The information in this Preliminary Placement Memorandum is not complete and may be changed. The Issue is meant only for Eligible Investors on a private placement basis and is not an offer to the public or to any other class of investors to subscribe to the Units. This Preliminary Placement Memorandum is not an offer to sell any Units and is not soliciting an offer to subscribe to or buy the Units in any jurisdiction where such offer, sale or subscription is not permitted.

IRB INFRASTRUCTURE TRUST

(An irrevocable trust set up under the Indian Trusts Act, 1882 and registered as an infrastructure investment trust with the Securities and Exchange Board of India)

Principal place of business: Off No-11th Floor/1101, Hiranandani Knowledge Park, Technology Street, Hill Side Avenue, Powai, Mumbai 400 076, Maharashtra, India
SEBI Registration Number: IN/InvIT/19-20/0012; **Tel**: +91 22 6733 6400
Compliance Officer: Ms. Shilpa C. Todankar; **E-mail**: shilpa.todankar@irb.co.in;

Sponsor	**Investment Manager**	**Trustee**
IRB Infrastructure Developers Limited	**MMK Toll Road Private Limited**	**IDBI Trusteeship Services Limited**

Initial offer of up to 375,254,000 units (the "**Units**") representing an undivided beneficial interest in IRB Infrastructure Trust (the "**Trust**") comprised of a fresh issue of up to 375,254,000 Units at a price of ₹100 per Unit (the "**Issue Price**") aggregating up to ₹37,525.40 million (the "**Issue**") on a private placement basis.

THE ISSUE IS BEING MADE ONLY TO ELIGIBLE INVESTORS IN RELIANCE UPON REGULATION 26B(1) AND REGULATION 15(4) OF THE SECURITIES AND EXCHANGE BOARD OF INDIA (INFRASTRUCTURE INVESTMENT TRUSTS) REGULATIONS, 2014

This is an initial offer of Units and there is no formal market for the Units. The Issue Price should not be taken to be indicative of the market price of the Units.

The Investment Manager, having made all reasonable inquiries, accepts responsibility for and confirms that this Preliminary Placement Memorandum contains all information with regard to the Trust, the Units and the Issue, which is material in the context of the Issue, that the information contained in this Preliminary Placement Memorandum is true and correct in all material aspects and is not misleading in any material respect, that the opinions and intentions expressed herein are honestly held and that there are no other facts, the omission of which makes this Preliminary Placement Memorandum as a whole or any of such information or the expression of any such opinions or intentions misleading in any material respect.

This Preliminary Placement Memorandum has not been, and will not be, registered as a prospectus, will not be circulated or distributed to the public at large in India or any other jurisdiction, and will not constitute a public offer in India or any other jurisdiction.

THIS PRELIMINARY PLACEMENT MEMORANDUM IS PERSONAL TO EACH ELIGIBLE INVESTOR. THIS PRELIMINARY PLACEMENT MEMORANDUM HAS BEEN PREPARED BY THE INVESTMENT MANAGER SOLELY FOR PROVIDING INFORMATION IN CONNECTION WITH THE ISSUE.

YOU MAY NOT, AND ARE NOT AUTHORIZED TO, (1) DELIVER THIS PRELIMINARY PLACEMENT MEMORANDUM TO ANY OTHER PERSON; OR (2) REPRODUCE THIS PRELIMINARY PLACEMENT MEMORANDUM IN ANY MANNER WHATSOEVER. ANY DISTRIBUTION OR REPRODUCTION OF THIS PRELIMINARY PLACEMENT MEMORANDUM, IN WHOLE OR IN PART, IS UNAUTHORIZED. FAILURE TO COMPLY WITH THIS INSTRUCTION MAY RESULT IN A VIOLATION OF THE SECURITIES AND EXCHANGE BOARD OF INDIA (INFRASTRUCTURE INVESTMENT TRUSTS) REGULATIONS, 2014 OR OTHER APPLICABLE LAWS OF INDIA AND OF OTHER JURISDICTIONS.

INVESTMENTS IN UNITS INVOLVE RISKS AND INVESTORS SHOULD NOT INVEST ANY FUNDS IN THE ISSUE UNLESS THEY CAN AFFORD TO TAKE THE RISK OF LOSING THEIR ENTIRE INVESTMENT. FOR MAKING AN INVESTMENT DECISION, INVESTORS MUST RELY ON THEIR OWN EXAMINATION OF THE TRUST, THE UNITS, THE ISSUE, AND THIS PRELIMINARY PLACEMENT MEMORANDUM. INVESTORS ARE ADVISED TO CAREFULLY READ THIS PRELIMINARY PLACEMENT MEMORANDUM, INCLUDING THE SECTION "RISK FACTORS" AND "RIGHTS OF UNITHOLDERS" ON PAGES 14 AND 234, RESPECTIVELY, BEFORE MAKING AN INVESTMENT DECISION. THE UNITS HAVE NOT BEEN RECOMMENDED OR APPROVED BY THE SECURITIES AND EXCHANGE BOARD OF INDIA (THE "SEBI") NOR DOES THE SEBI GUARANTEE THE ACCURACY OR ADEQUACY OF THE CONTENTS OF THIS PRELIMINARY PLACEMENT MEMORANDUM. EACH ELIGIBLE INVESTOR IS ADVISED TO CONSULT ITS OWN ADVISORS ABOUT THE CONSEQUENCES OF AN INVESTMENT IN THE UNITS BEING OFFERED PURSUANT TO THIS PRELIMINARY PLACEMENT MEMORANDUM.

Unless a serially numbered Preliminary Placement Memorandum along with an Application Form is addressed to a particular Eligible Investor, no invitation to offer shall be deemed to have been made to such Eligible Investor to make an offer to subscribe to Units pursuant to the Issue. For further details, see the section "*Issue Information*" on page 365. The distribution of this Preliminary Placement Memorandum and the Placement Memorandum or the disclosure of its contents without the Investment Manager's prior consent to any person other than the Eligible Investors is unauthorized and prohibited. Each Eligible Investor, by accepting delivery of this Preliminary Placement Memorandum, agrees to observe the foregoing restrictions and to make no copies of this Preliminary Placement Memorandum or any documents referred to in this Preliminary Placement Memorandum.

The information on the Sponsor's, Investment Manager's or Trust's website, as applicable, any website directly or indirectly linked to such websites, or the website of the Trustee does not form part of this Preliminary Placement Memorandum and prospective investors should not rely on such information contained in, or available through, any such websites.

This Preliminary Placement Memorandum is dated February 14, 2020.

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NOTICE TO INVESTORS

The statements contained in this Preliminary Placement Memorandum relating to the Trust and the Units are material, true, correct and adequate to enable investors to make an informed decision. The opinions and intentions expressed in this Preliminary Placement Memorandum with regard to the Trust and the Units are honestly held, have been reached after considering all relevant circumstances and are based on reasonable assumptions and information presently available with the Investment Manager or the Sponsor/Project Manager. There are no other facts in relation to Trust and the Units, the omission of which would, in the context of the Issue, make any statement in this Preliminary Placement Memorandum misleading in any material respect. Further, each of the Investment Manager and the Sponsor/Project Manager has made all reasonable enquiries to ascertain such facts and to verify the accuracy of all such information and statements.

Each Eligible Investor must rely on its own examination of the Trust and the merits and risks involved in investing in the Units. Eligible Investors should not construe the contents of this Preliminary Placement Memorandum as legal, tax, accounting or investment advice.

The delivery of this Preliminary Placement Memorandum, at any time, does not imply that the information contained in it is correct as of any time subsequent to its date. This Preliminary Placement Memorandum is personal to each Eligible Investor. This Preliminary Placement Memorandum shall not be relied upon by, and the Investment Manager, the Trustee and/or the Sponsor/Project Manager shall not be liable to any subsequent acquirer, transferee or investor of the Units.

The distribution of this Preliminary Placement Memorandum and the Placement Memorandum or the disclosure of their contents to any person, other than the Eligible Investors to whom they are addressed and those retained by such Eligible Investors to enable them to make a decision with respect to their subscription to the Units, is unauthorized and prohibited. Each Eligible Investor, by accepting delivery of this Preliminary Placement Memorandum, agrees to observe the foregoing restrictions and make no copies of this Preliminary Placement Memorandum or any other material in connection with the Issue or the Units.

Each Eligible Investor will be deemed to have made the representations, agreements and acknowledgments as described in this section "*Notice to Investors*" and elsewhere herein in "*Notice to Investors – Representations by Eligible Investors"*. Nothing contained herein will relieve any party of its rights or obligations under the Framework Agreement.

Notice to Investors in certain other jurisdictions

The distribution of this Preliminary Placement Memorandum and the issue of the Units in certain jurisdictions may be restricted by law. As such, this Preliminary Placement Memorandum does not constitute, and may not be used for, or in connection with, an offer or solicitation by anyone in any jurisdiction in which such offer or solicitation is not authorized or to any person to whom it is unlawful to make such offer or solicitation. In particular, no action has been taken by the Investment Manager which would permit an issue of the Units in any jurisdiction other than India. Accordingly, the Units may not be offered or sold, directly or indirectly, and neither this Preliminary Placement Memorandum nor any Issue materials in connection with the Units be distributed or published in or from any country or jurisdiction that would require registration of the Units in such country or jurisdiction.

Representations by Eligible Investors

References herein to "you" or "your" is to each Eligible Investor in the Issue.

By subscribing to the Units pursuant to the Issue, you are deemed to have represented to the Trustee, the Investment Manager and the Sponsor/ Project Manager, and you acknowledge and agree as follows:

1. You are permitted to acquire the Units under the laws of any applicable jurisdiction and that you have necessary capacity and authority, and have obtained all necessary consents and authorizations to enable you to commit to this participation in the Issue and to perform your obligations in relation thereto (including, without limitation, on behalf of any person) and honor such obligations;

2. You will make all necessary filings, in relation to the Issue and your investment in Units, with appropriate governmental, statutory or regulatory authorities, including the RBI, as may be required, in accordance with applicable law;

3. You are aware that the Units have not been, and will not be registered through a prospectus under the InvIT Regulations, or under any other law in force in India. This Preliminary Placement Memorandum will be submitted to the SEBI;

4. You confirm that, either: (i) you have not participated in or attended any investor meetings or presentations by the Trust or its agents ("**Presentations**") in relation to the Trust, the Units or the Issue; or (ii) if you have participated in or attended any Presentations, you understand and acknowledge that the Trustee, the Investment Manager and their respective agents, may not have knowledge of the statements made at such Presentations and may therefore be unable to determine whether the information provided to you at such Presentations may have included any material misstatements or omissions, and, accordingly you acknowledge that the Trustee, the Investment Manager, the Sponsor/ Project Manager and their respective agents have advised you not to rely in any way on any information that was provided to you at such Presentations;

5. None of the Trust, the Sponsor/ Project Manager, the Investment Manager, the Trustee or any of their respective shareholders, directors, officers, employees, counsel, representatives, advisers, agents or affiliates is making any recommendations to you or advising you regarding the suitability of any transactions it may enter into in connection with the Issue. None of the Trust, the Sponsor/ Project Manager, the Trustee, the Investment Manager or any of their respective shareholders, employees, counsel, officers, directors, representatives, advisers, agents or affiliates have any duties or responsibilities to you for providing the protection afforded to their clients, or for providing advice in relation to the Issue and are in no way acting in a fiduciary capacity towards you;

6. All statements, other than statements of historical fact included in this Preliminary Placement Memorandum, including, without limitation, those regarding the Trust's financial position, business strategy, plans and objectives for future operations, the Investment Objectives and the Projections, are forward-looking statements. Such forward-looking statements involve known and unknown risks, uncertainties and other important factors that could cause actual results to be materially different from future results, performance or achievements expressed or implied by such forward-looking statements. Such forward-looking statements are based on numerous assumptions regarding the Trust's present and future business strategies and the environment in which the Trust will operate in the future. You should not place undue reliance on forward-looking statements, which speak only as of the date of this Preliminary Placement Memorandum. The Trust, the Trustee, the Sponsor and the Investment Manager assume no responsibility to update any of the forward-looking statements contained in this Preliminary Placement Memorandum;

7. You have been provided a serially numbered copy of the Preliminary Placement Memorandum and Placement Memorandum and have read each of them, in its entirety, including, in particular, the section "*Risk Factors*" on page 14;

8. You are aware and understand that the Units are being offered only to Eligible Investors and are not being offered to the general public and the Allotment shall be on a discretionary basis;

9. In making your investment decision, you have (i) relied on your own examination of the Trust, the Units and the terms of the Issue, including the merits and risks involved, (ii) consulted your own independent advisors or otherwise have satisfied yourself concerning, without limitation, the effects of local laws and (iii) received all information in the Preliminary Placement Memorandum and the Placement Memorandum that you believe is necessary or appropriate in order to make an investment decision in respect of Trust and the Units;

10. You acknowledge that an investment in the Units involves a high degree of risk and that the Units are, therefore, a speculative investment. You are seeking to subscribe to the Units in the Issue for your own investment and not with a view to resell or distribute in any manner that could characterize you as an underwriter or similar party in any jurisdiction;

11. You will obtain your own independent legal, financial or tax advice and will not rely on the Investment Manager, the Sponsor/ Project Manager, the Trustee or any of their respective shareholders, employees, counsel, officers, directors, representatives, advisers, agents or affiliates when evaluating the tax consequences in relation to the Units (including but not limited to the Issue and the use of the proceeds of the Issue);

12. You are not the Trustee, or the Valuer or an employee of the Valuer involved in the valuation of the Project SPVs;

13. You understand that the Units to be Allotted in the Issue will, when issued, be credited as fully paid and will rank *pari passu* in all respect with all other Units, including in respect of the right to receive all distributions declared, made or paid in respect of the Units after the Allotment. For details, see "*Distribution*" on page 231;

14. The Trustee, the Investment Manager, the Sponsor/ Project Manager, their respective shareholders, employees, counsel, offices, directors, representatives, advisers, agents or affiliates, will rely on the truth and accuracy of the foregoing representations, warranties, acknowledgements and undertakings which are given to the Trust, the Sponsor/ Project Manager, the Investment Manager and the Trustee;

15. You are eligible to invest in India and in the Units under applicable law, including the FEMA Rules, and have not been prohibited by the SEBI or any regulatory authority from buying, selling or dealing in units or securities;

16. You understand that, none of the Investment Manager, the Sponsor/ Project Manager or the Trustee has any obligation to purchase or subscribe to all, or any part, of the Units subscribed by you in the Issue;

17. Any dispute arising in connection with the Issue will be governed by, and construed in accordance with, the laws of the Republic of India and shall be subject to the jurisdiction of the court in Mumbai, Maharashtra; and

18. You have made the representations, warranties, acknowledgements and agreements provided in this section and each of the representations, warranties, acknowledgements and agreements set out above shall continue to be true and accurate at all times, until and including the Allotment of Units in the Issue.

SECTION I – GENERAL

DEFINITIONS AND ABBREVIATIONS

This Preliminary Placement Memorandum uses certain definitions and abbreviations which, unless otherwise specified or the context otherwise indicates, requires or implies, shall have the meanings as provided below. References to any legislation, act, regulation, rule, guideline, policy, circular, notification or clarification shall be deemed to include all amendments, supplements, re-enactments and modifications thereto from time to time, and any reference to a statutory provision shall include any subordinate legislation made from time to time thereunder.

General Terms

Term	Description
Trust	IRB Infrastructure Trust, an irrevocable trust set up under the Trusts Act and registered as an infrastructure investment trust under the InvIT Regulations
We / us / our	Unless the context otherwise requires or implies, the Trust and the Project SPVs

Trust Related Terms

Term	Description
Associate	"Associate" shall have the meaning given to such term under Regulation 2(1)(b) of the InvIT Regulations
Auditor / Trust's Auditor	Gokhale & Sathe, Chartered Accountants
Capital Contribution	The total subscription amounts by way of cash or share swap or otherwise (including transfer of interest in the Trust Assets by the Sponsor) received by the Trust from Unitholders (including the Sponsor) in connection with any placement, offering or issue of Units
Combined Financial Statements	The combined financial statements of the Project SPVs, prepared in accordance with the requirements of the InvIT Regulations and Ind AS, and the related notes, schedules and annexures thereto, as of and for the Financial Years 2017, 2018 and 2019 and the six-month period ended September 30, 2019
Croxley	Croxley Investment Pte. Ltd.
Debt Novation Agreements	The debt novation agreements to be entered into by the Trust (acting through the Trustee), the Investment Manager and the Sponsor, with each of the Project SPVs and the Sponsor's affiliates (as applicable), in relation to the novation of subordinated debt and unsecured loans provided by the Sponsor and its associates to the Project SPVs, prior to the Bid/Issue Opening Date
Financial Investors	Bricklayers Investment Pte. Ltd., Chiswick Investment Pte. Ltd., Dagenham Investment Pte. Ltd., Anahera Investment Pte. Ltd. and Stretford End Investment Pte. Ltd.
Formation Transactions	The transactions pursuant to which the Trust will acquire the shareholding of the Sponsor in the Project SPVs and the subordinated debt and unsecured loans provided by the Sponsor and its associates to the Project SPV will stand novated in favor of the Trust in consideration for Units to be issued to the Sponsor after the Bid/Issue Closing Date and prior to Allotment in the Issue
Framework Agreement	The framework agreement dated August 6, 2019 among the Sponsor, the Investment Manager, the Financial Investors and Croxley, as amended
Indenture of Trust	The indenture of trust dated August 27, 2019 between the Sponsor and the Trustee to settle the Trust
Investment Manager	MMK Toll Road Private Limited
Investment Management Agreement	The investment management agreement dated August 27, 2019 between the Trustee (on behalf of the Trust) and the Investment Manager for managing and administration of the Trust, in accordance with the InvIT Regulations, as amended
Initial Road Assets	The toll road assets owned, operated and maintained by the Project SPVs
Manager Group or Manager Group Members	The Investment Manager, the Project SPVs, the Trust and the entities controlled by the Investment Manager/ the Trust, including any other SPVs
Parties to the Trust	The Sponsor, the Investment Manager, the Trustee and the Project Manager
Policies	The policies in relation to the Manager Group as specified in "*Corporate Governance*" on page 136

Term	Description
Project Implementation Agreements	The project implementation agreements dated February 3, 2020 entered into by the Trustee (on behalf of the Trust), the Investment Manager and the Project Manager, with each of the Project SPVs, which set out the obligations of the Project Manager with respect to the execution, operation and maintenance of the project undertaken by such Project SPV, in accordance with the InvIT Regulations
Project Entities	The entities through which the Sponsor operates its various road infrastructure projects
Project Manager	IRB Infrastructure Developers Limited
Project SPVs	The subsidiaries of the Sponsor which are proposed to form part of the initial portfolio of the Trust, namely the following: i) AE Tollway Limited; ii) CG Tollway Limited; iii) IRB Hapur Moradabad Tollway Limited iv) IRB Westcoast Tollway Limited; v) Kaithal Tollway Limited; vi) Kishangarh Gulabpura Tollway Limited; vii) Solapur Yedeshi Tollway Limited; viii) Udaipur Tollway Limited; and ix) Yedeshi Aurangabad Tollway Limited
Shareholder Loan Agreements	The shareholder loan agreements to be entered into by the Trust (acting through the Trustee) and the Investment Manager with each of the Project SPVs to provide unsecured loans to each of the Project SPVs, prior to the Bid/Issue Opening Date
Share Purchase Agreements	The share purchase agreements to be entered into by the Trust (acting through the Trustee), the Investment Manager and the Sponsor, with each of the Project SPVs, in relation to the transfer of the equity shares held by the Sponsor in such Project SPVs, in consideration for Units, prior to the Bid/Issue Opening Date
Sponsor	IRB Infrastructure Developers Limited
Stock Exchanges	The BSE Limited and The National Stock Exchange of India Limited
Traffic Consultants	LEA Associates South Asia Private Limited, Tractebel Engineering Private Limited, Steer and GMD Consultants
Traffic Reports	The reports prepared by the Traffic Consultants for the underlying road projects operated by the Project SPVs
Trustee	IDBI Trusteeship Services Limited
Trust Assets	The assets owned by the Trust, whether directly or through an SPV or a Holding Company, and shall include all rights, interests and benefits arising from and incidental to ownership of such assets
Trust Documents	The Indenture of Trust, the charter documents of the Investment Management Agreement, the Investment Management Agreement, the Trust Contribution Agreement (if any), the Project Implementation Agreements, any agreements among the Trustee, the Investment Manager and the Unitholders, in relation to the Trust, the Units, any debt securities or instruments or obligations issued by the Trust, any offering document in connection with a capital or debt issuance by the Trust (including the Issue), including any preliminary placement memorandum, final placement memorandum, information memorandum, draft offer document, offer document and final offer document, Policies, the Investment Manager and/or the SPVs/Holdcos, Business Plans and Annual Budget adopted by the Investment Manager and such other documents in connection herewith, as executed, issued, adopted and amended, modified, supplemented or restated from time to time
Trust Group or Trust Group Members	The Sponsor and the Manager Group Members
Unitholder	An investor which holds Units of the Trust
Units	Undivided beneficial interest in the Trust and the Units together represent the entire beneficial interest in the Trust
Valuer	Mr. Sunit Khandelwal

Project SPVs

Term	Description
AETL	AE Tollway Limited
CGTL	CG Tollway Limited
IRB HMTL	IRB Hapur Moradabad Tollway Limited
IRB WTL	IRB Westcoast Tollway Limited
KGTL	Kishangarh Gulabpura Tollway Limited

Term	Description
KTL	Kaithal Tollway Limited
SYTL	Solapur Yedeshi Tollway Limited
UTL	Udaipur Tollway Limited
YATL	Yedeshi Aurangabad Tollway Limited

Issue Related Terms

Term	Description
Allot/ Allotment/ Allotted	Unless the context otherwise requires, the issue and allotment of Units to successful Bidders pursuant to the Issue
Allottees	Bidders to which Units are issued and Allotted pursuant to the Issue
Application Form	The serially numbered form pursuant to which Eligible Investors shall submit a Bid for the Units in the Issue
Bid	Indication of interest of an Eligible Investor, as provided in the Application Form, to subscribe for the Units at the Issue Price, in terms of this Preliminary Placement Memorandum and the Application Form
Bid Amount	The amount payable by a Bidder simultaneously with the submission of the Application Form during the Bidding Period, for the number of Units Bid for at the Issue Price specified in the Preliminary Placement Memorandum
Bid/Issue Closing Date	February 21, 2020, which is the last date until which the Application Forms shall be accepted
Bid/Issue Opening Date	February 20, 2020, prior to which the Application Forms shall be dispatched to Eligible Investors by the Investment Manager and the date from which the Investment Manager shall accept Application Forms
Bidding Period	Period between the Bid/Issue Opening Date and the Bid/Issue Closing Date, inclusive of both days, during which Eligible Investors can submit their Bids
Bidder	Any Eligible Investor, who made a Bid pursuant to the terms of the Preliminary Placement Memorandum and the Application Form
Bodies Corporate	Bodies corporate as defined under Regulation 2(1)(d) of the InvIT Regulations A "Body Corporate" is defined in Section 2(11) of the Companies Act to include a company incorporated outside India, but does not include (i) a co-operative society registered under any law relating to co-operative societies; and (ii) any other body corporate (not being a company as defined in the Companies Act) which the central government may, by notification, specify in this regard
Client ID	Client identification number maintained with one of the Depositories in relation to a demat account
Demographic Details	Details of the Bidders including the Bidder's address, name of the Bidder's father/husband, investor status, occupation and bank account details
Designated Account	Account designated as "IRB Infrastructure Trust" in whose favor Eligible Investors are required to transfer money through direct credit/NEFT/NACH/RTGS in respect of the Bid Amount when submitting a Bid
Eligible Investors	Institutional Investors and Bodies Corporate, whether Indian or foreign, eligible under applicable law to invest in the Units in the Issue
Institutional Investors	Institutional investor as defined under the InvIT Regulations
Issue	The fresh issue of up to 375,254,000 Units aggregating up to ₹37,525.40 on a private placement basis
Issue Price	₹100 per Unit, being the price at which Units will be Allotted to successful Bidders in terms of this Preliminary Placement Memorandum
Issue Proceeds	The gross proceeds of the Issue, being ₹37,525.40 million. For further details in relation to the use of Issue Proceeds, see the section "*Use of Proceeds*" on page 60
Placement Memorandum	The placement memorandum to be issued in relation to the Issue in accordance with the InvIT Regulations
Preliminary Placement Memorandum	This preliminary placement memorandum dated February 14, 2020 in relation to the Issue issued in accordance with the InvIT Regulations, which does not contain the complete particulars of the Issue, to be filed with the SEBI
Minimum Bid Size	₹10 million
Qualified Institutional Buyers or QIB(s)	Qualified institutional buyers as defined under the InvIT Regulations
Registrar and Unit Transfer Agent	Kfin Technologies Private Limited

Term	Description
or Registrar	
Working Day	Any day which is not (a) a Saturday or Sunday; or (b) a day on which commercial banks in Mumbai, Delhi or Singapore are closed for ordinary banking business. In respect of the Bid/Issue Period, "Working Day" shall mean all days, excluding Saturdays, Sundays and public holidays, on which commercial banks in Mumbai are open for business

Technical/Industry Related Terms/Abbreviations

Term	Description
BOT	Build-Operate-Transfer
CCEA	Cabinet Committee on Economic Affairs
DBFOT	Design-Build-Finance-Operate-Transfer
EPC	Engineering Procurement and Construction
ETC	Electronic Toll Collection
MoRTH	Ministry of Road Transport and Highways
NH	National Highway
NHAI	National Highways Authority of India
NHDP	National Highways Development Project
O&M	Operation and Maintenance
PPP	Public Private Partnership
SPV	Special Purpose Vehicle

Conventional Terms/Abbreviations

Term	Description
Alternative Investment Funds or AIFs	Alternative investment funds as defined in, and registered under, the SEBI AIF Regulations
CAGR	Compounded Annual Growth Rate
Category I FPIs	FPIs registered as "Category I foreign portfolio investors" under the SEBI FPI Regulations
Category II FPIs	FPIs registered as "Category II foreign portfolio investors" under the SEBI FPI Regulations
CDSL	Central Depository Services (India) Limited
CIN	Corporate Identity Number
Client ID	Client identification number of the Bidder's beneficiary account
Companies Act, 2013	Companies Act, 2013 read with the rules, regulations, clarifications and notifications thereunder
Contract Labour Act	Contract Labour (Regulation and Abolition) Act, 1970
DIN	Director Identification Number
DIPP	Department for Promotion of Industry and Internal Trade, Ministry of Commerce and Industry, Government of India (formerly known as Department of Industrial Policy and Promotion)
DP ID	Depository participant identification
DP/ Depository Participant	A depository participant as defined under the Depositories Act
Debenture Trustees Regulations	Securities and Exchange Board of India (Debenture Trustees) Regulations, 1993
Demographic Details	Details of the Bidders including the Bidders' address, name of the Bidders' father / husband, investor status, occupation and bank account details
Depositories	NSDL and CDSL
Depositories Act	Depositories Act, 1996
FCNR Account	Foreign Currency Non-Resident Account, and has the meaning ascribed to the term "FCNR(B) account" under the Foreign Exchange Management (Deposit) Regulations, 2016
FDI	Foreign Direct Investment
FDI Policy	The 'Consolidated FDI Policy Circular of 2017' (No. 5(1)/2017-FC-1) issued by the DIPP, which has been effective since August 28, 2017
FEMA	Foreign Exchange Management Act, 1999, read with rules and regulations thereunder
FEMA Rules	The Foreign Exchange Management (Non-debt Instruments) Rules, 2019
Financial Year / Fiscal / FY	Unless stated otherwise, the period of 12 months ending March 31 of that particular year

Term	Description
FPI(s)	Foreign portfolio investors, as defined in and registered under the SEBI FPI Regulations
GoI / Government	Government of India
HUF	Hindu Undivided Family
ICAI	The Institute of Chartered Accountants of India
IFRS	International Financial Reporting Standards
Income Tax Act/ I.T. Act	The Income Tax Act, 1961
Ind AS	Indian Accounting Standards
InvIT Regulations	Securities and Exchange Board of India (Infrastructure Investment Trusts) Regulations, 2014 and the circulars, notifications, guidelines and clarifications issued thereunder
IST	Indian Standard Time
KM	Kilometres
LLP Act	The Limited Liability Partnership Act, 2008
Mutual Fund(s)	Mutual fund(s) as defined in and registered under the Securities and Exchange Board of India (Mutual Funds) Regulations, 1996
NACH	National Automated Clearing House
NAV	Net asset value
NEFT	National Electronic Fund Transfer
NRE Account	Non-Resident External Account, as defined under the Foreign Exchange Management (Deposit) Regulations, 2016
NRI	A person resident outside India, who is a citizen of India or an 'Overseas Citizen of India' cardholder within the meaning of section 7(A) of the Citizenship Act, 1955
NRO	Non-Resident Ordinary Account, as defined under the Foreign Exchange Management (Deposit) Regulations, 2016
NSDL	National Securities Depository Limited
p.a.	Per annum
PAN	Permanent Account Number
PAT	Profit after tax
Pension Fund	Pension fund, as defined in and registered under the Pension Fund Regulatory and Development Authority Act, 2013
PFRDA	Pension Fund Regulatory and Development Authority
RBI	Reserve Bank of India
Registration Act	Registration Act, 1908
RTGS	Real Time Gross Settlement
SCRA	Securities Contracts (Regulation) Act, 1956
SCRR	Securities Contracts (Regulation) Rules, 1957
SEBI	The Securities and Exchange Board of India constituted under the SEBI Act
SEBI Act	Securities and Exchange Board of India Act, 1992
SEBI AIF Regulations	Securities and Exchange Board of India (Alternative Investment Funds) Regulations, 2012
SEBI Depository Regulations	Securities and Exchange Board of India (Depositories and Participants) Regulations, 2018
SEBI FPI Regulations	Securities and Exchange Board of India (Foreign Portfolio Investors) Regulations, 2019
SEBI FVCI Regulations	Securities and Exchange Board of India (Foreign Venture Capital Investors) Regulations, 2000
SEBI VCF Regulations	Securities and Exchange Board of India (Venture Capital Funds) Regulations, 1996
Trusts Act	Indian Trusts Act, 1882
VCFs	Venture capital funds as defined in and registered with the SEBI under the SEBI VCF Regulations

The words and expressions used but not defined herein shall have the meanings assigned to such terms under the SEBI Act, the SCRA, the InvIT Regulations and the rules, regulations, circulars and guidelines made thereunder.

Notwithstanding the foregoing, terms in "*Statement of Tax Benefits*", "*Regulations and Policies*", "*Summary of the Concession Agreements*", "*Combined Financial Statements*", and "*Material Litigation and Regulatory Action*" on pages 71, 213, 140, 257 and 345, respectively, shall have the meanings given to such terms in these respective sections.

PRESENTATION OF FINANCIAL, INDUSTRY AND MARKET DATA

Certain Conventions

All references to "India" contained in this Preliminary Placement Memorandum are to the Republic of India and all references to the "U.S.", "USA" or the "United States" are to the United States of America.

Unless stated otherwise, all references to page numbers in this Preliminary Placement Memorandum are to the page numbers of this Preliminary Placement Memorandum.

Financial Data

Unless stated otherwise, the financial data included in this Preliminary Placement Memorandum in relation to the Trust and the Project SPVs is derived from the Combined Financial Statements which have been prepared in accordance with the requirements of the InvIT Regulations and Ind AS. For further information, see "*Combined Financial Statements*" on page 257.

This Preliminary Placement Memorandum includes Projections for 2021, 2022 and 2023, prepared in accordance with the requirements of the InvIT Regulations. For further information, see "*Projections*" on page B-1.

This Preliminary Placement Memorandum also includes summary financial statements of (i) the Sponsor as of and for the Financial Years 2019, 2018 and 2017 from the audited consolidated financial statements of the Sponsor which have been prepared in accordance with the Companies Act and Ind AS; and (ii) the Investment Manager for the Financial Years 2019, 2018 and 2017 and the four-month period ended July 31, 2019 from the audited standalone financial statements of the Investment Manager which have been prepared in accordance with the Companies Act and Ind AS. For further information, see "*Summary Financial Information*" on page 40.

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

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

In this Preliminary Placement Memorandum, all figures and percentage figures in decimals have been rounded off to two decimals. However, where any figures may have been sourced from third-party industry sources, such figures may be rounded-off to such number of decimal points as provided in such respective sources. In this Preliminary Placement Memorandum, (i) the sum or percentage change of certain numbers may not conform exactly to the total figure given; and (ii) the sum of the numbers in a column or row in certain tables may not conform exactly to the total figure given for that column or row. Any such discrepancies are due to rounding off.

Unless stated or the context requires otherwise, any percentage amounts, as disclosed in "*Risk Factors*", "*Business*" and "*Management's Discussion and Analysis of Financial Condition and Results of Operations*" on pages 14, 109 and 324, respectively, and elsewhere in this Preliminary Placement Memorandum have been calculated on the basis of the Combined Financial Statements.

Currency and Units of Presentation

All references to:

i) "Rupees" or "Rs." or "INR" or "₹" are to Indian Rupees, the official currency of the Republic of India; and
ii) "US$" or "USD" are to United States Dollars, the official currency of the United States of America.

Certain numerical information in this Preliminary Placement Memorandum has been presented in "million" and "billion" units. One million represents 1,000,000 and one billion represents 1,000,000,000.

Exchange Rates

This Preliminary Placement Memorandum contains conversions of certain other currency amounts into Indian Rupees. These conversions should not be construed as a representation that these currency amounts could have been, or can be converted into Indian Rupees, at any particular rate or at all.

The following table sets forth, for the periods indicated, information with respect to the exchange rate between the Rupee and the U.S. Dollar (in Rupees per U.S. Dollar):

As at	Reference rate (₹ per US$)
March 29, 2019*	69.17
March 28, 2018#	65.04
March 31, 2017	64.84

** Source: Financial Benchmarks India Private Limited reference rate. Exchange rate as at March 29, 2019, as Financial Benchmarks India Private Limited reference rate is not available for March 31, 2019, and March 30, 2019 being a Sunday and Saturday respectively.*
Source: RBI reference rate. Exchange rate as at March 28, 2018, as RBI reference rate is not available for March 31, 2018, March 30, 2018 and March 29, 2018, being a Sunday, a Saturday and a public holiday, respectively.

Industry and Market Data

Unless stated otherwise, industry and market data used in this Preliminary Placement Memorandum has been obtained or derived from the Traffic Reports prepared by the Traffic Consultants with respect to the toll revenues for the underlying road projects operated by the Project SPVs, which are commissioned reports, and publicly available information as well as other Government and industry publications and sources. The Investment Manager has commissioned the Traffic Reports, included in this Preliminary Placement Memorandum as "*Annexure C: Traffic Reports*", to provide an independent estimation of the projected traffic volumes with respect to the underlying road projects operated by the Project SPVs, which is based on historical data and certain assumptions. The Traffic Reports issued by LEA Associates South Asia Private Limited are subject to the following disclaimer:

"*The information contained in the TRAFFIC REPORT (FINAL) for the Projects is the proprietary and exclusive property of LEA Associates South Asia Pvt. Ltd. except as otherwise indicated. No part of this document, in whole or in part, may be reproduced, stored, transmitted, or used for design purposes without the prior written permission of LEA Associates South Asia Pvt. Ltd., New Delhi.*

The traffic data and analysis presented in this the Reports is based on the traffic surveys conducted specifically for the relevant Project at Survey Locations during the specified period as indicated in the Report. The future projections or any forward looking statements are based on secondary information collected from various public sources, inputs provided by the Clients/Agencies and certain assumptions about certain future parameters. While LEA Associates South Asia Pvt. Ltd. New Delhi has carefully and diligently analyzed and used the data, secondary information and assumptions, we claim no responsibility or offer any warranty whatsoever about the correctness and accuracy of assumptions, data or information not generated by us and consequent future projections.

The information in this document is provided for informational purposes only. LEA Associates South Asia Pvt. Ltd. New Delhi specifically disclaims all warranties, express or limited, including, but not limited, to the implied warranties of merchantability and fitness for a particular purpose, except as provided in the document."

Industry as well as Government publications generally state that information contained in those publications has been obtained from sources believed to be reliable but that their accuracy and completeness are not guaranteed and their reliability cannot be assured. Accordingly, no investment decision should be made on the basis of such information. Although we believe that the industry data used in this Preliminary Placement Memorandum is reliable, it has not been independently verified by the Investment Manager, the Trustee, the Sponsor or any of their respective affiliates/advisors. Such data involves risks, uncertainties and numerous assumptions and is subject to change based on various factors, including those discussed in the section "*Risk Factors*" on page 14. Accordingly, investment decisions should not be based solely on such information.

The extent to which market and industry data used in this Preliminary Placement Memorandum is meaningful depends on the reader's familiarity with and understanding of methodologies used in compiling such data. There are no standard data gathering methodologies in the industry in which business of the Project SPVs/Trust is conducted, and methodologies and assumptions may vary widely among different industry sources.

Websites

The information contained on the websites of the Trustee, the Sponsor or the other websites referenced in this Preliminary Placement Memorandum or that can be accessed through such websites, neither constitutes part of this Preliminary Placement Memorandum, nor is it incorporated by reference therein and should not form the basis of any investment decision. As at the date of the Preliminary Placement Memorandum, the Trust and the Investment Manager do not have a website. For details of the websites of the Trustee and the Sponsor, see "*General Information*" on page 57.

FORWARD-LOOKING STATEMENTS AND FINANCIAL PROJECTIONS

This Preliminary Placement Memorandum contains certain "forward-looking statements". These forward-looking statements generally can be identified by words or phrases such as "aim", "anticipate", "believe", "expect", "estimate", "intend", "objective", "plan", "goal", "project", "propose", "seek to", "likely", "will", "will continue", "will pursue", or other words or phrases of similar import. Similarly, statements that describe strategies, objectives, plans or goals are also forward-looking statements. All forward-looking statements and financial projections are subject to risks, uncertainties and assumptions about the Trust and the Project SPVs that could cause actual results to differ materially from those contemplated by the forward-looking statements and financial projections.

In accordance with the InvIT Regulations, the Projections have been included in this Preliminary Placement Memorandum. The Projections should be read together with the underlying assumptions and notes thereto. Further, the Valuation Report is based on certain projections and accordingly, should be read together with the assumptions and notes thereto. The Traffic Reports include projections/estimates in relation to traffic growth, and accordingly, should be read in conjunction with the notes and assumptions thereto. See "*Annexure A: Valuation Report*", "*Annexure B: Projections*" and "*Annexure C: Traffic Reports*" on pages A, B and C, respectively.

Actual results may differ materially from those suggested by forward-looking statements or financial projections due to risks or uncertainties associated without expectations with respect to, but not limited to, regulatory changes pertaining to the infrastructure sector in India and our ability to respond to them, our ability to successfully implement our strategy, our growth and expansion plans, technological changes, our exposure to market risks, general economic and political conditions in India which have an impact on our business activities or investments, the monetary and fiscal policies of India, inflation, deflation, unanticipated turbulence in interest rates, foreign exchange rates, equity prices or other rates or prices, the performance of the financial markets in India and globally, changes in domestic laws, regulations and taxes and changes in competition in the infrastructure sector. Certain important factors that could cause actual results to differ materially from our expectations include, but are not limited to, the following:

- we have not yet executed binding agreements with respect to the Formation Transactions and the debt financing arrangements. Our completion of the Formation Transactions, pursuant to which we will acquire the Project SPVs, and the transactions contemplated by the debt financing documentation are subject to certain conditions precedent and closing conditions that may prevent us from acquiring the Project SPVs or providing debt financing to them;
- the debt financing proposed to be provided by the Trust to each of the Project SPVs is comprised of unsecured, interest-free loans which will become interest-bearing at a future date. The payment obligations of the respective Project SPVs in relation to such debt financing will be subordinated to all existing and future obligations of the Project SPVs towards any senior lenders;
- any payment by the Project SPVs, including in an event of termination of the relevant concession agreement, is subject to a mandatory escrow arrangement which restricts their flexibility to utilize the available funds;
- the regulatory framework governing infrastructure investment trusts in India is untested and the interpretation and enforcement thereof involve uncertainties, which may have a material, adverse effect on the ability of certain categories of investors to invest in the Units, our business, financial condition and results of operations and our ability to make distributions to Unitholders;
- we may not be able to make distributions to Unitholders or the level of distributions may fall;
- the consents obtained from the lenders in relation to the Formation Transactions impose certain obligations on the Trust. Any default under the existing financing arrangements by any of the Project SPVs could adversely impact the Trust's ability to continue to own a majority of each of the Project SPVs, its cash flows and its ability to make distributions to Unitholders;
- we have a limited operating history and may not be able to operate our business successfully or generate sufficient cash flows to make or sustain distributions. The Combined Financial Statements presented in this Preliminary Placement Memorandum may not be indicative of the Trust's future financial condition and results of operations;
- the Valuation Report, and any underlying reports, are not opinions on the commercial merits of the Trust and the Project SPVs, nor are they opinions, expressed or implied, as to the financial condition of the Trust upon Allotment, and the valuation contained in such Valuation Report may not be indicative of the true value of the Project SPVs' assets; and

- we have referred to the data derived from Traffic Reports commissioned from the Traffic Consultants, which are based on certain bases, estimates and assumptions that are subjective in nature and may not be accurate.

For further discussion on factors that could cause actual results to differ from expectations, see the sections "*Risk Factors*", "*Industry Overview*", "*Business*" and "*Management's Discussion and Analysis of Financial Condition and Results of Operations*" on pages 14, 104, 109 and 324, respectively. By their nature, certain market risk disclosures are only estimates and could be materially different from what actually occurs in the future. As a result, actual gains or losses could materially differ from those that have been estimated.

Forward-looking statements and financial projections reflect current views as of the date of this Preliminary Placement Memorandum and are not a guarantee of future performance or returns to investors. These statements and projections are based on certain beliefs and assumptions, which in turn are based on currently available information. In accordance with the InvIT Regulations, the assumptions underlying the Projections have been certified by the Auditor.

Although the Investment Manager believes the assumptions upon which these forward-looking statements and financial projections are based are reasonable, any of these assumptions could prove to be inaccurate, and the forward-looking statements and financial projections based on these assumptions could be incorrect. The Investment Manager, the Trustee, the Sponsor or any of their affiliates/advisors do not have any obligation to update or otherwise revise any statements reflecting circumstances arising after the date hereof or to reflect the occurrence of underlying events, even if the underlying assumptions do not come to fruition.

There can be no assurance that the expectations reflected in the forward-looking statements and financial information will prove to be correct. Given these uncertainties, Eligible Investors are cautioned not to place undue reliance on such forward-looking statements and financial projections and not to regard such statements to be a guarantee or assurance of our future performance or returns to investors.

SECTION II – RISK FACTORS

An investment in the Units involves risks. Prospective investors should carefully consider all the information in this Preliminary Placement Memorandum, including the risks and uncertainties described below, before making an investment in the Units. To obtain a complete understanding, prospective investors should read this section together with the sections "Business", "Combined Financial Statements", "Management's Discussion and Analysis of Financial Condition and Results of Operations" and "Rights of Unitholders" on pages 109, 257, 324 and 234, respectively, as well as the other information contained in this Preliminary Placement Memorandum. The risks and uncertainties described in this section may not be the only risks and uncertainties the Trust and the Project SPVs currently face. Additional risks and uncertainties not presently known to the Trustee or the Investment Manager, or that the Trustee or the Investment Manager do not currently consider material, may arise or may adversely affect our business, financial condition, cash flows and results of operations. If any of the following risks, or other risks that are not currently known or are currently considered immaterial, actually occur, our business prospects, results of operations, cash flows and financial condition could suffer, the price of the Units could decline and prospective investors may lose all or part of their investment. Unless otherwise specified in the relevant risk factors, the Trustee and the Investment Manager are not in a position to specify or quantify the financial or other risks mentioned herein.

This Preliminary Placement Memorandum also contains forward-looking statements (including the Projections) that involve risks, uncertainties and assumptions. The actual results of the Trust and the Project SPVs could differ materially from those anticipated in these forward-looking statements as a result of certain factors, including the considerations described below and elsewhere in this Preliminary Placement Memorandum.

Investors should be aware that the price of the Units, and the income from them, may be subject to volatility. If any of the risks described below occurs, our business and prospects could be materially and adversely affected and investors could lose all or part of their original investment.

In making an investment decision, prospective investors must rely upon their own examinations and the terms of the Issue, including the merits and the risks involved. Prospective investors should consult their tax, financial and legal advisors about the particular consequences of investing in the Issue.

In this section, unless the context otherwise requires, a reference to "we", "us" and "our" refers collectively to the Trust and the Project SPVs. Further, unless the context otherwise requires, the financial information used in this section is derived from the Combined Financial Statements.

Risks Related to our Organization and the Structure of the Trust

1. ***We have not yet executed binding agreements with respect to the Formation Transactions and the debt financing arrangements. Our completion of the Formation Transactions, pursuant to which we will acquire the Project SPVs, and the transactions contemplated by the debt financing documentation are subject to certain conditions precedent and closing conditions that may prevent us from acquiring the Project SPVs or providing debt financing to them.***

Pursuant to the Formation Transactions, prior to the Allotment of the Units in the Issue, we will acquire the entire equity shareholding of the Sponsor in the Project SPVs in exchange for Units to be issued to the Sponsor. The unsecured loans and subordinated debt provided by the Sponsor and certain of its Associates will also stand novated in favor of the Trust and in exchange for the novation of a portion of such debt, the Sponsor will receive Units. For further details in relation to the Formation Transactions, see "*Background and Structure of the Trust – Formation Transactions*" on page 89. The Share Purchase Agreements, the Debt Novation Agreements and the Shareholder Loan Agreements have not been executed as at the date of this Preliminary Placement Memorandum and will be executed prior to the Bid/Issue Opening Date.

Our ability to complete the Formation Transactions is subject to certain conditions precedent and closing conditions. These conditions include, but are not limited to, the transfer of all existing employees of the Project SPVs to the Sponsor or its affiliates and the execution of all the transaction documents.

As a part of the Formation Transaction Agreements, we will assume existing liabilities of the Project SPVs. Although we have conducted due diligence on the Project SPVs with the objective of identifying any material existing liabilities, we may not have been able to identify all such liabilities prior to the completion of the Formation Transactions. The Formation Transaction Agreements contain indemnities, which are limited on

account of monetary and time limits among other limitations, which will limit our recourse under these agreements. Any losses or liabilities suffered by us in relation to the Project SPVs for which we are unable to recover under these agreements will materially adversely impact our results of operations, profitability, cash flows and our ability to make distributions to Unitholders.

Pursuant to the terms of the concession agreements entered into by the Project SPVs, the consent of the NHAI is required to make additions to, amend or replace any of the financing agreements entered into with the existing lenders of the Project SPVs, if such addition, replacement, or amendment has or may have the effect of imposing or increasing any financial liability of the NHAI. The Project SPVs intend to refinance a certain portion of their outstanding indebtedness with the Trust. Refinancing is permitted under the concession agreements, and we do not believe that the proposed refinancing of the existing loans of the Project SPVs will increase or impose any additional financial liability on the NHAI. There can be no assurance that the NHAI will not interpret any change to the terms and conditions of the Project SPVs' outstanding indebtedness that results from the proposed refinancing as increasing or adding to the NHAI's financial liability towards the Project SPVs. See "*Government and Other Approvals*" on page 361 in relation to approval of NHAI of the drafts of the financing arrangements.

Our inability to complete any of the Formation Transactions in the manner described in this Preliminary Placement Memorandum may materially and adversely impact our ability to complete the Issue within the anticipated time frame or at all. Under the InvIT Regulations, the Trust is prohibited from making an initial offer of units, unless the value of the assets held by the Trust prior to the Allotment of Units in the Issue equals or exceeds ₹5,000.00 million. If the Trust is unable to complete the acquisition of assets worth at least ₹5,000.00 million, we will not be able to Allot Units to Eligible Investors pursuant to the Issue. Further, the utilization of the Issue Proceeds by the Trust is required to be in accordance with the Framework Agreement and is not subject to monitoring by any independent agency.

The Combined Financial Statements, the Projections and other information in this Preliminary Placement Memorandum have been prepared and presented on the basis that the Trust will hold all nine Project SPVs on or prior to the date of the Allotment of the Units pursuant to the Issue and that the Trust will complete the debt financing transactions and the replacement of debt in the manner described in this Preliminary Placement Memorandum. You will be unable to rely on the Combined Financial Statements or the Projections presented in this Preliminary Placement Memorandum if this does not occur. Further, such event may materially and adversely affect the ability of the Trust to make, or prevent the Trust from making, distributions to the Unitholders in the manner described in this Preliminary Placement Memorandum or at all.

2. ***The debt financing proposed to be provided by the Trust to each of the Project SPVs is comprised of unsecured, interest-free loans which will become interest-bearing at a future date. The payment obligations of the respective Project SPVs in relation to such debt financing will be subordinated to all existing and future obligations of the Project SPVs towards any senior lenders.***

The debt financing proposed to be provided by the Trust to each of the Project SPVs comprises certain unsecured, interest-free loans (the "**Shareholder Loans**"), which shall be subordinated to the debt owed to the senior lenders of the respective Project SPVs at all times. The Shareholder Loans will become interest-bearing upon the earlier of (i) the completion of construction of the project of the relevant Project SPV and (ii) the listing of the Units. Pursuant to the Framework Agreement, under certain circumstances, if the Units of the Trust are not listed within a specified time period, the Sponsor will be required to make certain payments to the Financial Investors in connection with any delay. Also see "*Use of Proceeds – Shareholder Loan Agreements*" and *"Background and Structure of the Trust – Framework Agreement*" on pages 61 and 96, respectively.

All payment obligations of the Project SPVs to the Trust under the Shareholder Loan Agreements are proposed to be serviced from the balance amounts remaining in the escrow accounts maintained by each Project SPV as mandated under the relevant concession agreements, after the payment of, among other things, all taxes due, all expenses in connection with the construction of the project, operations and maintenance expenses, including expenses for repair works, payment of concession fees, debt service payments to senior lenders (as defined under the relevant concession agreements), negative grants payable to the NHAI, reimbursement of expenditure incurred by the NHAI, any payments and damages due and payable and any reserve requirements set forth in the financing agreements, as defined in the relevant concession agreements (the "**Surplus Cash Flows**"). Accordingly, any reduction in the cash flows of the Project SPVs or any unanticipated increase in any of the payments to be made by the Project SPVs from the escrow accounts may result in a decrease in the Surplus Cash Flows, which may materially and adversely impact the ability of the Project SPVs to meet their payment

obligations to the Trust in relation to the Shareholder Loans. Further, the receivables of each Project SPV (including the Surplus Cash Flows) are secured in favor of the existing senior lenders to the extent of the amounts payable to such senior lender pursuant to the terms of their respective financing arrangements and restrictive covenants under the financing arrangements with such senior lenders and the concession agreements prevent the Project SPVs from opening new bank accounts, and accordingly, the Project SPVs are not permitted to transfer the Surplus Cash Flows (as they arise) to a separate bank account in the name of the Project SPV that can be charged in favor of the Trust. We expect such receivables to remain secured in favor of the senior lenders until all amounts outstanding under such financing arrangements are paid in their entirety to the senior lenders. If an event were to occur under such financing arrangements such that all amounts outstanding under such financing arrangements were to become immediately due and payable, all, or substantially all, of the Surplus Cash Flows may be utilized in satisfying such payment obligations, thereby materially and adversely affecting the ability of such Project SPVs to meet their payment obligations to the Trust. Any adverse impact on any receivables payable to the Trust under such debt financing will materially and adversely affect the Trust's ability to make distributions to the Unitholders. Further, if the relevant concession agreement is terminated, the Surplus Cash Flows together with the termination payments deposited in the relevant escrow account will be applied towards the payment of the amounts outstanding to the senior lenders prior to the payment of the amounts outstanding under the Shareholder Loans. Accordingly, such amounts may be insufficient to repay all amounts outstanding under the Shareholder Loans.

3. ***Any payment by the Project SPVs, including in an event of termination of the relevant concession agreement, is subject to a mandatory escrow arrangement which restricts their flexibility to utilize the available funds.***

The escrow arrangements mandated under the concession agreements require all monies that are received by each Project SPV, including funds constituting the financing package, the fees collected from the operation of the Initial Road Assets and any termination payments received from the NHAI, to be deposited in an escrow account and utilized only in accordance with the order prescribed under the escrow agreement. The consent of the NHAI is required to amend the order of outflow of payments from such escrow account. The escrow arrangements typically prioritize the payment of all taxes due, followed by payment of expenses in connection with the construction of the project, operation and maintenance expenses including expenses for repair works, payment of concession fees, debt service payments, negative grant/premium payable to the NHAI, reimbursement of expenditure incurred by the NHAI, any payments and damages due and payable and any reserve requirements set forth in any financing agreements. For details of the escrow arrangements, see "*Summary of the Concession Agreements*" on page 140.

With respect to withdrawals on termination, the escrow arrangements typically prioritize the payment of all taxes due, followed by the payment of 90% of debt due to senior lenders (excluding subordinated debt), the payment of any outstanding concession fee, the payment of damages in relation to the concession, retentions and payments arising out of liability for any defects, the remainder of debt due, subordinated debt, operation and maintenance expenses and any other payments under the concession agreement, after which the balance may be withdrawn by the Project SPVs for their own purposes. The Shareholder Loans will be classified as subordinated debt and equity under the concession agreements (other than to the extent of refinancing of the debt availed from existing senior lenders). Accordingly, the ability of the Trust to access such termination payments in relation to the Shareholder Loans will be subordinated to the discharge of all obligations towards the senior lenders and the payment of, among other things, any outstanding concession fees and damages. Any shortfall in the termination payments received from the NHAI may prevent us from recovering our investments or returns in the relevant Project SPVs adequately or at all.

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

The SEBI issued the InvIT Regulations with effect from September 26, 2014. The regulations have been amended pursuant to a notification dated November 30, 2016 and supplemented with additional guidelines on May 11, 2016 (as amended pursuant to a circular dated January 15, 2019) and circulars dated October 20, 2016, November 29, 2016, April 13, 2018, November 27, 2019 and January 17, 2020.

Because the regulatory framework governing infrastructure investment trusts in India comprises a relatively new set of regulations and is therefore untested, interpretation and enforcement by regulators and courts involves uncertainties. Further, regulations and processes with respect to certain aspects of infrastructure investment trusts,

including, but not limited to, follow-on offers of Units, including rights issues of unlisted InvITs, the dissolution and delisting of infrastructure investment trusts and the liabilities of Unitholders, have not yet been issued or adopted or are the subject matter of consultation papers. For example, trust units may not be classified as "securities" under the Securities Contract Regulation Act, 1956, as amended, and infrastructure investment trusts are not "companies" or "bodies corporate" within the meaning of various SEBI regulations. Accordingly, the applicability of several regulations (including regulations relating to takeover and fraudulent and unfair trade practices) to the Trust is unclear, such as the SEBI FPI Regulations which specify that an offshore derivate instrument may be issued overseas by an FPI against "securities" held by it that are listed or proposed to be listed on any recognized stock exchange in India, or unlisted debt securities or securitized debt instruments, as its underlying.

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

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

5. *We may not be able to make distributions to Unitholders or the level of distributions may fall.*

The Trust's distributions will be based on the NDCF available for distribution and not on whether the Trust makes an accounting profit or loss. The InvIT Regulations provide that not less than 90% of NDCF of each Project SPV are required to be distributed to the Trust in proportion of its holding in each of the Project SPVs subject to applicable provisions of the Companies Act. Under the InvIT Regulations, not less than 90% of the NDCF of the Trust is required be distributed to the Unitholders not less than once a year in case of an infrastructure investment trust which has undertaken an initial offer through private placement. Such distributions are required to be made not later than fifteen days from the date of declaration. In relation to the Trust and the Project SPVs, the Investment Manager has adopted a distribution policy pursuant to which distributions are required to be made to the Unitholders on a quarterly basis for periods after Allotment pursuant to the Issue. For further details, see "*Distributions*" on page 231.

The Trust will primarily rely on interest payments and principal repayments in relation to the Shareholder Loans, the Subordinated Debt and the Unsecured Loans for generating its NDCF. NDCF at the Trust level may be also be generated through payment of dividends by the Project SPVs or buy-back of shares of the Project SPVs. Similar to the Shareholder Loans, a portion of the Subordinated Debt and Unsecured Loans novated in favor of the Trust by the Sponsor and its Associates pursuant to the Debt Novation Agreements are also proposed to become interest-bearing upon the earlier of (i) the completion of construction of the project of the relevant Project SPV and (ii) the listing of the Units. See also " – *The Project SPVs are subject to restrictive covenants under their financing agreements that could limit our flexibility in managing our business or to use cash or other assets."* and " – *Our completion of the Formation Transactions, pursuant to which we will acquire the Project SPVs, and the transactions contemplated by the debt financing documentation are subject to certain conditions precedent and closing conditions that may prevent us from acquiring the Project SPVs or providing debt financing to them.*" on pages 31 and 14, respectively.

There can be no assurance or guarantee that the Trust will have sufficient distributable or realized profits or surplus in any future period to make distributions quarterly in any amount or at all. The ability of the Project SPVs to service the Shareholder Loans, Unsecured Loans and Subordinated Debt and pay dividends may be affected by a number of factors including, among other things:

- their respective businesses and financial positions;

- insufficient cash flows received from the assets;
- applicable law which may restrict the payment of dividends by the Project SPVs;
- operating losses incurred by the Project SPVs in any financial year;
- changes in accounting standards, taxation laws and regulations, laws and regulations in respect of foreign exchange repatriation of funds, corporation laws and regulations relating thereto; and
- the terms of agreements, including any concession agreements or financing agreements, to which they are, or may become, a party.

Further, the method of calculation of NDCF is subject to change. Any change in the applicable law in India or elsewhere (including, for example, tax laws and foreign exchange controls) may limit the Trust's ability to pay or maintain distributions to Unitholders. No assurance can be given that the Trust will be able to pay or maintain the levels of distributions or that the level of distributions will increase over time, or that future acquisitions will increase the Trust's distributable free cash flow to Unitholders. Any reduction in, or elimination or taxation of, payments of distributions could materially and adversely affect the distributions made by the Trust.

6. *The consents obtained from the lenders in relation to the Formation Transactions impose certain obligations on the Trust. Any default under the existing financing arrangements by any of the Project SPVs could adversely impact the Trust's ability to continue to own a majority of each of the Project SPVs, its cash flows and its ability to make distributions to Unitholders.*

The consents obtained from the lenders in relation to the Formation Transactions impose certain obligations on the Trust. Such obligations include:

- the existing escrow agreement for the projects and all the toll collection arrangements to be continued;
- no dilution in security and rights of existing lenders;
- IRB group shall continue to hold 51% shareholding in the Trust during the currency of the loan;
- Prior to release of the pledged shares, the Sponsor, the Trust, the Project SPV, and the security trustee (acting on behalf of the lenders) shall execute an agreement setting out inter alia the mechanism of and obligations of the parties in relation to the release of the pledge by the security trustee and recreation of the pledge by the Trust to the satisfaction of the lenders;
- the Sponsor and the Trust will undertake that they shall not create any encumbrance over temporarily release pledged shares and shall comply with the condition of re-pledge of shares to the lenders within such time as specified by the lenders;
- unsecured loans availed by the Project SPV from the Trust will be subordinated to the debt from senior lenders through the currency of loan. Any payment towards unsecured loans extended by the Trust shall be governed by the clause relating to 'restricted payment' as per the existing financing documents; and
- any new appointment/removal of the Investment Manager/Project Manager by the Trust shall be with prior approval from lenders.

Any default under the existing financing arrangements by any of the Project SPVs could adversely impact the Trust's ability to own the Project SPVs, its cash flows and its ability to make distributions to Unitholders.

7. *We have a limited operating history and may not be able to operate our business successfully or generate sufficient cash flows to make or sustain distributions. The Combined Financial Statements presented in this Preliminary Placement Memorandum may not be indicative of the Trust's future financial condition and results of operations.*

Upon completion of the Formation Transactions, our only assets will be our shareholding in the Project SPVs and the debt financing provided by the Trust to the Project SPVs and novated in favor of the Trust by the Sponsor. We will rely on cash flows from the entities held by the Trust, which initially will comprise the Trust and the Project SPVs, in order to make distributions to Unitholders. For the purpose of this Preliminary Placement Memorandum, the Combined Financial Statements have been prepared so as to present the financial position, results of operations and cash flows of the Project SPVs on a combined historical basis for the Financial Years 2019, 2018 and 2017 and the six months ended September 30, 2019. The Combined Financial Statements have been prepared for the sole purpose of the Issue and may not necessarily represent our consolidated financial position, results of operations and cash flows had the Trust (together with the Project SPVs) been in existence during the periods presented, nor do they give an indication of our financial results, cash flows and financial position in the future. After the date of Allotment in the Issue, there may be certain

changes to our cost structure, level of indebtedness and operations. Our cost structure after the date of Allotment may differ in certain significant respects from our cost structure as indicated in the Combined Financial Statements. See "*Combined Financial Statements*" on page 257.

Additionally, the financial statements of the Trust are proposed to be consolidated with the financial statements of the Sponsor after the completion of the Issue and reported by the listed Sponsor. The financial statements of the Trust and the Project SPVs will be prepared in accordance with the requirements of the InvIT Regulations; however, there may be differences reflected in such financial statements for purposes of consolidation and reporting by the listed Sponsor. Accordingly, the Combined Financial Statements have been prepared only for the purpose of the Issue and may not be indicative of our future financial condition and results of operations.

8. *The Valuation Report, and any underlying reports, are not opinions on the commercial merits of the Trust and the Project SPVs, nor are they opinions, expressed or implied, as to the financial condition of the Trust upon Allotment, and the valuation contained in such Valuation Report may not be indicative of the true value of the Project SPVs' assets.*

Mr. Sunit Khandelwal has been appointed as the Valuer to undertake valuation of the Project SPVs. The Valuer has issued the Valuation Report, included in *Annexure A* to this Preliminary Placement Memorandum, which sets out his opinion as to the fair enterprise value of the Project SPVs as on September 30, 2019. In order to issue its Valuation Report, the Valuer based its assumptions regarding the traffic volume, toll rates, operation and maintenance costs, amortization, debt repayments and non-cash net working capital projections on information provided by and discussions with or on behalf of us, the Sponsor/Project Manager and the Investment Manager, and which reflects current expectations and views regarding future events and, therefore, necessarily involves known and unknown risks and uncertainties. Please see the Valuation Report included as *Annexure A* to this Preliminary Placement Memorandum for a detailed description of the assumptions and methodology. The Valuation Report contains forecasts, projections and other "forward-looking" statements that relate to future events, which are, by their nature, subject to significant risks and uncertainties. The future events referred to in these forward-looking statements involve risks, uncertainties and other factors which may cause the actual results or performance to be materially different from any future results or performance expressed or implied by the forward-looking statements.

The Valuation Report is not an opinion on the commercial merits and structure of the Trust or the Project SPVs, nor is it an opinion, expressed or implied, as to the financial condition of the Trust upon Allotment. The Valuation Report does not purport to contain all the information that may be necessary or desirable to fully evaluate the Trust or the Project SPVs or an investment in the Trust or the Units. The Valuation Report is not based on a comprehensive review of the business, operational or financial condition of the Project SPVs and, accordingly, makes no representation or warranty, expressed or implied, in this regard.

The Valuation Report does not constitute and should not be construed as any form of assurance as to the financial condition or future performance of the Trust or as to any other forward-looking statements included therein, including those relating to certain macro-economic factors, by or on behalf of the Sponsor/Project Manager, the Investment Manager, the Trustee or their respective affiliates. Further, we cannot assure you that the valuation prepared by the Valuer reflects the true value of the net future revenues of the Project SPVs or that other valuers would arrive at the same valuation. Accordingly, the valuation contained therein may not be indicative of the true value of the Project SPVs' assets. The Valuation Report has not been updated since the date of its issue, does not take into account any subsequent developments and should not be considered as a recommendation by the Sponsor, the Investment Manager, the Project Manager, the Trustee, their respective affiliates or any other party that any person should take any action based on the Valuation Report. Accordingly, Eligible Investors should not rely on the Valuation Report in making an investment decision to subscribe to Units in the Issue.

9. *We have referred to the data derived from Traffic Reports commissioned from the Traffic Consultants, which are based on certain bases, estimates and assumptions that are subjective in nature and may not be accurate.*

We have relied on reports issued by LEA Associates South Asia Private Limited, Tractebel Engineering Private Limited, Steer and GMD Consultants, independent third-party research agencies, as the traffic consultant (the "**Traffic Consultants**") to forecast the traffic volumes for the Project SPVs' projects and to prepare traffic reports on the Initial Road Assets, which are set out in *Annexure C* to this Preliminary Placement Memorandum (the "**Traffic Reports**"). The Traffic Reports are subject to various limitations and are based upon certain

bases, estimates and assumptions that are subjective in nature and that are based, in part, on information provided by and discussions with or on behalf of us, the Sponsor/Project Manager and the Investment Manager. The Traffic Reports reflect current expectations and views regarding future events, and therefore, necessarily involve known and unknown risks and uncertainties. The Traffic Reports contain forecasts, projections and other "forward-looking" statements that relate to future events, which are, by their nature, subject to significant risks and uncertainties, including population growth, gross domestic product growth, vehicle ownership rates, per capita income, agricultural output and fuel consumption. The future events referred to in the Traffic Reports involve risks, uncertainties and other factors which may cause the actual traffic volumes to be materially different from any future traffic volumes expressed or implied by the Traffic Reports. There can be no assurance that the bases, estimates and assumptions adopted by the Traffic Consultants for the purposes of preparing the Traffic Reports will prove to be accurate. If any of these bases or assumptions is incorrect, future traffic volumes for the Initial Road Assets could be materially different from those that are set out in the Traffic Reports and this Preliminary Placement Memorandum. Also see "*Presentation of Financial, Industry and Market Data – Industry and Market Data*" on page 10.

10. *Our actual results may be materially different from the expectations expressed or implied in the Projections and the assumptions in the Projections in Annexure B to this Preliminary Placement Memorandum are inherently uncertain and are subject to significant business, economic, financial, regulatory and competitive risks and uncertainties that could cause actual results to differ materially from those projected.*

This Preliminary Placement Memorandum contains forward-looking statements regarding, among other things, the projections of revenue, profit and cash flows for Projection Years 2021, 2022 and 2023 for the Trust set out in the section "*Projections*" in *Annexure B* to this Preliminary Placement Memorandum. The Projections are only estimates of possible future operating results and are not guarantees of future performance. The Projections may not be realized and, because they relate to future events, are inherently subject to significant business, economic, competitive, industry, regulatory, market and financial risks, uncertainties, contingencies and other factors, many of which are beyond our control. Such risks, uncertainties, contingencies and other factors which may cause the actual results or performance of the Trust and the Project SPVs to be materially different from any future results or performance expressed or implied by the Projections. The actual future results or performance of the Trust and the Project SPVs will be affected by numerous factors, including those discussed in "*Forward-looking Statements and Financial Projections*" on page 12 and in this section. Our revenue will be dependent on the cash flows from dividends, buyback of SPV shares, and principal and interest payments (net of applicable taxes and expenses) from the Project SPVs, whose revenue in turn is dependent on a number of factors, including the completion of our projects within expected timelines and receipt of toll revenues, which may decrease for a number of reasons including traffic volumes. Accordingly, we cannot assure you that we will be able to achieve the Projections or make the distributions set out in the Projections.

If we do not achieve the projected operating results, we may not be able to make the expected distributions. We will not, and disclaim any obligation to, furnish updated business plans or projections to Unitholders, or to otherwise make public such information. As a result, you should not rely upon the Projections in making an investment decision given the possibility that actual results may differ materially from the underlying estimates and assumptions.

Risks Related to Our Business and Industry

11. *Our failure to extend applicable concession agreements or our inability to identify and acquire new road assets that generate comparable or higher revenue, profits or cash flows than the Project SPVs may have a material adverse impact on our business, financial condition and results of operations and our ability to make distributions.*

The concession agreements of the Project SPVs stipulate a limited concession period. Certain concession agreements provide that, if the actual traffic volume falls short of or exceeds the target traffic volume on a defined date, the concession period may be extended or reduced, respectively, by the NHAI according to a formula specified in the agreement. The table below sets out the details of the Project SPVs' concession periods.

Project SPV	Project	Concession period	Commencement of concession period	End of concession period with no reduction or extension	Residual concession period as of December 31, 2019 with no extension or reduction (approx.)
AETL	Agra - Etawah NH-2 Project	24 years	August 1, 2016	July 31, 2040	20 years and 7 months
CGTL	Gulabpura - Chittorgarh NH-79 Project	20 years	November 4, 2017	November 3, 2037	17 years, 10 months and 3 days
IRB HMTL	Hapur - Moradabad NH-9 Project	22 years	May 28 , 2019	May 26, 2041	21 years, 4 months and 26 days
IRB WTL	Goa - Kundapur NH-17 Project	28 years	March 3, 2014	March 2, 2042	22 years, 2 months and 2 days
KGTL	Kishangarh - Gulabpura NH-79/79A Project	20 years	February 21, 2018	February 20, 2038	18 years, 1 month and 20 days
KTL	Kaithal - Rajasthan Board NH-152/65 Project	27 years	July 15, 2015	July 14, 2042	22 years, 6 months and 14 days
SYTL	Solapur - Yedeshi NH-211 Project	29 years	January 21, 2015	January 20, 2044	24 years and 20 days
UTL	Udaipur - Rajasthan NH-8 Project	21 years	September 3, 2017	September 2, 2038	18 years, 8 months and 2 days
YATL	Yedeshi - Aurangabad NH-211 Project	26 years	July 1, 2015	June 30, 2041	21 years and 6 months

As at December 31, 2019, the residual periods for the concessions of the Project SPVs ranged from approximately 24 years and 20 days to approximately 17 years and 10 months. For further details on the residual concession period of each of the Initial Road Assets, see "*Business*" on page 109.

There can also be no assurance that we will be able to acquire new toll-road assets upon the expiry of the Project SPVs' existing concession agreements or at any time thereafter. Accordingly, the number of assets forming part of our portfolio and the revenue generated by them may vary from time to time. Further, even if new toll-road assets are added to our portfolio, there can be no assurance that such toll-road assets will be able to generate comparable or higher cash flows, revenues and profits than the Project SPVs whose concession periods have expired. If the Project SPVs are unable to extend their concession agreements, or if we are unable to acquire new toll-road assets that generate comparable or higher cash flows, revenue or profits than the Project SPVs, our business, financial condition and results of operations and our ability to make distributions to Unitholders may be materially and adversely affected. For further details on the terms of each of the concession agreements, see "*Summary of the Concession Agreements*" on page 140.

12. *The Project SPVs' toll-road concessions may be terminated prematurely under certain circumstances.*

Upon completion of the Formation Transactions, the toll-road concessions will comprise our principal assets. We will be unable to continue the operation of a particular road concession without a continuing concession right from the NHAI. A concession may be revoked by the NHAI for certain reasons set forth in the relevant concession agreement, including, but not limited to, one or more of the following:

- any failure by the relevant Project SPV to comply with prescribed minimum shareholding requirements;
- any failure by the relevant Project SPV to participate in, or match the bid of, the successful bidder in the event of any proposed augmentation of capacity of the Initial Road Assets;
- any failure by the relevant Project SPV to augment the capacity of the project if the average daily traffic exceeds the traffic capacity for which the project;
- any failure by the relevant Project SPV to make any payments, including negative grants, to the NHAI in a timely manner;
- any failure by the relevant Project SPV to comply with operational or maintenance standards;
- any temporary or permanent halt of operations at the relevant Project SPV;
- any occurrence of an event of default under any financing document where the lender has recalled any part of the loan;
- any continuation of a force majeure event, such as an act of God, act of war, expropriation or compulsory acquisition of any project assets by the government, industrial strikes, and civil commotions, boycotts and political agitations, beyond a specified time; and
- any failure by the relevant Project SPV to comply with any other material terms of the relevant concession agreement.

The concession agreements also provide that, if the actual traffic volume exceeds the target traffic volume on a defined date, the NHAI may reduce the concession period according to a formula specified in the concession agreement or require the concessionaire to undertake additional capacity augmentation in lieu of a reduction in the concession period.

For each of the Project SPVs, we have assumed that we will continue to operate the relevant project until the last date of the concession period as per the relevant concession agreement and have not made provisions for any reduction in the concession periods in the Projections included in this Preliminary Placement Memorandum.

As at the date of this Preliminary Placement Memorandum, completion certificates have not been issued in relation to any of our four-laning-to-six-laning projects, i.e., AETL, CGTL, IRB HMTL, KGTL and UTL. If we are unable to complete the six-laning of these projects within the timelines under the concession agreements or to the satisfaction of the NHAI, our concession agreements may be terminated by the NHAI.

KTL and SYTL have received their final completion certificates. YATL and IRB WTL have received a provisional completion certificates. In relation to these SPVs, the receipt of the final completion certificates is subject to the completion of all conditions specified in the respective provisional completion certificates, such as quadrant pitching, avenue plantation and completion of rest areas. Certain of these activities are subject to the receipt of certain approvals and/or resources from the NHAI and may not be completed prior to the date of the acquisition of these SPVs by the Trust. If these SPVs are unable to complete the pending items listed in the provisional certificate, the respective concession agreements may be terminated. For more information, see "*Government and Other Approvals – Approvals in Relation to the Project SPVs*" on page 362.

In addition, AETL, CGTL, IRB HMTL, KGTL and UTL are required to pay annual premiums in consideration for being granted the right to build and operate their respective projects. Failure to make such payments could result in the termination of the relevant concession agreement by the NHAI.

In accordance with the terms and conditions of the concession agreements, should threshold levels of traffic set out in the concession agreements be exceeded, the Project SPVs may be required to undertake certain development of the Initial Road Assets during an extended concession period by way of augmenting the capacity of the Initial Road Assets. While the Project SPVs are currently in various stages of development, construction and completion, none of the Project SPVs have exceeded the levels of traffic set out in the respective concession agreements and as such, have not been required to undertake certain development of the Initial Road Assets, any future requirement to undertake such development may present additional risks to us. Certain concession agreements may impose penalties or provide for termination of such agreement for late or

non-completion of the certain development of the Initial Road Assets.

Our business, financial condition, reputation and results of operations may be materially and adversely affected if the completion of the construction of the Initial Road Assets and/or the conditions specified in the relevant provisional completion certificate is delayed or not achieved in the specified manner. There can be no assurance that these will be completed in the time expected, or at all. Further, there is no assurance that all potential liabilities that may arise from delays or shortfall in performance of contractors will be accurately estimated as part of the planned costs of the construction of the Initial Road Assets or conditions specified in the relevant provisional completion certificate, or that the damages that may be claimed from such contractors will be adequate to compensate any loss of revenues or profits resulting from such delays, shortfalls or disruptions. Such risks may increase if completion is delayed for an extended period. If we fail to manage any of the aforesaid risks or any unforeseen risks effectively, our revenues, profitability and results of operations could be materially and adversely affected. For further details on the events that may require the Project SPVs to undertake certain development of the Initial Road Assets as contemplated under the relevant concession agreements, see "*Business*" and "*Summary of the Concession Agreements*" on pages 109 and 140, respectively.

If a concession agreement is terminated by the NHAI due to a default by a Project SPV, or by the Project SPV due to a default by the NHAI, such Project SPV is entitled to termination payments or otherwise from the NHAI in accordance with the terms of the relevant concession agreement. The Shareholder Loans may be for a maturity term that exceeds the maturity term of the original facilities obtained from the senior lenders. There can be no assurance that the NHAI will recognize such amounts as outstanding after the term of the original facilities obtained by the Project SPVs from their respective senior lenders. There can also be no assurance that the NHAI will pay the termination payments promptly or at all or that any termination payments will be adequate to enable us to recover our investments or returns in the relevant Project SPVs.

If any of the concession agreements are reduced or terminated prematurely, our business, financial condition and results of operations may be materially and adversely affected. For further details on the termination of the concession agreements, the termination payments, and the definition of "default" as contemplated under the relevant concession agreements, see "*Business*" and "*Summary of the Concession Agreements*" on pages 109 and 140, respectively.

13. *A decline in traffic volumes would materially and adversely affect our business prospects, financial condition and results of operations and our ability to make distributions to Unitholders.*

The Project SPVs currently operate the Initial Road Assets. Toll revenues depend on toll receipts, which in turn depend on toll fees and traffic volumes on the toll roads. Traffic volumes are directly or indirectly affected by many external factors, including:

- toll fees;
- fuel prices in India;
- the frequency of traveller use;
- the number and affordability of automobiles;
- the quality, convenience and travel efficiency of alternative routes outside of our network of toll roads;
- the convenience and extent of a toll road's connections with other parts of the local, state and national highway networks;
- the availability and cost of alternative means of transportation, including rail networks and air transport;
- the level of commercial, industrial and residential development in areas served by the Project SPVs' projects;
- adverse weather conditions; and
- seasonal holidays.

In addition, under the terms of the concession agreements entered into by each of the Project SPVs and the NHAI, the Government and State Governments have the right to construct and open additional roads which may serve as alternate routes to the Initial Road Assets after the expiry of between eight and 15 years, depending on terms of the concession. The construction of such alternative roads and highways may result in a diversion of vehicular traffic from the Initial Road Assets and a reduction of revenue from toll receipts. Further, local roads and state highways may be improved so as to serve as alternate routes to the Initial Road Assets, and tolls may or may not be charged on such local roads and state highways. The existence or improvement of such alternative roads and highways may also result in a diversion of vehicular traffic from the Initial Road Assets and a reduction of revenue from toll receipts. For additional information on alternate routes, please see the Traffic

Reports set out in *Annexure C* to this Preliminary Placement Memorandum. Also see "*Summary of the Concession Agreements*" on page 140.

While most of the Project SPVs' concession agreements provide for an extension in the concession period if the actual traffic volumes are significantly lower than the target traffic volumes set forth in the respective concession agreements, there can be no assurances that the concession period will be actually extended by the NHAI. In the event that the actual traffic volumes are significantly less than the projected traffic volumes, the revenue generated from toll receipts may be lower than anticipated and our business prospects, financial condition and results of operations and our ability to make distributions to Unitholders may be materially and adversely affected.

14. *We may face limitations and risks associated with debt financing, refinancing and restrictions on investment.*

We are subject to regulatory restrictions in relation to our debt financing and refinancing. We may from time to time require debt financing and refinancing to carry out the Investment Manager's investment strategy. In the event that we undertake debt financing or refinancing, we may be limited by Indian law as to the form of financing or refinancing that we may undertake. For instance, under the InvIT Regulations, only listed InvITs are permitted to issue listed debentures and accordingly, as an unlisted infrastructure investment trust, this mode of debt financing is not currently available to us. Additionally, while the RBI has recently permitted scheduled commercial banks and certain financial institutions to lend to InvITs, such lending is subject to the conditions specified in the circular which include, *inter-alia*, banks putting in place a board-approved policy for exposure to InvITs and the determination of SPVs not being in "financial difficulty" and lending subject to such policies.

Pursuant to the Indenture of Trust, the limits for the aggregate consolidated borrowings and deferred payments applicable to the Trust and the Project SPVs are required to be determined based on approval of the Unitholders such that the votes cast in favor of the resolution are not less than one-and-a-half times the votes cast against such resolution.

In the event that we undertake debt financing or refinancing, we may also be subject to risks associated with debt financing and refinancing, including the risk that our cash flow may be insufficient to meet required payments of principal and interest under such financing and to make distributions to Unitholders. Our ability to generate sufficient cash to satisfy our debt obligations will depend on our future operating performance, which may be affected by prevailing economic conditions and financial, business and other factors beyond our control. There is no assurance that we will be able to generate sufficient cash flow to meet all of our debt obligations. If we are unable to make payments due under our debt facilities, the lenders may be able to declare an event of default and initiate enforcement proceedings relating to any security provided in respect of the loan facilities, and/or call upon any guarantees, and this may materially and adversely affect our ability to make distributions to Unitholders. Such default may also result in the termination of certain concession agreements by the concessioning authority.

We may also be subject to certain covenants in connection with any future borrowings that may limit or otherwise materially and adversely affect our operations and our ability to make distributions to Unitholders, such as covenants restricting our ability to acquire assets or undertake other capital expenditure, requirements to set aside funds for maintenance or repayment of security deposits or requirements to maintain certain financial ratios. For further details, see "*Financial Indebtedness*" on page 340.

Further, if prevailing interest rates or other factors at the time of financing or refinancing (including changes in market conditions and maturity term imposed by any lenders) result in higher interest rates, the interest expense may be significant and may have a material and adverse effect on our cash flow and the amount of distributions available to Unitholders.

Additionally, as an infrastructure investment trust undertaking an initial offer through private placement of our Units, the Trust is permitted to invest only in "eligible infrastructure projects" as defined under the InvIT Regulations, which excludes infrastructure projects that do not meeting certain thresholds. This may restrict the scope of potential acquisitions of assets in the future.

15. *Certain Project SPVs have experienced negative cash flows during the last three financial years.*

As at March 31, 2019, IRB HMTL had negative equity of ₹(0.31) million, which had increased to ₹3,932.25 million as at September 30, 2019. It was incorporated on April 18, 2018, i.e., during the Financial Year 2019 and accordingly, was not in existence during the Financial Years 2018 and 2017.

The Project SPVs set out below have experienced negative cash flows during the last three financial years.

Project SPV	Net cash flow used in operating activities (₹ in million)			
	Six-month period ended September 30, 2019	Financial Year 2019	Financial Year 2018	Financial Year 2017
AETL	2,436.04	(10,013.53)	(5,096.79)	16,113.27
CGTL	1,229.24	2,492.78	(666.16)	1.26
IRB WTL	(1,495.89)	3,820.25	2,026.72	(3,116.73)
UTL	1,078.48	5,090.99	(3,233.93)	1.40

Negative cash flows over extended periods, or significant negative cash flows in the short term, could materially impact our ability to operate our business and implement our construction and growth plans. As a result, our cash flows, business, financial condition and results of operations could be adversely affected.

16. *Our business will be subject to seasonal fluctuations that may affect our cash flows.*

Our cash flows will be affected by seasonal factors, which may materially and adversely affect traffic volumes. Traffic volumes tend to decrease during the monsoon season and conversely tend to increase during holiday seasons. The monsoon season may also restrict our ability to carry on activities related to our operation and maintenance of the Initial Road Assets. This may result in delays in periodic maintenance and reduce productivity, thereby materially and adversely affecting our business, financial condition and results of operations.

17. *Changes in the policies adopted by governmental entities or in the relationships of any member of the Trust and the Project SPVs with the Government of India or state governments could materially and adversely affect our business, financial performance and results of operations.*

The Project SPVs derive almost all of their revenue from their respective concession agreements with the NHAI and must maintain good relationships with the NHAI, the Government of India and the various state governments. We expect that, after the conclusion of the Formation Transactions, we will continue to depend on, and benefit from, policies relating to the terms of the concessions and other incentives that we will receive from governmental entities in respect of the Project SPVs' existing projects and any future projects. In addition, we expect to benefit from, and depend on, the NHAI and various Government of India and state government entities in terms of policies, incentives, budgetary allocations and other resources provided by these entities for the roads industry in general. Any adverse change in any existing governmental policies, incentives, allocations or resources, or any change in our relationships with governmental entities, could materially and adversely affect our business, financial condition and results of operations. Also see "*Regulations and Policies*" on page 213. There can be no assurance that the Government of India will continue to focus on and promote toll-road projects on a build-operate-transfer basis.

Additionally, toll roads which involve public-private partnerships may be subject to delays, extensive internal processes, policy changes, changes due to local, national and internal political pressures and changes in governmental or external budgetary allocation and insufficiency of funds. Since governmental entities are responsible for awarding concessions and are a party to the development and operation of the awarded projects, our business will be directly and significantly dependent on their support. Any withdrawal of support or adverse changes in their policies, even if not quantifiable monetarily, may lead to the Project SPVs' concession agreements being restructured or renegotiated or the concession period being decreased, which could materially and adversely affect the Project SPVs' financing, capital expenditure, revenues, development or operations.

18. *Certain provisions of the standard form of concession agreement may be non-negotiable or untested, and the concession agreements may contain certain restrictive terms and conditions which may be subject to varying interpretations.*

Our concession agreements were entered into with the NHAI and we have limited ability to negotiate the terms of these contracts. The concession agreements that we have entered into are based on a model concession agreement prescribed by the NHAI. For example, the toll fees under the concession agreements are fixed, subject to annual adjustments to account for inflation as specified in the concession agreements and the

applicable rules issued by the NHAI. In addition, the operation and maintenance standards and specifications require the Project SPVs to incur operation and maintenance costs on a regular and periodic basis. The model concession agreement prescribed by the NHAI also provides for a fixed term concession and, although all concession agreements provide for an extension or reduction of the concession period based on certain factors, including actual traffic volumes on the target date, the concession agreements do not provide for renewal of the concession agreement after the expiry of the term.

The form of the concession agreement has evolved within the last decade and there is limited guidance available on the interpretation of a number of provisions and conditions of such concession agreements. In addition, certain terms of the concession agreements, such as those related to an augmentation in the capacity of the toll roads, substitution of the NHAI in any or all of the project agreements, termination payments by the NHAI, construction of additional competing roads by the NHAI, the Government of India or state governments and payment of compensation by the NHAI for changes in law are untested. Accordingly, courts or regulators may consider a different interpretation of certain provisions and conditions in the concession agreements of the Project SPVs, which may be adverse to us.

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

The terms of the Project SPVs' concession agreements require the Project SPVs to indemnify the NHAI for losses arising out of the design, engineering, construction, procurement, operation and maintenance of the toll road or arising out of breach of the obligations of the Project SPVs under the concession agreements.

In the event the NHAI or a lender invokes any restrictive provision in the concession agreements or interprets any term or condition in an adverse manner, such invocation or interpretation may materially and adversely affect our business, financial condition and results of operations. For further details on the terms of the concession agreements, see "*Summary of the Concession Agreements*" on page 140.

19. *Certain actions of the Project SPVs require the prior approval of the NHAI, and no assurance can be given that the NHAI will approve such actions in a timely manner or at all.*

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

- amendment, modification or replacement by the Project SPV of any project agreements (including financing agreements) relating to the operation of the Initial Road Assets to which the Project SPV is a party if the amendment, modification or replacement of such agreement increases or imposes any financial liability or obligation on the NHAI;
- the creation of any encumbrance or security interest over, or transfer of rights and benefits of the Project SPVs under, the concession agreements or any project agreements; and
- the selection or replacement of any engineering, procurement and construction contract, operation and maintenance contractor and execution of the engineering, procurement and construction agreements and the operation and maintenance agreements.

We have received a letter dated January 3, 2020 issued by the NHAI in connection with the Formation Transactions and the Issue. The NHAI has approved the establishment of the Trust and the transfer of the Project SPVs to the Trust subject to certain conditions, including, (i) submission of no-objection certificates from the lenders of all the Project SPVs; (ii) the concessionaire/developer complying with all the provisions of the concession agreements including holding 51% in the Trust until two years after the completion / provisional COD of the projects; (iii) the incoming investor complying with all relevant contractual obligations of the

concession agreements; (iv) the proposal not having the effect of increasing any financial liability or obligation on the NHAI and not jeopardizing the interests of NHAI in any manner; and (v) an undertaking that all statutory compliances as required by SEBI guidelines will be adhered to.

The concession agreements of the Project SPVs also require the submission to the NHAI, for its review and comments, all project agreements to which a Project SPV is a party prior to entry, amendment or replacement of such agreements, even if such agreements do not affect the financial liability or obligations of the NHAI.

The restrictions described above may impose constraints on our flexibility to conduct our business. Further, if as a result of these restrictions, we are unable to pursue a favorable course of action or to respond to an unfavorable event, condition or circumstance, then our business, financial condition and results of operations may be materially and adversely affected. For details on the terms of the concession agreements, see "*Summary of the Concession Agreements*" on page 140.

20. *Leakage of the toll fees on the Project SPVs' roads may materially and adversely affect our revenues and financial condition.*

The Project SPVs' toll receipts are primarily dependent on the integrity of toll-collection systems and the willingness of road users to pay toll fees. While each of the Project SPVs has an integrated toll-collection system in place, the level of revenues derived from collection of tolls may be reduced by leakage through toll evasion, theft, fraud or technical defaults in the Project SPVs' toll systems or forced violations by users of the Initial Road Assets. Further, Project SPVs may also, at times, need to allow users of the Initial Road Assets to pass through without paying applicable tolls due to heavy traffic build-up, or may be unable to collect tolls due to political protests or other agitations relating to tolling. In addition, in certain circumstances, the governmental authorities or Indian courts could seek to suspend toll-collection for or during certain periods, in full or in part, on the Initial Road Assets, which suspension would result in a reduction in our revenues. Further, toll-collection errors may amount to a loss of revenue as there is an inherent risk of under-collection of toll fees given that most users of toll roads pay in cash. Any significant failure by us to monitor and control leakage in toll-collection systems could have a material, adverse effect on our business, prospects, financial condition and results of operations and our ability to make distributions. See "*Summary of the Concession Agreements*" on page 140.

21. *We will depend on certain directors, executive officers and key employees of the Investment Manager, the Project Manager and the Project SPVs, and such entities may be unable to retain such personnel or to replace them with similarly qualified personnel, which could have a material, adverse effect on the business, financial condition, results of operations and prospects of the Trust and the Project SPVs.*

Our performance will depend, in part, upon the continued service and performance of certain directors, executive officers and key employees of the Investment Manager and the Project Manager. The continued operations and growth of our business will be dependent upon the Investment Manager and the Project Manager being able to attract and retain personnel who have the necessary and required experience and expertise. Competition for qualified personnel with relevant industry expertise in India is intense due to the scarcity of qualified individuals in the toll roads business, and the aforesaid entities may not be able to retain their executive officers and key employees or attract and retain fresh talent in the future. Any inability by the Investment Manager or the Project Manager to retain their respective directors, executive officers and key employees, or the inability to replace such individuals with similarly qualified personnel, could have a material, adverse effect on the business, financial condition, results of operations and prospects of the Trust and the Project SPVs.

22. *There can be no assurance that we will be able to successfully undertake future acquisitions of road assets or efficiently manage the infrastructure road assets we have acquired or may acquire in the future.*

Our growth strategy in the future may involve strategic acquisitions of toll roads and other road assets, including pursuant to the Framework Agreement. Pursuant to the Framework Agreement, the Sponsor has agreed to certain arrangements in relation to submission of bids for (i) any new concession by the Sponsor and/or its affiliates involving the development or operation of roads and highways; or (ii) over any extensions of the concession period of road projects held by the Sponsor and/or its affiliates (other than the Project SPVs) with the Financial Investors. For details, see "*Related Party Transactions - Other Related Party Transactions*" and " *– The Sponsor, whose interests may be different from the other Unitholders, will be able to exercise significant influence over the Trust."* on pages 227 and 32, respectively. We may not be able to conclude appropriate or viable acquisitions in a timely manner. The success of our past acquisitions and any future acquisitions will depend upon several factors, including:

- our ability to finance and acquire operational toll roads and other road assets on a cost-effective basis;
- our ability to integrate acquired personnel, operations, products and technologies into our organization effectively;
- unanticipated problems or legal liabilities of the acquired businesses; and
- tax or accounting issues relating to the acquired businesses.

There can be no assurance that we will be able to achieve the strategic purpose of such acquisitions or operational integration or an acceptable return on such investments, which may materially and adversely affect our profits, financial condition and distributions.

Further, concession agreements for future road projects may also contain terms and conditions that are more restrictive than those under the current Project SPVs' concession agreements for the Initial Road Assets. These restrictions may restrict our flexibility in managing our business or projects and could in turn materially and adversely affect our business prospects, financial condition and results of operations.

23. *The Project SPVs' concessions are illiquid in nature, which may make it difficult for us to realize, sell or dispose of our shareholdings in the Project SPVs.*

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

24. *Our insurance policies may not provide adequate protection against all possible risks associated with our operations.*

The Project SPVs' principal types of insurance coverage include standard fire and special perils insurance, contractor all-risk insurance and money insurance. However, there can be no assurance that all possible risks are adequately insured against or that we will be able to procure adequate insurance coverage at commercially reasonable rates in the future.

Further, the Initial Road Assets are subject to various risks that we may not be insured against, adequately or at all, including:

- changes in governmental and regulatory policies;
- shortages of, or adverse price movement for, construction materials;
- design and engineering defects;
- breakdown, failure or substandard performance of the road assets and other equipment;
- improper installation or operation of the road assets and other equipment;
- labor disturbances;
- terrorism and acts of war;
- inclement weather and natural disasters;
- environmental hazards, including earthquakes, flooding, tsunamis and landslides; and
- adverse developments in the overall economic environment in India.

Further, we are subject to various risks in the operation of the Initial Road Assets, including on account of accidents on the Initial Road Assets. For further details, see "*Material Litigation and Regulatory Action*" on page 345. Our insurance may not provide adequate coverage in certain circumstances and is subject to certain deductibles, exclusions and limits on coverage. To the extent we suffer damage or loss which is not covered by insurance, or exceed our insurance coverage, such damage or loss would have to be borne by us. We can make no assurance that material losses in excess of insurance proceeds (if any at all) will not occur in the future, which could materially and adversely affect our financial condition, business and results of operations.

25. *The Project SPVs, the Sponsor/Project Manager, the Investment Manager and the Trustee are involved in certain legal and other proceedings, which may not be decided in their favor.*

The Project SPVs, the Sponsor/Project Manager, the Investment Manager and the Trustee are involved in legal proceedings or claims which are pending at different levels of adjudication before various courts, tribunals and regulatory authorities. For details of certain material outstanding legal proceedings, see "*Material Litigation and Regulatory Action"* on page 345. There is no assurance that these legal proceedings and regulatory matters will be decided in favor of the respective entities. Decisions in any of the aforesaid proceedings adverse to our interests may have a material, adverse effect on our or their business, future financial performance and results of operations. If the courts, tribunals or regulatory authorities decide against the Project SPVs, the Sponsor/Project Managers, the Investment Manager or the Trustee, we or such entities may face monetary and/or reputational losses and may have to make provisions in our financial statements, which could increase expenses and liabilities. Upon completion of the Formation Transaction, we will be responsible for legal proceedings against the Project SPVs. While the Sponsor will provide certain indemnities under the relevant share purchase agreement, there can be no assurance that the relevant Project SPV or the Trust will be able to successfully bring a claim against the Sponsor under the relevant share purchase agreements or that such indemnities will be adequate to satisfy all the losses, damages, costs and expenses suffered by the Trust and the Project SPVs arising from such proceedings or the consequences thereof. Also see " – *Our completion of the Formation Transactions, pursuant to which we will acquire the Project SPVs, and the transactions contemplated by the debt financing documentation are subject to certain conditions precedent and closing conditions that may prevent us from acquiring the Project SPVs or providing debt financing to them.*" on page 14.

26. *We do not own the "IRB" trademark and logo. Our license to use the "IRB" trademark and logo may be terminated under certain circumstances and our ability to use the trademark and logo may be impaired.*

We do not own the "IRB" trademark and "IRB" logo, which are registered in the name of, and owned by, the Sponsor. However, pursuant to a separate name licensing agreement, the Sponsor has granted to the Trust, each of the Project SPVs and the Investment Manager, the non-transferable and non-assignable right to use the IRB trademark as part of their respective corporate names, if applicable, as well as the IRB logo in connection with their respective businesses, on a non-exclusive basis. The license may be terminated under certain circumstances, including (i) if the Sponsor or any of its subsidiaries ceases to be the sponsor of the Trust for any reason whatsoever; or (ii) if the Sponsor or any of its subsidiaries ceases to hold at least 51% of the equity share capital of the Investment Manager, or an entity which is not a subsidiary of the Sponsor is appointed as the investment manager of the Trust. . Upon the termination of any license, the Trust and the Project SPVs will be required to cease the use of the IRB trademark and change its name to remove IRB from its name within three months from the date of termination, which may have a material, adverse effect on the operations of the Trust and the Project SPVs and require management's time and attention.

27. *The Initial Road Assets are concentrated in the infrastructure sector and toll-road industry in India, and our business could be adversely affected by an economic downturn in that sector or industry. The Project SPVs' projects are geographically concentrated in Rajasthan and Maharashtra.*

Upon completion of the Formation Transactions, the Initial Road Assets will comprise nine toll roads in India. This concentration may expose us to the risk of economic downturns in the infrastructure sector and the toll-road industry to a greater extent than if our assets were more diversified across other industries in the infrastructure sector or other sectors of the economy.

As at the date of this Preliminary Placement Memorandum, four Initial Road Assets are located in or pass through Rajasthan. Additionally, two Initial Road Assets each are located in or pass through Maharashtra and Uttar Pradesh. Our business therefore will be significantly dependent on the general economic conditions, market conditions and natural disasters in the states in which we operate, in particular Rajasthan and Maharashtra. Any regional slowdown in economic activity in these areas resulting in a reduction in traffic on the Initial Road Assets could materially and adversely affect our business, financial condition and results of operations.

28. *Political and other agitations against the collection of tolls may affect our ability to collect tolls over prolonged periods, which could have a material, adverse effect on our business, results of operation and financial condition.*

Over the past few years, there have been agitations by political parties and local community members against the collection of tolls on local road and state highway projects across various states, including Maharashtra. These agitations have often turned violent and resulted in the destruction of toll-collection booths and other related property. If such events spread to the Project SPVs' projects, which are located on the national highways, it may limit our ability to collect tolls over a prolonged period and may have a material, adverse effect on our business, financial condition and results of operations. Further, the Project SPVs' concession agreements provide that in the event that the Project SPVs' ability to collect tolls is disrupted as a result of political and other agitations over a specified period, either party to the concession agreement may terminate the agreement. While the concession agreements provide for a specified payment mechanism in the case of such termination, there can be no assurance that the Project SPVs will receive such payments from the NHAI in a timely manner or at all, or that such payments will be adequate to recover our investment or return, which may materially and adversely affect our business, financial condition and results of operations.

29. *We may be unable to renew or maintain the statutory and regulatory permits and approvals required to operate the Initial Road Assets.*

The Project SPVs are required to obtain and maintain certain permits, approvals, licenses, registrations and permissions under various regulations, guidelines, circulars and statutes regulated by various regulatory and governmental authorities for operating the Initial Road Assets. For further details, see "*Government and Other Approvals*" on page 361. Under the Project Implementation Agreements, the Project Manager is responsible for the maintenance of such approvals. In relation to the obligations of the Project Manager under the Project Implementation Agreements, see *"The Sponsor and Project Manager – Functions, Duties and Responsibilities of the Project Manager*" on page 241. If the Project Manager, the Project SPVs and/or the third-party contractor(s) fail to obtain or maintain them, or if there is any delay in obtaining or renewing them, our business, financial condition and results of operations could be materially and adversely affected. Further, these permits, approvals, licenses, registrations and permissions could be subject to several conditions, and we can make no assurance that we would be able to continuously meet such conditions or be able to prove compliance with such conditions to the statutory authorities. This could lead to the cancellation, revocation or suspension of relevant permits, licenses or approvals, which may result in the interruption of our operations and may materially and adversely affect our business, financial condition and results of operations.

30. *Compliance with, and changes in, safety, health and environmental laws and regulations in India may materially and adversely affect our business.*

Our business will be subject to environmental, health and safety laws and regulations and various labor, workplace and related laws and regulations in India and requirements under the concession agreements. For further details, see "*Regulations and Policies*" on page 213. Any changes in, or amendments to, these standards or laws and regulations could further regulate our business and could require us to incur additional, unanticipated expenses in order to comply with these changed standards. Under the Project Implementation Agreements, the Project Manager is responsible for the maintenance of such requirements and standards. In relation to the obligations of the Project Manager under the Project Implementation Agreements, see *"The Sponsor and Project Manager – Functions, Duties and Responsibilities of the Project Manager*" on page 241. If we fail to meet safety, health and environmental requirements, we may also be subject to administrative, civil and criminal proceedings by governmental authorities, as well as civil proceedings by environmental groups and other individuals, which could result in substantial fines and penalties against us. Penalties imposed by regulatory authorities on us or third parties upon whom we depend may also disrupt our business and operations.

There can be no assurance that we will not become involved in future litigation or other proceedings or be held responsible in any such future litigation or proceedings relating to safety, health and environmental matters in the future. Clean-up and remediation costs, as well as damages, payment of fines or other penalties, other liabilities and related litigation, could materially and adversely affect our business, prospects, financial condition and results of operations.

31. *The Project SPVs' financing agreements entail interest at variable rates, and any increases in interest rates may adversely affect our results of operations, financial condition and cash flows.*

The Project SPVs are susceptible to changes in interest rates and the risks arising therefrom. For details, see *"Use of Proceeds"* and "*Financial Indebtedness*" on pages 60 and 340, respectively. These financing agreements entail interest at variable rates with a provision for the periodic reset of interest rates. Currently, certain of the Project SPVs' borrowings are at floating rates of interest. Further, under the Project SPVs' financing agreements, the

lenders are entitled to change the applicable rate of interest depending upon the policies of the RBI and in the event of an adverse change in the Project SPVs' credit risk rating. Further, in recent years, the Government has taken measures to control inflation, which have included tightening monetary policy by raising interest rates. Any increase in interest rates may have an adverse effect on our results of operations, financial condition and cash flows.

32. *The Project SPVs are subject to restrictive covenants under their financing agreements that could limit our flexibility in managing our business or to use cash or other assets.*

Various financing agreements that the Project SPVs have entered into with certain banks and financial institutions contain certain restrictive covenants, including, but not limited to, requirements that they obtain consent from the lenders prior to:

- effecting any change in the nature or scope of the project or any change in the financing plan;
- effecting any change in capital structure (including shareholding pattern);
- raising any equity or preference share capital;
- making any capital expenditure other than permitted investments;
- making any dividend payments to the Trust or making any other restricted payments (including redemption of any shares of any class, prepayment in relation to any indebtedness, payment of interest on unsecured loans, investment in any entity) except as permitted under the financing agreements;
- creating of any security interest in any of the secured property;
- incurring any other indebtedness, including the issuance of debentures, other than permitted indebtedness;
- entering into any partnership, profit-sharing or royalty agreement;
- removing any person exercising substantial powers of management over the affairs of the Project SPVs in case of an event of default;
- amending the constitutional documents of the Project SPVs;
- undertaking of any new project or making of any investment or taking any assets on lease;
- providing guarantees, indemnities or similar assurances in respect of indebtedness of any other person, (other than in the ordinary course of business);
- repaying or prepaying any subordinated loan or loans brought in as equity taken by the Project SPVs from the Sponsor;
- creating any subsidiary or permit the Project SPV to become a subsidiary;
- undertaking or permitting any scheme of arrangement or compromise with its creditors or shareholders; and
- changing the management/management control or the composition of the board of directors of any Project SPV.

For details, see "*Financial Indebtedness*" on page 340. In addition, these restrictive covenants may also affect some of the Trust's rights as the shareholder of the Project SPV and the Project SPV's ability to pay dividends if it is in breach of its obligations under the applicable financing agreement.

In case of any shortfall in project receivables, the relevant Project SPV may need to make good the shortfall from its own sources and/or arrange for the loan to be repaid through revenue shortfall loans from the relevant concession authority. Such financing agreements also require us to maintain certain financial ratios. In the event of any breach of any covenant contained in these financing agreements, we may be required to immediately repay our borrowings either in whole or in part, together with any related costs. There can be no assurance that we will be able to secure consents from, and/or negotiate revised terms with, the lenders on terms favorable to the Trust or at all.

Further, the financing agreements also contain cross default provisions which could automatically trigger defaults under other financing agreements. Certain lenders are also entitled to accelerate the repayment of the loans at any time based on the lenders' assessment of the cash flows, subject to any approval required from the concessioning authority.

If the Project SPV is suspended under the concession in relation to any default by such Project SPV, at any time during such suspension, the senior lenders of each Project SPV have the right to request the NHAI to substitute the concessionaire in accordance with the substitution agreement.

Any downgrading of the credit rating of the Project SPVs by a credit rating agency or any adverse comment

from the statutory auditors of such Project SPV or the Trust may qualify as an event of default under the relevant financing agreements of our Project SPVs. Certain financing agreements also provide the banks and financial institutions with the right to convert amounts due into equity in the event of default, with the approval of the relevant concessioning authority. Certain of these banks and financial institutions also have a right to appoint nominee directors under these financing agreements in the event of default. Pursuant to the provisions of certain loan facilities availed by us, the lenders are entitled to recall the loan at any time on demand or call notice, requiring the borrower to repay (either in full or in part) the amount outstanding on any particular day.

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

33. *Shares of the Project SPVs are pledged in favor of lenders, who may exercise their rights under the respective share pledge agreements in the event of default under relevant financing agreements.*

Shares of the Project SPVs are pledged in favor of the lenders to such Project SPVs to secure loan facilities obtained by the Project SPVs. 51% of the equity share capital of each of the Project SPVs has been pledged in favor of their respective lenders. Pursuant to the draft of the Share Purchase Agreement, such pledges shall be released immediately prior to the transfer of the equity shares from the Sponsor to the Trust and will be required to be pledged by the Trust in favor of the lenders, immediately after such transfer within such time as specified by the lenders.

If there are any defaults in payment or any breach under the relevant financing agreements, the lenders may exercise their right to enforce the security interest under the financing agreements, including by taking ownership of the pledged shares, selling the pledged shares to any third-party purchaser, and exercising voting rights in respect of the pledged shares on any matter at any meeting of the members of the relevant Project SPVs. If any such event occurs, we may not be able to fully recognize revenue attributable to these Project SPVs, if at all. In addition, if we lose ownership or control of any of our Project SPVs, our business, results of operations and financial condition, and our ability to make distributions, would be adversely affected.

34. *We will enter into related-party transactions. There can be no assurance that we could not have achieved more favorable terms if such transactions had been entered into with third parties.*

We will enter into transactions with related parties, subject to and in accordance with the terms of the Framework Agreement. The procedure with respect to such related party transactions is subject to modification by law, which may have a material, adverse effect on the Trust. Further, there can be no assurance that we could not achieve more favorable terms had such transactions been entered into with unrelated parties. The transactions that we will enter into may involve conflicts of interest which may be detrimental to us. See "*Related Party Transactions*" on page 225. There can be no assurance that such transactions, individually or in the aggregate, will not have a material, adverse effect on our business, financial condition and results of operations, including because of potential conflicts of interest or otherwise.

Risks Related to the Trust's Relationships with the Sponsor and the Investment Manager

35. *The Sponsor, whose interests may be different from the other Unitholders, will be able to exercise significant influence over the Trust.*

After the completion of the Issue, the Sponsor will own an aggregate of 51% of the issued and outstanding Units and will be entitled to vote as a Unitholder on all matters other than matters where it is a related party and not permitted to vote under the InvIT Regulations. Additionally, the financials of the Trust will be consolidated with the financials of the Sponsor after the completion of the Issue. Also see " *– The Combined Financial Statements presented in this Preliminary Placement Memorandum may not be indicative of the Trust's future financial condition and results of operations."* on page 18. Although the Investment Manager will have a distinct board of directors, the Sponsor will nonetheless be in a position to exercise significant influence in matters which require the approval of Unitholders by virtue of its ownership of Units in the Trust. The interests of the Sponsor may conflict with the interests of our other Unitholders and the Sponsor may, for business considerations or otherwise, seek to benefit itself instead of the Trust or the interests of the other Unitholders. The Sponsor will also exercise significant influence over the Investment Manager, which will continue to be a subsidiary of the Sponsor.

We will also rely on the Sponsor to comply with its obligations under the various transaction agreements to which it is a party, including the Framework Agreement. Pursuant to the Framework Agreement, the Sponsor has agreed

that prior to the submission of Bid for any Potential Project, it will consult the Financial Investors in good faith and make best efforts to bid for the Potential Project on behalf of the Trust on such terms as agreed between Sponsor and the Financial Investors. If the Sponsor and the Financial Investors are unable to reach an agreement in relation to the terms of the Bid within a reasonable period, the Sponsor will be free to submit a Bid as it deems fit for the Potential Project provided such Bid is not on terms and conditions less favorable than the terms and conditions proposed by the Financial Investors.

In addition, as our Project Manager, we will rely on the Sponsor to provide construction works for the Project SPVs which are not yet completed and operation and maintenance services for the completed Project SPVs. Pursuant to the Project Implementation Agreements, the Project SPVs (other than KTL and SYTL) will make payments to the Project Manager for the remaining engineering, procurement and construction works in relation to the relevant project on a monthly basis, or as otherwise agreed among the parties to the Project Implementation Agreements based on invoices raised by the Project Manager. Any such payment of fees will be in the nature of a related party transaction and the relevant approvals would be required under the InvIT Regulations. For further information about the fees payable to the Project Manager, please see "*Background and Structure of the Trust – Fees and Expenses*" on page 102.

We will also rely on the Sponsor's expertise in executing build-operate-transfer projects in case of any additional work which we may be required to carry out for any of the Project SPVs or other assets. In the event that the Sponsor does not continue to focus on the infrastructure development sector or the toll-road industry, our business strategy, financial condition and results of operations may be materially and adversely impacted.

36. *The Sponsor is a listed company, operates other road assets and has sponsored another infrastructure investment trust ("Listed InvIT"), and anything that impacts the business, results of operations and trading price of the Sponsor's equity shares or the units of the Listed InvIT may have a material adverse effect on the Trust.*

The Sponsor has been listed on the Stock Exchanges since 2008. The Sponsor has also previously sponsored the Listed InvIT, which has been listed on the Stock Exchanges since 2017 and is also engaged in the toll-roads sector. Excluding the toll-road assets that are being transferred by the Sponsor to the Trust pursuant to the Formation Transactions, as of September 20, 2019, the Sponsor had four road projects, of which three were "operational" and one was "under construction". The Listed InvIT currently has a portfolio of seven toll-road projects. Because of our relationship with the Sponsor and its future toll-road assets, anything that impacts the business, results of operations and trading price of the Sponsor's equity shares or the Listed InvIT's units may have a material, adverse effect on the Trust.

37. *The Investment Manager may not be able to implement its capital and risk management strategies.*

There is no assurance that the Investment Manager will be able to implement these strategies successfully or that it will be able to expand our portfolio at any specified rate or to any specified size or to maintain distributions at projected levels. The Investment Manager may not be able to make acquisitions or investments on favorable terms or within a desired time frame, and it may not be able to manage the operations of its underlying assets in a profitable manner. Factors that may affect this risk may include, but are not limited to, changes in the regulatory framework in India, competition for assets, partial award of concessions or licenses favoring local or other competitors of the Trust, changes in the Indian regulatory or legal environment or macro-economic conditions. If the Investment Manager is unable to implement these strategies successfully or expand our portfolio, we will nonetheless be required to pay the Investment Manager an annual management fee of ₹36.00 million, which may be revised with the approval of the Unitholders such that the votes cast in favor of the resolution are not less than one-and-a-half times the votes against such resolution, in accordance with the terms of appointment of the Investment Manager.

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

38. *Parties to the Trust are required to maintain the eligibility conditions specified under Regulation 4 of the InvIT Regulations on an ongoing basis. The Trust may not be able to ensure such ongoing compliance by the Sponsor/Project Manager, the Investment Manager and the Trustee, which could result in the cancellation of the registration of the Trust.*

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

39. *The Investment Manager is required to comply with certain ongoing reporting and management obligations in relation to the Trust. There can be no assurance that the Investment Manager will be able to comply with such requirements.*

The Investment Manager is required to comply with certain ongoing reporting and management obligations in relation to the Trust in accordance with the InvIT Regulations. These requirements include, among other things, (a) making investment decisions with respect to the underlying assets or projects of the Trust, (b) overseeing the activities of the Project Manager, (c) investing and declaring distributions in accordance with the InvIT Regulations, (d) submitting reports to the Trustee and (e) ensuring the audit of the Trust's accounts. There can be no assurance that the Investment Manager will be able to comply with such requirements in a timely manner or at all, which could subject the Investment Manager, the other parties to the Trust, the Trust or any person involved in the activity of the Trust to applicable penalties under the InvIT Regulations, the Intermediaries Regulations and/or the SEBI Act. Any such failure to comply or the imposition of any penalty could have a material adverse effect on our business, financial condition and results of operations. Under the InvIT Regulations, the SEBI also has the right to inspect documents, accounts and records relating to the activity of the Trust, Project SPVs or Parties to the InvIT and may issue directions in the nature of, *inter-alia*, (i) requiring the Trust to surrender its certificate of registration; (ii) requiring the Trust to wind-up; (iii) requiring the Trust to sell its assets; (iv) requiring the Trust or Parties to the Trust to take such action as may be in the interest of investors; or (v) prohibiting the Trust or Parties to the Trust from operating in the capital markets or from accessing the capital markets for a specified period.

Risks Related to India

40. *Changing laws, rules and regulations, including changes in legislation or the rules relating to tax regimes, legal uncertainties and the political situation in India may materially and adversely affect our business, financial condition and results of operations.*

Our business, financial condition and results of operations could be materially and adversely affected by any change in laws or interpretations of existing, or the promulgation of new, laws, rules and regulations applicable to us and our business. There can be no assurance that the Government of India or the state governments will not implement new regulations and policies which will require the Trust and the Project SPVs to obtain additional approvals and licenses from governmental and other regulatory bodies or impose onerous requirements and conditions on our operations.

Tax laws and regulations are subject to differing interpretations by tax authorities. Differing interpretations of tax and other fiscal laws and regulations may exist within governmental ministries, including tax administrations and appellate authorities, thus creating uncertainty and potential unexpected results. The degree of uncertainty in tax laws and regulations, combined with significant penalties for default and a risk of aggressive action, including by retrospective legislation, by the governmental or tax authorities, may result in tax risks in the jurisdictions in which we operate being significantly higher than expected. These events may result in a material, adverse effect on our business, financial condition, results of operations and prospects. Tax authorities in India may also introduce additional or new regulations applicable to our business which could adversely affect our business and profitability.

The Government of India has implemented two major reforms in Indian tax laws, namely the goods and services tax and provisions relating to General Anti-Avoidance Rules. Given the recent implementation of these laws, there can be no assurances as to the manner in which this tax regime will be implemented, which could create uncertainty.

The right to own property in India is subject to restrictions that may be imposed by the Government of India. In particular, the Government of India under the provisions of the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 ("**Land Acquisition Act**") has the right to compulsorily acquire any land if such acquisition is for a "public purpose," after providing compensation to the owner. However, the compensation paid pursuant to such acquisition may not be adequate to compensate the owner for the loss of such property. The likelihood of such acquisitions may increase as central and state governments seek to acquire land for the development of infrastructure projects such as roads, railways, airports and townships. While the NHAI or the relevant concessioning authority is responsible for the acquisition of the land underlying the toll-road infrastructure projects, any delays or disputes relating to such acquisition could lead to delays and disruptions in the execution of our projects, which would have a material adverse effect on our business, financial condition and results of operations.

The Competition Act, 2002, as amended (the "**Competition Act**"), regulates practices having an appreciable adverse effect on competition in the relevant market in India. The Competition Act aims to, among other things, prohibit all agreements and transactions which may have an appreciable adverse effect on competition in India. Further, the CCI has extra-territorial powers and can investigate any agreements, abusive conduct or combination occurring outside India if such agreement, conduct or combination has an appreciable adverse effect on competition in India. In the event that that any of the assets proposed to be acquired by us in the future cross the prescribed thresholds, we cannot assure you that we will receive the necessary approvals from the CCI to consummate such transactions. Any prohibition or substantial penalties levied under the Competition Act could materially and adversely affect our financial condition and results of operations. Any adverse impact on our financial condition or operations due to the Competition Act may have a material adverse impact on our business, financial condition, results of operations and prospects and our ability to make distributions to the Unitholders.

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

India imports a significant majority of its requirements of crude oil. Crude oil prices are volatile and are subject to a number of factors, including the level of global production and political factors, such as war and other conflicts, particularly in the Middle East, where a substantial proportion of the world's oil reserves are located. Any significant increase in the price of or shortages in the supply of crude oil could materially and adversely affect the volume of traffic at the projects operated by the Project SPVs and materially and adversely affect the Indian economy in general, including the infrastructure sector, which could have a material, adverse effect on our business, financial condition and results of operations.

42. ***Our business is dependent on economic growth in India and financial stability in Indian markets, and any slowdown in the Indian economy or in Indian financial markets could have a material adverse effect on our business.***

The Trust is registered in India, and all of our assets are located in India. As a result, we are highly dependent on the prevailing economic conditions in India and our results of operations are significantly affected by factors influencing the Indian economy. Factors that may adversely affect the Indian economy, and hence our results of operations, may include:

- any increase in interest rates or inflation in India;
- any exchange rate fluctuations;
- any scarcity of credit or other financing in India;
- prevailing income, consumption and saving conditions among consumers and corporations in India;
- changes in India's tax, trade, fiscal or monetary policies;
- political instability, terrorism or military conflict in India or in countries in the region or globally, including in India's various neighboring countries;
- the occurrence of natural or man-made disasters or epidemics;
- prevailing regional or global economic conditions;
- the balance of trade movements, including export demand and movements in key imports, including oil and oil products; annual rainfall which affects agricultural production;
- civil unrest, riots, protests, acts of violence, terrorist attacks, regional conflicts or situations or war involving India or other countries could materially and adversely affect the financial markets, which could

impact our business; and

- other significant regulatory or economic developments in or affecting India or its infrastructure sector.

Any slowdown or perceived slowdown in the Indian economy, or in specific sectors of the Indian economy, could have a material, adverse effect on our business, financial condition and results of operations and the price of the Units.

Further, the Indian economy and Indian financial market are influenced by economic and market conditions in other countries, particularly in emerging market in Asian countries. Financial turmoil in Asia, Europe, the United States and elsewhere in the world in recent years has affected the Indian economy. Although economic conditions are different in each country, investors' reactions to developments in one country can have a material, adverse effect on the securities of companies in other countries, including India. A loss in investor confidence in the financial systems of other emerging markets may cause increased volatility in Indian financial markets and, indirectly, in the Indian economy in general. Any global financial instability, including any instability related to current relation between the United States and China, could also have a negative impact on the Indian economy. Financial disruptions may occur again and could harm our results of operations and financial condition.

43. ***Any downgrading of India's sovereign debt rating by a domestic or international rating agency could materially and adversely affect our ability to obtain financing and, in turn, our business and financial performance.***

India's sovereign debt rating could be downgraded due to various factors, including changes in tax or fiscal policy or a decline in India's foreign exchange reserves, which are outside of our control. Any adverse revisions to India's credit ratings for domestic and international debt by domestic or international rating agencies may materially and adversely impact our ability to raise additional financing, and the interest rates and other commercial terms at which any such additional financing is available. This could have a material, adverse effect on our business and financial performance, ability to obtain financing for capital expenditures and the price of the Units.

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

Fluctuations in the exchange rates between the Indian Rupee and other currencies will affect the foreign currency equivalent of the Indian Rupee price of the Units. Such fluctuations will also affect the amount that holders of the Units will receive in foreign currency upon conversion of any cash distributions or other distributions paid in Indian Rupees by us on the Units, and any proceeds paid in Indian Rupees from any sale of the Units.

Risks Related to Ownership of the Units

45. ***It may not be possible for Unitholders to enforce foreign judgements.***

The Trustee, the Investment Manager and the Sponsor are incorporated in India and the Trust is settled and registered in India. All of our assets are located in India and we may, from time to time, invest in toll roads in India. Where investors wish to enforce foreign judgements in India, where our assets are or will be located, they may face difficulties in enforcing such judgements. India is not a party to any international treaty in relation to the recognition or enforcement of foreign judgements. India exercises reciprocal recognition and enforcement of judgements in civil and commercial matters with a limited number of jurisdictions, including Singapore. In order to be enforceable, a judgement obtained in a jurisdiction which India recognizes as a reciprocating territory must meet certain requirements of the Code of Civil Procedure, 1908 ("**Civil Code**"). Further, the Civil Code only permits enforcement of monetary decrees not being in the nature of any amounts payable in respect of taxes, or other charges of a like nature or in respect of a fine or other penalty and does not provide for the enforcement of arbitration awards even if such awards are enforceable as a decree or judgement. Judgements or decrees from jurisdictions not recognized as a reciprocating territory by India cannot be enforced or executed in India except through a fresh suit upon judgement. Even if we or a Unitholder were to obtain a judgement in such a jurisdiction, we or it would be required to institute a fresh suit upon the judgement and would not be able to enforce such judgement by proceedings in execution. In addition, the party which has obtained such judgement must institute the new proceedings within three years of obtaining the judgement. It is unlikely that an Indian court would award damages on the same basis or to the same extent as was awarded in a judgement rendered by a foreign court if the Indian court believed that the amount of damages awarded was excessive or inconsistent with public policy in India. In addition, any person seeking to enforce a foreign judgement in India is required to obtain prior approval of

the RBI to repatriate outside India any amount recovered pursuant to the execution of the judgement.

Consequently, it may not be possible to enforce in an Indian court any judgement obtained in a foreign court, or effect service of process outside of India, against Indian companies, their directors and executive officers, and any other parties resident in India. Additionally, there is no assurance that a suit brought in an Indian court in relation to a foreign judgement will be disposed of in a timely manner.

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

The Trust is an irrevocable trust registered under the Registration Act and it may only be extinguished, dissolved and terminated in accordance with the InvIT Regulations and other applicable law. Under the Indenture of Trust, in the event of dissolution, the net assets of the Trust, remaining after settlement of all liabilities, and the retention of any reserves which the Trustee deems to be necessary to discharge contingent or unforeseen liabilities, shall be paid to the Unitholders. Should the Trust be dissolved, depending on the circumstances and the terms upon which assets of the Trust are disposed of, there is no assurance that a Unitholder will recover all or any part of its investment. There may also be uncertainty around the interpretation and implementation of certain provisions in relation to the insolvency of a trust under the Insolvency and Bankruptcy Code, 2016.

47. *The reporting requirements and other obligations of infrastructure investment trusts are still evolving. Accordingly, the level of ongoing disclosures made to and the protection granted to Unitholders may be more limited than those made to or available to the shareholders of a company in India.*

The InvIT Regulations, along with the guidelines and circulars issued by the SEBI from time to time, govern the affairs of infrastructure investment trusts in India. However, as compared to the statutory and regulatory framework governing companies in India, the regulatory framework applicable to infrastructure investment trusts is relatively new and thus, still evolving. The SEBI introduced a framework for unlisted InvITs pursuant to amendments to the InvIT Regulations issued in April 2019.

Accordingly, the ongoing disclosures made to Unitholders under the InvIT Regulations may differ from those made to the shareholders of a company in accordance with the Companies Act. Further, the rights of the Unitholders may not be as extensive as the rights of the shareholders of a company and accordingly, the protection available to the Unitholders may be more limited than those available to such shareholders.

48. *The price of the Units may decline after the Issue.*

The Issue Price determined by the Investment Manager may not be indicative of the price of the Units upon completion of the Issue. If the price of the Units declines significantly, Eligible Investors may be unable to resell their Units at or above their purchase price, if at all. There can be no assurance that the price of the Units will not fluctuate or decline significantly in the future. The price and value of the Units will depend on many factors, including, among others:

- the perceived prospects of our business and investments and the market for toll roads and other infrastructure projects;
- differences between our actual financial and operating results and those expected by investors and analysts;
- the perceived prospects of future toll roads and other infrastructure projects that may be added to our portfolio in accordance with our investment mandate;
- changes in general economic or market conditions;
- the market value of our assets;
- the perceived attractiveness of the Units against those of other business trusts, equity or debt securities;
- the balance of buyers and sellers of the Units;
- the size and liquidity of the Indian business trusts market;
- any changes to the regulatory system, including the tax system, both generally and specifically in relation to India business trusts;
- the ability of the Investment Manager to implement successfully its investment and growth strategies;
- foreign exchange rates;
- variations in our quarterly operating results;
- additions or departures of key management personnel of the Investment Manager and/or the Project SPVs;

- changes in the amounts of our distributions, if any, and changes in the distribution payment policy or failure to execute the existing distribution policy;
- actions by Unitholders;
- changes in market valuations of similar business entities or companies;
- announcements by us or our competitors of significant contracts, acquisitions, disposals, strategic partnerships, joint ventures or capital commitments;
- speculation in the press or investment community; and
- changes or proposed changes in laws or regulations affecting the road industry and infrastructure development in India or enforcement of these laws and regulations, or announcements relating to these matters.

To the extent that we retain operating cash flow for investment purposes, working capital reserves or other purposes, these retained funds, while increasing the value of our underlying assets, may not correspondingly increase the price of the Units. Our performance with regard to future earnings and distributions may materially and adversely affect the market price of the Units. In addition, Unitholders who do not, or are not able to, participate in a new issuance of Units may experience a dilution of their interest in the Trust. The Units are not capital-safe products and there is no guarantee that Unitholders can regain the amount invested, in full or in part. If the Trust is extinguished, it is possible that investors may lose a part or all of their investment in the Units.

49. *Any future issuance of Units by us or sales of Units by the Sponsor or any of other significant Unitholders may dilute your Unitholding.*

Any future issuance of Units by us could dilute investors' holdings of Units. Any such future issuance of Units could impact our ability to raise capital through an offering of our securities. There can be no assurance that we will not issue further Units. Upon completion of the Issue, [●] Units (constituting 51% of the total number of Units on a post-Issue basis) will be held by the Sponsor. While the Sponsor has agreed to certain *inter-se* arrangements in relation to the sale of its Unitholding with the Financial Investors and pre-emptive rights in case of any further issue of Units, if the Sponsor (pursuant to any applicable waivers), directly or indirectly, sells or is perceived as intending to sell a substantial number of its Units, the price for the Units could be materially and adversely affected. These sales may also make it more difficult for us to raise capital through the issue of new units at a time and at a price we deem appropriate. For details of the *inter-se* arrangements, see "*Background and Structure of the Trust – Framework Agreement*" and "*Rights of Unitholders*" on pages 96 and 234, respectively.

50. *Our rights and the rights of the Unitholders to recover claims against the Investment Manager or the Trustee are limited.*

Under the Investment Management Agreement, the Investment Manager is not liable for, among other things, any action for any investment decision taken in respect of the Trust, other than for fraud, gross negligence, or willful misconduct on the part of the Investment Manager.

Pursuant to the Indenture of Trust, the Trustee is not liable for anything done or omitted to be done or suffered by the Trustee in good faith. Further, the Trustee is not liable for any action or omission that results in any depletion in the value of the trust fund and consequent losses of the Unitholder, except in situations where such depletion is a result of the gross negligence, fraud or wilful default on the part of the Trustee, or a violation of the Investment Management Agreement, as determined by a court of competent jurisdiction whose decision is final and non-appealable. Any costs and expenses incurred by the Trustee in connection with any legal proceedings, in relation to the Trust, shall be incurred by the Trustee from the Trust Assets.

The Investment Management Agreement provides that the Investment Manager is entitled to be indemnified out of the Trust Assets against all taxes and other liabilities, claims, costs, losses, damages and expenses (including reasonable attorney's fees and costs) ("**Losses**") incurred in connection with the Trust, unless arising out of fraud, gross negligence or willful misconduct. As a result, the Trust's rights and the rights of the Unitholders to recover claims against the Investment Manager are limited. Further, recourse to the Trustee may be limited under the Indenture of Trust. The Indenture of Trust provides for the indemnification of the Trustee for all Losses, except Losses incurred due to any fraud, gross negligence or willful misconduct, or material breach of the provisions of the Investment Management Agreement, or the provisions of the other Trust Documents, as finally determined by a court of competent jurisdiction.

51. *Information and the other rights of Unitholders under Indian law may differ from such rights available to equity shareholders of an Indian company or under the laws of other jurisdictions.*

The Indenture of Trust and various provisions of Indian law govern our corporate affairs. Legal principles relating to these matters and the validity of corporate procedures, fiduciary duties and liabilities, and Unitholders' rights may differ from those that would apply to a company in India or a trust in another jurisdiction. Unitholders' rights and disclosure standards under Indian law may also differ from the laws of other countries or jurisdictions. Also see "*Rights of Unitholders*" on page 234.

SECTION III – INTRODUCTION

SUMMARY FINANCIAL INFORMATION

The following tables set forth the summary financial information derived from:

a) the Combined Financial Statements, prepared in accordance with the requirements of the InvIT Regulations and Ind AS, as of and for the six-month period ended September 30, 2019 and the Financial Years ended March 31, 2019, March 31, 2018 and March 31, 2017;

b) the consolidated financial statements of the Sponsor, prepared in accordance with Ind AS and the Companies Act, as of and for the Financial Years ended March 31, 2019, March 31, 2018 and March 31, 2017; and

c) the standalone financial statements of the Investment Manager, prepared in accordance with Ind AS and the Companies Act, as of and for the four-month period ended July 31, 2019 and the Financial Years ended March 31, 2019, March 31, 2018 and March 31, 2017.

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

The summary financial information derived from the Combined Financial Statements, as presented herein below, should be read in conjunction with the Combined Financial Statements, the notes thereto and the sections "*Combined Financial Statements*" and "*Management's Discussion and Analysis of Financial Condition and Results of Operations*" on pages 257 and 324, respectively.

A. Summary Combined Financial Statements

I. *Combined Summary Statement of Assets and Liabilities as at September 30, 2019, March 31, 2019, March 31, 2018 and March 31, 2017*

(Amount in ₹ Millions.)

	Notes	As at September 30, 2019	As at March 31, 2019	As at March 31, 2018	As at March 31, 2017
ASSETS					
Non-current assets					
Property, Plant and Equipment	4	14.99	10.90	5.72	0.35
Other Intangible assets	4	169,974.62	135,725.68	108,852.49	24,146.39
Intangible assets under development		37,670.27	34,156.49	53,208.12	65,997.43
Financial assets					
i) Investments	5	-	-	477.23	-
ii) Loans	7	1.20	-	5.36	3.81
iii) Others	8	104.93	99.39	198.65	0.92
Other non-current assets	10	1,327.10	679.32	2,214.50	10,166.76
		209,093.11	**170,671.78**	**164,962.07**	**100,315.66**
Current Assets					
Inventories	11	-	27.86	-	-
Financial assets					
i) Investments	5	510.92	184.38	1,105.64	-
ii) Trade receivables	6	-	14.02	31.51	85.66
iii) Cash and cash equivalents	12	205.41	325.82	999.45	351.79
iv) Bank balance other than (iii) above	12(a)	1,525.83	1,450.03	-	-
v) Loans	7	5.14	9.87	0.75	0.19
vi) Others	8	289.62	287.47	175.03	140.48
Current tax assets (net)	13	138.61	137.67	98.62	68.33
Other current assets	14	6,371.14	5,942.90	11,422.37	3,193.12
		9,046.67	**8,380.02**	**13,833.37**	**3,839.57**
Total assets		**218,139.78**	**179,051.80**	**178,795.44**	**104,155.23**
EQUITY AND LIABILITIES					
Equity					
Equity share capital	15	17,686.19	15,636.69	12,800.81	10,096.41
Share application money		-	-	696.58	-
Subordinate debt		30,594.34	25,969.07	21,740.02	19,351.74
Other equity	16				
Other reserves		458.88	1,548.37	554.09	80.84
Total Equity		**48,739.41**	**43,154.13**	**35,791.50**	**29,528.99**
Non-controlling interests				-	-
		48,739.41	**43,154.13**	**35,791.50**	**29,528.99**
Non-current liabilities					
Financial liabilities					
i) Borrowings	17	97,412.62	90,849.96	65,684.93	52,956.85
ii) Other financial liabilities	19	67.14	2,084.34	21,044.27	20,214.15
Provisions	20	51.68	9.46	6.54	1.49
Deferred tax liabilities (net)	9	359.35	295.91	116.02	-
		97,890.79	**93,239.67**	**86,851.76**	**73,172.49**

Financial liabilities					
i) Borrowings	17	12,260.14	7,085.60	9,534.55	757.29
ii) Trade payables	18				
a) total outstanding dues of micro enterprises and small enterprises		-	-	-	-
b) total outstanding dues of creditors other than micro enterprises and small enterprises		16,174.69	8,529.24	6,581.21	58.14
iii) Other financial liabilities	19	42,102.26	26,923.81	39,866.33	486.02
Other current liabilities	21	949.05	107.41	133.05	152.18
Provisions	20	3.00	1.42	1.18	0.12
Current tax liabilities (net)		20.44	10.52	35.87	-
		71,509.58	**42,658.00**	**56,152.19**	**1,453.75**
Total liabilities		**169,400.37**	**135,897.67**	**143,003.95**	**74,626.24**
Total equity and liabilities		**218,139.78**	**179,051.80**	**178,795.44**	**104,155.23**

II. *Combined Summary Statement of Profit and Loss for the six-month period ended September 30, 2019 and the Financial Years 2019, 2018 and 2017*

(Amount in ₹ Millions.)

Particulars	Notes	For the six months ended September 30, 2019	For the year ended March 31, 2019	For the year ended March 31, 2018	For the year ended March 31, 2017
Income					
Revenue from operations	22	4,518.19	7,886.81	3,511.47	1,455.63
Other income	23	80.10	156.65	51.59	2.79
Total income		**4,598.29**	**8,043.46**	**3,563.06**	**1,458.42**
Expenses					
Cost of material consumed		41.44	-	-	-
Road work and site expenses	24	890.86	1,756.86	1,065.87	1,297.90
Employee benefits expenses	25	146.68	207.12	108.57	18.37
Depreciation and amortisation expenses	26	842.46	1,099.83	441.19	83.69
Finance costs	27	3,530.76	3,898.60	984.20	6.86
Other expenses	28	76.25	122.46	48.55	12.29
Total expenses		**5,528.45**	**7,084.87**	**2,648.38**	**1,419.11**
Profit before tax		**(930.16)**	**958.59**	**914.68**	**39.31**
Tax expenses					
Current tax		3.60	527.45	326.18	20.50
Deferred tax		156.13	179.89	116.02	-
Total tax expenses		**159.73**	**707.34**	**442.20**	**20.50**
Profit/(Loss) after tax		**(1,089.89)**	**251.25**	**472.48**	**18.81**
Other comprehensive income					
Item that will not be reclassified to profit or loss:					
(a) Re-measurement (loss)/gain on defined benefit plans (net of taxes)		0.41	(1.84)	0.77	-
Other comprehensive (loss) for the year/ period, net of tax		**0.41**	**(1.84)**	**0.77**	**-**
Total comprehensive income for the year/period		**(1,089.48)**	**249.41**	**473.25**	**18.81**
Profit/(Loss) after tax		**(1,089.89)**	**251.25**	**472.48**	**18.81**
Attributable to:					
Owners of the Project SPV Group		(1,089.89)	251.25	472.48	18.81
Non-controlling interests		-	-	-	-
Total comprehensive income for the year/period					
Attributable to:					
Equity holders of the Project SPV Group		(1,089.48)	249.41	473.25	18.81
Non-controlling interests		-	-	-	-

III. *Combined Summary Statement of Cash Flows for the six-month period ended September 30, 2019 and the Financial Years 2019, 2018 and 2017*

Combined Cash Flow Statement

(Amount in ₹ Millions.)

Particulars	For the six months ended September 30, 2019	For the year ended March 31, 2019	For the year ended March 31, 2018	For the year ended March 31, 2017
Cash flow from operating activities				
Profit/(Loss) before tax	(930.16)	958.59	914.68	39.31
Adjustment to reconcile profit before tax to net cash flows:				
Depreciation and amortisation	842.46	1,099.83	441.19	83.69
Resurfacing expenses	36.10	-	-	-
Fair value gain on mutual funds	(0.66)	(0.04)	(30.63)	-
Net (gain) on sale of current Investment	(19.20)	(81.95)	(17.35)	(1.91)
Finance costs	3,530.76	1,715.15	761.76	3,898.60
Interest income	(57.90)	-	-	-
Other non operative income	(2.34)	(0.32)	(0.21)	(3.23)
Dividend income on current investments	-	-	(1.83)	(0.17)
Operating profit before working capital changes	**3,399.06**	**3,691.27**	**2,067.61**	**4,016.29**
Movement in working capital:				
Increase/ (decrease) in trade payables	7,645.45	1,948.03	6,523.07	(947.77)
Increase/ (decrease) in provisions	8.12	1.30	6.89	1.61
Increase/ (decrease) in other financial liabilities	152.67	(83.40)	263.25	164.80
(Decrease)/ increase in other liabilities	841.64	(25.64)	(19.13)	115.81
Decrease / (increase) in trade receivables	14.02	17.49	54.15	(85.17)
Decrease / (increase) in inventories	27.86	(27.86)	-	-
Increase in loans	3.54	(3.76)	(2.11)	(4.00)
(Increase) / decrease in other financial assets	(42.16)	47.49	(232.24)	(26.41)
(Increase) / decrease in other assets	(1,044.20)	6,623.09	(686.13)	(1,745.05)
Cash generated from operations	**11,005.99**	**12,188.01**	**7,975.36**	**1,490.10**
Taxes paid (net)	(87.33)	(591.85)	(320.62)	(85.29)
Net cash flows generated from operating activities	**10,918.66**	**11,596.16**	**7,654.74**	**1,404.81**
Cash flows from investing activities				
Purchase of property, plant and equipment including CWIP, intangible assets including intangible assets under development and capital advances	(25,719.85)	(40,819.27)	(32,442.64)	(31,673.38)
Proceeds/ redemption from sale of non-current investments*	-	477.23	(477.23)	-
Proceeds from sale/ (purchase) of current investments (net)	(306.67)	1,003.24	(1,057.66)	1.91
Investments in bank deposits (having original maturity of more than three months) (net)	(75.80)	(1,450.03)	-	-
Interest received	94.70	(60.35)	0.17	3.23
Dividend received	-	-	1.83	0.17
Net cash flows (used in) investing activities	**(26,007.62)**	**(40,849.18)**	**(33,975.53)**	**(31,668.07)**
Cash flows from financing activities				
Proceeds from non-current borrowings	6,723.88	26,372.50	13,195.05	20,402.33
Repayment of non-current borrowings	-33.92	-56.02	-3.25	-
Proceeds/ (Repayment) of current borrowings (net)	5,174.54	(2,448.95)	8,777.26	194.46
Issue of equity share capital	2,049.50	2,139.31	3,400.98	5,310.04
Issue of sub-ordinate debt	4,625.27	4,229.05	2,388.28	8,015.76
Finance cost paid	(3,570.71)	(1,656.50)	(789.87)	(3,855.80)
Net cash flows generated from financing activities	**14,968.56**	**28,579.39**	**26,968.45**	**30,066.79**
Net increase / (decrease) in cash and cash equivalents (A+B+C)	**(120.41)**	**(673.62)**	**647.66**	**(196.47)**
Cash and cash equivalents at the beginning of the year	325.82	999.45	351.79	548.26
Cash and cash equivalents at the end of the year (refer note 12)	**205.41**	**325.82**	**999.45**	**351.79**

Components of cash and cash equivalents				
Balances with scheduled banks:				
- Trust, retention and other escrow accounts	44.24	82.88	35.17	176.32
- Others	127.98	199.19	810.39	171.95
- In deposit accounts with original maturity less than 3 months	-		- 130.88	0.03
Cash on hand	33.19	43.75	23.01	3.51
Total cash and cash equivalents	**205.41**	**325.82**	**999.45**	**351.79**
Debt reconciliation statement in accordance with Ind AS 7				
Opening balances				
Long term borrowing	91,817.88	66,246.26	53,054.46	32,652.13
Short term borrowing	7,085.60	9,534.55	757.29	562.82
Movements				
Cash Flows				
Long term borrowing	6,689.97	25,571.62	13,191.80	20,402.33
Short term borrowing	5,174.54	(2,448.95)	8,777.26	194.46
Closing balances				
Long term borrowing	98,507.84	91,817.88	66,246.26	53,054.46
Short term borrowing	12,260.14	7,085.60	9,534.55	757.29

Notes :

1. All figures in bracket are outflow.
2. Taxes paid are treated as arising from operating activities and are not bifurcated between investing and financing activities.
3. The Consolidated cash flow statement has been prepared under Indirect Method as per Ind AS 7 "Statement of Cash Flows".

Summary Consolidated Financial Information of the Sponsor

I. *Sponsor's Summary Consolidated Balance Sheet as at March 31, 2019, March 31, 2018 and March 31, 2017*

(₹ in millions)

		March 31, 2019	March 31, 2018	March 31, 2017
I	**ASSETS**			
(1)	**Non-current assets**			
	Property, Plant and Equipment	1,716.67	1,800.12	2,412.10
	Capital work-in-progress	360.60	650.71	609.70
	Goodwill on consolidation	78.04	78.04	1,115.40
	Other Intangible assets	327,636.89	308,830.43	240,350.05
	Intangible assets under development	37,605.52	55,833.90	67,454.34
a.	Financial assets			
	i) Investments	6,130.57	7,616.64	8.01
	ii) Loans	0.08	166.38	132.59
	iii) Other financial assets	727.99	241.66	817.67
b.	Deferred tax assets (net)	1,673.51	3,348.07	3,854.86
c.	Other non-current assets	200.48	300.25	293.51
		376,130.35	**378,866.20**	**317,048.23**
(2)	**Current assets**			
	Inventories	4,424.86	4,872.56	3,527.09
a.	Financial assets			
	i) Investments	323.01	1,838.02	1,450.87
	ii) Trade receivables	1,135.23	1,326.20	704.73
	iii) Cash and cash equivalents	2,777.31	2,063.04	2,303.95
	iv) Bank balance other than (iii) above	12,825.71	10,615.35	10,772.65
	v) Loans	635.29	427.83	51.34
	vi) Other financial assets	2,054.51	1,431.01	1,201.68
b.	Current tax assets (net)	353.75	407.98	537.83
c.	Other current assets	4,300.73	2,183.95	1,974.64
		28,830.40	**25,165.94**	**22,524.78**
	Assets classified as held for sale	-	-	126,835.70
	TOTAL ASSETS	**404,960.75**	**404,032.14**	**466,408.71**

(₹ in millions)

		March 31, 2019	March 31, 2018	March 31, 2017
II	**EQUITY AND LIABILITIES**			
	Equity			
a.	Equity share capital	3,514.50	3,514.50	3,514.50
b.	Other equity	59,637.00	53,410.70	49,201.48
		63,151.50	**56,925.20**	**52,715.98**
	Liabilities			
	Non-current liabilities			
(1)				
a.	Financial liabilities			
	i) Borrowings	144,076.06	118,312.59	120,896.71
	ii) Other financial liabilities	134,391.97	155,810.55	158,755.58
b.	Provisions	456.75	653.98	841.29
	Deferred tax liabilities (net)	322.92	143.04	-
	Other non-current liabilities	1,021.50	-	-
		280,269.20	**274,920.16**	**280,493.58**
	Current liabilities			
(2)				
a.	Financial liabilities			
	i) Borrowings	13,115.38	11,644.99	9,308.01
	ii) Trade payables			
	a) total outstanding dues of micro enterprises and small enterprises	457.95	-	-
	b) total outstanding dues of creditors other than micro enterprises	6,602.98	4,058.33	4,506.80
	iii) Other financial liabilities	35,563.80	51,152.55	12,839.28
b.	Other current liabilities	4,380.77	5,071.21	3,907.63
c.	Provisions	410.40	92.90	86.72
d.	Current tax liabilities (net)	1,008.77	166.80	491.96
		61,540.05	**72,186.78**	**31,140.40**
	Total liabilities	**341,809.25**	**347,106.94**	**311,633.98**
	Liabilities directly associated with assets classified as held for sale	-	-	102,058.75
	TOTAL EQUITY AND LIABILITIES	**404,960.75**	**404,032.14**	**466,408.71**

II. *Sponsor's Summary Consolidated Statement of Profit and Loss for the Financials Years 2019, 2018 and 2017*

(₹ in millions)

	March 31, 2019	March 31, 2018	March 31, 2017
Income			
Revenue from operations	67,070.18	56,940.99	58,459.36
Other income	1,956.00	1,686.67	1,231.72
TOTAL INCOME	**69,026.18**	**58,627.66**	**59,691.08**
Expenses			
Cost of material consumed	3,231.08	730.05	2,682.90
Road work and site expenses	27,968.85	23,235.54	20,183.90
Employee benefits expense	2,861.74	2,914.63	2,726.19
Finance costs	11,200.58	9,666.68	13,327.25
Depreciation and amortisation expenses	5,395.13	5,440.45	8,547.90
Other expenses	3,635.56	3,267.12	2,383.51
TOTAL EXPENSES	**54,292.94**	**45,254.47**	**49,851.65**
Profit before exceptional items and tax	**14,733.24**	**13,373.19**	**9,839.43**
Exceptional item	-	1,266.90	-
Profit before tax	**14,733.24**	**14,640.09**	**9,839.43**
Tax expenses			
Current tax (including earlier years Rs. 9.98 millions (March 31, 2018: Rs.Nil), (March 31, 2017: Rs.Nil))	6,192.62	5,711.92	3,672.74
Deferred tax	40.97	(268.40)	(987.52)
TOTAL TAX EXPENSES	**6,233.59**	**5,443.52**	**2,685.22**
Profit for the year	**8,499.65**	**9,196.57**	**7,154.21**

(Rs in millions)

	March 31, 2019	March 31, 2018	March 31, 2017
Other comprehensive income			
Item that will not to be reclassified to profit or loss:			
a) Re-measurement gains/ (losses) on defined benefit plans (net of taxes)	(37.68)	(2.71)	(9.82)
b) Mark to market gain/(loss) on fair value measurement of investments	(1,176.43)	(1,585.53)	-
	(1,214.11)	**(1,588.24)**	**(9.82)**
Other comprehensive income/(loss) for the year (net of taxes)			
Total comprehensive income for the year	**7,285.54**	**7,608.33**	**7,144.39**

III. *Sponsor's Summary Consolidated Cash Flow Statement for the Financial Years 2019, 2018 and 2017*

(₹ in millions)

	March 31, 2019	March 31, 2018	March 31, 2017
Cash flow from operating activities			
Profit before tax	**14,733.24**	**14,640.09**	**9,839.43**
Adjustments to reconcile profit before tax net cash flows:			
Depreciation and amortisation	5,395.13	5,440.45	8,547.90
Resurfacing expenses	64.91	565.10	683.52
Net loss/ (gain) on sale of property, plant and equipment	(6.40)	41.20	(9.93)
Fair value gain on mutual funds	(8.85)	(25.82)	(18.30)
Net (gain) on sale of current Investment	(110.40)	(157.02)	(54.28)
Finance costs	11,200.58	9,666.68	13,327.25
Interest income	(1,691.96)	(1,166.55)	(1,012.17)
Other non operative income	(104.03)	(84.12)	(70.33)
Profit on sale of investment in subsidiaries (exceptional item)	-	(1,266.90)	0.00
Dividend income on current investments	(34.36)	(253.16)	(66.71)
Operating profit before working capital changes	**29,437.85**	**27,399.95**	**31,166.38**
Movement in working capital:			
Increase in trade payables	3,002.60	634.38	1,544.29
Increase/ (decrease) in provisions	17.68	(516.97)	1.66
Increase in other financial liabilities	116.75	4,130.90	661.17
(Decrease)/ increase in other liabilities	331.06	21.08	43.10
Decrease / (increase) in trade receivables	190.97	(698.52)	(626.79)
Decrease / (increase) in inventories	447.70	(1,345.47)	(438.68)
(Increase) / decrease in loans	(41.16)	(3,381.60)	25.92
(Increase) / decrease in other financial assets	(904.30)	410.78	952.68
(Increase) / decrease in other assets	(2,016.79)	(316.37)	2,074.01
Cash (used for) / generated from operations	**30,582.36**	**26,338.16**	**35,403.74**
Taxes paid (net)	(3,482.95)	(5,014.89)	(3,483.28)
Net cash flows generated from / (used in) operating activities			
(A)	**27,099.41**	**21,323.27**	**31,920.46**
Cash flows from investing activities			
Purchase of property, plant and equipment including CWIP, intangible assets including intangible assets under development and capital advances	(42,188.90)	(39,660.12)	(27,763.41)
Proceeds from sale of property, plant and equipment	16.69	(41.20)	9.93
Proceeds/ redemption from sale of non-current investments*	309.64	13,807.17	72.34
Purchase of non-current investments (net)	-	(129.66)	(2,011.67)

Proceeds from sale/ (purchase) of current investments (net)		1,634.27	(692.86)	(1,384.89)

(₹ in millions)

		March 31, 2019	March 31, 2018	March 31, 2017
Investments in bank deposits (having original maturity of more than three months) (net)		(2,328.88)	(1,005.75)	419.34
Interest received		1,708.98	1,254.53	782.13
Dividend received		34.36	253.16	66.71
Net cash flows generated from investing activities	**(B)**	**(40,813.84)**	**(26,214.73)**	**(29,809.52)**
Cash flow from financing activities				
Proceeds from non-current borrowings		33,975.21	13,195.04	37,602.33
Repayment of non-current borrowings		(9,455.29)	(7,964.75)	(18,684.57)
Proceeds/ (Repayment) of current borrowings (net)		1,470.39	11,201.02	(2,579.12)
Finance cost paid		(10,555.42)	(8,945.77)	(17,508.91)
Dividend paid on equity shares		(878.63)	(2,811.60)	(702.90)
Tax on equity dividend paid		(180.61)	(572.38)	(143.09)
Net cash flows (used in) / generated from financing activities	**(C)**	**14,375.65**	**4,101.56**	**(2,016.26)**
Net increase/ (decrease) in cash and cash equivalents (A+B+C)		**661.22**	**(789.90)**	**94.68**
Cash and cash equivalents at the beginning of the year		2,063.04	2,852.94	2,758.26
Cash and cash equivalents at the end of the year		**2,724.26**	**2,063.04**	**2,852.94**
Components of cash and cash equivalents				
Balances with scheduled banks:				
- Trust, retention and other escrow accounts		208.59	60.31	313.82
- Others		2,176.70	1,083.24	1,653.55
- In deposit accounts with original maturity less than 3 months		158.61	737.76	183.57
Cash on hand		233.41	181.73	153.01
Less : Book overdraft		(53.05)	-	-
Add: Assets held for sale		-	-	548.99
Total Cash and cash equivalents		**2,724.26**	**2,063.04**	**2,852.94**

B. Summary Standalone Financial Information of the Investment Manager

I. *Investment Manager's Summary Standalone Balance Sheet as at July 31, 2019, March 31, 2019, March 31, 2018 and March 31, 2017*

(₹ in millions)

		July 31, 2019	March 31, 2019	March 31, 2018	March 31, 2017
I	**ASSETS**				
(1) Non-current assets					
a.	Property, plant and equipment	-	0.05	0.06	0.07
b.	Financial assets				
	Investments	0.10	0.10	0.10	0.10
		0.10	**0.15**	**0.16**	**0.17**
(2) Current assets					
a.	Financial assets				
	i) Trade receivables	2.78	-	-	-
	ii) Cash and cash equivalents	0.18	0.09	0.06	0.90
	iii) Loans	113.20	401.91	402.36	401.84
	iv) Other financial assets	0.10	0.10	0.10	0.10
b.	Current tax assets (net)	3.47	4.08	4.11	4.11
		119.73	**406.18**	**406.63**	**406.95**
	TOTAL ASSETS	**119.83**	**406.33**	**406.79**	**407.12**

		July 31, 2019	March 31, 2019	March 31, 2018	March 31, 2017
II	**EQUITY AND LIABILITIES**				
	Equity				
a.	Equity share capital	70.00	70.00	70.00	70.00
b.	Other equity	30.00	322.49	322.95	323.32
		100.00	**392.49**	**392.95**	**393.32**
	Liabilities				
(1)	**Current liabilities**				
a.	Financial liabilities				
	i) Borrowings	13.67	13.67	13.67	13.67
	ii) Trade payables				
	a) total outstanding dues of micro enterprises and small enterprises	-	-	-	-
	b) total outstanding dues of creditors other than micro enterprises	2.18	0.15	0.11	0.11
	iii) Other financial liabilities	0.07	0.01	0.04	-
b.	Other current liabilities	3.91	0.01	0.02	0.02
		19.83	**13.84**	**13.84**	**13.80**
	Total liabilities	**19.83**	**13.84**	**13.84**	**13.80**
	TOTAL EQUITY AND LIABILITIES	**119.83**	**406.33**	**406.79**	**407.12**

II. ***Investment Manager's Summary Standalone Statement of Profit and Loss for the the four-month period ended July 31, 2019 and the Financial Years 2019, 2018 and 2017***

(₹ in millions)

	July 31, 2019	March 31, 2019	March 31, 2018	March 31, 2017
Income				
Revenue from operations	2.53	-	-	-
Other income	1.83	0.01	0.01	0.12
TOTAL INCOME	**4.36**	**0.01**	**0.01**	**0.12**
Expenses				
Contract and site expenses	1.92	-	-	-
Depreciation and amortisation expenses	-	0.01	0.01	0.01
Other expenses	0.18	0.43	0.38	1.28
TOTAL EXPENSES	**2.10**	**0.44**	**0.39**	**1.29**
Profit before tax	**2.26**	**(0.43)**	**(0.37)**	**(1.17)**
Tax expenses				
Current tax	0.66	0.03	-	0.04
TOTAL TAX EXPENSES	**0.66**	**0.03**	**-**	**0.04**
Profit for the year/period	**1.60**	**(0.46)**	**(0.37)**	**(1.21)**
Other comprehensive income				
Item that will not to be reclassified to profit or loss:				
Re-measurement gains/ (losses) on defined benefit plans (net of taxes)	-	-	-	-
Other comprehensive income/(loss) for the year/period (net of taxes)	-	-	-	-
Total comprehensive income for the year/period	**1.60**	**(0.46)**	**(0.37)**	**(1.21)**

III. ***Investment Manager's Summary Standalone Cash Flow Statement for the four-month period ended July 31, 2019 and the Financial Years 2017, 2018 and 2019***

(₹ in millions)

		July 31, 2019	March 31, 2019	March 31, 2018	March 31, 2017
Cash flow from operating activities					
Profit before tax		**1.60**	**(0.43)**	**(0.37)**	**(1.17)**
Adjustments to reconcile profit before tax net cash flows:					
Depreciation and amortisation expenses		-	0.01	0.01	0.01
(Gain) on sale of fixed assets		(1.83)	-	-	-
Dividend income from investments		-	(0.01)	(0.01)	(0.12)
Operating profit before working capital changes		**(0.23)**	**(0.43)**	**(0.37)**	**(1.28)**
Working capital adjustments					
Decrease/(increase) in Trade receivables		(2.78)	-	-	-
Increase/(decrease) in trade payables		2.04	0.03	0.00	(0.12)
Decrease/(increase) in current loans		-	-	-	87.92
Decrease/(increase) in other current assets		-	-	-	125.97
Increase/(decrease) in other financial liabilities		0.05	(0.03)	0.04	-
Increase/(decrease) in other liabilities		3.89	(0.01)	0.01	(0.01)
Cash (used in) / generated from operations		**2.97**	**(0.44)**	**(0.32)**	**212.48**
Taxes paid (net)		0.61	-	-	(12.85)
Net cash flows generated from / (used in) operating activities	**(A)**	**3.58**	**(0.44)**	**(0.32)**	**199.63**
Cash flows from investing activities					
Proceeds from sale of property, plant and equipment		1.89	-	-	-
Loan given to related parties		-	-	(0.83)	-
Loans repaid by related parties		288.71	0.46	0.30	-
Interest received		-	-	-	0.10
Dividend received from subsidiary companies		-	0.01	0.01	0.02
Net cash flows generated from investing activities	**(B)**	**290.60**	**0.47**	**(0.52)**	**0.11**
Cash flow from financing activities					
Repayment of current borrowings		-	-	-	(200.00)
Dividend paid on Equity Shares		(243.94)	-	-	-
Tax on equity dividend paid		(50.15)	-	-	-
Net cash flows (used in) / generated from financing activities	**(C)**	**(294.09)**	**0.00**	**0.00**	**(200.00)**
Net increase/ (decrease) in cash and cash equivalents (A+B+C)		**0.09**	**0.03**	**(0.84)**	**(0.26)**
Cash and cash equivalents at the beginning of the year		0.09	0.06	0.90	1.16
Cash and cash equivalents at the end of the year		**0.18**	**0.09**	**0.06**	**0.90**

(₹ in millions)

	July 31, 2019	March 31, 2019	March 31, 2018	March 31, 2017
Components of cash and cash equivalents				
Balances with scheduled banks:				
- In current accounts	0.01	0.09	0.06	0.90
Cash on hand	0.17	0.00	0.00	0.00
Total Cash and cash equivalents	**0.18**	**0.09**	**0.06**	**0.90**

THE ISSUE

The following table summarizes the details of the Issue:

Issue	Up to 375,254,000 Units aggregating up to ₹37,525.40 million
Details of outstanding Units	
Units outstanding prior to the Issue (pre-Formation Transactions)	Nil
Units outstanding prior to the Issue (upon completion of the Formation Transactions)	[●] Units*
Units outstanding after the Issue	[●] Units*

**To be completed in the Placement Memorandum*

The Issue is a private placement of unlisted Units under Regulation 26B(1) of the InvIT Regulations. The Issue has been authorized by a resolution of the board of directors of the Investment Manager dated February 13, 2020.

The Units will be allotted only in dematerialized form, in accordance with the InvIT Regulations.

In accordance with the InvIT Regulations, no Unitholder shall enjoy preferential voting or any other rights over another Unitholder. Further, there shall not be multiple classes of Units of the Trust, unless permitted by applicable law.

No person connected with the Issue, including any person connected with the distribution of the Issue, shall offer any incentive, whether direct or indirect, in any manner, whether in cash or kind or services or otherwise to any person for making an application for Allotment of the Units.

GENERAL INFORMATION

The Trust has been settled by the Sponsor as an irrevocable trust under the provisions of the Trusts Act in New Delhi, India pursuant to the Indenture of Trust dated August 27, 2019. The Indenture of Trust is registered under the Registration Act. The Trust is registered with the SEBI as an infrastructure investment trust under the InvIT Regulations.

For details of the business of the Trust, see "*Business*" on page 109.

Principal place of business and correspondence address of the Trust:

IRB Infrastructure Trust
Off No-11th Floor/1101
Hiranandani Knowledge Park
Technology Street, Hill Side Avenue
Powai, Mumbai 400 076
Maharashtra, India
Tel: +91 22 6733 6400
E-mail: shilpa.todankar@irb.co.in
SEBI registration number: IN/InvIT/19-20/0012
Date of registration with the SEBI: November 25, 2019

Contact Person and Compliance Officer

Ms. Shilpa C. Todankar has been designated by the Investment Manager as the Compliance Officer with respect to the Trust, and is the relevant contact person with respect to the Trust. Her contact details are as follows:

Shilpa C. Todankar
MMK Toll Road Private Limited
Off No-11th Floor/1101
Hiranandani Knowledge Park
Technology Street, Hill Side Avenue
Powai, Mumbai 400 076
Maharashtra, India
Tel: +91 22 6733 6400
E-mail: shilpa.todankar@irb.co.in

Bidders can contact the Compliance Officer in case of any pre-Issue or post-Issue related problems such as non-credit of Allotted Units in the respective beneficiary account and non-receipt of refunds.

Sponsor/Project Manager

IRB Infrastructure Developers Limited
Off No-11th Floor/1101
Hiranandani Knowledge Park
Technology Street, Hill Side Avenue
Powai, Mumbai 400 076
Maharashtra, India
Tel: +91 22 6640 4220
Email: info@irb.co.in
Contact person: Mr. Mehul Patel

Trustee

IDBI Trusteeship Services Limited
Asian Building, Ground Floor
17, R. Kamani Marg
Ballard Estate, Mumbai 400 001
Maharashtra, India
Tel: +91 22 4080 7016

Email: sgunware@idbitrustee.com / naresh.sachwani@idbitrustee.com
SEBI registration number: IND000000460
Contact person: Mr. Shivaji Gunware / Mr. Naresh Sachwani

Investment Manager

MMK Toll Road Private Limited
Off No-11th Floor/1101
Hiranandani Knowledge Park
Technology Street, Hill Side Avenue
Powai, Mumbai 400 076
Maharashtra, India
Tel: +91 22 6733 6400
Email: shilpa.todankar@irb.co.in
Contact person: Ms. Shilpa Todankar

Advisors to the Sponsor for the Issue

Bajaj Consultants Private Limited
ONE BKC, 1312, C Wing
Bandra-Kurla Complex, Bandra East
Mumbai 400 051
Maharashtra, India

Legal Advisors to the Sponsor and the Investment Manager as to Indian law

S&R Associates
One Indiabulls Centre, 1403, Tower 2 B
841 Senapati Bapat Marg, Lower Parel
Mumbai 400 013
Maharashtra, India

Auditor

Gokhale & Sathe Chartered Accountants
Unit No. 3018/3019, Third Floor
Udyog Mandir No. 1
7-C, Bhagoji Keer Marg, Mahim
Mumbai 400 016
Maharashtra, India
Tel: +91 22 4348 4242
E-mail: office@gokhalesathe.in
Firm registration number: 103264W

Valuer

Mr. Sunit Khandelwal
507 A, 5th floor
Platinum Tower, Sohna Road
Sector 47, Gurugram 122 001
Haryana, India
Tel: +91 124 436 2995
E-mail: sunitk@incwert.com

Registrar and Unit Transfer Agent

Kfin Technologies Private Limited
Karvy Selenium Tower B
Plot no. 31-32, Gachibowli
Financial District, Nanakramguda, Serilingampally

Hyderabad 500 032
Tel: +91 40 3321 5211/ 3321 5210
Email: einward.rti@kfintech.com
SEBI registration number: INR000000221
Contact person: Mr. M. Murali Krishna
Website: www.kfintech.com
Investor Grievance Email: irb.infrastructure@kfintech.com

Credit Rating

No credit rating has been obtained in relation to the Issue or the Trust.

USE OF PROCEEDS

The Issue comprises a fresh issue of up to 375,254,000 Units aggregating up to ₹37,525.40 million.

The Trustee and the Investment Manager shall ensure that the subscription amounts are kept in a separate bank account in the name of the Trust and are only utilized for adjustment against Allotment of Units or refund of money to Eligible Investors.

In accordance with the InvIT Regulations, the Investment Manager (on behalf of the Trust) intends to utilize the Issue Proceeds towards:

1. Providing loans to (i) AETL, IRB WTL, KTL, SYTL and YATL for partial refinancing of the debt availed from senior lenders (banks and financial institutions) and towards funding of the total project cost; and (ii) CGTL, IRB HMTL, KGTL and UTL towards funding of the total project cost;

2. Payment of partial consideration for the novation of subordinated loans and unsecured loans pursuant to certain Debt Novation Agreements; and

3. General purposes.

Issue Proceeds

The details of the Issue Proceeds are set forth in the following table:

(₹ in million)

Particulars		Amount
Gross proceeds from the Fresh Issue		37,525.40
Less:	Issue related expenses	Nil
Issue Proceeds		**37,525.40**

Utilization of Issue Proceeds

The proposed utilisation of the Issue Proceeds is set forth in the table below:

(₹ in million)

S. No.	Particulars	Amount
1.	Providing loans to (i) AETL, IRB WTL, KTL, SYTL and YATL for partial refinancing, of the debt availed from senior lenders (banks and financial institutions) and towards funding of the total project cost; and (ii) CGTL, IRB HMTL, KGTL and UTL towards funding of the total project cost	33,080.30
2.	Payment of partial consideration for the novation of subordinated loans and unsecured loans pursuant to certain Debt Novation Agreements	4,445.10
3.	General purposes	-*
Issue Proceeds		**37,525.40**

**Any amounts which are not utilized for providing debt under the Shareholder Loan Agreements may be utilized towards general purposes, subject to compliance with the InvIT Regulations.*

The fund requirements mentioned above and the proposed deployment are based on the estimates of the Investment Manager and have not been appraised by any bank, financial institution or any other external agency. The Issue Proceeds will be utilized in accordance with terms of the Framework Agreement and applicable law.

Details of Utilization of Issue Proceeds

The details of utilization of the Issue Proceeds are set forth herein below:

1. Providing loans to (i) AETL, IRB WTL, KTL, SYTL and YATL for partial refinancing of the debt availed from senior lenders (banks and financial institutions) and towards funding of the total project cost; and (ii) CGTL, IRB HMTL, KGTL and UTL towards funding of the total project cost

The Investment Manager, on behalf of the Trust, proposes to utilize an estimated amount of ₹33,080.00 million

from the Issue Proceeds to provide unsecured loans to each of the Project SPVs. AETL, IRB WTL, KTL, SYTL and YATL, in turn, intend to utilize the proceeds of such financing towards (a) partial refinancing of certain loans/facilities availed by the Project SPVs from their respective senior lenders; and (b) funding of the total project cost of the projects of the respective Project SPVs. CGTL, IRB HMTL, KGTL and UTL intend to utilize the proceeds of such financing towards funding of the total project of the projects of the respective Project SPVs. Such debt will be provided pursuant to debt documentation with each Project SPV (collectively, the "**Shareholder Loan Agreements**") proposed to be entered into prior to the Bid/Issue Opening Date. A summary of the indicative terms of the Shareholder Loan Agreements is set forth below. The terms are indicative and may change based on commercial and other considerations. For risks in relation to the Shareholder Loan Agreements not having been executed as at the date of this Preliminary Placement Memorandum, see "*Risk Factors – We have not yet executed binding agreements with respect to the Formation Transactions and the debt financing arrangements. Our completion of the Formation Transactions, pursuant to which we will acquire the Project SPVs, and the transactions contemplated by the debt financing documentation are subject to certain conditions precedent and closing conditions that may prevent us from acquiring the Project SPVs or providing debt financing to them.* " on page 14.

Indicative terms of the Shareholder Loan Agreements

Purpose	***AETL, IRB WTL, KTL, SYTL and YATL*** The Project SPV shall utilize the loan amounts solely for (i) the purpose of partial refinancing of certain secured loans provided to the Project SPV by the senior lenders; (ii) funding of total project cost; and (iii) working capital requirements or general corporate purposes of the Project SPV. Any disbursements of the loan amounts out of the proceeds of the Issue shall be utilized solely for the purpose in (i) and (ii) above. ***CGTL, IRB HMTL, KGTL and UTL*** The Project SPV shall utilize the loan amounts solely for (i) funding of total project cost; and (ii) working capital requirements or general corporate purposes of the Project SPV. Any disbursements of the loan amounts out of the proceeds of the Issue shall be utilized solely for the purpose in (i) above.
Term	The Project SPV shall repay the loan at the end of the concession period under the relevant concession agreement as mutually agreed between the parties to the Shareholder Loan Agreement.
Interest	• The Project SPV shall pay accrued interest (subject to withholding of applicable taxes) at the rate of 14% p.a., or or such other rate as may be decided mutually by the parties to the Shareholder Loan Agreement from time to time. Interest will accrue from the date of disbursement of the loan. • Interest will be chargeable from the earlier of the (i) project completion date under the relevant concession agreement and (ii) the date of listing of the Units on one or more Stock Exchanges. • Interest will be payable in arrears on a quarterly basis, on or before the expiry of the calendar month immediately succeeding the completion of each quarter, provided that the Project SPV may, at its discretion, elect to pay interest on a monthly basis, and such interest shall be payable on the first day of the subsequent month for which the interest is being paid.
Repayment	• The Trust may call on the Project SPV to prepay the loan, in full or part, or permit the Project SPv to make payments of the outstanding loan, in full or part, after the date such payment is due, at any time during the term of the Shareholder Loan Agreement until the final settlement date (as defined in the Shareholder Loan Agreement). • The Project SPV may prepay the whole or part of the loan together with interest on that amount accrued up to the date of prepayment, by giving a prior written notice of not less than 30 days to the Trust, specifying the amount to be prepaid and the date of proposed prepayment. • The loan (in one or more tranches) provided under the Shareholder Loan Agreement shall, at all times be subordinate to the debt provided by the senior lenders. Subject to the terms of the financing agreements and the escrow agreements, payments towards the loan amounts (including interest) shall be made out of balance available in the escrow account for utilization in accordance with the instructions of the Project SPV, on the relevant

	interest payment date or repayment date, after meeting all payments due to the senior lenders as of such date.
Security	Unsecured
Events of Default	The occurrence of any of the events or circumstances set out below shall constitute an "**Event of Default**", if not remedied within 180 days (or such extended period as may be provided by the Trust at its sole discretion) from the date of receiving notice of such default from the Trust. The Project SPV shall promptly give written notice to the Trust of any Event of Default and of any other event which, with the giving of notice or lapse of time or otherwise could constitute an Event of Default, and inform the Trust of any action taken or proposed to be taken by the Project SPV in connection therewith. • **Non-Payment:** The Project SPV fails to pay any amount due under the Shareholder Loan Agreement or any other finance documents within a period of 180 days from the relevant due date. If debt due to senior lenders is outstanding, the Trust may declare a non-payment Event of Default only if one or more of the senior lenders declares an Event of Default in relation to amounts due to such senior lenders. • **Breach of Covenants and Undertakings:** The Project SPV breaches any provision of the Shareholder Loan Agreement or any other finance documents. • **Misrepresentation:** Any representation or statement made by the Project SPV in any finance document or any other document delivered by or on behalf of the Project SPV under or in connection with any transaction document is or proves to have been incorrect or misleading in any material respect when made or results in a material adverse effect on the Project SPV or the relevant project. • **Cessation of Business**: The Project SPV ceasing or threatening or likely to cease, to carry on all or substantially all of its business or operations. • **Insolvency:** The Project SPV is unable to, or presumed or deemed to be unable to, or admits its inability to, pay its debts as they fall due, suspends making payments on any of its debts or, by reason of actual or anticipated financial difficulties, commences negotiations with one or more of its creditors with a view to rescheduling any of its indebtedness. • **Insolvency proceedings:** Any corporate action, legal proceedings or other procedure is taken in relation to: (a) the suspension of payments, a moratorium of any indebtedness, winding-up, dissolution, administration, provisional supervision or reorganization (by way of voluntary arrangement, scheme of arrangement or otherwise) of the Project SPV other than a solvent liquidation or reorganization of the Project SPV; (b) a composition or arrangement with any creditor of the Project SPV, or an assignment for the benefit of creditors generally of the Project SPV or a class of such creditors; (c) the appointment of a liquidator, receiver, and manager, administrator, administrative receiver, compulsory manager, provisional supervisor or other similar officer in respect of the Project SPV or any of its assets; or (d) or any analogous procedure is taken in any jurisdiction. • **Unlawfulness and Invalidity:** (a) It is or becomes unlawful for the Project SPV to perform its obligations under the Shareholder Loan Agreement or any other finance documents; or (b) any finance document is not or ceases to be legal, valid, binding or enforceable. • **Nationalization or Expropriation**: Any governmental authority has taken or has threatened to take any action to expropriate, condemn, nationalize or seize the relevant project or whole or part of the assets of the Project SPV or the whole or substantially whole or part the relevant project, resulting in the Project SPV being deprived or threatened to deprive to carry on its business or which will have a material adverse effect on the Project SPV or the relevant project on the operation of the business of the Project SPV. • **Cross Default**: The Project SPV defaults in the payment of any principal, interest, premium or other amount due (whether by scheduled maturity, mandatory prepayment, acceleration or demand) under any loan or credit agreement and/or defaults in the payments due under any existing facility agreement or the occurrence of an event of default under the existing facility agreements of the Project SPV. On and at any time after the occurrence of an Event of Default which has not been waived or

	cured and which is continuing, the Trust may, upon the delivery of seven business days' notice to the Project SPV of the occurrence of an Event of Default: (i) require all or part of the outstanding amounts to be payable immediately; and (ii) exercise such other rights as may be available to the Trust under the Shareholder Loan Agreement, the finance documents or under applicable law. No further disbursement shall be made after the occurrence of an Event of Default.
Dispute Resolution	Any dispute shall be referred to and finally resolved by arbitration administered by the Singapore International Arbitration Centre in accordance with the Arbitration Rules of the Singapore International Arbitration Centre ("**SIAC Rules**") for the time being in force. The arbitration panel will consist of three arbitrators, each of which shall be appointed by SIAC in accordance with the SIAC Rules. The seat and venue of the arbitration proceedings shall be Delhi, India.
Governing Law	Laws of India

The Investment Manager believes that such investment in the Project SPVs and the subsequent refinancing of certain loans/facilities availed by such Project SPVs from their respective senior lenders will help reduce the outstanding indebtedness of the Project SPVs and associated debt servicing costs, and will enable the utilization of the internal accruals of the Project SPVs towards distribution and/or other business requirements. The proportion of debt proposed to be refinanced will depend on various factors and commercial considerations, including, *inter-alia*, the cost of the debt (including applicable interest rates), the levy of any prepayment penalties and the quantum thereof and the provisions of applicable law. Please note IDBI Bank, which has provided facilities to the Project SPVs as set out below, is an affiliate of the Trustee.

A. *Details of outstanding loans proposed to be partially refinanced from the Issue Proceeds*

The table below provides details of certain facilities that have been availed by AETL, IRB WTL, KTL, SYTL and YATL that are outstanding as at September 30, 2019 which are proposed to be partially refinanced out of the Issue Proceeds:

S. No.	Name of lender	Nature of borrowing and details of facility agreement	Purpose	Amount sanctioned (₹ in millions)	Principal amount outstanding as at September 30, 2019 (₹ in millions)	Repayment provision	Prepayment provision
IRB WTL							
1.	IDBI Bank	Rupee term loan under facility agreement dated December 24, 2013	Part-financing of the total cost for the development and implementation of the four-laning of the Goa/Karnataka Border to Kundapur section from km 93.700 to km 283.300 of NH-17 in Karnataka	3,060.00	2,825.50	The loan is required to be repaid in 192 monthly instalments.	• Prepayment premium at the rate of 1% p.a. of the amount prepaid plus applicable taxes until the next interest reset date or final settlement date, whichever is earlier. • If on an interest reset date, the spread is increased by the lenders and/or the reset interest rate is not acceptable to IRB WTL, it may prepay its dues within 90 days of the interest reset intimation date without any prepayment premium with prior notice of 30 days.
2.	Canara Bank			1,500.00	1,384.15		
3.	Bank of Baroda			2,000.00	1,932.66		
4.	Bank of India			2,750.00	2,537.79		
5.	Allahabad Bank			2,000.00	1,844.23		
6.	Union Bank			2,750.00	2,537.79		

S. No.	Name of lender	Nature of borrowing and details of facility agreement	Purpose	Amount sanctioned (₹ in millions)	Principal amount outstanding as at September 30, 2019 (₹ in millions)	Repayment provision	Prepayment provision
SYTL							
1.	IDBI Bank	Rupee term loan under facility agreement dated August 28, 2014	Part-financing of the total cost for the development and implementation of the four-laning of Solapur to Yedeshi section of NH-211 in Maharashtra from km 0.000 to km 100.000 (design length – 98.717 km)	2,500.00	2,471.35	The loan is required to be repaid in 195 monthly instalments.	• Prepayment premium at the rate of 1% p.a. of the amount prepaid plus applicable taxes until the next interest reset date or final settlement date, whichever is earlier. • If on an interest reset date, the spread is increased by the lenders and/or the reset interest rate is not acceptable to SYTL, it may prepay its dues within 90 days of the interest reset intimation date without any prepayment premium with prior notice of 30 days. • SYTL also has the right to prepay up to 25% of the dues outstanding or part thereof, once in any fiscal year during the term, without any prepayment premium, subject to a prior written notice of 60 days and provided such pre-payments are made out of the internal accruals.
2.	IIFCL			2,000.00	1,976.89		
3.	Canara Bank			2,000.00	1,976.89		
4.	Union Bank			1,000.00	988.38		
5.	Indian Overseas Bank			750.00	740.56		
6.	Corporation Bank			850.00	840.14		
YATL							
1.	IDBI Bank	Rupee term loan under the facility agreement dated March 16, 2015	Part-financing of the total cost for the development and implementation of the	5,000.00	4,944.69	The loan is required to be repaid in 177 monthly instalments.	• Prepayment premium at the rate of 1% p.a. of the amount prepaid plus applicable taxes until the next interest reset date or final

S. No.	Name of lender	Nature of borrowing and details of facility agreement	Purpose	Amount sanctioned (₹ in millions)	Principal amount outstanding as at September 30, 2019 (₹ in millions)	Repayment provision	Prepayment provision
2.	IIFCL		four-laning of Yedeshi-Aurangabad section of NH-211 in Maharashtra from km 100.000 to km 290.200	4,000.00	3,955.42		settlement date, whichever is earlier. • If on an interest reset date, the spread is increased by the lenders and/or the reset interest rate is not acceptable to YATL, it may prepay its dues within 90 days of the interest reset intimation date without any prepayment premium with prior notice of 30 days. • YATL also has the right to prepay up to 25% of the dues outstanding or part thereof, once in any fiscal year during the term, without any prepayment premium, subject to a prior written notice of 60 days and provided such pre-payments are made out of the internal accruals.
3.	Union Bank			2,060.00	2,037.07		
4.	Canara Bank			1,500.00	1,483.69		
5.	IDFC Bank			1,500.00	1,483.64		
6.	Andhra Bank			1,000.00	989.49		
7.	Indian Overseas Bank			2,500.00	2,469.64		
KTL							
1.	IDBI Bank	Rupee term loan under the facility agreement dated July 24, 2015	Part-financing of the total cost for the development and implementation of the	2,500.00	2,478.58	The loan is required to be repaid in 189 monthly instalments.	• Prepayment premium at the rate of 1% p.a. of the amount prepaid plus applicable taxes until the next interest reset date or final

S. No.	Name of lender	Nature of borrowing and details of facility agreement	Purpose	Amount sanctioned (₹ in millions)	Principal amount outstanding as at September 30, 2019 (₹ in millions)	Repayment provision	Prepayment provision
2.	IIFCL	("**KTL Facility Agreement**")	for four-laning of Kaithal – Rajasthan border section of NH-152/65 in Haryana from km 33+250 (design km -0.500) to km 241+580 (design km 165.759)	1,213.27	1,211.01		settlement date, whichever is earlier. • If on an interest reset date, the spread is increased by the lenders and/or the reset interest rate is not acceptable to KTL, it may prepay its dues within 90 days of the interest reset intimation date without any prepayment premium with prior notice of 30 days. • KTL also has the right to prepay up to 25% of the dues outstanding or part thereof, once in any fiscal year during the term, without any prepayment premium, subject to a prior written notice of 60 days and provided such pre-payments are made out of the internal accruals.
3.	Indian Overseas Bank			1,146.46	1,143.98		
4.	IDFC Bank			909.96	908.32		
5.	Bank of Baroda			1,213.27	1,211.01		
6.	Bank of Maharashtra			909.96	908.49		
7.	Union Bank			604.64	605.51		
8.	India Infradebt (IDF)	Debenture Trust Deed dated January 2, 2019	Part-prepayment or refinancing of the outstanding amount under the KTL Facility Agreement	5,500.00	5,494.15	The debentures are to be redeemed in 186 structured instalments commencing from October 2019 and shall be mandatorily redeemed no later than March 31, 2035.	KTL can voluntarily redeem the outstanding debentures in full within 90 days of the interest reset dates giving a prior written premature redemption notice to the debenture trustee or the debenture holders of at least 30 days without payment of any redemption premium. KTL can voluntarily redeem

S. No.	Name of lender	Nature of borrowing and details of facility agreement	Purpose	Amount sanctioned (₹ in millions)	Principal amount outstanding as at September 30, 2019 (₹ in millions)	Repayment provision	Prepayment provision
							the outstanding debentures in part or in full at any time, apart from the interest reset dates, after a lock-in period of three years from the date of allotment, by paying a redemption premium of 1% on such outstanding debentures being redeemed. On early redemption the amount so paid shall be reduced on a pro-rata basis.
AETL							
1.	IDBI Bank	Rupee term loan under the facility agreement dated June 21, 2016	Part-financing of the total cost for the development and implementation of the for six-laning of km 199.660 to km 323.525, Agra to Etawah Bypass section of NH-2 in Uttar Pradesh	4,700.00	4,276.78	The loan is required to be repaid in 180 monthly instalments.	• Prepayment premium at the rate of 1% p.a. of the amount prepaid plus applicable taxes until the next interest reset date or final settlement date, whichever is earlier. • If on an interest reset date, the spread is increased by the lenders and/or the reset interest rate is not acceptable to AETL, it may prepay its dues within 90 days of the interest reset intimation date without any prepayment premium with prior notice of 30 days. • AETL also has the right to prepay up to 25% of the dues outstanding or part thereof, once in any fiscal year during the term, without any prepayment premium, subject to a prior written notice of 60 days and provided such pre-payments are made out of the internal accruals.
2.	IIFCL			3,300.00	3,002.92		
3.	Bank of Maharashtra			2,500.00	2,274.86		
4.	Bank of India			2,500.00	2,274.86		
5.	UCO Bank			1,500.00	1,365.05		

S. No.	Name of lender	Nature of borrowing and details of facility agreement	Purpose	Amount sanctioned (₹ in millions)	Principal amount outstanding as at September 30, 2019 (₹ in millions)	Repayment provision	Prepayment provision
6.	Andhra Bank			1,000.00	910.02		
7.	Punjab National Bank			1,000.00	910.01		
Total				**72,717.56**	**68,395.52**		

2. Payment of partial consideration for the novation of subordinated loans and unsecured loans pursuant to certain Debt Novation Agreements

Prior to the Bid/Issue Opening Date, the Sponsor and its Associates will enter into Debt Novation Agreements with the Trust (acting through the Trustee), the Investment Manager and each of the Project SPVs, pursuant to which the subordinated debt and unsecured loans provided by the Sponsor and its Associates to the Project SPVs will stand novated in favor of the Trust (acting through the Trustee). ₹4,445.10 million from the Issue Proceeds is proposed to be utilized by the Investment Manager (on behalf of the Trust) towards payment of a portion of the consideration for the novation of the subordinated debt and unsecured loans in favor of the Trust in relation to each of the Project SPVs, other than KTL and SYTL. For details of the indicative terms of the Debt Novation Agreements, including the remaining consideration for the novation, see *"Background and Structure of the Trust – Terms of the Debt Novation Agreements*" on page 93.

3. General Purposes

Subject to the InvIT Regulations, the Investment Manager will have flexibility in utilizing the unutilized Issue Proceeds under the first object, if any, for general purposes in relation to the operation of the Trust, subject to compliance with the InvIT Regulations. The general purposes for which the Investment Manager (on behalf of the Trust) proposes to utilize the Net Proceeds include, *inter-alia*, meeting expenses incurred in the ordinary course of business, reimbursing the set-up costs incurred by the Sponsor in relation to establishment and registration of the Trust, payment of Trust expenses, meeting any exigencies that the Trust may face, capital expenditure requirements of the Project SPVs, additional investment in the Project SPVs or any other purposes as may be approved by the Investment Manager from time to time, subject to compliance with necessary provisions of the InvIT Regulations and the Framework Agreement, as applicable.

In addition to the above, the Investment Manager may utilise the Issue Proceeds towards other expenditure (in the ordinary course of business of the Trust) considered expedient. In case of a shortfall in the Issue Proceeds or cost overruns, the Investment Manager may explore a range of options including utilizing the Trust's or the Project SPVs' internal accruals or seeking debt financing in accordance with the Business Plan and Annual Budget. In case the actual Issue expenses are different from estimated Issue expenses, the Investment Manager will have flexibility in utilizing the proceeds, subject to the InvIT Regulations and contractual commitments of the Trust and the Investment Manager.

Schedule of Deployment

The Investment Manager proposes to deploy the Issue Proceeds during the Financial Year 2020, depending on various factors, including the actual timing of completion of the Issue and the receipt of the Issue Proceeds. Pursuant to the terms of the Framework Agreement, subject to and in accordance with the terms of the Identified SPV Shareholder Loan Agreements, the Investment Manager (on behalf of the Trust) is required to utilize the Issue Proceeds within 15 days from the completion of the transactions specified in the Framework Agreement and after the proceeds of the Issue have been credited to the account of the Trust.

Interim use of Issue Proceeds

Pending utilization of the Issue Proceeds for the purposes described above, the Investment Manager may invest the funds only in deposits in one or more scheduled commercial banks included in the Second Schedule of RBI Act. Pending utilization of the Issue Proceeds for the objects of the Issue, the Investment Manager shall not utilize the Issue Proceeds for any investment in the equity markets (excluding any investment in the equity shares of the Project SPVs), real estate or related products.

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STATEMENT OF TAX CONSIDERATIONS

Statement of possible tax consideration / benefits available to the Trust and its Unitholders under applicable laws in India

IDBI TRUSTEESHIP SERVICES LIMITED
(Trustee of IRB Infrastructure Trust)
Asian Building, Ground Floor,
17, R. Kamani Marg,
Ballard Estate, Mumbai - 400 001

MMK Toll Road Private Limited
(As the Investment Manager of the IRB Infrastructure Trust)
Off No-11th Floor/1101,
Hiranandani Knowledge Park,
Technology Street, Hill Side Avenue,
Powai, Mumbai 400 076,

Dear Sirs/Ma'am,

Sub: Statement of possible tax considerations / benefits available to the IRB Infrastructure Trust and its Unitholders under the Income Tax Act, 1961.

We refer to the proposed private placement of the units of IRB Infrastructure Trust ("the Trust") and enclose the statement showing the current position of tax considerations / benefits available to the Trust and to its Unitholders as per the provisions of the Income-tax Act, 1961 ('the IT Act') presently in force in India (i.e. applicable for the financial year ending 31 March 2020 relevant to the assessment year 2020-21) for inclusion in the preliminary placement memorandum and placement memorandum.

This statement is provided for general information purposes only and each investor is advised to consult its own tax consultant with respect to specific income tax implications arising out of participation in the private placement.

Unless otherwise specified, sections referred below are sections of the IT Act. The benefits set out below are subject to conditions specified therein read with the Income-tax Rules, 1962 presently in force.

The benefits outlined in the enclosed statement based on the information and particulars provided by the Trust are neither exhaustive nor conclusive.

We do not express any opinion or provide any assurance as to whether:

- the Trust or its Unitholders will continue to obtain these benefits in future;
- the conditions prescribed for availing the benefits have been/would be met with; and
- the revenue authorities/courts will concur with the views expressed herein.

We hereby give our consent to include the enclosed statement regarding special tax regime available to the Trust and to its Unitholders in the preliminary placement memorandum and placement memorandum in connection with the private placement of the units of the Trust which is intended to be filed with Securities and Exchange Board of India and any regulatory authority as may be required under applicable law.

Limitations

No assurance is given that the revenue authorities/courts will concur with the views expressed herein. Our views are based on the existing provisions of law and its interpretation, which are subject to changes from time to time. We do not assume responsibility to update the views consequent to such changes. We shall not be liable to any claims, liabilities or expenses relating to this assignment except to the extent of fees relating to this assignment,

as finally judicially determined to have resulted primarily from bad faith or intentional misconduct. We will not be liable to any other person in respect of this statement.

This statement of possible direct tax benefits enumerated above is as per the Act as amended by the Taxation Laws (Amendment) Ordinance 2019. The statement of possible Direct-tax Benefits sets out the possible tax benefits available to the Trust and its Unitholders under the current tax laws presently in force in India and also considering the amendments proposed by the Finance Bill, 2020. Several of these benefits available are dependent on the Trust or its Unitholders fulfilling the conditions prescribed under the relevant tax laws.

The information provided above sets out the possible tax benefits available to the Unitholders in a summary manner only and is not a complete analysis or listing of all potential tax consequences of the purchase, ownership and disposal of units, under the current tax laws presently in force in India. It is not exhaustive or comprehensive and is not intended to be a substitute for professional advice.

For Gokhale & Sathe
Chartered Accountants
ICAI registration number: 103264W

Chinmaya Deval
Partner
Membership No. 148652

UDIN: 20148652AAAACR1195
Place: Mumbai
Date: 13th February, 2020

ANNEXURE TO STATEMENT OF POSSIBLE TAX CONSIDERATIONS AVAILABLE TO IRB INFRASTRUCTURE TRUST AND ITS UNITHOLDERS UNDER APPLICABLE LAWS IN INDIA

UNDER THE INCOME-TAX ACT, 1961 (hereinafter referred to as 'the Act')

TAX BENEFITS AVAILABLE TO IRB INFRASTRUCTURE TRUST ('TRUST') UNDER THE ACT

IRB Infrastructure Trust is proposed as an unlisted Private Infrastructure Trust in accordance with the Securities and Exchange Board of India (Infrastructure Investment Trusts) Regulations, 2014, as amended ('SEBI Regulations').

The Income of the unlisted Private Infrastructure Trust shall be taxable at the maximum marginal tax rate in the hands of the Trust, if it is settled as an indeterminate Trust. However, if the unlisted Private Infrastructure Trust is settled as a determinate then it will be taxable in the hands of the Investors.

Section 2(13A) of the Act defines Business Trust wherein it has been stated that the units of the Business Trust are required to be listed on a recognised stock exchange. (It may be noted that Finance Bill 2020 proposes to amend section 2(13A) to remove the requirement of listing of units of the trust on stock exchange.)

On listing of the Trust (as required by the existing provisions), the following benefits are available to the Business Trust after fulfilling conditions as per applicable provisions of the Act and the guidelines prescribed by the Securities and Exchange Board of India ('SEBI') (including the Securities and Exchange Board of India (Infrastructure Investment Trusts) Regulations, 2014, as amended) ('SEBI Regulations').

Tax benefit in the hands of the Trust in respect of interest and dividend income:

(a) Interest received or receivable by the Trust from the Project SPVs would be exempt from tax, subject to satisfaction of conditions given in section 10(23FC) of the Act.

(b) Dividend received or receivable by the Trust from the specified domestic companies shall be exempt from tax under section 10(23FC) of the Act. (Consequent to proposed abolishment of Dividend Distribution Tax (DDT) vide Finance Bill 2020, a corresponding amendment has been proposed in section 10(23FC)(b) to provide that dividend received/receivable from a special purpose vehicle shall be exempt.)

Accordingly, sec. 194A(3)(xi) exempts SPV from the provisions of tax deduction at source in respect of interest paid/payable to the business trust.

In view of the provisions of section 14A of the Act, any expenditure incurred in relation to earning the above exempt income shall not be tax deductible. In case the Tax Authorities are not satisfied by the disallowance considered by the Trust, the quantum of disallowance shall be computed in accordance with the provisions of section 14A read with Rule 8D of the Income-tax Rules, 1961 ('the Rules').

Further, as per section 115-O(7) of the Act, no tax on distributed profits shall be chargeable in respect of any amount declared, distributed or paid by the specified domestic company by way of dividends (whether interim or otherwise) to a business trust out of its current income on or after the specified date. (It may be noted that vide Finance Bill 2020, it is proposed to remove DDT for all companies)

The above benefit shall not apply in respect of any amount declared, distributed or paid, at any time, by the specified domestic company by way of dividends (whether interim or otherwise) out of its accumulated profits and current profits up to the specified date.

"Specified domestic company" means a domestic company in which a business trust has become the holder of whole of the nominal value of equity share capital of the company (excluding the equity share capital required to be held mandatorily by any other person in accordance with any law for the time being in force or any directions of Government or any regulatory authority, or equity share capital held by any Government or Government body).

"Specified date" means the date of acquisition by the business trust of such holding.

Benefits in the hands of the Trust in respect of dividend other than the dividend distributed by specified domestic company:

Section 10(34) of the Act: Income by way of dividend referred to under section 115-O of the Act

Dividend received by the Trust referred to under section 115-O from domestic companies on investments is exempt from tax under section 10(34) of the Act. (As per Finance Bill 2020, section 10(34) is proposed to be made inapplicable to any income by way of dividend received on or after 01/04/2020)

However, as per the amendment made by the Finance Act, 2017, such dividend income of the Trust shall be liable to tax @ 10% (plus applicable surcharge and cess) under the provisions of section 115BBDA of the Act, where such dividend income exceeds ₹ 10 lakhs, declared, distributed or paid by a domestic company or companies.

Section 94(7) of the Act provides that losses arising from the sale/ transfer of securities or units purchased within a period of three months prior to the record date and sold/ transferred within three (for shares)/nine (for units) months after such date, will be disallowed to the extent dividend income on such shares is claimed as exempt from tax.

Further, as per the provisions of section 94(8) of the Act, if an investor purchases units within three months prior to the record date for entitlement of bonus units and is allotted bonus units without any payment on the basis of the original holding on the record date and such person sells / redeems the original units within nine months of the record date, then the loss arising from sale/ redemption of the original units will be ignored for the purpose of computing income chargeable to tax and the amount of such loss ignored shall be regarded as the cost of acquisition of the bonus units.

Section 10(35) of the Act – Income from specified units

The following incomes are exempt under section 10(35) of the Act, in the hands of the Trust (except income arising on transfer of units mentioned therein):

I. Income received in respect of units of a mutual fund specified under section 10(23D) of the Act;
II. Income received in respect of units from the Administrator of the specified undertaking as defined under the provisions of the Unit Trust of India (Transfer of Undertaking and Repeal) Act, 2002;
III. Income received in respect of units from the company referred to in section 2(h) of the Unit Trust of India (Transfer of Undertaking and Repeal) Act, 2002.

(As per Finance Bill 2020, section 10(35) is proposed to be made inapplicable to any income in respect of units, received on or after 01/04/2020)

In view of the provisions of section 14A of the Act, any expenditure incurred in relation to earning such above exempt income shall not be tax deductible. In case the Tax Authorities are not satisfied by the disallowance considered by the Trust, the quantum of disallowance shall be computed in accordance with the provisions of section 14A read with Rule 8D of the Rules.

Section 94(7) of the Act provides that losses arising from the sale/ transfer of securities or units purchased within a period of three months prior to the record date and sold/ transferred within three (for shares)/nine (for units) months after such date, will be disallowed to the extent dividend income on such shares is claimed as exempt from tax.

Further, as per the provisions of section 94(8) of the Act, if an investor purchases units within three months prior to the record date for entitlement of bonus units and is allotted bonus units without any payment on the basis of the original holding on the record date and such person sells / redeems the original units within nine months of the record date, then the loss arising from sale/ redemption of the original units will be ignored for the purpose of computing income chargeable to tax and the amount of such loss ignored shall be regarded as the cost of acquisition of the bonus units.

Section 10(34A) of the Act - Income from buy back of shares

The provisions of section 115QA mandate domestic companies to pay an additional tax at the rate of 20% (plus applicable surcharge and cess) of the distributed income on buy-back of shares. Distributed income means the consideration paid by the company on buy-back of shares as reduced by the amount which was received by the company for issue of such shares, determined as per the rules prescribed.

Further, income arising from buy-back shall not be taxable as per section 10(34A) of the Act in the hands of the Trust.

In view of the provisions of section 14A of the Act, any expenditure incurred in relation to earning such exempt income shall not be tax deductible. In case the Tax Authorities are not satisfied by the disallowance considered by the Trust, the quantum of disallowance shall be computed in accordance with the provisions of section 14A read with Rule 8D of the Rules.

Section 115UA(2) read with section 111A, section 112 and section 112A of the Act – Taxability of business income, capital gains and income from other sources in the hands of the Trust

In terms of section 115UA(2) of the Act, the total income of the Trust shall be chargeable to tax at the maximum marginal rates in force except for the income chargeable to tax on transfer of Short Term Capital assets under section 111A and Long Terms Capital assets under section 112 of the Act and income referred to in section 10(23FC) of the Act.

If the period of holding of a security (other than a unit) listed on a recognized stock exchange in India or a unit of the Unit Trust of India or a unit of an equity oriented fund or a zero coupon bond is more than 12 months, it will be considered a long term capital asset as per section 2(29A) of the Act. With respect to shares of a company not being listed on a recognized stock exchange or immovable property, being land, building, or both, the determinative period of holding shall be more than 24 months for it to be regarded as long term capital asset. With respect to other assets including a unit of a mutual fund other than equity oriented mutual fund or unit of a business trust, the determinative period of holding is more than 36 months for it to be regarded as long term capital asset.

As per the provisions of section 111A of the Act, any income arising from transfer of short term capital asset being an equity share in a company or a unit of an equity oriented fund or a unit of a eligible business trust, transacted through a recognized stock exchange and subject to STT, will be taxable at a concessional rate of 15% (plus applicable surcharge and cess if any).

As per the provisions of section 112(1)(d) of the Act, gains arising on the transfer of long term capital assets shall be chargeable to tax in the hands of the Trust at the rate of 20% (plus applicable surcharge and cess). However, as per the proviso to section 112 of the Act, the tax on long term capital gains on transfer of listed securities (other than units) or Zero Coupon Bonds shall be at the rate of 10% (plus applicable surcharge and cess) without indexation benefit.

Further, as per section 112A, with effect from FY 2018-19, gains exceeding one lakh rupees arising on the transfer of long term capital asset, being an equity share in a company or a unit of an equity oriented fund or a unit of a business trust, transacted through a recognized stock exchange and subject to STT, shall be chargeable to tax in the hands of the Trust at the rate of 10% (plus applicable surcharge and cess) without indexation benefit.

Section 48 of the Act prescribes the mode of computation of Capital Gains and provides for deduction of cost of acquisition/ improvement and expenses incurred in connection with the transfer of a capital asset, from the sale consideration to arrive at the amount of Capital Gains. However, in respect of long term capital gains, section 48 provides for substitution of cost of acquisition/ improvement with indexed cost of acquisition/ improvement, which adjusts the cost of acquisition/ improvement by a cost inflation index as prescribed from time to time. Such indexation benefit would not be available on bonds, debentures, listed equity shares in a company or units of equity oriented funds or units of a business trust referred to in section 112A of the Act.

With a view to grandfather gains notionally realized by investors up to 31st January 2018, for securities acquired till such date, it has been provided that taxable gains will be determined considering the cost which will be higher of:

- Actual cost of acquisition; or
- Lower of sale price and Fair Market Value (as specifically defined under the Act) (Sec. 55(2)(ac))

In accordance with, and subject to the conditions, including the limit of investment of ₹ 50 lakhs, capital gains arising on transfer of a long term capital asset, being land or building or both, shall be exempt from capital gains under section 54EC if the gains are invested within 6 months from the date of transfer in purchase of specified bonds (redeemable after five years and issued on or after 1 April 2018) issued by National Highways Authority of India (NHAI) or Rural Electrification Corporation Ltd (RECL) or any other bond notified by the Central Government, if permitted to be invested by an Investment trust as per the extant governing regulations. In case the whole of the gains are not so invested, the exemption shall be allowed on a pro rata basis.

In accordance with, and subject to the conditions, including the limit of investment of ₹50 lakhs, capital gains arising on transfer of a long term capital asset shall be exempt from capital gains tax under section 54EE if the gains are invested within 6 months from the date of transfer in the purchase of long-term specified assets if permitted to be invested by an Investment trust as per the extant governing regulations. In case the whole of the gains are not so invested, the exemption shall be allowed on a pro rata basis.

As per section 70 read with section 74 of the Act, short term capital loss arising during a year is allowed to be set-off against short term capital gains as well as long term capital gains. Balance loss, if any, shall be carried forward and set-off against any capital gains arising during subsequent eight assessment years. Also, as per section 70 of the Act, long term capital loss arising during a year is allowed to be set-off only against long term capital gains. Balance loss, if any, shall be carried forward and set-off against long term capital gains arising during subsequent eight assessment years.

TAX BENEFITS AVAILABLE TO UNITHOLDERS OF THE TRUST

Special Benefits available to the Unitholders of the Trust:

Following tax benefit is specifically available to the unitholders of the Trust subject to the fulfilment of the conditions specified in the Act and SEBI Regulations:

Section 10(23FD) of the Act - Tax exemption in respect of income distributed by the Trust:

As per the provisions of section 115UA(1) of the Act, the income distributed by the Trust shall be deemed to be of the same nature and in the same proportion in the hands of the Unitholder as such income was received by or accrued to the Trust.

As per the provisions of section 10(23FD), any income referred to in section 115UA(1) of the Act and distributed by the Trust (except for that proportion of interest income referred in section 10(23FC) of the Act and taxable under section 115UA(3) of the Act) shall not be included in the total income of the unit- holders.

(Consequent to proposed amendment in section 10(23FC), corresponding adjustment has been proposed in section 10(23FD) to provide that such proportion of income which is of the same nature as the income referred to in section 10(23FC) shall not be exempt in hands of the unit-holders.)

The Trust shall not be subject to levy of dividend distribution tax on the amount of income distributed to its unitholders.

Section 115BBDA provides that where the total income of a specified assessee (as defined under section 115BBDA), resident in India, includes any income exceeding ₹ 10 lakhs by way of dividend declared, distributed or paid by a domestic company or companies, such assessee shall be liable to additional tax @ 10% (plus applicable surcharge and cess if any) on such dividend. Currently, the law is not clear and there is ambiguity on whether the resident investors receiving income representing dividend from the Trust is likely to be considered as 'dividend declared, distributed or paid by a domestic company' referred to in section 115BBDA. The ambiguity exists even though the Act confers a pass through status in favour of investor.

In view of the provisions of section 14A of the Act, any expenditure incurred in relation to earning the above exempt income shall not be tax deductible. In case the Tax Authorities are not satisfied by the disallowance considered by the Trust, the quantum of disallowance shall be computed in accordance with the provisions of section 14A read with Rule 8D of the Rules.
According to sec. 47(xvii), any transfer of a capital asset, being share of a special purpose vehicle to a business trust in exchange of units allotted by that trust to the transferor shall not be regarded as transfer and accordingly not be liable to capital gains tax.

According to sec. 49(2AC) the cost of units acquired in lieu of shares in SPV shall be deemed to be cost of acquisition of shares in SPV.

As per clause (hc) of explanation 1 of sec. 2(42A), for ascertaining the period of holding of such units, the period of holding of shares in SPV shall also be included.

Notional gain or loss arising on transfer of share of special purpose vehicle to business trust in exchange of units allotted by that trust as referred u/s 47(xvii) or notional gain or loss arising upon change in carrying amount of the units are to be excluded in calculation of book profits for the purposes of MAT u/s 115JB. (clause (iie)/(fc) to explanation 1 to section 115JB). Further, actual gain or loss on transfer of units as referred to in section 47 (xvii) are considered for the purpose of MAT u/s 115JB (clause (iif)/(k) to explanation 1 to section 115JB).

General Benefits available to all Unitholders of the Trust:

For resident Unitholder:

Long-term capital gains:
Income arising on transfer of units of the Trust through a recognized stock exchange, on which STT is paid, shall be chargeable to tax in the hands of the Unitholders at a rate of 10% without indexation benefit (plus applicable surcharge and cess) under section 112A of the Act if the said units are long-term capital assets. The determinative period of holding for such units to qualify as long term capital asset is more than 36 months. Income arising on transfer of units of the Trust that are long term capital assets, which is not through a recognized stock exchange and not subject to STT, shall be chargeable to tax at 20%, with indexation benefit (plus applicable surcharge and cess) under section 112 of the Act.

Short-term capital gains:
Short-term capital gains arising on transfer of the units of the Trust will be chargeable to tax at the rate of 15% (plus applicable surcharge and cess) as per the provisions of section 111A of the Act provided such transaction is subject to STT and through a recognized stock exchange. In case of a Unit-holder being an individual or HUF, where the total taxable income as reduced by short-term capital gains is below the basic exemption limit, the short-term capital gains will be reduced to the extent of the shortfall and only the balance short-term capital gains will be subjected to such tax in accordance with the proviso to sub-section (1) of section 111A of the Act.

Set-off of losses:
Short Term Capital Loss computed for the given year is allowed to be set-off against Short Term/ Long Term Capital Gains computed for the said year under section 70 of the Act. Balance loss, if any, shall be carried forward and set-off against any capital gains arising during subsequent eight assessment years. Also, as per section 70 of the Act, long term capital loss arising during a year is allowed to be set-off only against long term capital gains. Balance loss, if any, shall be carried forward and set-off against long term capital gains arising during subsequent eight assessment years.

Deduction of Securities Transaction Tax:
Where the gains arising on the transfer of the units of the Trust are included in the business income of an assessee assessable under the head “Profits and Gains from Business or Profession” and on which securities transaction tax has been charged, such securities transaction tax shall be a deductible expense from business income as per the provisions of section 36(1)(xv) of the Act. The characterization of gains/ losses, arising from sale of shares, as capital gains or business income would depend on the nature of holding in the hands of the unitholder and various other factors.

Section 194LBA – Tax Deduction on Certain income from units of the Trust:

Where any distributed income referred in section 115UA, is in the nature referred to in sub clause (a) of clause (23FC) of section 10 i.e. interest payable by the Trust to its unit holder being a resident, shall at the time of credit of such payment deduct tax at the rate of 10%. No tax is required to be deducted on dividend income distributed by the Trust to the Unitholders. (Consequent to proposed removal of DDT, a corresponding amendment has been proposed in section 194LBA to provide that the section will apply to income referred to in section 115UA which is in the nature referred to in amended section 10(23FC).

For non-resident Unit-Holder

Long-term capital gains:
Income arising on transfer of units of the Trust, shall be chargeable to tax in the hands of the Unitholders at a rate of 10% without indexation benefit (plus applicable surcharge and cess) under section 112A of the Act if the said units are long-term capital assets and transfer is through a recognized stock exchange and subject to STT. These assets turn long term if they are held for more than 36 months. Income arising on transfer of units of the Trust that are long term capital assets, which is not through a recognized stock exchange and not subject to STT, shall be chargeable to tax at 20%, with indexation benefit (plus applicable surcharge and cess) under section 112 of the Act.

Short-term capital gains:
Short-term capital gains arising on transfer of the units of the Trust will be chargeable to tax at the rate of 15% (plus applicable surcharge and cess) as per the provisions of section 111A of the Act if such transaction is chargeable to STT.

Set-off of losses:
Short Term Capital Loss computed for the given year is allowed to be set-off against Short Term/ Long Term Capital Gains computed for the said year under section 70 of the Act. Balance loss, if any, shall be carried forward and set-off against any capital gains arising during subsequent eight assessment years. Also, as per section 70 of the Act, long term capital loss arising during a year is allowed to be set-off only against long term capital gains. Balance loss, if any, shall be carried forward and set-off against long term capital gains arising during subsequent eight assessment years.

Deduction of Securities Transaction Tax:
Where the gains arising on the transfer of shares of the company are included in the business income of an assessee assessable under the head "Profits and Gains from Business or Profession" and on which securities transaction tax has been charged, such securities transaction tax shall be a deductible expense from business income as per the provisions of section 36(1)(xv) of the Act.

Benefits under Double Taxation Avoidance Agreements:
Under the provisions of section 90(2) of the Act, a non-resident will be governed by the provisions of the Double Tax Avoidance Agreement (DTAA) between India and the country of tax residence of the non-resident and the provisions of the Act apply to the extent they are more beneficial to the assessee.

As per explanation 4 to section 115JB(2), the provisions of section 115JB shall not be applicable to a foreign company if the foreign company is a resident of a country having DTAA with India and such foreign company does not have a permanent establishment within the definition of the term in the relevant DTAA, or the foreign company is a resident of a country which does not have a DTAA with India and such foreign company is not required to seek registration under section 592 of the Companies Act 1956 or section 380 of the Companies Act 2013.

Section 194LBA – Tax Deduction on certain income from units of the Trust:

Where any distributed income referred in section 115UA, is in the nature referred to in sub clause (a) of clause (23FC) of section 10 i.e. interest payable by the Trust to its unit holder being a non-resident unit holder, then the same shall be subjected to the tax deduction at the rate of 5% (plus applicable surcharge and cess). Additionally, in view of section 90(2) of the Act, a non-resident will be governed by the provisions of the DTAA between India and the country of tax residence of the non-resident and the provisions of the Act apply to the extent they are more beneficial to the assessee. (Consequent to proposed removal of DDT, a corresponding amendment has been proposed in section 194LBA to provide that the section will apply to income referred to in section 115UA

which is in the nature referred to in amended section 10(23FC) (i.e. including income in the nature of dividend received/receivable from SPV), then the dividend payable by the Trust to its unit holder being a non-resident unit holder, shall be subjected to the tax deduction at source at the rate of 10% (plus applicable surcharge and cess).

For unit-holders who are Foreign Portfolio Investors ('FPIs')/ Foreign Institutional Investors ('FIIs'):

As per section 2(14) of the Act, transfer of any shares/ securities being invested in accordance with the regulations made under the Securities and Exchange Board of India Act, 1992 shall be deemed to be treated as Capital Gains.

As per section 196D, no tax is to be deducted from any income, by way of capital gains arising from the transfer of units to Foreign Institutional Investor. In respect of non-residents, the tax rates and consequent taxation mentioned above will be further subject to any benefits available under the Tax Treaty, if any, between India and the country in which the FIIis a tax resident. As per the provisions of section 90(2) of the Act, the provisions of the Act would prevail over the provisions of the Tax Treaty to the extent they are more beneficial to the FII.

Pursuant to Central Board of Direct Tax press release dated 24 September 2015, the Government has clarified the inapplicability of Minimum Alternate Tax provisions to FIIs/FPIs.

For unit-holders who are Mutual Funds:

Under section 10(23D) of the Act, any income earned by a Mutual Fund registered under the Securities and Exchange Board of India Act, 1992, or a Mutual Fund set up by a public sector bank or a public financial institution, or a Mutual Fund authorized by the Reserve Bank of India would be exempt from income-tax, subject to such conditions as the Central Government may by notification in the Official Gazette specify in this behalf.

The Trust is not required to withhold tax on interest payment to Mutual Fund set up under section 10(23D) of the Act.

The above statement of possible direct tax benefits sets out the provisions of law in a summary manner only and is not a complete analysis or listing of all potential tax consequences of the purchase, ownership and disposal of Shares and units.

The stated benefits will be available only to the sole/ first named holder in case the units are held by joint holders.

In respect of non-residents, the tax rates and the consequent taxation mentioned above shall be further subject to any benefits available under the applicable DTAA, if any, between India and the country in which the non-resident is a tax resident.

SECTION IV – ABOUT THE TRUST

BACKGROUND AND STRUCTURE OF THE TRUST

Background of the Trust

The Trust has been settled by the Sponsor as an irrevocable trust under the provisions of the Trusts Act in New Delhi, India pursuant to the Indenture of Trust dated August 27, 2019. The Indenture of Trust is registered under the Registration Act. The Trust is registered with the SEBI as an infrastructure investment trust under the InvIT Regulations.

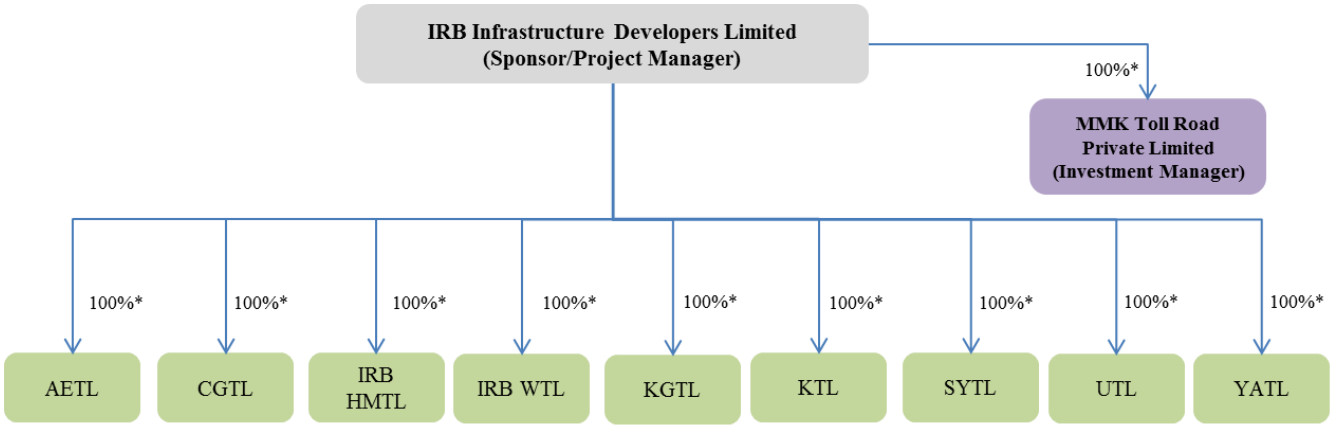
The object and purpose of the Trust, as described in the Indenture of Trust, is to carry on the activity of an infrastructure investment trust under the InvIT Regulations. Investment by the Trust shall only be in holding companies, SPVs, infrastructure projects, securities in India or other permitted investments in accordance with the InvIT Regulations, the investment strategy and the Trust Documents. The principal investment objective of the Trust is to own, operate and invest in infrastructure projects in India, directly or through holding companies or SPVs and make other investments and undertake such activities in such jurisdictions as may be permissible under the InvIT Regulations, other applicable law and the Trust Documents. For further details in relation to the business and investment strategy of the Trust, see "*Business*" on page 109.

The Trust is required to make distributions to the Unitholders in accordance with the InvIT Regulations and the Distribution Policy. For details in relation to the distribution policy of the Trust, see "*Distributions*" on page 231.

Parties to the Trust

In accordance with the InvIT Regulations, the Parties to the Trust are (i) the Sponsor; (ii) the Investment Manager; (iii) the Trustee; and (iv) the Project Manager. For details, see "*The Sponsor and Project Manager*", "*The Investment Manager*" and "*The Trustee*" on pages 240, 243 and 249, respectively.

The following diagram illustrates the shareholding structure of the Project SPVs as on the date of this Preliminary Placement Memorandum before the completion of the Formation Transactions:



**Together with nominee shareholders*

Details of the Project SPVs

1. AETL

Corporate Information

AETL was incorporated on July 21, 2015 as a private limited company under the Companies Act, 1956, having CIN U45209MH2015PTC266741. AETL was converted into a public limited company under the Companies Act, and a fresh certificate of incorporation dated November 13, 2019 was issued, having CIN

U45209MH2015PLC266741. Its registered office is situated at Off. No-11th Floor/1101 Hiranandani Knowledge Park, Technology Street, Hill Side Avenue, Powai, Mumbai 400 076, Maharashtra, India.

Main Object

The main object, as contained in the memorandum of association of AETL, is as follows:

"*To carry on the business of infrastructure development in respect of the work of Design, Build, Finance and Operation of Six Laning of Agra to Etawah Bypass section of NH-2 from km 199.660 to km 323.525 in the State of Uttar Pradesh under NHDP Phase V on Design, Build, Finance, Operate and Transfer (DBFOT) Toll basis, including collection and retention of the toll or fee and to carry out the ancillary activities, in relation of the foregoing, as specified in the Concession Agreement to be executed with National Highways Authority of India (NHAI).*"

Capital Structure

The capital structure of AETL is as follows:

Particulars	No. of equity shares of face value of ₹10 each
Authorized capital	436,500,000
Issued, subscribed and paid-up capital	436,500,000

Shareholding Pattern

The shareholding pattern of AETL is as follows:

S. No.	Name of the shareholder	No. of equity shares of face value of ₹10 each	Percentage of the issued, paid-up and subscribed capital (%)
1.	IRB Infrastructure Developers Limited	436,499,994	100
2.	Mukeshlal Gupta*	1	Negligible
3.	Dhananjay K. Joshi*	1	Negligible
4.	Arati Taskar*	1	Negligible
5.	Ajay P. Deshmukh*	1	Negligible
6.	Naresh Kumar Taneja*	1	Negligible
7.	Anushree Joshi*	1	Negligible
Total		**436,500,000**	**100**

** As a nominee of IRB Infrastructure Developers Limited*

2. CGTL

Corporate Information

CGTL was incorporated on October 18, 2016 as a private limited company under the Companies Act, having CIN U45200MH2016PTC286895. CGTL was converted into a public limited company under the Companies Act, and a fresh certificate of incorporation dated November 13, 2019 was issued, having CIN U45200MH2016PLC286895. Its registered office is situated at Off. No-11th Floor/1101 Hiranandani Knowledge Park, Technology Street, Hill Side Avenue, Powai, Mumbai 400 076, Maharashtra, India.

Main Object

The main object, as contained in the memorandum of association of CGTL, is as follows:

"*To carry on the business of infrastructure development in respect of the work of Design, Build, Finance, and Operation of Six Laning of Kishangarh Udaipur Ahmedabad Section from km 90.000 (near Gulabpura) to km 214.870 (end of Chittorgarh Bypass) of NH-79 in the State of Rajasthan Package-2 under NHDP Phase – V on BOT(Toll) mode, including collection and retention of the toll or fee and to carry out the ancillary activities, in*

relation of the foregoing, as specified in the Concession Agreement to be executed with National Highways Authority of India (NHAI)."

Capital Structure

The capital structure of CGTL is as follows:

Particulars	No. of equity shares of face value of ₹10 each
Authorized capital	203,500,000
Issued, subscribed and paid-up capital	203,500,000

Shareholding Pattern

The shareholding pattern of CGTL is as follows:

S. No.	Name of the shareholder	No. of equity shares of face value of ₹10 each	Percentage of the issued, paid-up and subscribed capital (%)
1.	IRB Infrastructure Developers Limited	203,499,994	100
2.	Mukeshlal Gupta*	1	Negligible
3.	Dhananjay K. Joshi*	1	Negligible
4.	Arati Taskar*	1	Negligible
5.	Ajay P. Deshmukh*	1	Negligible
6.	Naresh Kumar Taneja*	1	Negligible
7.	Vinod Kumar Menon*	1	Negligible
Total		**203,500,000**	**100**

** As a nominee of IRB Infrastructure Developers Limited*

3. IRB HMTL

Corporate Information

IRB HMTL was incorporated on April 18, 2018 as a private limited company under the Companies Act, having CIN U45400MH2018PTC308187. IRB HMTL was converted into a public limited company under the Companies Act, and a fresh certificate of incorporation dated November 13, 2019 was issued, having CIN U45400MH2018PLC308187. Its registered office is situated at Off. No-11th Floor/1101 Hiranandani Knowledge Park, Technology Street, Hill Side Avenue, Powai, Mumbai 400 076, Maharashtra, India.

Main Object

The main object, as contained in the memorandum of association of IRB HMTL, is as follows:

"*To carry on the business of infrastructure development in respect of Six Laning of Hapur bypass to Moradabad Section including Hapur bypass from Km 50.000 (Design Chainage 50.000) to Km 148.277 (Design Chainage 149.867) of NH-24 (New NH-9) in the State of Uttar Pradesh under NHDP Phase V (Bharatmala Pariyojna) on DBFOT (Toll) mode, including collection and retention of the toll of fee and to carry out the ancillary activities, in relation of the foregoing, as specified in the Concession Agreement to be executed with National Highways Authority of India (NHAI).*"

Capital Structure

The capital structure of IRB HMTL is as follows:

Particulars	No. of equity shares of face value of ₹10 each
Authorized capital	190,000,000
Issued, subscribed and paid-up capital	189,500,000

Shareholding Pattern

The shareholding pattern of IRB HMTL is as follows:

S. No.	Name of the shareholder	No. of equity shares of face value of ₹10 each	Percentage of the issued, paid-up and subscribed capital (%)
1.	IRB Infrastructure Developers Limited	189,499,994	100
2.	Mukeshlal Gupta*	1	Negligible
3.	Dhananjay K. Joshi*	1	Negligible
4.	Arati Taskar*	1	Negligible
5.	Ajay P. Deshmukh*	1	Negligible
6.	Naresh Kumar Taneja*	1	Negligible
7.	Vinod Kumar Menon*	1	Negligible
Total		**189,500,000**	**100**

** As a nominee of IRB Infrastructure Developers Limited*

4. IRB WTL

Corporate Information

IRB WTL was incorporated on August 22, 2012 as a private limited company under the Companies Act, 1956, having CIN U45400MH2012PTC234786. IRB WTL was converted into a public limited company under the Companies Act, and a fresh certificate of incorporation dated November 13, 2019 was issued, having CIN U45400MH2012PLC234786. Its registered office is situated at Off. No-11th Floor/1101 Hiranandani Knowledge Park, Technology Street, Hill Side Avenue, Powai, Mumbai 400 076, Maharashtra, India.

Main Object

The main object, as contained in the memorandum of association of IRB WTL, is as follows:

"*To carry on the business of infrastructure development in respect of the work of Design, Build, Finance, and Operation of Four Laning of Goa/Karnataka border to Kundapur section of NH-17 from existing km 93.700 to km 283.300 in the State of Karnataka under NHDP Phase IV on Design, Build, Finance, Operate and Transfer (DBFOT) Toll basis, inclduing collection and retention of toll or fee and to carry out the ancillary activities, in relation of the foregoing, as specified in the Concession Agreement to be executed with National Highways Authority of India (NHAI).*"

Capital Structure

The capital structure of IRB WTL is as follows:

Particulars	No. of equity shares of face value of ₹10 each
Authorized capital	174,194,303
Issued, subscribed and paid-up capital	174,194,303

Shareholding Pattern

The shareholding pattern of IRB WTL is as follows:

S No.	Name of the shareholder	No. of equity shares of face value of ₹10 each	Percentage of the issued, paid-up and subscribed capital (%)
1.	IRB Infrastructure Developers Limited	174,194,297	100
2.	Mukeshlal Gupta*	1	Negligible
3.	Dhananjay K. Joshi*	1	Negligible
4.	Ajay P. Deshmukh *	1	Negligible
5.	Naresh Kumar Taneja *	1	Negligible

S No.	Name of the shareholder	No. of equity shares of face value of ₹10 each	Percentage of the issued, paid-up and subscribed capital (%)
6.	Arati Taskar*	1	Negligible
7.	Anushree Joshi*	1	Negligible
Total		**174,194,303**	**100**

** As a nominee of IRB Infrastructure Developers Limited*

5. KGTL

Corporate Information

KGTL was incorporated on January 12, 2017 as a private limited company under the Companies Act, having CIN U45203MH2017PTC289501. KGTL was converted into a public limited company under the Companies Act, and a fresh certificate of incorporation dated November 14, 2019 was issued, having CIN U45203MH2017PLC289501. Its registered office is situated at Off. No-11th Floor/1101 Hiranandani Knowledge Park, Technology Street, Hill Side Avenue, Powai, Mumbai 400 076, Maharashtra, India.

Main Object

The main object, as contained in the memorandum of association of KGTL, is as follows:

"*To carry on the business of infrastructure development in respect of the work of Design, Build, Finance and Operation of Six Laning of Kishangarh to Gulabpura Section of NH 79A and NH 79 in the state of Rajasthan (length 90.000 km) under NHDP Phase V package – I on DBFOT (Toll) mode, including collection and retention of the toll or fee and to carry out the ancillary activities, in relation of the foregoing, as specified in the Concession Agreement to be executed with National Highways Authority of India (NHAI).*"

Capital Structure

The capital structure of KGTL is as follows:

Particulars	No. of equity shares of face value of ₹10 each
Authorized capital	155,500,000
Issued, subscribed and paid-up capital	155,500,000

Shareholding Pattern

The shareholding pattern of KGTL is as follows:

S. No.	Name of the shareholder	No. of equity shares of face value of ₹10 each	Percentage of the issued, paid-up and subscribed capital (%)
1.	IRB Infrastructure Developers Limited	155,499,994	100
2.	Mukeshlal Gupta*	1	Negligible
3.	Dhananjay K. Joshi*	1	Negligible
4.	Arati Taskar *	1	Negligible
5.	Ajay P. Deshmukh *	1	Negligible
6.	Naresh Kumar Taneja *	1	Negligible
7.	Vinod Kumar Menon*	1	Negligible
Total		155,500,000	**100**

** As a nominee of IRB Infrastructure Developers Limited*

6. KTL

Corporate Information

KTL was incorporated on June 11, 2014 as a private limited company under the Companies Act, having CIN U45201MH2014PTC255454. KTL was converted into a public limited company under the Companies Act, and

a fresh certificate of incorporation dated November 14, 2019 was issued, having CIN U45201MH2014PLC255454. Its registered office is situated at Off. No-11th Floor/1101 Hiranandani Knowledge Park, Technology Street, Hill Side Avenue, Powai, Mumbai 400 076, Maharashtra, India.

Main Object

The main object, as contained in the memorandum of association of KTL, is as follows:

"*To carry on the business of infrastructure development in respect of the work of Design, Build, Finance and Operation of Four Laning of Kaithal to Rajasthan Border section of NH-152/65 from km 33+250 (Design Km – 0.500) to km 241+580 (Design Km 165.759) in the State of Haryana under NHDP Phase IV on Design, Build, Finance, Operate and Transfer (DBFOT) Toll basis, including collection and retention of the toll or fee and to carry out the ancillary activities, in relation of the foregoing, as specified in the Concession Agreement to be executed with National Highways Authority of India (NHAI).*"

Capital Structure

The capital structure of KTL is as follows:

Particulars	**No. of equity shares of face value of ₹10 each**
Authorized capital	328,000,000
Issued, subscribed and paid-up capital	328,000,000

Shareholding Pattern

The shareholding pattern of KTL is as follows:

S. No.	**Name of the shareholder**	**No. of equity shares of face value of ₹10 each**	**Percentage of the issued, paid-up and subscribed capital (%)**
1.	IRB Infrastructure Developers Limited	327,999,994	100
2.	Mukeshlal Gupta*	1	Negligible
3.	Dhananjay K. Joshi*	1	Negligible
4.	Arati Taskar *	1	Negligible
5.	Ajay P. Deshmukh *	1	Negligible
6.	Naresh Kumar Taneja *	1	Negligible
7.	Anushree Joshi*	1	Negligible
Total		**328,000,000**	**100**

** As a nominee of IRB Infrastructure Developers Limited*

7. SYTL

Corporate Information

SYTL was incorporated on January 10, 2014 as a private limited company under the Companies Act, 1956, having CIN U45400MH2014PTC251983. SYTL was converted into a public limited company under the Companies Act, and a fresh certificate of incorporation dated November 13, 2019 was issued, having CIN U45400MH2014PLC251983. Its registered office is situated at Off. No-11th Floor/1101 Hiranandani Knowledge Park, Technology Street, Hill Side Avenue, Powai, Mumbai 400 076, Maharashtra, India.

Main Object

The main object, as contained in the memorandum of association of SYTL, is as follows:

"*To carry on the business of infrastructure development in respect of the work of Design, Build, Finance and Operation of Four Laning of Solapur to Yedeshi section of NH-211 from km 0.000 to km 100.000 (Design Length 98.717 km) in the State of Maharashtra under NHDP Phase IV on Design, Build, Finance, Operate and Transfer (DBFOT) Toll basis, including collection and retention of the toll or fee and to carry out the ancillary*

activities, in relation of the foregoing, as specified in the Concession Agreement to be executed with National Highways Authority of India (NHAI)."

Capital Structure

The capital structure of SYTL is as follows:

Particulars	No. of equity shares of face value of ₹10 each
Authorized capital	98,250,000
Issued, subscribed and paid-up capital	98,250,000

Shareholding Pattern

The shareholding pattern of SYTL is as follows:

S. No.	Name of the shareholder	No. of equity shares of face value of ₹10 each	Percentage of the issued, paid-up and subscribed capital (%)
1.	IRB Infrastructure Developers Limited	98,249,994	100
2.	Dhananjay K. Joshi *	1	Negligible
3.	Mukeshlal Gupta *	1	Negligible
4.	Ajay P. Deshmukh *	1	Negligible
5.	Naresh Kumar Taneja *	1	Negligible
6.	Arati Taskar*	1	Negligible
7.	Anushree Joshi*	1	Negligible
Total		**98,250,000**	**100**

** As a nominee of IRB Infrastructure Developers Limited*

8. UTL

Corporate Information

UTL was incorporated on October 6, 2016 as a private limited company under the Companies Act, having CIN U45203MH2016PTC286600. UTL was converted into a public limited company under the Companies Act, and a fresh certificate of incorporation dated November 13, 2019 was issued, having CIN U45203MH2016PLC286600. Its registered office is situated at Off. No-11th Floor/1101 Hiranandani Knowledge Park, Technology Street, Hill Side Avenue, Powai, Mumbai 400 076, Maharashtra, India.

Main Object

The main object, as contained in the memorandum of association of UTL, is as follows:

"*To carry on the business of infrastructure development in respect of the work of Design, Build, Finance and Operation of Six Lanning from km 287.400 to km 401.200 section of NH-8 in the States of Rajasthan and Gujarat (approx. length 113.800 km) on Design, Build, Finance, Operate and Transfer (DBFOT) Toll basis under NHDP Phase V (package – V), including collection and retention of the toll or fee and to carry out the ancillary activities, in relation of the foregoing, as specified in the Concession Agreement to be executed with National Highways Authority of India (NHAI).*"

Capital Structure

The capital structure of UTL is as follows:

Particulars	No. of equity shares of face value of ₹10 each
Authorized capital	116,800,000
Issued, subscribed and paid-up capital	116,800,000

Shareholding Pattern

The shareholding pattern of UTL is as follows:

S. No.	Name of the shareholder	No. of equity shares of face value of ₹10 each	Percentage of the issued, paid-up and subscribed capital (%)
1.	IRB Infrastructure Developers Limited	116,799,994	100
2.	Mukeshlal Gupta*	1	Negligible
3.	Ajay P. Deshmukh*	1	Negligible
4.	Arati Taskar*	1	Negligible
5.	Dhananjay K. Joshi*	1	Negligible
6.	Vinod Kumar Menon*	1	Negligible
7.	Naresh Kumar Taneja*	1	Negligible
Total		**116,800,000**	**100**

** As a nominee of IRB Infrastructure Developers Limited*

9. YATL

Corporate Information

YATL was incorporated on May 17, 2014, as a private limited company under the Companies Act, 2013, having CIN U45300MH2014PTC255280. YATL was converted into a public limited company under the Companies Act, and a fresh certificate of incorporation dated November 13, 2019 was issued, having CIN U45300MH2014PLC255280. Its registered office is situated at Off. No-11th Floor/1101 Hiranandani Knowledge Park, Technology Street, Hill Side Avenue, Powai, Mumbai 400 076, Maharashtra, India.

Main Object

The main object, as contained in the memorandum of association of YATL, is as follows:

"*To carry on the business of infrastructure development in respect of the work of Design, Build, Finance and Operation of Four Laning of Yedeshi to Aurangabad section of NH-211 from km 100.000 to km 290.200 in the State of Maharashtra under NHDP Phase IVB on Design, Build, Finance, Operate and Transfer (DBFOT) Toll basis, including collection and retention of the toll or free and to carry out the ancillary activities, in relation of the foregoing, as specified in the Concession Agreement to be excuted with National Highways Authority of India (NHAI).*"

Capital Structure

The capital structure of YATL is as follows:

Particulars	No. of equity shares of ₹10 each
Authorized capital	216,000,000
Issued, subscribed and paid-up capital	215,757,001

Shareholding Pattern

The shareholding pattern of YATL is as follows:

S. No.	Name of the shareholder	No. of equity shares of face value of ₹10 each	Percentage of the issued, paid-up and subscribed capital (%)
1.	IRB Infrastructure Developers Limited	215,756,995	100
2.	Mukeshlal Gupta*	1	Negligible
3.	Ajay P. Deshmukh*	1	Negligible
4.	Arati Taskar*	1	Negligible
5.	Dhananjay K. Joshi*	1	Negligible

S. No.	Name of the shareholder	No. of equity shares of face value of ₹10 each	Percentage of the issued, paid-up and subscribed capital (%)
6.	Anushree Joshi*	1	Negligible
7.	Naresh Kumar Taneja*	1	Negligible
Total		**215,757,001**	**100**

** As a nominee of IRB Infrastructure Developers Limited*

Formation Transactions

Prior to the Allotment of the Units in the Issue, the Trust intends to acquire an initial portfolio of nine SPVs, i.e., AETL, CGTL, IRB HMTL, IRB WTL, KGTL, KTL, SYTL, UTL and YATL, all of which are currently wholly owned by the Sponsor (the "**Formation Transactions**").

The Trust intends to acquire 100% of the equity shares of the Project SPVs after the Bid/Issue Closing Date and prior to the Allotment in the Issue (for each such Project SPV, the "**Acquisition Date**"). On the Acquisition Date, the subordinate debt and unsecured loans provided by the Sponsor and its Associates to the Project SPVs will stand novated in favor of the Trust pursuant to the Debt Novation Agreements. As consideration for the acquisition of the equity shares of the Project SPVs and the novation of a portion of the subordinated debt and unsecured loans, the Trust will issue Units to the Sponsor on or around the Acquisition Date. For details of the Share Purchase Agreements and Debt Novation Agreements, see " – *Terms of the Share Purchase Agreements*" and " – *Terms of the Debt Novation Agreements*" on pages 91 and 93, respectively.

The purchase price for the equity shares of each Project SPV will be mutually agreed between the Investment Manager (in consultation with the Trustee) and the Sponsor in the Share Purchase Agreements. The Trust (acting through the Trustee) will acquire the shareholding of the Sponsor in each of the Project SPVs by entering into the following share purchase agreements:

1. Share Purchase Agreement to be entered into among the Sponsor, the Trust (acting through the Trustee), the Investment Manager and AETL (the "**AETL SPA**") for the transfer of an aggregate of 436,500,000 equity shares in AETL (representing 100% of the equity shares of AETL on a fully diluted basis) from the Sponsor in consideration for the issue of [●] Units* to the Sponsor;

2. Share Purchase Agreement to be entered into among the Sponsor, the Trust (acting through the Trustee), the Investment Manager and CGTL (the "**CGTL SPA**") for the transfer of an aggregate of 203,500,000 equity shares in CGTL (representing 100% of the equity shares of CGTL on a fully diluted basis) from the Sponsor in consideration for the issue of [●] Units* to the Sponsor;

3. Share Purchase Agreement to be entered into among the Sponsor, the Trust (acting through the Trustee), the Investment Manager and IRB HMTL (the "**IRB HMTL SPA**") for the transfer of an aggregate of 189,500,000 equity shares in IRB HMTL (representing 100% of the equity shares of IRB HMTL on a fully diluted basis) from the Sponsor in consideration for the issue of [●] Units* to the Sponsor;

4. Share Purchase Agreement to be entered into among the Sponsor, the Trust (acting through the Trustee), the Investment Manager and IRB WTL (the "**IRB WTL SPA**") for the transfer of an aggregate of 174,194,303 equity shares in IRB WTL (representing 100% of the equity shares of IRB WTL on a fully diluted basis) from the Sponsor in consideration for the issue of [●] Units* to the Sponsor;

5. Share Purchase Agreement to be entered into among the Sponsor, the Trust (acting through the Trustee), the Investment Manager and KGTL (the "**KGTL SPA**") for the transfer of an aggregate of 155,500,000 equity shares in KGTL (representing 100% of the equity shares of KGTL on a fully diluted basis) from the Sponsor in consideration for the issue of [●] Units* to the Sponsor;

6. Share Purchase Agreement to be entered into among the Sponsor, the Trust (acting through the Trustee), the Investment Manager and KTL (the "**KTL SPA**") for the transfer of an aggregate of 328,000,000 equity shares in KTL (representing 100% of the equity shares of KTL on a fully diluted basis) from the Sponsor in consideration for the issue of [●] Units* to the Sponsor;

7. Share Purchase Agreement to be entered into among the Sponsor, the Trust (acting through the Trustee), the Investment Manager and SYTL (the "**SYTL SPA**") for the transfer of an aggregate of 98,250,000

equity shares in SYTL (representing 100% of the equity shares of SYTL on a fully diluted basis) from the Sponsor in consideration for the issue of [●] Units* to the Sponsor;

8. Share Purchase Agreement to be entered into among the Sponsor, the Trust (acting through the Trustee), the Investment Manager and UTL (the "**UTL SPA**") for the transfer of an aggregate of 116,800,000 equity shares in UTL (representing 100% of the equity shares of UTL on a fully diluted basis) from the Sponsor in consideration for the issue of [●] Units* to the Sponsor; and

9. Share Purchase Agreement to be entered into among the Sponsor, the Trust (acting through the Trustee), the Investment Manager and YATL (the "**YATL SPA**") for the transfer of an aggregate of 215,757,001 equity shares in YATL (representing 100% of the equity shares of YATL on a fully diluted basis) from the Sponsor in consideration for the issue of [●] Units* to the Sponsor.

On the Acquisition Date, the subordinated debt and unsecured loans provided by the Sponsor and its Associates to the Project SPVs will stand novated in favor of the Trust (acting through the Trustee) and as consideration for the novation of a portion of such subordinated debt and unsecured loans: (i) Units will be issued to the Sponsor and (ii) certain amounts will be paid to the Sponsor and its Associates (as applicable) out of the Issue Proceeds, pursuant to the following Debt Novation Agreements:

1. Debt Novation Agreement to be entered into among the Sponsor, the Trust (acting through the Trustee), the Investment Manager and AETL (the "**AETL Debt Novation Agreement**") for the novation of subordinated debt and unsecured loans from the Sponsor in consideration for the issue of [●] Units* to the Sponsor, the payment of certain amounts out of the Issue Proceeds and the Amounts (defined below);

2. Debt Novation Agreement to be entered into among the Sponsor, the Trust (acting through the Trustee), the Investment Manager and CGTL (the "**CGTL Debt Novation Agreement**") for the novation of subordinated debt and unsecured loans from the Sponsor in consideration for the issue of [●] Units* to the Sponsor, the payment of certain amounts out of the Issue Proceeds and the Amounts;

3. Debt Novation Agreement to be entered into among the Sponsor, the Trust (acting through the Trustee), the Investment Manager and IRB HMTL (the "**IRB HMTL Debt Novation Agreement**") for the novation of subordinated debt and unsecured loans from the Sponsor in consideration for the issue of [●] Units* to the Sponsor, the payment of certain amounts out of the Issue Proceeds and the Amounts;

4. Debt Novation Agreement to be entered into among the Sponsor, Modern Road Makers Private Limited, IRB Goa Tollway Private Limited, the Trust (acting through the Trustee), the Investment Manager and IRB WTL (the "**IRB WTL Debt Novation Agreement**") for the novation of subordinated debt and unsecured loans from the Sponsor, Modern Road Makers Private Limited and IRB Goa Tollway Private Limited in consideration for the issue of [●] Units* to the Sponsor, the payment of certain amounts out of the Issue Proceeds and the Amounts;

5. Debt Novation Agreement to be entered into among the Sponsor, the Trust (acting through the Trustee), the Investment Manager and KGTL (the "**KGTL Debt Novation Agreement**") for the novation of subordinated debt and unsecured loans from the Sponsor in consideration for the issue of [●] Units* to the Sponsor, the payment of certain amounts out of the Issue Proceeds and the Amounts;

6. Debt Novation Agreement to be entered into among the Sponsor, IRB Goa Tollway Private Limited, the Trust (acting through the Trustee), the Investment Manager and KTL (the "**KTL Debt Novation Agreement**") for the novation of subordinated debt and unsecured loans from the Sponsor and IRB Goa Tollway Private Limited in consideration for the issue of [●] Units* to the Sponsor and the Amounts;

7. Debt Novation Agreement to be entered into among the Sponsor, the Trust (acting through the Trustee), the Investment Manager and SYTL (the "**SYTL Debt Novation Agreement**") for the novation of subordinated debt and unsecured loans from the Sponsor in consideration for the issue of [●] Units* to the Sponsor and the Amounts;

8. Debt Novation Agreement to be entered into among the Sponsor, the Trust (acting through the Trustee), the Investment Manager and UTL (the "**UTL Debt Novation Agreement**") for the novation of subordinated debt and unsecured loans from the Sponsor in consideration for the issue of [●] Units* to the Sponsor, the payment of certain amounts out of the Issue Proceeds and the Amounts; and

9. Debt Novation Agreement to be entered into among the Sponsor, IRB Goa Tollway Private Limited, the Trust (acting through the Trustee), the Investment Manager and YATL (the "**YATL Debt Novation Agreement**") for the novation of subordinated debt and unsecured loans from the Sponsor and IRB Goa Tollway Private Limited in consideration for the issue of [●] Units* to the Sponsor, the payment of certain amounts out of the Issue Proceeds and the Amounts.

** Will be updated in the Placement Memorandum*

Terms of the Share Purchase Agreements

The Investment Manager and the Trust (acting through the Trustee) propose to enter into the Share Purchase Agreements with the Sponsor and the Project SPVs prior to the Bid/Issue Opening Date. Indicative terms of the Share Purchase Agreements are set out below.

"**Governmental Authority**" shall include the SEBI, the NHAI, the Ministry of Road Transport and Highways of the Government of India or any state or union territory of India, the Reserve Bank of India, and any national, state, regional or local government or governmental, regulatory, statutory, administrative, fiscal, taxation, judicial, or government-owned body, department, commission, authority, court, arbitrator, tribunal, agency or entity, in India or outside India, in each case, having jurisdiction over any of the parties, their operations, or the transactions contemplated in the Share Purchase Agreement and the transaction documents;

"**Material Adverse Change**" shall mean any fact, circumstance or condition that, individually or in the aggregate, has a material adverse effect on or material adverse change in: (i) the business, assets (whether tangible or intangible), liabilities, financial condition or regulatory status of the Project SPV or the Seller; or (ii) the ability of the Seller to perform its obligations under any transaction document, or to complete any of the transactions contemplated thereunder; or (iii) the validity, legality or enforceability of the rights or remedies of the Trust or the Investment Manager under the Share Purchase Agreements;

"**Sale Shares**" shall mean 100% of the equity shares of the Project SPV;

"**Seller**" shall mean the Sponsor.

Sale and Purchase of the Sale Shares and issue of Consideration Units

Subject to the terms and conditions of the Share Purchase Agreements, the Seller will sell and transfer the Sale Shares of each Project SPV to the Trust and the Trust will acquire the Sale Shares, free and clear from all Encumbrances, together with all rights, title, interest and benefits appertaining thereto, on the third day from the Bid/Issue Closing Date (the "**Closing Date**").

As consideration for the acquisition of the Sale Shares, the Investment Manager (on behalf of the Trust) will issue such number of Units on the Closing Date, to the Seller in the aggregate, calculated as specified under the Share Purchase Agreements.

The closing as contemplated under the relevant Share Purchase Agreements shall not be deemed to have occurred unless all the closing actions as well as the closing actions set forth in each of the other Share Purchase Agreements and each of the Debt Novation Agreements are completed.

Conditions Precedent

The obligations of the parties to complete the transactions under the Share Purchase Agreements are subject to the fulfilment of certain conditions by the Seller on or before the Closing Date, to the satisfaction of the Trust, unless waived in writing by the Trust, which, *inter-alia*, include:

- all the transaction documents (in agreed form) shall have been duly executed by the parties thereunder (through their respective authorized representatives), and delivered to the other parties thereunder;
- no Governmental Authority of competent jurisdiction shall have enacted, issued, promulgated or enforced any applicable law that prohibits or makes illegal the consummation of the transactions contemplated under any of the transaction documents;

- there shall be no legal proceedings pending against, or threatened against (to the knowledge of the Seller), the Seller or the Project SPV wherein an unfavorable judgment, decree, injunction or order could reasonably result in any of the transactions contemplated herein being declared unlawful or rescinded, and no such judgment, decree, injunction or order shall be in effect;
- the Seller (and its affiliates) shall have obtained all necessary consents in connection with the execution of the Share Purchase Agreements, the transaction documents and the completion of the transactions contemplated thereunder;
- the representations and warranties provided by the Seller under the Share Purchase Agreement are true, complete and accurate as of the execution date and as of the Closing Date (except those representations and warranties that address matters only as of a specified date, which shall be true and correct as of that specified date);
- no Material Adverse Change shall be subsisting as on the Closing Date;
- all employees of the relevant Project SPV shall have been transferred to the Seller or its affiliates (other than to any Manager Group Member);
- the Seller shall have obtained a no-objection certificate under Section 281 of the IT Act;
- the conditions precedent under all other transaction documents shall be completed in a manner acceptable to the relevant parties thereunder;
- the Seller and its affiliates shall have duly performed and complied in all respects with all agreements, covenants and conditions required by the transaction documents to be performed or complied with by them prior to or on the Closing Date; and
- the Trust shall have received a certificate, dated the Closing Date and signed by a duly authorized officer of the Seller, that each of the conditions set forth above have been satisfied.

Representations and Warranties

The Seller will provide representations and warranties in relation to, *inter-alia*, the organization, status and authority of each Project SPV, no conflict with other obligations, capital structure of the Project SPVs, conduct of business in compliance with applicable law and charter documents by each Project SPV, corporate records and filings of the Project SPVs, obtaining of all material consents required for carrying out business activities by each Project SPV and no material breach of any of the conditions of such consents, financial matters, taxation, related party transactions, indebtedness, material contracts, assets, insurance coverage, intellectual property, information technology, employment law matters, business practices and politicial affiliations, environmental laws and licenses, powers of attorney, anti-bribery and anti-corruption laws, anti-money-laundering laws, absence of legal proceedings which would materially and adversely impact the Project SPVs and that information provided by the Seller is true, complete and accurate in all material respects. The Sponsor has also provided representations and warranties in relation to its title to the equity shares of the Project SPVs and the transfer to the Trust being free of encumbrances and in accordance with applicable law. These representations and warranties are subject to the disclosures in this Preliminary Placement Memorandum.

The Investment Manager and the Trust (acting through the Trustee) will provide representations and warranties in relation to, *inter-alia*, their incorporation, existence, authority to enter into the agreement, eligbility to undertake the transactions under the agreement, no conflicts.

The Trust and the Project SPVs will agree and acknowledge that Seller and its affiliates can continue to include relevant Project SPV and the relevant project as part of their experience and eligibility in any bids for infrastructure projects submitted by the Sponsor or its affiliates in the future even after the Closing Date subject to the conditions set out in the Share Purchase Agreements.

Indemnification

The Seller will agree to indemnify the Trust against, any losses incurred or sustained by, or imposed upon, the Indemnified Parties based upon, arising out of, with respect to or relating to: (i) breach or inaccuracy of any of the Seller's warranties; (ii) any matter involving fraud, gross negligence or wilful misconduct by the Seller or the Project SPV; and (iii) any non-fulfilment, non-performance or other breach of any covenant or obligation of the Seller or the Project SPV under the Share Purchase Agreement or the relevant Debt Novation Agreement.

The Seller's indemnification obligations will be subject to certain limitations as to time and quantum as specified in the Share Purchase Agreements. Further, the Trust will not be entitled to claim any losses with respect to a particular indemnity event unless the losses exceed a particular amount. Payments by the Seller in

respect of any loss will be limited to the amount of any liability or damage that remains after deducting any insurance proceeds received by the indemnified party in respect of any such claim. Subject to the limitations set out in the Share Purchase Agreements, the Seller's liability for all monetary claims for breach of warranties, including claims for damages, will not exceed a specified amount agreed under the Share Purchase Agreements.

Governing Law, Dispute Resolution and Termination

The Share Purchase Agreements will be governed by the laws of India. Any dispute shall be referred to and finally resolved by arbitration administered by the Singapore International Arbitration Centre in accordance with the Arbitration Rules of the Singapore International Arbitration Centre ("**SIAC Rules**") for the time being in force. The arbitration panel will consist of three arbitrators, each of which shall be appointed by SIAC in accordance with the SIAC Rules. The seat and venue of the arbitration proceedings will be Delhi, India.

The Share Purchase Agreements may be terminated prior to the Closing Date: (i) by the mutual written agreement of the parties; (ii) by the Trust or the Sponsor, upon termination of any of the other transaction documents; (iii) upon termination of the Framework Agreement; or (iv) by the Trust and the Seller jointly if Closing has not occurred on or prior to March 31, 2020, including on account of non-fulfilment of the conditions precedent.

Terms of the Debt Novation Agreements

The Investment Manager and the Trust (acting through the Trustee) propose to enter into the Debt Novation Agreements with the relevant Lenders and the Project SPV prior to the Bid/Issue Opening Date. Indicative terms of the Debt Novation Agreements are discussed below.

Certain definitions in the Debt Novation Agreements are set out below:

"**Debt**" shall mean the Subordinated Debt and the Unsecured Loans;

"**Future Claims**" shall mean, with respect to a Project SPV, the claims (including any administrative, legal or other similar proceedings) made or intended to be made by such Project SPV against any Governmental Authority for events pertaining to the period after the Reference Date, including any claims for events pertaining to the period prior to the Closing Date (defined below) but which would likely adversely impact the toll revenue of the Identified SPV during periods subsequent to the Closing Date;

"**Governmental Authority**" shall include the SEBI, the NHAI, the Ministry of Road Transport and Highways of the Government of India or any state or union territory of India, the Reserve Bank of India, and any national, state, regional or local government or governmental, regulatory, statutory, administrative, fiscal, taxation, judicial, or government-owned body, department, commission, authority, court, arbitrator, tribunal, agency or entity, in India or outside India, in each case, having jurisdiction over any of the parties, their operations, or the transactions contemplated in the Debt Novation Agreement and the transaction documents;

"**Lenders**" shall mean the Sponsor and its associates that have provided Subordinated Debt and Unsecured Loans to the Project SPV in connection with its project;

"**Material Adverse Change**" shall mean any fact, circumstance or condition that, individually or in the aggregate, has a material adverse effect on or material adverse change in: (i) the business, assets (whether tangible or intangible), liabilities, financial condition or regulatory status of the Project SPV or the Lenders; or (ii) the ability of the Lenders to perform their obligations under any transaction document, or to complete any of the transactions contemplated thereunder; or (iii) the validity, legality or enforceability of the rights or remedies of the Trust, the Investment Manager under the Debt Novation Agreements;

"**Reference Date**" shall mean, with respect to a Project SPV, the later of the (i) the Closing Date; and (ii) the project completion date under the Concession Agreement, provided that if a provisional completion certificate is issued under the terms of the Concession Agreement and additional construction is required to be undertaken after the date of such certificate, this date shall be the date of issue of the final completion certificate;

"**Sponsor Claims**" shall mean shall mean, with respect to a Project SPV: (a) any kind of claim made by such Project SPV for events pertaining to the period prior to the Reference Date and the impact of which also solely pertains to the period prior to the Reference Date; and/or (b) all construction related claims (including any

administrative, legal or other similar proceedings in relation to utilities shifting, change of scope, construction, delays in construction, idling of resources, interest during construction or other matters) made or intended to be made by such Project SPV against any Governmental Authority for events pertaining to the period prior or after to the Reference Date;

"Subordinated Debt" shall mean, with respect to a Project SPV, the outstanding interest-free subordinated debt provided by the Lenders to such Project SPV; and

"**Unsecured Loans**" shall mean, with respect to a Project SPV, the outstanding interest-free unsecured loans provided by the Lenders to such Project SPV.

Novation of Debt and Issue of Consideration Units

The novation of the Debt will be effective from the third day from the date of closing of the Issue (the "**Closing Date**"). The rights and obligations of the Lenders in relation to the Debt will stand novated to the Trust with effect from the Closing Date and upon such novation, all rights and obligations of the Lenders in relation to the Debt will stand cancelled and discharged to the extent of the Debt without any further act or deed.

In consideration for the transfer and release of a portion of the Subordinated Debt and Unsecured Loans by the Sponsor, and all rights and obligations in relation to such Debt, the Trust and the Investment Manager will (i) issue such number of Units on the Closing Date, to the Sponsor in the aggregate, calculated as specified under the Debt Novation Agreements (the "**Consideration Units**") and (ii) pay a specified amount to the Lenders under the Debt Novation Agreements (other than the KTL Debt Novation Agreement and the SYTL Debt Novation Agreement).

The actions to be completed on the Closing Date will be conditional on and be deemed to occur simultaneously with the closing actions in the other transaction documents and shall not be deemed to have occurred unless all such actions as well as the closing actions set forth in each of the Debt Novation Agreements and each of the Share Purchase Agreements are completed.

Treatment of Sponsor Claims and Future Claims

In consideration for the transfer and release of the remaining Subordinated Debt and Unsecured Loans by the Lenders, and all rights and obligations in relation to such Debt, the Trust and the Investment Manager have agreed that the Amounts (defined below) will be paid by the Trust to the Lenders to the extent that any such amounts are received by the Project SPV in a settlement or adjudication (including arbitration) of Sponsor Claims.

The payment of Amounts to the Lenders shall constitute full, final and complete discharge of the obligation of the Trust with respect to payment of consideration for such Subordinated Debt and Unsecured Loans.

Any payments received by the Project SPV in a settlement or adjudication (including arbitration) of Sponsor Claims will be transferred by the Identified SPV to the Trust immediately upon receipt (the "**Amounts**"). If a bank guarantee is required to be submitted to the relevant Governmental Authority in lieu of such Amounts (or any part thereof), the Lenders will provide the bank guarantee. Upon the receipt of the Amounts by the Trust, the Amounts will forthwith be paid by the Trust to the Lenders. All taxes in relation to such payments will be solely borne by the Lenders.

If the final settlement or adjudication in relation to the relevant Sponsor Claim is unsuccessful, the Trust will promptly inform the Lenders, as applicable, and the Sponsor and the Financial Investors will mutually agree on treatment of any outstanding amounts in relation to such Sponsor Claims based on tax considerations in a manner mutually agreed between the Financial Investors and the Sponsor. Any tax impact on the Trust or the Project SPVs on account of such outstanding debt and/ or write-off such debt (whether pertaining to the period prior to the Closing Date or after) will only be to the account of the Lenders, and no Manager Group Member (as defined in the Debt Novation Agreements) and/or any other Unitholder should suffer/ incur a loss in connection with such debt.

The Project SPV, the Investment Manager and the Trust will render all reasonable assistance necessary to enable the payment of the Amounts to the Lenders, as applicable, including to obtain any required approval and

authorization required from the NHAI or other Governmental Authority or any of the senior lenders of the Project SPV.

Any amounts received by the Identified SPV or the Trust pursuant to the settlement or adjudication of Future Claims shall be distributed among the Unitholders in the proportion of their respective Unitholding percentages in the Trust in such manner as may be permitted under applicable law. In the event of any restructuring as set out above, any amounts received pursuant to Future Claims for periods prior to such restructuring shall be distributed among the Unitholders in the proportion of their respective Unitholding percentages.

Conditions Precedent

The obligations of the parties to complete the transactions under the Debt Novation Agreements are subject to the fulfilment of certain conditions by the Lenders on or before the Closing Date, to the satisfaction of the Trust, unless waived in writing by the Trust, which, *inter-alia*, include:

- all the transaction documents (in agreed form) shall have been duly executed by the parties thereunder (through their respective authorized representatives), and delivered to the other parties thereunder;
- no Governmental Authority of competent jurisdiction shall have enacted, issued, promulgated or enforced any applicable law that prohibits or makes illegal the consummation of the transactions contemplated under any of the transaction documents;
- there shall be no legal proceeding pending against, or threatened against (to the knowledge of the Sponsor), the Lenders or the Project SPV wherein an unfavorable judgment, decree, injunction or order could reasonably result in any of the transactions contemplated herein being declared unlawful or rescinded, and no such judgment, decree, injunction or order shall be in effect;
- the Lenders (and their affiliates) shall have obtained all necessary consents in connection with the execution of the Debt Novation Agreements, the transaction documents and the completion of the transactions contemplated thereunder;
- no Material Adverse Change shall be subsisting as on the Closing Date;
- the conditions precedent under all other Transaction Documents shall be completed in a manner acceptable to the relevant parties thereunder;
- the Lenders and their affiliates shall have duly performed and complied in all respects with all agreements, covenants and conditions required by the transaction documents to be performed or complied with by them prior to or on the Closing Date; and
- the Trust shall have received a certificate, dated the Closing Date and signed by a duly authorized officer of the Lenders, that each of the conditions set forth above have been satisfied.

Representations and Warranties

Each of the parties to the Debt Novation Agreements will provide certain representations and warranties in relation to, *inter-alia*, its due incorporation, valid existence and authority to enter into the agreement, due execution and delivery of the agreement, the terms of the agreement being binding on and enforceable against the relevant party, all applicable consents having been obtained and no conflicts with the constitutional documents, applicable law or contractual obligations of the relevant party.

Repayment of the Debt by the Project SPVs

The Project SPVs will repay the Subordinated Debt and Unsecured Loans to the Trust as may be mutually agreed between the Parties based on availability of cash flows. Interest at rate of 14% p.a. will be chargeable on the above Debt with effect from the earlier of (i) the project completion date under the relevant concession agreement and (ii) the date of listing of the Units on one or more Stock Exchanges.

The above Debt shall, at all times be subordinate to the debt provided by the senior lenders. Subject to the terms of the financing agreements and the relevant escrow agreement, payments towards such Debt (including interest) will be made out of balance available in the escrow account for utilization in accordance with the instructions of the Project SPV, on the relevant interest payment date or repayment date, after meeting all payments due to the senior lenders as of such date.

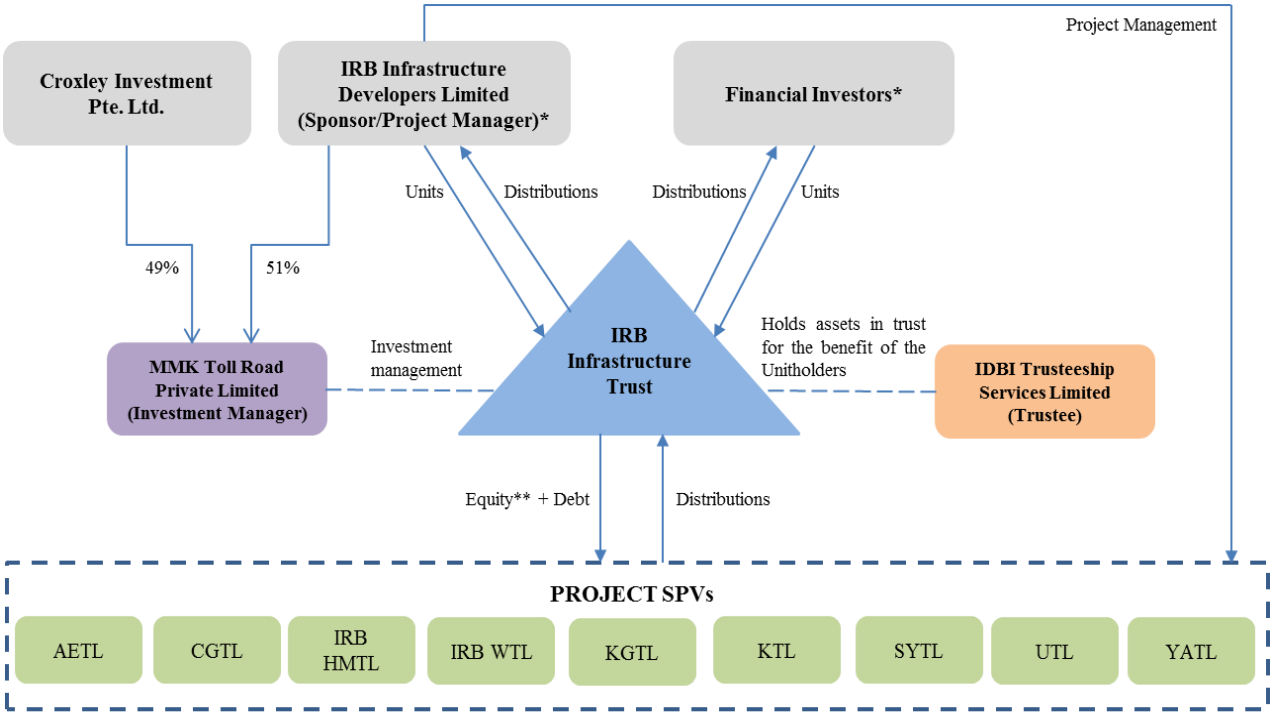
Governing Law, Dispute Resolution and Termination

The Debt Novation Agreements will be governed by the laws of India. Any dispute shall be referred to and finally resolved by arbitration administered by the Singapore International Arbitration Centre in accordance with the SIAC Rules for the time being in force. The arbitration panel will consist of three arbitrators, each of which shall be appointed by SIAC in accordance with the SIAC Rules. The seat and venue of the arbitration proceedings will be Delhi, India.

The Debt Novation Agreements may be terminated prior to the Closing Date: (i) by the mutual written agreement of the parties; (ii) by the Trust or the Sponsor, upon termination of any of the other transaction documents; (iii) upon termination of the Framework Agreement; or (iv) by the Trust and the Lenders jointly if Closing has not occurred on or prior to March 31, 2020, including on account of non-fulfilment of the conditions precedent. The Debt Novation Agreements will stand terminated and fall away automatically without any further act by the parties (i) upon the repayment or settlement of all amounts (including interests and other charges) in relation to the Debt and (ii) there are no Amounts remaining due to the Lenders.

Structure of the Trust

The following diagram illustrates the proposed relationship among the Trust, the Project SPVs the Trustee, the Investment Manager and the Unitholders (which includes the Sponsor) on the date of Placement Memorandum after completion of the Formation Transactions:



** Unitholders of the Trust pursuant to this Issue*
***100% of each Project SPV, together with nominee shareholders*

Framework Agreement

The Sponsor, the Investment Manager, the Financial Investors and Croxley have entered into the Framework Agreement to record the terms and conditions in relation to, *inter-alia*, the Formation Transactions, the subscription by the Financial Investors to the Issue, subsequent investment into the Trust by the Sponsor, further funding for completion of the projects of the Project SPVs and the transfer of 49% of the equity share capital of the Investment Manager from the Sponsor to Croxley.

Pursuant to the terms of the Framework Agreement, the Trust (acting through the Trustee), the Investment Manager, the Sponsor, its affiliates and the relevant Project SPVs will enter into the Share Purchase Agreements, the Debt Novation Agreements (including provisions in relation to treatment of Sponsor Claims and Future Claims) and the Shareholder Loan Agreements. See " – *Terms of the Share Purchase Agreements*" and " – *Terms of the Debt Novation Agreements*" on pages 91 and 93, respectively, for a summary of the key indicative terms of these agreements. See "*Use of Proceeds – Details of Utilization of Issue Proceeds –*

Providing loans to (i) AETL, IRB WTL, KTL, SYTL and YATL for partial refinancing of the debt availed from senior lenders (banks and financial institutions) and towards funding of the total project cost; and (ii) CGTL, IRB HMTL, KGTL and UTL towards funding of the total project cost – Indicative terms of the Shareholder Loan Agreements" on page 60 for a a summary of the key indicative terms of the Shareholder Loan Agreements. The promoter of the Sponsor has also provided undertakings in relation to his shareholding in the Sponsor and other matters.

Pursuant to the terms of the Framework Agreement, the Sponsor, Croxley and the Investment Manager have entered into the IM SPA and the IM SHA in connection with Croxley's investment into the Investment Manager. See "*Corporate Governance*" and "*The Investment Manager*" on pages 134 and 243, respectively, for details of the arrangements under these agreements.

A summary of the provisions relating to conditions precedent, representations and warranties and indemnity is set out below.

Conditions Precedent

The obligation of the relevant parties to complete the transactions contemplated under the Framework Agreement is subject to the fulfillment of certain conditions by the Sponsor to the satisfaction of the Financial Investors (or waiver of the conditions, at the sole discretion of the Financial Investors), including, among others:

- the due execution and delivery of all transaction documents;
- the completion of the transactions contemplated under any of the transaction documents not being prohibited or illegal under applicable law;
- no legal proceedings pending or threatened (to the knowledge of the Sponsor) against any Trust Group Member, promoter of the Sponsor or the Sponsor wherein an unfavorable judgment, decree, injunction or order could reasonably result in any of the transactions contemplated under the Framework Agreement being declared unlawful or rescinded, and no such judgment, decree, injunction or order shall be in effect;
- the Sponsor and its affiliates having obtained all necessary consents under the Framework Agreement.
- the representations and warranties provided by the Sponsor or its affiliates under the Framework Agreement and/or under the other transaction documents being true, accurate and complete as of the execution date and as of the closing date (except those representations and warranties that address matters only as of a specified date, which shall be true and correct as of that specified date);
- the business plan and the annual budget being in agreed form;
- no material adverse change shall be subsisting as on the closing;
- all employees of the Project SPVs shall have been transferred to the Sponsor or its affiliates;
- the conditions precedent under all other transaction documents being completed in a manner acceptable to the relevant parties thereunder;
- each Trust Group Member and the Sponsor shall have duly performed and complied in all respects with all agreements, covenants and conditions required by the transaction documents to be performed or complied with by them prior to or on the closing date; and
- the Financial Investors shall have received a certificate, dated the closing date and signed by a duly authorized officer of the Sponsor, that each of the conditions precedent in the Framework Agreement have been satisfied.

Covenants

The Sponsor has provided covenants and undertakings to the Financial Investors in relation to certain matters under the Framework Agreement. These include, *inter-alia*:

- *Conduct of business of the Project SPVs*: the Sponsor will ensure that the business of the Project SPVs is conducted in the ordinary course and in accordance with applicable law and the relevant project documentation between execution and closing;

- *Correspondence and regulatory filings:* regulatory correspondence and filings between the Trustee or Manager Group Member and the SEBI or RBI as specified in the Framework Agreement require the prior written consent of the Financial Investors;

- *Project management works*: the Sponsor will act as the Project Manager in accordance with the terms of the Project Implementation Agreements and provide operation and maintenance services for a period of at least 10 years under the Project Implementation Agreements. For further details, see "*Background and Structure of the Trust – Fees and Expenses – Fees and expenses of the Project Manager*" and "*The Sponsor and Project Manager*" on pages 102 and 240, respectively;

- *Listing:* Under certain circumstances and subject to the conditions specified in the Framework Agreement, the Sponsor is required to ensure that the Units of the Trust are listed on the BSE Limited and/ or National Stock Exchange of India Limited and/or such other agreed stock exchanges on or prior to a mutually agreed date in accordance with the InvIT Regulations and other applicable law;

- *Sponsor categorization*: Unless otherwise agreed by the parties, the Sponsor will continue to act as a sponsor of the Trust so long as the Sponsor and/or its affiliates hold Units and shall fulfil the obligations of a sponsor under the InvIT Regulations; and

- *Right of first offer in relation to the IRB InvIT Fund:* the Sponsor has agreed to provide the Financial Investors a right of first offer over any units of the IRB InvIT Fund held by the Sponsor and its affiliates and proposed to be transferred by them to any person (other than the entities controlled by the Sponsor or its subsidiaries) at any time after the closing date.

In addition, the Sponsor has also undertaken to comply with provisions in relation to material contracts, business plans, policies and initial tax orders and ensure certain information rights. The Sponsor has also agreed to certain standstill obligations in relation to the Investment Manager or any Manager Group Member between execution and closing.

The Sponsor is also required to ensure compliance with certain post-closing obligations including notification by the Project SPVs to the relevant governmental authorities of a material change in control and provision of valuation reports under the IT Act. Upon the Project SPVs achieving completion of the projects as required under the relevant concession agreements, the Sponsor has undertaken to ensure that no more than 51% of the equity shares (on a fully diluted basis) of all the Project SPVs will be encumbered in favor of the lenders and/or a debenture trustee.

Reserved Matters

For details of Reserved Matters, see "*Rights of Unitholders – Approval of Unitholders – Reserved Matters*" on page 237.

Further funding

The Financial Investors have agreed to contribute a portion of the total equity commitment required for completion of the project of each Project SPV (the "**Project SPV Commitment**") in accordance with the business plan and the annual budget as set out in the Framework Agreement. Such contribution is proposed to be through subscription to additional Units on a periodic basis. In the first instance, the internal accruals of the relevant Identified SPVs for the relevant period will be applied towards the Identified SPV Commitment in such period, and any shortfall or excess as per the forecasts in the business plan will be adjusted towards the Identified SPV Commitment requirements in the subsequent period. The Sponsor and the Financial Investors will together invest the required funding into the Trust in an agreed proportion.

Potential Projects

For details in relation to Potential Projects, see "*Related Party Transactions – Other Related Party Transactions*" on page 227.

Further issue of Units, transfer of Units and rights in relation to Unitholding

For details of arrangements agreed in relation to further issue of Units, transfer of Units and rights in relation to Unitholding, see "*Rights of Unitholders – Arrangements between the Sponsor and the Financial Investors*" on page 234-235.

Event of Default

For details of events of default and consequences, see "*Rights of Unitholders – Arrangements between the Sponsor and the Financial Investors – Events of Default and Consequences*" on page 235.

Representations and Warranties

The Sponsor has provided representations and warranties in relation to, *inter-alia*, the organization, status and authority of each Trust Group Member, no conflict with other obligations, eligibility of the Sponsor/Project Manager and the Investment Manager under the InvIT Regulations, stamp duty payable on the transaction documents, capital structure of the Manager Group Members, conduct of business in compliance with applicable law and charter documents by each Manager Group Member, corporate records and filings of the Manager Group Members, obtaining of all material consents required for carrying out business activities by each Manager Group Member and no material breach of any of the conditions of such consents, financial matters, taxation, related party transactions, indebtedness, material contracts, assets, insurance coverage, intellectual property, information technology, employment law matters, business practices and politicial affiliations, environmental laws and licenses, powers of attorney, anti-bribery and anti-corruption laws, anti-money-laundering laws, absence of legal proceedings which would materially and adversely impact the Manager Group and that information provided by the Sponsor is true, complete and accurate in all material respects. These representations and warranties are subject to the disclosure schedule and schedule supplements (if any).

The Financial Investors and Croxley have provided representations and warranties in relation to their incorporation, existence, authority to enter into the agreement, eligbility to undertake the transactions under the agreement and no conflicts.

Indemnification

The Sponsor has agreed to indemnify the indemnified parties (i.e., (a) the Financial Investors, their respective affiliates, their respective directors, officers, employees; and (b) at the option of the Financial Investors, any Manager Group Member, provided the Sponsor agrees to indemnify the relevant Manager Group Member of the entire loss suffered/ incurred by such Manager Group Member in relation to an indemnity event) against, any losses incurred or sustained by, or imposed upon, the Indemnified Parties based upon, arising out of, with respect to or relating to: (i) breach or inaccuracy of any of the Sponsor's warranties; (ii) any non-fulfilment, non-performance or other breach of any covenant or obligation of the Sponsor, its affiliates and/or any Manager Group Member contained in the transaction documents; (iii) any matter involving fraud, gross negligence or wilful misconduct by the Sponsor or any Manager Group Member; and (iv) certain specific indemnity matters.

The Sponsor's indemnification obligations are subject to certain limitations as to time and quantum as specified in the Framework Agreement. Further, the indemnified parties will not be entitled to claim any losses with respect to a particular indemnity event unless the losses exceed a particular amount. Payments by the Sponsor in respect of any loss will be limited to the amount of any liability or damage that remains after deducting any insurance proceeds received by the indemnified party in respect of any such claim. Subject to the limitations set out in the Framework Agreement, the Sponsor's liability for all monetary claims for breach of warranties, including claims for damages, will not exceed a specified amount agreed under the Framework Agreement.

Governing Law, Dispute Resolution and Termination

The Framework Agreement is governed by the laws of India. Any dispute shall be referred to and finally resolved by arbitration administered by the Singapore International Arbitration Centre in accordance with the SIAC Rules for the time being in force. The arbitration panel will consist of three arbitrators, each of which shall be appointed by SIAC in accordance with the SIAC Rules. The seat and venue of the arbitration proceedings will be London, United Kingdom.

The Framework Agreement may be terminated prior to the closing date: (i) by the mutual written agreement of the parties; (ii) by the Sponsor or the Financial Investors, if closing has not occurred on or prior to March 31, 2020, including on account of non-fulfilment of the conditions precedent.

The Framework Agreement will stand automatically terminated without any further action (i) as against the Financial Investors, when the entire Unitholding of the Financial Investors is sold and the entire shareholding of Croxley in the Investment Manager is sold, in accordance with the terms of the transaction documents; or (ii) as

against the Sponsor, when the entire Unitholding of the Sponsor is sold or transferred in accordance with the terms of the Framework Agreement.

Unitholding pattern of the Trust

The table below provides details of the Unitholding pattern of the Trust:

S. No.	Name of Unitholder	Pre-Issue Unitholding[(1)] (Pre-Formation Transactions)		Pre-Issue Unitholding (Upon the completion of the Formation Transactions)[(2)]		Post-Issue Unitholding[(2)]	
		No. of Units	As a % of the total outstanding Units	No. of Units	As a % of the total outstanding Units	No. of Units	As a % of the total outstanding Units[(3)]
1.	IRB Infrastructure Developers Limited	-	-	[●]	[●]	[●]	[●]
2.	Financial Investors	-	-	-	-	[●]	[●]
TOTAL		**-**	**-**	[●]	**100.00**	[●]	**100.00**

(1) As at the date of this Preliminary Placement Memorandum
(2)To be completed in the Placement Memorandum
(3)On a post-Issue basis

Fees and Expenses

1. *Fees and expenses of the Investment Manager*

Pursuant to the terms of the Investment Management Agreement, the fees will be paid to the Investment Manager for the services provided by it ("**Management Fees**"). The Management Fees will be an annual amount of ₹36.00 million per annum and for the full Financial Year 2020 shall be payable towards the payment of, *inter-alia*, Trusteeship Fee, sitting fees of directors, directors' and officers' liability insurance, salaries of the key managerial personnel of the Investment Manager and fees of various intermediaries including the Auditor, the Valuer and the Traffic Consultant. The Management Fees may be revised for every Financial Year with the approval of the Unitholders, where the votes cast by Unitholders so entitled and voting in favor of a resolution are not less than one-and-a-half times the votes cast against such resolution.

2. *Fees and expenses of the Trustee ("Trusteeship Fee")*

The fee payable to the Trustee for acting as the trustee to the Trust pursuant to an engagement letter dated June 27, 2019 is set out below. Any amendment to trusteeship fees will require the approval of the Unitholders, where the votes cast by Unitholders so entitled and voting in favor of a resolution are not less than one-and-a-half times the votes cast against such resolution.

Particulars	Description
Acceptance fee	₹0.6 million plus applicable taxes (one-time payment, payable upfront, non-refundable)
Service charges	(i) Service charges of ₹1.1 million p.a. plus applicable taxes would become payable from the date of transfer of assets to the Trust for the *pro-rata* period from the date of transfer of assets until the end of the quarter of the prevailing financial year, i.e., September 30, 2019 etc. (ii) Thereafter, service charges are payable on a quarterly basis, i.e., ₹0.28 million plus applicable taxes payable quarterly in advance on April 1 for April to June, July 1 for July to September, October 1 for October to December and January 1 for January to March each year until full and final repayment of funds to Unitholders, winding up of the Trust and termination of the Indenture of Trust.
Delayed payment charges	In case the payment of service charges is not received within a period of 30 days from the date of the bill, the Trustee reserves the right to charge delayed payment charges at the rate of 12% p.a. on the outstanding amount.
Reset clause	The Trustee has the right to reset the service charges after expiry of two years from the date of execution of the Indenture of Trust as mutually agreed with the Investment Manager.
Out-of-pocket expenses	To be claimed by the Trustee on an actual basis within intimation to the Sponsor/Investment Manager
Invocation and enforcement	Any other work relating to invocation and enforcement of the Trust Assets in case of default would attract separate expenses and fees

In case of late payment of the above fees, penal interest on the outstanding amount would be payable in accordance with the terms of the Indenture of Trust (if applicable).

The above fee structure is subject to certain conditions specified in the engagement letter.

3. *Fees and expenses of the Project Manager*

Pursuant to the Project Implementation Agreements, the Project SPVs (other than KTL and SYTL) will make payments to the Project Manager for the remaining engineering, procurement and construction works in relation to the relevant project ("**EPC Payments**") on a monthly basis, or as otherwise agreed among the parties to the Project Implementation Agreements based on invoices raised by the Project Manager. The agreed EPC Payments are set forth in the relevant Project Implementation Agreements, copies of which will be available for inspection to Eligible Investors from the date of this Preliminary Placement Memorandum until the Bid/Issue Closing Date. See "*Material Contracts and Material Documents for Inspection*" on page 371.

Pursuant to the Project Implementation Agreements, the Project SPVs will also make payments to the Project Manager for the operation and maintenance works in relation to the relevant project ("**O&M Payments**", and together with the EPC Payments, the "**Project Management Payments**") on a monthly basis, or as otherwise agreed among the parties to the Project Implementation Agreements based on invoices raised by the Project

Manager. The agreed O&M Payments applicable for the initial term of the Project Implementation Agreements (i.e., 10 years from the date of the relevant agreement) are set forth in the relevant Project Implementation Agreements, copies of which will be available for inspection by the Eligible Investors from the date of this Preliminary Placement Memorandum until the Bid/Issue Closing Date. See "*Material Contracts and Material Documents for Inspection*" on page 371.

No additional payments, including those on account of out of pocket expenses, delay in construction timeline, payment of Taxes, any statutory liabilities, any actual losses or damages incurred on any account whatsoever, will be made to the Project Manager over and above the Project Management Payments, except for any payments related to change of scope (as defined in the relevant concession agreement) or utility shifting as required by the NHAI, which will be paid by the relevant Project SPV to the Project Manager as and when such payments are received from the NHAI. If a Project SPV has made any payments to NHAI related to change of scope, such amount will be reduced from the EPC Payments. If any payment due to a Project SPV by the NHAI in respect of the EPC works or the O&M works is delayed in terms of the relevant concession agreement, the Project SPV's payment obligations to the Project Manager will be correspondingly delayed until the Project SPV receives payment from the NHAI.

4. *Fees and expenses of the Auditor and Valuer*

The fees and expenses paid or payable by the Investment Manager to the Valuer and the Auditor is approximately ₹4.4 million plus applicable taxes.

Set-up costs

In connection with the establishment and registration of the Trust, the Sponsor has incurred ₹1.1 million in expenses. Reimbursement of such costs and any costs relating to or incurred in connection with the settlement of the Trust will be in accordance with the Framework Agreement subject to a cap of US$ 2.00 million.

INDUSTRY OVERVIEW

The information contained in this section is derived from various government and other industry sources. The Investment Manager, the Trustee, the Sponsor or any other person connected with the Issue have not independently verified this information. Industry sources and publications generally state that the information contained therein has been obtained from sources generally believed to be reliable, but that their accuracy, completeness and underlying assumptions are not guaranteed and their reliability cannot be assured. Industry publications are also prepared on information as of specific dates and may no longer be current or reflect current trends. Accordingly, investment decisions should not be based on such information. All references to years refer to calendar years except as otherwise stated.

Overview of the Indian economy

In 2018, India's population was approximately 1,320 million, second only to China. *(Source: CIA World Factbook)* India had an estimated GDP of approximately US$ 10,498,000 million in 2018, which made it the third largest national economy in the world after China and the United States of America, in purchasing power parity terms. *(Source: World Bank Data)* According to the IMF, in 2016, 2017 and 2018, India's gross domestic product ("**GDP**") based on purchasing power parity per capita was estimated at US$ 6,634.84, US$ 7,168.99 and US$ 7,761.59, respectively. *(Source: World Bank Data)*

India is also one of the world's fastest growing economies. The table below sets forth a comparison between India's real GDP annual percent change in 2017 and 2018 and its expected real GDP growth rate during 2019 and 2020, as compared to advanced economies, emerging markets and developing economies and the world:

(in percentage)

	Real GDP growth rate		Projected GDP growth rate	
	2018	**2019**	**2020**	**2021**
India	6.80	4.80	5.80	6.50
Advanced Economies	2.20	1.70	1.60	1.60
Emerging Markets and Developing Economies	4.50	3.70	4.40	4.60
World	3.60	2.90	3.30	3.40

*Source: International Monetary Fund, World Economic Outlook Update – Tentative Stabilization, Sluggish Recovery, January 2020(the "**IMF Report**").*

As shown in the table above, India's pace of growth is expected to outperform that of advanced and developing economies. In 2018 and 2019, India's real GDP grew at rate of 6.80% and 4.80%, respectively. According to the IMF Report, India's growth is projected to improve to 5.80% in 2020 and 6.50% in 2021, supported by monetary and fiscal stimulus as well as subdued oil prices. (*Source: IMF Report*)

India's consumption has always been a strong and major driver of growth in the economy. Within total final consumption, it is the private final consumption expenditure that has a major share (close to 60%) in the economy's GDP, with its growth rate mostly being higher than the overall GDP growth rate. The huge size of the economy serves as a big market for businesses. Growth in private final consumption expenditure increased to 8.10% in 2018-19. Although the share of private consumption in GDP remains high, the pattern of consumption has undergone some change over time from essentials to luxuries and from goods to services. (*Source: Government of India, Ministry of Finance, Economic Survey 2018-2019, Volume II ("**Economic Survey 2018-2019**")*

World output rates (in percentage terms) for certain developed and developing economies for each of the calendar years 2017 and 2018 and projections for 2019 and 2020 are set forth below:

(in percentage)

Countries	2018	2019	2020 (projected)	2021 (projected)
China	6.60	6.10	6.00	5.80
India	**6.80**	**4.80**	**5.80**	**6.50**
Russia	2.30	1.10	1.90	2.00
Brazil	1.30	1.20	2.20	2.30
South Africa	0.80-	0.40	0.80	1.00

Countries	2018	2019	2020 (projected)	2021 (projected)
United States	2.90	2.30	2.00	1.70
Japan	0.30	1.00	0.70	0.50
United Kingdom	1.30	1.30	1.40	1.50

Source: IMF Report

Overview of the infrastructure sector in India

The development of the infrastructure sector has been a priority area for the government of India and has witnessed enhanced public investment. Many reforms have been initiated in the infrastructure sector, resulting in robust growth in most of the sectors. Major infrastructure sectors, namely power, road, railways, civil aviation, ports and telecommunication, have performed better during the Financial Year 2019 as compared to the Financial Year 2018. Rail freight and passenger traffic grew by 5.33% and 0.64%, respectively in 2018-19 as compared to 2017-18. Road construction in km grew at the rate of 30 km per day in 2018-19 as compared to 12 km per day in 2014-15. Building sustainable and resilient infrastructure has been given due importance with the formulation of sector specific programmes such as Pradhan Mantri Sahaj Bijli Har Ghar Yojana - SAUBHAGYA scheme and the Pradhan Mantri Awas Yojana. India has considerably improved its rank to 63 in 2019 among 190 economies assessed by the World Bank Doing Business Report, 2020, 14 ranks above its previous position of 77 in 2018 and 37 ranks above its position of 100 in 2017. However, growth in infrastructure, based on an index of eight core infrastructure-supportive industries such as coal, crude oil, natural gas, refinery products, fertilizers, steel, cement and electricity that have a total weight of nearly 40% in the index of industrial production was 4.30% in 2018-19 and at the same level of 4.30% in 2017-18. (*Source: Economic Survey 2018-2019*)

In the Financial Year 2019, the Government of India focused on increasing expenditure in priority areas such as the agriculture and rural sector, the social sector and the infrastructure sector. Further, the focus of the Government of India has been on improvement and development of infrastructure in the country *(Source: Government of India, Ministry of Finance, Union Budget 2018-2019. ("**Budget 2018-19**"))* The Government of India has emphasised on all forms of physical connectivity through Pradhan Mantri Gram Sadak Yojana, industrial corridors, dedicated freight corridors, Bharatmala and Sagarmala projects, Jal Marg Vikas and Ude Desh ke Aam Nagrik - UDAN schemes. According to the Union Budget 2019-20, the Pradhan Mantri Gram Sadak Yojana is envisaged to upgrade 125,000 km of road length over the next five years, with an estimated cost of ₹802,500 million under Pradhan Mantri Gram Sadak Yojana-III. 30,000 km of such roads have been built using green technology, waste plastic and cold mix technology.

Overview of the road sector in India

India has one of the largest road networks in the world, with approximately 5,603,293 km of roads comprising national highways, state highways, other public works department roads, district roads, rural roads, urban roads and project roads. India's national highways carry 40% of the total road-based traffic despite constituting less than 2% of the total road network. State highways together with major district roads constitute a secondary system of road transportation and contribute significantly to the development of India's rural economy and industrial growth. The secondary road system also carries about 40% of the total road traffic, despite constituting only 13% of the total road network. At the tertiary level are the rural roads. *(Source: Twelfth Five Year Plan (2012-2017), Economic Sectors, Volume II)*

According to the NHAI, as of March 31, 2016 the Indian road network consisted of the following:

Type of Road	Length (in km)	% of total Indian road network
National Highways	101,011	1.80
State Highways	176,166	3.10
District Roads	561,940	10.00
Rural Roads	3,935,337	70.20
Urban Roads	509,730	9.10
Project Roads	319,109	5.70
Total Length	**5,603,293**	**100.00**

Source: Government of India, Ministry of Road Transport and Highways, Transport Research Wing, "Basic Road Statistics of India 2015-16"

Bharatmala Pariyojana Phase-I

This is the umbrella program for the highways sector started in 2017-18, that aims to optimize the efficiency of road traffic movement across the country by bridging critical infrastructure gaps. 34,800 km of National Highways are to be constructed under the Phase-I of the programme between 2017-18 to 2021-22 in a phased manner at a cost of ₹5,350,000 million. This includes 5,000 km of the national corridors, 9,000 km of economic corridors, 6,000 km of feeder corridors and inter-corridors, 2,000 km of border roads, 2,000 km of coastal roads and port connectivity roads and 800 km of green-field expressways.

Eastern Peripheral Expressway – Western Peripheral Expressway

The two projects of Peripheral Expressways around Delhi, comprising 135 km Eastern Peripheral Expressway ("**EPE**"), and 135 km Western Peripheral Expressway ("**WPE**") connecting NH-1 and NH-2 from Western and Eastern side of Delhi were completed in 2018. The EPE was constructed by NHAI and the WPE was constructed by the state government of Haryana. The two expressways were envisaged with the twin objectives of decongesting and de-polluting the national capital by diverting the traffic not destined for Delhi.

The EPE stretches from Kundli on NH 1 to Palwal on NH 2, and was constructed at a cost of ₹46,180 million, in addition to ₹59,000 million spent on acquiring 1,700 acres of land. It was completed in a record time of about 500 days against the scheduled target of 910 days. It is a fully access-controlled six-lane expressway with a closed tolling system. *(Source: Government of India, Ministry of Road Transport & Highways, Year end Review: Ministry of Road Transport and Highways 2018: the Highway Construction Year, December 31, 2018)*

Regulatory framework for the highways infrastructure industry

The Ministry of Road Transport and Highways

The Ministry of Road Transport and Highways (the "**MoRTH**") is responsible for the formulation and administration of policies for road transport, national highways and transport research and consults with other central ministries, departments, state governments, organizations and individuals. The aim of the MoRTH is to increase mobility and the efficiency of the road transport system in India. *(Source: MoRTH website)*

The National Highways Authority of India

The NHAI was constituted by the National Highways Authority of India Act, 1988. The NHAI is responsible for the development, maintenance and management of national highways entrusted to it and for matters connected or incidental thereto. It became operational in February 1995 with the appointment of a full time chairman and other members. It is mandated to implement the National Highways Development Project. *(Source: NHAI website)*

National Highways Development Project

The NHAI is mandated to implement National Highways Development Project, which is India's largest ever highways project ("**NHDP**") in a phased manner. The National Highways have a total length of approximately 72,000 km to serve as the arterial network of the country. Although national highways constitute only about 2% of the road network, it carries 40% of the total road traffic. Rapid expansion of passenger and freight traffic makes it imperative to improve the road network in the country. Accordingly, the Government of India launched major initiatives to upgrade and strengthen National Highways through various phases of the NHDP. *(Source: NHAI website)*

The growth of various phases of the NHDP is set out below:

NHDP Phase I: In January 2000, the CCEA approved NHDP Phase I - four laning of 6,359 km at a cost of ₹303,000 million.

NHDP Phase II: In December 2003, the CCEA approved NHDP Phase II - four laning of 6,702 km at a cost of ₹343,490 million. These two phases comprise the Golden Quadrilateral ("**GQ**"), North-South and East-West Corridors ("**NS-EW**"), Port Connectivity and other projects. The GQ (5,846 km) connects the four major cities

of Delhi, Mumbai, Chennai and Kolkata. The NS-EW Corridors (7,300 km) connect Srinagar in the North to Kanyakumari in the South, including a spur from Salem to Kochi and Silchar in the East to Porbandar in the West.

NHDP Phase III: In April 2007, the CCEA approved the upgradation of 12,109 km under NHDP Phase III at an estimated cost of ₹806,260 million.

NHDP Phase IV: In June 2008, the CCEA approved the upgradation/strengthening of 20,000 km of national highways to 2/4 lane with paved shoulders on EPC/ BOT (Toll/Annuity) basis under NHDP Phase IV.

NHDP Phase V: In October 2006, the CCEA approved the six laning of 6,500 km of national highways comprising 5,700 km of GQ and balance 800 km of other sections under NHDP Phase V at a cost of ₹412,100 million.

NHDP Phase VI: In November 2006, the CCEA approved the construction of 1, 000 km of expressways with full access control on new alignments at a cost of ₹166,800 million under NHDP Phase VI.

NHDP Phase VII: In December 2007, the CCEA approved the construction of ring roads, bypasses, grade separators, flyovers, elevated roads and tunnels at a cost of ₹166,800 million under the NHDP Phase VII.

The table below provides certain details of the NHDP and other NHAI projects.

NHDP	Total Length (in km)	Already 4 or 6 Laned (in km)	Under Implementation (in km)	Contracts Under Implementation	Balance length for award (in km)
Golden Quadrilateral (GQ)[1]	5,846	5,846	-	-	-
NS-EW Phases I & II	7,142	6,568	300	28	274
Port Connectivity	435	383	52	7	-
NHDP Phase III	11,809	7,621	2,161	71	2,027
NHDP Phase IV	13,203	4,058	6,050	105	3,095
NHDP Phase V	6,500	2,564	1,428	33	2,508
NHDP Phase VI	1,000	0	184	9	816
NHDP Phase VII	700	22	94	4	584
NHDP Total	46,635	27,062	10,269	257	9,304
Others NHs	2,048	1,743	305	18	-
SARDP – NE	110	110	0	1	-
Total	**48,793**	**28,915***	**10,574**	**276**	**9,304**

(Source:http://www.prsindia.org/parliamenttrack/budgets/demand-grants-2018-19-analysis-road-transport-and-highways)
** A total of 20,000 km were approved under NHDP Phase IV out of which 13,203 km were assigned to NHAI and the remaining km were with the MoRTH.*

Schemes

Bharatmala Pariyojana: The Bharatmala Pariyojana is a new umbrella programme covering highways. It aims to optimize the efficiency of freight and passenger movement by bridging critical infrastructure gaps. The programme aims to increase the number districts with national highway linkages from 300 to 550.

On October 24, 2017, the Union Cabinet approved phase I of Bharatmala Pariyojana under which 34,800 km of roads will be developed over a period of five years. Phase I will also subsume 10,000 km of balance roadworks under the NHDP. The estimated cost of Phase I is ₹5,350,000 million, spread over five years.

Components of phase I of Bharatmala Pariyojana (2017-2022) are as follows:

S No.	Components	Length (in km)	Outlay (in ₹ Crore)
1.	Economic corridors development	9,000	120,000
2.	Inter-corridor and feeder roads	6,000	80,000

S No.	Components	Length (in km)	Outlay (in ₹ Crore)
3.	National Corridors Efficiency improvements	5,000	100,000
4.	Border and International connectivity roads	2,000	25,000
5.	Coastal and port connectivity roads	2,000	20,000
6.	Expressways	800	40,000
7.	Total	24,800	385,000
8.	Balance road works under NHDP	10,000	150,000
	Total		**535,000**

(Sources: Ministry of Road Transport and Highways; and Demand for Grants 2018-19: Road Transport and Highways)

According to the Union Budget 2019-20, Road - Bharatmala phase 2 will be launched to develop the state road networks. *(Source: Key Features of Budget 2019-20)*

BUSINESS

Some of the information in this section, including information with respect to our plans and strategies, contains forward-looking statements that involve risks and uncertainties. Please see "Forward-Looking Statements and Financial Projections" and "Risk Factors" on pages 12 and 14, respectively, for a discussion of certain factors that may affect our business, results of operations or financial condition. Our actual results may differ materially from those expressed in or implied by these forward-looking statements.

Prospective investors should read this section together with the sections Industry Overview", "Combined Financial Statements" and "Management's Discussion and Analysis of Financial Condition and Results of Operations" and "Summary of the Concession Agreements" on pages 104, 257, 324 and 140, respectively, as well as the other information contained in Preliminary Placement Memorandum.

In this section, unless the context otherwise requires, a reference to "we", "us" and "our" refers collectively to the Trust and the Project SPVs. Further, unless the context otherwise requires, the financial information used in this section is derived from the Combined Financial Statements.

Overview

The Trust is a registered infrastructure investment trust under the InvIT Regulations. The Trust intends to own, build, operate and maintain a portfolio of nine toll-road assets in the states of Haryana, Uttar Pradesh, Rajasthan, Gujarat, Goa, Maharashtra and Karnataka in India. These toll roads are operated and maintained pursuant to concessions awarded by the NHAI. We believe that, upon the completion of the Issue, the Trust will be the first unlisted infrastructure investment trust focused on toll-road assets in India.

The Trust will acquire an initial portfolio comprised of the Project SPVs, all of which are currently wholly-owned subsidiaries of the Sponsor. Each of the Project SPVs is an eligible infrastructure project as defined under the InvIT Regulations. As of September 30, 2019, the Project SPVs owned the following toll road assets comprising 5,892 Lane Kilometers of highway:

- The Agra - Etawah NH-2 Project: A 124.52 km section of NH-2 between Agra and Etawah Bypass in Uttar Pradesh which is held by AETL;
- The Gulabpura - Chittorgarh NH-79 Project: A 124.87 km section of NH-79 between Gulabpura and Chittorgarh Bypass in Rajasthan which is held by CGTL;
- The Hapur - Moradabad NH-9 Project: A 99.867 km section of NH-9 between Hapur and Moradabad in Uttar Pradesh which is held by IRB HMTL;
- The Goa - Kundapur NH-17Project: A 187.28 km section of NH-17 between Goa/Karnataka border and Kundapur in Karnataka which is held by IRB WTL;
- The Kishangarh - Gulabpura NH-79/79A Project: A 90.00 km section of NH-79/79A between Kishangarh and Gulabpura in Rajasthan which is held by KGTL;
- The Kaithal - Rajasthan Border NH-152/65 Project: A 166.259 km section of NH-152/65 between Kaithal and Rajasthan Border in Haryana which is held by KTL;
- The Solapur - Yedeshi NH-211 Project: A 98.717 km section of NH-211 between Solapur and Yedeshi in Maharashtra which is held by SYTL;
- The Udaipur - Rajasthan Border NH-8 Project: A 113.80 km section of NH-8 between Udaipur and Rajasthan Border in Rajasthan and Gujarat which is held by UTL; and
- The Yedeshi - Aurangabad NH-211 Project: A 189.09 km section of NH-211 between Yedeshi and Aurangabad in Maharashtra which is held by YATL.

The map set out below depicts the location of the Initial Road Assets:



The Trust intends to acquire 100% of the equity shares of the Project SPVs after the Bid/Issue Closing Date and prior to the Allotment in the Issue, *i.e.*, the Acquisition Date pursuant to the Share Purchase Agreements. In addition, on the Acquisition Date, the subordinated debt and unsecured loans provided by the Sponsor and its Associates to the Project SPVs will stand novated in favor of the Trust pursuant to the Debt Novation Agreements. As consideration for the acquisition of the equity shares of the Project SPVs and the novation of a portion of the subordinated debt and unsecured loans, the Trust will issue Units to the Sponsor on or around the Acquisition Date. For details, see "*Background and Structure of the Trust – Formation Transactions*" on page 89. As of the date of this Preliminary Placement Memorandum, the Share Purchase Agreements and the Debt Novation Agreements have not been executed. See also "*Risk Factors - We have not yet executed binding agreements with respect to the Formation Transactions and the debt financing arrangements. Our completion of the Formation Transactions, pursuant to which we will acquire the Project SPVs, and the transactions contemplated by the debt financing documentation are subject to certain conditions precedent and closing conditions that may prevent us from acquiring the Project SPVs or providing debt financing to them.*" on page 14.

The Sponsor of the Trust is IRB Infrastructure Developers Limited, one of the largest infrastructure development and construction companies in India in terms of net worth in the roads and highways sector according to the NHAI's annual prequalification for public private partnerships in national highway projects report for 2016. The Sponsor has been listed on the Stock Exchanges since 2008. Excluding the toll-road assets being transferred by the Sponsor pursuant to the Formation Transactions, as at September 30, 2019, the Sponsor had four road projects of which three were operational and one was under-construction. The Sponsor will also act as the Project Manager. For further details, see "*Parties to the Trust – The Sponsor and Project Manager*" on page 240.

The Investment Manager of the Trust is MMK Toll Road Private Limited. The Investment Manager has experience in operating a road project for a period of 13 years. The Investment Manager is currently a wholly-owned subsidiary of the Sponsor. On or about the date of Allotment, 49% of the equity share capital of the Investment Manager will be transferred by the Sponsor to Croxley. For further details, see "*Parties to the Trust – The Investment Manager*" and "*Corporate Governance*" on pages 243 and 134, respectively.

The Trustee of the Trust is IDBI Trusteeship Services Limited. The Trustee is registered with the SEBI as a debenture trustee under the Debenture Trustees Regulations. For further details, see "*Parties to the Trust – The Trustee*" on page 249.

The Sponsor proposes to hold 51% of the units of the Trust on a post-Issue basis immediately after the Issue, with the remaining 49% held by the Financial Investors.

Competitive Strengths

We believe that our key competitive strengths are as follows:

Portfolio of assets in key growth markets

Upon the completion of the Formation Transactions, the Trust will own 100% of the nine Project SPVs. Each of these Project SPVs is the concessionaire of a toll-road project in India.

The Project SPVs' gross toll revenues and gross toll revenue growth rates are set out below:

(₹ in millions)

Project SPV	Project	Gross toll revenue in the six-month period ended September 30, 2019	Gross toll revenue in the Financial Year 2019	Gross toll revenue in the Financial Year 2018	Gross toll revenue in the Financial Year 2017
KTL	Kaithal - Rajasthan Board NH-152/65 Project	467.83	795.41	368.92	-
SYTL	Solapur - Yedeshi NH-211 Project	331.09	689.78	46.78	-
YATL	Yedeshi - Aurangabad NH-211 Project	540.79	48.65	-	-
IRB WTL	Goa - Kundapur NH-17 Project	-	-	-	-
AETL	Agra - Etawah NH-2 Project	396.48	879.70	1,022.32	635.71
UTL	Udaipur - Rajasthan NH-8 Project	674.47	1,453.86	888.43	-
CGTL	Gulabpura - Chittorgarh NH-79 Project	813.64	1,969.99	917.30	-
KGTL	Kishangarh - Gulabpura NH-79/79A Project	573.62	1,341.74	152.89	-
IRB HMTL	Hapur - Moradabad NH-9 Project	425.77	-	-	-
Total		**4,223.69**	**7,179.13**	**3,396.64**	**635.71**

For further information, see *"Financial Information – Combined Financial Statements*" on page 257.

We believe that the Initial Road Assets have growth potential due to expected growth in traffic volumes as a result of regional growth and expected increases in toll fees as a result of inflation adjustments. For more information, see "*Projections*" included as *Annexure B* to this Preliminary Placement Memorandum.

Diversified road project portfolio and revenue base

The Initial Road Assets consist of a mix of eligible infrastructure toll road projects spread across several states in India. We believe that the geographic diversity of the Initial Road Assets will play a significant role in developing our experience and expertise, including our ability to evaluate, acquire, operate and maintain new projects.

The Initial Road Assets are primarily located along economic corridors and across tourist hubs in India.

The Project SPVs' concession agreements are also temporally diverse in that they commenced and are expected to expire at different times. The concession agreements' residual terms range between approximately 24 years and 20 days to approximately 17 years and 10 months as of December 31, 2019.

We believe that our geographically and temporally diverse project portfolio provides us with an advantage in capitalizing on new opportunities available in the roads and highways sector. We believe that this diversification strengthens our business by reducing our reliance on any specific region or project and reducing the potential

impact on our business of any economic slowdown or force majeure event in any particular region or with respect to any particular project.

Experienced Sponsor/Project Manager and Investment Manager with consistent track record in operating and maintaining projects in the roads and highways sector in India

The Sponsor is one of the largest infrastructure development and construction companies in India in terms of net worth in the roads and highways sector according to the NHAI's annual prequalification for public private partnerships in national highway projects report for 2016. Excluding the toll-road assets being transferred by the Sponsor pursuant to the Formation Transactions, as at September 30, 2019, the Sponsor had four road projects of which three were operational and one was under-construction.

The Sponsor will also act as the Project Manager. The Sponsor's BOT project portfolio includes the Ahmedabad Vadodara section of NH 8 and the Ahmedabad Vadodara Expressway, the Pune-Nashik section of NH 9, Thane-Ghodbunder road and the Padra to Vadodara Section of Vadodara-Mumbai Expressway. The Sponsor has experience in developing road and highway infrastructure and has received various industry awards and recognitions.

The Sponsor/Project Manager has experience in the execution of construction work for roads, highways, and other relevant structures and had a track record of constructing over 12,500 Lane Kilometres of roads and highways as of March 31, 2019.

The Investment Manager has experience in operating a road project for a period of 13 years. The Investment Manager is currently a wholly-owned subsidiary of the Sponsor. On or about to the date of Allotment, 49% of the equity share capital of the Investment Manager will be transferred by the Sponsor to Croxley.

Experienced management team with industry experience

We will be managed by qualified personnel of the Investment Manager who have management and operational experience in the roads and highways sector. For further details, see "*Parties to the Trust – The Investment Manager*" on page 243. We believe that the experience and leadership of these teams will contribute to our growth and success and will position the Initial Road Assets to be operated and managed in an efficient manner.

Attractive sector with strong underlying fundamentals

India has one of the largest road networks in the world, with approximately 5,603,293 km of roads comprising national highways, state highways, other public works department roads, district roads, rural roads, urban roads and project roads. India's national highways carry 40% of the total road-based traffic despite constituting less than 2% of the total road network. State highways together with major district roads constitute a secondary system of road transportation and contribute significantly to the development of India's rural economy and industrial growth. The secondary road system also carries about 40% of the total road traffic, despite constituting only 13% of the total road network. At the tertiary level are the rural roads *(Source: Twelfth Five Year Plan (2012-2017), Economic Sectors, Volume II)*.

In the Financial Year 2019, the Government of India focused on increasing expenditure in priority areas such as the agriculture and rural sector, the social sector and the infrastructure sector. Further, the focus of the Government of India has been on improvement and development of infrastructure in the country (*Source: Budget 2018-19*). The Government of India has emphasised on all forms of physical connectivity through Pradhan Mantri Gram Sadak Yojana, industrial corridors, dedicated freight corridors, Bharatmala and Sagarmala projects, Jal Marg Vikas and Ude Desh ke Aam Nagrik - UDAN schemes. According to the Union Budget 2019-20, the Pradhan Mantri Gram Sadak Yojana is envisaged to upgrade 125,000 km of road length over the next five years, with an estimated cost of ₹802,500 million under Pradhan Mantri Gram Sadak Yojana-III. 30,000 km of such roads have been built using green technology, waste plastic and cold mix technology.

According to the Union Budget 2019-20, Road - Bharatmala phase 2 will be launched to develop the state road networks. *(Source: Key Features of Budget 2019-20)*

Investment Strategy and Risk and Capital Management Strategy

Our principal business strategies which are proposed to be implemented by the Investment Manager are set out below:

Organic growth through proactive management

Our principal investment strategy is to acquire the Project SPVs and proactively manage the Initial Road Assets to support growth. In particular, the Investment Manager will seek to maintain or improve the Project SPVs' net incomes by, among other initiatives, curbing leakages, conducting proper due diligence, formulating and adopting policies and procedures and structuring investments to address tax or regulatory considerations. The Project Manager will assist the Investment Manager by carrying out the construction, operations, management and maintenance of the project in accordance with the relevant concession agreement and the Project Implementation Agreements and by procuring, operating and maintaining the project's toll management systems, including but not limited to, employing staff for toll collection, monitoring toll collection and providing security arrangements at toll plazas.

The Investment Manager will also focus on minimizing project operating expenses. The roads and highways sector is a highly competitive sector that is capital intensive and requires significant expenditure. Our ability to efficiently manage the costs associated with the Initial Road Assets is critical to maintaining the Project SPVs' profit margins. The Investment Manager intends to focus on increasing the margins of the Project SPVs by strengthening internal processes and systems so as to improve utilization of resources and reduce costs. As part of our operations and maintenance systems and processes, the Investment Manager intends to work closely with the Project Manager to promote best practices, to minimize downtime or defects with respect to the Initial Road Assets and to monitor performance of toll booth operators and maintenance contractors. The Investment Manager also intends to work with the Project Manager and the Project SPVs to upgrade technology as needed, to manage any leakages in toll collections and to streamline collection, route and maintenance operations. With this focus on proactive asset management and operating expense minimization, the Investment Manager hopes to increase our profit margins and achieve long-term growth.

Acquisition and divestment of toll road projects

The Investment Manager intends to expand our initial portfolio by identifying and selectively bidding for and acquiring additional toll road projects in accordance with the Procurement and Divestment Policy. Pursuant to the Framework Agreement, the Sponsor has agreed to certain arrangements in relation to submission of bids for (i) any new concession by the Sponsor and/or its affiliates involving the development or operation of roads and highways; or (ii) over any extensions of the concession period of road projects held by the Sponsor and/or its affiliates (other than the Project SPVs) with the Financial Investors. For details, see "*Related Party Transactions - Other Related Party Transactions*" on page 227. The Investment Manager may also consider divestment of certain toll road assets, depending on the maturity and profile of the relevant asset and subject to the Procurement and Divestment Policy. For details of the Procurement and Divestment Policy, see "*Corporate Governance – Policies of the Manager Group*" on page 136.

Optimization of capital structure

The Investment Manager will seek to employ appropriate financing policies and diversify its sources of financing with the objective of minimizing our overall cost of capital. The Investment Manager will ensure compliance with the provisions of the Indenture of Trust and the InvIT Regulations for borrowing. The Investment Manager may also pursue growth opportunities that require raising additional capital through the issuance of new Units.

Details of the Project SPVs and the Initial Road Assets

The Initial Road Assets comprise nine toll-roads in the Indian states of Haryana, Uttar Pradesh, Rajasthan, Gujarat, Goa, Maharashtra and Karnataka that the Project SPVs operate and maintain pursuant to concessions granted by the NHAI. In relation to the projects for which construction has not been completed, see *"Government and Other Approvals*" on page 361 for information about the status of approvals and "*Risk Factors*" on page 14 for a discussion of risks in relation to delay of completion of the projects.

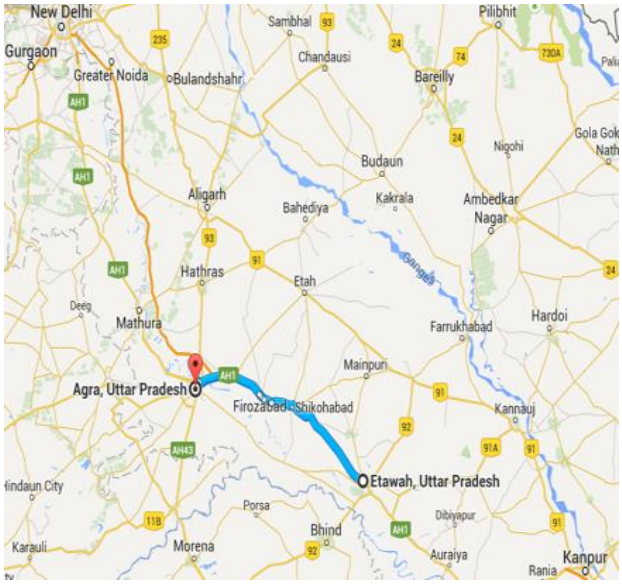
See "*Summary of the Concession Agreements*" on page 140 for a summary of the key terms of the concession agreements entered into by the Project SPVs with the NHAI.

Details of the Project SPVs are set out below:

Project SPV	Project	Ownership of Project by the Trust	Lane Km	Commencement of Concession Period	Commencement of Toll Collection	End of Concession Period	Concession Period (years)	Total project cost expended as at March 31, 2019 (in %)	Expected Completion
AETL	Agra - Etawah NH-2 Project	100%	747	August 1, 2016	August 1, 2016	July 31, 2040	24	76.31	During calendar year 2020
CGTL	Gulabpura - Chittorgarh NH-79 Project	100%	749	November 4, 2017	November 4, 2017	November 3, 2037	20	62.62	During calendar year 2020
IRB HMTL	Hapur - Moradabad NH-9 Project	100%	599	May 28, 2019	May 28, 2019	May 26, 2041	22	-	During calendar year 2021
IRB WTL	Goa - Kundapur NH-17 Project	100%	758	March 3, 2014	February 11, 2020	March 2, 2042	28	89.30	During calendar year 2020
KGTL	Kishangarh - Gulabpura NH-79/79A Project	100%	540	February 21, 2018	February 21, 2018	February 20, 2038	20	56.03	During calendar year 2020
KTL	Kaithal - Rajasthan Board NH-152/65 Project	100%	665	July 15, 2015	September 6, 2017	July 14, 2042	27	N.A.	Received completion certificate dated March 29, 2019
SYTL	Solapur - Yedeshi NH-211 Project	100%	395	January 21, 2015	March 7, 2018	January 20, 2044	29	N.A.	Received completion certificate dated October 15, 2019
UTL	Udaipur - Rajasthan NH-8 Project	100%	683	September 3, 2017	September 3, 2017	September 2, 2038	21	59.79	During calendar year 2020
YATL	Yedeshi - Aurangabad NH-211 Project	100%	756	July 1, 2015	March 17, 2019	June 30, 2041	26	94.07	During calendar year 2020

A summary of the key features of each Initial Road Asset is discussed below.

1. *Agra – Etawah NH-2 Project*



Map of the Agra – Etawah NH-2 Project

On September 1, 2015, the NHAI and AETL entered into a concession agreement in respect of the Agra - Etawah NH-2 Project. AETL was engaged to augment a 124.52 km section of NH-2 between Agra and Etawah in Uttar Pradesh by six-laning on a DBFOT basis. Being a four-laning to six-laning project, the concession period and the collection of toll commenced on August 1, 2016. As per the relevant concession agreement, the Agra - Etawah NH-2 Project comprises the section of NH-2 from km 199.660 to km 323.525.

Corridor description and competing roads

The Agra - Etawah NH-2 Project corridor starts from Agra (Km 199.660) and ends at Etawah (Km 323.525), end of Etawah Bypass). The length of project road is 123.865 Kms. The project road is a section of NH-2, which starts from Delhi and ends at Kolkata and is a part of the Golden Quadrilateral Project. The project road section passes through the districts of Agra, Firozabad and Etawah. Project road alignment passes through the towns/built-up areas of Tundla, Firozabad, Shikohabad, Sirsaganj and Jaswantnagar.

The project road is a link between Agra and Kanpur in the state of Uttar Pradesh. The main project influence area of the project road consists of the three districts through which the project road passes. In addition, the project influence area includes the districts of Kanpur, Mathura and Aligarh. While most of the traffic on the project road section is observed by the Traffic Consultant to be to and from within the state of Uttar Pradesh, significant influence of Delhi, Haryana, Rajasthan, Madhya Pradesh, Bihar and West Bengal is also present.

Concession period and revenue sharing arrangement

The NHAI granted AETL a concession for a period of 24 years for this project. The concession period commenced on August 1, 2016 and is expected to expire on July 31, 2040. AETL began collecting toll with respect to this project on August 1, 2016.

The concession agreement provides that if the actual traffic volume falls short of or exceeds the target traffic volume on the target date, the concession period will be extended or reduced, respectively. As per the concession agreement, in the event the actual average traffic on the target date exceeds the target traffic volume by more than 2.5%, the concession period may be reduced by 0.75% for every 1.00% excess in actual average traffic as compared to the target traffic volume, provided that such reduction in the concession period does not exceed 10% of the original concession period. In the event that the actual average traffic on the target date falls short of the target traffic volume by more than 2.5%, the concession period may be extended by 1.5% for every 1.00%, provided that such extension in the concession period does not exceed 20% of the original concession period. The concession agreement, however, also stipulates that, if the actual average traffic exceeds the design capacity in any accounting year, the NHAI may, at its discretion, cause AETL to undertake suitable capacity augmentation of the project. If capacity augmentation is required, the concession period would be for a period of up to five years so as to yield a post-tax return on equity of 16% per annum. The concession agreement also

states that in the event that the NHAI requires AETL to undertake capacity augmentation, there will be no reduction in the concession period pursuant to any other provision of the concession agreement.

For this project, the target date and target traffic volume in the concession agreement is April 1, 2025 and 52,995 PCUs, respectively.

In consideration of the grant of concession, AETL pays the NHAI a concession fee of ₹1 per annum. Additionally, AETL was required to pay on the appointed date a premium in the form of an additional concession fee equal to ₹810 million as due to the NHAI during that year, due and payable for the period remaining in that year; and for each subsequent year of the concession period, the premium is determined by increasing the amount of premium in the respective year by an additional 5% as compared to the immediately preceding year.

Monthly toll revenue

The following table sets out the gross monthly toll revenues received from the project for the periods indicated:

Period	Toll revenue (₹ in millions)
October 2019	71.81
November 2019	75.50
December 2019	70.44
January 2020	74.69

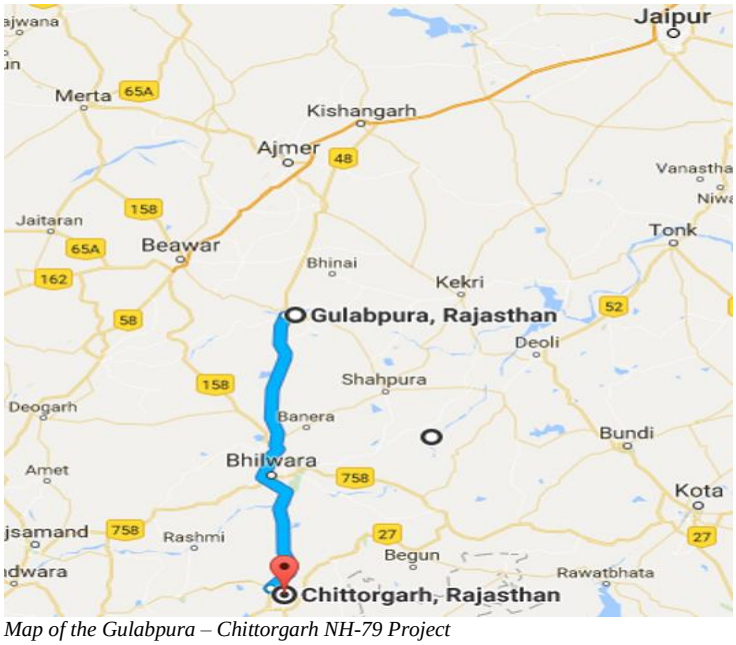
Land

The NHAI owns the land that underlies the Agra - Etawah NH-2 Project.

Structure of ownership of the project

For information about the proposed structure of ownership of the project by the Trust, see "*Background and Structure of the Trust*" on page 81.

2. *Gulabpura – Chittorgarh NH-79 Project*



Map of the Gulabpura – Chittorgarh NH-79 Project

On December 9, 2016, the NHAI and CGTL entered into a concession agreement in respect of the Gulabpura - Chittorgarh NH-79 Project. CGTL was engaged to augment a 124.87 km section of NH-79 between Gulabpura and Chittorgarh in Rajasthan by six-laning on a DBFOT basis. Being a four-to-six-laning project, the concession

period and the collection of toll commenced on November 4, 2017. As per the relevant concession agreement, the Gulabpura - Chittorgarh NH-79 Project comprises the section of NH-79 from km 90.00 to km 214.870.

Corridor description and competing roads

The Gulabpura - Chittorgarh NH-79 Project is a 124 km road and has two toll plazas. It is being upgraded from four lanes to six lanes. The project road primarily serves traffic travelling between Delhi, Rajasthan, Gujarat and Maharashtra. According to the traffic report, the vehicle distribution on the project road is dominated by heavy vehicles. Further, several textile industries and marble or granite industries border the project road. Udaipur serves as a big tourism hub as well as a consumption center which also result in traffic, feeding into the demand being generated.

In addition, Chittorgarh has four major cement plants located in Chanderiya and Nimbahera villages. There is a regular movement of cement bulkers to and from these locations along the project road. Chanderiya Lead-Zinc Smelter, one of the largest zinc-lead smelting complexes in the world, is also located in Chittorgarh. Bhilwara is home to textiles industry and is the only center in the country producing insulation bricks. Mining is another major sector, including large scale mining of sandstone, soap stone feldspar, quartz, mica, china clay and granite. Iron ore, lead, and zinc are also mined and processed in Bhilwara.

Long-distance traffic travelling south from Delhi and Jaipur branches out towards Ajmer and Bhilwara at Kishangarh, and the traffic going towards Bhilwara passes through the Lambian Kalan toll plaza. At Bhilwara, a part of the traffic continues further south to cross Jojro Ka Khera to reach Chittorgarh. The rest of the traffic diverts on to NH-758 through Gangapur to reach Rajsamand, Udaipur and other destinations further south of the traffic that branches out towards Ajmer, some divert on to the Beawar-Pali road and others continue further south to reach Udaipur and other destinations.

Concession period and revenue sharing arrangement

The NHAI granted CGTL a concession for a period of 20 years for this project. The concession period commenced on November 4, 2017 and is expected to expire on November 3, 2037. Being a four-to-six-laning project, CGTL began collecting toll with respect to this project on November 4, 2017.

The concession agreement provides that if the actual traffic volume falls short of or exceeds the target traffic volume on the target date, the concession period will be extended or reduced, respectively. As per the concession agreement, in the event the actual average traffic on the target date exceeds the target traffic volume by more than 2.5%, the concession period may be reduced by 0.75% for every 1.00% excess in actual average traffic as compared to the target traffic volume, provided that such reduction in the concession period does not exceed 10% of the original concession period. In the event that the actual average traffic on the target date falls short of the target traffic volume by more than 2.5%, the concession period may be extended by 1.5% for every 1.00%, provided that such extension in the concession period does not exceed 20% of the original concession period. The concession agreement, however, also stipulates that, if the actual average traffic exceeds the design capacity in any accounting year, the NHAI may, at its discretion, cause CGTL to undertake suitable capacity augmentation of the project. If capacity augmentation is required, the concession period would be for a period of up to five years so as to yield a post-tax return on equity of 16% per annum. The concession agreement also states that in the event that the NHAI requires CGTL to undertake capacity augmentation, there will be no reduction in the concession period pursuant to any other provision of the concession agreement.

For this project, the target date and target traffic volume in the concession agreement is June 1, 2026 and 76,316 PCUs, respectively.

In consideration of the grant of concession, CGTL pays the NHAI a concession fee of ₹1 per annum. Additionally, after the third anniversary of the COD, CGTL is required to pay a premium in the form of an additional concession fee equal to ₹2,286.00 million as due to the NHAI during that year, due and payable for the period remaining in that year; and for each subsequent year until the ninth anniversary of the COD, the premium will be determined by increasing the amount of premium in the respective year by an additional 3% as compared to the immediately preceding year, and for each subsequent year of the concession period, the premium will be determined by increasing the amount of premium in the respective year by an additional 8% as compared to the immediately preceding year.

The following table sets out the gross monthly toll revenues received from the project for the periods indicated:

Period	Toll revenue (₹ in millions)
October 2019	133.39
November 2019	129.02
December 2019	136.79
January 2020	137.37

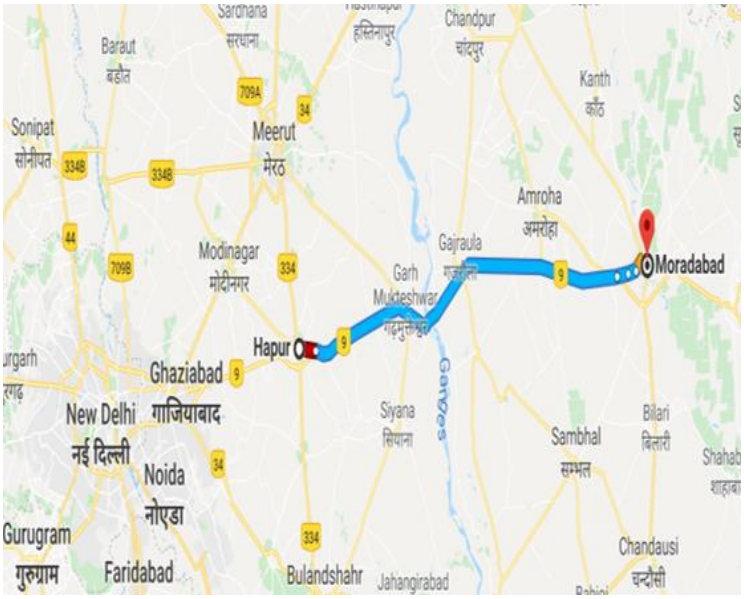
Land

The NHAI owns the land that underlies the Gulabpura - Chittorgarh NH-79 Project.

Structure of ownership of the project

For information about the proposed structure of ownership of the project by the Trust, see "*Background and Structure of the Trust*" on page 81.

3. *Hapur – Moradabad NH-9 Project*



Map of the Hapur - Moradabad NH-9 Project

On May 29, 2018, the NHAI and IRB HMTL entered into a concession agreement in respect of the Hapur – Moradabad NH-9 Project. IRB HMTL was engaged to augment a 99.867 km section of NH-9 between Hapur and Moradabad in Uttar Pradesh by six laning on a DBFOT basis. The concession period and the collection of tolls commenced on May 28, 2019. As per the relevant concession agreement, the Hapur – Moradabad NH-9 Project comprises the section of NH-9 from km 50.00 to km 148.277.

Corridor description and competing roads

The Hapur – Moradabad NH-9 Project is the section of the former NH-24 which has now been re-designated as NH-9 connecting Fazilka in Punjab to Pithoragarh in Uttarakhand. On the way it connects several important cities in five states in North India (from west towards east): Malout, Sirsa, Hisar, Rohtak, Bahadurgarh, Delhi, Ghaziabad, Hapur, Moradabad, Rampur, Rudrapur, Sitarganj, Khatima, Pithoragarh, Ogla, Askot. The total length of the highway is 811 km. After renumbering of all national highways by the NHAI in 2010, the current NH-9 was formed by merging five differently numbered national highways in 2010, including Old NH-10 (Fazilka-Delhi section), Old NH-24 (Delhi-Rampur section), Old NH-87 (Rampur-Rudrapur section), Old NH-74 (Rudrapur-Sitarganj-Khatima section) and Old NH-125 (Tanakpur-Pithoragarh section).

The project road starts from Hapur Bypass (km 50.000) and ends in Moradabad (km 148.277). The total design length of project road section is about 100 km. The existing road is four lane divided carriageway, which is proposed to be six-laned. The road passes through the districts of Hapur, Amroha and Moradabad; all in Uttar

Pradesh. The project road alignment passes through the small towns / built-up areas of Pakwara, Joya and Babugarh. Simbhaoli, one of the largest integrated sugar refinery complexes is right on the project road.

The project road is a link between the major cities of Hapur, Amroha and Moradabad districts in the state of Uttar Pradesh, apart from connecting other major cities of North like NCT Delhi, Rohtak, Bahadurgarh, Hisar with cities of Pithoragarh, Ogla and Askot. The main project influence area of the project road consists of the three districts through which the project road passes namely of Hapur, Amroha and Moradabad (Uttar Pradesh). In addition, the project influence area includes the districts of Gaziabad, Bareilly and Bulandshahr in the state of Uttar Pradesh. While most of the traffic on the project road section is observed to be to and from the state of Uttar Pradesh and Uttarakhand, significant influence of NCT Delhi, Haryana and Panjab state are also present on the project road.

Concession period and revenue sharing arrangement

The NHAI granted IRB HMTL a concession for a period of 22 years for this project. The concession period commenced on May 28, 2019 and is expected to expire on May 26, 2041. Being a four-to-six-laning project, IRB HMTL began collecting toll with respect to this project on May 28, 2019.

The concession agreement provides that if the actual traffic volume falls short of or exceeds the target traffic volume on the target date, the concession period will be extended or reduced, respectively. As per the concession agreement, in the event the actual average traffic on the target date exceeds the target traffic volume by more than 2.5%, the concession period may be reduced by 0.75% for every 1.00% excess in actual average traffic as compared to the target traffic volume, provided that such reduction in the concession period does not exceed 10% of the original concession period. In the event that the actual average traffic on the target date falls short of the target traffic volume by more than 2.5%, the concession period may be extended by 1.5% for every 1.00%, provided that such extension in the concession period does not exceed 20% of the original concession period. The concession agreement, however, also stipulates that, if the actual average traffic exceeds the design capacity in any accounting year, the NHAI may, at its discretion, cause IRB HMTL to undertake suitable capacity augmentation of the project. If capacity augmentation is required, the concession period would be for a period of up to five years so as to yield a post-tax return on equity of 16% per annum. The concession agreement also states that in the event that the NHAI requires IRB HMTL to undertake capacity augmentation, there will be no reduction in the concession period pursuant to any other provision of the concession agreement.

For this project, the target date and target traffic volume in the concession agreement is April 1, 2028 and 67,413 PCUs, respectively.

In consideration of the grant of concession, IRB HMTL pays the NHAI a concession fee of ₹1 per annum. Additionally, after the third anniversary year of the COD, IRB HMTL is required to pay a premium in the form of an additional concession fee equal to ₹315.00 million as due to the NHAI during that year, due and payable for the period remaining in that year; and for each subsequent year till the ninth anniversary of the COD, the premium will be determined by increasing the amount of premium in the respective year by an additional 3% as compared to the immediately preceding year and for each subsequent year of the concession period, the premium will be determined by increasing the amount of premium in the respective year by an additional 8% as compared to the immediately preceding year.

Monthly toll revenue

The following table sets out the gross monthly toll revenues received from the project for the periods indicated:

Period	Toll revenue (₹ in millions)
October 2019	115.54
November 2019	115.48
December 2019	108.48
January 2020	111.75

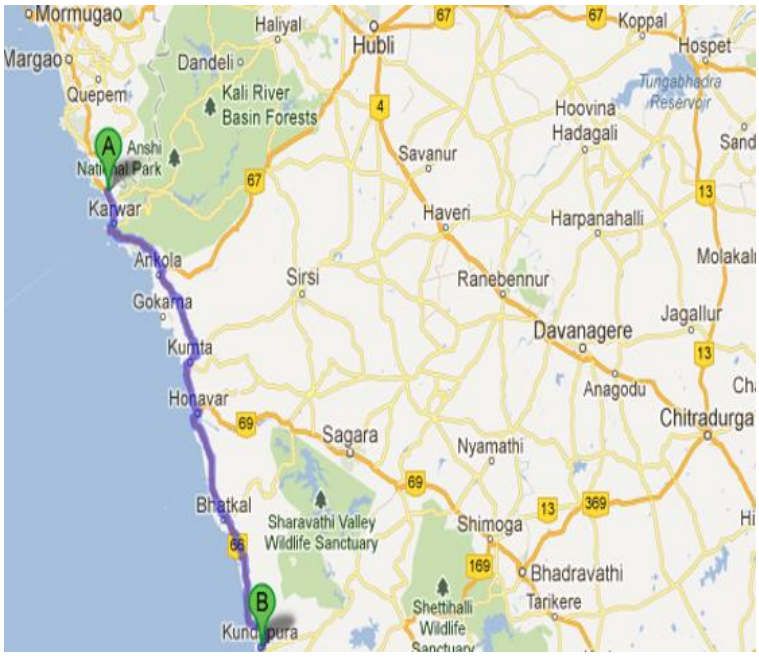
Land

The NHAI owns the land that underlies the Hapur - Moradabad NH-9 Project.

Structure of ownership of the project

For information about the proposed structure of ownership of the project by the Trust, see "*Background and Structure of the Trust*" on page 81.

4. *Goa – Kundapur NH-17 Project*



Map of the Goa – Kundapur NH-17 Project

On March 25, 3013, the NHAI and IRB WTL entered into a concession agreement in respect of the Goa - Kundapur NH-17 Project. IRB WTL was engaged to augment a 187.28 km section of NH-17 between Goa and Kundapur in Karnataka by four-laning on a DBFOT basis. The concession period commenced on March 3, 2014. As per the relevant concession agreement, the Goa – Kundapur NH-17 Project comprises the section of NH-17 from km 93.700 to km 283.300. A provisional completion certificate was issued on January 31, 2020.

Corridor description and competing roads

The project road from the Goa/Karnataka border (near Kawar) to Kundapur is a 190 km section of the Mumbai-Goa highway (NH-17) from km 93.70 to km 283.30. NH-17 is the most important transportation corridor along the west coast of India. It starts at Panvel, at the junction of NH-4, and ends at Kanyakumari. NH-17 mainly traverses through the west coast of India, sometimes touching the shores of the Arabian Sea. The NH-66 touches the Arabian Sea at Maravanthe in Karnataka, Thalassery, Alappuzha, and Kollam in Kerala. It passes through the states of Maharashtra, Goa, Karnataka, Kerala, and Tamil Nadu.

The four-laning of the Goa/Karnataka Border – Kundapur section of NH-17 is a Phase IV project of the NHAI on a public private partnership basis under the DBFOT pattern. Ankola, Bhaktal, Kumta, and Karwar are the main urban centres on the project corridor. For most of its length, the project road runs parallel to the western coast. The project road is the main connectivity between Mumbai and the southern parts of the west coast like Goa, Kannur, Kochi, Thiruvananthapuram, and Kanyakumari. Transport of goods and passengers are largely dependent on this road.

The major centers which have an impact on the project road in terms of traffic are Goa, Kumta, and Bhaktal. Goa is a coastal state bordered by Maharashtra and Karnataka, with the Arabian Sea forming its west coast. It was ranked the 'best placed state' by the 11th Finance Commission for its infrastructure. Kumta is a town in Karnataka and is situated 72.7 km from Karwar. It is one of the most important stations along the Konkan Railway line running between Mumbai and Mangalore, Bhaktal is a port town in Karnataka, and is also a major station on the Konkan Railway.

Concession period and revenue sharing arrangement

The NHAI granted IRB WTL a concession for a period of 28 years for this project. The concession period commenced on March 3, 2014 and is expected to expire on March 2, 2042. IRB WTL commenced tolling on February 11, 2020.

The concession agreement provides that if the actual traffic volume falls short of or exceeds the target traffic volume on the target date, the concession period will be extended or reduced, respectively. As per the concession agreement, in the event the actual average traffic on the target date exceeds the target traffic volume by more than 2.5%, the concession period may be reduced by 0.75% for every 1.00% excess in actual average traffic as compared to the target traffic volume, provided that such reduction in the concession period does not exceed 10% of the original concession period. In the event that the actual average traffic on the target date falls short of the target traffic volume by more than 2.5%, the concession period may be extended by 1.5% for every 1.00%, provided that such extension in the concession period does not exceed 20% of the original concession period. The concession agreement, however, also stipulates that, if the actual average traffic exceeds the design capacity in any accounting year, the NHAI may, at its discretion, cause IRB WTL to undertake suitable capacity augmentation of the project. If capacity augmentation is required, the concession period would be for a period of up to five years so as to yield a post-tax return on equity of 16% per annum. The concession agreement also states that in the event that the NHAI requires IRB WTL to undertake capacity augmentation, there will be no reduction in the concession period pursuant to any other provision of the concession agreement.

For this project, the target date and target traffic volume in the concession agreement is April 1, 2022 and 21,307 PCUs, respectively.

In consideration of the grant of concession, IRB WTL pays the NHAI a concession fee of ₹1 per annum.

Monthly toll revenue

IRB WTL has commenced collection of toll in relation to this project on February 11, 2020.

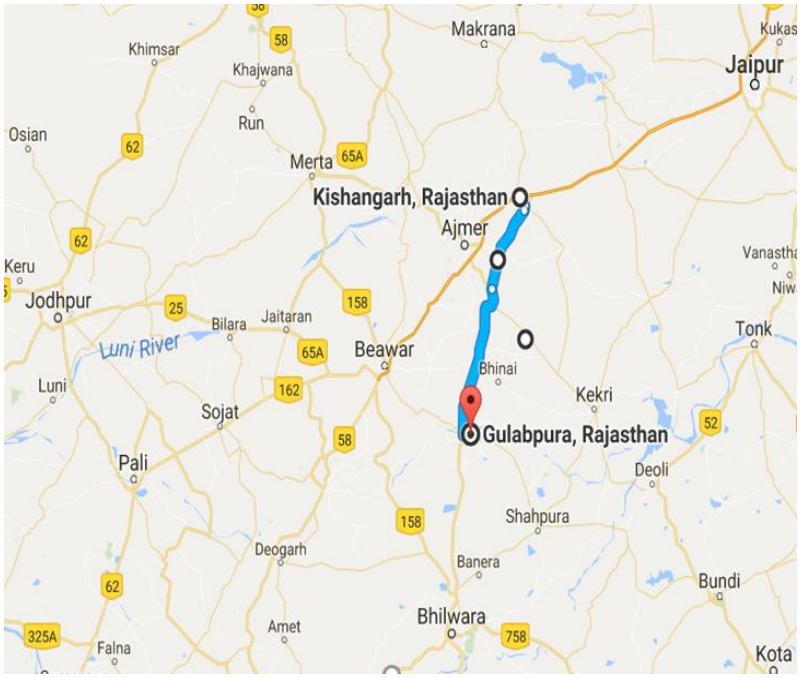
Land

The NHAI owns the land that underlies the Goa - Kundapur NH-17 Project.

Structure of ownership of the project

For information about the proposed structure of ownership of the project by the Trust, see "*Background and Structure of the Trust*" on page 81.

5. *Kishangarh – Gulabpura NH-79/79A Project*



Map of the Kishangarh - Gulabpura NH-79/79A Project

On February 22, 2017, the NHAI and KGTL entered into a concession agreement in respect of the Kishangarh – Gulabpura NH-79/79A Project. KGTL was engaged to augment a 90.00 km section of NH-79/79A between Kishangarh and Gulabpura in Rajasthan by six-laning on a DBFOT basis. Being a four-to-six-laning project, the concession period and the collection of toll commenced on February 21, 2018. As per the relevant concession agreement, the Kishangarh - Gulabpura NH-79/79A Project comprises the section of NH-79/79A from km 0.000 to km 90.000.

Corridor description and competing roads

The Kishangarh – Gulabpura NH-79/79A Project is the section of the former NH-79A and NH-79 which has now been re-designated as NH-48. The project road section takes off at Kishangarh and ends at Gulabpura, both in the state of Rajasthan. The NH-79A was the section from Kishangarh to Nasirabad and part of NH-79 (Ajmer to Ghata Billod) was the remaining section from Nasirabad to Gulabpura.

After renumbering of all national highways by National Highway Authority of India in 2010, the current NH-48 was formed by merging the old NH-8 (Delhi-Mumbai section) and NH-4 (Mumbai-Chennai). NH-48 starts at Delhi and terminates at Chennai and goes through Jaipur, Udaipur, Vadodara, Mumbai, Pune and Bengaluru, traversing through six states of India. It has a total length of 2807 km (1,744 miles).

The project road alignment passes through the small towns of Shreenagar, Nasirabad, Jharwasa, Bandanwara and Bijainagar (Vijay Nagar). The main project influence area of the project road consists of the two districts through which the project road passes namely of Ajmer and Bhilwara. In addition, the project influence area includes the districts of Udaipur, Chittorgarh and Jaipur in the state of Rajasthan. While the project road section carries long distance traffic from many far off places in India, the main influence region remain the state of Rajasthan.

Concession period and revenue sharing arrangement

The NHAI granted KGTL a concession for a period of 20 years for this project. The concession period commenced on February 21, 2018 and is expected to expire on February 20, 2038. KGTL began collecting toll with respect to this project on February 21, 2018.

The concession agreement provides that if the actual traffic volume falls short of or exceeds the target traffic volume on the target date, the concession period will be extended or reduced, respectively. As per the

concession agreement, in the event the actual average traffic on the target date exceeds the target traffic volume by more than 2.5%, the concession period may be reduced by 0.75% for every 1.00% excess in actual average traffic as compared to the target traffic volume, provided that such reduction in the concession period does not exceed 10% of the original concession period. In the event that the actual average traffic on the target date falls short of the target traffic volume by more than 2.5%, the concession period may be extended by 1.5% for every 1.00%, provided that such extension in the concession period does not exceed 20% of the original concession period. The concession agreement, however, also stipulates that, if the actual average traffic exceeds the design capacity in any accounting year, the NHAI may, at its discretion, cause KGTL to undertake suitable capacity augmentation of the project. If capacity augmentation is required, the concession period would be for a period of up to five years so as to yield a post-tax return on equity of 16% per annum. The concession agreement also states that in the event that the NHAI requires KGTL to undertake capacity augmentation, there will be no reduction in the concession period pursuant to any other provision of the concession agreement.

For this project, the target date and target traffic volume in the concession agreement is May 1, 2026 and 76,236 PCUs, respectively.

In consideration of the grant of concession, KGTL pays the NHAI a concession fee of ₹1 per annum. Additionally, after the third anniversary year of the COD, KGTL is required to pay a premium in the form of an additional concession fee equal to ₹1,863.00 million as due to the NHAI during that year, due and payable for the period remaining in that year; and for each subsequent year till the ninth anniversary of the COD, the premium will be determined by increasing the amount of premium in the respective year by an additional 3% as compared to the immediately preceding year and for each subsequent year of the concession period, the premium will be determined by increasing the amount of premium in the respective year by an additional 8% as compared to the immediately preceding year.

Monthly toll revenue

The following table sets out the gross monthly toll revenues received from the project for the periods indicated:

Period	Toll revenue (₹ in millions)
October 2019	94.80
November 2019	91.05
December 2019	96.32
January 2020	94.70

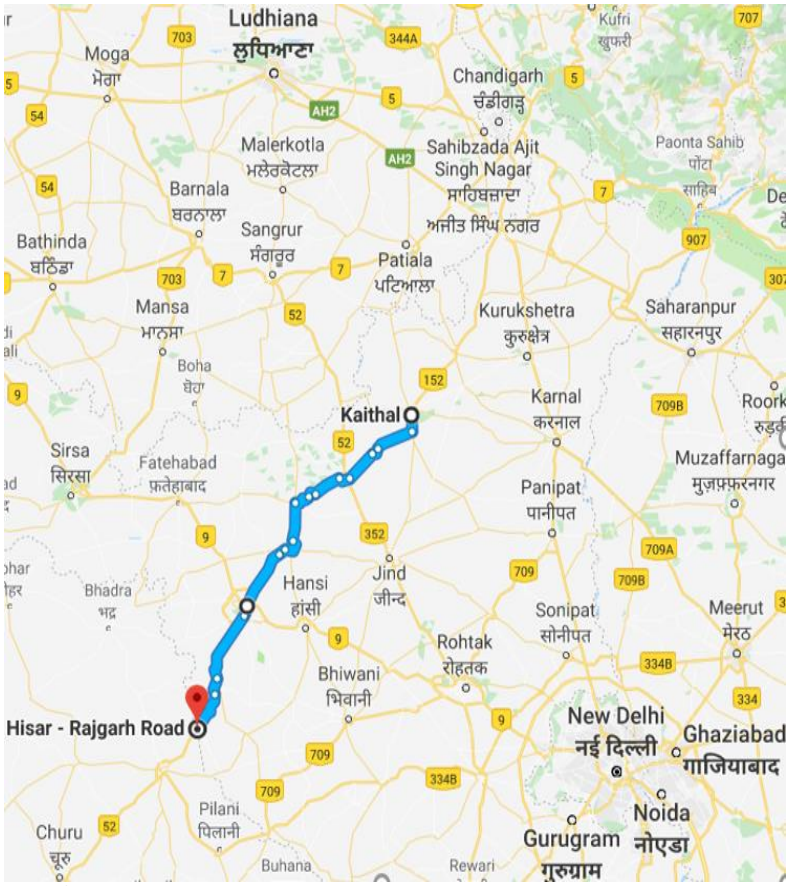
Land

The NHAI owns the land that underlies the Kishangarh – Gulabpura NH-79/79A Project.

Structure of ownership of the project

For information about the proposed structure of ownership of the project by the Trust, see "*Background and Structure of the Trust*" on page 81.

6. *Kaithal – Rajasthan Border NH-152/65 Project*



Map of the Kaithal – Rajasthan Border NH-152/65 Project

On June 23, 2014, the NHAI and KTL entered into a concession agreement in respect of the Kaithal – Rajasthan Border NH-152/65 Project. KTL was engaged to augment a 166.259 km section of NH-152/65 between Kaithal and Rajasthan Border in Haryana by four-laning on a DBFOT basis. The concession period commenced on July 15, 2015 and the collection of toll commenced on September 6, 2017. As per the relevant concession agreement, the Kaithal - Rajasthan Border NH-152/65 Project comprises the section of NH-152/65 from km 33.250 to km 241.580. Provisional completion certificates dated September 6, 2017 and July 9, 2018 and a completion certificate dated March 29, 2019 have been issued in relation to the project.

Corridor description and competing roads

The Kaithal - Rajasthan Border NH-152/65 Project from Kaithal to Rajasthan border is part of a corridor which connects, *inter-alia*, part of Haryana, Punjab, Himachal Pradesh and a certain part of Uttarakhand to Rajasthan, Gujarat and Costal parts of Maharashtra and down to the south. The project road section form Kaithal to Rajasthan border passes through three districts of Haryana namely Kaithal, Hisar and Bhiwani. Project road also passes through the major towns and development areas of Narwana, Hisar and Siwani, in addition to Kaithal.

The project road has been widened to four lanes and has four bypasses. Earlier, there were a number of congestion points along the route of the project road in form of narrow roads inside towns, level crossings and bad riding quality. The road from Ambala to Kaithal has also been four-laned. This is expected to improve the flow of traffic on project corridor.

The project road is the shortest route between Punjab, Jammu and Kashmir, Gujarat, Rajasthan, Maharashtra, Goa, and Kerala and according to the relevant Traffic Consultant, becomes a good alternate route to NH-1 and NH-8 for traffic bound towards Gujarat, Rajasthan, Maharashtra, Goa and Kerala from Haryana, Punjab, Jammu and Kashmir and Himachal Pradesh.

The project road also caters to local intra-state traffic between the districts of Ambala, Chandigarh, Kaithal, Jind, Hisar, Bhiwani in Haryana and Churu, Sikar, Nagaur and Jodhpur in Rajasthan. According to the relevant

Traffic Consultant, the project road alignment is a good option for the traffic between Ludhiana and Ajmer and down south. The traffic from Ludhiana joins the project road at Hisar and then proceeds towards Ajmer.

Concession period and revenue sharing arrangement

The NHAI granted KTL a concession for a period of 27 years for this project. The concession period commenced on July 15, 2015 and is expected to expire on July 14, 2042. KTL began collecting toll with respect to this project on September 6, 2017.

The concession agreement provides that if the actual traffic volume falls short of or exceeds the target traffic volume on the target date, the concession period will be extended or reduced, respectively. As per the concession agreement, in the event the actual average traffic on the target date exceeds the target traffic volume by more than 2.5%, the concession period may be reduced by 0.75% for every 1.00% excess in actual average traffic as compared to the target traffic volume, provided that such reduction in the concession period does not exceed 10% of the original concession period. In the event that the actual average traffic on the target date falls short of the target traffic volume by more than 2.5%, the concession period may be extended by 1.5% for every 1.00%, provided that such extension in the concession period does not exceed 20% of the original concession period. The concession agreement, however, also stipulates that, if the actual average traffic exceeds the design capacity in any accounting year, the NHAI may, at its discretion, cause KTL to undertake suitable capacity augmentation of the project. If capacity augmentation is required, the concession period would be for a period of up to five years so as to yield a post-tax return on equity of 16% per annum. The concession agreement also states that in the event that the NHAI requires KTL to undertake capacity augmentation, there will be no reduction in the concession period pursuant to any other provision of the concession agreement.

For this project, the target date and target traffic volume set out in the concession agreement is April 1, 2023 and 21,919 PCUs, respectively.

In consideration of the grant of concession, KTL pays the NHAI a concession fee of ₹1 per annum.

Monthly toll revenue

The following table sets out the gross monthly toll revenues received from the project for the periods indicated:

Period	Toll revenue (₹ in millions)
October 2019	79.36
November 2019	82.36
December 2019	86.07
January 2020	84.51

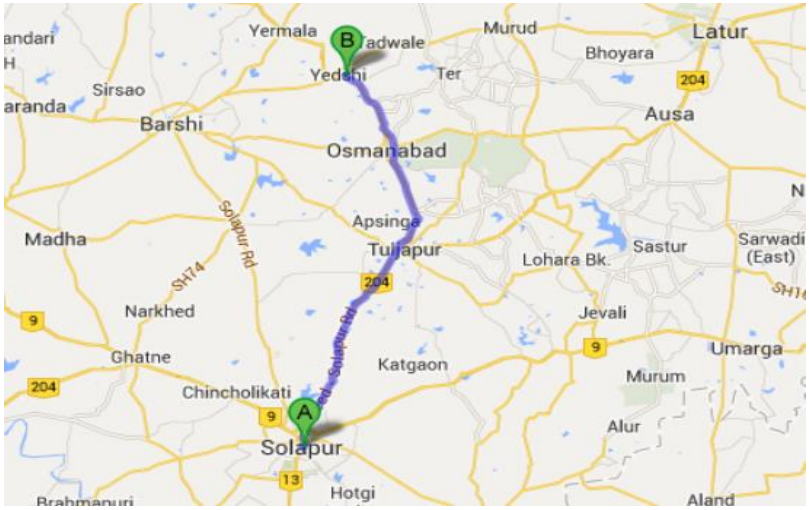
Land

The NHAI owns the land that underlies the Kaithal – Rajasthan Border NH-152/65 Project.

Structure of ownership of the project

For information about the proposed structure of ownership of the project by the Trust, see "*Background and Structure of the Trust*" on page 81.

7. *Solapur – Yedeshi NH-211 Project*



Map of the Solapur - Yedeshi NH-211 Project

On March 3, 2014, the NHAI and SYTL entered into a concession agreement in respect of the Solapur – Yedeshi NH-211 Project. SYTL was engaged to augment a 98.717 km section of NH-211 between Solapur and Yedeshi in Maharashtra by four-laning on a DBFOT basis. The concession period commenced on January 21, 2015 and the collection of toll commenced on March 7, 2018. As per the relevant concession agreement, the Solapur – Yedeshi NH-211 Project comprises the section of NH-211 from km 0.000 to km 100.000. A provisional completion certificate was issued on March 5, 2018. The completion certificate for the project was issued on October 15, 2019.

Corridor description and competing roads

The Solapur - Yedeshi NH-211 Project has been developed as a four lane highway. NH-211 starts at Solapur and ends at Dhule. The highway is 460 km long and falls within Maharashtra state. The broad influence area of the project road includes other states in India like Madhya Pradesh, Gujarat, Karnataka, Tamil Nadu and Andhra Pradesh. According to the relevant Traffic Consultant, a majority of the passenger traffic on the project road is originating from or destined to Maharashtra. In case of freight traffic, more than 50% of the trucks are from Maharashtra and the others are from Karnataka, Gujarat and Andhra Pradesh.

The traffic on the project road is primarily of local and regional level. According to the relevant Traffic Consultant, the possibility of opting for any alternate route for the set of origin destinations is unlikely. The highest traffic at toll plaza 1 is between Sholapur and Tujalpur and at toll plaza 2 is between Tujalpur and Terkhed. According to the Traffic Consultant, any alternate route option for this is presently unviable for tollable traffic on project road.

Concession period and revenue sharing arrangement

The NHAI granted SYTL a concession for a period of 29 years for this project. The concession period commenced on January 21, 2015 and is expected to expire on January 20, 2044. SYTL began collecting toll with respect to this project on March 7, 2018.

The concession agreement provides that if the actual traffic volume falls short of or exceeds the target traffic volume on the target date, the concession period will be extended or reduced, respectively. As per the concession agreement, in the event the actual average traffic on the target date exceeds the target traffic volume by more than 2.5%, the concession period may be reduced by 0.75% for every 1.00% excess in actual average traffic as compared to the target traffic volume, provided that such reduction in the concession period does not exceed 10% of the original concession period. In the event that the actual average traffic on the target date falls short of the target traffic volume by more than 2.5%, the concession period may be extended by 1.5% for every 1.00%, provided that such extension in the concession period does not exceed 20% of the original concession period. The concession agreement, however, also stipulates that, if the actual average traffic exceeds the design capacity in any accounting year, the NHAI may, at its discretion, cause SYTL to undertake suitable capacity augmentation of the project. If capacity augmentation is required, the concession period would be for a period of

up to five years so as to yield a post-tax return on equity of 16% per annum. The concession agreement also states that in the event that the NHAI requires SYTL to undertake capacity augmentation, there will be no reduction in the concession period pursuant to any other provision of the concession agreement.

For this project, the target date and target traffic volume in the concession agreement is October 1, 2023 and 22,210 PCUs, respectively.

In consideration of the grant of concession, SYTL pays the NHAI a concession fee of ₹1 per annum.

Monthly toll revenue

The following table sets out the gross monthly toll revenues received from the project for the periods indicated:

Period	Toll revenue (₹ in millions)
October 2019	36.62
November 2019	56.85
December 2019	66.58
January 2020	64.57

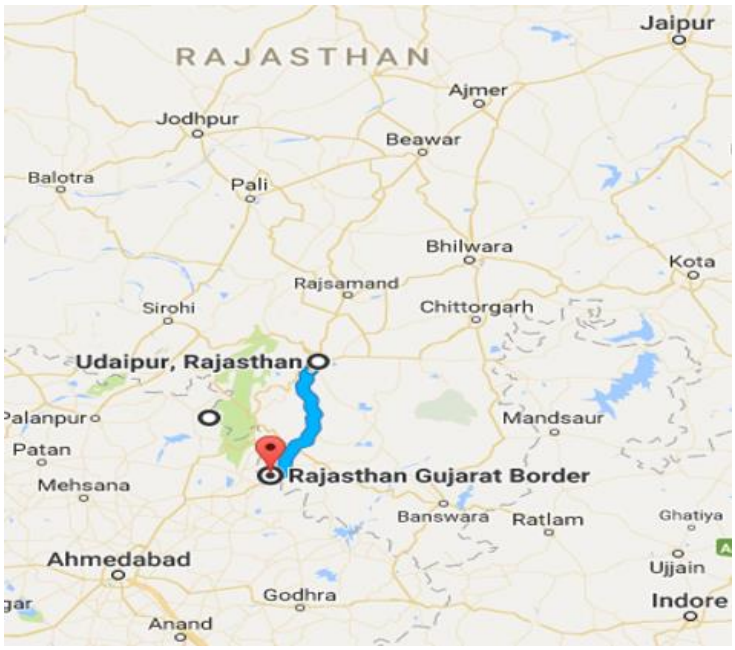
Land

The NHAI owns the land that underlies the Solapur - Yedeshi NH-211 Project.

Structure of ownership of the project

For information about the proposed structure of ownership of the project by the Trust, see "*Background and Structure of the Trust*" on page 81.

8. *Udaipur - Rajasthan Border NH-8 Project*



Map of the Udaipur – Rajasthan Border NH-8 Project

On December 9, 2016, the NHAI and UTL entered into a concession agreement in respect of the Udaipur - Rajasthan Border NH-8 Project. UTL was engaged to augment a 113.80 km section of NH-8 between Udaipur and Rajasthan Border in Rajasthan and Gujarat by six-laning on a DBFOT basis. Being a four-to-six-laning project, the concession period and the collection of toll commenced on September 3, 2017. As per the relevant concession agreement, the Udaipur - Rajasthan Border NH-8 Project comprises the section of NH-8 from km 287.400 to km 401.200.

Corridor description and competing roads

The 114 km four-lane toll road (NH-48) that comprises the Udaipur - Rajasthan Border NH-8 Project is located in Rajasthan and forms part of the Delhi-Mumbai arm of the Golden Quadrilateral. It is also part of the direct link between Ahmedabad and Udaipur. The project is being six-laned. There is one toll plaza with six entry lanes. Situated amidst *ghats* (hills/valleys), the project road has a few rural and semi-urban settlements along its alignment. However, there is noticeable passenger movement due to the presence of a few religious centers in the area.

Tourism, agriculture, and mineral industries contribute to Udaipur's diverse economic base. Udaipur sees major tourist footfall throughout the year owing to its picturesque landscape, lakes, and historic palaces and architecture. Shamlaji is a major Hindu pilgrimage dedicated to God Vishnu. Each year an annual fair is held October which attracts huge crowds from surrounding region. Udaipur district is rich in lead, zinc, silver, phosphate, calcite, copper and limestone minerals. Udaipur is known for its marble which is mined, processed, and is exported across the world. Nathdwara to the north of the project road is one of the biggest extractors of marble and limestone minerals.

Serving as the primary link between Delhi, Jaipur and Udaipur in the north and Himmatnagar, Ahmedabad and Mumbai in the south, the project road is a key strategic corridor connecting Rajasthan and Udaipur. Accordingly, there is minimal competition to the project road as per the relevant Traffic Consultant.

Concession period and revenue sharing arrangement

The NHAI granted UTL a concession for a period of 21 years for this project. The concession period commenced on September 3, 2017 and is expected to expire on September 2, 2038. UTL began collecting toll with respect to this project on September 3, 2017.

The concession agreement provides that if the actual traffic volume falls short of or exceeds the target traffic volume on the target date, the concession period will be extended or reduced, respectively. As per the concession agreement, in the event the actual average traffic on the target date exceeds the target traffic volume by more than 2.5%, the concession period may be reduced by 0.75% for every 1.00% excess in actual average traffic as compared to the target traffic volume, provided that such reduction in the concession period does not exceed 10% of the original concession period. In the event that the actual average traffic on the target date falls short of the target traffic volume by more than 2.5%, the concession period may be extended by 1.5% for every 1.00%, provided that such extension in the concession period does not exceed 20% of the original concession period. The concession agreement, however, also stipulates that, if the actual average traffic exceeds the design capacity in any accounting year, the NHAI may, at its discretion, cause UTL to undertake suitable capacity augmentation of the project. If capacity augmentation is required, the concession period would be for a period of up to five years so as to yield a post-tax return on equity of 16% per annum. The concession agreement also states that in the event that the NHAI requires UTL to undertake capacity augmentation, there will be no reduction in the concession period pursuant to any other provision of the concession agreement.

For this project, the target date and target traffic volume in the concession agreement is September 21, 2026 and 61,435 PCUs, respectively.

In consideration of the grant of concession, UTL pays the NHAI a concession fee of ₹1 per annum. Additionally, immediately after the third anniversary year of the COD, a premium in the form of an additional concession fee equal to ₹1,638.00 million is required to be paid by UTL as due to the NHAI during that year, due and payable for the period remaining in that year; and for each subsequent year till the ninth anniversary of the COD, the premium will be determined by increasing the amount of premium in the respective year by an additional 3% as compared to the immediately preceding year and for each subsequent year of the concession period, the premium will be determined by increasing the amount of premium in the respective year by an additional 8% as compared to the immediately preceding year.

Monthly toll revenue

The following table sets out the gross monthly toll revenues received from the project for the periods indicated:

Period	Toll revenue (₹ in millions)

Period	Toll revenue (₹ in millions)
October 2019	107.73
November 2019	111.64
December 2019	116.81
January 2020	116.35

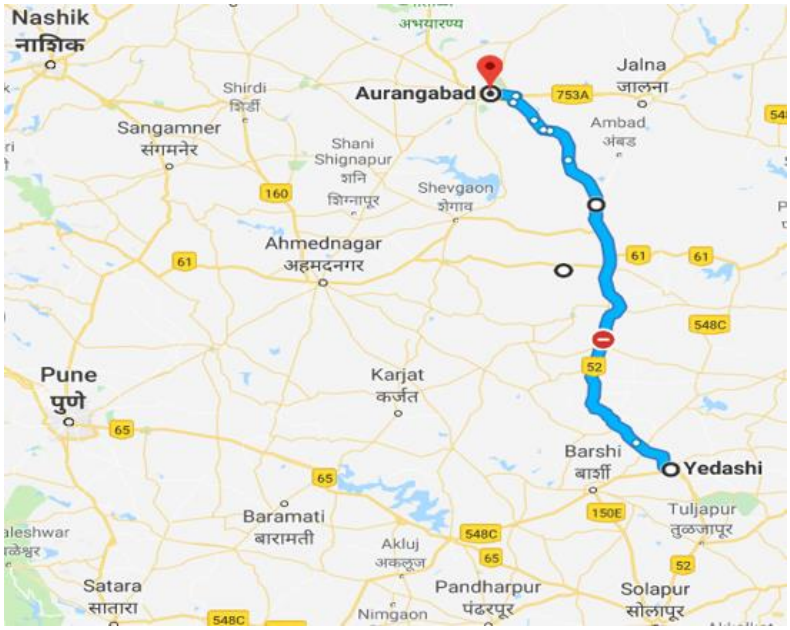
Land

The NHAI owns the land that underlies the Udaipur - Rajasthan Border NH-8 Project.

Structure of ownership of the project

For information about the proposed structure of ownership of the project by the Trust, see "*Background and Structure of the Trust*" on page 81.

9. *Yedeshi – Aurangabad NH-211 Project*



Map of the Yedeshi - Aurangabad NH-211 Project

On May 30, 2014, the NHAI and YATL entered into a concession agreement in respect of the Yedeshi - Aurangabad NH-211 Project. YATL was engaged to augment a 189.09 km section of NH-211 between Yedeshi and Aurangabad in Maharashtra by four-laning on a DBFOT basis. The concession period commenced on July 1, 2015 and the collection of toll commenced on March 17, 2019. As per the relevant concession agreement, the Yedeshi – Aurangabad NH-211 Project comprises the section of NH-211 from km 100.00 to km 290.200. A provisional completion certificate was issued on March 15, 2019.

Corridor description and competing roads

Yedeshi - Aurangabad NH-211 Project is being upgraded from two lanes to four lanes and will have three toll plazas. The inter-urban areas along the project road have vast stretches of agricultural fields. Aurangabad has several breweries. According to the traffic report, the project road, being part of the long-distance North-South Corridor (NH-52) between Delhi and Bengaluru, shows a mix of commodities and traffic from and to various parts of the country.

According to the relevant Traffic Consultant, as construction activity is currently ongoing on the project road, NH-48 (the Mumbai - Bengaluru corridor) represents a more attractive alternative through Pune. However, once construction is completed, it is expected that the project road will be the first choice for strategic long distance north-south movements. It is also expected that some sections of the project road such as Shirapur (near Beed) become part of short-to-medium-distance east-west movement for CJVs and light trucks.

Concession period and revenue sharing arrangement

The NHAI granted YATL a concession for a period of 26 years for this project. The concession period commenced on July 1, 2015 and is expected to expire on June 30, 2041. YATL began collecting toll with respect to this project on March 17, 2017.

The concession agreement provides that if the actual traffic volume falls short of or exceeds the target traffic volume on the target date, the concession period will be extended or reduced, respectively. As per the concession agreement, in the event the actual average traffic on the target date exceeds the target traffic volume by more than 2.5%, the concession period may be reduced by 0.75% for every 1.00% excess in actual average traffic as compared to the target traffic volume, provided that such reduction in the concession period does not exceed 10% of the original concession period. In the event that the actual average traffic on the target date falls short of the target traffic volume by more than 2.5%, the concession period may be extended by 1.5% for every 1.00%, provided that such extension in the concession period does not exceed 20% of the original concession period. The concession agreement, however, also stipulates that, if the actual average traffic exceeds the design capacity in any accounting year, the NHAI may, at its discretion, cause YATL to undertake suitable capacity augmentation of the project. If capacity augmentation is required, the concession period would be for a period of up to five years so as to yield a post-tax return on equity of 16% per annum. The concession agreement also states that in the event that the NHAI requires YATL to undertake capacity augmentation, there will be no reduction in the concession period pursuant to any other provision of the concession agreement.

For this project, the target date and target traffic volume in the concession agreement is October 1, 2023 and 24,407 PCUs, respectively.

In consideration of the grant of concession, YATL pays the NHAI a concession fee of ₹1 per annum.

Monthly toll revenue

The following table sets out the gross monthly toll revenues received from the project for the periods indicated:

Period	Toll revenue (₹ in millions)
October 2019	70.74
November 2019	88.97
December 2019	100.28
January 2020	100.68

Land

The NHAI owns the land that underlies the Yedeshi – Aurangabad NH-211 Project.

Structure of ownership of the project

For information about the proposed structure of ownership of the project by the Trust, see "*Background and Structure of the Trust*" on page 81.

Operation and Maintenance Services

Our key business activity will be the development, operation and maintenance of the Initial Road Assets pursuant to, and in accordance with, the provisions of the concession and other road project related agreements (as applicable). The Project SPVs are required to operate and maintain the Initial Road Assets in accordance with the concession agreement, including by modifying, repairing or otherwise making improvements to the road. In particular, each of the concession agreements requires the Project SPV to maintain the Initial Road Asset to certain standards during the concession period. The NHAI has used, and will likely continue to use, independent engineers to carry out periodic tests to assess the quality of the roads or bridges and their related maintenance.

The Project Manager manages the critical day-to-day operation and maintenance of the Initial Road Assets. The

Project Manager, through the relevant Project Implementation Agreement, provides project and contract management support, such as liaising with and supervising sub-contractors, managing design and planning and obtaining necessary licenses and approvals for the projects.

A Project SPV is generally responsible for carrying out operation and maintenance activities at its toll road during its concession period. The scope of a Project SPV's operation and maintenance activities is usually defined in the relevant concession agreement. Within the scope of such operation and maintenance obligations, the Project SPV may be required to undertake routine and periodic maintenance of project roads, maintain and comply with safety standards to ensure smooth and safe traffic movement, deploy adequate human resources for incident management, maintain proper medical and sanitary arrangements for personnel deployed at the site, prevent any unauthorized entry to and exit from the project as may be required. After the completion of the Formation Transactions, the activities of the Project SPVs will be undertaken by the Project Manager pursuant to the Project Management Agreements.

A computerised maintenance management system is used to ensure that all maintenance is systematically and correctly scheduled, carried out and recorded. In addition, it is used to assure planning, control and monitoring of each maintenance activity. Maintenance methodologies and system performance are regularly reviewed and examined for optimisation of resource deployment.

Operations

Toll collection system

Toll is collected for each journey through each of the toll plazas. Signs setting out the toll rates for the Initial Road Assets are displayed at the toll booths and tolls can be paid or tendered by the driver of any vehicle in the following manners:

Cash

Tolls paid by means of cash are collected by toll collectors at the manual toll booths.

Electronic toll collection

The Project SPVs make use of technology for the operation of the projects which helps in improving operational efficiency and ensuring transparency in the process of toll collection, including through electronic toll collection system based on radio-frequency identification technology was implemented in the projects. Further, the Project SPVs also use weight based tolling systems with the help of devices that are designed to capture and record axle weights and gross vehicle weights as vehicles drive over a measurement device fitted in each lane.

Monitoring

Toll collection

Payments at the toll plazas, both electronic as well as cash payments are processed through a semi-automated or a fully-automated toll collection system, depending on complexity of the project. Both these systems collect and store traffic and payment data, thereby reducing the need for manual operation. A semi-automated system consists of revenue collection software desktop, barrier gate, smart cards and monitoring cameras and a fully automated system includes equipment such as vehicle counting classifier, vehicle audit system, communication channels and traffic control equipment in addition to all the components of a semi-automated system.

For the purpose of identifying categories of vehicles and to charge an appropriate toll rate, the automatic vehicle identification based in-road/infrared sensors are also used. The Project SPVs also use weigh-in-motion technology for projects where weight based toll collection is mandated. The weight based tolling systems are integrated with the fully automatic toll collection system for enhanced revenue controls.

There are cameras installed particularly for capturing and recording any toll evasion incidents by vehicles. There is also a back-up power supply system to ensure that there is no interruption to power supply at the toll plazas in order to maintain a stable power supply for the sub-systems and equipment. Servers used in the toll collection systems at the toll plazas are capable of real time uploading of transaction data from toll lane equipment and performing an automatic daily backup to prevent any toll data loss and to enable quick system recovery, which

allows the Project SPVs to collect variable amounts of tolls depending on the class of motor vehicles and serves as a traffic information system.

Only certain authorized persons have access to the toll collection systems and the activities are recorded for security purposes. The Project Manager will be responsible for operating the toll collection system at the toll plazas of the Project SPVs and taking regular preventive and corrective measures to maintain such systems at the highest levels of security and reliability.

We have set up a centralized control room ("**Control Room**") at our office in Mumbai that consolidates cameras at the toll plazas to enable video based monitoring of the toll operations throughout the day.

Traffic control

There is an emergency telephone system to provide a reliable communication channel for the drivers in cases of emergency where they need to communicate with staff at the Control Room. Emergency telephone systems and emergency helpline numbers are provided at all projects where such systems and numbers are required by the relevant concession agreement. There are also patrol vehicles that patrol an assigned section of the relevant project for regulating traffic and undertaking surveillance activities.

Safety Measures

Under the terms of the concession agreements, concessionaires are required to ensure certain safety requirements, which include measures such as road signs, pavement marking, traffic control devices, roadside furniture, highway design elements, enforcement and emergency response. The concessionaires are bound by, *inter-alia*, applicable law and applicable permits, the Manual for Safety in Road Design as issued by MoRTH, relevant standards and guidelines of the Indian Roads Congress and good industry practice. The concessionaires also carry out safety audits of the projects from time to time, by appointing a safety consultant, which is comprised of, among others, one road safety expert and one traffic planner. These safety requirements apply to all phases of construction, operation and maintenance with emphasis on identification of factors associated with accidents and implementation of appropriate remedial measures.

Management

We will be managed by qualified personnel of the Investment Manager, all of whom have or will have management and operational experience in the roads and highways sector.

After the completion of the Formation Transactions, the Investment Manager, in consultation with the Trustee, will appoint the directors on the board of each Project SPV in accordance with the InvIT Regulations. Each Project SPV's board of directors will also form committees as may be required under the Companies Act, 2013 and rules made thereunder.

For further details about the Investment Manager, see "*The Investment Manager*" on page 243.

Various financing agreements that the Project SPVs have entered into with certain banks and financial institutions contain certain restrictive covenants, including, but not limited to, requirements that they obtain consent from the lenders prior to changing the composition of any board of directors of any Project SPV. For more details, see "*Risk Factors – The Project SPVs are subject to restrictive covenants under their financing agreements that could limit our flexibility in managing our business or to use cash or other assets*" on page 31.

Seasonality

Traffic volume tends to decrease during the monsoon season and conversely tends to increase during holiday seasons. While the northern parts of India experience monsoon rains during the period from June or July until September or October every year, the southern parts of India, especially Tamil Nadu and some parts of coastal Andhra Pradesh, experience monsoon rains even during the months of October to December. The monsoon season may also restrict the ability to carry on activities related to operation and maintenance of toll roads. For further details on risk associated with seasonality, see "*Risk Factors – Our business will be subject to seasonal fluctuations that may affect our cash flows*" on page 25. Conversely, traffic volume tends to increase during holiday seasons.

Health, Safety and Environment

The Investment Manager and Project Manager believe that the Trust and the Project SPVs are in compliance, in all material respects, with applicable health, safety and environmental regulations and other requirements in their operations. The Project Manager believes that accidents and occupational health hazards can be significantly reduced through a systematic analysis and control of risks and by providing appropriate training to management, employees and sub-contractors. Project managers appointed by the Project SPVs for a project are principally responsible for ensuring that safety standards are met at the relevant project sites.

Intellectual Property

We do not own the "IRB" trademark and "IRB" logo, which are registered in the name of, and owned by, the Sponsor. However, pursuant to separate name licensing agreement, the Sponsor has granted to the Trust, each of the Project SPVs and the Investment Manager, the non-transferable and non-assignable right to use the "IRB" trademark as part of their respective corporate names, if applicable, as well as the "IRB" logo in connection with their respective businesses, on a non-exclusive basis. The license may be terminated under certain circumstances, including (i) if the Sponsor or any of its subsidiaries ceases to be the sponsor of the Trust for any reason whatsoever; or (ii) if the Sponsor or any of its subsidiaries ceases to hold at least 51% of the equity share capital of the Investment Manager, or an entity which is not a subsidiary of the Sponsor is appointed as the investment manager of the Trust. . Upon the termination of the license, the Trust or the relevant Project SPV, as the case may be, will be required to cease the use of the IRB trademark and change its name to remove IRB from its name within three months from the date of termination, which may have a material adverse effect on the operations of the Project SPVs and require management's time and attention.

See also "*Risk Factors –We do not own the 'IRB' trademark and logo. Our license to use the 'IRB' trademark and logo may be terminated under certain circumstances and our ability to use the trademark and logo may be impaired*" on page 29.

Property

The Investment Manager's registered office is located in Mumbai from which all its administrative and reporting activities are conducted. The principal place of business of the Trust is located in Mumbai. The Investment Manager and the Trust also have an office located in New Delhi. The Project SPVs typically lease various premises across India to facilitate their work at their project sites. These leases usually expire upon completion of the relevant project.

Insurance

The Project SPVs' operations are subject to hazards inherent in providing operation and maintenance services, such as risk of equipment failure, work accidents, fire, earthquake, flood and other force majeure events. This includes hazards that may cause injury and loss of life, damage and destruction of property, equipment and environmental damage. The Project SPVs' principal types of insurance coverage include fire insurance, and money insurance. The Investment Manager and the Trustee confirm that the amount of insurance that we presently maintain represents an adequate and appropriate level of coverage required to insure the Project SPVs' business and operations and all the infrastructure assets held by the Project SPVs, and is in accordance with the concession agreements and industry standards in India and will perform regular assessment on the adequacy of its insurance coverage on a yearly basis.

Legal Proceedings

The Project SPVs, the Sponsor, the Investment Manager, the Project Manager and the Trustee are involved in legal proceedings or claims from time to time. Certain proceedings or claims are currently pending at different levels of adjudication before various courts, tribunals and regulatory authorities. For a description of the material legal proceedings that are outstanding, see "*Material Litigation and Regulatory Action*" on page 345.

CORPORATE GOVERNANCE

Set out below is a summary of the corporate governance framework which will be in relation to the Trust, the Investment Manager and the Project SPVs after the transfer of the shares of the Project SPVs to the Trust.

Composition of the Board of Directors of the Investment Manager

As at the date of this Preliminary Placement Memorandum, the Investment Manager is a wholly-owned subsidiary of the Sponsor. For details of the current board of directors of the Investment Manager (the "**Board**"), see "*The Investment Manager*" on page 243.

The composition of the Board will change upon the transfer of 49% of the equity share capital of the Investment Manager from the Sponsor to Croxley Investment Pte. Ltd. ("**Croxley**"), on or prior to Allotment, pursuant to the share purchase agreement dated August 6, 2019, as amended, entered into between the Sponsor, Croxley and the Investment Manager (the "**IM SPA**"). The Sponsor, Croxley and the Investment Manager have also entered into a shareholders agreement dated August 6, 2019, as amended (the "**IM SHA**"), which will be effective from the date of closing under the IM SPA. For details of the rights in relation to shareholding and certain other rights of Croxley in the Investment Manager, see "*The Investment Manager*" on page 243.

On and from the date of closing under the IM SPA, the Board will consist of five directors in accordance with the terms of the IM SHA. The composition of the Board will be as follows:

(a) the Sponsor shall be entitled to nominate one director on the Board (the "**Sponsor Director**");

(b) Croxley will be entitled to nominate one director on the Board (the "**Investor Director**"); and

(c) three independent directors will be appointed in accordance with the Companies Act, of which: (i) the Sponsor and Croxley will be entitled to recommend the appointment one independent director each; and (ii) the Sponsor and Croxley will be entitled to jointly recommend the appointment of one independent director.

Under the IM SHA, an alternate director may be appointed to act as an alternate to the Sponsor Director or Investor Director during such director's absence for a period of at least three months from India, in accordance with the Companies Act.

The Investment Manager will reimburse the Board for all actual travel and accommodation expenses incurred by them or their alternate directors in connection with the performance of their duties as directors of the Investment Manager in accordance with the IM SHA. The directors will be entitled to sitting fees or any other remuneration for attending meetings as mutually agreed in writing by the parties.

In addition to the right to nominate directors on the Board, the Sponsor and Croxley will be entitled to appoint one observer on the Board and/or the committees of the Board.

Chairman

The chairman of the Board will be the Sponsor Director unless an Event of Default has occurred.

Quorum

Subject to the provisions of the Companies Act, the Sponsor Director and the Investor Director will constitute a quorum in meetings of the Board (including any meetings held by video-conferencing).

If quorum is not present within 30 (thirty) minutes of the scheduled time for any meeting of the Board or ceases to exist at any time during such meeting, the meeting of the Board will be automatically adjourned and be reconvened on the same day in the following week, time and place and if such day is not a Business Day, then the immediately following Business Day. At any such adjourned meeting, the presence of at least three Directors shall be required to constitute the quorum; provided that no Reserved Matters will be taken up for discussion or voted upon at any adjourned Board Meeting unless the Investor Director and the IRB Director are present in such meeting, or if prior written consent in respect of such Reserved Matters has been obtained in accordance with the IM SHA. No matters which were not part of the agenda for the original Board meeting will be discussed at such adjourned meeting. Subject to the terms of the IM SHA, the Investor Director and the IRB

Director may at any time waive their respective right to form part of the quorum for a particular Board Meeting, in writing, and at any such Board Meeting, no new matters other than those forming part of the agenda for such Board Meeting will be discussed or taken up.

Frequency of meetings

Subject to the provisions of the Companies Act, the Board will meet at least four times a year and once every 120 days, at any location mutually agreed between the Sponsor Director and the Investor Director.

Committees

On and from the date of closing under the IM SPA, the Investment Manager will be required to constitute (i) an audit committee; (ii) a capex monitoring committee; (iii) a health and safety monitoring committee; (iv) a nomination and remuneration committee; and (v) an internal complaints committee under the Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013 in accordance with the terms of the IM SHA.

The Sponsor and Croxley will have the right to nominate the Sponsor Director or the Investor Director, as applicable, as a member of any committee or sub-committee of the Board. In addition to the committees of the Board set out above, the Board may constitute committees for various functions from time to time.

Reserved Matters

On and from the date of closing under the IM SPA, in accordance with the terms of the IM SHA, the Sponsor and Croxley have agreed that no resolution will be passed or decision or action be taken by the Investment Manager in relation to any Manager Group Member, in any manner, including by: the Board, the shareholders or otherwise in respect of any of the Reserved Matters, unless the written consent of the Sponsor and Croxley has been obtained through the Sponsor Director and the Investor Director in the manner specified in the IM SHA, prior to any decisions on Reserved Matters being taken in any other manner. Subject to applicable law, the Sponsor, Croxley, the Sponsor Director and/or the Investor Director will have the right to require that any Reserved Matter be decided at a shareholder meeting instead of at a Board meeting and/or with the prior written consent of Croxley or of the Sponsor in accordance with the terms of the IM SHA.

Under the IM SHA, any obligation on any Manager Group Member is deemed to be a simultaneous and corresponding obligation on the Sponsor to exercise its voting rights in relation to the Investment Manager to perform such obligation.

For details of the Reserved Matters, see "*Rights of Unitholders – Approval of Unitholders*" on page 236.

Directors of the Project SPVs

After the completion of the Formation Transactions, the Investment Manager, in consultation with the Trustee, will appoint the directors on the board of each Project SPV in accordance with the InvIT Regulations. Further, pursuant to the terms of the IM SHA, each of the Sponsor and the Croxley have the right to require a director or observer on the board of directors of any Project SPV as a representative of the Investment Manager.

Fall-Away

The rights of the Sponsor and Croxley in relation to the board of directors of the Investment Manager, shareholders meetings and voting and reserved matters under the IM SHA will terminate with respect to such party upon such party's (together its affiliates') shareholding in the Investment Manager (calculated on a fully diluted basis) falling below 20% of the share capital of the Investment Manager.

All rights of the Sponsor or Croxley under the IM SHA other than the economic and voting rights attached to the securities held by them shall terminate with respect to such party upon such party's (together with its affiliates') shareholding in the Investment Manager (calculated on a fully diluted basis) falling below 10% of the share capital of the Investment Manager.

Policies of the Manager Group

Pursuant to the terms of the IMA SHA, the Investment Manager (on behalf of itself and the Trust) and each of the Project SPVs is required to adopt certain policies for corporate governance, key terms of which are set out below. Each Manager Group Member is required to ensure that these policies remain in full force and effect and consider amendments in accordance with the terms of the Framework Agreement. Ms. Shilpa C. Todankar has been designated by the Investment Manager as the Compliance Officer with respect to the Trust.

Code of Conduct

The Code of Conduct serves as a basis for maintaining the standards of honest and ethical business conduct including the ethical handling of actual or apparent conflicts of interest between personal and professional relationships, and ensuring confidentiality of corporate information and data for the Manager Group, the Sponsor/Project Manager, and the Trustee (together the "**Trust Entities**") and compliance with the applicable laws and the InvIT Regulations. The key terms of the Code of Conduct include *inter-alia*:

(i) Duties must be carried out in an honest, fair, diligent and ethical manner within the scope of the authority conferred and in accordance with applicable laws, rules, regulations, agreements, guidelines, standards, and internal policies and procedures.

(ii) Assets, properties, and human resources of the Manager Group Members are to be used only for the official business of the Trust Entities, and the security of all confidential information must be ensured.

(iii) The Trust Entities must not, and ensure that their employees do not engage in any business activity that conflicts with the interest of a Manager Group Member.

(iv) The Trust and the parties to the Trust must conduct all affairs in the interest of the unitholders of the InvIT, and they shall make adequate, accurate, explicit and timely disclosure of relevant material information to all unit holders, exchanges and the Securities and Exchange Board of India in accordance with the InvIT Regulations.

(v) The Trust, the parties to the Trust and any third party appointed by the Investment Manager shall not use any unethical means to sell, market or induce any person to buy units of the Trust and where a third party appointed by the Investment Manager fails to comply with this condition, the Investment Manager shall be held liable for the same. The Trust and the parties to the Trust shall render at all times high standards of service, exercise due diligence, ensure proper care and exercise independent professional judgment.

Disclosure of Information Policy

This policy sets out the process and procedure for determining materiality of information in relation to periodic disclosures required under applicable law, including the InvIT Regulations. The key terms of the Disclosure of Information Policy include *inter-alia*:

(i) The following information in relation to the Manager Group shall be provided to the Unitholders:
   a. quarterly management accounts within 20 days from the end of each calendar month;
   b. unaudited quarterly financial statements (including profit and loss accounts and a balance sheet) and management accounts for each financial quarter within 45 days from the end of such financial quarter;
   c. audited annual financial statements (including profit and loss accounts and a balance sheet) for every Financial Year within 60 days of the end of such Financial Year;
   d. notices, agenda and minutes of meetings of board of directors, committees of the board and shareholders of the Manager Group Member as may be requested by the unitholders;
   e. copies of all agreements, business projections, reports, certificates and any material information regularly provided to any other security holder or lender (in their capacity as security holders or lenders), including any management or audit or investigative reports provided to any security holder or lender, simultaneously with such security holder or lender;
   f. proposed Annual Budget for the upcoming Financial Year by March 15 of the preceding Financial Year;
   g. toll collection MIS data and lenders' independent engineers' reports for each SPV on monthly basis;

h. prior intimation, to the extent practicable, regarding initiation of any criminal litigation to which the Manager Group Member is a party; and
i. prior intimation regarding initiation of any civil or administrative litigation, arbitration or other legal proceedings to which the Manager Group Member is a party and which relate to a claim amount exceeding INR 25 million.

(ii) Disclosure of information to regulators:
a. The Manager Group Member shall submit the information required to be submitted to the SEBI, the NHAI, MoRTH, the RBI, the Stock Exchanges or any other governmental, regulatory, statutory, administrative, or judicial body under applicable law, including or such further information or clarification required by any of them; and
b. The Manager Group Member shall inform the SEBI, in writing, if any information or particulars previously submitted to SEBI are found to be false or misleading in any material particular or if there is any material change in the information already submitted, in accordance with InvIT Regulations.

Distribution Policy

For details of the Distribution Policy, see "*Distributions*" on page 231.

Procurement and Divestment Policy

This policy sets out the guidelines for procurement and divestment of the Trust Assets and the assets of any Manager Group Member (collectively, the "**Manager Group Assets**"). The key terms of the Procurement and Divestment Policy include, *inter-alia*:

(i) The Investment Manager is empowered to make all investment decisions with respect to the underlying assets or projects of the Trust, including, without limitation, investigation, selection, development, negotiation, structuring, restructuring, commitment to or monitoring and any further investment or divestment of the underlying assets or projects of the Trust.

(ii) The Investment Manager shall focus on addition of new assets to the existing portfolio of the Manager Group Assets. The projects acquired shall be in the under-construction phase in order to utilize and leverage the experience and technical expertise of the Manager Group Members.

(iii) Any decision for procurement and divestment of the Manager Group Assets must be made in accordance with the Annual Budget, the Business Plan and the terms of the Framework Agreement and the IM SHA. Any procurement or divestment that is not in accordance with such documents will require the written consent of the shareholders of the Investment Manager and the Unitholders of the Trust. It is clarified that this shall be treated as a matter which is not in the ordinary course of business and will require the approval of the unitholder under Regulation 22(5)(d) of the InvIT Regulations.

Leverage Policy

For details of the Leverage Policy, see "*Leverage*" on page 223.

Nomination and Remuneration Policy

This policy sets out the guidelines regarding the nomination, remuneration and removal of directors, key managerial personnel and employees of the Manager Group. The key terms of the Nomination and Remuneration Policy include, *inter-alia*:

(i) The board of directors of the Manager Group Members shall, as applicable, have the required number of independent directors in terms of the applicable law, including the Companies Act.

(ii) The board of directors of each of the Manager Group Members, is, as applicable, expected to possess the required expertise, skill and experience to effectively manage and direct the Manager Group Members to attain its organizational and business goals. They are expected to be persons with vision, leadership qualities, and proven competence and integrity.

(iii) Each member of the board of directors of the Manager Group Members, as applicable, shall ensure that

their personal interest does not run in conflict with the any of the Manager Group Member's interests.

(iv) The annual performance and remuneration review of the employees of the Manager Group Members shall be done once every year. The review of remuneration will be undertaken on the basis of the following criteria:
   a. Performance of the employee;
   b. Performance of the team to which such employee belongs;
   c. Overall performance of the Manager Group Member; and
   d. Prevailing business environment and requirement of manpower for future projects.

Additionally, the following terms will be applicable to the Investment Manager:

a. The board of directors shall constitute a capex monitoring committee, a health and safety monitoring committee, an audit committee and all such other committees of the board of directors as are required to be constituted by the Investment Manager under applicable law.
b. The board of directors shall appoint and designate such key managerial personnel as are required under applicable law, including a Chief Executive Officer, a Chief Financial Officer and a Company Secretary of the Investment Manager. These key managerial persons shall be jointly nominated by the Sponsor and Croxley, and appointed by the board of directors.

Record Retention Policy

The policy sets out the guidelines for the identification of documents and records which are required to be preserved, storage, maintenance and preservation of documents and records of the Manager Group and protection and preservation of all the necessary documents and records as per the statutory requirements. The key terms of the Record Retention Policy include, *inter-alia*:

(i) The policy applies to all the documents required to be maintained in terms of the InvIT Regulations, the applicable secretarial standards, and any other applicable law which shall be preserved under the custody of the compliance officer of the respective Manager Group Members. It also applies to all financial records required to be maintained in terms of the InvIT Regulations, the prescribed accounting standards, the Income Tax Act, 1961, and any other applicable law which shall be maintained under the custody of the chief financial officer of the respective Manager Group Member.

(ii) All documents which are required to be preserved by virtue of applicable laws shall be preserved either permanently or for such periods as may be mandated by applicable laws from time to time.

(iii) Documents which are required to be preserved for a period of not less than eight years after the completion of the relevant transaction shall be determined by the relevant heads of departments of the Manager Group Member from time to time.

(iv) Documents shall be preserved in a chronological manner for each financial year.

(v) The Manager Group Members shall maintain back-up of all documents maintained in electronic form. Documents which are confidential in nature shall, wherever possible, be kept under lock and key and shall be shared on a 'need to know' basis only, with persons directly involved in the transaction involving such documents and records.

(vi) Certain documents may be required to be kept open by the Manager Group Member for inspection in the manner specified under such applicable law. Regulatory authorities, including the SEBI, have the right of access to all registers and records.

(vii) Documents which are statutorily required to be hosted on the website of any Manager Group Member shall be hosted within the prescribed timeline from the occurrence of the event.

(viii) Where documents are no longer required to be preserved, or on the expiration of the specified period of time for which they were required to be preserved, they may be discarded or disposed off in accordance with the procedure specified under the applicable law, and where no procedure has been specified, they may be discarded or disposed off in accordance with the standard operating procedures applicable to the respective departments.

In addition, the Investment Manager (on behalf of itself and the Trust) and each of the Project SPVs have also adopted policies on corporation social responsibility, environment, health and safety, maternity benefits, equal opportunities, procurement, prohibited practices and anti-trust practices, anti-corruption practices, prevention of sexual harassment and anti-harassment, personal data protection and whistle-blowing.

SUMMARY OF THE CONCESSION AGREEMENTS

Set out below are summaries of the concession agreements entered into by the Project SPVs in relation to their respective business. The descriptions and summaries of the agreements below are not and nor do they purport to be complete descriptions or summaries of all terms of such agreements. Certain terms used in this section have the meanings assigned to such terms in the respective concession agreements. Copies of these concession agreements will be made available for inspection at the office of the Trust in New Delhi. See "Material Contracts and Documents for Inspection" on page 371.

1. Concession Agreement between AETL and the NHAI dated September 1, 2015

AETL has entered into a concession agreement for six-laning of km 199.660 to km 323.525, Agra to Etawah Bypass section of NH-2 in Uttar Pradesh on build, operate and transfer ("**BOT**") basis (the "**AETL Concession Agreement**"), for a period of 24 years, from August 1, 2016 ("**AETL Appointed Date**") or until such date on which the AETL Concession Agreement is terminated by a termination notice ("**AETL Termination Date**", and the period between the AETL Appointed Date and the AETL Termination Date, the "**AETL Concession Period**").

Certain Definitions

"**AETL Debt Due**" shall mean the aggregate of the following sums expressed in Indian Rupees outstanding on the transfer date:

a) the principal amount of the debt provided by the senior lenders under the financing agreements for financing the total project cost (the "**Principal**") but excluding any part of the Principal that had fallen due for repayment two years prior to the transfer date;

b) all accrued interest, financing fees and charges payable under the financing agreements on, or in respect of, the debt referred to in the sub-clause above until the transfer date but excluding (i) any interest, fees or charges that had fallen due one year prior to the transfer date, (ii) any penal interest or charges payable under the financing agreements to any senior lender, and (iii) any pre-payment charges in relation to accelerated repayment of debt except where such charges have arisen due to an NHAI Default (as defined below); and

c) any subordinated debt which is included in the financing package and disbursed by lenders for financing the total project cost;

If all, or any part of the AETL Debt Due is convertible into equity at the option of the senior lenders and/or AETL, it shall, for the purposes of the AETL Concession Agreement, be deemed to be AETL Debt Due even after the conversion and the Principal thereof shall be dealt with as if such conversion had not been undertaken;

"**AETL Debt Service**" shall mean the sum of all payments on account of Principal, interest, financing fees and charges due and payable in an accounting year to the senior lenders under the financing agreements;

"**AETL Project Assets**" shall mean all physical and other assets relating to and forming part of the site including (a) rights over the site in the form of licence, right of way or otherwise; (b) tangible assets such as civil works and equipment including foundations, embankments, pavements, road surface, interchanges, bridges, culverts, road overbridges, drainage works, traffic signals, sign boards, kilometre-stones, toll plazas, electrical systems, communication systems, rest areas, relief centres, maintenance depots and administrative offices; (c) project facilities situated on the site; (d) all rights of AETL under the project agreements; (e) financial assets, such as receivables, security deposits etc.; (f) insurance proceeds; and (g) applicable permits and authorizations relating to or in respect of the AETL Project Highway (as defined below), but does not include additional facilities;

"**AETL Project Highway**" shall mean the site comprising the existing road comprising section of six-laning of Agra-Etawah Bypass section of NH-2 from km 199.660 to km 323.525 in the State of Uttar Pradesh under NHDP Phase-V on BOT(Toll) mode and all AETL Project Assets, and its subsequent development and augmentation in accordance with the AETL Concession Agreement;

"**AETL Project**" shall mean the construction, operation, and maintenance of the AETL Project Highway in accordance with the provisions of the AETL Concession Agreement, and includes all works, services, and equipment relating to and in respect of the scope of the project; and

"**Premium**" shall mean an amount paid to the NHAI by AETL in the form of an additional concession fee, as set forth in the bid for each year of the AETL Concession Period.

Grant of Concession

Subject to, and in accordance with the provisions set out in the AETL Concession Agreement, the applicable laws and the applicable permits, the NHAI has granted to AETL, and AETL has accepted the concession, including the exclusive right, license, and authority during the subsistence of the AETL Concession Agreement, to construct, operate and maintain the AETL Project for a period of 24 years from the AETL Appointed Date.

Subject to, and in accordance with the provisions of the AETL Concession Agreement, the concession granted shall oblige or entitle, as the case may be, AETL to:

a) right of way, access and license to the site for the purpose of, and to the extent conferred by the provisions of the AETL Concession Agreement;

b) finance and construct the AETL Project Highway;

c) manage, operate, and maintain the AETL Project Highway and regulate the use thereof by third parties;

d) demand, collect, and appropriate fee from vehicles and persons liable for payment of fee for using the AETL Project Highway or any part thereof and refuse entry of any vehicle if the fee due is not paid;

e) perform and fulfil all of AETL's obligations under and in accordance with the AETL Concession Agreement;

f) bear and pay all costs, expenses, and charges in connection with or incidental to the performance of the obligations of AETL under the AETL Concession Agreement; and

g) neither assign, transfer or sublet, or create any lien or encumbrance on the AETL Concession Agreement, or the concession granted, or on the whole or any part of the AETL Project Highway, nor transfer, lease, or part possession thereof, save and except as expressly permitted by the AETL Concession Agreement or the agreement for the substitution of AETL entered into by AETL, the NHAI, and the lenders' representative on behalf of the senior lenders (the "**Substitution Agreement**").

Fees

On and from the commercial operation date ("**COD**") till the transfer date, AETL shall have the sole and exclusive right to demand, collect, and appropriate fee from the users subject to, and in accordance with the AETL Concession Agreement and the applicable rules and regulations, provided that for ease of payment, such fee shall be rounded off to the nearest five rupees in accordance with the applicable fee rules, as updated from time to time. Further, AETL may determine and collect fee at such lower rates as it may, by public notice to the users, specify in respect of all or any category of users or vehicles. In accordance with the AETL Concession Agreement, AETL shall not collect any fees in relation to exempted vehicles.

AETL shall not collect any fee from a local user for non-commercial use of the AETL Project Highway, and shall issue a pass in respect thereof for commuting on a section of the AETL Project Highway as specified in the pass and for crossing the toll plaza specified therein. For carrying out these provisions, AETL shall formulate, publish and implement an appropriate scheme, and make such modifications to the scheme as may reasonably be suggested by the NHAI or by local users from time to time. For defraying its expenses on issuing of passes and handling of local users, AETL shall be entitled to charge a monthly fee of ₹150, with reference to the base year 2007-08, to be revised annually in accordance with the fee rules to reflect the variation in WPI, and then rounded off to the nearest five rupees; provided that no passes will be required or fee collected from a vehicle that uses part of the AETL Project Highway and does not cross a toll plaza.

Concession Fee

In consideration of the grant of concession, AETL shall pay to the NHAI by way of concession fee a sum of ₹1 per annum.

Additionally, AETL was required to pay to the NHAI on the AETL Appointed Date, a Premium in the form of an additional concession fee equal to ₹810 million as due to the NHAI during that year, due and payable for the period remaining in that year; and for each subsequent year of the AETL Concession Period, the Premium shall be determined by increasing the amount of Premium in the respective year by an additional 5% as compared to the immediately preceding year. The Premium is deemed to be a part of the concession fee.

The concession fee payable under the provisions of the AETL Concession Agreement shall be due and payable in monthly instalments within seven days of the close of each month.

Escrow Account

AETL was required to, prior to the AETL Appointed Date, open and establish an escrow account (the "**Escrow Account**") with a bank (the "**Escrow Bank**") in accordance with the AETL Concession Agreement read with the escrow agreement entered into amongst AETL, the NHAI, the Escrow Bank and the senior lenders through the lenders' representative (the "**Escrow Agreement**").

AETL shall deposit, or cause to be deposited the following inflows and receipts into the Escrow Account:

a) all funds constituting the financial package;

b) all fee and any other revenues from or in respect of the AETL Project Highway, including the proceeds of any deposits, capital receipts or insurance claims; and

c) all payments by the NHAI, after deducting any outstanding concession fee.

The senior lenders may make direct disbursements to the EPC contractor in accordance with the express provisions contained in this behalf in the financing agreements.

Withdrawals during Concession Period

AETL was required to, at the time of opening the Escrow Account, give irrevocable instructions, by way of the Escrow Agreement, to the Escrow Bank instructing, inter alia, that deposits in the Escrow Account shall be appropriated in the following order every month, or at shorter intervals as necessary, and if not due in a month, then appropriated proportionately in such month and retained in the Escrow Account and paid out therefrom in a month when due:

a) all taxes due and payable by AETL for and in respect of the AETL Project Highway;

b) all payments relating to construction of the AETL Project Highway, subject to and in accordance with the conditions, if any, set forth in the financing agreements;

c) Operation and Management ("**O&M**") expenses, subject to the ceiling, if any, set forth in the financing agreements;

d) O&M expenses and other costs and expenses incurred by the NHAI in accordance with the provisions of the AETL Concession Agreement, and certified by the NHAI as due and payable to it;

e) concession fee due and payable to the NHAI;
f) monthly proportionate provision of AETL Debt Service due in an accounting year;

g) premium due and payable to the NHAI;

h) all payments and damages certified by the NHAI as due and payable to it by AETL, including repayment of revenue shortfall loan;

i) monthly proportionate provision of AETL Debt Service payments due in an accounting year in respect of subordinated debt;

j) any reserve requirements set forth in the financing agreements; and

k) balance, if any, in accordance with the instructions of AETL.

AETL shall not, in any manner, modify the order of payment specified except with prior written approval from the NHAI.

Withdrawals upon Termination

Notwithstanding anything to the contrary contained in the AETL Concession Agreement, all amounts standing to the credit of the Escrow Account shall, upon termination, be appropriated in the following order:

a) all taxes due and payable by AETL for and in respect of the AETL Project Highway;

b) 90% of the AETL Debt Due excluding the subordinated debt;

c) outstanding concession fee;

d) all payments and damages certified by the NHAI as due and payable to it by AETL, including the Premium and the repayment of the revenue shortfall loan;

e) retention and payments relating to the liability for defects and deficiencies set forth in the AETL Concession Agreement;

f) outstanding AETL Debt Service including balance of AETL Debt Due;

g) outstanding subordinated debt;

h) incurred or accrued O&M expenses;

i) any other payments required to be made under the AETL Concession Agreement; and

j) balance, if any, in accordance with the instructions of AETL.

No appropriations shall be made until a vesting certificate has been issued by the NHAI.

Change of Scope

The NHAI may, notwithstanding anything to the contrary contained in the AETL Concession Agreement, require the provision of additional works and services which are not included in the scope of the project as contemplated by the AETL Concession Agreement. Any such change of scope shall be made in accordance with the provisions of the AETL Concession Agreement and the costs thereof shall be expended by AETL and reimbursed by the NHAI.

If AETL determines at any time that a change in scope is necessary for providing safer and improved services to the users, it shall, by notice in writing, require the NHAI to consider such change of scope. The NHAI shall, within 15 days of receipt of such notice, either accept the change of scope with modifications, if any, and initiate proceedings thereof in accordance with the provisions of the AETL Concession Agreement, or inform AETL in writing of its reasons for not accepting such change of scope.

Compensation for Breach of Agreement

In the event of AETL being in material default or breach of the AETL Concession Agreement, it shall pay to the NHAI by way of compensation, all direct costs suffered or incurred by the NHAI as a consequence of the material default or breach, within 30 days of the receipt of the demand supported by the necessary particulars thereof. No compensation shall be payable for any material breach or default in respect of which damages are expressly specified and payable under the AETL Concession Agreement.

In the event of the NHAI being in material default of the AETL Concession Agreement at any time after the AETL Appointed Date, it shall pay to AETL by way of compensation, all direct costs suffered or incurred by AETL as a consequence of the material default or breach within 30 days of receipt of the demand supported by necessary particulars thereof. No compensation shall be payable for any material breach or default in respect of which damages have been expressly specified in the AETL Concession Agreement.

In the event that a material default or breach of the AETL Concession Agreement causes a delay in achieving COD or leads to suspension of, or reduction in collection of fee, as the case may be, the NHAI shall, in addition to the payment of compensation, extend the AETL Concession Period as provided in the AETL Concession Agreement. In the event that an additional toll way or a competing road, as the case may be, is opened to traffic in breach of the AETL Concession Agreement, the NHAI shall pay to AETL, for each day of the breach, compensation as provided in the AETL Concession Agreement, until the breach is cured. The payment of compensation by the NHAI shall be deemed to cure the breach of the AETL Concession Agreement so long as the NHAI continues to pay the compensation.

The compensation payable shall be in addition to, and not in substitution for, or derogation of, termination payment, if any.

Effects of Variation in Traffic Growth

Subject to the provisions of the AETL Concession Agreement, in the event actual average traffic shall have fallen short of the target traffic, then for every 1% (one percent) shortfall as compared to the target traffic, the AETL Concession Period shall, subject to payment of concession fee in accordance with the AETL Concession Agreement, be increased by 1.5% (one point five percent) thereof; provided that such increase in AETL Concession Period shall not in any case exceed 20% (twenty percent) of the AETL Concession Period.

Subject to the provisions of the AETL Concession Agreement, in the event actual average traffic shall have exceeded the target traffic, then for every 1% (one percent) excess as compared to the target traffic, the AETL Concession Period shall be reduced by 0.75% (zero point seven five percent) thereof; provided that such reduction in AETL Concession Period shall not in any case exceed 10% (ten percent) thereof.

Provided further that in lieu of a reduction in AETL Concession Period under the AETL Concession Agreement, AETL may elect to pay, in addition to the concession fee that would be due and payable if the AETL Concession Period were not reduced hereunder, a further premium equal to 25% (twenty five percent) of the realizable fee, and upon notice given to this effect by AETL no later than two years prior to the AETL Termination Date contemplated by the AETL Concession Agreement, NHAI shall waive the reduction in AETL Concession Period hereunder forthwith.

Notwithstanding anything to the contrary contained in AETL Concession Agreement, if the average daily traffic of PCUs in any accounting year shall exceed the designed capacity of the AETL Project Highway, the NHAI at its option may cause preparation of detailed project report which will assess the cost that may have to be incurred for augmenting the capacity of the AETL Project Highway so that its capacity is sufficiently increased for carrying the then current traffic in accordance with the corresponding provisions of the Indian Roads Congress publication no. IRC -64, 1990 or any substitute thereof. The AETL Concession Period, may be extended so that it yields for AETL a post-tax return on equity of 16% per annum. This assessment will be made at an assumed debt to equity ratio of 70:30. The extension of the AETL Concession Period shall be however limited to five years. The NHAI may thereafter, at their sole option, issue a notice to AETL, to undertake within six months of such notice, the augmentation so determined by the NHAI. The refusal, non-acceptance, or failure by AETL to undertake such augmentation on the due date so intimated by the NHAI, will be considered an indirect political event and the NHAI may at its discretion terminate this AETL Concession Agreement by issuing a termination notice and making a termination payment in accordance with the provisions of the AETL Concession Agreement without the NHAI being liable to issue any further notice under it.

Termination of the AETL Concession Agreement

Termination by the NHAI

Save as otherwise provided in the AETL Concession Agreement, in the event that any of the defaults specified below shall have occurred, and AETL fails to cure the default within the cure period, or where no cure period is

specified, then within a cure period of 60 days, AETL shall be deemed to be in default of the AETL Concession Agreement ("**AETL Default**"), unless the default has occurred solely as a result of any breach of the AETL Concession Agreement by the NHAI or due to force majeure. The defaults referred to herein shall include:

a) the performance security has been encashed and appropriated in accordance with the AETL Concession Agreement and AETL fails to replenish or provide fresh performance security within a cure period of 30 days;

b) subsequent to the replenishment or furnishing of fresh performance security in accordance with the AETL Concession Agreement, AETL fails to cure, within a cure period of 90 days, the AETL Default for which whole or part of the performance security was appropriated;

c) AETL does not achieve the latest outstanding project milestone due in accordance with the AETL Concession Agreement and continues to be in default for 90 days;

d) AETL abandons or manifests intention to abandon the construction or operation of the AETL Project Highway without the prior written consent of the NHAI;

e) project completion date does not occur within the period specified in the AETL Concession Agreement;

f) the punch list items have not been completed within the period set forth in the AETL Concession Agreement;

g) AETL is in breach of the maintenance requirements or the safety requirements as the case may be;

h) AETL has failed to make any payment to the NHAI within the period specified in the AETL Concession Agreement;

i) an escrow default has occurred and AETL fails to cure the default within a cure period of 15 days;

j) upon occurrence of a financial default, the lenders' representative has, by notice, required the NHAI to undertake suspension or termination, as the case may be, in accordance with the Substitution Agreement and AETL fails to cure the default within the cure period specified hereinabove;

k) a breach of the project agreements by AETL has caused a material adverse effect;

l) AETL creates an encumbrance in breach of the AETL Concession Agreement;

m) AETL repudiates the AETL Concession Agreement or otherwise takes any action or evidences or conveys an intention not to be bound by the AETL Concession Agreement;

n) a change in ownership has occurred in breach of the AETL Concession Agreement;

o) there is a transfer, pursuant to law either of (i) the rights and/or obligations of AETL under any of the project agreements, or of (ii) all or part of the assets or undertaking of AETL, and such transfer causes a material adverse effect;

p) an execution levied on any of the assets of AETL has caused a material adverse effect;

q) AETL is adjudged bankrupt or insolvent, or if a trustee or receiver is appointed for AETL or for the whole or material part of its assets that has a material bearing on the AETL Project;

r) AETL has been, or is in the process of being liquidated, dissolved, wound-up, amalgamated or reconstituted in a manner that would cause, in the reasonable opinion of the NHAI, a material adverse effect;

s) a resolution for winding up of AETL is passed, or any petition for winding up of AETL is admitted by a court of competent jurisdiction and a provisional liquidator or receiver is appointed and such order has not been set aside within 90 days of the date thereof, or AETL is ordered to be wound up by Court except for the purpose of amalgamation or reconstruction, provided that, as part of such amalgamation or reconstruction, the entire property, assets and undertaking of AETL are transferred to the amalgamated or

reconstructed entity and that the amalgamated or reconstructed entity has unconditionally assumed the obligations of AETL under the AETL Concession Agreement and the project agreements; provided that:

i) the amalgamated or reconstructed entity has the capability and operating experience necessary for the performance of its obligations under the AETL Concession Agreement and the project agreements;

ii) the amalgamated or reconstructed entity has the financial standing to perform its obligations under the AETL Concession Agreement and the project agreements and has a creditworthiness at least as good as that of AETL as at the AETL Appointed Date; and

iii) each of the project agreements remains in full force and effect;

t) any representation or warranty of AETL which is, as of the date hereof, found to be materially false, incorrect or misleading or AETL is at any time hereafter found to be in breach thereof;

u) AETL submits to the NHAI any statement, notice or other document, in written or electronic form, which has a material effect on the NHAI's rights, obligations or interests and which is false in material particulars;

v) AETL has failed to fulfil any obligation, for which failure termination has been specified in the AETL Concession Agreement; or

w) AETL commits a default in complying with any other provision of the AETL Concession Agreement if such default causes a material adverse effect on the NHAI.

Without prejudice to any other rights or remedies which the NHAI may have under the AETL Concession Agreement, upon the occurrence of an AETL Default, the NHAI shall be entitled to terminate the AETL Concession Agreement by issuing a termination notice to AETL. Before issuing the termination notice, the NHAI shall, by notice, inform AETL of its intention to issue a termination notice and grant 15 days to AETL to make a representation, and may, after the expiry of the 15 days, whether or not it is in receipt of such representation, issue the termination notice subject to the provisions of the AETL Concession Agreement.

If there are senior lenders, the NHAI shall send a copy of its notice of intention to issue a termination notice to inform the lenders' representative and grant 15 days to the lenders' representative for making a representation on behalf of the senior lenders stating the intention to substitute AETL in accordance with the Substitution Agreement. If the NHAI receives a representation on behalf of the senior lenders, it shall, in its discretion, either withhold termination for a period not exceeding 180 days from the date of the representation, or exercise its right of suspension, as the case may be, to enable the lenders' representative to exercise the senior lenders' right of substitution in accordance with the Substitution Agreement. The lenders' representative may, instead of exercising the senior lenders' right of substitution, procure that the default specified in the notice is cured within the aforesaid 180 days, and upon the curing, the NHAI shall withdraw its notice and restore the rights of AETL. On a written request from the lenders' representative and AETL, the NHAI shall extend the period of 180 days by a further period not exceeding 90 days as it may deem appropriate.

Termination by AETL

In the event that any of the defaults specified below shall have occurred, and the NHAI fails to cure the default within a cure period of 90 days or such longer period as provided in the AETL Concession Agreement, the NHAI shall be deemed to be in default of the AETL Concession Agreement ("**NHAI Default**"), unless the default has occurred as a result of a breach of the AETL Concession Agreement by AETL, or due to force majeure. The default referred to herein shall include:

a) the NHAI commits a material default in complying with any of the provisions of the AETL Concession Agreement and such default has a material adverse effect on AETL;

b) the NHAI has failed to make any payment to AETL within the period specified in the AETL Concession Agreement;

c) the NHAI repudiates the AETL Concession Agreement or otherwise takes any action that amounts to or manifests an irrevocable intention not to be bound by the AETL Concession Agreement; or

d) the State of Uttar Pradesh commits a material default in complying with the provisions of the state support agreement if such default has a material adverse effect on AETL and the breach continues for a period of 90 days from the date of notice given in this behalf by AETL to the NHAI.

Without prejudice to any other rights or remedies which AETL may have under the AETL Concession Agreement, upon the occurrence of an NHAI Default, AETL shall be entitled to terminate the AETL Concession Agreement by issuing a termination notice to the NHAI. Before issuing the termination notice, AETL shall, by notice, inform the NHAI of its intention to issue a termination notice and grant 15 days to the NHAI to make a representation, and may, after the expiry of the 15 days, whether or not it is in receipt of such representation, issue the termination notice.

Termination Payment

Upon termination on account of an AETL Default during the operation period, the NHAI shall pay to AETL, by way of termination payment, an amount equal to 90% of the AETL Debt Due less insurance cover. If any insurance claims forming part of the insurance cover are not admitted and paid, then 80% of such unpaid claims shall be included in the computation of AETL Debt Due.

Upon termination on account of an NHAI Default, the NHAI shall pay to AETL, by way of termination payment, an amount equal to:

a) AETL Debt Due; and
b) 150% of the adjusted equity.

Termination payment shall become due and payable to AETL within 15 days of a demand being made by AETL to the NHAI with the necessary particulars, and in the event of any delay, the NHAI shall pay interest at a rate equal to 3% above the bank rate on the amount of termination payment remaining unpaid. The delay shall not exceed 90 days. The termination payment under the AETL Concession Agreement shall constitute a full and final settlement of all claims of AETL on account of termination of the AETL Concession Agreement for any reason whatsoever and AETL shall not have any further right or claim under any law, treaty, convention, contract or otherwise.

Defects Liability after Termination

AETL shall be responsible for all defects and deficiencies in the AETL Project Highway for a period of 120 days after termination. AETL shall have the obligation to repair or rectify, at its own cost, all defects and deficiencies in the AETL Project Highway as observed by the independent engineer. The repair or rectification of the defect or deficiency shall be done within a period of 15 days from the date of notice issued by the NHAI in this behalf. A sum as specified in the AETL Concession Agreement shall be retained in the Escrow Account for a period of 120 days after termination for meeting the liabilities, if any, arising out of, or in connection with this provision.

1.1. Supplementary Agreement between AETL and the NHAI dated April 7, 2018

AETL has entered into a supplementary agreement (the "**Supplementary Agreement**") to amend the concession agreement dated September 1, 2015 (the "**Concession Agreement**") to provide for the installation of a new electronic toll collection system (the "**Hybrid ETC System**") for electronic payment of user fee using RFID tags or any other such device.

Change of Scope

The NHAI shall provide a change in the scope of work order at prices discovered by the NHAI to AETL to provide for, as per the defined technical specifications, installation, testing, commissioning, operations and maintenance of the Hybrid ETC System in all lanes of the toll plaza. AETL shall ensure that the requisite civil work is completed prior to the installation, integration, testing and commissioning of the Hybrid ETC System. It shall also ensure the smooth flow of traffic during installation, integration, testing and commissioning of the Hybrid ETC System. AETL will have no claim against the NHAI on account of any lane closure, if any, on account of any third party claims.

Scope of Work

AETL shall install, integrate, test, commission, operate and maintain the Hybrid ETC System in all the lanes of the toll plazas. The Hybrid ETC System shall be installed, commissioned, operated and maintained for a period of five years or the end of the Concession Agreement, whichever is earlier, beyond which it will be replaced or renewed, as the case may be, by AETL or the NHAI, at the cost of the NHAI. The cycle shall be maintained till the end of the concession period in accordance with the Concession Agreement.

The provisions of the Concession Agreement relating to change of scope shall not apply to the Supplementary Agreement.

Any permission required by AETL under the applicable laws for the installation of the Hybrid ETC System shall be procured and maintained by AETL. The NHAI shall provide reasonable assistance in this regard.

Timeline

AETL shall complete all responsibilities, obligations and works as described in the Supplementary Agreement within a period of 120 days from the date of issuance of the change of scope work order by the NHAI and the release of advance payment.

Damages for Delay

In case of delay in installation, testing, or commissioning of the Hybrid ETC System at the toll plazas as per the time schedule prescribed on account of reasons attributable to AETL, damages at 0.1% of the cost of installation, testing, or commissioning of the Hybrid ETC System for each day of the delay, subject to a maximum of 10% of the cost of installation, testing, or commissioning of the Hybrid ETC System shall be levied on AETL. Damages for delay will not be applicable in case of a delay in implementation due to delayed payment release by the NHAI.

AETL shall not be entitled to any additional benefit either in monetary terms or on any other account including, but not limited to any extension of time, save on account of and NHAI Default or force majeure.

Compensation

In case of any damage to the Hybrid ETC System due to any act or omission of AETL, the NHAI shall not be liable for any compensation to AETL, and AETL shall bear the cost of repair, replacement or renewal of the damaged Hybrid ETC System equipment or hardware itself.

In case of any damage to the Hybrid ETC System due to the occurrence of any force majeure event, the compensation to AETL shall be derived as per the provisions of the Concession Agreement.

End of the Concession Period

AETL shall hand over all the Hybrid ETC equipment or hardware in an operational condition to the NHAI or a third party as directed by the NHAI at the end of the concession period, beyond which no O&M payment shall be made to AETL. If any Hybrid ETC System equipment or hardware is found to be non-operational, then AETL shall be liable to replace or pay for the replacement of the Hybrid ETC System equipment or hardware required to make the Hybrid ETC System operational on all lanes of the toll plazas to the NHAI promptly.
Upon termination, AETL shall assign warranties received from the original equipment manufacturer and for the components or equipment, and provide the respective warranty assignment agreements and necessary documents. AETL shall ensure that all the warranties are duly assigned in favor of the NHAI and AETL shall bear the cost and expenses towards the assignment.

1.2. Supplementary Agreement between AETL and the NHAI dated May 1, 2017

AETL has entered into a supplementary agreement with the NHAI to amend the concession agreement dated September 1, 2015 (the "**Concession Agreement**") to provide for dispute resolution through the Society for Affordable Redressal of Disputes ("**SAROD**").

Any dispute arising out of the Concession Agreement which is not resolved amicably shall be finally settled by arbitration. The dispute shall be referred to SAROD for resolution by arbitration in accordance with the rules of

SAROD and the Arbitration and Conciliation Act, 1996. AETL and the NHAI shall choose the arbitrators from a panel of arbitrators empanelled by SAROD. The arbitral tribunal shall consist of a sole arbitrator in case the total claim of the dispute is ₹30 million or less, and in case the claim is more than ₹30 million, the tribunal shall consist of an odd number of arbitrators to be nominated by the parties.

The arbitral proceedings shall be held at Delhi (India) and the language of the arbitral proceedings, and that of all the correspondence between the parties shall be English. The dispute shall be governed by the substantive law of India.

2. Concession Agreement between CGTL and the NHAI dated December 9, 2016

CGTL has entered into a concession agreement for six-laning of Kishangarh Udaipur Ahmedabad section from km 90.000 (near Gulabpura) to km 214.870 (end of Chittorgarh bypass), of NH-79 in Rajasthan on build, operate and transfer ("**BOT**") basis (the "**CGTL Concession Agreement**"), for a period of 20 years, from November 4, 2017 ("**CGTL Appointed Date**") or until such date on which the CGTL Concession Agreement is terminated by a termination notice ("**CGTL Termination Date**", and the period between the CGTL Appointed Date and the CGTL Termination Date, the "**CGTL Concession Period**").

Certain Definitions

"**CGTL Debt Due**" shall mean the aggregate of the following sums expressed in Indian Rupees outstanding on the transfer date:

a) the principal amount of the debt provided by the senior lenders under the financing agreements for financing the total project cost (the "**Principal**") but excluding any part of the Principal that had fallen due for repayment two years prior to the transfer date;

b) all accrued interest, financing fees and charges payable under the financing agreements on, or in respect of, the debt referred to in the sub-clause above until the transfer date but excluding (i) any interest, fees or charges that had fallen due one year prior to the transfer date, (ii) any penal interest or charges payable under the financing agreements to any senior lender, and (iii) any pre-payment charges in relation to accelerated repayment of debt except where such charges have arisen due to an NHAI Default (as defined below); and

c) any subordinated debt which is included in the financing package and disbursed by lenders for financing the total project cost;

If all, or any part of the CGTL Debt Due is convertible into equity at the option of the senior lenders and/or CGTL, it shall, for the purposes of the CGTL Concession Agreement, be deemed to be CGTL Debt Due even after the conversion and the Principal thereof shall be dealt with as if such conversion had not been undertaken;

"**CGTL Debt Service**" shall mean the sum of all payments on account of Principal, interest, financing fees and charges due and payable in an accounting year to the senior lenders under the financing agreements;

"**CGTL Project Assets**" shall mean all physical and other assets relating to and forming part of the site including (a) rights over the site in the form of licence, right of way or otherwise; (b) tangible assets such as civil works and equipment including foundations, embankments, pavements, road surface, interchanges, bridges, culverts, road overbridges, drainage works, traffic signals, sign boards, kilometre-stones, toll plazas, electrical systems, communication systems, rest areas, relief centres, maintenance depots and administrative offices; (c) project facilities situated on the site; (d) all rights of CGTL under the project agreements; (e) financial assets, such as receivables, security deposits etc.; (f) insurance proceeds; and (g) applicable permits and authorizations relating to or in respect of the CGTL Project Highway (as defined below), but does not include additional facilities;

"**CGTL Project Highway**" shall mean the site comprising the existing road comprising NH-79 from km 90.000 to km 214.870 and all CGTL Project Assets, and its subsequent development and augmentation in accordance with the CGTL Concession Agreement;

"**CGTL Project**" shall mean the construction, operation, and maintenance of the CGTL Project Highway in accordance with the provisions of the CGTL Concession Agreement, and includes all works, services, and equipment relating to and in respect of the scope of the project; and

"**Premium**" shall mean an amount paid to the NHAI by CGTL in the form of an additional concession fee, as set forth in the bid for each year of the CGTL Concession Period.

Grant of Concession

Subject to, and in accordance with the provisions set out in the CGTL Concession Agreement, the applicable laws and the applicable permits, the NHAI has granted to CGTL, and CGTL has accepted the concession, including the exclusive right, license, and authority during the subsistence of the CGTL Concession Agreement, to construct, operate and maintain the CGTL Project for a period of 20 years from the CGTL Appointed Date.

Subject to, and in accordance with the provisions of the CGTL Concession Agreement, the concession granted shall oblige or entitle, as the case may be, CGTL to:

a) right of way, access and license to the site for the purpose of, and to the extent conferred by the provisions of the CGTL Concession Agreement;

b) finance and construct the CGTL Project Highway;

c) manage, operate, and maintain the CGTL Project Highway and regulate the use thereof by third parties;

d) demand, collect, and appropriate fee from vehicles and persons liable for payment of fee for using the CGTL Project Highway or any part thereof and refuse entry of any vehicle if the fee due is not paid;

e) perform and fulfil all of CGTL's obligations under and in accordance with the CGTL Concession Agreement;

f) bear and pay all costs, expenses, and charges in connection with or incidental to the performance of the obligations of CGTL under the CGTL Concession Agreement; and

g) neither assign, transfer or sublet, or create any lien or encumbrance on the CGTL Concession Agreement, or the concession granted, or on the whole or any part of the CGTL Project Highway, nor transfer, lease, or part possession thereof, save and except as expressly permitted by the CGTL Concession Agreement or the agreement for the substitution of CGTL entered into by CGTL, the NHAI, and the lenders' representative on behalf of the senior lenders (the "**Substitution Agreement**").

Fees

On and from the commercial operation date ("**COD**") till the transfer date, CGTL shall have the sole and exclusive right to demand, collect, and appropriate fee from the users subject to, and in accordance with the CGTL Concession Agreement and the applicable rules and regulations, provided that for ease of payment and collection, such fee shall be rounded off to the nearest five rupees in accordance with the applicable fee rules, as updated from time to time. Further, CGTL may determine and collect fee at such lower rates as it may, by public notice to the users, specify in respect of all or any category of users or vehicles. In accordance with the CGTL Concession Agreement, CGTL shall not collect any fees in relation to exempted vehicles.

CGTL shall not collect any fee from a local user for non-commercial use of the CGTL Project Highway, and shall issue a pass in respect thereof for commuting on a section of the CGTL Project Highway as specified in the pass and for crossing the toll plaza specified therein. For carrying out these provisions, CGTL shall formulate, publish and implement an appropriate scheme, and make such modifications to the scheme as may reasonably be suggested by the NHAI or by local users from time to time. For defraying its expenses on issuing of passes and handling of local users, CGTL shall be entitled to charge a monthly fee of ₹150, with reference to the base year 2007-08, to be revised annually in accordance with the fee rules to reflect the variation in WPI, and then rounded off to the nearest five rupees; provided that no passes will be required or fee collected from a vehicle that uses part of the CGTL Project Highway and does not cross a toll plaza.

Concession Fee

In consideration of the grant of concession, CGTL shall pay to the NHAI by way of concession fee a sum of ₹1 per annum.

Additionally, CGTL was required to pay to the NHAI, immediately after the third anniversary year of the COD, a Premium in the form of an additional concession fee equal to ₹2,286,000,000 as due to the NHAI during that year, due and payable for the period remaining in that year; and for each subsequent year till the ninth anniversary of the COD, the Premium shall be determined by increasing the amount of Premium in the respective year by an additional 3% as compared to the immediately preceding year, and for each subsequent year of the CGTL Concession Period, the Premium shall be determined by increasing the amount of Premium in the respective year by an additional 8% as compared to the immediately preceding year. The Premium is deemed to be a part of the concession fee.

The concession fee payable under the provisions of the CGTL Concession Agreement shall be due and payable in monthly instalments within seven days of the close of each month.

Escrow Account

CGTL was required to, prior to the CGTL Appointed Date, open and establish an escrow account (the "**Escrow Account**") with a bank (the "**Escrow Bank**") in accordance with the CGTL Concession Agreement read with the escrow agreement entered into amongst CGTL, the NHAI, the Escrow Bank and the senior lenders through the lenders' representative (the "**Escrow Agreement**").

CGTL shall deposit, or cause to be deposited the following inflows and receipts into the Escrow Account:

a) all funds constituting the financial package;

b) all fee and any other revenues from or in respect of the CGTL Project Highway, including the proceeds of any deposits, capital receipts or insurance claims; and

c) all payments by the NHAI, after deducting any outstanding concession fee.

The senior lenders may make direct disbursements to the EPC contractor in accordance with the express provisions contained in this behalf in the financing agreements.

Withdrawals during Concession Period

CGTL was required to, at the time of opening the Escrow Account, give irrevocable instructions, by way of the Escrow Agreement, to the Escrow Bank instructing, inter alia, that deposits in the Escrow Account shall be appropriated in the following order every month, or at shorter intervals as necessary, and if not due in a month, then appropriated proportionately in such month and retained in the Escrow Account and paid out therefrom in a month when due:

a) all taxes due and payable by CGTL for and in respect of the CGTL Project Highway;

b) all payments relating to construction of the CGTL Project Highway, subject to and in accordance with the conditions, if any, set forth in the financing agreements;

c) Operation and Management ("**O&M**") expenses, subject to the ceiling, if any, set forth in the financing agreements;

d) O&M expenses and other costs and expenses incurred by the NHAI in accordance with the provisions of the CGTL Concession Agreement, and certified by the NHAI as due and payable to it;

e) concession fee due and payable to the NHAI;

f) monthly proportionate provision of CGTL Debt Service due in an accounting year;

g) premium due and payable to the NHAI;

h) all payments and damages certified by the NHAI as due and payable to it by CGTL, including repayment of revenue shortfall loan. CGTL has agreed to give irrevocable instructions to the Escrow Bank to make payments from the Escrow Account in accordance with the instructions of the NHAI under the CGTL Concession Agreement and debit the payment to O&M expenses;

i) monthly proportionate provision of CGTL Debt Service payments due in an accounting year in respect of subordinated debt;

j) any reserve requirements set forth in the financing agreements; and

k) balance, if any, in accordance with the instructions of CGTL.

CGTL shall not, in any manner, modify the order of payment specified except with prior written approval from the NHAI.

Withdrawals upon Termination

Notwithstanding anything to the contrary contained in the CGTL Concession Agreement, all amounts standing to the credit of the Escrow Account shall, upon termination, be appropriated in the following order:

a) all taxes due and payable by CGTL for and in respect of the CGTL Project Highway;

b) 90% of the CGTL Debt Due excluding the subordinated debt;

c) outstanding concession fee;

d) all payments and damages certified by the NHAI as due and payable to it by CGTL, including the repayment of the revenue shortfall loan. CGTL has agreed to give irrevocable instruction to the Escrow Bank to make payment from the Escrow Account in accordance with the instructions of the NHAI under the CGTL Concession Agreement and debit the payment to O&M expenses.

e) retention and payments relating to the liability for defects and deficiencies set forth in the CGTL Concession Agreement;

f) outstanding CGTL Debt Service including balance of CGTL Debt Due;

g) outstanding subordinated debt;

h) incurred or accrued O&M expenses;

i) any other payments required to be made under the CGTL Concession Agreement; and

j) balance, if any, in accordance with the instructions of CGTL.

No appropriations shall be made until a vesting certificate has been issued by the NHAI.

Change of Scope

The NHAI may, notwithstanding anything to the contrary contained in the CGTL Concession Agreement, require the provision of additional works and services which are not included in the scope of the project as contemplated by the CGTL Concession Agreement. Any such change of scope shall be made in accordance with the provisions of the CGTL Concession Agreement and the costs thereof shall be expended by CGTL and reimbursed by the NHAI.

If CGTL determines at any time that a change in scope is necessary for providing safer and improved services to the users, it shall, by notice in writing, require the NHAI to consider such change of scope. The NHAI shall, within 60 days of receipt of such notice, either accept the change of scope with modifications, if any, and initiate proceedings thereof in accordance with the provisions of the CGTL Concession Agreement, or inform CGTL in writing of its reasons for not accepting such change of scope.

Compensation for Breach of Agreement

In the event of CGTL being in material default or breach of the CGTL Concession Agreement, it shall pay to the NHAI by way of compensation, all direct costs suffered or incurred by the NHAI as a consequence of the material default or breach, within 30 days of the receipt of the demand supported by the necessary particulars thereof. No compensation shall be payable for any material breach or default in respect of which damages are expressly specified and payable under the CGTL Concession Agreement.

In the event of the NHAI being in material default of the CGTL Concession Agreement at any time after the CGTL Appointed Date, it shall pay to CGTL by way of compensation, all direct costs suffered or incurred by CGTL as a consequence of the material default or breach within 30 days of receipt of the demand supported by necessary particulars thereof. No compensation shall be payable for any material breach or default in respect of which damages have been expressly specified in the CGTL Concession Agreement.

In the event that a material default or breach of the CGTL Concession Agreement causes a delay in achieving COD or leads to suspension of, or reduction in collection of fee, as the case may be, the NHAI shall, in addition to the payment of compensation, extend the CGTL Concession Period as provided in the CGTL Concession Agreement. In the event that an additional toll way or a competing road, as the case may be, is opened to traffic in breach of the CGTL Concession Agreement, the NHAI shall pay to CGTL, for each day of the breach, compensation as provided in the CGTL Concession Agreement, until the breach is cured. The payment of compensation by the NHAI shall be deemed to cure the breach of the CGTL Concession Agreement so long as the NHAI continues to pay the compensation.

The compensation payable shall be in addition to, and not in substitution for, or derogation of, termination payment, if any.

Effects of Variation in Traffic Growth

Subject to the provisions of the CGTL Concession Agreement, in the event actual average traffic shall have fallen short of the target traffic, then for every 1% (one percent) shortfall as compared to the target traffic, the CGTL Concession Period shall, subject to payment of concession fee in accordance with the CGTL Concession Agreement, be increased by 1.5% (one point five percent) thereof; provided that such increase in CGTL Concession Period shall not in any case exceed 20% (twenty percent) of the CGTL Concession Period.

Subject to the provisions of the CGTL Concession Agreement, in the event actual average traffic shall have exceeded the target traffic, then for every 1% (one percent) excess as compared to the target traffic, the CGTL Concession Period shall be reduced by 0.75% (zero point seven five percent) thereof; provided that such reduction in CGTL Concession Period shall not in any case exceed 10% (ten percent) thereof.

Provided further that in lieu of a reduction in CGTL Concession Period under the CGTL Concession Agreement, CGTL may elect to pay, in addition to the concession fee that would be due and payable if the CGTL Concession Period were not reduced hereunder, a further premium equal to 25% (twenty five percent) of the realizable fee, and upon notice given to this effect by CGTL no later than two years prior to the CGTL Termination Date contemplated by the CGTL Concession Agreement, NHAI shall waive the reduction in CGTL Concession Period hereunder forthwith.

Notwithstanding anything to the contrary contained in CGTL Concession Agreement, if the average daily traffic of PCUs in any accounting year shall exceed the designed capacity of the CGTL Project Highway, the NHAI at its option may cause preparation of detailed project report which will assess the cost that may have to be incurred for augmenting the capacity of the CGTL Project Highway so that its capacity is sufficiently increased for carrying the then current traffic in accordance with the corresponding provisions of the Indian Roads Congress publication no. IRC -64, 1990 or any substitute thereof. The CGTL Concession Period, may be extended so that it yields for CGTL a post-tax return on equity of 16% per annum. This assessment will be made at an assumed debt to equity ratio of 70:30. The extension of the CGTL Concession Period shall be however limited to five years. The NHAI may thereafter, at their sole option, issue a notice to CGTL, to undertake within six months of such notice, the augmentation so determined by the NHAI. The refusal, non-acceptance, or failure by CGTL to undertake such augmentation on the due date so intimated by the NHAI, will be considered an indirect political event and the NHAI may at its discretion terminate this CGTL Concession Agreement by issuing a termination notice and making a termination payment in accordance with the provisions of the CGTL Concession Agreement without the NHAI being liable to issue any further notice under it.

Termination of the CGTL Concession Agreement

Termination by the NHAI

Save as otherwise provided in the CGTL Concession Agreement, in the event that any of the defaults specified below shall have occurred, and CGTL fails to cure the default within the cure period, or where no cure period is specified, then within a cure period of 60 days, CGTL shall be deemed to be in default of the CGTL Concession Agreement ("**CGTL Default**"), unless the default has occurred solely as a result of any breach of the CGTL Concession Agreement by the NHAI or due to force majeure. The defaults referred to herein shall include:

a) the performance security has been encashed and appropriated in accordance with the CGTL Concession Agreement and CGTL fails to replenish or provide fresh performance security within a cure period of 30 days;

b) subsequent to the replenishment or furnishing of fresh performance security in accordance with the CGTL Concession Agreement, CGTL fails to cure, within a cure period of 90 days, the CGTL Default for which whole or part of the performance security was appropriated;

c) CGTL does not achieve the latest outstanding project milestone due in accordance with the CGTL Concession Agreement and continues to be in default for 90 days;

d) CGTL abandons or manifests intention to abandon the construction or operation of the CGTL Project Highway without the prior written consent of the NHAI;

e) project completion date does not occur within the period specified in the CGTL Concession Agreement;

f) the punch list items have not been completed within the period set forth in the CGTL Concession Agreement;

g) CGTL is in breach of the maintenance requirements or the safety requirements as the case may be;

h) CGTL has failed to make any payment to the NHAI within the period specified in the CGTL Concession Agreement;

i) an escrow default has occurred and CGTL fails to cure the default within a cure period of 15 days;

j) upon occurrence of a financial default, the lenders' representative has, by notice, required the NHAI to undertake suspension or termination, as the case may be, in accordance with the Substitution Agreement and CGTL fails to cure the default within the cure period specified hereinabove;

k) a breach of the project agreements by CGTL has caused a material adverse effect;

l) CGTL creates an encumbrance in breach of the CGTL Concession Agreement;

m) CGTL repudiates the CGTL Concession Agreement or otherwise takes any action or evidences or conveys an intention not to be bound by the CGTL Concession Agreement;

n) a change in ownership has occurred in breach of the CGTL Concession Agreement;

o) there is a transfer, pursuant to law either of (i) the rights and/or obligations of CGTL under any of the project agreements, or of (ii) all or part of the assets or undertaking of CGTL, and such transfer causes a material adverse effect;

p) an execution levied on any of the assets of CGTL has caused a material adverse effect;

q) CGTL is adjudged bankrupt or insolvent, or if a trustee or receiver is appointed for CGTL or for the whole or material part of its assets that has a material bearing on the CGTL Project;

r) CGTL has been, or is in the process of being liquidated, dissolved, wound-up, amalgamated or reconstituted in a manner that would cause, in the reasonable opinion of the NHAI, a material adverse effect;

s) a resolution for winding up of CGTL is passed, or any petition for winding up of CGTL is admitted by a court of competent jurisdiction and a provisional liquidator or receiver is appointed and such order has not been set aside within 90 days of the date thereof, or CGTL is ordered to be wound up by Court except for the purpose of amalgamation or reconstruction, provided that, as part of such amalgamation or reconstruction, the entire property, assets and undertaking of CGTL are transferred to the amalgamated or reconstructed entity and that the amalgamated or reconstructed entity has unconditionally assumed the obligations of CGTL under the CGTL Concession Agreement and the project agreements; provided that:

   i) the amalgamated or reconstructed entity has the capability and operating experience necessary for the performance of its obligations under the CGTL Concession Agreement and the project agreements;

   ii) the amalgamated or reconstructed entity has the financial standing to perform its obligations under the CGTL Concession Agreement and the project agreements and has a creditworthiness at least as good as that of CGTL as at the CGTL Appointed Date; and

   iii) each of the project agreements remains in full force and effect;

t) any representation or warranty of CGTL which is, as of the date hereof, found to be materially false, incorrect or misleading or CGTL is at any time hereafter found to be in breach thereof;

u) CGTL submits to the NHAI any statement, notice or other document, in written or electronic form, which has a material effect on the NHAI's rights, obligations or interests and which is false in material particulars;

v) CGTL has failed to fulfil any obligation, for which failure termination has been specified in the CGTL Concession Agreement; or

w) CGTL commits a default in complying with any other provision of the CGTL Concession Agreement if such default causes a material adverse effect on the NHAI.

Without prejudice to any other rights or remedies which the NHAI may have under the CGTL Concession Agreement, upon the occurrence of a CGTL Default, the NHAI shall be entitled to terminate the CGTL Concession Agreement by issuing a termination notice to CGTL. Before issuing the termination notice, the NHAI shall, by notice, inform CGTL of its intention to issue a termination notice and grant 15 days to CGTL to make a representation, and may, after the expiry of the 15 days, whether or not it is in receipt of such representation, issue the termination notice subject to the provisions of the CGTL Concession Agreement.

If there are senior lenders, the NHAI shall send a copy of its notice of intention to issue a termination notice to inform the lenders' representative and grant 30 days to the lenders' representative for making a representation on behalf of the senior lenders stating the intention to substitute CGTL in accordance with the Substitution Agreement. If the NHAI receives a representation on behalf of the senior lenders, it shall, in its discretion, either withhold termination for a period not exceeding 180 days from the date of the representation, or exercise its right of suspension, as the case may be, to enable the lenders' representative to exercise the senior lenders' right of substitution in accordance with the Substitution Agreement. The lenders' representative may, instead of exercising the senior lenders' right of substitution, procure that the default specified in the notice is cured within the aforesaid 180 days, and upon the curing, the NHAI shall withdraw its notice and restore the rights of CGTL. On a written request from the lenders' representative and CGTL, the NHAI shall extend the period of 180 days by a further period not exceeding 90 days as it may deem appropriate.

Termination by CGTL

In the event that any of the defaults specified below shall have occurred, and the NHAI fails to cure the default within a cure period of 90 days or such longer period as provided in the CGTL Concession Agreement, the NHAI shall be deemed to be in default of the CGTL Concession Agreement ("**NHAI Default**"), unless the default has occurred as a result of a breach of the CGTL Concession Agreement by CGTL, or due to force majeure. The default referred to herein shall include:

a) the NHAI commits a material default in complying with any of the provisions of the CGTL Concession Agreement and such default has a material adverse effect on CGTL;

b) the NHAI has failed to make any payment to CGTL within the period specified in the CGTL Concession Agreement;

c) the NHAI repudiates the CGTL Concession Agreement or otherwise takes any action that amounts to or manifests an irrevocable intention not to be bound by the CGTL Concession Agreement; or

d) the State of Rajasthan commits a material default in complying with the provisions of the state support agreement if such default has a material adverse effect on CGTL and the breach continues for a period of 90 days from the date of notice given in this behalf by CGTL to the NHAI.

Without prejudice to any other rights or remedies which CGTL may have under the CGTL Concession Agreement, upon the occurrence of an NHAI Default, CGTL shall be entitled to terminate the CGTL Concession Agreement by issuing a termination notice to the NHAI. Before issuing the termination notice, CGTL shall, by notice, inform the NHAI of its intention to issue a termination notice and grant 30 days to the NHAI to make a representation, and may, after the expiry of the 30 days, whether or not it is in receipt of such representation, issue the termination notice.

Termination Payment

Upon termination on account of a CGTL Default during the operation period, the NHAI shall pay to CGTL, by way of termination payment, an amount equal to 90% of the CGTL Debt Due less insurance cover. If any insurance claims forming part of the insurance cover are not admitted and paid, then 80% of such unpaid claims shall be included in the computation of CGTL Debt Due.

Upon termination on account of an NHAI Default, the NHAI shall pay to CGTL, by way of termination payment, an amount equal to:

a) CGTL Debt Due; and
b) 150% of the adjusted equity.

The termination payment shall not be less than an amount equal to the product of six and the average monthly fee actually realized 12 months prior to the transfer date.

Termination payment shall become due and payable to CGTL within 30 days of a demand being made by CGTL to the NHAI with the necessary particulars, and in the event of any delay, the NHAI shall pay interest at a rate equal to 3% above the bank rate on the amount of termination payment remaining unpaid. The delay shall not exceed 90 days. The termination payment under the CGTL Concession Agreement shall constitute a full and final settlement of all claims of CGTL on account of termination of the CGTL Concession Agreement for any reason whatsoever and CGTL shall not have any further right or claim under any law, treaty, convention, contract or otherwise.

Defects Liability after Termination

CGTL shall be responsible for all defects and deficiencies in the CGTL Project Highway for a period of 120 days after termination. CGTL shall have the obligation to repair or rectify, at its own cost, all defects and deficiencies in the CGTL Project Highway as observed by the independent engineer. The repair or rectification of the defect or deficiency shall be done within a period of 15 days from the date of notice issued by the NHAI in this behalf. A sum as specified in the CGTL Concession Agreement shall be retained in the Escrow Account for a period of 120 days after termination for meeting the liabilities, if any, arising out of, or in connection with this provision.

3. Concession Agreement between IRB HMTL and the NHAI dated May 29, 2018

IRB HMTL has entered into a concession agreement for six-laning of Hapur Bypass to Moradabad section including Hapur Bypass from km 50.000 (design chainage 50.000) to km 148.277 (design chainage 149.867) of NH-24 (new NH-9) in Uttar Pradesh on design, build, finance, operate and transfer ("**DBFOT**") basis (the "**IRB HMTL Concession Agreement**"), for a period of 22 years, from May 28, 2019 ("**IRB HMTL Appointed Date**") or until such date on which the IRB HMTL Concession Agreement is terminated by a termination notice ("**IRB HMTL Termination Date**", and the period between the IRB HMTL Appointed Date and the IRB HMTL Termination Date, the "**IRB HMTL Concession Period**").

Certain Definitions

"**IRB HMTL Debt Due**" shall mean the aggregate of the following sums expressed in Indian Rupees outstanding on the transfer date:

a) the principal amount of the debt provided by the senior lenders under the financing agreements for financing the total project cost (the "**Principa**l") but excluding any part of the Principal that had fallen due for repayment two years prior to the transfer date;

b) all accrued interest, financing fees and charges payable under the financing agreements on, or in respect of, the debt referred to in the sub-clause above until the transfer date but excluding (i) any interest, fees or charges that had fallen due one year prior to the transfer date, (ii) any penal interest or charges payable under the financing agreements to any senior lender, and (iii) any pre-payment charges in relation to accelerated repayment of debt except where such charges have arisen due to an NHAI Default (as defined below); and

c) any subordinated debt which is included in the financing package and disbursed by lenders for financing the total project cost;

If all, or any part of the IRB HMTL Debt Due is convertible into equity at the option of the senior lenders and/or IRB HMTL, it shall, for the purposes of the IRB HMTL Concession Agreement, be deemed to be IRB HMTL Debt Due even after the conversion and the Principal thereof shall be dealt with as if such conversion had not been undertaken;

"**IRB HMTL Debt Service**" shall mean the sum of all payments on account of Principal, interest, financing fees and charges due and payable in an accounting year to the senior lenders under the financing agreements;

"**IRB HMTL Project Assets**" shall mean all physical and other assets relating to and forming part of the site including (a) rights over the site in the form of licence, right of way or otherwise; (b) tangible assets such as civil works and equipment including foundations, embankments, pavements, road surface, interchanges, bridges, culverts, road overbridges, drainage works, traffic signals, sign boards, kilometre-stones, toll plazas, electrical systems, communication systems, rest areas, relief centres, maintenance depots and administrative offices; (c) project facilities situated on the site; (d) all rights of IRB HMTL under the project agreements; (e) financial assets, such as receivables, security deposits etc.; (f) insurance proceeds; and (g) applicable permits and authorizations relating to or in respect of the IRB HMTL Project Highway (as defined below), but does not include additional facilities;

"**IRB HMTL Project Highway**" shall mean the site comprising the existing road comprising Hapur Bypass to Moradabad section including Hapur Bypass from km 50.000 (design chainage km 50.000) to km 148.277 (design chainage km 149.867) of NH-24 (new NH-9) and all IRB HMTL Project Assets, and its subsequent development and augmentation in accordance with the IRB HMTL Concession Agreement;

"**IRB HMTL Project**" shall mean the construction, operation, and maintenance of the IRB HMTL Project Highway in accordance with the provisions of the IRB HMTL Concession Agreement, and includes all works, services, and equipment relating to and in respect of the scope of the project; and

"**Premium**" shall mean an amount paid to the NHAI by IRB HMTL in the form of an additional concession fee, as set forth in the bid for each year of the IRB HMTL Concession Period.

Grant of Concession

Subject to, and in accordance with the provisions set out in the IRB HMTL Concession Agreement, the applicable laws and the applicable permits, the NHAI has granted to IRB HMTL, and IRB HMTL has accepted the concession, including the exclusive right, license, and authority during the subsistence of the IRB HMTL Concession Agreement, to construct, operate and maintain the IRB HMTL Project for a period of 22 years from the IRB HMTL Appointed Date.

Subject to, and in accordance with the provisions of the IRB HMTL Concession Agreement, the concession granted shall oblige or entitle, as the case may be, IRB HMTL to:

a) right of way, access and license to the site for the purpose of, and to the extent conferred by the provisions of the IRB HMTL Concession Agreement;

b) finance and construct the IRB HMTL Project Highway;

c) manage, operate, and maintain the IRB HMTL Project Highway and regulate the use thereof by third parties;

d) demand, collect, and appropriate fee from vehicles and persons liable for payment of fee for using the IRB HMTL Project Highway or any part thereof and refuse entry of any vehicle if the fee due is not paid;

e) perform and fulfil all of IRB HMTL's obligations under and in accordance with the IRB HMTL Concession Agreement;

f) bear and pay all costs, expenses, and charges in connection with or incidental to the performance of the obligations of IRB HMTL under the IRB HMTL Concession Agreement; and

g) neither assign, transfer or sublet, or create any lien or encumbrance on the IRB HMTL Concession Agreement, or the concession granted, or on the whole or any part of the IRB HMTL Project Highway, nor transfer, lease, or part possession thereof, save and except as expressly permitted by the IRB HMTL Concession Agreement or the agreement for the substitution of IRB HMTL entered into by IRB HMTL, the NHAI, and the lenders' representative on behalf of the senior lenders (the "**Substitution Agreement**").

Fees

On and from the commercial operation date ("**COD**") till the transfer date, IRB HMTL shall have the sole and exclusive right to demand, collect, and appropriate fee from the users subject to, and in accordance with the IRB HMTL Concession Agreement and the applicable rules and regulations, provided that for ease of payment and collection, such fee shall be rounded off to the nearest five rupees in accordance with the applicable fee rules, as updated from time to time. Further, IRB HMTL may determine and collect fee at such lower rates as it may, by public notice to the users, specify in respect of all or any category of users or vehicles. In accordance with the IRB HMTL Concession Agreement, IRB HMTL shall not collect any fees in relation to exempted vehicles.

IRB HMTL shall not collect any fee from a local user for non-commercial use of the IRB HMTL Project Highway, and shall issue a pass in respect thereof for commuting on a section of the IRB HMTL Project Highway as specified in the pass and for crossing the toll plaza specified therein. For carrying out these provisions, IRB HMTL shall formulate, publish and implement an appropriate scheme, and make such modifications to the scheme as may reasonably be suggested by the NHAI or by local users from time to time. For defraying its expenses on issuing of passes and handling of local users, IRB HMTL shall be entitled to charge a monthly fee of ₹150, with reference to the base year 2007-08, to be revised annually in accordance with the fee rules to reflect the variation in WPI, and then rounded off to the nearest five rupees; provided that no passes will be required or fee collected from a vehicle that uses part of the IRB HMTL Project Highway and does not cross a toll plaza.

Concession Fee

In consideration of the grant of concession, IRB HMTL shall pay to the NHAI by way of concession fee a sum of ₹1 per annum.

Additionally, IRB HMTL was required to pay to the NHAI, immediately after the third anniversary year of the COD, a Premium in the form of an additional concession fee equal to ₹315 million as due to the NHAI during that year, due and payable for the period remaining in that year; and for each subsequent year till the ninth anniversary of the COD, the Premium shall be determined by increasing the amount of Premium in the respective year by an additional 3% as compared to the immediately preceding year and for each subsequent year of the IRB HMTL Concession Period, the Premium shall be determined by increasing the amount of Premium in the respective year by an additional 8% as compared to the immediately preceding year. The Premium is deemed to be a part of the concession fee.

The concession fee payable under the provisions of the IRB HMTL Concession Agreement shall be due and

payable in monthly instalments within seven days of the close of each month.

Escrow Account

IRB HMTL was required to, prior to the IRB HMTL Appointed Date, open and establish an escrow account (the "**Escrow Account**") with a bank (the "**Escrow Bank**") in accordance with the IRB HMTL Concession Agreement read with the escrow agreement entered into amongst IRB HMTL, the NHAI, the Escrow Bank and the senior lenders through the lenders' representative (the "**Escrow Agreement**").

IRB HMTL shall deposit, or cause to be deposited the following inflows and receipts into the Escrow Account:

a) all funds constituting the financial package;
b) all fee and any other revenues from or in respect of the IRB HMTL Project Highway, including the proceeds of any deposits, capital receipts or insurance claims; and

c) all payments by the NHAI, after deducting any outstanding concession fee.

The senior lenders may make direct disbursements to the EPC contractor in accordance with the express provisions contained in this behalf in the financing agreements.

Withdrawals during Concession Period

IRB HMTL was required to, at the time of opening the Escrow Account, give irrevocable instructions, by way of the Escrow Agreement, to the Escrow Bank instructing, inter alia, that deposits in the Escrow Account shall be appropriated in the following order every month, or at shorter intervals as necessary, and if not due in a month, then appropriated proportionately in such month and retained in the Escrow Account and paid out therefrom in a month when due:

a) all taxes due and payable by IRB HMTL for and in respect of the IRB HMTL Project Highway;

b) all payments relating to construction of the IRB HMTL Project Highway, subject to and in accordance with the conditions, if any, set forth in the financing agreements;

c) Operation and Management ("**O&M**") expenses, subject to the ceiling, if any, set forth in the financing agreements;

d) O&M expenses and other costs and expenses incurred by the NHAI in accordance with the provisions of the IRB HMTL Concession Agreement, and certified by the NHAI as due and payable to it;

e) concession fee due and payable to the NHAI;

f) monthly proportionate provision of IRB HMTL Debt Service due in an accounting year;

g) premium due and payable to the NHAI;

h) all payments and damages certified by the NHAI as due and payable to it by IRB HMTL, including repayment of revenue shortfall loan. IRB HMTL has agreed to give irrevocable instructions to the Escrow Bank to make payments from the Escrow Account in accordance with the instructions of the NHAI under the IRB HMTL Concession Agreement and debit the payment to O&M expenses;

i) monthly proportionate provision of IRB HMTL Debt Service payments due in an accounting year in respect of subordinated debt;

j) any reserve requirements set forth in the financing agreements; and

k) balance, if any, in accordance with the instructions of IRB HMTL.

IRB HMTL shall not, in any manner, modify the order of payment specified except with prior written approval from the NHAI.

Withdrawals upon Termination

Notwithstanding anything to the contrary contained in the IRB HMTL Concession Agreement, all amounts standing to the credit of the Escrow Account shall, upon termination, be appropriated in the following order:

a) all taxes due and payable by IRB HMTL for and in respect of the IRB HMTL Project Highway;

b) 90% of the IRB HMTL Debt Due excluding the subordinated debt;
c) outstanding concession fee;

d) all payments and damages certified by the NHAI as due and payable to it by IRB HMTL, including the repayment of the revenue shortfall loan. IRB HMTL has agreed to give irrevocable instruction to the Escrow Bank to make payment from the Escrow Account in accordance with the instructions of the NHAI under the IRB HMTL Concession Agreement and debit the payment to O&M expenses.

e) retention and payments relating to the liability for defects and deficiencies set forth in the IRB HMTL Concession Agreement;

f) outstanding IRB HMTL Debt Service including balance of IRB HMTL Debt Due;

g) outstanding subordinated debt;

h) incurred or accrued O&M expenses;

i) any other payments required to be made under the IRB HMTL Concession Agreement; and

j) balance, if any, in accordance with the instructions of IRB HMTL.

No appropriations shall be made until a vesting certificate has been issued by the NHAI.

Change of Scope

The NHAI may, notwithstanding anything to the contrary contained in the IRB HMTL Concession Agreement, require the provision of additional works and services which are not included in the scope of the project as contemplated by the IRB HMTL Concession Agreement. Any such change of scope shall be made in accordance with the provisions of the IRB HMTL Concession Agreement and the costs thereof shall be expended by IRB HMTL and reimbursed by the NHAI.

If IRB HMTL determines at any time that a change in scope is necessary for providing safer and improved services to the users, it shall, by notice in writing, require the NHAI to consider such change of scope. The NHAI shall, within 60 days of receipt of such notice, either accept the change of scope with modifications, if any, and initiate proceedings thereof in accordance with the provisions of the IRB HMTL Concession Agreement, or inform IRB HMTL in writing of its reasons for not accepting such change of scope.

Compensation for Breach of Agreement

In the event of IRB HMTL being in material default or breach of the IRB HMTL Concession Agreement, it shall pay to the NHAI by way of compensation, all direct costs suffered or incurred by the NHAI as a consequence of the material default or breach, within 30 days of the receipt of the demand supported by the necessary particulars thereof. No compensation shall be payable for any material breach or default in respect of which damages are expressly specified and payable under the IRB HMTL Concession Agreement.

In the event of the NHAI being in material default of the IRB HMTL Concession Agreement at any time after the IRB HMTL Appointed Date, it shall pay to IRB HMTL by way of compensation, all direct costs suffered or incurred by IRB HMTL as a consequence of the material default or breach within 30 days of receipt of the demand supported by necessary particulars thereof. No compensation shall be payable for any material breach or default in respect of which damages have been expressly specified in the IRB HMTL Concession Agreement.

In the event that a material default or breach of the IRB HMTL Concession Agreement causes a delay in achieving COD or leads to suspension of, or reduction in collection of fee, as the case may be, the NHAI shall,

in addition to the payment of compensation, extend the IRB HMTL Concession Period as provided in the IRB HMTL Concession Agreement. In the event that an additional toll way or a competing road, as the case may be, is opened to traffic in breach of the IRB HMTL Concession Agreement, the NHAI shall pay to IRB HMTL, for each day of the breach, compensation as provided in the IRB HMTL Concession Agreement, until the breach is cured. The payment of compensation by the NHAI shall be deemed to cure the breach of the IRB HMTL Concession Agreement so long as the NHAI continues to pay the compensation.

The compensation payable shall be in addition to, and not in substitution for, or derogation of, termination payment, if any.

Effects of Variation in Traffic Growth

Subject to the provisions of the IRB HMTL Concession Agreement, in the event actual average traffic shall have fallen short of the target traffic, then for every 1% (one percent) shortfall as compared to the target traffic, the IRB HMTL Concession Period shall, subject to payment of concession fee in accordance with the IRB HMTL Concession Agreement, be increased by 1.5% (one point five percent) thereof; provided that such increase in IRB HMTL Concession Period shall not in any case exceed 20% (twenty percent) of the IRB HMTL Concession Period.

Subject to the provisions of the IRB HMTL Concession Agreement, in the event actual average traffic shall have exceeded the target traffic, then for every 1% (one percent) excess as compared to the target traffic, the IRB HMTL Concession Period shall be reduced by 0.75% (zero point seven five percent) thereof; provided that such reduction in IRB HMTL Concession Period shall not in any case exceed 10% (ten percent) thereof.

Provided further that in lieu of a reduction in IRB HMTL Concession Period under the IRB HMTL Concession Agreement, IRB HMTL may elect to pay, in addition to the concession fee that would be due and payable if the IRB HMTL Concession Period were not reduced hereunder, a further premium equal to 25% (twenty five percent) of the realizable fee, and upon notice given to this effect by IRB HMTL no later than two years prior to the IRB HMTL Termination Date contemplated by the IRB HMTL Concession Agreement, NHAI shall waive the reduction in IRB HMTL Concession Period hereunder forthwith.

Notwithstanding anything to the contrary contained in IRB HMTL Concession Agreement, if the average daily traffic of PCUs in any accounting year shall exceed the designed capacity of the IRB HMTL Project Highway, the NHAI at its option may cause preparation of detailed project report which will assess the cost that may have to be incurred for augmenting the capacity of the IRB HMTL Project Highway so that its capacity is sufficiently increased for carrying the then current traffic in accordance with the corresponding provisions of the Indian Roads Congress publication no. IRC -64, 1990 or any substitute thereof. The IRB HMTL Concession Period, may be extended so that it yields for IRB HMTL a post-tax return on equity of 16% per annum. This assessment will be made at an assumed debt to equity ratio of 70:30. The extension of the IRB HMTL Concession Period shall be however limited to five years. The NHAI may thereafter, at their sole option, issue a notice to IRB HMTL, to undertake within six months of such notice, the augmentation so determined by the NHAI. The refusal, non-acceptance, or failure by IRB HMTL to undertake such augmentation on the due date so intimated by the NHAI, will be considered an indirect political event and the NHAI may at its discretion terminate this IRB HMTL Concession Agreement by issuing a termination notice and making a termination payment in accordance with the provisions of the IRB HMTL Concession Agreement without the NHAI being liable to issue any further notice under it.

Termination of the IRB HMTL Concession Agreement

Termination by the NHAI

Save as otherwise provided in the IRB HMTL Concession Agreement, in the event that any of the defaults specified below shall have occurred, and IRB HMTL fails to cure the default within the cure period, or where no cure period is specified, then within a cure period of 60 days, IRB HMTL shall be deemed to be in default of the IRB HMTL Concession Agreement ("**IRB HMTL Default**"), unless the default has occurred solely as a result of any breach of the IRB HMTL Concession Agreement by the NHAI or due to force majeure. The defaults referred to herein shall include:

a) the performance security has been encashed and appropriated in accordance with the IRB HMTL Concession Agreement and IRB HMTL fails to replenish or provide fresh performance security within a cure period of 30 days;

b) subsequent to the replenishment or furnishing of fresh performance security in accordance with the IRB HMTL Concession Agreement, IRB HMTL fails to cure, within a cure period of 90 days, the IRB HMTL Default for which whole or part of the performance security was appropriated;

c) IRB HMTL does not achieve the latest outstanding project milestone due in accordance with the IRB HMTL Concession Agreement and continues to be in default for 90 days;

d) IRB HMTL abandons or manifests intention to abandon the construction or operation of the IRB HMTL Project Highway without the prior written consent of the NHAI;

e) project completion date does not occur within the period specified in the IRB HMTL Concession Agreement;

f) the punch list items have not been completed within the period set forth in the IRB HMTL Concession Agreement;

g) IRB HMTL is in breach of the maintenance requirements or the safety requirements as the case may be;

h) IRB HMTL has failed to make any payment to the NHAI within the period specified in the IRB HMTL Concession Agreement;

i) an escrow default has occurred and IRB HMTL fails to cure the default within a cure period of 15 days;

j) upon occurrence of a financial default, the lenders' representative has, by notice, required the NHAI to undertake suspension or termination, as the case may be, in accordance with the Substitution Agreement and IRB HMTL fails to cure the default within the cure period specified hereinabove;

k) a breach of the project agreements by IRB HMTL has caused a material adverse effect;

l) IRB HMTL creates an encumbrance in breach of the IRB HMTL Concession Agreement;

m) IRB HMTL repudiates the IRB HMTL Concession Agreement or otherwise takes any action or evidences or conveys an intention not to be bound by the IRB HMTL Concession Agreement;

n) a change in ownership has occurred in breach of the IRB HMTL Concession Agreement;

o) there is a transfer, pursuant to law either of (i) the rights and/or obligations of IRB HMTL under any of the project agreements, or of (ii) all or part of the assets or undertaking of IRB HMTL, and such transfer causes a material adverse effect;

p) an execution levied on any of the assets of IRB HMTL has caused a material adverse effect;

q) IRB HMTL is adjudged bankrupt or insolvent, or if a trustee or receiver is appointed for IRB HMTL or for the whole or material part of its assets that has a material bearing on the IRB HMTL Project;

r) IRB HMTL has been, or is in the process of being liquidated, dissolved, wound-up, amalgamated or reconstituted in a manner that would cause, in the reasonable opinion of the NHAI, a material adverse effect;

s) a resolution for winding up of IRB HMTL is passed, or any petition for winding up of IRB HMTL is admitted by a court of competent jurisdiction and a provisional liquidator or receiver is appointed and such order has not been set aside within 90 days of the date thereof, or IRB HMTL is ordered to be wound up by Court except for the purpose of amalgamation or reconstruction, provided that, as part of such amalgamation or reconstruction, the entire property, assets and undertaking of IRB HMTL are transferred to the amalgamated or reconstructed entity and that the amalgamated or reconstructed entity has

unconditionally assumed the obligations of IRB HMTL under the IRB HMTL Concession Agreement and the project agreements; provided that:

i) the amalgamated or reconstructed entity has the capability and operating experience necessary for the performance of its obligations under the IRB HMTL Concession Agreement and the project agreements;

ii) the amalgamated or reconstructed entity has the financial standing to perform its obligations under the IRB HMTL Concession Agreement and the project agreements and has a creditworthiness at least as good as that of IRB HMTL as at the IRB HMTL Appointed Date; and

iii) each of the project agreements remains in full force and effect;

t) any representation or warranty of IRB HMTL which is, as of the date hereof, found to be materially false, incorrect or misleading or IRB HMTL is at any time hereafter found to be in breach thereof;

u) IRB HMTL submits to the NHAI any statement, notice or other document, in written or electronic form, which has a material effect on the NHAI's rights, obligations or interests and which is false in material particulars;

v) IRB HMTL has failed to fulfil any obligation, for which failure termination has been specified in the IRB HMTL Concession Agreement; or

w) IRB HMTL commits a default in complying with any other provision of the IRB HMTL Concession Agreement if such default causes a material adverse effect on the NHAI.

Without prejudice to any other rights or remedies which the NHAI may have under the IRB HMTL Concession Agreement, upon the occurrence of an IRB HMTL Default, the NHAI shall be entitled to terminate the IRB HMTL Concession Agreement by issuing a termination notice to IRB HMTL. Before issuing the termination notice, the NHAI shall, by notice, inform IRB HMTL of its intention to issue a termination notice and grant 15 days to IRB HMTL to make a representation, and may, after the expiry of the 15 days, whether or not it is in receipt of such representation, issue the termination notice subject to the provisions of the IRB HMTL Concession Agreement.

If there are senior lenders, the NHAI shall send a copy of its notice of intention to issue a termination notice to inform the lenders' representative and grant 30 days to the lenders' representative for making a representation on behalf of the senior lenders stating the intention to substitute IRB HMTL in accordance with the Substitution Agreement. If the NHAI receives a representation on behalf of the senior lenders, it shall, in its discretion, either withhold termination for a period not exceeding 180 days from the date of the representation, or exercise its right of suspension, as the case may be, to enable the lenders' representative to exercise the senior lenders' right of substitution in accordance with the Substitution Agreement. The lenders' representative may, instead of exercising the senior lenders' right of substitution, procure that the default specified in the notice is cured within the aforesaid 180 days, and upon the curing, the NHAI shall withdraw its notice and restore the rights of IRB HMTL. On a written request from the lenders' representative and IRB HMTL, the NHAI shall extend the period of 180 days by a further period not exceeding 90 days as it may deem appropriate.

Termination by IRB HMTL

In the event that any of the defaults specified below shall have occurred, and the NHAI fails to cure the default within a cure period of 90 days or such longer period as provided in the IRB HMTL Concession Agreement, the NHAI shall be deemed to be in default of the IRB HMTL Concession Agreement ("**NHAI Default**"), unless the default has occurred as a result of a breach of the IRB HMTL Concession Agreement by IRB HMTL, or due to force majeure. The default referred to herein shall include:

a) the NHAI commits a material default in complying with any of the provisions of the IRB HMTL Concession Agreement and such default has a material adverse effect on IRB HMTL;

b) the NHAI has failed to make any payment to IRB HMTL within the period specified in the IRB HMTL Concession Agreement;

c) the NHAI repudiates the IRB HMTL Concession Agreement or otherwise takes any action that amounts to or manifests an irrevocable intention not to be bound by the IRB HMTL Concession Agreement; or

d) the State of Uttar Pradesh commits a material default in complying with the provisions of the state support agreement if such default has a material adverse effect on IRB HMTL and the breach continues for a period of 90 days from the date of notice given in this behalf by IRB HMTL to the NHAI.

Without prejudice to any other rights or remedies which IRB HMTL may have under the IRB HMTL Concession Agreement, upon the occurrence of an NHAI Default, IRB HMTL shall be entitled to terminate the IRB HMTL Concession Agreement by issuing a termination notice to the NHAI. Before issuing the termination notice, IRB HMTL shall, by notice, inform the NHAI of its intention to issue a termination notice and grant 30 days to the NHAI to make a representation, and may, after the expiry of the 30 days, whether or not it is in receipt of such representation, issue the termination notice.

Termination Payment

Upon termination on account of an IRB HMTL Default during the operation period, the NHAI shall pay to IRB HMTL, by way of termination payment, an amount equal to 90% of the IRB HMTL Debt Due less insurance cover. If any insurance claims forming part of the insurance cover are not admitted and paid, then 80% of such unpaid claims shall be included in the computation of IRB HMTL Debt Due.

Upon termination on account of an NHAI Default, the NHAI shall pay to IRB HMTL, by way of termination payment, an amount equal to:

a) IRB HMTL Debt Due; and
b) 150% of the adjusted equity.

The termination payment shall not be less than an amount equal to the product of six and the average monthly fee actually realized 12 months prior to the transfer date.

Termination payment shall become due and payable to IRB HMTL within 30 days of a demand being made by IRB HMTL to the NHAI with the necessary particulars, and in the event of any delay, the NHAI shall pay interest at a rate equal to 3% above the bank rate on the amount of termination payment remaining unpaid. The delay shall not exceed 90 days. The termination payment under the IRB HMTL Concession Agreement shall constitute a full and final settlement of all claims of IRB HMTL on account of termination of the IRB HMTL Concession Agreement for any reason whatsoever and IRB HMTL shall not have any further right or claim under any law, treaty, convention, contract or otherwise.

Defects Liability after Termination

IRB HMTL shall be responsible for all defects and deficiencies in the IRB HMTL Project Highway for a period of 120 days after termination. IRB HMTL shall have the obligation to repair or rectify, at its own cost, all defects and deficiencies in the IRB HMTL Project Highway as observed by the independent engineer. The repair or rectification of the defect or deficiency shall be done within a period of 15 days from the date of notice issued by the NHAI in this behalf. A sum as specified in the IRB HMTL Concession Agreement shall be retained in the Escrow Account for a period of 120 days after termination for meeting the liabilities, if any, arising out of, or in connection with this provision.

4. Concession Agreement between IRB WTL and the NHAI dated March 25, 2013

IRB WTL has entered into a concession agreement for four-laning of Goa/Karnataka Border to Kundapur section from km 93.700 to km 283.300 of NH-17 in Karnataka on design, build, finance, operate and transfer ("**DBFOT**") basis (the "**IRB WTL Concession Agreement**"), for a period of 28 years, from March 3, 2014 ("**IRB WTL Appointed Date**") or until such date on which the IRB WTL Concession Agreement is terminated by a termination notice ("**IRB WTL Termination Date**", and the period between the IRB WTL Appointed Date and the IRB WTL Termination Date, the "**IRB WTL Concession Period**").

Certain Definitions

"**IRB WTL Debt Due**" shall mean the aggregate of the following sums expressed in Indian Rupees outstanding on the transfer date:

a) the principal amount of the debt provided by the senior lenders under the financing agreements for financing the total project cost (the "**Principa**l") but excluding any part of the Principal that had fallen due for repayment two years prior to the transfer date;

b) all accrued interest, financing fees and charges payable under the financing agreements on, or in respect of, the debt referred to in the sub-clause above until the transfer date but excluding (i) any interest, fees or charges that had fallen due one year prior to the transfer date, (ii) any penal interest or charges payable under the financing agreements to any senior lender, and (iii) any pre-payment charges in relation to accelerated repayment of debt except where such charges have arisen due to an NHAI Default (as defined below); and

c) any subordinated debt which is included in the financing package and disbursed by lenders for financing the total project cost;

If all, or any part of the IRB WTL Debt Due is convertible into equity at the option of the senior lenders and/or IRB WTL, it shall, for the purposes of the IRB WTL Concession Agreement, be deemed to be IRB WTL Debt Due even after the conversion and the Principal thereof shall be dealt with as if such conversion had not been undertaken;

"**IRB WTL Debt Service**" shall mean the sum of all payments on account of Principal, interest, financing fees and charges due and payable in an accounting year to the senior lenders under the financing agreements;

"**IRB WTL Project Assets**" shall mean all physical and other assets relating to and forming part of the site including (a) rights over the site in the form of licence, right of way or otherwise; (b) tangible assets such as civil works and equipment including foundations, embankments, pavements, road surface, interchanges, bridges, culverts, road overbridges, drainage works, traffic signals, sign boards, kilometre-stones, toll plazas, electrical systems, communication systems, rest areas, relief centres, maintenance depots and administrative offices; (c) project facilities situated on the site; (d) all rights of IRB WTL under the project agreements; (e) financial assets, such as receivables, security deposits etc.; (f) insurance proceeds; and (g) applicable permits and authorizations relating to or in respect of the IRB WTL Project Highway (as defined below), but does not include additional facilities;

"**IRB WTL Project Highway**" shall mean the site comprising the existing road comprising NH-17 from km 93.700 to km 283.300 and all IRB WTL Project Assets, and its subsequent development and augmentation in accordance with the IRB WTL Concession Agreement;
"**IRB WTL Project**" shall mean the construction, operation, and maintenance of the IRB WTL Project Highway in accordance with the provisions of the IRB WTL Concession Agreement, and includes all works, services, and equipment relating to and in respect of the scope of the project; and

"**Grant**" shall mean the cash support provided to IRB WTL by the NHAI which is equal to the sum set forth in the bid.

Grant of Concession

Subject to, and in accordance with the provisions set out in the IRB WTL Concession Agreement, the applicable laws and the applicable permits, the NHAI has granted to IRB WTL, and IRB WTL has accepted the concession, including the exclusive right, license, and authority to construct, operate and maintain the IRB WTL Project for a period of 28 years from the IRB WTL Appointed Date.

Subject to, and in accordance with the provisions of the IRB WTL Concession Agreement, the concession granted shall oblige or entitle, as the case may be, IRB WTL to:

a) right of way, access and license to the site for the purpose of, and to the extent conferred by the provisions of the IRB WTL Concession Agreement;

b) finance and construct the IRB WTL Project Highway;

c) manage, operate, and maintain the IRB WTL Project Highway and regulate the use thereof by third parties;

d) demand, collect, and appropriate fee from vehicles and users liable for payment of fee for using the IRB WTL Project Highway or any part thereof and refuse entry of any vehicle if the fee due is not paid;

e) perform and fulfil all of IRB WTL's obligations under and in accordance with the IRB WTL Concession Agreement;

f) bear and pay all costs, expenses, and charges in connection with or incidental to the performance of the obligations of IRB WTL under the IRB WTL Concession Agreement; and

g) neither assign, transfer or sublet, or create any lien or encumbrance on the IRB WTL Concession Agreement, or the concession granted, or on the whole or any part of the IRB WTL Project Highway, nor transfer, lease, or part possession thereof, save and except as expressly permitted by the IRB WTL Concession Agreement or the agreement for the substitution of IRB WTL entered into by IRB WTL, the NHAI, and the lenders' representative on behalf of the senior lenders (the "**Substitution Agreement**").

Fees

On and from the commercial operation date ("**COD**") till the transfer date, IRB WTL shall have the sole and exclusive right to demand, collect, and appropriate fee from the users subject to, and in accordance with the IRB WTL Concession Agreement and the applicable rules and regulations, provided that for ease of payment and collection, such fee shall be rounded off to the nearest five rupees in accordance with the applicable fee rules, as updated from time to time. In accordance with the IRB WTL Concession Agreement, IRB WTL shall not collect any fees in relation to exempted vehicles.

IRB WTL shall not collect any fee from a local user for non-commercial use of the IRB WTL Project Highway, and shall issue a pass in respect thereof for commuting on a section of the IRB WTL Project Highway as specified in the pass and for crossing the toll plaza specified therein. For carrying out these provisions, IRB WTL shall formulate, publish and implement an appropriate scheme, and make such modifications to the scheme as may reasonably be suggested by the NHAI or by local users from time to time. For defraying its expenses on issuing of passes and handling of local users, IRB WTL shall be entitled to charge a monthly fee of ₹150, with reference to the base year 2007-08, to be revised annually in accordance with the fee rules to reflect the variation in WPI, and then rounded off to the nearest five rupees; provided that no passes will be required or fee collected from a vehicle that uses part of the IRB WTL Project Highway and does not cross a toll plaza.

Grant

The NHAI has agreed to pay to IRB WTL cash support by way of an outright grant equal to ₹5,362.2 million as set out in the bid. The grant shall be disbursed to IRB WTL by way of equity support. It shall be credited to the Escrow Account (as defined below) and shall be applied by IRB WTL for meeting the total project cost. The equity support shall not exceed the sum specified, but shall in no case be greater than twice the equity, and shall be further restricted to a sum not exceeding 40% of the total project cost.

The equity support shall be due and payable to IRB WTL after it has expended the equity, and shall be disbursed proportionately along with the loan funds thereafter remaining to be disbursed by the senior lenders under the financing agreements. The NHAI shall disburse each tranche of the equity support as and when due, but no later than 15 days of receiving a request from IRB WTL along with necessary particulars. In the event of the occurrence of an IRB WTL Default (as defined below), disbursement of equity support shall be suspended till the IRB WTL Default has been cured.

Concession Fee

In consideration of the grant of concession, IRB WTL shall pay to the NHAI by way of concession fee a sum of ₹1.00 per annum.

The concession fee payable under the provisions of the IRB WTL Concession Agreement shall be due and payable in monthly instalments within seven days of the close of each month.

Escrow Account

IRB WTL was required to, prior to the IRB WTL Appointed Date, open and establish an escrow account (the "**Escrow Account**") with a bank (the "**Escrow Bank**") in accordance with the IRB WTL Concession Agreement read with the escrow agreement entered into amongst IRB WTL, the NHAI, the Escrow Bank and the senior lenders through the lenders' representative (the "**Escrow Agreement**").

IRB WTL shall deposit, or cause to be deposited the following inflows and receipts into the Escrow Account:

a) all funds constituting the financial package;

b) all fee and any other revenues from or in respect of the IRB WTL Project Highway, including the proceeds of any deposits, capital receipts or insurance claims; and

c) all payments by the NHAI, after deducting any outstanding concession fee.

The senior lenders may make direct disbursements to the EPC contractor in accordance with the express provisions contained in this behalf in the financing agreements.

Withdrawals during Concession Period

IRB WTL was required to, at the time of opening the Escrow Account, give irrevocable instructions, by way of the Escrow Agreement, to the Escrow Bank instructing, inter alia, that deposits in the Escrow Account shall be appropriated in the following order every month, or at shorter intervals as necessary, and if not due in a month, then appropriated proportionately in such month and retained in the Escrow Account and paid out therefrom in a month when due:

a) all taxes due and payable by IRB WTL for and in respect of the IRB WTL Project Highway;

b) all payments relating to construction of the IRB WTL Project Highway, subject to and in accordance with the conditions, if any, set forth in the financing agreements;

c) Operation and Management ("**O&M**") expenses, subject to the ceiling, if any, set forth in the financing agreements;

d) O&M expenses and other costs and expenses incurred by the NHAI in accordance with the provisions of the IRB WTL Concession Agreement, and certified by the NHAI as due and payable to it;

e) concession fee due and payable to the NHAI;

f) monthly proportionate provision of IRB WTL Debt Service due in an accounting year;

g) all payments and damages certified by the NHAI as due and payable to it by IRB WTL, including repayment of revenue shortfall loan.

h) monthly proportionate provision of IRB WTL Debt Service payments due in an accounting year in respect of subordinated debt;

i) any reserve requirements set forth in the financing agreements; and

j) balance, if any, in accordance with the instructions of IRB WTL.

IRB WTL shall not, in any manner, modify the order of payment specified except with prior written approval from the NHAI.

Withdrawals upon Termination

Notwithstanding anything to the contrary contained in the IRB WTL Concession Agreement, all amounts standing to the credit of the Escrow Account shall, upon termination, be appropriated in the following order:

a) all taxes due and payable by IRB WTL for and in respect of the IRB WTL Project Highway;

b) 90% of the IRB WTL Debt Due excluding the subordinated debt;

c) outstanding concession fee;

d) all payments and damages certified by the NHAI as due and payable to it by IRB WTL, including the repayment of the revenue shortfall loan. retention and payments relating to the liability for defects and deficiencies set forth in the IRB WTL Concession Agreement;

e) outstanding IRB WTL Debt Service including balance of IRB WTL Debt Due;

f) outstanding subordinated debt;

g) incurred or accrued O&M expenses;

h) any other payments required to be made under the IRB WTL Concession Agreement; and

i) balance, if any, in accordance with the instructions of IRB WTL.

No appropriations shall be made until a vesting certificate has been issued by the NHAI.

Change of Scope

The NHAI may, notwithstanding anything to the contrary contained in the IRB WTL Concession Agreement, require the provision of additional works and services which are not included in the scope of the project as contemplated by the IRB WTL Concession Agreement. Any such change of scope shall be made in accordance with the provisions of the IRB WTL Concession Agreement and the costs thereof shall be expended by IRB WTL and reimbursed by the NHAI.

If IRB WTL determines at any time that a change in scope is necessary for providing safer and improved services to the users, it shall, by notice in writing, require the NHAI to consider such change of scope. The NHAI shall, within 15 days of receipt of such notice, either accept the change of scope with modifications, if any, and initiate proceedings thereof in accordance with the provisions of the IRB WTL Concession Agreement, or inform IRB WTL in writing of its reasons for not accepting such change of scope.

Compensation for Breach of Agreement

In the event of IRB WTL being in material default or breach of the IRB WTL Concession Agreement, it shall pay to the NHAI by way of compensation, all direct costs suffered or incurred by the NHAI as a consequence of the material default or breach, within 30 days of the receipt of the demand supported by the necessary particulars thereof. No compensation shall be payable for any material breach or default in respect of which damages are expressly specified and payable under the IRB WTL Concession Agreement.

In the event of the NHAI being in material default of the IRB WTL Concession Agreement at any time after the IRB WTL Appointed Date, it shall pay to IRB WTL by way of compensation, all direct costs suffered or incurred by IRB WTL as a consequence of the material default or breach within 30 days of receipt of the demand supported by necessary particulars thereof. No compensation shall be payable for any material breach or default in respect of which damages have been expressly specified in the IRB WTL Concession Agreement.

In the event that a material default or breach of the IRB WTL Concession Agreement causes a delay in achieving COD or leads to suspension of, or reduction in collection of fee, as the case may be, the NHAI shall, in addition to the payment of compensation, extend the IRB WTL Concession Period as provided in the IRB WTL Concession Agreement. In the event that an additional toll way or a competing road, as the case may be, is opened to traffic in breach of the IRB WTL Concession Agreement, the NHAI shall pay to IRB WTL, for each day of the breach, compensation as provided in the IRB WTL Concession Agreement, until the breach is cured. The payment of compensation by the NHAI shall be deemed to cure the breach of the IRB WTL Concession Agreement so long as the NHAI continues to pay the compensation.

The compensation payable shall be in addition to, and not in substitution for, or derogation of, termination payment, if any.

Effects of Variation in Traffic Growth

Subject to the provisions of the IRB WTL Concession Agreement, in the event actual average traffic shall have fallen short of the target traffic, then for every 1% (one percent) shortfall as compared to the target traffic, the IRB WTL Concession Period shall, subject to payment of concession fee in accordance with the IRB WTL Concession Agreement, be increased by 1.5% (one point five percent) thereof; provided that such increase in IRB WTL Concession Period shall not in any case exceed 20% (twenty percent) of the IRB WTL Concession Period.

Subject to the provisions of the IRB WTL Concession Agreement, in the event actual average traffic shall have exceeded the target traffic, then for every 1% (one percent) excess as compared to the target traffic, the IRB WTL Concession Period shall be reduced by 0.75% (zero point seven five percent) thereof; provided that such reduction in IRB WTL Concession Period shall not in any case exceed 10% (ten percent) thereof.

Provided further that in lieu of a reduction in IRB WTL Concession Period under the IRB WTL Concession Agreement, IRB WTL may elect to pay, in addition to the concession fee that would be due and payable if the IRB WTL Concession Period were not reduced hereunder, a further premium equal to 25% (twenty five percent) of the realizable fee, and upon notice given to this effect by IRB WTL no later than two years prior to the IRB WTL Termination Date contemplated by the IRB WTL Concession Agreement, NHAI shall waive the reduction in IRB WTL Concession Period hereunder forthwith.

Notwithstanding anything to the contrary contained in IRB WTL Concession Agreement, if the average daily traffic of PCUs in any accounting year shall exceed the designed capacity of the IRB WTL Project Highway, the NHAI at its option may cause preparation of detailed project report which will assess the cost that may have to be incurred for augmenting the capacity of the IRB WTL Project Highway so that its capacity is sufficiently increased for carrying the then current traffic in accordance with the corresponding provisions of the Indian Roads Congress publication no. IRC -64, 1990 or any substitute thereof. The IRB WTL Concession Period, may be extended so that it yields for IRB WTL a post-tax return on equity of 16% per annum. This assessment will be made at an assumed debt to equity ratio of 70:30. The extension of the IRB WTL Concession Period shall be however limited to five years. The NHAI may thereafter, at their sole option, issue a notice to IRB WTL, to undertake within six months of such notice, the augmentation so determined by the NHAI. The refusal, non-acceptance, or failure by IRB WTL to undertake such augmentation on the due date so intimated by the NHAI, will be considered an indirect political event and the NHAI may at its discretion terminate this IRB WTL Concession Agreement by issuing a termination notice and making a termination payment in accordance with the provisions of the IRB WTL Concession Agreement without the NHAI being liable to issue any further notice under it.

Termination of the IRB WTL Concession Agreement

Termination by the NHAI

Save as otherwise provided in the IRB WTL Concession Agreement, in the event that any of the defaults specified below shall have occurred, and IRB WTL fails to cure the default within the cure period, or where no cure period is specified, then within a cure period of 60 days, IRB WTL shall be deemed to be in default of the IRB WTL Concession Agreement ("**IRB WTL Default**"), unless the default has occurred solely as a result of any breach of the IRB WTL Concession Agreement by the NHAI or due to force majeure. The defaults referred to herein shall include:

a) the performance security has been encashed and appropriated in accordance with the IRB WTL Concession Agreement and IRB WTL fails to replenish or provide fresh performance security within a cure period of 30 days;

b) subsequent to the replenishment or furnishing of fresh performance security in accordance with the IRB WTL Concession Agreement, IRB WTL fails to cure, within a cure period of 90 days, the IRB WTL Default for which whole or part of the performance security was appropriated;

c) IRB WTL does not achieve the latest outstanding project milestone due in accordance with the IRB WTL Concession Agreement and continues to be in default for 120 days;

d) IRB WTL abandons or manifests intention to abandon the construction or operation of the IRB WTL Project Highway without the prior written consent of the NHAI;

e) project completion date does not occur within the period specified in the IRB WTL Concession Agreement;

f) the punch list items have not been completed within the period set forth in the IRB WTL Concession Agreement;

g) IRB WTL is in breach of the maintenance requirements or the safety requirements as the case may be;

h) IRB WTL has failed to make any payment to the NHAI within the period specified in the IRB WTL Concession Agreement;

i) an escrow default has occurred and IRB WTL fails to cure the default within a cure period of 15 days;

j) upon occurrence of a financial default, the lenders' representative has, by notice, required the NHAI to undertake suspension or termination, as the case may be, in accordance with the Substitution Agreement and IRB WTL fails to cure the default within the cure period specified hereinabove;

k) a breach of the project agreements by IRB WTL has caused a material adverse effect;

l) IRB WTL creates an encumbrance in breach of the IRB WTL Concession Agreement;

m) IRB WTL repudiates the IRB WTL Concession Agreement or otherwise takes any action or evidences or conveys an intention not to be bound by the IRB WTL Concession Agreement;

n) a change in ownership has occurred in breach of the IRB WTL Concession Agreement;

o) there is a transfer, pursuant to law either of (i) the rights and/or obligations of IRB WTL under any of the project agreements, or of (ii) all or part of the assets or undertaking of IRB WTL, and such transfer causes a material adverse effect;

p) an execution levied on any of the assets of IRB WTL has caused a material adverse effect;

q) IRB WTL is adjudged bankrupt or insolvent, or if a trustee or receiver is appointed for IRB WTL or for the whole or material part of its assets that has a material bearing on the IRB WTL Project;

r) IRB WTL has been, or is in the process of being liquidated, dissolved, wound-up, amalgamated or reconstituted in a manner that would cause, in the reasonable opinion of the NHAI, a material adverse effect;

s) a resolution for winding up of IRB WTL is passed, or any petition for winding up of IRB WTL is admitted by a court of competent jurisdiction and a provisional liquidator or receiver is appointed and such order has not been set aside within 90 days of the date thereof, or IRB WTL is ordered to be wound up by Court except for the purpose of amalgamation or reconstruction, provided that, as part of such amalgamation or reconstruction, the entire property, assets and undertaking of IRB WTL are transferred to the amalgamated or reconstructed entity and that the amalgamated or reconstructed entity has unconditionally assumed the obligations of IRB WTL under the IRB WTL Concession Agreement and the project agreements; provided that:

   i) the amalgamated or reconstructed entity has the capability and operating experience necessary for the performance of its obligations under the IRB WTL Concession Agreement and the project agreements;

   ii) the amalgamated or reconstructed entity has the financial standing to perform its obligations under the IRB WTL Concession Agreement and the project agreements and has a creditworthiness at least as good as that of IRB WTL as at the IRB WTL Appointed Date; and

   iii) each of the project agreements remains in full force and effect;

t) any representation or warranty of IRB WTL which is, as of the date hereof, found to be materially false, incorrect or misleading or IRB WTL is at any time hereafter found to be in breach thereof;

u) IRB WTL submits to the NHAI any statement, notice or other document, in written or electronic form, which has a material effect on the NHAI's rights, obligations or interests and which is false in material particulars;

v) IRB WTL has failed to fulfil any obligation, for which failure termination has been specified in the IRB WTL Concession Agreement; or

w) IRB WTL commits a default in complying with any other provision of the IRB WTL Concession Agreement if such default causes a material adverse effect on the NHAI.

Without prejudice to any other rights or remedies which the NHAI may have under the IRB WTL Concession Agreement, upon the occurrence of an IRB WTL Default, the NHAI shall be entitled to terminate the IRB WTL Concession Agreement by issuing a termination notice to IRB WTL. Before issuing the termination notice, the NHAI shall, by notice, inform IRB WTL of its intention to issue a termination notice and grant 15 days to IRB WTL to make a representation, and may, after the expiry of the 15 days, whether or not it is in receipt of such representation, issue the termination notice subject to the provisions of the IRB WTL Concession Agreement.

If there are senior lenders, the NHAI shall send a copy of its notice of intention to issue a termination notice to inform the lenders' representative and grant 15 days to the lenders' representative for making a representation on behalf of the senior lenders stating the intention to substitute IRB WTL in accordance with the Substitution Agreement. If the NHAI receives a representation on behalf of the senior lenders, it shall, in its discretion, either withhold termination for a period not exceeding 180 days from the date of the representation, or exercise its right of suspension, as the case may be, to enable the lenders' representative to exercise the senior lenders' right of substitution in accordance with the Substitution Agreement. The lenders' representative may, instead of exercising the senior lenders' right of substitution, procure that the default specified in the notice is cured within the aforesaid 180 days, and upon the curing, the NHAI shall withdraw its notice and restore the rights of IRB WTL. On a written request from the lenders' representative and IRB WTL, the NHAI shall extend the period of 180 days by a further period not exceeding 90 days as it may deem appropriate.

Termination by IRB WTL

In the event that any of the defaults specified below shall have occurred, and the NHAI fails to cure the default within a cure period of 90 days or such longer period as provided in the IRB WTL Concession Agreement, the NHAI shall be deemed to be in default of the IRB WTL Concession Agreement ("**NHAI Default**"), unless the default has occurred as a result of a breach of the IRB WTL Concession Agreement by IRB WTL, or due to force majeure. The default referred to herein shall include:

a) the NHAI commits a material default in complying with any of the provisions of the IRB WTL Concession Agreement and such default has a material adverse effect on IRB WTL;

b) the NHAI has failed to make any payment to IRB WTL within the period specified in the IRB WTL Concession Agreement;

c) the NHAI repudiates the IRB WTL Concession Agreement or otherwise takes any action that amounts to or manifests an irrevocable intention not to be bound by the IRB WTL Concession Agreement; or

d) the State of Karnataka commits a material default in complying with the provisions of the state support agreement if such default has a material adverse effect on IRB WTL and the breach continues for a period of 90 days from the date of notice given in this behalf by IRB WTL to the NHAI.

Without prejudice to any other rights or remedies which IRB WTL may have under the IRB WTL Concession Agreement, upon the occurrence of an NHAI Default, IRB WTL shall be entitled to terminate the IRB WTL Concession Agreement by issuing a termination notice to the NHAI. Before issuing the termination notice, IRB WTL shall, by notice, inform the NHAI of its intention to issue a termination notice and grant 15 days to the NHAI to make a representation, and may, after the expiry of the 15 days, whether or not it is in receipt of such representation, issue the termination notice.

Termination Payment

Upon termination on account of an IRB WTL Default during the operation period, the NHAI shall pay to IRB WTL, by way of termination payment, an amount equal to 90% of the IRB WTL Debt Due less insurance cover. If any insurance claims forming part of the insurance cover are not admitted and paid, then 80% of such unpaid claims shall be included in the computation of IRB WTL Debt Due.

Upon termination on account of an NHAI Default, the NHAI shall pay to IRB WTL, by way of termination payment, an amount equal to:

a) IRB WTL Debt Due; and
b) 150% of the adjusted equity.

Termination payment shall become due and payable to IRB WTL within 15 days of a demand being made by IRB WTL to the NHAI with the necessary particulars, and in the event of any delay, the NHAI shall pay interest at a rate equal to 3% above the bank rate on the amount of termination payment remaining unpaid. The delay shall not exceed 90 days. The termination payment under the IRB WTL Concession Agreement shall constitute a full and final settlement of all claims of IRB WTL on account of termination of the IRB WTL Concession Agreement for any reason whatsoever and IRB WTL, or any shareholder thereof, shall not have any further right or claim under any law, treaty, convention, contract or otherwise.

Defects Liability after Termination

IRB WTL shall be responsible for all defects and deficiencies in the IRB WTL Project Highway for a period of 120 days after termination. IRB WTL shall have the obligation to repair or rectify, at its own cost, all defects and deficiencies in the IRB WTL Project Highway as observed by the independent engineer. The repair or rectification of the defect or deficiency shall be done within a period of 15 days from the date of notice issued by the NHAI in this behalf. A sum as specified in the IRB WTL Concession Agreement shall be retained in the Escrow Account for a period of 120 days after termination for meeting the liabilities, if any, arising out of, or in connection with this provision.

5. Concession Agreement between KGTL and the NHAI dated February 22, 2017

KGTL has entered into a concession agreement for six-laning of Kishangarh to Gulabpura section of NH-79A and NH-79 in Rajasthan with a length of 90.000 km on design, build, finance, operate and transfer ("D**BFOT**") basis (the "**KGTL Concession Agreement**"), for a period of 20 years, from February 21, 2018 ("**KGTL Appointed Date**") or until such date on which the KGTL Concession Agreement is terminated by a termination notice ("**KGTL Termination Date**", and the period between the KGTL Appointed Date and the KGTL Termination Date, the "**KGTL Concession Period**").

Certain Definitions

"**KGTL Debt Due**" shall mean the aggregate of the following sums expressed in Indian Rupees outstanding on the transfer date:

a) the principal amount of the debt provided by the senior lenders under the financing agreements for financing the total project cost (the "**Principa**l") but excluding any part of the Principal that had fallen due for repayment two years prior to the transfer date;

b) all accrued interest, financing fees and charges payable under the financing agreements on, or in respect of, the debt referred to in the sub-clause above until the transfer date but excluding (i) any interest, fees or charges that had fallen due one year prior to the transfer date, (ii) any penal interest or charges payable under the financing agreements to any senior lender, and (iii) any pre-payment charges in relation to accelerated repayment of debt except where such charges have arisen due to an NHAI Default (as defined below); and

c) any subordinated debt which is included in the financing package and disbursed by lenders for financing the total project cost;

If all, or any part of the KGTL Debt Due is convertible into equity at the option of the senior lenders and/or KGTL, it shall, for the purposes of the KGTL Concession Agreement, be deemed to be KGTL Debt Due even after the conversion and the Principal thereof shall be dealt with as if such conversion had not been undertaken;

"**KGTL Debt Service**" shall mean the sum of all payments on account of Principal, interest, financing fees and charges due and payable in an accounting year to the senior lenders under the financing agreements;

"**KGTL Project Assets**" shall mean all physical and other assets relating to and forming part of the site including (a) rights over the site in the form of licence, right of way or otherwise; (b) tangible assets such as civil works and equipment including foundations, embankments, pavements, road surface, interchanges, bridges, culverts, road overbridges, drainage works, traffic signals, sign boards, kilometre-stones, toll plazas, electrical systems, communication systems, rest areas, relief centres, maintenance depots and administrative offices; (c) project facilities situated on the site; (d) all rights of KGTL under the project agreements; (e) financial assets, such as receivables, security deposits etc.; (f) insurance proceeds; and (g) applicable permits and authorizations relating to or in respect of the KGTL Project Highway (as defined below), but does not include additional facilities;

"**KGTL Project Highway**" shall mean the site comprising the existing road comprising NH-79A and 79 from km 0.000 to km 90.000 and all KGTL Project Assets, and its subsequent development and augmentation in accordance with the KGTL Concession Agreement;

"**KGTL Project**" shall mean the construction, operation, and maintenance of the KGTL Project Highway in accordance with the provisions of the KGTL Concession Agreement, and includes all works, services, and equipment relating to and in respect of the scope of the project;

"**Premium**" shall mean an amount paid to the NHAI by KGTL in the form of an additional concession fee, as set forth in the bid for each year of the KGTL Concession Period.

Grant of Concession

Subject to, and in accordance with the provisions set out in the KGTL Concession Agreement, the applicable laws and the applicable permits, the NHAI has granted to KGTL, and KGTL has accepted the concession, including the exclusive right, license, and authority during the subsistence of the KGTL Concession Agreement, to construct, operate and maintain the KGTL Project for a period of 20 years from the KGTL Appointed Date.

Subject to, and in accordance with the provisions of the KGTL Concession Agreement, the concession granted shall oblige or entitle, as the case may be, KGTL to:

a) right of way, access and license to the site for the purpose of, and to the extent conferred by the provisions of the KGTL Concession Agreement;

b) finance and construct the KGTL Project Highway;

c) manage, operate, and maintain the KGTL Project Highway and regulate the use thereof by third parties;

d) demand, collect, and appropriate fee from vehicles and persons liable for payment of fee for using the KGTL Project Highway or any part thereof and refuse entry of any vehicle if the fee due is not paid;

e) perform and fulfil all of KGTL's obligations under and in accordance with the KGTL Concession Agreement;

f) bear and pay all costs, expenses, and charges in connection with or incidental to the performance of the obligations of KGTL under the KGTL Concession Agreement; and

g) neither assign, transfer or sublet, or create any lien or encumbrance on the KGTL Concession Agreement, or the concession granted, or on the whole or any part of the KGTL Project Highway, nor transfer, lease, or part possession thereof, save and except as expressly permitted by the KGTL Concession Agreement or the agreement for the substitution of KGTL entered into by KGTL, the NHAI, and the lenders' representative on behalf of the senior lenders (the "**Substitution Agreement**").

Fees

On and from the commercial operation date ("**COD**") till the transfer date, KGTL shall have the sole and exclusive right to demand, collect, and appropriate fee from the users subject to, and in accordance with the KGTL Concession Agreement and the applicable rules and regulations, provided that for ease of payment and collection, such fee shall be rounded off to the nearest five rupees in accordance with the applicable fee rules, as updated from time to time. Further, KGTL may determine and collect fee at such lower rates as it may, by public notice to the users, specify in respect of all or any category of users or vehicles. In accordance with the KGTL Concession Agreement, KGTL shall not collect any fees in relation to exempted vehicles.

KGTL shall not collect any fee from a local user for non-commercial use of the KGTL Project Highway, and shall issue a pass in respect thereof for commuting on a section of the KGTL Project Highway as specified in the pass and for crossing the toll plaza specified therein. For carrying out these provisions, KGTL shall formulate, publish and implement an appropriate scheme, and make such modifications to the scheme as may reasonably be suggested by the NHAI or by local users from time to time. For defraying its expenses on issuing of passes and handling of local users, KGTL shall be entitled to charge a monthly fee of ₹150, with reference to the base year 2007-08, to be revised annually in accordance with the fee rules to reflect the variation in WPI, and then rounded off to the nearest five rupees; provided that no passes will be required or fee collected from a vehicle that uses part of the KGTL Project Highway and does not cross a toll plaza.

Concession Fee

In consideration of the grant of concession, KGTL shall pay to the NHAI by way of concession fee a sum of ₹1 per annum.

Additionally, KGTL was required to pay to the NHAI, immediately after the third anniversary year of the COD, a Premium in the form of an additional concession fee equal to ₹1,863 million as due to the NHAI during that year, due and payable for the period remaining in that year; and for each subsequent year till the ninth anniversary of the COD, the Premium shall be determined by increasing the amount of Premium in the respective year by an additional 3% as compared to the immediately preceding year and for each subsequent year of the KGTL Concession Period, the Premium shall be determined by increasing the amount of Premium in the respective year by an additional 8% as compared to the immediately preceding year. The Premium is deemed to be a part of the concession fee.

The concession fee payable under the provisions of the KGTL Concession Agreement shall be due and payable in monthly instalments within seven days of the close of each month.

Escrow Account

KGTL was required to, prior to the KGTL Appointed Date, open and establish an escrow account (the "**Escrow Account**") with a bank (the "**Escrow Bank**") in accordance with the KGTL Concession Agreement read with the escrow agreement entered into amongst KGTL, the NHAI, the Escrow Bank and the senior lenders through the lenders' representative (the "**Escrow Agreement**").

KGTL shall deposit, or cause to be deposited the following inflows and receipts into the Escrow Account:

a) all funds constituting the financial package;
b) all fee and any other revenues from or in respect of the KGTL Project Highway, including the proceeds of any deposits, capital receipts or insurance claims; and
c) all payments by the NHAI, after deducting any outstanding concession fee.

The senior lenders may make direct disbursements to the EPC contractor in accordance with the express provisions contained in this behalf in the financing agreements.

Withdrawals during Concession Period

KGTL was required to, at the time of opening the Escrow Account, give irrevocable instructions, by way of the Escrow Agreement, to the Escrow Bank instructing, inter alia, that deposits in the Escrow Account shall be appropriated in the following order every month, or at shorter intervals as necessary, and if not due in a month, then appropriated proportionately in such month and retained in the Escrow Account and paid out therefrom in a month when due:

a) all taxes due and payable by KGTL for and in respect of the KGTL Project Highway;

b) all payments relating to construction of the KGTL Project Highway, subject to and in accordance with the conditions, if any, set forth in the financing agreements;

c) Operation and Management ("**O&M**") expenses, subject to the ceiling, if any, set forth in the financing agreements;

d) O&M expenses and other costs and expenses incurred by the NHAI in accordance with the provisions of the KGTL Concession Agreement, and certified by the NHAI as due and payable to it;

e) concession fee due and payable to the NHAI;

f) monthly proportionate provision of KGTL Debt Service due in an accounting year;

g) premium due and payable to the NHAI;

h) all payments and damages certified by the NHAI as due and payable to it by KGTL, including repayment of revenue shortfall loan. KGTL has agreed to give irrevocable instructions to the Escrow Bank to make payments from the Escrow Account in accordance with the instructions of the NHAI under the KGTL Concession Agreement and debit the payment to O&M expenses;

i) monthly proportionate provision of KGTL Debt Service payments due in an accounting year in respect of subordinated debt;

j) any reserve requirements set forth in the financing agreements; and

k) balance, if any, in accordance with the instructions of KGTL.

KGTL shall not, in any manner, modify the order of payment specified except with prior written approval from the NHAI.

Withdrawals upon Termination

Notwithstanding anything to the contrary contained in the KGTL Concession Agreement, all amounts standing to the credit of the Escrow Account shall, upon termination, be appropriated in the following order:

a) all taxes due and payable by KGTL for and in respect of the KGTL Project Highway;

b) 90% of the KGTL Debt Due excluding the subordinated debt;
c) outstanding concession fee;

d) all payments and damages certified by the NHAI as due and payable to it by KGTL, including the repayment of the revenue shortfall loan. KGTL has agreed to give irrevocable instruction to the Escrow Bank to make payment from the Escrow Account in accordance with the instructions of the NHAI under the KGTL Concession Agreement and debit the payment to O&M expenses.

e) retention and payments relating to the liability for defects and deficiencies set forth in the KGTL Concession Agreement;

f) outstanding KGTL Debt Service including balance of KGTL Debt Due;

g) outstanding subordinated debt;

h) incurred or accrued O&M expenses;

i) any other payments required to be made under the KGTL Concession Agreement; and

j) balance, if any, in accordance with the instructions of KGTL.

No appropriations shall be made until a vesting certificate has been issued by the NHAI.

Change of Scope

The NHAI may, notwithstanding anything to the contrary contained in the KGTL Concession Agreement, require the provision of additional works and services which are not included in the scope of the project as contemplated by the KGTL Concession Agreement. Any such change of scope shall be made in accordance with the provisions of the KGTL Concession Agreement and the costs thereof shall be expended by KGTL and reimbursed by the NHAI.

If KGTL determines at any time that a change in scope is necessary for providing safer and improved services to the users, it shall, by notice in writing, require the NHAI to consider such change of scope. The NHAI shall, within 60 days of receipt of such notice, either accept the change of scope with modifications, if any, and initiate proceedings thereof in accordance with the provisions of the KGTL Concession Agreement, or inform KGTL in writing of its reasons for not accepting such change of scope.

Compensation for Breach of Agreement

In the event of KGTL being in material default or breach of the KGTL Concession Agreement, it shall pay to the NHAI by way of compensation, all direct costs suffered or incurred by the NHAI as a consequence of the material default or breach, within 30 days of the receipt of the demand supported by the necessary particulars thereof. No compensation shall be payable for any material breach or default in respect of which damages are expressly specified and payable under the KGTL Concession Agreement.

In the event of the NHAI being in material default of the KGTL Concession Agreement at any time after the KGTL Appointed Date, it shall pay to KGTL by way of compensation, all direct costs suffered or incurred by KGTL as a consequence of the material default or breach within 30 days of receipt of the demand supported by necessary particulars thereof. No compensation shall be payable for any material breach or default in respect of which damages have been expressly specified in the KGTL Concession Agreement.

In the event that a material default or breach of the KGTL Concession Agreement causes a delay in achieving COD or leads to suspension of, or reduction in collection of fee, as the case may be, the NHAI shall, in addition to the payment of compensation, extend the KGTL Concession Period as provided in the KGTL Concession Agreement. In the event that an additional toll way or a competing road, as the case may be, is opened to traffic in breach of the KGTL Concession Agreement, the NHAI shall pay to KGTL, for each day of the breach, compensation as provided in the KGTL Concession Agreement, until the breach is cured. The payment of compensation by the NHAI shall be deemed to cure the breach of the KGTL Concession Agreement so long as the NHAI continues to pay the compensation.

The compensation payable shall be in addition to, and not in substitution for, or derogation of, termination payment, if any.

Effects of Variation in Traffic Growth

Subject to the provisions of the KGTL Concession Agreement, in the event actual average traffic shall have fallen short of the target traffic, then for every 1% (one percent) shortfall as compared to the target traffic, the KGTL Concession Period shall, subject to payment of concession fee in accordance with the KGTL Concession Agreement, be increased by 1.5% (one point five percent) thereof; provided that such increase in KGTL Concession Period shall not in any case exceed 20% (twenty percent) of the KGTL Concession Period.

Subject to the provisions of the KGTL Concession Agreement, in the event actual average traffic shall have exceeded the target traffic, then for every 1% (one percent) excess as compared to the target traffic, the KGTL Concession Period shall be reduced by 0.75% (zero point seven five percent) thereof; provided that such reduction in KGTL Concession Period shall not in any case exceed 10% (ten percent) thereof.

Provided further that in lieu of a reduction in KGTL Concession Period under the KGTL Concession Agreement, KGTL may elect to pay, in addition to the concession fee that would be due and payable if the KGTL Concession Period were not reduced hereunder, a further premium equal to 25% (twenty five percent) of the realizable fee, and upon notice given to this effect by KGTL no later than two years prior to the KGTL

Termination Date contemplated by the KGTL Concession Agreement, NHAI shall waive the reduction in KGTL Concession Period hereunder forthwith.

Notwithstanding anything to the contrary contained in KGTL Concession Agreement, if the average daily traffic of PCUs in any accounting year shall exceed the designed capacity of the KGTL Project Highway, the NHAI at its option may cause preparation of detailed project report which will assess the cost that may have to be incurred for augmenting the capacity of the KGTL Project Highway so that its capacity is sufficiently increased for carrying the then current traffic in accordance with the corresponding provisions of the Indian Roads Congress publication no. IRC -64, 1990 or any substitute thereof. The KGTL Concession Period, may be extended so that it yields for KGTL a post-tax return on equity of 16% per annum. This assessment will be made at an assumed debt to equity ratio of 70:30. The extension of the KGTL Concession Period shall be however limited to five years. The NHAI may thereafter, at their sole option, issue a notice to KGTL, to undertake within six months of such notice, the augmentation so determined by the NHAI. The refusal, non-acceptance, or failure by KGTL to undertake such augmentation on the due date so intimated by the NHAI, will be considered an indirect political event and the NHAI may at its discretion terminate this KGTL Concession Agreement by issuing a termination notice and making a termination payment in accordance with the provisions of the KGTL Concession Agreement without the NHAI being liable to issue any further notice under it.

Termination of the KGTL Concession Agreement

Termination by the NHAI

Save as otherwise provided in the KGTL Concession Agreement, in the event that any of the defaults specified below shall have occurred, and KGTL fails to cure the default within the cure period, or where no cure period is specified, then within a cure period of 60 days, KGTL shall be deemed to be in default of the KGTL Concession Agreement ("**KGTL Default**"), unless the default has occurred solely as a result of any breach of the KGTL Concession Agreement by the NHAI or due to force majeure. The defaults referred to herein shall include:

a) the performance security has been encashed and appropriated in accordance with the KGTL Concession Agreement and KGTL fails to replenish or provide fresh performance security within a cure period of 30 days;

b) subsequent to the replenishment or furnishing of fresh performance security in accordance with the KGTL Concession Agreement, KGTL fails to cure, within a cure period of 90 days, the KGTL Default for which whole or part of the performance security was appropriated;

c) KGTL does not achieve the latest outstanding project milestone due in accordance with the KGTL Concession Agreement and continues to be in default for 90 days;

d) KGTL abandons or manifests intention to abandon the construction or operation of the KGTL Project Highway without the prior written consent of the NHAI;

e) project completion date does not occur within the period specified in the KGTL Concession Agreement;

f) the punch list items have not been completed within the period set forth in the KGTL Concession Agreement;

g) KGTL is in breach of the maintenance requirements or the safety requirements as the case may be;

h) KGTL has failed to make any payment to the NHAI within the period specified in the KGTL Concession Agreement;

i) an escrow default has occurred and KGTL fails to cure the default within a cure period of 15 days;

j) upon occurrence of a financial default, the lenders' representative has, by notice, required the NHAI to undertake suspension or termination, as the case may be, in accordance with the Substitution Agreement and KGTL fails to cure the default within the cure period specified hereinabove;

k) a breach of the project agreements by KGTL has caused a material adverse effect;

l) KGTL creates an encumbrance in breach of the KGTL Concession Agreement;

m) KGTL repudiates the KGTL Concession Agreement or otherwise takes any action or evidences or conveys an intention not to be bound by the KGTL Concession Agreement;

n) a change in ownership has occurred in breach of the KGTL Concession Agreement;

o) there is a transfer, pursuant to law either of (i) the rights and/or obligations of KGTL under any of the project agreements, or of (ii) all or part of the assets or undertaking of KGTL, and such transfer causes a material adverse effect;

p) an execution levied on any of the assets of KGTL has caused a material adverse effect;

q) KGTL is adjudged bankrupt or insolvent, or if a trustee or receiver is appointed for KGTL or for the whole or material part of its assets that has a material bearing on the KGTL Project;

r) KGTL has been, or is in the process of being liquidated, dissolved, wound-up, amalgamated or reconstituted in a manner that would cause, in the reasonable opinion of the NHAI, a material adverse effect;

s) a resolution for winding up of KGTL is passed, or any petition for winding up of KGTL is admitted by a court of competent jurisdiction and a provisional liquidator or receiver is appointed and such order has not been set aside within 90 days of the date thereof, or KGTL is ordered to be wound up by Court except for the purpose of amalgamation or reconstruction, provided that, as part of such amalgamation or reconstruction, the entire property, assets and undertaking of KGTL are transferred to the amalgamated or reconstructed entity and that the amalgamated or reconstructed entity has unconditionally assumed the obligations of KGTL under the KGTL Concession Agreement and the project agreements; provided that:

   i) the amalgamated or reconstructed entity has the capability and operating experience necessary for the performance of its obligations under the KGTL Concession Agreement and the project agreements;

   ii) the amalgamated or reconstructed entity has the financial standing to perform its obligations under the KGTL Concession Agreement and the project agreements and has a creditworthiness at least as good as that of KGTL as at the KGTL Appointed Date; and

   iii) each of the project agreements remains in full force and effect;

t) any representation or warranty of KGTL which is, as of the date hereof, found to be materially false, incorrect or misleading or KGTL is at any time hereafter found to be in breach thereof;

u) KGTL submits to the NHAI any statement, notice or other document, in written or electronic form, which has a material effect on the NHAI's rights, obligations or interests and which is false in material particulars;

v) KGTL has failed to fulfil any obligation, for which failure termination has been specified in the KGTL Concession Agreement; or

w) KGTL commits a default in complying with any other provision of the KGTL Concession Agreement if such default causes a material adverse effect on the NHAI.

Without prejudice to any other rights or remedies which the NHAI may have under the KGTL Concession Agreement, upon the occurrence of a KGTL Default, the NHAI shall be entitled to terminate the KGTL Concession Agreement by issuing a termination notice to KGTL. Before issuing the termination notice, the NHAI shall, by notice, inform KGTL of its intention to issue a termination notice and grant 15 days to KGTL to make a representation, and may, after the expiry of the 15 days, whether or not it is in receipt of such representation, issue the termination notice subject to the provisions of the KGTL Concession Agreement.

If there are senior lenders, the NHAI shall send a copy of its notice of intention to issue a termination notice to inform the lenders' representative and grant 30 days to the lenders' representative for making a representation on behalf of the senior lenders stating the intention to substitute KGTL in accordance with the Substitution Agreement. If the NHAI receives a representation on behalf of the senior lenders, it shall, in its discretion, either withhold termination for a period not exceeding 180 days from the date of the representation, or exercise its

right of suspension, as the case may be, to enable the lenders' representative to exercise the senior lenders' right of substitution in accordance with the Substitution Agreement. The lenders' representative may, instead of exercising the senior lenders' right of substitution, procure that the default specified in the notice is cured within the aforesaid 180 days, and upon the curing, the NHAI shall withdraw its notice and restore the rights of KGTL. On a written request from the lenders' representative and KGTL, the NHAI shall extend the period of 180 days by a further period not exceeding 90 days as it may deem appropriate.

Termination by KGTL

In the event that any of the defaults specified below shall have occurred, and the NHAI fails to cure the default within a cure period of 90 days or such longer period as provided in the KGTL Concession Agreement, the NHAI shall be deemed to be in default of the KGTL Concession Agreement ("**NHAI Default**"), unless the default has occurred as a result of a breach of the KGTL Concession Agreement by KGTL, or due to force majeure. The default referred to herein shall include:

a) the NHAI commits a material default in complying with any of the provisions of the KGTL Concession Agreement and such default has a material adverse effect on KGTL;

b) the NHAI has failed to make any payment to KGTL within the period specified in the KGTL Concession Agreement;

c) the NHAI repudiates the KGTL Concession Agreement or otherwise takes any action that amounts to or manifests an irrevocable intention not to be bound by the KGTL Concession Agreement; or

d) the State of Rajasthan commits a material default in complying with the provisions of the state support agreement if such default has a material adverse effect on KGTL and the breach continues for a period of 90 days from the date of notice given in this behalf by KGTL to the NHAI.

Without prejudice to any other rights or remedies which KGTL may have under the KGTL Concession Agreement, upon the occurrence of an NHAI Default, KGTL shall be entitled to terminate the KGTL Concession Agreement by issuing a termination notice to the NHAI. Before issuing the termination notice, KGTL shall, by notice, inform the NHAI of its intention to issue a termination notice and grant 30 days to the NHAI to make a representation, and may, after the expiry of the 30 days, whether or not it is in receipt of such representation, issue the termination notice.

Termination Payment

Upon termination on account of a KGTL Default during the operation period, the NHAI shall pay to KGTL, by way of termination payment, an amount equal to 90% of the KGTL Debt Due less insurance cover. If any insurance claims forming part of the insurance cover are not admitted and paid, then 80% of such unpaid claims shall be included in the computation of KGTL Debt Due.

Upon termination on account of an NHAI Default, the NHAI shall pay to KGTL, by way of termination payment, an amount equal to:

a) KGTL Debt Due; and
b) 150% of the adjusted equity.

The termination payment shall not be less than an amount equal to the product of six and the average monthly fee actually realized 12 months prior to the transfer date.

Termination payment shall become due and payable to KGTL within 30 days of a demand being made by KGTL to the NHAI with the necessary particulars, and in the event of any delay, the NHAI shall pay interest at a rate equal to 3% above the bank rate on the amount of termination payment remaining unpaid. The delay shall not exceed 90 days. The termination payment under the KGTL Concession Agreement shall constitute a full and final settlement of all claims of KGTL on account of termination of the KGTL Concession Agreement for any reason whatsoever and KGTL shall not have any further right or claim under any law, treaty, convention, contract or otherwise.

Defects Liability after Termination

KGTL shall be responsible for all defects and deficiencies in the KGTL Project Highway for a period of 120 days after termination. KGTL shall have the obligation to repair or rectify, at its own cost, all defects and deficiencies in the KGTL Project Highway as observed by the independent engineer. The repair or rectification of the defect or deficiency shall be done within a period of 15 days from the date of notice issued by the NHAI in this behalf. A sum as specified in the KGTL Concession Agreement shall be retained in the Escrow Account for a period of 120 days after termination for meeting the liabilities, if any, arising out of, or in connection with this provision.

6. Concession Agreement between KTL and the NHAI dated June 23, 2014

KTL has entered into a concession agreement for four-laning of Kaithal – Rajasthan border section of NH-152/65 in Haryana from km 33+250 (design km -0.500) to km 241+580 (design km 165.759) on design, build, finance, operate and transfer ("**DBFOT**") basis (the "**KTL Concession Agreement**"), for a period of 27 years, from July 15, 2015 ("**KTL Appointed Date**") or until such date on which the KTL Concession Agreement is terminated by a termination notice ("**KTL Termination Date**", and the period between the KTL Appointed Date and the KTL Termination Date, the "**KTL Concession Period**").

Certain Definitions

"**KTL Debt Due**" shall mean the aggregate of the following sums expressed in Indian Rupees outstanding on the transfer date:

a) the principal amount of the debt provided by the senior lenders under the financing agreements for financing the total project cost (the "**Principa**l") but excluding any part of the Principal that had fallen due for repayment two years prior to the transfer date;

b) all accrued interest, financing fees and charges payable under the financing agreements on, or in respect of, the debt referred to in the sub-clause above until the transfer date but excluding (i) any interest, fees or charges that had fallen due one year prior to the transfer date, (ii) any penal interest or charges payable under the financing agreements to any senior lender, and (iii) any pre-payment charges in relation to accelerated repayment of debt except where such charges have arisen due to an NHAI Default (as defined below); and

c) any subordinated debt which is included in the financing package and disbursed by lenders for financing the total project cost;

If all, or any part of the KTL Debt Due is convertible into equity at the option of the senior lenders and/or KTL, it shall, for the purposes of the KTL Concession Agreement, be deemed to be KTL Debt Due even after the conversion and the Principal thereof shall be dealt with as if such conversion had not been undertaken;

"**KTL Debt Service**" shall mean the sum of all payments on account of Principal, interest, financing fees and charges due and payable in an accounting year to the senior lenders under the financing agreements;

"**KTL Project Assets**" shall mean all physical and other assets relating to and forming part of the site including (a) rights over the site in the form of licence, right of way or otherwise; (b) tangible assets such as civil works and equipment including foundations, embankments, pavements, road surface, interchanges, bridges, culverts, road overbridges, drainage works, traffic signals, sign boards, kilometre-stones, toll plazas, electrical systems, communication systems, rest areas, relief centres, maintenance depots and administrative offices; (c) project facilities situated on the site; (d) all rights of KTL under the project agreements; (e) financial assets, such as receivables, security deposits etc.; (f) insurance proceeds; and (g) applicable permits and authorizations relating to or in respect of the KTL Project Highway (as defined below), but does not include additional facilities;

"**KTL Project Highway**" shall mean the site comprising the existing road comprising NH-152/65 from km 33.250 to km 241.580 and all KTL Project Assets, and its subsequent development and augmentation in accordance with the KTL Concession Agreement;

"**KTL Project**" shall mean the construction, operation, and maintenance of the KTL Project Highway in accordance with the provisions of the KTL Concession Agreement, and includes all works, services, and equipment relating to and in respect of the scope of the project; and

"**Grant**" shall mean the cash support provided to KTL by the NHAI which is equal to the sum set forth in the bid.

Grant of Concession

Subject to, and in accordance with the provisions set out in the KTL Concession Agreement, the applicable laws and the applicable permits, the NHAI has granted to KTL, and KTL has accepted the concession, including the exclusive right, license, and authority to construct, operate and maintain the KTL Project for a period of 27 years from the KTL Appointed Date.

Subject to, and in accordance with the provisions of the KTL Concession Agreement, the concession granted shall oblige or entitle, as the case may be, KTL to:

a) right of way, access and license to the site for the purpose of, and to the extent conferred by the provisions of the KTL Concession Agreement;

b) finance and construct the KTL Project Highway;

c) manage, operate, and maintain the KTL Project Highway and regulate the use thereof by third parties;

d) demand, collect, and appropriate fee from vehicles and users liable for payment of fee for using the KTL Project Highway or any part thereof and refuse entry of any vehicle if the fee due is not paid;

e) perform and fulfil all of KTL's obligations under and in accordance with the KTL Concession Agreement;

f) bear and pay all costs, expenses, and charges in connection with or incidental to the performance of the obligations of KTL under the KTL Concession Agreement; and

g) neither assign, transfer or sublet, or create any lien or encumbrance on the KTL Concession Agreement, or the concession granted, or on the whole or any part of the KTL Project Highway, nor transfer, lease, or part possession thereof, save and except as expressly permitted by the KTL Concession Agreement or the agreement for the substitution of KTL entered into by KTL, the NHAI, and the lenders' representative on behalf of the senior lenders (the "**Substitution Agreement**").

Fees

On and from the commercial operation date ("**COD**") till the transfer date, KTL shall have the sole and exclusive right to demand, collect, and appropriate fee from the users subject to, and in accordance with the KTL Concession Agreement and the applicable rules and regulations, provided that for ease of payment and collection, such fee shall be rounded off to the nearest five rupees in accordance with the applicable fee rules, as updated from time to time. Further, KTL may determine and collect fee at such lower rates as it may, by public notice to the users, specify in respect of all or any category of users or vehicles. In accordance with the KTL Concession Agreement, KTL shall not collect any fees in relation to exempted vehicles.

KTL shall not collect any fee from a local user for non-commercial use of the KTL Project Highway, and shall issue a pass in respect thereof for commuting on a section of the KTL Project Highway as specified in the pass and for crossing the toll plaza specified therein. For carrying out these provisions, KTL shall formulate, publish and implement an appropriate scheme, and make such modifications to the scheme as may reasonably be suggested by the NHAI or by local users from time to time. For defraying its expenses on issuing of passes and handling of local users, KTL shall be entitled to charge a monthly fee of ₹150, with reference to the base year 2007-08, to be revised annually in accordance with the fee rules to reflect the variation in WPI, and then rounded off to the nearest five rupees; provided that no passes will be required or fee collected from a vehicle that uses part of the KTL Project Highway and does not cross a toll plaza.

Grant

The NHAI has agreed to pay to KTL cash support by way of an outright grant equal to ₹2340 million as set out in the bid. The grant shall be disbursed to KTL by way of equity support. It shall be credited to the Escrow Account (as defined below) and shall be applied by KTL for meeting the total project cost. The equity support

shall not exceed the sum specified, but shall in no case be greater than twice the equity, and shall be further restricted to a sum not exceeding 40% of the total project cost.

The equity support shall be due and payable to KTL after it has expended the equity, and shall be disbursed proportionately along with the loan funds thereafter remaining to be disbursed by the senior lenders under the financing agreements. The NHAI shall disburse each tranche of the equity support as and when due, but no later than 15 days of receiving a request from KTL along with necessary particulars. In the event of the occurrence of a KTL Default (as defined below), disbursement of equity support shall be suspended till the KTL Default has been cured.

Concession Fee

In consideration of the grant of concession, KTL shall pay to the NHAI by way of concession fee a sum of ₹1 per annum.

Escrow Account

KTL was required to, prior to the KTL Appointed Date, open and establish an escrow account (the "**Escrow Account**") with a bank (the "**Escrow Bank**") in accordance with the KTL Concession Agreement read with the escrow agreement entered into amongst KTL, the NHAI, the Escrow Bank and the senior lenders through the lenders' representative (the "**Escrow Agreement**").

KTL shall deposit, or cause to be deposited the following inflows and receipts into the Escrow Account:

a) all funds constituting the financial package;

b) all fee and any other revenues from or in respect of the KTL Project Highway, including the proceeds of any deposits, capital receipts or insurance claims; and

c) all payments by the NHAI, after deducting any outstanding concession fee.

The senior lenders may make direct disbursements to the EPC contractor in accordance with the express provisions contained in this behalf in the financing agreements.

Withdrawals during Concession Period

KTL was required to, at the time of opening the Escrow Account, give irrevocable instructions, by way of the Escrow Agreement, to the Escrow Bank instructing, inter alia, that deposits in the Escrow Account shall be appropriated in the following order every month, or at shorter intervals as necessary, and if not due in a month, then appropriated proportionately in such month and retained in the Escrow Account and paid out therefrom in a month when due:

a) all taxes due and payable by KTL for and in respect of the KTL Project Highway;

b) all payments relating to construction of the KTL Project Highway, subject to and in accordance with the conditions, if any, set forth in the financing agreements;

c) Operation and Management ("**O&M**") expenses, subject to the ceiling, if any, set forth in the financing agreements;

d) O&M expenses and other costs and expenses incurred by the NHAI in accordance with the provisions of the KTL Concession Agreement, and certified by the NHAI as due and payable to it;

e) concession fee due and payable to the NHAI;

f) monthly proportionate provision of KTL Debt Service due in an accounting year;

g) all payments and damages certified by the NHAI as due and payable to it by KTL, including repayment of revenue shortfall loan.

h) monthly proportionate provision of KTL Debt Service payments due in an accounting year in respect of subordinated debt;

i) any reserve requirements set forth in the financing agreements; and

j) balance, if any, in accordance with the instructions of KTL.

KTL shall not, in any manner, modify the order of payment specified except with prior written approval from the NHAI.

Withdrawals upon Termination

Notwithstanding anything to the contrary contained in the KTL Concession Agreement, all amounts standing to the credit of the Escrow Account shall, upon termination, be appropriated in the following order:

a) all taxes due and payable by KTL for and in respect of the KTL Project Highway;

b) 90% of the KTL Debt Due excluding the subordinated debt;

c) outstanding concession fee;

d) all payments and damages certified by the NHAI as due and payable to it by KTL, including the repayment of the revenue shortfall loan.

e) retention and payments relating to the liability for defects and deficiencies set forth in the KTL Concession Agreement;

f) outstanding KTL Debt Service including balance of KTL Debt Due;

g) outstanding subordinated debt;

h) incurred or accrued O&M expenses;

i) any other payments required to be made under the KTL Concession Agreement; and

j) balance, if any, in accordance with the instructions of KTL.

No appropriations shall be made until a vesting certificate has been issued by the NHAI.

Change of Scope

The NHAI may, notwithstanding anything to the contrary contained in the KTL Concession Agreement, require the provision of additional works and services which are not included in the scope of the project as contemplated by the KTL Concession Agreement. Any such change of scope shall be made in accordance with the provisions of the KTL Concession Agreement and the costs thereof shall be expended by KTL and reimbursed by the NHAI.

If KTL determines at any time that a change in scope is necessary for providing safer and improved services to the users, it shall, by notice in writing, require the NHAI to consider such change of scope. The NHAI shall, within 15 days of receipt of such notice, either accept the change of scope with modifications, if any, and initiate proceedings thereof in accordance with the provisions of the KTL Concession Agreement, or inform KTL in writing of its reasons for not accepting such change of scope.

Compensation for Breach of Agreement

In the event of KTL being in material default or breach of the KTL Concession Agreement, it shall pay to the NHAI by way of compensation, all direct costs suffered or incurred by the NHAI as a consequence of the material default or breach, within 30 days of the receipt of the demand supported by the necessary particulars thereof. No compensation shall be payable for any material breach or default in respect of which damages are expressly specified and payable under the KTL Concession Agreement.

In the event of the NHAI being in material default of the KTL Concession Agreement at any time after the KTL Appointed Date, it shall pay to KTL by way of compensation, all direct costs suffered or incurred by KTL as a consequence of the material default or breach within 30 days of receipt of the demand supported by necessary particulars thereof. No compensation shall be payable for any material breach or default in respect of which damages have been expressly specified in the KTL Concession Agreement.

In the event that a material default or breach of the KTL Concession Agreement causes a delay in achieving COD or leads to suspension of, or reduction in collection of fee, as the case may be, the NHAI shall, in addition to the payment of compensation, extend the KTL Concession Period as provided in the KTL Concession Agreement. In the event that an additional toll way or a competing road, as the case may be, is opened to traffic in breach of the KTL Concession Agreement, the NHAI shall pay to KTL, for each day of the breach, compensation as provided in the KTL Concession Agreement, until the breach is cured. The payment of compensation by the NHAI shall be deemed to cure the breach of the KTL Concession Agreement so long as the NHAI continues to pay the compensation.

The compensation payable shall be in addition to, and not in substitution for, or derogation of, termination payment, if any.

Effects of Variation in Traffic Growth

Subject to the provisions of the KTL Concession Agreement, in the event actual average traffic shall have fallen short of the target traffic, then for every 1% (one percent) shortfall as compared to the target traffic, the KTL Concession Period shall, subject to payment of concession fee in accordance with the KTL Concession Agreement, be increased by 1.5% (one point five percent) thereof; provided that such increase in KTL Concession Period shall not in any case exceed 20% (twenty percent) of the KTL Concession Period.

Subject to the provisions of the KTL Concession Agreement, in the event actual average traffic shall have exceeded the target traffic, then for every 1% (one percent) excess as compared to the target traffic, the KTL Concession Period shall be reduced by 0.75% (zero point seven five percent) thereof; provided that such reduction in KTL Concession Period shall not in any case exceed 10% (ten percent) thereof.

Provided further that in lieu of a reduction in KTL Concession Period under the KTL Concession Agreement, KTL may elect to pay, in addition to the concession fee that would be due and payable if the KTL Concession Period were not reduced hereunder, a further premium equal to 25% (twenty five percent) of the realizable fee, and upon notice given to this effect by KTL no later than two years prior to the KTL Termination Date contemplated by the KTL Concession Agreement, NHAI shall waive the reduction in KTL Concession Period hereunder forthwith.

Notwithstanding anything to the contrary contained in KTL Concession Agreement, if the average daily traffic of PCUs in any accounting year shall exceed the designed capacity of the KTL Project Highway, the NHAI at its option may cause preparation of detailed project report which will assess the cost that may have to be incurred for augmenting the capacity of the KTL Project Highway so that its capacity is sufficiently increased for carrying the then current traffic in accordance with the corresponding provisions of the Indian Roads Congress publication no. IRC -64, 1990 or any substitute thereof. The KTL Concession Period, may be extended so that it yields for KTL a post-tax return on equity of 16% per annum. This assessment will be made at an assumed debt to equity ratio of 70:30. The extension of the KTL Concession Period shall be however limited to five years. The NHAI may thereafter, at their sole option, issue a notice to KTL, to undertake within six months of such notice, the augmentation so determined by the NHAI. The refusal, non-acceptance, or failure by KTL to undertake such augmentation on the due date so intimated by the NHAI, will be considered an indirect political event and the NHAI may at its discretion terminate this KTL Concession Agreement by issuing a termination notice and making a termination payment in accordance with the provisions of the KTL Concession Agreement without the NHAI being liable to issue any further notice under it.

Termination of the KTL Concession Agreement

Termination by the NHAI

Save as otherwise provided in the KTL Concession Agreement, in the event that any of the defaults specified below shall have occurred, and KTL fails to cure the default within the cure period, or where no cure period is

specified, then within a cure period of 60 days, KTL shall be deemed to be in default of the KTL Concession Agreement ("**KTL Default**"), unless the default has occurred solely as a result of any breach of the KTL Concession Agreement by the NHAI or due to force majeure. The defaults referred to herein shall include:

a) the performance security has been encashed and appropriated in accordance with the KTL Concession Agreement and KTL fails to replenish or provide fresh performance security within a cure period of 30 days;

b) subsequent to the replenishment or furnishing of fresh performance security in accordance with the KTL Concession Agreement, KTL fails to cure, within a cure period of 90 days, the KTL Default for which whole or part of the performance security was appropriated;

c) KTL does not achieve the latest outstanding project milestone due in accordance with the KTL Concession Agreement and continues to be in default for 120 days;

d) KTL abandons or manifests intention to abandon the construction or operation of the KTL Project Highway without the prior written consent of the NHAI;

e) project completion date does not occur within the period specified in the KTL Concession Agreement;

f) the punch list items have not been completed within the period set forth in the KTL Concession Agreement;

g) KTL is in breach of the maintenance requirements or the safety requirements as the case may be;

h) KTL has failed to make any payment to the NHAI within the period specified in the KTL Concession Agreement;

i) an escrow default has occurred and KTL fails to cure the default within a cure period of 15 days;

j) upon occurrence of a financial default, the lenders' representative has, by notice, required the NHAI to undertake suspension or termination, as the case may be, in accordance with the Substitution Agreement and KTL fails to cure the default within the cure period specified hereinabove;

k) a breach of the project agreements by KTL has caused a material adverse effect;

l) KTL creates an encumbrance in breach of the KTL Concession Agreement;

m) KTL repudiates the KTL Concession Agreement or otherwise takes any action or evidences or conveys an intention not to be bound by the KTL Concession Agreement;

n) a change in ownership has occurred in breach of the KTL Concession Agreement;

o) there is a transfer, pursuant to law either of (i) the rights and/or obligations of KTL under any of the project agreements, or of (ii) all or part of the assets or undertaking of KTL, and such transfer causes a material adverse effect;

p) an execution levied on any of the assets of KTL has caused a material adverse effect;

q) KTL is adjudged bankrupt or insolvent, or if a trustee or receiver is appointed for KTL or for the whole or material part of its assets that has a material bearing on the KTL Project;

r) KTL has been, or is in the process of being liquidated, dissolved, wound-up, amalgamated or reconstituted in a manner that would cause, in the reasonable opinion of the NHAI, a material adverse effect;

s) a resolution for winding up of KTL is passed, or any petition for winding up of KTL is admitted by a court of competent jurisdiction and a provisional liquidator or receiver is appointed and such order has not been set aside within 90 days of the date thereof, or KTL is ordered to be wound up by Court except for the purpose of amalgamation or reconstruction, provided that, as part of such amalgamation or reconstruction, the entire property, assets and undertaking of KTL are transferred to the amalgamated or reconstructed

entity and that the amalgamated or reconstructed entity has unconditionally assumed the obligations of KTL under the KTL Concession Agreement and the project agreements; provided that:

i) the amalgamated or reconstructed entity has the capability and operating experience necessary for the performance of its obligations under the KTL Concession Agreement and the project agreements;

ii) the amalgamated or reconstructed entity has the financial standing to perform its obligations under the KTL Concession Agreement and the project agreements and has a creditworthiness at least as good as that of KTL as at the KTL Appointed Date; and

iii) each of the project agreements remains in full force and effect;

t) any representation or warranty of KTL which is, as of the date hereof, found to be materially false, incorrect or misleading or KTL is at any time hereafter found to be in breach thereof;

u) KTL submits to the NHAI any statement, notice or other document, in written or electronic form, which has a material effect on the NHAI's rights, obligations or interests and which is false in material particulars;

v) KTL has failed to fulfil any obligation, for which failure termination has been specified in the KTL Concession Agreement; or

w) KTL commits a default in complying with any other provision of the KTL Concession Agreement if such default causes a material adverse effect on the NHAI.

Without prejudice to any other rights or remedies which the NHAI may have under the KTL Concession Agreement, upon the occurrence of a KTL Default, the NHAI shall be entitled to terminate the KTL Concession Agreement by issuing a termination notice to KTL. Before issuing the termination notice, the NHAI shall, by notice, inform KTL of its intention to issue a termination notice and grant 15 days to KTL to make a representation, and may, after the expiry of the 15 days, whether or not it is in receipt of such representation, issue the termination notice subject to the provisions of the KTL Concession Agreement.

If there are senior lenders, the NHAI shall send a copy of its notice of intention to issue a termination notice to inform the lenders' representative and grant 15 days to the lenders' representative for making a representation on behalf of the senior lenders stating the intention to substitute KTL in accordance with the Substitution Agreement. If the NHAI receives a representation on behalf of the senior lenders, it shall, in its discretion, either withhold termination for a period not exceeding 180 days from the date of the representation, or exercise its right of suspension, as the case may be, to enable the lenders' representative to exercise the senior lenders' right of substitution in accordance with the Substitution Agreement. The lenders' representative may, instead of exercising the senior lenders' right of substitution, procure that the default specified in the notice is cured within the aforesaid 180 days, and upon the curing, the NHAI shall withdraw its notice and restore the rights of KTL. On a written request from the lenders' representative and KTL, the NHAI shall extend the period of 180 days by a further period not exceeding 90 days as it may deem appropriate.

Termination by KTL

In the event that any of the defaults specified below shall have occurred, and the NHAI fails to cure the default within a cure period of 90 days or such longer period as provided in the KTL Concession Agreement, the NHAI shall be deemed to be in default of the KTL Concession Agreement ("**NHAI Default**"), unless the default has occurred as a result of a breach of the KTL Concession Agreement by KTL, or due to force majeure. The default referred to herein shall include:

a) the NHAI commits a material default in complying with any of the provisions of the KTL Concession Agreement and such default has a material adverse effect on KTL;

b) the NHAI has failed to make any payment to KTL within the period specified in the KTL Concession Agreement;

c) the NHAI repudiates the KTL Concession Agreement or otherwise takes any action that amounts to or manifests an irrevocable intention not to be bound by the KTL Concession Agreement; or

d) the State of Haryana commits a material default in complying with the provisions of the state support agreement if such default has a material adverse effect on KTL and the breach continues for a period of 90 days from the date of notice given in this behalf by KTL to the NHAI.

Without prejudice to any other rights or remedies which KTL may have under the KTL Concession Agreement, upon the occurrence of an NHAI Default, KTL shall be entitled to terminate the KTL Concession Agreement by issuing a termination notice to the NHAI. Before issuing the termination notice, KTL shall, by notice, inform the NHAI of its intention to issue a termination notice and grant 15 days to the NHAI to make a representation, and may, after the expiry of the 15 days, whether or not it is in receipt of such representation, issue the termination notice.

Termination Payment

Upon termination on account of a KTL Default during the operation period, the NHAI shall pay to KTL, by way of termination payment, an amount equal to 90% of the KTL Debt Due less insurance cover. If any insurance claims forming part of the insurance cover are not admitted and paid, then 80% of such unpaid claims shall be included in the computation of KTL Debt Due.

Upon termination on account of an NHAI Default, the NHAI shall pay to KTL, by way of termination payment, an amount equal to:

a) KTL Debt Due; and
b) 150% of the adjusted equity.

Termination payment shall become due and payable to KTL within 15 days of a demand being made by KTL to the NHAI with the necessary particulars, and in the event of any delay, the NHAI shall pay interest at a rate equal to 3% above the bank rate on the amount of termination payment remaining unpaid. The delay shall not exceed 90 days. The termination payment under the KTL Concession Agreement shall constitute a full and final settlement of all claims of KTL on account of termination of the KTL Concession Agreement for any reason whatsoever and KTL, or any shareholder thereof, shall not have any further right or claim under any law, treaty, convention, contract or otherwise.

Defects Liability after Termination

KTL shall be responsible for all defects and deficiencies in the KTL Project Highway for a period of 120 days after termination. KTL shall have the obligation to repair or rectify, at its own cost, all defects and deficiencies in the KTL Project Highway as observed by the independent engineer. The repair or rectification of the defect or deficiency shall be done within a period of 15 days from the date of notice issued by the NHAI in this behalf. A sum as specified in the KTL Concession Agreement shall be retained in the Escrow Account for a period of 120 days after termination for meeting the liabilities, if any, arising out of, or in connection with this provision.

6.1. Supplementary Agreement between KTL and the NHAI dated April 5, 2018

KTL has entered into a supplementary agreement (the "**Supplementary Agreement**") to amend the concession agreement dated June 23, 2014 (the "**Concession Agreement**") to provide for the installation of a new electronic toll collection system (the "**Hybrid ETC System**") for electronic payment of user fee using RFID tags or any other such device.

Change of Scope

The NHAI shall provide a change in the scope of work order at prices discovered by the NHAI to KTL to provide for, as per the defined technical specifications, installation, testing, commissioning, operations and maintenance of the Hybrid ETC System in all lanes of the toll plaza. KTL shall ensure that the requisite civil work is completed prior to the installation, integration, testing and commissioning of the Hybrid ETC System. It shall also ensure the smooth flow of traffic during installation, integration, testing and commissioning of the Hybrid ETC System. KTL will have no claim against the NHAI on account of any lane closure, if any, on account of any third party claims.

Scope of Work

KTL shall install, integrate, test, commission, operate and maintain the Hybrid ETC System in all the lanes of the toll plazas. The Hybrid ETC System shall be installed, commissioned, operated and maintained for a period of five years or the end of the Concession Agreement, whichever is earlier, beyond which it will be replaced or renewed, as the case may be, by KTL or the NHAI, at the cost of the NHAI. The cycle shall be maintained till the end of the concession period in accordance with the Concession Agreement.

The provisions of the Concession Agreement relating to change of scope shall not apply to the Supplementary Agreement.

Any permission required by KTL under the applicable laws for the installation of the Hybrid ETC System shall be procured and maintained by KTL. The NHAI shall provide reasonable assistance in this regard.

Timeline

KTL shall complete all responsibilities, obligations and works as described in the Supplementary Agreement within a period of 120 days from the date of signing the Supplementary Agreement.

Damages for Delay

In case of delay in installation, testing, or commissioning of the Hybrid ETC System at the toll plazas as per the time schedule prescribed on account of reasons attributable to KTL, damages at 0.1% of the cost of installation, testing, or commissioning of the Hybrid ETC System for each day of the delay, subject to a maximum of 10% of the cost of installation, testing, or commissioning of the Hybrid ETC System shall be levied on KTL. Damages for delay will not be applicable in case of a delay in implementation due to delayed payment release by the NHAI.

KTL shall not be entitled to any additional benefit either in monetary terms or on any other account including, but not limited to any extension of time, save on account of and NHAI Default or force majeure.

Compensation

In case of any damage to the Hybrid ETC System due to any act or omission of KTL, the NHAI shall not be liable for any compensation to KTL, and KTL shall bear the cost of repair, replacement or renewal of the damaged Hybrid ETC System equipment or hardware itself.

In case of any damage to the Hybrid ETC System due to the occurrence of any force majeure event, the compensation to KTL shall be derived as per the provisions of the Concession Agreement.

End of the Concession Period

KTL shall hand over all the Hybrid ETC equipment or hardware in an operational condition to the NHAI or a third party as directed by the NHAI at the end of the concession period, beyond which no O&M payment shall be made to KTL. If any Hybrid ETC System equipment or hardware is found to be non-operational, then KTL shall be liable to replace or pay for the replacement of the Hybrid ETC System equipment or hardware required to make the Hybrid ETC System operational on all lanes of the toll plazas to the NHAI promptly.

Upon termination, KTL shall assign warranties received from the original equipment manufacturer and for the components or equipment, and provide the respective warranty assignment agreements and necessary documents. KTL shall ensure that all the warranties are duly assigned in favor of the NHAI and KTL shall bear the cost and expenses towards the assignment.

7. Concession Agreement between SYTL and the NHAI dated March 3, 2014

SYTL has entered into a concession agreement for four-laning of Solapur to Yedeshi section of NH-211 in Maharashtra from km 0.000 to km 100.000 (design length – 98.717 km) on build, operate and transfer ("**BOT**") basis (the "**SYTL Concession Agreement**"), for a period of 29 years, from January 21, 2015 ("**SYTL Appointed Date**") or until such date on which the SYTL Concession Agreement is terminated by a termination notice ("**SYTL Termination Date**", and the period between the SYTL Appointed Date and the SYTL Termination Date, the "**SYTL Concession Period**").

Certain Definitions

"**SYTL Debt Due**" shall mean the aggregate of the following sums expressed in Indian Rupees outstanding on the transfer date:

a) the principal amount of the debt provided by the senior lenders under the financing agreements for financing the total project cost (the "**Principa**l") but excluding any part of the Principal that had fallen due for repayment two years prior to the transfer date;

b) all accrued interest, financing fees and charges payable under the financing agreements on, or in respect of, the debt referred to in the sub-clause above until the transfer date but excluding (i) any interest, fees or charges that had fallen due one year prior to the transfer date, (ii) any penal interest or charges payable under the financing agreements to any senior lender, and (iii) any pre-payment charges in relation to accelerated repayment of debt except where such charges have arisen due to an NHAI Default (as defined below); and

c) any subordinated debt which is included in the financing package and disbursed by lenders for financing the total project cost;

If all, or any part of the SYTL Debt Due is convertible into equity at the option of the senior lenders and/or SYTL, it shall, for the purposes of the SYTL Concession Agreement, be deemed to be SYTL Debt Due even after the conversion and the Principal thereof shall be dealt with as if such conversion had not been undertaken;

"**SYTL Debt Service**" shall mean the sum of all payments on account of Principal, interest, financing fees and charges due and payable in an accounting year to the senior lenders under the financing agreements;

"**SYTL Project Assets**" shall mean all physical and other assets relating to and forming part of the site including (a) rights over the site in the form of licence, right of way or otherwise; (b) tangible assets such as civil works and equipment including foundations, embankments, pavements, road surface, interchanges, bridges, culverts, road overbridges, drainage works, traffic signals, sign boards, kilometre-stones, toll plazas, electrical systems, communication systems, rest areas, relief centres, maintenance depots and administrative offices; (c) project facilities situated on the site; (d) all rights of SYTL under the project agreements; (e) financial assets, such as receivables, security deposits etc.; (f) insurance proceeds; and (g) applicable permits and authorizations relating to or in respect of the SYTL Project Highway (as defined below), but does not include additional facilities;

"**SYTL Project Highway**" shall mean the site comprising the existing road comprising NH-211 from km 0.000 to km 100.000 and all SYTL Project Assets, and its subsequent development and augmentation in accordance with the SYTL Concession Agreement;

"**SYTL Project**" shall mean the construction, operation, and maintenance of the SYTL Project Highway in accordance with the provisions of the SYTL Concession Agreement, and includes all works, services, and equipment relating to and in respect of the scope of the project; and

"**Grant**" shall mean the cash support provided to SYTL by the NHAI which is equal to the sum set forth in the bid.

Grant of Concession

Subject to, and in accordance with the provisions set out in the SYTL Concession Agreement, the applicable laws and the applicable permits, the NHAI has granted to SYTL, and SYTL has accepted the concession, including the exclusive right, license, and authority to construct, operate and maintain the SYTL Project for a period of 29 years from the SYTL Appointed Date.

Subject to, and in accordance with the provisions of the SYTL Concession Agreement, the concession granted shall oblige or entitle, as the case may be, SYTL to:

a) right of way, access and license to the site for the purpose of, and to the extent conferred by the provisions of the SYTL Concession Agreement;

b) finance and construct the SYTL Project Highway;

c) manage, operate, and maintain the SYTL Project Highway and regulate the use thereof by third parties;

d) demand, collect, and appropriate fee from vehicles and users liable for payment of fee for using the SYTL Project Highway or any part thereof and refuse entry of any vehicle if the fee due is not paid;

e) perform and fulfil all of SYTL's obligations under and in accordance with the SYTL Concession Agreement;

f) bear and pay all costs, expenses, and charges in connection with or incidental to the performance of the obligations of SYTL under the SYTL Concession Agreement; and

g) neither assign, transfer or sublet, or create any lien or encumbrance on the SYTL Concession Agreement, or the concession granted, or on the whole or any part of the SYTL Project Highway, nor transfer, lease, or part possession thereof, save and except as expressly permitted by the SYTL Concession Agreement or the agreement for the substitution of SYTL entered into by SYTL, the NHAI, and the lenders' representative on behalf of the senior lenders (the "**Substitution Agreement**").

Fees

On and from the commercial operation date ("**COD**") till the transfer date, SYTL shall have the sole and exclusive right to demand, collect, and appropriate fee from the users subject to, and in accordance with the SYTL Concession Agreement and the applicable rules and regulations, provided that for ease of payment and collection, such fee shall be rounded off to the nearest five rupees in accordance with the applicable fee rules, as updated from time to time. Further, SYTL may determine and collect fee at such lower rates as it may, by public notice to the users, specify in respect of all or any category of users or vehicles. In accordance with the SYTL Concession Agreement, SYTL shall not collect any fees in relation to exempted vehicles.

SYTL shall not collect any fee from a local user for non-commercial use of the SYTL Project Highway, and shall issue a pass in respect thereof for commuting on a section of the SYTL Project Highway as specified in the pass and for crossing the toll plaza specified therein. For carrying out these provisions, SYTL shall formulate, publish and implement an appropriate scheme, and make such modifications to the scheme as may reasonably be suggested by the NHAI or by local users from time to time. For defraying its expenses on issuing of passes and handling of local users, SYTL shall be entitled to charge a monthly fee of ₹150, with reference to the base year 2007-08, to be revised annually in accordance with the fee rules to reflect the variation in WPI, and then rounded off to the nearest five rupees; provided that no passes will be required or fee collected from a vehicle that uses part of the SYTL Project Highway and does not cross a toll plaza.

Grant

The NHAI has agreed to pay to SYTL cash support by way of an outright grant equal to ₹1,890 million as set out in the bid. The grant shall be disbursed to SYTL by way of equity support. It shall be credited to the Escrow Account (as defined below) and shall be applied by SYTL for meeting the total project cost. The equity support shall not exceed the sum specified, but shall in no case be greater than twice the equity, and shall be further restricted to a sum not exceeding 40% of the total project cost.

The equity support shall be due and payable to SYTL after it has expended the equity, and shall be disbursed proportionately along with the loan funds thereafter remaining to be disbursed by the senior lenders under the financing agreements. The NHAI shall disburse each tranche of the equity support as and when due, but no later than 15 days of receiving a request from SYTL along with necessary particulars. In the event of the occurrence of an SYTL Default (as defined below), disbursement of equity support shall be suspended till the SYTL Default has been cured.

Concession Fee

In consideration of the grant of concession, SYTL shall pay to the NHAI by way of concession fee a sum of ₹1 per annum.

Escrow Account

SYTL was required to, prior to the SYTL Appointed Date, open and establish an escrow account (the "**Escrow Account**") with a bank (the "**Escrow Bank**") in accordance with the SYTL Concession Agreement read with the escrow agreement entered into amongst SYTL, the NHAI, the Escrow Bank and the senior lenders through the lenders' representative (the "**Escrow Agreement**").

SYTL shall deposit, or cause to be deposited the following inflows and receipts into the Escrow Account:

a) all funds constituting the financial package;

b) all fee and any other revenues from or in respect of the SYTL Project Highway, including the proceeds of any deposits, capital receipts or insurance claims; and

c) all payments by the NHAI, after deducting any outstanding concession fee.

The senior lenders may make direct disbursements to the EPC contractor in accordance with the express provisions contained in this behalf in the financing agreements.

Withdrawals during Concession Period

SYTL was required to, at the time of opening the Escrow Account, give irrevocable instructions, by way of the Escrow Agreement, to the Escrow Bank instructing, inter alia, that deposits in the Escrow Account shall be appropriated in the following order every month, or at shorter intervals as necessary, and if not due in a month, then appropriated proportionately in such month and retained in the Escrow Account and paid out therefrom in a month when due:

a) all taxes due and payable by SYTL for and in respect of the SYTL Project Highway;

b) all payments relating to construction of the SYTL Project Highway, subject to and in accordance with the conditions, if any, set forth in the financing agreements;

c) Operation and Management ("**O&M**") expenses, subject to the ceiling, if any, set forth in the financing agreements;

d) O&M expenses and other costs and expenses incurred by the NHAI in accordance with the provisions of the SYTL Concession Agreement, and certified by the NHAI as due and payable to it;

e) concession fee due and payable to the NHAI;

f) monthly proportionate provision of SYTL Debt Service due in an accounting year;

g) all payments and damages certified by the NHAI as due and payable to it by SYTL, including repayment of revenue shortfall loan.

h) monthly proportionate provision of SYTL Debt Service payments due in an accounting year in respect of subordinated debt;

i) any reserve requirements set forth in the financing agreements; and

j) balance, if any, in accordance with the instructions of SYTL.

SYTL shall not, in any manner, modify the order of payment specified except with prior written approval from the NHAI.

Withdrawals upon Termination

Notwithstanding anything to the contrary contained in the SYTL Concession Agreement, all amounts standing to the credit of the Escrow Account shall, upon termination, be appropriated in the following order:

a) all taxes due and payable by SYTL for and in respect of the SYTL Project Highway;

b) 90% of the SYTL Debt Due excluding the subordinated debt;

c) outstanding concession fee;

d) all payments and damages certified by the NHAI as due and payable to it by SYTL, including the repayment of the revenue shortfall loan.

e) retention and payments relating to the liability for defects and deficiencies set forth in the SYTL Concession Agreement;

f) outstanding SYTL Debt Service including balance of SYTL Debt Due;

g) outstanding subordinated debt;

h) incurred or accrued O&M expenses;

i) any other payments required to be made under the SYTL Concession Agreement; and

j) balance, if any, in accordance with the instructions of SYTL.

No appropriations shall be made until a vesting certificate has been issued by the NHAI.

Change of Scope

The NHAI may, notwithstanding anything to the contrary contained in the SYTL Concession Agreement, require the provision of additional works and services which are not included in the scope of the project as contemplated by the SYTL Concession Agreement. Any such change of scope shall be made in accordance with the provisions of the SYTL Concession Agreement and the costs thereof shall be expended by SYTL and reimbursed by the NHAI.

If SYTL determines at any time that a change in scope is necessary for providing safer and improved services to the users, it shall, by notice in writing, require the NHAI to consider such change of scope. The NHAI shall, within 15 days of receipt of such notice, either accept the change of scope with modifications, if any, and initiate proceedings thereof in accordance with the provisions of the SYTL Concession Agreement, or inform SYTL in writing of its reasons for not accepting such change of scope.

Compensation for Breach of Agreement

In the event of SYTL being in material default or breach of the SYTL Concession Agreement, it shall pay to the NHAI by way of compensation, all direct costs suffered or incurred by the NHAI as a consequence of the material default or breach, within 30 days of the receipt of the demand supported by the necessary particulars thereof. No compensation shall be payable for any material breach or default in respect of which damages are expressly specified and payable under the SYTL Concession Agreement.

In the event of the NHAI being in material default of the SYTL Concession Agreement at any time after the SYTL Appointed Date, it shall pay to SYTL by way of compensation, all direct costs suffered or incurred by SYTL as a consequence of the material default or breach within 30 days of receipt of the demand supported by necessary particulars thereof. No compensation shall be payable for any material breach or default in respect of which damages have been expressly specified in the SYTL Concession Agreement.

In the event that a material default or breach of the SYTL Concession Agreement causes a delay in achieving COD or leads to suspension of, or reduction in collection of fee, as the case may be, the NHAI shall, in addition to the payment of compensation, extend the SYTL Concession Period as provided in the SYTL Concession Agreement. In the event that an additional toll way or a competing road, as the case may be, is opened to traffic in breach of the SYTL Concession Agreement, the NHAI shall pay to SYTL, for each day of the breach, compensation as provided in the SYTL Concession Agreement, until the breach is cured. The payment of compensation by the NHAI shall be deemed to cure the breach of the SYTL Concession Agreement so long as the NHAI continues to pay the compensation.

The compensation payable shall be in addition to, and not in substitution for, or derogation of, termination payment, if any.

Effects of Variation in Traffic Growth

Subject to the provisions of the SYTL Concession Agreement, in the event actual average traffic shall have fallen short of the target traffic, then for every 1% (one percent) shortfall as compared to the target traffic, the SYTL Concession Period shall, subject to payment of concession fee in accordance with the SYTL Concession Agreement, be increased by 1.5% (one point five percent) thereof; provided that such increase in SYTL Concession Period shall not in any case exceed 20% (twenty percent) of the SYTL Concession Period.

Subject to the provisions of the SYTL Concession Agreement, in the event actual average traffic shall have exceeded the target traffic, then for every 1% (one percent) excess as compared to the target traffic, the SYTL Concession Period shall be reduced by 0.75% (zero point seven five percent) thereof; provided that such reduction in SYTL Concession Period shall not in any case exceed 10% (ten percent) thereof.

Provided further that in lieu of a reduction in SYTL Concession Period under the SYTL Concession Agreement, SYTL may elect to pay, in addition to the concession fee that would be due and payable if the SYTL Concession Period were not reduced hereunder, a further premium equal to 25% (twenty five percent) of the realizable fee, and upon notice given to this effect by SYTL no later than two years prior to the SYTL Termination Date contemplated by the SYTL Concession Agreement, NHAI shall waive the reduction in SYTL Concession Period hereunder forthwith.

Notwithstanding anything to the contrary contained in SYTL Concession Agreement, if the average daily traffic of PCUs in any accounting year shall exceed the designed capacity of the SYTL Project Highway, the NHAI at its option may cause preparation of detailed project report which will assess the cost that may have to be incurred for augmenting the capacity of the SYTL Project Highway so that its capacity is sufficiently increased for carrying the then current traffic in accordance with the corresponding provisions of the Indian Roads Congress publication no. IRC -64, 1990 or any substitute thereof. The SYTL Concession Period, may be extended so that it yields for SYTL a post-tax return on equity of 16% per annum. This assessment will be made at an assumed debt to equity ratio of 70:30. The extension of the SYTL Concession Period shall be however limited to five years. The NHAI may thereafter, at their sole option, issue a notice to SYTL, to undertake within six months of such notice, the augmentation so determined by the NHAI. The refusal, non-acceptance, or failure by SYTL to undertake such augmentation on the due date so intimated by the NHAI, will be considered an indirect political event and the NHAI may at its discretion terminate this SYTL Concession Agreement by issuing a termination notice and making a termination payment in accordance with the provisions of the SYTL Concession Agreement without the NHAI being liable to issue any further notice under it.

Termination of the SYTL Concession Agreement

Termination by the NHAI

Save as otherwise provided in the SYTL Concession Agreement, in the event that any of the defaults specified below shall have occurred, and SYTL fails to cure the default within the cure period, or where no cure period is specified, then within a cure period of 60 days, SYTL shall be deemed to be in default of the SYTL Concession Agreement ("**SYTL Default**"), unless the default has occurred solely as a result of any breach of the SYTL Concession Agreement by the NHAI or due to force majeure. The defaults referred to herein shall include:

a) the performance security has been encashed and appropriated in accordance with the SYTL Concession Agreement and SYTL fails to replenish or provide fresh performance security within a cure period of 30 days;

b) subsequent to the replenishment or furnishing of fresh performance security in accordance with the SYTL Concession Agreement, SYTL fails to cure, within a cure period of 90 days, the SYTL Default for which whole or part of the performance security was appropriated;

c) SYTL does not achieve the latest outstanding project milestone due in accordance with the SYTL Concession Agreement and continues to be in default for 120 days;

d) SYTL abandons or manifests intention to abandon the construction or operation of the SYTL Project Highway without the prior written consent of the NHAI;

e) project completion date does not occur within the period specified in the SYTL Concession Agreement;

f) the punch list items have not been completed within the period set forth in the SYTL Concession Agreement;

g) SYTL is in breach of the maintenance requirements or the safety requirements as the case may be;

h) SYTL has failed to make any payment to the NHAI within the period specified in the SYTL Concession Agreement;

i) an escrow default has occurred and SYTL fails to cure the default within a cure period of 15 days;

j) upon occurrence of a financial default, the lenders' representative has, by notice, required the NHAI to undertake suspension or termination, as the case may be, in accordance with the Substitution Agreement and SYTL fails to cure the default within the cure period specified hereinabove;

k) a breach of the project agreements by SYTL has caused a material adverse effect;

l) SYTL creates an encumbrance in breach of the SYTL Concession Agreement;

m) SYTL repudiates the SYTL Concession Agreement or otherwise takes any action or evidences or conveys an intention not to be bound by the SYTL Concession Agreement;

n) a change in ownership has occurred in breach of the SYTL Concession Agreement;

o) there is a transfer, pursuant to law either of (i) the rights and/or obligations of SYTL under any of the project agreements, or of (ii) all or part of the assets or undertaking of SYTL, and such transfer causes a material adverse effect;

p) an execution levied on any of the assets of SYTL has caused a material adverse effect;

q) SYTL is adjudged bankrupt or insolvent, or if a trustee or receiver is appointed for SYTL or for the whole or material part of its assets that has a material bearing on the SYTL Project;

r) SYTL has been, or is in the process of being liquidated, dissolved, wound-up, amalgamated or reconstituted in a manner that would cause, in the reasonable opinion of the NHAI, a material adverse effect;

s) a resolution for winding up of SYTL is passed, or any petition for winding up of SYTL is admitted by a court of competent jurisdiction and a provisional liquidator or receiver is appointed and such order has not been set aside within 90 days of the date thereof, or SYTL is ordered to be wound up by Court except for the purpose of amalgamation or reconstruction, provided that, as part of such amalgamation or reconstruction, the entire property, assets and undertaking of SYTL are transferred to the amalgamated or reconstructed entity and that the amalgamated or reconstructed entity has unconditionally assumed the obligations of SYTL under the SYTL Concession Agreement and the project agreements; provided that:

   i) the amalgamated or reconstructed entity has the capability and operating experience necessary for the performance of its obligations under the SYTL Concession Agreement and the project agreements;

   ii) the amalgamated or reconstructed entity has the financial standing to perform its obligations under the SYTL Concession Agreement and the project agreements and has a creditworthiness at least as good as that of SYTL as at the SYTL Appointed Date; and

   iii) each of the project agreements remains in full force and effect;

t) any representation or warranty of SYTL which is, as of the date hereof, found to be materially false, incorrect or misleading or SYTL is at any time hereafter found to be in breach thereof;

u) SYTL submits to the NHAI any statement, notice or other document, in written or electronic form, which has a material effect on the NHAI's rights, obligations or interests and which is false in material particulars;

v) SYTL has failed to fulfil any obligation, for which failure termination has been specified in the SYTL Concession Agreement; or

w) SYTL commits a default in complying with any other provision of the SYTL Concession Agreement if such default causes a material adverse effect on the NHAI.

Without prejudice to any other rights or remedies which the NHAI may have under the SYTL Concession Agreement, upon the occurrence of an SYTL Default, the NHAI shall be entitled to terminate the SYTL Concession Agreement by issuing a termination notice to SYTL. Before issuing the termination notice, the NHAI shall, by notice, inform SYTL of its intention to issue a termination notice and grant 15 days to SYTL to make a representation, and may, after the expiry of the 15 days, whether or not it is in receipt of such representation, issue the termination notice subject to the provisions of the SYTL Concession Agreement.

If there are senior lenders, the NHAI shall send a copy of its notice of intention to issue a termination notice to inform the lenders' representative and grant 15 days to the lenders' representative for making a representation on behalf of the senior lenders stating the intention to substitute SYTL in accordance with the Substitution Agreement. If the NHAI receives a representation on behalf of the senior lenders, it shall, in its discretion, either withhold termination for a period not exceeding 180 days from the date of the representation, or exercise its right of suspension, as the case may be, to enable the lenders' representative to exercise the senior lenders' right of substitution in accordance with the Substitution Agreement. The lenders' representative may, instead of exercising the senior lenders' right of substitution, procure that the default specified in the notice is cured within the aforesaid 180 days, and upon the curing, the NHAI shall withdraw its notice and restore the rights of SYTL. On a written request from the lenders' representative and SYTL, the NHAI shall extend the period of 180 days by a further period not exceeding 90 days as it may deem appropriate.

Termination by SYTL

In the event that any of the defaults specified below shall have occurred, and the NHAI fails to cure the default within a cure period of 90 days or such longer period as provided in the SYTL Concession Agreement, the NHAI shall be deemed to be in default of the SYTL Concession Agreement ("**NHAI Default**"), unless the default has occurred as a result of a breach of the SYTL Concession Agreement by SYTL, or due to force majeure. The default referred to herein shall include:

a) the NHAI commits a material default in complying with any of the provisions of the SYTL Concession Agreement and such default has a material adverse effect on SYTL;

b) the NHAI has failed to make any payment to SYTL within the period specified in the SYTL Concession Agreement;

c) the NHAI repudiates the SYTL Concession Agreement or otherwise takes any action that amounts to or manifests an irrevocable intention not to be bound by the SYTL Concession Agreement; or

d) the State of Maharashtra commits a material default in complying with the provisions of the state support agreement if such default has a material adverse effect on SYTL and the breach continues for a period of 90 days from the date of notice given in this behalf by SYTL to the NHAI.

Without prejudice to any other rights or remedies which SYTL may have under the SYTL Concession Agreement, upon the occurrence of an NHAI Default, SYTL shall be entitled to terminate the SYTL Concession Agreement by issuing a termination notice to the NHAI. Before issuing the termination notice, SYTL shall, by notice, inform the NHAI of its intention to issue a termination notice and grant 15 days to the NHAI to make a representation, and may, after the expiry of the 15 days, whether or not it is in receipt of such representation, issue the termination notice.

Termination Payment

Upon termination on account of an SYTL Default during the operation period, the NHAI shall pay to SYTL, by way of termination payment, an amount equal to 90% of the SYTL Debt Due less insurance cover. If any

insurance claims forming part of the insurance cover are not admitted and paid, then 80% of such unpaid claims shall be included in the computation of SYTL Debt Due.

Upon termination on account of an NHAI Default, the NHAI shall pay to SYTL, by way of termination payment, an amount equal to:

a) SYTL Debt Due; and
b) 150% of the adjusted equity.

Termination payment shall become due and payable to SYTL within 15 days of a demand being made by SYTL to the NHAI with the necessary particulars, and in the event of any delay, the NHAI shall pay interest at a rate equal to 3% above the bank rate on the amount of termination payment remaining unpaid. The delay shall not exceed 90 days. The termination payment under the SYTL Concession Agreement shall constitute a full and final settlement of all claims of SYTL on account of termination of the SYTL Concession Agreement for any reason whatsoever and SYTL, or any shareholder thereof, shall not have any further right or claim under any law, treaty, convention, contract or otherwise.

Defects Liability after Termination

SYTL shall be responsible for all defects and deficiencies in the SYTL Project Highway for a period of 120 days after termination. SYTL shall have the obligation to repair or rectify, at its own cost, all defects and deficiencies in the SYTL Project Highway as observed by the independent engineer. The repair or rectification of the defect or deficiency shall be done within a period of 15 days from the date of notice issued by the NHAI in this behalf. A sum as specified in the SYTL Concession Agreement shall be retained in the Escrow Account for a period of 120 days after termination for meeting the liabilities, if any, arising out of, or in connection with this provision.

7.1. Supplementary Agreement between SYTL and the NHAI dated April 12, 2018

SYTL has entered into a supplementary agreement (the "**Supplementary Agreement**") to amend the concession agreement dated March 3, 2014 (the "**Concession Agreement**") to provide for the installation of a new electronic toll collection system (the "**Hybrid ETC System**") for electronic payment of user fee using RFID tags or any other such device.

Change of Scope

The NHAI shall provide a change in the scope of work order at prices discovered by the NHAI to SYTL to provide for, as per the defined technical specifications, installation, testing, commissioning, operations and maintenance of the Hybrid ETC System in all lanes of the toll plaza. SYTL shall ensure that the requisite civil work is completed prior to the installation, integration, testing and commissioning of the Hybrid ETC System. It shall also ensure the smooth flow of traffic during installation, integration, testing and commissioning of the Hybrid ETC System. SYTL will have no claim against the NHAI on account of any lane closure, if any, on account of any third party claims.

Scope of Work

SYTL shall install, integrate, test, commission, operate and maintain the Hybrid ETC System in all the lanes of the toll plazas. The Hybrid ETC System shall be installed, commissioned, operated and maintained for a period of five years or the end of the Concession Agreement, whichever is earlier, beyond which it will be replaced or renewed, as the case may be, by SYTL or the NHAI, at the cost of the NHAI. The cycle shall be maintained till the end of the concession period in accordance with the Concession Agreement.

The provisions of the Concession Agreement relating to change of scope shall not apply to the Supplementary Agreement.

Any permission required by SYTL under the applicable laws for the installation of the Hybrid ETC System shall be procured and maintained by SYTL. The NHAI shall provide reasonable assistance in this regard.

Timeline

SYTL shall complete all responsibilities, obligations and works as described in the Supplementary Agreement within a period of 120 days from the date of signing the Supplementary Agreement.

Damages for Delay

In case of delay in installation, testing, or commissioning of the Hybrid ETC System at the toll plazas as per the time schedule prescribed on account of reasons attributable to SYTL, damages at 0.1% of the cost of installation, testing, or commissioning of the Hybrid ETC System for each day of the delay, subject to a maximum of 10% of the cost of installation, testing, or commissioning of the Hybrid ETC System shall be levied on SYTL. Damages for delay will not be applicable in case of a delay in implementation due to delayed payment release by the NHAI.

SYTL shall not be entitled to any additional benefit either in monetary terms or on any other account including, but not limited to any extension of time, save on account of and NHAI Default or force majeure.

Compensation

In case of any damage to the Hybrid ETC System due to any act or omission of SYTL, the NHAI shall not be liable for any compensation to SYTL, and SYTL shall bear the cost of repair, replacement or renewal of the damaged Hybrid ETC System equipment or hardware itself.

In case of any damage to the Hybrid ETC System due to the occurrence of any force majeure event, the compensation to SYTL shall be derived as per the provisions of the Concession Agreement.

End of the Concession Period

SYTL shall hand over all the Hybrid ETC equipment or hardware in an operational condition to the NHAI or a third party as directed by the NHAI at the end of the concession period, beyond which no O&M payment shall be made to SYTL. If any Hybrid ETC System equipment or hardware is found to be non-operational, then SYTL shall be liable to replace or pay for the replacement of the Hybrid ETC System equipment or hardware required to make the Hybrid ETC System operational on all lanes of the toll plazas to the NHAI promptly.

Upon termination, SYTL shall assign warranties received from the original equipment manufacturer and for the components or equipment, and provide the respective warranty assignment agreements and necessary documents. SYTL shall ensure that all the warranties are duly assigned in favor of the NHAI and SYTL shall bear the cost and expenses towards the assignment.

8. Concession Agreement between UTL and the NHAI dated December 9, 2016

UTL has entered into a concession agreement for six-laning of NH-8 in Rajasthan and Gujarat from km 287.400 to km 401.200 (approx. length 113.800 km) on design, build, finance, operate and transfer ("D**BFOT**") basis (the "**UTL Concession Agreement**"), for a period of 21 years, from September 3, 2017 ("**UTL Appointed Date**") or until such date on which the UTL Concession Agreement is terminated by a termination notice ("**UTL Termination Date**", and the period between the UTL Appointed Date and the UTL Termination Date, the "**UTL Concession Period**").

Certain Definitions

"**UTL Debt Due**" shall mean the aggregate of the following sums expressed in Indian Rupees outstanding on the transfer date:

a) the principal amount of the debt provided by the senior lenders under the financing agreements for financing the total project cost (the "**Principa**l") but excluding any part of the Principal that had fallen due for repayment two years prior to the transfer date;

b) all accrued interest, financing fees and charges payable under the financing agreements on, or in respect of, the debt referred to in the sub-clause above until the transfer date but excluding (i) any interest, fees or charges that had fallen due one year prior to the transfer date, (ii) any penal interest or charges payable under the financing agreements to any senior lender, and (iii) any pre-payment charges in relation to

accelerated repayment of debt except where such charges have arisen due to an NHAI Default (as defined below); and

c) any subordinated debt which is included in the financing package and disbursed by lenders for financing the total project cost;

If all, or any part of the UTL Debt Due is convertible into equity at the option of the senior lenders and/or UTL, it shall, for the purposes of the UTL Concession Agreement, be deemed to be UTL Debt Due even after the conversion and the Principal thereof shall be dealt with as if such conversion had not been undertaken;

"**UTL Debt Service**" shall mean the sum of all payments on account of Principal, interest, financing fees and charges due and payable in an accounting year to the senior lenders under the financing agreements;

"**UTL Project Assets**" shall mean all physical and other assets relating to and forming part of the site including (a) rights over the site in the form of licence, right of way or otherwise; (b) tangible assets such as civil works and equipment including foundations, embankments, pavements, road surface, interchanges, bridges, culverts, road overbridges, drainage works, traffic signals, sign boards, kilometre-stones, toll plazas, electrical systems, communication systems, rest areas, relief centres, maintenance depots and administrative offices; (c) project facilities situated on the site; (d) all rights of UTL under the project agreements; (e) financial assets, such as receivables, security deposits etc.; (f) insurance proceeds; and (g) applicable permits and authorizations relating to or in respect of the UTL Project Highway (as defined below), but does not include additional facilities;

"**UTL Project Highway**" shall mean the site comprising the existing road comprising NH-8 from km 287.400 to km 401.200 and all UTL Project Assets, and its subsequent development and augmentation in accordance with the UTL Concession Agreement;

"**UTL Project**" shall mean the construction, operation, and maintenance of the UTL Project Highway in accordance with the provisions of the UTL Concession Agreement, and includes all works, services, and equipment relating to and in respect of the scope of the project;

"**Premium**" shall mean an amount paid to the NHAI by UTL in the form of an additional concession fee, as set forth in the bid for each year of the UTL Concession Period.

Grant of Concession

Subject to, and in accordance with the provisions set out in the UTL Concession Agreement, the applicable laws and the applicable permits, the NHAI has granted to UTL, and UTL has accepted the concession, including the exclusive right, license, and authority during the subsistence of the UTL Concession Agreement, to construct, operate and maintain the UTL Project for a period of 21 years from the UTL Appointed Date.

Subject to, and in accordance with the provisions of the UTL Concession Agreement, the concession granted shall oblige or entitle, as the case may be, UTL to:

a) right of way, access and license to the site for the purpose of, and to the extent conferred by the provisions of the UTL Concession Agreement;

b) finance and construct the UTL Project Highway;

c) manage, operate, and maintain the UTL Project Highway and regulate the use thereof by third parties;

d) demand, collect, and appropriate fee from vehicles and persons liable for payment of fee for using the UTL Project Highway or any part thereof and refuse entry of any vehicle if the fee due is not paid;

e) perform and fulfil all of UTL's obligations under and in accordance with the UTL Concession Agreement;

f) bear and pay all costs, expenses, and charges in connection with or incidental to the performance of the obligations of UTL under the UTL Concession Agreement; and

g) neither assign, transfer or sublet, or create any lien or encumbrance on the UTL Concession Agreement, or the concession granted, or on the whole or any part of the UTL Project Highway, nor transfer, lease, or part

possession thereof, save and except as expressly permitted by the UTL Concession Agreement or the agreement for the substitution of UTL entered into by UTL, the NHAI, and the lenders' representative on behalf of the senior lenders (the "**Substitution Agreement**").

Fees

On and from the commercial operation date ("**COD**") till the transfer date, UTL shall have the sole and exclusive right to demand, collect, and appropriate fee from the users subject to, and in accordance with the UTL Concession Agreement and the applicable rules and regulations, provided that for ease of payment and collection, such fee shall be rounded off to the nearest five rupees in accordance with the applicable fee rules, as updated from time to time. Further, UTL may determine and collect fee at such lower rates as it may, by public notice to the users, specify in respect of all or any category of users or vehicles. In accordance with the UTL Concession Agreement, UTL shall not collect any fees in relation to exempted vehicles.

UTL shall not collect any fee from a local user for non-commercial use of the UTL Project Highway, and shall issue a pass in respect thereof for commuting on a section of the UTL Project Highway as specified in the pass and for crossing the toll plaza specified therein. For carrying out these provisions, UTL shall formulate, publish and implement an appropriate scheme, and make such modifications to the scheme as may reasonably be suggested by the NHAI or by local users from time to time. For defraying its expenses on issuing of passes and handling of local users, UTL shall be entitled to charge a monthly fee of ₹150, with reference to the base year 2007-08, to be revised annually in accordance with the fee rules to reflect the variation in WPI, and then rounded off to the nearest five rupees; provided that no passes will be required or fee collected from a vehicle that uses part of the UTL Project Highway and does not cross a toll plaza.

Concession Fee

In consideration of the grant of concession, UTL shall pay to the NHAI by way of concession fee a sum of ₹1 per annum.

Additionally, UTL was required to pay to the NHAI, immediately after the third anniversary year of the COD, a Premium in the form of an additional concession fee equal to ₹1,638,000,000 as due to the NHAI during that year, due and payable for the period remaining in that year; and for each subsequent year till the ninth anniversary of the COD, the Premium shall be determined by increasing the amount of Premium in the respective year by an additional 3% as compared to the immediately preceding year and for each subsequent year of the UTL Concession Period, the Premium shall be determined by increasing the amount of Premium in the respective year by an additional 8% as compared to the immediately preceding year. The Premium is deemed to be a part of the concession fee.

The concession fee payable under the provisions of the UTL Concession Agreement shall be due and payable in monthly instalments within seven days of the close of each month.

Escrow Account

UTL was required to, prior to the UTL Appointed Date, open and establish an escrow account (the "**Escrow Account**") with a bank (the "**Escrow Bank**") in accordance with the UTL Concession Agreement read with the escrow agreement entered into amongst UTL, the NHAI, the Escrow Bank and the senior lenders through the lenders' representative (the "**Escrow Agreement**").

UTL shall deposit, or cause to be deposited the following inflows and receipts into the Escrow Account:

a) all funds constituting the financial package;

b) all fee and any other revenues from or in respect of the UTL Project Highway, including the proceeds of any deposits, capital receipts or insurance claims; and

c) all payments by the NHAI, after deducting any outstanding concession fee.

The senior lenders may make direct disbursements to the EPC contractor in accordance with the express provisions contained in this behalf in the financing agreements.

Withdrawals during Concession Period

UTL was required to, at the time of opening the Escrow Account, give irrevocable instructions, by way of the Escrow Agreement, to the Escrow Bank instructing, inter alia, that deposits in the Escrow Account shall be appropriated in the following order every month, or at shorter intervals as necessary, and if not due in a month, then appropriated proportionately in such month and retained in the Escrow Account and paid out therefrom in a month when due:

a) all taxes due and payable by UTL for and in respect of the UTL Project Highway;

b) all payments relating to construction of the UTL Project Highway, subject to and in accordance with the conditions, if any, set forth in the financing agreements;

c) Operation and Management ("**O&M**") expenses, subject to the ceiling, if any, set forth in the financing agreements;

d) O&M expenses and other costs and expenses incurred by the NHAI in accordance with the provisions of the UTL Concession Agreement, and certified by the NHAI as due and payable to it;

e) concession fee due and payable to the NHAI;

f) monthly proportionate provision of UTL Debt Service due in an accounting year;

g) premium due and payable to the NHAI;

h) all payments and damages certified by the NHAI as due and payable to it by UTL, including repayment of revenue shortfall loan. UTL has agreed to give irrevocable instructions to the Escrow Bank to make payments from the Escrow Account in accordance with the instructions of the NHAI under the UTL Concession Agreement and debit the payment to O&M expenses;

i) monthly proportionate provision of UTL Debt Service payments due in an accounting year in respect of subordinated debt;

j) any reserve requirements set forth in the financing agreements; and

k) balance, if any, in accordance with the instructions of UTL.

UTL shall not, in any manner, modify the order of payment specified except with prior written approval from the NHAI.

Withdrawals upon Termination

Notwithstanding anything to the contrary contained in the UTL Concession Agreement, all amounts standing to the credit of the Escrow Account shall, upon termination, be appropriated in the following order:

a) all taxes due and payable by UTL for and in respect of the UTL Project Highway;

b) 90% of the UTL Debt Due excluding the subordinated debt;

c) outstanding concession fee;

d) all payments and damages certified by the NHAI as due and payable to it by UTL, including the repayment of the revenue shortfall loan. UTL has agreed to give irrevocable instruction to the Escrow Bank to make payment from the Escrow Account in accordance with the instructions of the NHAI under the UTL Concession Agreement and debit the payment to O&M expenses.

e) retention and payments relating to the liability for defects and deficiencies set forth in the UTL Concession Agreement;

f) outstanding UTL Debt Service including balance of UTL Debt Due;

g) outstanding subordinated debt;

h) incurred or accrued O&M expenses;

i) any other payments required to be made under the UTL Concession Agreement; and

j) balance, if any, in accordance with the instructions of UTL.

No appropriations shall be made until a vesting certificate has been issued by the NHAI.

Change of Scope

The NHAI may, notwithstanding anything to the contrary contained in the UTL Concession Agreement, require the provision of additional works and services which are not included in the scope of the project as contemplated by the UTL Concession Agreement. Any such change of scope shall be made in accordance with the provisions of the UTL Concession Agreement and the costs thereof shall be expended by UTL and reimbursed by the NHAI.

If UTL determines at any time that a change in scope is necessary for providing safer and improved services to the users, it shall, by notice in writing, require the NHAI to consider such change of scope. The NHAI shall, within 60 days of receipt of such notice, either accept the change of scope with modifications, if any, and initiate proceedings thereof in accordance with the provisions of the UTL Concession Agreement, or inform UTL in writing of its reasons for not accepting such change of scope.

Compensation for Breach of Agreement

In the event of UTL being in material default or breach of the UTL Concession Agreement, it shall pay to the NHAI by way of compensation, all direct costs suffered or incurred by the NHAI as a consequence of the material default or breach, within 30 days of the receipt of the demand supported by the necessary particulars thereof. No compensation shall be payable for any material breach or default in respect of which damages are expressly specified and payable under the UTL Concession Agreement.

In the event of the NHAI being in material default of the UTL Concession Agreement at any time after the UTL Appointed Date, it shall pay to UTL by way of compensation, all direct costs suffered or incurred by UTL as a consequence of the material default or breach within 30 days of receipt of the demand supported by necessary particulars thereof. No compensation shall be payable for any material breach or default in respect of which damages have been expressly specified in the UTL Concession Agreement.

In the event that a material default or breach of the UTL Concession Agreement causes a delay in achieving COD or leads to suspension of, or reduction in collection of fee, as the case may be, the NHAI shall, in addition to the payment of compensation, extend the UTL Concession Period as provided in the UTL Concession Agreement. In the event that an additional toll way or a competing road, as the case may be, is opened to traffic in breach of the UTL Concession Agreement, the NHAI shall pay to UTL, for each day of the breach, compensation as provided in the UTL Concession Agreement, until the breach is cured. The payment of compensation by the NHAI shall be deemed to cure the breach of the UTL Concession Agreement so long as the NHAI continues to pay the compensation.

The compensation payable shall be in addition to, and not in substitution for, or derogation of, termination payment, if any.

Effects of Variation in Traffic Growth

Subject to the provisions of the UTL Concession Agreement, in the event actual average traffic shall have fallen short of the target traffic, then for every 1% (one percent) shortfall as compared to the target traffic, the UTL Concession Period shall, subject to payment of concession fee in accordance with the UTL Concession Agreement, be increased by 1.5% (one point five percent) thereof; provided that such increase in UTL Concession Period shall not in any case exceed 20% (twenty percent) of the UTL Concession Period.

Subject to the provisions of the UTL Concession Agreement, in the event actual average traffic shall have exceeded the target traffic, then for every 1% (one percent) excess as compared to the target traffic, the UTL

Concession Period shall be reduced by 0.75% (zero point seven five percent) thereof; provided that such reduction in UTL Concession Period shall not in any case exceed 10% (ten percent) thereof.

Provided further that in lieu of a reduction in UTL Concession Period under the UTL Concession Agreement, UTL may elect to pay, in addition to the concession fee that would be due and payable if the UTL Concession Period were not reduced hereunder, a further premium equal to 25% (twenty five percent) of the realizable fee, and upon notice given to this effect by UTL no later than two years prior to the UTL Termination Date contemplated by the UTL Concession Agreement, NHAI shall waive the reduction in UTL Concession Period hereunder forthwith.

Notwithstanding anything to the contrary contained in UTL Concession Agreement, if the average daily traffic of PCUs in any accounting year shall exceed the designed capacity of the UTL Project Highway, the NHAI at its option may cause preparation of detailed project report which will assess the cost that may have to be incurred for augmenting the capacity of the UTL Project Highway so that its capacity is sufficiently increased for carrying the then current traffic in accordance with the corresponding provisions of the Indian Roads Congress publication no. IRC -64, 1990 or any substitute thereof. The UTL Concession Period, may be extended so that it yields for UTL a post-tax return on equity of 16% per annum. This assessment will be made at an assumed debt to equity ratio of 70:30. The extension of the UTL Concession Period shall be however limited to five years. The NHAI may thereafter, at their sole option, issue a notice to UTL, to undertake within six months of such notice, the augmentation so determined by the NHAI. The refusal, non-acceptance, or failure by UTL to undertake such augmentation on the due date so intimated by the NHAI, will be considered an indirect political event and the NHAI may at its discretion terminate this UTL Concession Agreement by issuing a termination notice and making a termination payment in accordance with the provisions of the UTL Concession Agreement without the NHAI being liable to issue any further notice under it.

Termination of the UTL Concession Agreement

Termination by the NHAI

Save as otherwise provided in the UTL Concession Agreement, in the event that any of the defaults specified below shall have occurred, and UTL fails to cure the default within the cure period, or where no cure period is specified, then within a cure period of 60 days, UTL shall be deemed to be in default of the UTL Concession Agreement ("**UTL Default**"), unless the default has occurred solely as a result of any breach of the UTL Concession Agreement by the NHAI or due to force majeure. The defaults referred to herein shall include:

a) the performance security has been encashed and appropriated in accordance with the UTL Concession Agreement and UTL fails to replenish or provide fresh performance security within a cure period of 30 days;

b) subsequent to the replenishment or furnishing of fresh performance security in accordance with the UTL Concession Agreement, UTL fails to cure, within a cure period of 90 days, the UTL Default for which whole or part of the performance security was appropriated;

c) UTL does not achieve the latest outstanding project milestone due in accordance with the UTL Concession Agreement and continues to be in default for 90 days;

d) UTL abandons or manifests intention to abandon the construction or operation of the UTL Project Highway without the prior written consent of the NHAI;

e) project completion date does not occur within the period specified in the UTL Concession Agreement;

f) the punch list items have not been completed within the period set forth in the UTL Concession Agreement;

g) UTL is in breach of the maintenance requirements or the safety requirements as the case may be;

h) UTL has failed to make any payment to the NHAI within the period specified in the UTL Concession Agreement;

i) an escrow default has occurred and UTL fails to cure the default within a cure period of 15 days;

j) upon occurrence of a financial default, the lenders' representative has, by notice, required the NHAI to undertake suspension or termination, as the case may be, in accordance with the Substitution Agreement and UTL fails to cure the default within the cure period specified hereinabove;

k) a breach of the project agreements by UTL has caused a material adverse effect;

l) UTL creates an encumbrance in breach of the UTL Concession Agreement;

m) UTL repudiates the UTL Concession Agreement or otherwise takes any action or evidences or conveys an intention not to be bound by the UTL Concession Agreement;

n) a change in ownership has occurred in breach of the UTL Concession Agreement;

o) there is a transfer, pursuant to law either of (i) the rights and/or obligations of UTL under any of the project agreements, or of (ii) all or part of the assets or undertaking of UTL, and such transfer causes a material adverse effect;

p) an execution levied on any of the assets of UTL has caused a material adverse effect;

q) UTL is adjudged bankrupt or insolvent, or if a trustee or receiver is appointed for UTL or for the whole or material part of its assets that has a material bearing on the UTL Project;

r) UTL has been, or is in the process of being liquidated, dissolved, wound-up, amalgamated or reconstituted in a manner that would cause, in the reasonable opinion of the NHAI, a material adverse effect;

s) a resolution for winding up of UTL is passed, or any petition for winding up of UTL is admitted by a court of competent jurisdiction and a provisional liquidator or receiver is appointed and such order has not been set aside within 90 days of the date thereof, or UTL is ordered to be wound up by Court except for the purpose of amalgamation or reconstruction, provided that, as part of such amalgamation or reconstruction, the entire property, assets and undertaking of UTL are transferred to the amalgamated or reconstructed entity and that the amalgamated or reconstructed entity has unconditionally assumed the obligations of UTL under the UTL Concession Agreement and the project agreements; provided that:

   i) the amalgamated or reconstructed entity has the capability and operating experience necessary for the performance of its obligations under the UTL Concession Agreement and the project agreements;

   ii) the amalgamated or reconstructed entity has the financial standing to perform its obligations under the UTL Concession Agreement and the project agreements and has a creditworthiness at least as good as that of UTL as at the UTL Appointed Date; and

   iii) each of the project agreements remains in full force and effect;

t) any representation or warranty of UTL which is, as of the date hereof, found to be materially false, incorrect or misleading or UTL is at any time hereafter found to be in breach thereof;

u) UTL submits to the NHAI any statement, notice or other document, in written or electronic form, which has a material effect on the NHAI's rights, obligations or interests and which is false in material particulars;

v) UTL has failed to fulfil any obligation, for which failure termination has been specified in the UTL Concession Agreement; or

w) UTL commits a default in complying with any other provision of the UTL Concession Agreement if such default causes a material adverse effect on the NHAI.

Without prejudice to any other rights or remedies which the NHAI may have under the UTL Concession Agreement, upon the occurrence of a UTL Default, the NHAI shall be entitled to terminate the UTL Concession Agreement by issuing a termination notice to UTL. Before issuing the termination notice, the NHAI shall, by notice, inform UTL of its intention to issue a termination notice and grant 15 days to UTL to make a representation, and may, after the expiry of the 15 days, whether or not it is in receipt of such representation, issue the termination notice subject to the provisions of the UTL Concession Agreement.

If there are senior lenders, the NHAI shall send a copy of its notice of intention to issue a termination notice to inform the lenders' representative and grant 30 days to the lenders' representative for making a representation on behalf of the senior lenders stating the intention to substitute UTL in accordance with the Substitution Agreement. If the NHAI receives a representation on behalf of the senior lenders, it shall, in its discretion, either withhold termination for a period not exceeding 180 days from the date of the representation, or exercise its right of suspension, as the case may be, to enable the lenders' representative to exercise the senior lenders' right of substitution in accordance with the Substitution Agreement. The lenders' representative may, instead of exercising the senior lenders' right of substitution, procure that the default specified in the notice is cured within the aforesaid 180 days, and upon the curing, the NHAI shall withdraw its notice and restore the rights of UTL. On a written request from the lenders' representative and UTL, the NHAI shall extend the period of 180 days by a further period not exceeding 90 days as it may deem appropriate.

Termination by UTL

In the event that any of the defaults specified below shall have occurred, and the NHAI fails to cure the default within a cure period of 90 days or such longer period as provided in the UTL Concession Agreement, the NHAI shall be deemed to be in default of the UTL Concession Agreement ("**NHAI Default**"), unless the default has occurred as a result of a breach of the UTL Concession Agreement by UTL, or due to force majeure. The default referred to herein shall include:

a) the NHAI commits a material default in complying with any of the provisions of the UTL Concession Agreement and such default has a material adverse effect on UTL;

b) the NHAI has failed to make any payment to UTL within the period specified in the UTL Concession Agreement;

c) the NHAI repudiates the UTL Concession Agreement or otherwise takes any action that amounts to or manifests an irrevocable intention not to be bound by the UTL Concession Agreement; or

d) the State of Rajasthan or Gujarat commits a material default in complying with the provisions of the state support agreement if such default has a material adverse effect on UTL and the breach continues for a period of 90 days from the date of notice given in this behalf by UTL to the NHAI.

Without prejudice to any other rights or remedies which UTL may have under the UTL Concession Agreement, upon the occurrence of an NHAI Default, UTL shall be entitled to terminate the UTL Concession Agreement by issuing a termination notice to the NHAI. Before issuing the termination notice, UTL shall, by notice, inform the NHAI of its intention to issue a termination notice and grant 30 days to the NHAI to make a representation, and may, after the expiry of the 30 days, whether or not it is in receipt of such representation, issue the termination notice.

Termination Payment

Upon termination on account of a UTL Default during the operation period, the NHAI shall pay to UTL, by way of termination payment, an amount equal to 90% of the UTL Debt Due less insurance cover. If any insurance claims forming part of the insurance cover are not admitted and paid, then 80% of such unpaid claims shall be included in the computation of UTL Debt Due.

Upon termination on account of an NHAI Default, the NHAI shall pay to UTL, by way of termination payment, an amount equal to:

a) UTL Debt Due; and
b) 150% of the adjusted equity.

The termination payment shall not be less than an amount equal to the product of six and the average monthly fee actually realized 12 months prior to the transfer date.

Termination payment shall become due and payable to UTL within 30 days of a demand being made by UTL to the NHAI with the necessary particulars, and in the event of any delay, the NHAI shall pay interest at a rate equal to 3% above the bank rate on the amount of termination payment remaining unpaid. The delay shall not

exceed 90 days. The termination payment under the UTL Concession Agreement shall constitute a full and final settlement of all claims of UTL on account of termination of the UTL Concession Agreement for any reason whatsoever and UTL shall not have any further right or claim under any law, treaty, convention, contract or otherwise.

Defects Liability after Termination

UTL shall be responsible for all defects and deficiencies in the UTL Project Highway for a period of 120 days after termination. UTL shall have the obligation to repair or rectify, at its own cost, all defects and deficiencies in the UTL Project Highway as observed by the independent engineer. The repair or rectification of the defect or deficiency shall be done within a period of 15 days from the date of notice issued by the NHAI in this behalf. A sum as specified in the UTL Concession Agreement shall be retained in the Escrow Account for a period of 120 days after termination for meeting the liabilities, if any, arising out of, or in connection with this provision.

9. Concession Agreement between YATL and the NHAI dated May 30, 2014

YATL has entered into a concession agreement for four-laning of Yedeshi-Aurangabad section of NH-211 in Maharashtra from km 100.000 to km 290.200 on design, build, finance, operate and transfer ("**DBFOT**") basis (the "**YATL Concession Agreement**"), for a period of 26 years, from July 1, 2015 ("**YATL Appointed Date**") or until such date on which the YATL Concession Agreement is terminated by a termination notice ("**YATL Termination Date**", and the period between the YATL Appointed Date and the YATL Termination Date, the "**YATL Concession Period**").

Certain Definitions

"**YATL Debt Due**" shall mean the aggregate of the following sums expressed in Indian Rupees outstanding on the transfer date:

a) the principal amount of the debt provided by the senior lenders under the financing agreements for financing the total project cost (the "**Principa**l") but excluding any part of the Principal that had fallen due for repayment two years prior to the transfer date;

b) all accrued interest, financing fees and charges payable under the financing agreements on, or in respect of, the debt referred to in the sub-clause above until the transfer date but excluding (i) any interest, fees or charges that had fallen due one year prior to the transfer date, (ii) any penal interest or charges payable under the financing agreements to any senior lender, and (iii) any pre-payment charges in relation to accelerated repayment of debt except where such charges have arisen due to an NHAI Default (as defined below); and

c) any subordinated debt which is included in the financing package and disbursed by lenders for financing the total project cost;

If all, or any part of the YATL Debt Due is convertible into equity at the option of the senior lenders and/or YATL, it shall, for the purposes of the YATL Concession Agreement, be deemed to be YATL Debt Due even after the conversion and the Principal thereof shall be dealt with as if such conversion had not been undertaken;

"**YATL Debt Service**" shall mean the sum of all payments on account of Principal, interest, financing fees and charges due and payable in an accounting year to the senior lenders under the financing agreements;

"**YATL Project Assets**" shall mean all physical and other assets relating to and forming part of the site including (a) rights over the site in the form of licence, right of way or otherwise; (b) tangible assets such as civil works and equipment including foundations, embankments, pavements, road surface, interchanges, bridges, culverts, road overbridges, drainage works, traffic signals, sign boards, kilometre-stones, toll plazas, electrical systems, communication systems, rest areas, relief centres, maintenance depots and administrative offices; (c) project facilities situated on the site; (d) all rights of YATL under the project agreements; (e) financial assets, such as receivables, security deposits etc.; (f) insurance proceeds; and (g) applicable permits and authorizations relating to or in respect of the YATL Project Highway (as defined below), but does not include additional facilities;

"**YATL Project Highway**" shall mean the site comprising the existing road comprising NH-211 from km 100.000 to km 290.200 and all YATL Project Assets, and its subsequent development and augmentation in accordance with the YATL Concession Agreement;

"**YATL Project**" shall mean the construction, operation, and maintenance of the YATL Project Highway in accordance with the provisions of the YATL Concession Agreement, and includes all works, services, and equipment relating to and in respect of the scope of the project; and

"**Grant**" shall mean the cash support provided to YATL by the NHAI which is equal to the sum set forth in the bid.

Grant of Concession

Subject to, and in accordance with the provisions set out in the YATL Concession Agreement, the applicable laws and the applicable permits, the NHAI has granted to YATL, and YATL has accepted the concession, including the exclusive right, license, and authority to construct, operate and maintain the YATL Project for a period of 26 years from the YATL Appointed Date.

Subject to, and in accordance with the provisions of the YATL Concession Agreement, the concession granted shall oblige or entitle, as the case may be, YATL to:

a) right of way, access and license to the site for the purpose of, and to the extent conferred by the provisions of the YATL Concession Agreement;

b) finance and construct the YATL Project Highway;

c) manage, operate, and maintain the YATL Project Highway and regulate the use thereof by third parties;

d) demand, collect, and appropriate fee from vehicles and users liable for payment of fee for using the YATL Project Highway or any part thereof and refuse entry of any vehicle if the fee due is not paid;

e) perform and fulfil all of YATL's obligations under and in accordance with the YATL Concession Agreement;

f) bear and pay all costs, expenses, and charges in connection with or incidental to the performance of the obligations of YATL under the YATL Concession Agreement; and

g) neither assign, transfer or sublet, or create any lien or encumbrance on the YATL Concession Agreement, or the concession granted, or on the whole or any part of the YATL Project Highway, nor transfer, lease, or part possession thereof, save and except as expressly permitted by the YATL Concession Agreement or the agreement for the substitution of YATL entered into by YATL, the NHAI, and the lenders' representative on behalf of the senior lenders (the "**Substitution Agreement**").

Fees

On and from the commercial operation date ("**COD**") till the transfer date, YATL shall have the sole and exclusive right to demand, collect, and appropriate fee from the users subject to, and in accordance with the YATL Concession Agreement and the applicable rules and regulations, provided that for ease of payment and collection, such fee shall be rounded off to the nearest five rupees in accordance with the applicable fee rules, as updated from time to time. Further, YATL may determine and collect fee at such lower rates as it may, by public notice to the users, specify in respect of all or any category of users or vehicles. In accordance with the YATL Concession Agreement, YATL shall not collect any fees in relation to exempted vehicles.

YATL shall not collect any fee from a local user for non-commercial use of the YATL Project Highway, and shall issue a pass in respect thereof for commuting on a section of the YATL Project Highway as specified in the pass and for crossing the toll plaza specified therein. For carrying out these provisions, YATL shall formulate, publish and implement an appropriate scheme, and make such modifications to the scheme as may reasonably be suggested by the NHAI or by local users from time to time. For defraying its expenses on issuing of passes and handling of local users, YATL shall be entitled to charge a monthly fee of ₹150, with reference to the base year 2007-08, to be revised annually in accordance with the fee rules to reflect the variation in WPI,

and then rounded off to the nearest five rupees; provided that no passes will be required or fee collected from a vehicle that uses part of the YATL Project Highway and does not cross a toll plaza.

Grant

The NHAI has agreed to pay to YATL cash support by way of an outright grant equal to ₹5,580 million as set out in the bid. The grant shall be disbursed to YATL by way of equity support. It shall be credited to the Escrow Account (as defined below) and shall be applied by YATL for meeting the total project cost. The equity support shall not exceed the sum specified, but shall in no case be greater than twice the equity, and shall be further restricted to a sum not exceeding 40% of the total project cost.

The equity support shall be due and payable to YATL after it has expended the equity, and shall be disbursed proportionately along with the loan funds thereafter remaining to be disbursed by the senior lenders under the financing agreements. The NHAI shall disburse each tranche of the equity support as and when due, but no later than 15 days of receiving a request from YATL along with necessary particulars. In the event of the occurrence of a YATL Default (as defined below), disbursement of equity support shall be suspended till the YATL Default has been cured.

Concession Fee

In consideration of the grant of concession, YATL shall pay to the NHAI by way of concession fee a sum of ₹1 per annum.

Escrow Account

YATL was required to, prior to the YATL Appointed Date, open and establish an escrow account (the "**Escrow Account**") with a bank (the "**Escrow Bank**") in accordance with the YATL Concession Agreement read with the escrow agreement entered into amongst YATL, the NHAI, the Escrow Bank and the senior lenders through the lenders' representative (the "**Escrow Agreement**").

YATL shall deposit, or cause to be deposited the following inflows and receipts into the Escrow Account:

a) all funds constituting the financial package;

b) all fee and any other revenues from or in respect of the YATL Project Highway, including the proceeds of any deposits, capital receipts or insurance claims; and

c) all payments by the NHAI, after deducting any outstanding concession fee.

The senior lenders may make direct disbursements to the EPC contractor in accordance with the express provisions contained in this behalf in the financing agreements.

Withdrawals during Concession Period

YATL was required to, at the time of opening the Escrow Account, give irrevocable instructions, by way of the Escrow Agreement, to the Escrow Bank instructing, inter alia, that deposits in the Escrow Account shall be appropriated in the following order every month, or at shorter intervals as necessary, and if not due in a month, then appropriated proportionately in such month and retained in the Escrow Account and paid out therefrom in a month when due:

a) all taxes due and payable by YATL for and in respect of the YATL Project Highway;

b) all payments relating to construction of the YATL Project Highway, subject to and in accordance with the conditions, if any, set forth in the financing agreements;

c) Operation and Management ("**O&M**") expenses, subject to the ceiling, if any, set forth in the financing agreements;

d) O&M expenses and other costs and expenses incurred by the NHAI in accordance with the provisions of the YATL Concession Agreement, and certified by the NHAI as due and payable to it;

e) concession fee due and payable to the NHAI;

f) monthly proportionate provision of YATL Debt Service due in an accounting year;

g) all payments and damages certified by the NHAI as due and payable to it by YATL, including repayment of revenue shortfall loan.

h) monthly proportionate provision of YATL Debt Service payments due in an accounting year in respect of subordinated debt;

i) any reserve requirements set forth in the financing agreements; and

j) balance, if any, in accordance with the instructions of YATL.

YATL shall not, in any manner, modify the order of payment specified except with prior written approval from the NHAI.

Withdrawals upon Termination

Notwithstanding anything to the contrary contained in the YATL Concession Agreement, all amounts standing to the credit of the Escrow Account shall, upon termination, be appropriated in the following order:

a) all taxes due and payable by YATL for and in respect of the YATL Project Highway;

b) 90% of the YATL Debt Due excluding the subordinated debt;

c) outstanding concession fee;

d) all payments and damages certified by the NHAI as due and payable to it by YATL, including the repayment of the revenue shortfall loan.

e) retention and payments relating to the liability for defects and deficiencies set forth in the YATL Concession Agreement;

f) outstanding YATL Debt Service including balance of YATL Debt Due;

g) outstanding subordinated debt;

h) incurred or accrued O&M expenses;

i) any other payments required to be made under the YATL Concession Agreement; and

j) balance, if any, in accordance with the instructions of YATL.

No appropriations shall be made until a vesting certificate has been issued by the NHAI.

Change of Scope

The NHAI may, notwithstanding anything to the contrary contained in the YATL Concession Agreement, require the provision of additional works and services which are not included in the scope of the project as contemplated by the YATL Concession Agreement. Any such change of scope shall be made in accordance with the provisions of the YATL Concession Agreement and the costs thereof shall be expended by YATL and reimbursed by the NHAI.

If YATL determines at any time that a change in scope is necessary for providing safer and improved services to the users, it shall, by notice in writing, require the NHAI to consider such change of scope. The NHAI shall, within 15 days of receipt of such notice, either accept the change of scope with modifications, if any, and initiate proceedings thereof in accordance with the provisions of the YATL Concession Agreement, or inform YATL in writing of its reasons for not accepting such change of scope.

Compensation for Breach of Agreement

In the event of YATL being in material default or breach of the YATL Concession Agreement, it shall pay to the NHAI by way of compensation, all direct costs suffered or incurred by the NHAI as a consequence of the material default or breach, within 30 days of the receipt of the demand supported by the necessary particulars thereof. No compensation shall be payable for any material breach or default in respect of which damages are expressly specified and payable under the YATL Concession Agreement.

In the event of the NHAI being in material default of the YATL Concession Agreement at any time after the YATL Appointed Date, it shall pay to YATL by way of compensation, all direct costs suffered or incurred by YATL as a consequence of the material default or breach within 30 days of receipt of the demand supported by necessary particulars thereof. No compensation shall be payable for any material breach or default in respect of which damages have been expressly specified in the YATL Concession Agreement.

In the event that a material default or breach of the YATL Concession Agreement causes a delay in achieving COD or leads to suspension of, or reduction in collection of fee, as the case may be, the NHAI shall, in addition to the payment of compensation, extend the YATL Concession Period as provided in the YATL Concession Agreement. In the event that an additional toll way or a competing road, as the case may be, is opened to traffic in breach of the YATL Concession Agreement, the NHAI shall pay to YATL, for each day of the breach, compensation as provided in the YATL Concession Agreement, until the breach is cured. The payment of compensation by the NHAI shall be deemed to cure the breach of the YATL Concession Agreement so long as the NHAI continues to pay the compensation.

The compensation payable shall be in addition to, and not in substitution for, or derogation of, termination payment, if any.

Effects of Variation in Traffic Growth

Subject to the provisions of the YATL Concession Agreement, in the event actual average traffic shall have fallen short of the target traffic, then for every 1% (one percent) shortfall as compared to the target traffic, the YATL Concession Period shall, subject to payment of concession fee in accordance with the YATL Concession Agreement, be increased by 1.5% (one point five percent) thereof; provided that such increase in YATL Concession Period shall not in any case exceed 20% (twenty percent) of the YATL Concession Period.

Subject to the provisions of the YATL Concession Agreement, in the event actual average traffic shall have exceeded the target traffic, then for every 1% (one percent) excess as compared to the target traffic, the YATL Concession Period shall be reduced by 0.75% (zero point seven five percent) thereof; provided that such reduction in YATL Concession Period shall not in any case exceed 10% (ten percent) thereof.

Provided further that in lieu of a reduction in YATL Concession Period under the YATL Concession Agreement, YATL may elect to pay, in addition to the concession fee that would be due and payable if the YATL Concession Period were not reduced hereunder, a further premium equal to 25% (twenty five percent) of the realizable fee, and upon notice given to this effect by YATL no later than two years prior to the YATL Termination Date contemplated by the YATL Concession Agreement, NHAI shall waive the reduction in YATL Concession Period hereunder forthwith.

Notwithstanding anything to the contrary contained in YATL Concession Agreement, if the average daily traffic of PCUs in any accounting year shall exceed the designed capacity of the YATL Project Highway, the NHAI at its option may cause preparation of detailed project report which will assess the cost that may have to be incurred for augmenting the capacity of the YATL Project Highway so that its capacity is sufficiently increased for carrying the then current traffic in accordance with the corresponding provisions of the Indian Roads Congress publication no. IRC -64, 1990 or any substitute thereof. The YATL Concession Period, may be extended so that it yields for YATL a post-tax return on equity of 16% per annum. This assessment will be made at an assumed debt to equity ratio of 70:30. The extension of the YATL Concession Period shall be however limited to five years. The NHAI may thereafter, at their sole option, issue a notice to YATL, to undertake within six months of such notice, the augmentation so determined by the NHAI. The refusal, non-acceptance, or failure by YATL to undertake such augmentation on the due date so intimated by the NHAI, will be considered an indirect political event and the NHAI may at its discretion terminate this YATL Concession Agreement by

issuing a termination notice and making a termination payment in accordance with the provisions of the YATL Concession Agreement without the NHAI being liable to issue any further notice under it.

Termination of the YATL Concession Agreement

Termination by the NHAI

Save as otherwise provided in the YATL Concession Agreement, in the event that any of the defaults specified below shall have occurred, and YATL fails to cure the default within the cure period, or where no cure period is specified, then within a cure period of 60 days, YATL shall be deemed to be in default of the YATL Concession Agreement ("**YATL Default**"), unless the default has occurred solely as a result of any breach of the YATL Concession Agreement by the NHAI or due to force majeure. The defaults referred to herein shall include:

a) the performance security has been encashed and appropriated in accordance with the YATL Concession Agreement and YATL fails to replenish or provide fresh performance security within a cure period of 30 days;

b) subsequent to the replenishment or furnishing of fresh performance security in accordance with the YATL Concession Agreement, YATL fails to cure, within a cure period of 90 days, the YATL Default for which whole or part of the performance security was appropriated;

c) YATL does not achieve the latest outstanding project milestone due in accordance with the YATL Concession Agreement and continues to be in default for 120 days;

d) YATL abandons or manifests intention to abandon the construction or operation of the YATL Project Highway without the prior written consent of the NHAI;

e) project completion date does not occur within the period specified in the YATL Concession Agreement;

f) the punch list items have not been completed within the period set forth in the YATL Concession Agreement;

g) YATL is in breach of the maintenance requirements or the safety requirements as the case may be;

h) YATL has failed to make any payment to the NHAI within the period specified in the YATL Concession Agreement;

i) an escrow default has occurred and YATL fails to cure the default within a cure period of 15 days;

j) upon occurrence of a financial default, the lenders' representative has, by notice, required the NHAI to undertake suspension or termination, as the case may be, in accordance with the Substitution Agreement and YATL fails to cure the default within the cure period specified hereinabove;

k) a breach of the project agreements by YATL has caused a material adverse effect;

l) YATL creates an encumbrance in breach of the YATL Concession Agreement;

m) YATL repudiates the YATL Concession Agreement or otherwise takes any action or evidences or conveys an intention not to be bound by the YATL Concession Agreement;

n) a change in ownership has occurred in breach of the YATL Concession Agreement;

o) there is a transfer, pursuant to law either of (i) the rights and/or obligations of YATL under any of the project agreements, or of (ii) all or part of the assets or undertaking of YATL, and such transfer causes a material adverse effect;

p) an execution levied on any of the assets of YATL has caused a material adverse effect;

q) YATL is adjudged bankrupt or insolvent, or if a trustee or receiver is appointed for YATL or for the whole or material part of its assets that has a material bearing on the YATL Project;

r) YATL has been, or is in the process of being liquidated, dissolved, wound-up, amalgamated or reconstituted in a manner that would cause, in the reasonable opinion of the NHAI, a material adverse effect;

s) a resolution for winding up of YATL is passed, or any petition for winding up of YATL is admitted by a court of competent jurisdiction and a provisional liquidator or receiver is appointed and such order has not been set aside within 90 days of the date thereof, or YATL is ordered to be wound up by Court except for the purpose of amalgamation or reconstruction, provided that, as part of such amalgamation or reconstruction, the entire property, assets and undertaking of YATL are transferred to the amalgamated or reconstructed entity and that the amalgamated or reconstructed entity has unconditionally assumed the obligations of YATL under the YATL Concession Agreement and the project agreements; provided that:

   i) the amalgamated or reconstructed entity has the capability and operating experience necessary for the performance of its obligations under the YATL Concession Agreement and the project agreements;

   ii) the amalgamated or reconstructed entity has the financial standing to perform its obligations under the YATL Concession Agreement and the project agreements and has a creditworthiness at least as good as that of YATL as at the YATL Appointed Date; and

   iii) each of the project agreements remains in full force and effect;

t) any representation or warranty of YATL which is, as of the date hereof, found to be materially false, incorrect or misleading or YATL is at any time hereafter found to be in breach thereof;

u) YATL submits to the NHAI any statement, notice or other document, in written or electronic form, which has a material effect on the NHAI's rights, obligations or interests and which is false in material particulars;

v) YATL has failed to fulfil any obligation, for which failure termination has been specified in the YATL Concession Agreement; or

w) YATL commits a default in complying with any other provision of the YATL Concession Agreement if such default causes a material adverse effect on the NHAI.

Without prejudice to any other rights or remedies which the NHAI may have under the YATL Concession Agreement, upon the occurrence of a YATL Default, the NHAI shall be entitled to terminate the YATL Concession Agreement by issuing a termination notice to YATL. Before issuing the termination notice, the NHAI shall, by notice, inform YATL of its intention to issue a termination notice and grant 15 days to YATL to make a representation, and may, after the expiry of the 15 days, whether or not it is in receipt of such representation, issue the termination notice subject to the provisions of the YATL Concession Agreement.

If there are senior lenders, the NHAI shall send a copy of its notice of intention to issue a termination notice to inform the lenders' representative and grant 15 days to the lenders' representative for making a representation on behalf of the senior lenders stating the intention to substitute YATL in accordance with the Substitution Agreement. If the NHAI receives a representation on behalf of the senior lenders, it shall, in its discretion, either withhold termination for a period not exceeding 180 days from the date of the representation, or exercise its right of suspension, as the case may be, to enable the lenders' representative to exercise the senior lenders' right of substitution in accordance with the Substitution Agreement. The lenders' representative may, instead of exercising the senior lenders' right of substitution, procure that the default specified in the notice is cured within the aforesaid 180 days, and upon the curing, the NHAI shall withdraw its notice and restore the rights of YATL. On a written request from the lenders' representative and YATL, the NHAI shall extend the period of 180 days by a further period not exceeding 90 days as it may deem appropriate.

Termination by YATL

In the event that any of the defaults specified below shall have occurred, and the NHAI fails to cure the default within a cure period of 90 days or such longer period as provided in the YATL Concession Agreement, the NHAI shall be deemed to be in default of the YATL Concession Agreement ("**NHAI Default**"), unless the default has occurred as a result of a breach of the YATL Concession Agreement by YATL, or due to force majeure. The default referred to herein shall include:

a) the NHAI commits a material default in complying with any of the provisions of the YATL Concession Agreement and such default has a material adverse effect on YATL;

b) the NHAI has failed to make any payment to YATL within the period specified in the YATL Concession Agreement;

c) the NHAI repudiates the YATL Concession Agreement or otherwise takes any action that amounts to or manifests an irrevocable intention not to be bound by the YATL Concession Agreement; or

d) the State of Maharashtra commits a material default in complying with the provisions of the state support agreement if such default has a material adverse effect on YATL and the breach continues for a period of 90 days from the date of notice given in this behalf by YATL to the NHAI.

Without prejudice to any other rights or remedies which YATL may have under the YATL Concession Agreement, upon the occurrence of an NHAI Default, YATL shall be entitled to terminate the YATL Concession Agreement by issuing a termination notice to the NHAI. Before issuing the termination notice, YATL shall, by notice, inform the NHAI of its intention to issue a termination notice and grant 15 days to the NHAI to make a representation, and may, after the expiry of the 15 days, whether or not it is in receipt of such representation, issue the termination notice.

Termination Payment

Upon termination on account of a YATL Default during the operation period, the NHAI shall pay to YATL, by way of termination payment, an amount equal to 90% of the YATL Debt Due less insurance cover. If any insurance claims forming part of the insurance cover are not admitted and paid, then 80% of such unpaid claims shall be included in the computation of YATL Debt Due.

Upon termination on account of an NHAI Default, the NHAI shall pay to YATL, by way of termination payment, an amount equal to:

a) YATL Debt Due; and
b) 150% of the adjusted equity.

Termination payment shall become due and payable to YATL within 15 days of a demand being made by YATL to the NHAI with the necessary particulars, and in the event of any delay, the NHAI shall pay interest at a rate equal to 3% above the bank rate on the amount of termination payment remaining unpaid. The delay shall not exceed 90 days. The termination payment under the YATL Concession Agreement shall constitute a full and final settlement of all claims of YATL on account of termination of the YATL Concession Agreement for any reason whatsoever and YATL, or any shareholder thereof, shall not have any further right or claim under any law, treaty, convention, contract or otherwise.

Defects Liability after Termination

YATL shall be responsible for all defects and deficiencies in the YATL Project Highway for a period of 120 days after termination. YATL shall have the obligation to repair or rectify, at its own cost, all defects and deficiencies in the YATL Project Highway as observed by the independent engineer. The repair or rectification of the defect or deficiency shall be done within a period of 15 days from the date of notice issued by the NHAI in this behalf. A sum as specified in the YATL Concession Agreement shall be retained in the Escrow Account for a period of 120 days after termination for meeting the liabilities, if any, arising out of, or in connection with this provision.

REGULATIONS AND POLICIES

The following description is a summary of certain key regulations and policies which are applicable to the operations of the Trust and the Project SPVs. The information detailed in this section has been obtained from publications available in the public domain. The regulations set out below may not be exhaustive, and are only intended to provide general information to the investors and are neither designed nor intended to substitute for professional legal advice. The information in this section is based on the current provisions of applicable law that are subject to change or modification by subsequent legislative, regulatory, administrative or judicial decisions in India.

Laws Relating to the Business and Operations of the Trust and the Project SPVs

The primary central legislations governing the road sector are the National Highways Act, 1956 (the "**NH Act**") and the National Highways Authority of India Act, 1988 (the "**NHAI Act**").

The NH Act

In accordance with the NH Act, the GoI is vested with the power to declare a highway as a national highway and also to acquire land for this purpose. The GoI may, by notification, declare its intention to acquire any land when it is satisfied that, for a public purpose, such land is required for the building, maintenance, management or operation of a national highway, or part thereof. The NH Act prescribes the procedure for such land acquisition. Such procedure includes, *inter-alia*, a declaration of an intention to acquire, entering and inspecting such land, hearing of objections, a declaration of the acquisition and the power to take possession. The NH Act also provides for payment of compensation to owners and any other person whose right of enjoyment in the land has been affected.

The GoI is responsible for the development and maintenance of national highways. However, it may direct that such functions may also be exercised by the government of a state in which the highway is located or by any officer or authority subordinate to the GoI or to the state government. Further, the GoI has the power to enter into an agreement with any person for the development and maintenance of a part or whole of the highway. Such person would have the right to collect and retain fees at such rates as may be notified by the GoI and will also have the powers to regulate and control the traffic, for proper management of the highway, in accordance with the provisions of the Motor Vehicles Act, 1988, as amended. The GoI also has the power to make rules for carrying out the purposes of the NH Act.

National Highways Fee (Determination of Rates and Collection) Rules, 2008

The National Highways Fee (Determination of Rates and Collection) Rules, 2008 (the "**NH Fee Rules**"), regulates the collection of fees for the use of national highways. In accordance with the NH Fee Rules, the GoI may, by a notification, levy a fee for use of any section of a national highway, permanent bridge, bypass or tunnel forming part of a national highway, as the case may be. However, the GoI may, by notification, exempt any section of a national highway, permanent bridge, bypass or tunnel constructed through a public funded project from levy of such fee.

The NH Fee Rules supersede the National Highways (Temporary Bridges) Rules, 1964, the National Highways (Collection of Fees by any Person for the Use of Section of National Highways/ Permanent Bridge/ Temporary Bridge on National Highways) Rules, 1997, the National Highways (Fees for the use of National Highways Section and Permanent Bridges – Public Funded Project) Rules, 1997 and the National Highways (Rate of Fees) Rules, 1997 other than in respect of things done or omitted to be done under such rules prior to supersession. The NH Fee Rules do not apply to agreements and contracts executed or bids invited prior to the publication of such rules, i.e., prior to December 5, 2008.

The collection of fees in case of a public funded project shall commence within 45 days from the date of completion of the project. The NH Fee Rules further provide a base rate of fees applicable for the use of a section of the national highway for different categories of vehicles and the fees collected by the executing authority shall be remitted to the GoI. However, the GoI may, by notification, allow any or all of the executing authorities to appropriate the whole, or part of such fees for purposes as may be specified.

FASTag lanes on fee plazas is a policy initiative of the GoI in which there is an exclusive lane in the fee plaza for movement of vehicles fitted with FASTag. The FASTag is a device which is fitted on the front windscreen

of vehicles to indicate online toll payment. The amended NH Fee Rules impose a penalty equivalent to two times the fee applicable if a vehicle not fitted with FASTag enters the exclusive FASTag lane. However, in case a user is unable to pay, due to malfunctioning electronic toll collection infrastructure, the user will be permitted to pass the fee plaza without payment.

The NH Fee rules were also amended to provide that the driver or owner of a mechanical vehicle which is loaded in excess of permissible load specified for its category, (i) shall not be permitted to use the national highway or cross the fee plaza until the excess load has been removed, and (ii) shall be liable to pay a fee to the toll collection agency equal to ten times of the fee applicable to such category of mechanical vehicle. However, in case no weighbridge has been installed at the toll plaza, no fee for overloading shall be levied.

The National Highways Rules, 1957

The National Highway Rules, 1957 (the "**NH Rules**") provide that in situations where the estimate cost of the execution of any original work on a national highway exceeds ₹1,000,000, a detailed estimated of the cost is to be forwarded to the GoI. An application for allotment of funds for meeting expenditure on an original work on a national highway must also be made to the GoI. The executing agency of the highway is required to furnish monthly progress reports and a completion report on the conclusion of the work. The NH Rules also give the consulting engineer of the GoI the right to inspect the work while it is in progress or after completion.

The NHAI Act

NHAI

The National Highways Authority of India (the "**NHAI**") was constituted pursuant to the NHAI Act and became operational in 1995. The NHAI Act details the functions the NHAI, which primarily are the development, maintenance and management of national highways and any other highways vested in, or entrusted to it, by the GoI, and matters connected therewith or incidental thereto. In accordance with the NHAI Act, the GoI carries out development and maintenance of the national highway system through NHAI. Subject to the provisions of the NHAI Act, the NHAI has the power to enter into and perform any contract necessary for the discharge of its functions. The NHAI has the power to acquire any land to discharge its functions, and such acquired land will be deemed to be land needed for a public purpose. The NHAI Act prescribes a limit in relation to the value of the contracts that may be entered into by NHAI. However, the NHAI may enter into contracts exceeding the specified value, on obtaining prior approval of the GoI. The NHAI Act provides that the contracts for acquisition, sale, or lease of immovable property on behalf of the NHAI cannot exceed a term of 30 years unless previously approved by the GoI.

As per the NHAI Works Manual, 2006, NHAI's mandate is the time and cost bound implementation of the National Highways Development Project (the "**NHDP**"). The sources of finance available to the NHAI include fund assistance from external funding agencies like the World Bank and the Asian Development Bank. NHDP Phase – I also strives to provide road connectivity to major ports. NHAI's role encompasses involving the private sector in provision, maintenance and operation of the national highways.

Financing of the NHDP

The GoI, under the Central Road Fund Act, 2000 created a fund which is required to be utilized for the development and maintenance of national highways (the "**Central Road Fund**"). Section 18 of the NHAI Act also provides for the creation of a separate NHAI Fund. Any capital grant or aid received, loan taken, borrowing made, or any other sum received by the NHAI is credited to the NHAI Fund. Certain sources for financing of the NHDP are through dedicated accruals under the Central Road Fund by levy of cess on fuel as well as involving the private sector and encouraging public private partnerships. The NHDP is also financed through long-term external loans from the World Bank, the Asian Development Bank and the Japan Bank for International Cooperation as well as through tolling of roads for different projects undertaken by the NHAI.

Private Participation in NHDP

In an effort to attract private sector participation in the NHDP, the NHAI has formulated model concession agreements where a private entity being the concessionaire is awarded a concession to build, operate and collect toll on a road for a specified period of time, which is usually up to 30 years.

The bidding for the projects takes place in two stages as per the process provided below:

1. in the pre-qualification stage, the NHAI selects certain bidders on the basis of technical and financial expertise, prior experience in implementing similar projects and previous track record; and

2. in the second stage, the NHAI invites commercial bids from the pre-qualified bidders on the basis of which the right to develop the project is awarded.

In accordance with the model concession agreement for projects above ₹1,000 million, the concessionaire meets the upfront cost and expenditure on annual maintenance and recovers the entire cost along with the interest from toll collections during the concession period. As per the 'Guidelines for Investment in Road Sector' issued by the Ministry of Shipping, Road Transport and Highways ("**MoRTH**") in 2009, in order to increase the viability of projects, a capital grant of up to 40% of the project cost is provided by the NHAI or the GoI. The quantum of grant is determined on a case to case basis and typically constitutes the bid parameter in Build, Operate, Transfer ("**BOT**") projects which are generally not viable based on toll revenue alone. For certain projects with high traffic volumes, concessionaire also offers a negative grant (i.e., premium) to the NHAI. The concessionaire at the end of the concession period transfers the road back to the Government (free of charge and clear of all encumbrances). The concessionaire's investment in the road is recovered directly through user fees collected by way of tolls. As per the model concession agreement for annuity based projects, the concessionaire is required to meet the entire upfront cost (no grant is paid by the NHAI or the GoI) and the expenditure on annual maintenance for annuity based projects. The concessionaire recovers the entire investment through pre-determined annuity payments to be made by the NHAI or the GoI. Furthermore, MoRTH approved certain amendments to the model concession agreement, *inter-alia*, in relation to deferment of premium payments.

Exit Policy

The CCEA in May 2015 approved a comprehensive exit policy framework with the objective to mobilize funds in the market. This policy framework now permits divestment of 100% equity by concessionaires/developers after two years of completion of construction to facilitate unlocking of funds for new projects. The equity divested is required to be invested by promoters in their new projects. This comprehensive exit policy framework is expected to harmonize certain conditions across all concessions signed prior to 2009 with the policy framework for post 2009 contracts which permit divestment of equity up to 100%, two years after completion of construction.

Rationalized Compensation

The CCEA in November 2015 approved a policy for rationalized compensation to concessionaires for languishing national highway projects in BOT mode for delays that are not attributable to the concessionaires. Under the policy, the NHAI is authorized to allow an extension of the concession period for BOT (Toll) projects while keeping the original operation period unchanged. The NHAI has also been authorised to pay compensatory annuities to the concessionaire corresponding to the actual period of delay that is not attributable to the concessionaire upon successful completion of the project. In these cases, the construction period will be enhanced but the tenure of the concession will remain unchanged.

One Time Fund Infusion

The CCEA in October 2015 gave its approval to the NHAI for a one-time infusion of funds with the purpose of reviving and physically completing stalled projects in the advanced stages of completion. As per the policy, the amount of funds required in each case shall be approved by NHAI on a case to case basis.

Bidder Information

MoRTH has developed the Bidder Information Management System ("**BIMS**") to streamline the process of pre-qualification of bidders for EPC mode of contracts for all national highway works, with enhanced transparency and objectivity. BIMS works as a data base of bidder information that covers basic details, civil works experience, cash accruals and network, and annual turnover so that bidders' pre-qualification can be assessed based on evaluation parameters like threshold capacity and bid capacity from already stored data and the technical evaluation can be carried out in a faster manner.

Land Acquisition

While land is acquired for national highway projects under the NH Act, the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 (the "**Land Acquisition Act**") must also be complied with. MoRTH has issued comprehensive guidelines on land acquisition for national highways taking into account the applicability of the Land Acquisition Act.

Arbitral Awards

CCEA on August 31, 2016 approved various measures to revive the construction sector. An office memorandum dated September 5, 2016 was issued by the National Institute for Transforming India with certain proposals. On November 20, 2019, the CCEA approved certain proposals in relation to the arbitrations by or against government entities, for the effective implementation of the CCEA's decision on August 31, 2016 on its initiatives to revive the construction sector. Initially, the CCEA had approved the proposal that government agencies will be required to pay 75% of the arbitral award to the concessionaire against a bank guarantee, in cases where the award already announced is challenged. However, pursuant to a press release dated November 20, 2019, the CCEA approved, *inter-alia*, that where a government entity has challenged an arbitral award, resultant of which the amount of the arbitral award has not been paid, 75% of such award will be paid by the government entity to the contractor or the concessionaire against a bank guarantee only for the said 75% and not for its interest component. In relation to interest payable to the government entity, if a subsequent court order required the refund of 75% of the amount, the payment of such amounts will be required to be made as per the court orders.

Indian Tolls Act, 1851

In accordance with the Indian Tolls Act, 1851 (the "**Tolls Act**"), state governments have been vested with the power to levy tolls at such rates as they deem fit, to be levied upon any road or bridge, made or repaired at the expense of the GoI or any state government. The tolls levied under the Tolls Act, are deemed to be 'public revenue' and the collection of tolls can be placed under the management of any person the state governments' may deem fit. Such persons are instructed with the same responsibilities as if they were employed in the collection of land revenue. Further, all police officers are bound to assist the toll collectors when required in the implementation of the Tolls Act. The Tolls Act further gives power for recovery of toll and exempts certain category of people from payment of toll.

Provisions under the Constitution of India and other legislations in relation to collection of toll

Entry 59, List II of Schedule VII read with Article 246 of the Constitution of India vests state governments with the power to levy tolls. Further, in accordance with the Tolls Act, state governments have been vested with the power to levy tolls at such rates as they deem fit.

Control of National Highways (Land and Traffic) Act, 2002

The Control of National Highways (Land and Traffic) Act, 2002 (the "**Control of NH Act**") provides for control of land within national highways, right of way and traffic moving on national highways and also for removal of unauthorised occupation thereon.

In accordance with the provisions of the Control of NH Act, the GoI has established the Highway Administration which is governed by Highway Administration Rules, 2004. Its functions include maintenance of land records and issuance of permits. Under the Control of NH Act, all land that forms part of a highway which vests in the GoI, or that which does not already vest in the GoI but has been acquired for the purpose of highways shall be deemed to be the property of the GoI. The Control of NH Act prohibits any person from occupying any highway land or discharging any material through drain on such land without the permission of the Highway Administration or any officer authorised by such administration. The Control of NH Act permits the grant of lease and license for use of highway land for temporary use.

Other Laws and Regulations

In addition to the aforementioned legislations which are applicable to the Trust and the Project SPVs, other material legislations that are applicable to the operations of the Trust and the Project SPVs include:

Indian Trusts Act, 1882

The Indian Trusts Act, 1882 ("**Trusts Act**") governs all private trusts in India.

The Trusts Act sets out the purpose for which private trusts can be established, the manner in which they may be created, executed and extinguished. The person creating a trust under the Trusts Act is the author of such trust, the person to whom the author grants the power and authority to regulate the trust is the trustee and the persons for whose benefit such trust has been created are the beneficiaries of such trust. The Trust Act sets out the rights, duties, liabilities and powers of the trustees and the beneficiaries *vis-a-vis* the trust. The Trust has been settled in accordance with the provisions of the Trusts Act.

Environment Regulation

Infrastructure projects must also ensure compliance with environmental legislation such as the Water (Prevention and Control of Pollution) Act, 1974 ("**Water Pollution Act**"), the Air (Prevention and Control of Pollution) Act, 1981 ("**Air Pollution Act**") and the Environment Protection Act, 1986 ("**Environment Act**"). The Water Pollution Act aims to prevent and control water pollution. This legislation provides for the constitution of a Central Pollution Control Board and State Pollution Control Boards. The functions of the Central Pollution Control Board include, *inter alia*, coordination of activities of the State Pollution Control Boards, collecting data relating to water pollution and the measures devised for the prevention and control of water pollution and prescription of standards for streams or wells. The State Pollution Control Boards are responsible for, *inter alia*, the planning for programmes for prevention and control of pollution of streams and wells, collecting and disseminating information relating to water pollution and its prevention and control, inspection of sewage or trade effluents, works and plants for their treatment and to review the specifications and data relating to plants set up for treatment and purification of water, laying down or annulling the effluent standards for trade effluents and for the quality of the receiving waters, and laying down standards for treatment of trade effluents to be discharged. This legislation prohibits any person from establishing any industry, operation or process or any treatment and disposal system, which is likely to discharge trade effluent into a stream, well or sewer, or bring into use any new or altered outlet for discharge of sewage, or begin to make any new discharge of sewage without taking prior consent of the State Pollution Control Board.

The Central and State Pollution Control Boards constituted under the Water Pollution Act are also to perform functions as per the Air Pollution Act for the prevention and control of air pollution. The Air Pollution Act aims for the prevention, control and abatement of air pollution. It is mandated under this Act that no person can, without the previous consent of the State Pollution Control Board, establish or operate any industrial plant in an air pollution control area as notified by the State Government. The Environment Act has been enacted for the protection and improvement of the environment. The Environment Act empowers the GoI to take measures to protect and improve the environment such as by laying down standards for emission or discharge of pollutants, providing for restrictions regarding areas where industries may operate and so on. The GoI may make rules for regulating environmental pollution. With respect to forest conservation, the Forest (Conservation) Act, 1980 prevents state governments from making any order directing that any forest land be used for a non-forest purpose or that any forest land is assigned through lease or otherwise to any private person or corporation not owned or managed or controlled by the Government without the prior approval of the GoI. The Ministry of Environment and Forests (the "**MoEF**") mandates that Environment Impact Assessment ("**EIA**") must be conducted for specified projects. In the process, the MoEF receives proposals for the setting up of projects and assesses their impact on the environment before granting clearances to the projects.

The EIA Notification S.O. 1533, issued on September 14, 2006 (the "**EIA Notification**") and amended from time to time, under the provisions of the Environment Act, prescribes that new construction of specified projects require prior environmental clearance from the MoEF. The environmental clearance must be obtained from the MoEF according to the procedure specified in the EIA Notification. No construction work or preparation of land by the project management except for securing the land, relating to the setting up of a specified project can be undertaken until such clearance is obtained. Under the EIA Notification, the environmental clearance process for new projects consists of four stages – screening, scoping, public consultation and appraisal. After completion of public consultation, the applicant is required to make appropriate changes in the draft 'EIA Report' and the 'Environment Management Plan.' The final EIA Report has to be submitted to the concerned regulatory authority for appraisal. The regulatory authority is required to give its decision within 105 days of the receipt of the final EIA Report. The EIA Guidance Manual for Highways, 2010 explains the four stages of the environmental clearance process and the contents of the EIA Report required to be submitted by highway projects.

Public Liability Insurance Act, 1991

The Public Liability Insurance Act, 1991 (the "**Public Liability Act**"), imposes liability on the owner or controller of hazardous substances for any damage arising out of an accident involving such hazardous substances. A list of 'hazardous substances' covered by the legislation has been enumerated by the Government by way of a notification. The owner or handler is also required to take out an insurance policy insuring against liability under the legislation. The rules made under the Public Liability Act mandate that the employer has to contribute towards the Environment Relief Fund, a sum equal to the premium paid on the insurance policies. This amount is payable to the insurer.

Green Highways (Plantation, Transplantation, Beautification and Maintenance) Policy, 2015

In September 2015, MoRTH has launched Green Highways (Plantation, Transplantation, Beautification and Maintenance) Policy, 2015 which will require road developers to earmark one per cent of a project's total cost for planting of trees and shrubs across the national highways. Under this policy, the maintenance of such plantations will be outsourced through a bidding process to plantation agencies. MoRTH/NHAI will appoint the authorized agency for empanelment of such plantation agencies.

Foreign Investment Regulations

Foreign investment in Indian securities is governed by the provisions of the FEMA, read with the applicable FEMA Rules, the FEMA (Mode of payment and Reporting of Non-Debt Instruments) Regulations, 2019 and the consolidated FDI Policy issued by the Department for Promotion of Industry and Internal Trade, Ministry of Commerce and Industry, Government. Foreign investment is permitted (except in the prohibited sectors) either through the automatic route or the approval route, depending upon the sector in which foreign investment is sought to be made. Under the FEMA Rules and the current consolidated FDI Policy, effective from August 28, 2017, an infrastructure investment trust registered and regulated by the SEBI under the InvIT Regulations, being an 'investment vehicle', is permitted to receive foreign investment from a person resident outside India (other than an individual who is citizen of or any other entity which is registered / incorporated in Pakistan or Bangladesh), including an FPI or an NRI subject to the terms and conditions specified in the FEMA Rules.

Downstream investment by an infrastructure investment trust shall be regarded as indirect foreign investment if neither the sponsor nor the investment manager of such an infrastructure investment trust is Indian 'owned and controlled' as defined in FEMA Rules.

Downstream investment by an 'investment vehicle' shall have to conform to the sectoral caps and conditions/restrictions, if any, as applicable to the company in which the downstream investment is made as per the FDI Policy. Foreign investment of up to 100% through the automatic route is permitted in the infrastructure sector in India. An infrastructure investment trust that receives foreign investment shall be required to make such report and in such format to the RBI or to the SEBI as may be prescribed by them from time to time.

The payment for the units of an infrastructure investment trust acquired by a person resident or registered/ incorporated outside India shall be made by an inward remittance from abroad through banking channels or by way of swap of shares of an SPV, or out of funds held in an NRE or FCNR(B) account maintained in accordance with the Foreign Exchange Management (Deposit) Regulations, 2016.

Further, any person who is a non-resident and holds units of an infrastructure investment trust in accordance with the FEMA Rules may pledge such units (i) in favor of a bank in India to secure the credit facilities being extended to the Indian company for bona fide purposes; (ii) in favor of an overseas bank to secure the credit facilities being extended to the person, or a person resident outside India who is the promoter of the Indian company or the overseas group company of the Indian company; (iii) in favor of a Non-Banking Financial Company registered with the RBI to secure credit facilities being extended to the Indian company for bona fide purposes; and (iv) subject to the authorized dealer bank satisfying itself of the compliance of the conditions stipulated by the RBI in this regard.

Laws Relating to Employment

Certain other laws and regulations that may be applicable to the Trust and the Project SPVs include the following:

- Contract Labour (Regulation and Abolition) Act, 1970;
- Payment of Wages Act, 1936;
- Payment of Bonus Act, 1965;
- Employees' State Insurance Act, 1948;
- Employees' Provident Funds and Miscellaneous Provisions Act, 1952;
- Equal Remuneration Act, 1976;
- Payment of Gratuity Act, 1972;
- Shops and Commercial Establishments Acts, where applicable;
- Minimum Wages Act 1948;
- Industrial Disputes Act, 1947;
- Employees Compensation Act, 1923; and
- The Code of Wages, 2019.

The Code on Wages, 2019 (enacted by the parliament of India and assented to by the President of India on August 8, 2019) will come into force on such date as may be notified in the official gazette of India by the central government, and different dates may be appointed for different provisions of the Code on Wages, 2019. Once effective, it will subsume the Equal Remuneration Act, 1976, the Minimum Wages Act, 1948, the Payment of Bonus Act, 1965 and the Payment of Wages Act, 1936.

In addition to the above, we are also required to comply with the provisions of various tax-related legislations, intellectual-property related legislations and other applicable law for our day-to-day operations.

LEVERAGE

The following tables present (a) the capital structure of the Trust (including any borrowing or deferred payments) on a combined basis as at September 30, 2019, as adjusted taking into account the Formation Transactions and the utilization of the Issue Proceeds, as described in the section "*Use of Proceeds*" on page 60; and (b) the capital structure of each of the Project SPVs (including any borrowing or deferred payment) on a standalone basis as at September 30, 2019.

The information presented below should be read in conjunction with the sections "*Use of Proceeds*", "*Combined Financial Statements*" and "*Management's Discussion and Analysis of Financial Condition and Results of Operations*" on pages 60, 257 and 324, respectively.

Combined capital structure of the Trust (including any borrowings or deferred payments)

Particulars	As at September 30, 2019	
	Pre-Issue (₹ in millions)	Post-Issue[(1)] (₹ in millions)
Shareholders' Funds:		
Equity Share Capital	17,686.19	
Subordinate Debt	30,594.35	
Other Equity	458.92	
Total Shareholders' Funds	**48,739.46**	
Borrowings		
Borrowings from related parties	12,441.28	
Long term borrowings	98,097.97	
Current maturities of long term borrowings	228.73	
Total Debt	**110,767.98**	
Total Capitalization	**159,507.47**	[●]

[(1)]Will be determined upon completion of the Issue

Standalone capital structure of the Project SPVs (including any borrowings or deferred payments)

AETL

Particulars	As at September 30, 2019	
	Pre-Issue (₹ in millions)	Post-Issue[(1)] (₹ in millions)
Shareholders' Funds:		
Equity Share Capital	4,365.00	
Subordinate Debt	4,365.00	
Other Equity	(576.08)	
Total Shareholders' Funds	**8,153.92**	
Borrowings		
Borrowings from related parties	1,699.01	
Long term borrowings	15,004.49	
Current maturities of long term borrowings	10.01	
Total Debt	**16,713.51**	
Total Capitalization	**24,867.43**	[●]

[(1)] Will be determined upon completion of the Issue

CGTL

Particulars	As at September 30, 2019	
	Pre-Issue (₹ in millions)	Post-Issue[(1)] (₹ in millions)
Shareholders' Funds:		
Equity Share Capital	1,424.50	
Subordinate Debt	1,847.50	
Other Equity	1,395.99	
Total Shareholders' Funds	**4,667.99**	
Borrowings		
Borrowings from related parties		
Long term borrowings	10,588.66	
Current maturities of long term borrowings	26.54	
Total Debt	**10,615.20**	
Total Capitalization	**15,283.19**	[●]

(1) Will be determined upon completion of the Issue

IRB HMTL

Particulars	As at September 30, 2019	
	Pre-Issue (₹ in millions)	Post-Issue[(1)] (₹ in millions)
Shareholders' Funds:		
Equity Share Capital	1,895.00	
Subordinate Debt	1,820.00	
Other Equity	217.25	
Total Shareholders' Funds	**3,932.25**	
Borrowings		
Borrowings from related parties	240.54	
Long term borrowings	-	
Current maturities of long term borrowings	-	
Total Debt	**240.54**	
Total Capitalization	**4,172.79**	[●]

(1) Will be determined upon completion of the Issue

IRB WTL

Particulars	As at September 30, 2019	
	Pre-Issue (₹ in millions)	Post-Issue[(1)] (₹ in millions)
Shareholders' Funds:		
Equity Share Capital	1,741.94	
Subordinate Debt	5,225.86	
Other Equity	58.12	
Total Shareholders' Funds	**7,025.92**	
Borrowings		
Borrowings from related parties	5,629.45	
Long term borrowings	13,036.94	
Current maturities of long term borrowings	25.18	
Total Debt	**18,691.57**	
Total Capitalization	**25,717.49**	[●]

(1) Will be determined upon completion of the Issue

KGTL

Particulars	As at September 30, 2019	
	Pre-Issue (₹ in millions)	Post-Issue[(1)] (₹ in millions)
Shareholders' Funds:		
Equity Share Capital	1,243.50	
Subordinate Debt	1,157.50	
Other Equity	764.57	
Total Shareholders' Funds	**3,165.57**	
Borrowings		
Borrowings from related parties	-	
Long term borrowings	7,017.79	
Current maturities of long term borrowings	21.86	
Total Debt	**7,039.65**	
Total Capitalization	**10,205.22**	[●]

(1) Will be determined upon completion of the Issue

KTL

Particulars	As at September 30, 2019	
	Pre-Issue (₹ in millions)	Post-Issue[(1)] (₹ in millions)
Shareholders' Funds:		
Equity Share Capital	3,280.00	
Subordinate Debt	3,280.00	
Other Equity	(993.72)	
Total Shareholders' Funds	**5,566.28**	
Borrowings		
Borrowings from related parties	464.05	
Long term borrowings	13,927.83	
Current maturities of long term borrowings	33.24	
Total Debt	**14,425.12**	
Total Capitalization	**19,991.40**	[●]

(1) Will be determined upon completion of the Issue

SYTL

Particulars	As at September 30, 2019	
	Pre-Issue (₹ in millions)	Post-Issue[(1)] (₹ in millions)
Shareholders' Funds:		
Equity Share Capital	982.50	
Subordinate Debt	2,947.50	
Other Equity	(587.03)	
Total Shareholders' Funds	**3,342.97**	
Borrowings		
Borrowings from related parties	939.45	
Long term borrowings	8,978.86	
Current maturities of long term borrowings	15.37	
Total Debt	**9,933.68**	

Particulars	As at September 30, 2019	
	Pre-Issue (₹ in millions)	Post-Issue[(1)] (₹ in millions)
Total Capitalization	**13,276.65**	[●]

(1) Will be determined upon completion of the Issue

UTL

Particulars	As at September 30, 2019	
	Pre-Issue (₹ in millions)	Post-Issue[(1)] (₹ in millions)
Shareholders' Funds:		
Equity Share Capital	596.18	
Subordinate Debt	3,478.56	
Other Equity	666.54	
Total Shareholders' Funds	**4,741.28**	
Borrowings		
Borrowings from related parties	23.30	
Long term borrowings	12,276.29	
Current maturities of long term borrowings	-	
Total Debt	**12,299.59**	
Total Capitalization	**17,040.87**	[●]

(1) Will be determined upon completion of the Issue

YATL

Particulars	As at September 30, 2019	
	Pre-Issue (₹ in millions)	Post-Issue[(1)] (₹ in millions)
Shareholders' Funds:		
Equity Share Capital	2,157.57	
Subordinate Debt	6,472.43	
Other Equity	(486.72)	
Total Shareholders' Funds	**8,143.28**	
Borrowings		
Borrowings from related parties	3,445.48	
Long term borrowings	17,267.11	
Current maturities of long term borrowings	96.53	
Total Debt	**20,809.12**	
Total Capitalization	**28,952.40**	[●]

(1) Will be determined upon completion of the Issue

Leverage Policy

This policy sets out the framework for selection and repayment of borrowings by the Manager Group. The key terms of the Leverage Policy include, *inter-alia*:

(i) The Manager Group Members may avail additional borrowings or debt from time to time in accordance with the Annual Budget and Business Plan of the respective Manager Group Members, the Transaction Documents, and the InvIT Regulations. Any additional borrowing or creation of security that is not in

accordance with the Annual Budget and Business Plan will require the prior approval of the shareholders of the Investment Manager.

(ii) In the event that the Trust is listed, and in accordance with Regulation 20 of the InvIT Regulations, if the aggregate consolidated borrowings and deferred payments of the Trust, holdco, and the SPVs, net of cash and cash equivalents exceeds 25% of the value of the Trust Assets, then for any further borrowing:

a. Up to 49% of the value of the Trust Assets, the Trust shall:
- obtain credit rating from a credit rating agency registered with the SEBI; and
- seek approval of the Unitholders in the manner as specified in Regulation 22 of the InvIT Regulations.

b. Above 49% of the value of the Trust Assets, the Trust shall:
- obtain a credit rating of "AAA" or equivalent for its consolidated borrowing and the proposed borrowing, from a credit rating agency registered with the SEBI;
- utilize the funds only for acquisition or development of infrastructure projects;
- have a track record of at least six distributions, in terms of Regulation 18(6) of the InvIT Regulations, on a continuous basis, post listing, in the years preceding the financial year in which the enhanced borrowings are proposed to be made; and
- obtain the approval of 75% of Unitholders by value.

(iii) If either of the conditions specified above are breached on account of market movements of the price of the underlying assets or securities, the Investment Manager shall inform the Trustee at the earliest and ensure that the condition is satisfied within six months of the breach, in accordance with the InvIT Regulations.

(iv) The limits in relation to the aggregate consolidated borrowings and deferred payments of the Trust, any Holdcos and the SPVs, net of cash and cash equivalents, shall be as approved by at least 60% of the Unitholders from time to time, unless otherwise provided under the InvIT Regulations.

(v) In no event will the aggregate borrowings exceed 70% of the value of the Trust Assets, or such other limit as provided under the InvIT Regulations.

(vi) The Trust shall be permitted to borrow monies through any permitted means, by any instrument, in Indian or foreign currency, as permitted by applicable law.

(vii) The Investment Manager shall be permitted to borrow monies on behalf of the Trust, subject to the approval of its board of directors or such other committee of the board of directors of the Investment Manager as may be constituted in this regard.

(viii) Any borrowing and/or creation of security for any borrowing by the Manager Group Members incorporated under the Companies Act, 1956 or the Companies Act, 2013, will be in accordance with the conditions prescribed therein.

(ix) The Investment Manager may secure the payment of any sum of money for and on behalf of the Manager Group Member in such manner and upon such terms and conditions in all respects as set out in the Annual Budget or the Business Plan, including by mortgage or pledge or charge upon all or any Trust Assets (present or future).

RELATED PARTY TRANSACTIONS

Under Regulation 2(1)(zv) of the InvIT Regulations, a 'related party' will be as defined under the Companies Act, 2013 or under the applicable accounting standards (i.e., Ind AS 24 on "Related Party Disclosures") and will also include (i) the Parties to the Trust and (ii) the promoters, directors and partners of the Parties to the Trust. Further, any transaction between the Trust and one or more infrastructure investment trusts having a common investment manager or sponsor, or a transaction where the Investment Manager or the Sponsor is an Associate of the investment manager or sponsor of the other infrastructure investment trust, will be deemed to be related party transactions for such parties. The list of related parties included in Note 32 in the Combined Financial Information in the section "*Combined Financial Statements*" on page 295 is the list of related parties as a result of the combination of financial statements of the Project SPVs. However, please note that the related parties of the Trust after the Issue will be determined on the basis of applicable law from time to time. Also see *"Combined Financial Statements*" on page 257.

A. Procedure for dealing with Related Party Transactions

General Requirements

In accordance with relevant provisions of the InvIT Regulations, all related party transactions will be on an arms' length basis, in compliance with applicable accounting standards and any other guidelines issued by the SEBI from time to time. Such related party transactions shall be in the best interest of the Unitholders, and must be consistent with the strategy and investment objectives of the Trust.

Approval of the Unitholders

In the case of related party transactions proposed to be entered into after the Issue, if such related party transaction is a Reserved Matter, approval from Unitholders will be obtained such that the votes cast by Unitholders so entitled and voting in favor of a resolution are not less than one-and-a-half times the votes cast against such resolution, provided that if the InvIT Regulations specify a different threshold for the approval by Unitholders of such matter, the threshold specified in the InvIT Regulations will prevail. For details of the Reserved Matters, see "*Corporate Governance*" and "*Rights of Unitholders*" on pages 134 and 234, respectively.

Voting by any person who is a related party with respect to any transaction as well as the voting by the Associates of such person will not be considered on the specific issue.

Role of the Investment Manager

The Investment Manager is responsible for formulating and maintaining all such internal processes and relevant controls with respect to related party transactions, so as to ensure compliance with the InvIT Regulations and applicable accounting standards. Further, the Investment Manager will convene meetings of the Unitholders in accordance with Regulation 22 of the InvIT Regulations and maintain records pertaining to such meetings in the manner prescribed. The Investment Manager will also ensure compliance with any additional guidelines, circulars or regulations with respect to related party transactions issued by the SEBI in the future.

The Investment Manager or its Associates will not obtain any commission, rebate or any other remuneration, by whatever name called, arising out of transactions pertaining to the Trust, other than as specified in the Placement Memorandum or any other document as may be specified by the SEBI for the issue of Units.

Disclosure and Reporting

The Investment Manager will submit quarterly reports on the activities of the Trust, including the status of compliance with the requirements specified under the InvIT Regulations in relation to related party transactions to the Trustee within 30 days of the end of each quarter.

Further, in accordance with the InvIT Regulations, the Investment Manager will submit an annual report and a half-yearly report to the Trustee and the Unitholders, electronically or through physical copies within the timelines specified under the InvIT Regulations, which will contain, *inter-alia*, details of all related party transactions, including acquisitions or disposal of any projects, directly or through SPVs during the year, the value of which exceeded 5% of the value of the Trust Assets.

B. Details of Related Party Transactions undertaken prior to the filing of this Preliminary Placement Memorandum

The Trust (acting through the Trustee) has entered into the following related party transactions prior to the filing of this Preliminary Placement Memorandum:

S. No.	Name of the Related Party	Nature of Relationship with the Trust	Nature of Transaction
1.	IRB Infrastructure Developers Limited	Sponsor	The Trust was settled with an initial settlement amount of ₹1,000.00 by the Sponsor.
2.	MMK Toll Road Private Limited	Investment Manager	The Trustee (acting on behalf of the Trust) has entered into the Investment Management Agreement dated August 27, 2019, as amended on September 16, 2019, with the Investment Manager for managing and administering the Trust, in accordance with the InvIT Regulations. The Investment Manager will be paid Management Fees in accordance with the terms of the Investment Management Agreement. For details, see "*Background and Structure of the Trust – Fees and Expenses – Fees and expenses payable to the Investment Manager*" and "*The Investment Manager*" on pages 102 and page 243, respectively.
3.	IRB Infrastructure Developers Limited	Project Manager	The Trustee (on behalf of the Trust) has entered into the Project Implementation Agreements with the Project Manager, with respect to each of the Project SPVs, which set out the obligations of the Project Manager with respect to the execution of each of the projects, in accordance with the InvIT Regulations. The Project Manager will be paid EPC Payments and O&M Payments, as applicable, by the respective Project SPVs in accordance with the terms of the Project Implementation Agreements. For details, see "*Background and Structure of the Trust – Fees and Expenses – Fees and expenses payable to the Project Manager*" and "*The Sponsor and Project Manager*" on pages 103 and page 240, respectively.
4.	IRB Infrastructure Developers Limited	Sponsor	Pursuant to the Name Licensing Agreement dated February 13, 2020, the Sponsor has granted to the Trust, each of the Project SPVs and the Investment Manager, the non-transferable and non-assignable right to use the "IRB" trademark as part of their respective corporate names, if applicable, as well as the "IRB" logo in connection with their respective businesses, on a non-exclusive basis. No licensing fee is payable to the Sponsor under the Name Licensing Agreement.

For details of the related party transactions entered into by the Project SPVs during the six-month period ended September 30, 2019 and the Financial Years 2019, 2018 and 2017, see "*Combined Financial Statements*" on page 257.

C. Details of Related Party Transactions proposed to be undertaken

Transactions in connection with the Issue

In connection with the completion of the Issue and prior to the Allotment of the Units in the Issue, the Trust (acting through the Trustee) will acquire an initial portfolio of Project SPVs, all of which are currently wholly owned by the Sponsor. The Trust (acting through the Trustee) intends to acquire 100% of the equity shares of the each of the Project SPVs on the Acquisition Date pursuant to the Share Purchase Agreements. On the Acquisition Date, the subordinated debt and unsecured loans provided by the Sponsor and certain of its Associates to the Project SPVs will also stand novated in favor of the Trust (acting through the Trustee) pursuant to the Debt Novation Agreements. As consideration for the acquisition of 100% of the equity shares of each Project SPVs and the novation of a portion of the subordinated debt and unsecured loans, the Trust will issue Units to the Sponsor on or around the Acquisition Date. For further details, see "*Background and*

Structure of the Trust – Formation Transactions" on page 89.

A portion of the Issue Proceeds are proposed to be utilized towards providing loans to (i) AETL, IRB WTL, KTL, SYTL and YATL for partial refinancing of the debt availed from senior lenders (banks and financial institutions) and towards funding of the total project cost; and (ii) CGTL, IRB HMTL, KGTL and UTL towards funding of the total project cost, pursuant to the Shareholder Debt Agreements and payment of partial consideration under certain Debt Novation Agreements. For further details, see "*Use of Proceeds – Details of Utilization of Issue Proceeds*" on page 60.

Other Related Party Transactions

In order to conduct its business, the Trust may enter into transactions with related parties in the future, which will be carried out in compliance with the above policy for dealing with related party transactions, applicable accounting standards and the provisions of the InvIT Regulations.

Pursuant to the terms of the Framework Agreement, the Sponsor has agreed that prior to the submission of a bid ("**Bid**") for (i) any new concession by the Sponsor and/or its affiliates involving the development or operation of roads and highways ("**New Projects**"); or (ii) over any extensions of the concession period of road projects held by the Sponsor and/or its affiliates (other than the Project SPVs) ("**Extension Projects**", and together with the New Projects, the "**Potential Projects**"), it will consult the Financial Investors in good faith and make best efforts to Bid for the Potential Project on behalf of the Trust on such terms as agreed between the Sponsor and the Financial Investors. If IRB and the Financial Investors are unable to reach an agreement in relation to the terms of the Bid within a reasonable period, the Sponsor will be free to submit a Bid subject to the terms of the Framework Agreement.

D. Potential Conflicts of Interest

We may be subject to potential conflicts of interest arising out of our relationship with our Sponsor and its respective Associates, and we will enter into transactions with related parties in the future. Details in relation to our policies for dealing with related party transactions are provided above. Also see "*Risk Factors – Risks Related to the Trust's Relationships with the Sponsor and the Investment Manager*" on page 32.

While the Sponsor operates various road infrastructure projects and accordingly, has interests in road infrastructure assets apart from those of the Project SPVs, none of these other road infrastructure assets compete or are likely to compete, directly or indirectly, with the activities of the Trust. The Sponsor confirms that it shall perform its duty in relation to the Trust independent of its related business.

VALUATION

The Valuer has undertaken a valuation of the Project SPVs which are proposed to be acquired by the Trust pursuant to the Formation Transactions. The Valuer has issued a valuation report dated February 13, 2020 (the "**Valuation Report**") which is included as "*Annexure A: Valuation Report*" on page A.

A. Summary of the Valuation and Valuation Methodology

Valuation methodology

The standard of value used in our analysis is fair value which is often defined as the price, in terms of cash or equivalent, that a buyer could reasonably be expected to pay, and a seller could reasonably be expected to accept, if the business were exposed for sale on the open market for a reasonable period of time, with both buyer and seller being in possession of the pertinent facts and neither being under any compulsion to act.

There are several commonly used and internationally accepted methods for determining the fair value of companies, which have been considered in the present case, to the extent relevant and applicable. Accordingly, we have carried out valuation of the SPVs as on 30 September 2019.

It should be understood that the valuation of any company or its assets is inherently subjective and is subject to certain uncertainties and contingencies, all of which are difficult to predict and are beyond our control. In performing our analysis, we made assumptions with respect to industry performance and general business and economic conditions, many of which are beyond the control of the SPVs. In addition, this valuation will fluctuate with changes in prevailing market conditions, the conditions and prospects, financial and otherwise, of the SPVs, and other factors which generally influence the valuation analysis.

The application of any particular method of valuation depends on the purpose for which the valuation is done. Although different values may exist for different purposes, it cannot be too strongly emphasized that a valuer can only arrive at one value for one purpose. Our choice of methodology of valuation has been arrived at using usual and conventional methodologies adopted for transactions of a similar nature and our reasonable judgment, in an independent and bona fide manner is based on our previous experience of assignments of a similar nature.

In respect of going concerns, certain valuation techniques have evolved over time and are commonly in vogue. These can be broadly categorised as follows:

Market Price (MP) Method

The market price of an equity share as quoted on a Stock Exchange is generally considered as the value of the equity shares of that company where such quotations are arising from the shares being regularly and freely traded in, subject to the element of speculative support that may be inbuilt in the value of the shares.

Equity shares of the SPVs are not listed on any stock exchange. Hence, this method has not been considered for the purpose of valuation.

Comparable Companies Market Multiple ("CCM") Method

Under this method, the value of the equity shares of a company/ business undertaking is arrived at by using multiples derived from valuations of comparable companies, as apparent through stock market valuations of listed companies. This valuation is based on the principle that market valuations, taking place between informed buyers and informed sellers, incorporate all factors relevant for the assessment of the value of the company.

Relevant multiples need to be chosen carefully and adjusted for differences between the circumstances. We have not considered this method in our valuation analysis in the absence of closely comparable listed companies having similar geographical locations, stage of growth, size, terms and profitability.

Comparable Companies Transaction Multiple ("CTM") Method

Under the CTM method, the value of the equity shares of a company/ business undertaking is arrived at by using the prices implied by reported transactions/ deals of comparable companies.

Relevant multiples need to be chosen carefully and adjusted for differences between the circumstances.

We have not been able to identify any comparable company to the SPVs for which a transaction has taken place in the last one year. We believe that the older transactions are not relevant for our valuation considering share price movements and changes in the macro-economic situation in India. Also, transactions multiples as times tend to be biased due to premium which may be embedded in the price for strategic benefits and synergies which an acquirer may perceive in the target. Accordingly, we have not applied the Comparable Transactions Multiple Method for the valuation of the SPVs.

Net Asset Value (NAV) Method

The asset-based valuation technique is based on the value of the underlying net assets of the business either on a book value basis or realisable value basis or replacement cost basis. The cost approach assumes that a prudent investor would pay no more for an entity than the amount for which he could replace or re-create it or an asset with similar utility. Under a going-concern premise, the cost approach usually is best suited for use in valuing asset-intensive companies, such as investment or real estate holding companies, or companies with unstable or unpredictable earnings.

In the present case of valuing the SPVs, we have not considered this method as the underlying earnings are fairly stable, and a going concern business plan has been provided by the Management.

Discounted Cash Flows (DCF) Method

Under the DCF method, the projected free cash flows to the firm are discounted at the weighted average cost of capital. The sum of the discounted value of such free cash flows is the value of the firm.

Using the DCF analysis involves determining the following:

Estimating future free cash flows:

Free cash flows are the cash flows expected to be generated by the company that is available to all providers of the company's capital — both debt and equity.

Appropriate discount rate to be applied to cash flows, i.e. the cost of capital:

This discount rate, which is applied to the free cash flows, should reflect the opportunity cost to all the capital providers (namely shareholders and creditors), weighted by their relative contribution to the total capital of the company. The opportunity cost to the capital provider equals the rate of return the capital provider expects to earn on other investments of equivalent risk.

The value so computed by discounting the cash flows to the firm is adjusted for net borrowings, surplus asset including investments, minority interests, equity instruments granted as part of the share-based payment, and other matters to arrive at an aggregate equity value of the company.

In the present case, we have been provided with the financial projections of all the 9 SPVs. As such, we have considered this method for valuing the SPVs.

Valuation Summary

The Enterprise Value ("EV") and equity value of the 9 SPVs as on the Valuation Date has been arrived as under:

Valuation summary of the SPVs

Sl. No	Name of Project	Short name of SPV	Enterprise value (INR Crores)
1	Goa Kundapur	IWTL	3,304.8
2	Solapur Yedeshi	SYTL	1,734.5
3	Yedeshi Aurangabad	YATL	3,094.7
4	Kaithal - Rajasthan	KTL	2,850.8
5	Agra Etawah	AETL	1,748.0
6	Udaipur Rajasthan Gujarat	UTL	1,501.8
7	Gulabpura Chittorgarh	CGTL	1,778.4
8	Kishangarh Gulabpura	KGTL	1,460.9
9	Hapur Moradabad	IHMTL	1,610.8
	Total EV	**Total**	**19,084.7**

Computation of fair value of equity of the portfolio of 9 SPVs

Valuation approach	Method	INR crores	Weight (%)
Income approach	DCF	19,084.7	100%
Market approach	Comparable companies method	n/a	n/a
Cost approach	NAV	n/a	n/a
Enterprise value for the combined portfolio of 9 SPVs (Note 1)		19,084.7	100%
Less: Debt (Note 2)		(6,842.1)	
Less: Deb-like-items		(584.6)	
Add: Cash and cash equivalents		28.1	
Add: Surplus assets		490.9	
Value of equity + quasi equity (Note 3)		**12,177.0**	

Notes

Note 1 - Management has represented that the liabilities (INR 1,396.5 crores) forming part of the other working capital shown on the balance sheets of the 9 SPVs as of the Valuation Date of 30 September 2019 has been settled to zero by infusion of sponsor debt before the transaction date. As such impact of change in one-time other working capital has not been considered in computation of the free cash flow and the enterprise valuation presented in the table above. Other working capital primarily comprises current tax assets, other financial liabilities, trade payables, provisions and other current liabilities.

Note 2 - Further, based on the 30 September 2019 financials, there are consolidated external borrowing of INR 9,842.1 crores across the 9 SPVs. There is additional debt in the form of subordinated debt (INR 2,974.5 crores) and sponsor debt (INR 1,269.8 crores) which Management has represented that they are quasi equity and hence have not been included in the debt but rather classified as equity. Management has further represented that out of the outstanding external debt, INR 3,000 crores shall be repaid on transaction date using sub-debt from the Trust. Accordingly, proforma debt is INR 6,842.1 crores. This has been reduced from the combined EV for the computation of combined equity value of the 9 SPVs.

Note 3: Management has represented that a total of INR 7,244.2 crores of debt is infused by Trust or sponsor or sponsor entities and hence Management has classified the same as quasi-equity. Break-up of the quasi equity is provided below.

Quasi-equity computation as represented by Management

Particulars	INR crores
Sub debt (from sponsor)	2,974.5
Sponsor debt	1,269.8
Sub debt from Trust to refinance existing external debt*	3,000.0
Total quasi-equity	**7,244.2**

**This refinancing will happen on the transaction date and has been included on proforma basis*

B. Frequency of Valuation

In accordance with the InvIT Regulations, after the Allotment of the Units pursuant to the Issue, a full valuation of the Trust Assets (including physical inspection of each of the Trust's infrastructure projects) shall be conducted by the Valuer not less than once every financial year, and that such a full valuation shall be conducted at the end of each financial year, within two months from the end of such financial year. An updated valuation report taking into account any material developments during the previous half-year is also required to be issued by the Valuer as part of the half-yearly report to be submitted by the Investment Manager to the Trustee and the Unitholders.

However, in case of any material development that may have an impact on the valuation of the Trust Assets, the Investment Manager will require the Valuer to undertake a full valuation of the infrastructure project under consideration, within not more than two months from the date of such event, and disclose the same to the Trustee within 15 days of such valuation.

C. Declaration of NAV

The Investment Manager will ensure that computation and declaration of NAV of the Trust is based on the valuation done by the Valuer, not later than 15 days from the date of valuation.

DISTRIBUTIONS

Distribution

Distributions shall be made by the Trust to the Unitholders, from time to time, in accordance with the Indenture of Trust and the InvIT Regulations. The Trustee shall make and shall ensure that the Investment Manager declares distributions on a quarterly basis after the Allotment of Units pursuant to the Issue. However, Unitholders should note that there is no assurance or guarantee that distributions will be made in any amount or at all.

The InvIT Regulations provide that not less than 90% of net distributable cash flows of each Project SPV are required to be distributed to the Trust in proportion of its holding in each of the Project SPVs subject to applicable provisions of the Companies Act. Further, not less than 90% of net distributable cash flows of the Trust shall be distributed to the Unitholders. Such distributions are required be declared and made not less than once every year and shall be made not later than fifteen days from the date of such declaration.

In the event distributions are not made within 15 days of declaration, the Investment Manager shall pay interest at the rate of 15% per annum until the distribution is made to the Unitholders. Such interest is not and will not be recoverable by the Investment Manager from the Trust in the form of fees or any other charges payable by the Trust to the Investment Manager.

Distributions shall be made *pro rata* to the total subscription amount of a Unitholder and in accordance with the provisions of the Indenture of Trust, the InvIT Regulations, the Distribution Policy, the Preliminary Placement Memorandum and the Placement Memorandum.

Since the establishment of the Trust, there have not been any distributions made on the Units. The Trust's distribution policy is to distribute as per the Trust's net distributable cash flows (the "**Net Distributable Cash Flows**"). The Trust's distribution policy is to distribute at least 90% of the Net Distributable Cash Flows of the Trust. Unless otheriwse decided by the Unitholders, the Trust shall declare 100% of the Net Distributable Cash Flows as distributions to the Unitholders.

See "*Risk Factors*" on page 14 for a description of factors that may adversely affect the ability of the Trust to make distributions to Unitholders.

Distribution Policy of the Trust

In accordance with the InvIT Regulations, and the applicable guidelines, as may be issued by SEBI from time to time:

a) Each Project SPV, and any other SPV that may be acquired by the Trust, shall distribute its respective Net Distributable Cash Flows to the Trust, subject to the applicable provisions under Companies Act or any other applicable law, not less than once every three months; and

b) The Trust shall distribute at least 90% of the Net Distributable Cash Flows to the Unitholders not less than once every three months. Unless otheriwse decided by the Unitholders, the Trust shall declare 100% of the Net Distributable Cash Flows as distributions to the Unitholders.

The indicative framework for calculation of net distributable cash flows, as provided herein below, is subject to change, including pursuant to any amendments to the InvIT Regulations or by way of any circulars or guidelines issued by SEBI in this regard:

A. *Indicative Calculation of Net Distributable Cash Flows at a Standalone Project SPV Level*

S. No.	Description
1.	**Profit after tax as per profit and loss account (standalone) (A)**
2.	**Add:** Depreciation and amortisation as per profit and loss account
3.	**Add/less:** Loss/gain on sale of infrastructure assets
4.	**Add:** Proceeds from sale of infrastructure assets adjusted for the following: • related debts settled or due to be settled from sale proceeds

	• directly attributable transaction costs • proceeds reinvested or planned to be reinvested in accordance with Regulation 18 (7) (a) of the InvIT Regulations
5.	**Add:** Proceeds from sale of infrastructure assets not distributed pursuant to an earlier plan to re-invest, if such proceeds are not intended to be invested subsequently net of any profit/(loss) recognized in the P&L account
6.	**Add/less:** Any other item of non-cash expense / non cash income (net of actual cash flows for these items), if deemed necessary by the Investment Manager, including but not limited to: • any decrease / increase in carrying amount of an asset or of a liability recognised in profit and loss • account on measurement of the asset or the liability at fair value; • interest cost as per effective interest rate method; • deferred tax; • reserve for major maintenance to the extent payments are not due in the next period; and • any other items charged / credited to the P&L account which do not involve corresponding cash flows
7.	**Less:** Repayment of external debt (principal) / redeemable preference shares / debentures
8.	**Less:** Any premium / negative grant payments to NHAI
9.	**Less:** Capital expenditure towards the project
10.	**Total Adjustments (B)**
11.	**Net Distributable Cash Flows (C)=(A+B)**

A minimum of 90% of the net distributable cash flows arrived at in (C) above shall be distributed by each Project SPV and any other SPVs that may be acquired in the future, to the Trust, subject to the applicable provisions of Companies Act/LLP Act or any other applicable laws, net of applicable taxes, if any, proportionate to the Trust's equity shareholding in such SPV.

B. *Indicative Calculation of Net Distributable Cash Flows at the Standalone Trust Level*

S. No.	Description
1.	Cash flows received from the Identified SPVs in the form of interest
2.	Cash flows received from the Identified SPVs in the form of dividend
3.	Any other income accruing at the Trust level and not captured above, including but not limited to interest / return on surplus cash invested by the Trust
4.	Cash flows received from the Identified SPVs towards the repayment of the debt issued to the Identified SPVs by the Trust
5.	Proceeds from the Identified SPVs for any capital reduction by way of buy back etc., subject to applicable laws
6.	Proceeds from sale of assets of the Identified SPVs not distributed pursuant to an earlier plan to re-invest, or if such proceeds are not intended to be invested subsequently
7.	**Total cash inflow at the Trust level (A)**
8.	**Less:** Any payment of fees, interest and expense incurred at the Trust level, including but not limited to the fees of the Investment Manager
9.	**Less:** Capital expenditure towards the Identified SPVs
10.	**Less:** Costs/retention associated with sale of assets of the project SPVs: • related debts settled or due to be settled from sale proceeds of Identified SPVs • transaction costs paid on sale of the assets of the Identified SPVs
11.	**Less:** Proceeds reinvested or planned to be reinvested in accordance with Regulation 18(7)(a) of the InvIT Regulations
12.	**Less:** Repayment of external debt at the Trust level
13.	**Less:** Income tax (if applicable) at the standalone Trust Level (including capital gains taxes on sale of assets / share in Identified SPVs / other investments)
14.	**Less:** Contribution towards maintaining minimum cash balance of INR 150,000,000 (Rupees One Hundred and Fifty Million) and/or such other reserve/minimum cash balance as agreed by Unitholders
15.	**Total cash outflows / retention at the Trust level (B)**
16.	**Net Distributable Cash Flows (C)=(A+B)**

A minimum of 90% of the Net Distributable Cash Flows arrived at in (C) above shall be distributed by the Trust to the Unitholders, subject to the applicable provisions of InvIT Regulations, net of applicable taxes, if any.

Distribution on Disposition

Subject to the InvIT Regulations, if (i) any asset is sold by the Trust or (ii) if the equity shares or interest in the Trust Assets are sold by the Trust then (a) if the Trust proposes to re-invest the sale proceeds into another

infrastructure asset, it shall not be required to distribute any sale proceeds to the Trust or the Unitholders; but (b) if the Trust proposes not to invest the sales proceeds into any other infrastructure Assets, then such sales proceeds shall be regarded as Net Distributable Cash Flows and the Trust shall be required to distribute such proceeds in accordance with the Distribution Policy.

Distribution on Dissolution

In the event of dissolution or winding up of the Trust, all of the Trust Assets or the proceeds therefrom shall be distributed or used as follows and in the following order of priority:

a) First, towards the payment of the debts and liabilities of the Trust, including without limitation any fees, any amounts due to the Investment Manager, or the Project Manager and the expenses of liquidation;

b) Second, towards the setting up of any reserves which the Trustee, in consultation with the Investment Manager, or the authority in-charge of the dissolution of the Trust may deem reasonably necessary for any contingent or unforeseen liabilities or obligations of the Trust; and

c) Third, towards the Unitholders in accordance with the terms of the Distribution Policy, the Indenture of Trust, and applicable law.

In-specie Distribution

Subject to the provisions of applicable law and the Trust Documents, the Trustee, in consultation with the Investment Manager, may anytime during the life of the Trust make *in-specie* distributions of the Trust Assets.

RIGHTS OF UNITHOLDERS

The rights and interests of the Unitholders are included in this Preliminary Placement Memorandum and the InvIT Regulations. Under the the Indenture of Trust and the Investment Management Agreement, these rights and interests are safeguarded by the Trustee and the Investment Manager respectively. Any rights and interests of Unitholders as specified in this Preliminary Placement Memorandum would be deemed to be amended to the extent of any amendment to the InvIT Regulations.

Please note that nothing contained in this Preliminary Placement Memorandum or the Placement Memorandum will relieve any party of its rights or obligations under the Framework Agreement.

Beneficial Interest

Each Unit represents an undivided beneficial interest in the Trust. A Unitholder has no equitable or proprietary interest in the Trust Assets and is not entitled to transfer of the Trust Assets (or any part thereof) or any interest in the Trust Assets (or any part thereof). A Unitholder's right is limited to the right to require due administration of the Trust in accordance with the provisions of the Indenture of Trust and the Investment Management Agreement.

Ranking

No Unitholder of the Trust shall enjoy superior voting or any other rights over another Unitholder. Further, the Units shall not have multiple classes, except any subordinate Units that may be issued only to the Sponsor and its Associates, where such subordinate units carry only inferior voting or any other rights compared to other Units in the future, in accordance with Regulation 4(2)(h) of the InvIT Regulations.

Distribution

The Trustee shall ensure that the Investment Manager makes timely declaration of distributions to the Unitholders in accordance with the InvIT Regulations. If the distributions are not made within 15 days of declaration, then the Investment Manager shall be liable to pay interest to the Unitholders at the rate of 15% per annum till the distribution is made. The Investment Manager shall maintain records of the distributions declared and made to the Unitholders. For details, see "*Distributions*" on page 231.

Rights of Unitholders

Subject to the provisions of the InvIT Regulations, the Indenture of Trust, and applicable rules, regulations and guidelines, the rights of the Unitholders include:

a) right to receive income or distributions with respect to the Units held in accordance with the InvIT Regulations and in the manner set forth in this Preliminary Placement Document and the Placement Document;

b) right to attend the annual general meeting and other meetings of the Unitholders of the Trust;

c) right to vote upon any matters/resolutions proposed in relation to the Trust;

d) right to receive periodic information having a bearing on the operation or performance of the Trust in accordance with the InvIT Regulations; and

e) right to apply to the Trustee to take up certain issues at meetings for Unitholders approval;

Pre-emptive rights: In addition, the Investment Manager (on behalf of the Trust) will ensure that Unitholders will have the right to subscribe to their respective proportionate share of the proposed issue of Units at the same price to maintain their respective proportionate ownership in the Trust if the Trust proposes to issue any new units after the completion of the Issue to any person (except as contemplated in any business plan). The Investment Manager and the Trustee will also ensure that Unitholders exercise their rights in relation to Reserved Matters and Events of Default.

For details of Reserved Matters, see "*Corporate Governance*" and " – *Approval of Unitholders*" on pages 134 and 237, respectively. For details of Event of Default, see " – *Arrangements between the Sponsor and the Financial Investors*" on page 235.

The Trustee shall hold the Trust Assets in the name of the Trust for the benefit of the Unitholders in accordance with the Indenture of Trust and the InvIT Regulations and shall oversee the activities of the Investment Manager in the interest of the Unitholders. All related party transactions shall be on an arms' length basis in accordance with the relevant accounting standards, and in the best interests of the Unitholders. Further, the Trustee shall maintain records relating to the notices and agenda sent to the Unitholders for meetings held and the disclosures made to the Unitholders.

The rights given by the Sponsor to the Financial Investors will be made available to any new Unitholder that acquires Units of the Trust.

Arrangements between the Sponsor and the Financial Investors

In addition to the rights set out above, pursuant to the Framework Agreement, the Sponsor and the Financial Investors have agreed to certain *inter-se* arrangements in relation to their Unitholding in the Trust on a post-Issue basis. Key terms of such arrangements are set out below:

Put option: The Financial Investors have the right to require the Sponsor to purchase the Units held by them in the Trust upon the occurrence of certain events within the period of 12 months from the date of Allotment.

Right of first offer: The Financial Investors have a right of first offer over Units proposed to be transferred by the Sponsor to any person other than the subsidiaries of the Sponsor.

Tag along right: If the Sponsor proposes to transfer the Units held by it to a third party buyer (which is not a subsidiary of the Sponsor), the Financial Investors have a right to require such buyer to purchase from the Financial Investors, (i) the entire Unitholding of the Financial Investors, if the Sponsor proposes to transfer in excess of 20% of the total outstanding Units or (ii) up to such percentage of Units held by the Financial Investors that are *pro rata* to the percentage of Units proposed to be transferred by the Sponsor if the Sponsor proposes to transfer 20% or less of the total outstanding Units.

Reserved Matters: See *" – Approval of Unitholders*" below.

Encumbrances on the Sponsor's Units: The Sponsor is restricted from creating any encumbrances on its Units until the expiry of five years from the date of Allotment in the Issue. However, the Sponsor can pledge up to a certain percentage of its Units in favor of permitted lenders subject to certain conditions as agreed between the Sponsor and the Financial Investors.

Transfer of Units by the Sponsor: The Sponsor will only sell its Units to a person that is willing to be bound by the existing arrangements between Sponsor and the Financial Investors.

Event of Default and Consequences

The Financial Investors have the right to call an event of default ("**Event of Default**") under the Framework Agreement under certain circumstances.

If an Event of Default is declared by the Financial Investors:

- *Credit of distributions into an escrow account controlled by the Investment Manager*: The Sponsor and the Investors will cause any distributions that are to be made to them to be credited into the escrow account. The Trustee and the Investment Manager will ensure compliance with obligations in relation to distributions under Regulation 18(6) of the InvIT Regulations.

- *Operations of the Trust*: Other than operating in the ordinary course of business, no action shall be taken by any Manager Group Member in relation to the operations and business of the Trust without the unanimous consent of the Unitholders. However, if the InvIT Regulations specify a different threshold for the approval by Unitholders of such matter, the threshold specified in the InvIT Regulations will be followed instead of the unanimous consent requirement. If the Financial Investors vote against a resolution on any such matter

for which a different threshold is specified under the InvIT Regulations, the Sponsor has agreed that it will also vote against the resolution on such matter.

The Sponsor may elect to dispute the event of default notice within a specified time period. If the Sponsor does not dispute such notice or the dispute is decided in favour of the Financial Investors:

- *Default call option and default put option*: The Financial Investors will have the right to require (i) the Sponsor to sell its Unitholding to them or (ii) the Sponsor to purchase the Investors' Unitholding in accordance with the conditions specified in the Framework Agreement.

- *Right to cause the Sponsor to take actions*: The Financial Investors will have the right to require the Sponsor to require the Trustee to call for a meeting of the Unitholders for change of the investment manager and the project manager. The Sponsor will vote in favor of the appointment of any entity proposed by the Financial Investors as the new investment manager of the Trust as per the InvIT Regulations. The Sponsor and its affiliates will forfeit all their rights under the transaction documents. This will not impact any responsibilities of the Sponsor under the InvIT Regulations.

- *Resolution of dispute relating to an Event of Default*: Upon the resolution of the dispute relating to the event of default, the distributions in the escrow account will immediately be released to the relevant party, i.e., Sponsor and Financial Investors. The party (against whom the dispute has been resolved unfavorably) shall be required to pay interest to the other party on the distributions credited to the escrow account for the delayed period.

Meetings of Unitholders

Subject to the provisions of the IM SHA, the Investment Manager shall convene meetings of the Unitholders in accordance with Regulation 22 of the InvIT Regulations, including at the written request of the Unitholders as specified therein, and maintain records pertaining to the meetings in accordance with Regulation 26 of the InvIT Regulations.

A Unitholder may be present at and may vote at any Unitholders' meeting in person, by proxy or attorney or by a duly authorized representative, and any such proxy, attorney or representative shall be counted for the purposes of constituting a quorum, to the extent permissible under applicable law. Voting on all matters to be considered at a Unitholders meeting shall be by poll, in proportion of the Units held by each Unitholder. Each Unit shall carry one vote. The Unitholders shall be entitled to participate, be counted towards quorum and vote in Unitholders' meetings by e-voting, postal ballot or any other means, subject to applicable law.

Approval of Unitholders

The Investment Manager and the Trustee are required to ensure that no resolution is passed in respect of any of the Reserved Matters without the approval of Unitholders such that the votes cast by Unitholders so entitled and voting in favor of the resolution are not less than one-and-a-half times the votes cast against such resolution at a validly convened Unitholders meeting (i.e., Unitholders holding at least 60% of the Unitholding of the Trust), provided that if the InvIT Regulations specify a different threshold for approval by Unitholders of any Reserved Matter, the threshold specified in the InvIT Regulations will prevail. If the Financial Investors vote against a resolution on a Reserved Matter for which the InvIT Regulations specify an approval threshold below 60%, the Sponsor has agreed that it will also vote against the resolution on such matter.

After the Allotment of Units pursuant to the Issue, where any act under any Trust Document requires a 'consultation with the Trustee' or involves the exercise of powers by the Trustee which have not or cannot be delegated to the Investment Manager, then the performance of such act shall be deemed to include the obligation to obtain the approval of the Unitholders such that the votes cast by Unitholders so entitled and voting in favor of the resolution are not less than one-and-a-half times the votes cast against such resolution.

The limits in relation to the aggregate consolidated borrowings and deferred payments of the Trust and the Project SPVs, net of cash and cash equivalents, shall be as approved by at least 60% of the Unitholders from time to time. Also see *"Leverage – Leverage Policy*" on page 223 for details of the leverage policy of the Trust.

Reserved Matters

Certain Reserved Matters relating to the operations of the Trust, the Investment Manager, the Project SPVs and any other Manager Group Members which would require the approval of the board of directors, shareholders and Unitholders of the relevant entities, as applicable, have been identified and agreed under the Framework Agreement and the IM SHA. Such Reserved Matters include, *inter-alia*, matters in relation to:

- changes to the capital structure of any Manager Group Member;
- amendments to the charter documents of any Manager Group Member;
- listing of any Manager Group Member;
- approval of annual budgets and business plans;
- acquisition or divestment of road assets by the Trust;
- replacement or removal of certain managerial personnel;
- distributions in deviation from the Distribution Policy;
- indebtedness and encumbrances of assets of any Manager Group Member;
- amendment or termination of material contracts;
- major transactions;
- accounting and tax matters; and
- litigation and delegation of authority.

Matters for Approval under the InvIT Regulations

Under the InvIT Regulations, with respect to any matter requiring approval of the Unitholders:

a) a resolution shall be considered as passed when the votes cast by Unitholders, so entitled and voting, in favor of the resolution exceed a certain percentage (as specified in InvIT Regulations) of votes cast against;

b) the voting may also be done by postal ballot or electronic mode;

c) a notice of not less than 21 days (or such other time period specified under the InvIT Regulations) shall be provided to the Unitholders; and

d) voting by any person who is a related party in such transaction as well as the voting by any Associates of such person(s), shall not be considered on the specific issue.

The Investment Manager shall be responsible for all the activities relating to conducting of a meeting of the Unitholders, subject to the Trustee's oversight. However, in accordance with Regulation 22(2) of the InvIT Regulations, the Trustee shall convene and handle all activities relating to the conduct of the meetings in respect of issues relating to the Investment Manager, such as change, removal or change in control of the Investment Manager. Further, in respect of issues pertaining to the Trustee, including any change in the Trustee, the Trustee shall not be involved in any manner in the conduct of the meetings of the Unitholders.

Under the InvIT Regulations, approval from the Unitholders shall be required where the votes cast in favor of the resolution shall be more than the votes cast against the resolution, with respect to the resolutions of the Unitholders on, *inter-alia*, the following matters:

a) any approval from the unitholders required in terms of Regulation 18 (Investment Conditions and Dividend Policy), Regulation 19 (Related Party Transactions), and Regulation 21 (Valuation of Assets) of the InvIT Regulations, to the extent applicable;

b) any transaction, other than borrowing, the value of which is equal to or greater than the threshold prescribed under the InvIT Regulations (currently 25% of the Trust Assets);

c) any issue of Units after the initial offer by the Trust, in whatever form, other than any issue of Units which is considered by the SEBI under Regulation 22(5) of the InvIT Regulations;

d) increasing period for compliance with investment conditions to one year in accordance with Regulation 18(5)(c) of the InvIT Regulations;

e) any issue, which in the ordinary course of business, in the opinion of the Sponsor, the Trustee or the Investment Manager, is material and requires approval of the Unitholders;

f) any issue for which the SEBI requires the approval of the Unitholders under Regulation 22(4) of the InvIT Regulations; and

g) any issue taken up at an annual meeting of the Unitholders under Regulation 22(3) of the InvIT Regulations, which requires approval of the Unitholders other than as specified in Regulation 22(6) of the InvIT Regulations.

Under the InvIT Regulations, approval from the Unitholders shall be required where the votes cast in favor of the resolution shall not be less than one and a half times the votes cast against the resolution, with respect to the resolutions of the Unitholders on, *inter-alia*, the following matters:

a) any change in the Investment Manager, including removal or change in control of the Investment Manager;

b) any material change in the investment strategy of the Trust or its management fees;

c) any issue, not in the ordinary course of business, which in the opinion of the Sponsor, the Investment Manager or the Trustee, requires approval of the Unitholders. In case of any failure to obtain an approval in relation to such an issue, the Sponsor or the Investment Manager or the Trustee, as the case may be, shall provide an exit option to the Unitholder to the extent and in the manner specified by the SEBI;

d) any issue for which SEBI requires the approval of the Unitholders under Regulation 22(5) of the InvIT Regulations;

e) any issue taken up at the request of the Unitholders, including:

   i) removal of the Investment Manager, and the appointment of another investment manager to the Trust;

   ii) removal of the Auditor, and appointment of another auditor with respect to the Trust;

   iii) removal of the Valuer, and appointment of another valuer with respect to the Trust;

   iv) any issue which the Unitholders have sufficient reason to believe is detrimental to their interest; or

   v) a change in the Trustee if the Unitholders have sufficient reason to believe that the acts of the Trustee are detrimental to their interests.

In relation to any issue taken up at the request of the Unitholders as described above, the Trustee will require the Investment Manager to place the issue for voting in the manner specified in the InvIT Regulations on receipt of such applications.

Redressal of Grievances

The Investment Manager shall ensure adequate and timely redressal of all Unitholders' grievances pertaining to the activities of the Trust, and the Trustee shall periodically review the status of Unitholders' complaints and their redressal undertaken by the Investment Manager. The Investment Manager shall maintain records of the Unitholders' grievances and the actions taken thereon, including copies of correspondences made with the Unitholders.

Limitation of the Liability of the Unitholders

The liability of each Unitholder towards the payment of any amount (that may arise in relation to the Trust including any taxes, duties, fines, levies, liabilities, costs or expenses) shall be limited only to the extent of the Capital Contribution of such Unitholder and after such capital contribution shall have been paid in full by the Unitholder, the Unitholder shall not be obligated to make any further payments.

Periodic Information and Disclosures

The Investment Manager shall submit an annual report, half-yearly report, and valuation report to the Trustee and all Unitholders, electronically or by physical copies.

The Investment Manager shall disclose to the Trustee and the Unitholders any information having bearing on the operation or performance of the Trust which includes, but is not restricted to the following:

a) acquisition or disposal of any projects, directly or through a holdco or SPV, the value of which exceeds 5% of the value of the Trust Assets;

b) additonal issue of Units by the Trust;

c) details of any credit rating obtained by the Trust and any change in such rating;

d) any issue which requires the approval of the Unitholders;

e) any legal proceedings which may have significant bearing on the functioning of the Trust;

f) notices and results of meetings of the Unitholders;

g) any instance of non-compliance with the InvIT Regulations, including any breach of limits specified under the InvIT Regulations; and

h) any material issue that, in the opinion of the Investment Manager or Trustee, needs to be disclosed to the Unitholders.

The Investment Manager (on behalf of the Trust) shall submit such information to the Unitholders on a periodic basis as may be required under the InvIT Regulations and applicable law. Further, the Investment Manager (on behalf of the Trust) shall disclose to the Unitholders and SEBI, all such information, in the manner as may be specified by SEBI. For details of the responsibilities of the Investment Manager in relation to making periodic disclosures with respect to the valuation of the Trust Assets and the computation and declaration of NAV of the Trust, see "*Valuation*" on page 228.

SECTION V – PARTIES TO THE TRUST

THE SPONSOR AND PROJECT MANAGER

The Sponsor of the Trust is IRB Infrastructure Developers Limited. The Sponsor has settled the Trust pursuant to the Indenture of Trust dated August 27, 2019 and has appointed the Trustee in accordance with the provisions of the InvIT Regulations.

The Sponsor has also been appointed as the Project Manager pursuant to Project Implementation Agreements dated February 3, 2020.

The details of the Sponsor and Project Manager are as follows:

A. Details of the Sponsor and Project Manager

a) **Name:** IRB Infrastructure Developers Limited;

b) **Registered Office:** Off No-11th Floor/1101, Technology Street, Hill Side Avenue, Powai, Mumbai 400 076, Maharashtra, India;

c) **Correspondence Address:** Off No-11th Floor/1101, Technology Street, Hill Side Avenue, Powai, Mumbai 400 076, Maharashtra, India;

d) **Telephone Number:** +91 22 6640 4220;

e) **Website:** www.irb.co.in

f) **E-mail:** info@irb.co.in

B. Details of the Contact Person of the Sponsor

a) **Name:** Mr. Mehul Patel;

b) **Telephone Number:** +91 22 6640 4220; and

c) **E-mail:** mehul.patel@irb.co.in

C. Background and Past Experience of the Sponsor and Project Manager

The Sponsor is one of the largest infrastructure development and construction companies in India in terms of net worth in the roads and highways sector according to the NHAI's annual prequalification for public private partnerships in national highway projects report for 2016. Excluding the toll-road assets being transferred by the Sponsor pursuant to the Formation Transactions, as at September 30, 2019, the Sponsor had four road projects of which three were operational and one was under-construction.

The Sponsor will also act as the Project Manager. The Sponsor's BOT project portfolio includes the Ahmedabad Vadodara section of NH 8 and the Ahmedabad Vadodara Expressway, the Pune-Nashik section of NH 9, Thane-Ghodbunder road and the Padra to Vadodara Section of Vadodara-Mumbai Expressway. The Sponsor has experience in developing road and highway infrastructure and has received various industry awards and recognitions.

The Sponsor/Project Manager has experience in the execution of construction work for roads, highways, and other relevant structures and had a track record of constructing over 12,500 Lane Kilometres of roads and highways as of March 31, 2019.

The Sponsor is listed on the Stock Exchanges with a market capitalization of ₹38.12 billion as at February 7, 2020. As at March 31, 2019, the Sponsor has a consolidated networth of ₹63.15 billion. The Sponsor recorded a consolidated turnover of ₹69.03 billion in the Financial Year 2019 with a profit after tax of ₹8,499.65 million.

In accordance with the eligibility criteria specified under the InvIT Regulations, the Sponsor had a net worth of ₹26.33 billion as on March 31, 2019, on a standalone basis. As on March 31, 2019, the Sponsor had a consolidated net worth of ₹ 63.15 billion. The Sponsor has an experience of more than 20 years as a developer in the infrastructure sector and has completed more than 18 projects.

Further, neither the Sponsor/Project Manager, nor its promoters or directors:

a) is debarred from accessing the securities market by the SEBI;

b) is a promoter, director or person in control of any other company or a sponsor, investment manager or trustee of any other infrastructure investment trust or infrastructure investment trust which is debarred from accessing the capital market under any order or directions made by the SEBI; or

c) is in the list of the wilful defaulters published by the RBI.

D. Details of the Holding or the Proposed Holding by Sponsor in the Trust

The Sponsor proposes to hold 51% of the units of the Trust on a post-Issue basis immediately after the Issue.

E. Summary of the Consolidated Financial Statements of the Sponsor

For a summary of the financial statements of the Sponsor, as derived from the consolidated financial statements of the Sponsor, prepared in accordance with Ind AS and the Companies Act, as of and for the Financial Years 2019, 2018 and 2017, see "*Summary Financial Information*" on page 40.

F. Functions, Duties and Responsibilities of the Project Manager

The Project Manager has agreed to provide professional services to carry out engineering, procurement, construction, operations and maintenance of the Project SPVs, including making arrangements for the appropriate maintenance, either directly or through sub-contractors, in accordance with the terms and conditions of the relevant project agreements, the InvIT Regulations, other applicable law and good industry practice (the "**Works**").

Under the terms of the Project Implementation Agreements, the Project Manager is required to, *inter-alia*, provide the following Works:

(a) engineering, procurement and construction works in relation to the project as required under the project agreements;
(b) operations and maintenance for the project as stipulated under the project agreements, including tolling, which shall include procuring, operating and maintaining the toll management system at its toll plazas, including employing staff for toll collection, security arrangements at toll plazas and printing of toll tickets;
(c) any and all activities required to be performed by the Project SPV pursuant to the project agreements or pursuant to any communication from NHAI or any other governmental authority, including in relation to shifting of utilities, associated roads, felling of trees and related works with respect to the project site or any work to be undertaken pursuant to a change of scope order based on a determination of change of scope by the NHAI under the relevant concession agreement; and
(d) other administrative services such as software usage support services, information technology support services, support services for legal matters, support services for accounting and tax matters, support services for general administration and investor relations, and support services and payroll and related services.

The Project Manager may engage duly qualified third-party service providers including but not limited to architects, surveyors and technical consultants for provision of the Works. If more than 50% of the Works are sub-contracted to any person other than Modern Road Makers Private Limited or any other affiliate of the Project Manager, then such sub-contract will be subject to prior approval of the Investment Manager (as confirmed by Unitholders of the Trust).

The Project Manager will inform the Investment Manager about any transactions between the Project Manager

and its Associates which may involve a conflict of interest and where the Project Manager has advised that there may be a conflict of interest, and will obtain confirmation from the practicing chartered accountant or the valuer, as applicable, that such transaction is on an arms' length basis.

The Project Manager will ensure that it provides a compliance certificate to the Investment Manager and the Trustee on a quarterly basis or such other intervals as required in accordance with the InvIT Regulations with a copy to the Financial Investors.

The Project Manager has confirmed that it will provide the Works to the Project SPVs on a most preferred basis and if the Project Manager offers same or similar works to any person on better terms than offered to a Project SPV, then the Project SPV will be automatically entitled to the such better terms, and the Project Manager will ensure that the such better terms are forthwith made applicable to the Project SPV.

The Project Manager has also agreed to indemnify the Investment Manager, the Project SPVs and their respective officers, directors, shareholders, partners, members and employees subject to the terms, conditions and limitations specified in the Project Implementation Agreements.

The Project Implementation Agreements are valid for an initial period of 10 years. The Project Implementation Agreements may be terminated by the Investment Manager, *inter-alia*, with prior written notice of a specified period, provided that such right shall not be exercisable by the Investment Manager until the later of (i) the completion of the first major maintenance cycle in relation to the first Project SPV that undergoes a major maintenance cycle; or (ii) the commencement of the fifth year of the initial term. The above right of termination shall be exercisable by the Investment Manager collectively in relation to all the Project Implementation Agreements and not selectively in relation to one or more (but less than all) Project Implementation Agreements, provided that selective termination in respect of a Project SPV shall be permitted if (a) the Project Implementation is terminated pursuant to the other provisions of the agreement; or (b) if the Identified SPV is undergoing a major maintenance or the construction period or any EPC Work, in which case, unless otherwise required by the Investment Manager for such Project SPV, the other Project Implementation Agreements shall stand terminated. The Investment Manager shall obtain approvals from the Unitholders and any governmental authority as may be applicable, in relation to such termination.

The Investment Manager also has the right to terminate the Project Implementation Agreements by issuing a notice of termination in case of certain events, including breach of the agreement by the Project Manager and the breach is not remedied within 60 days, occurrence of an Event of Default under the Framework Agreement, change in control of the Project Manager, occurrence of an insolvency event in relation to the Project Manager or a force majeure event continues for a period of 180 days or more within a continuous period of 365 days.

THE INVESTMENT MANAGER

MMK Toll Road Private Limited is the Investment Manager of the Trust, and has been designated as such pursuant to the Investment Management Agreement. The Investment Manager is responsible for making investment decisions with respect to the underlying assets or projects of the Trust, including any further investment or divestment of its assets, in accordance with the InvIT Regulations and the Investment Management Agreement.

The details of the Invesment Manager are as follows:

A. Details of the Investment Manager

a) **Name:** MMK Toll Road Private Limited;

b) **Registered Office:** Off No-11th Floor/1101, Technology Street, Hill Side Avenue, Powai, Mumbai 400 076, Maharashtra, India;

c) **Correspondence Address:** Off No-11th Floor/1101, Technology Street, Hill Side Avenue, Powai, Mumbai 400 076, Maharashtra, India;

d) **Telephone Number:** +91 22 6733 6400; and

e) **E-mail:** shilpa.todankar@irb.co.in

B. Details of the Contact Person of the Investment Manager

a) **Name:** Ms. Shilpa Todankar;

b) **Telephone Number:** +91 22 6733 6400; and

c) **Email:** shilpa.todankar@irb.co.in

C. Background and Past Experience of the Investment Manager

MMK Toll Road Private Limited ("**Investment Manager**") was incorporated on April 12, 2002. The Investment Manager has experience in operating a road BOT project for a period of 13 years and in developing, operating and maintaining toll roads in the infrastructure sector.

The Investment Manager has executed the BOT project of improving and strengthening the Mohol – Kurul – Kamti – Mandrup Road in Solapur District (length: 33 Km). The cost of the project was ₹180 million, which was financed by equity of ₹70.00 million and RTL of ₹110.00 million. The commercial operations date of the project was in May 2002 and the concession period was 13 years which expired in May 2015.

Being part of the IRB group, the Investment Manager has the infrastructure for acting as the Investment Manager for managing the assets and investments of the Trust.

The net worth of the Investment Manager as on July 31, 2019 stood at ₹100.00 million on a standalone basis. The key managerial personnel of the Investment Manager have over five years of experience each, in providing advisory services to a a developer in the infrastructure sector. One such key managerial personnel has experience of over five years in the roads sector which is the relevant sub-sector in which the Trust primarily proposes to invest.

The Investment Manager confirms that it has, and undertakes to ensure that it will at all times maintain, adequate infrastructure, personnel and resources to perform its functions, duties and responsibilities with respect to the management of the Trust, in accordance with the InvIT Regulations, the Investment Management Agreement and other applicable law.

Further, neither the Investment Manager, nor its promoters or directors:

a) is debarred from accessing the securities market by the SEBI;

b) is a promoter, director or person in control of any other company or a sponsor, investment manager or trustee of any other infrastructure investment trust or infrastructure investment trust which is debarred from accessing the capital market under any order or directions made by the SEBI; or

c) is in the list of the wilful defaulters published by the RBI.

The Investment Manager will conduct the operations of the Trust from its offices in Mumbai and New Delhi. The Investment Manager is currently a wholly-owned subsidiary of the Sponsor. On or about the date of Allotment, 49% of the equity share capital of the Investment Manager will be transferred by the Sponsor to Croxley. For details, see "*Corporate Governance*" on page 134.

D. Brief Profiles of the Investment Manager's Directors

a) **Mr. Naresh Kumar Taneja**

Mr. Naresh Kumar Taneja, 65 years, joined the IRB group in October 2006. He has a masters' degree in psychology and in defence studies. He is also a graduate of Defence Services Staff College, Wellington. He is a certified Master Coach from Behavioral Coaching Institute, USA, certified independent director and a certified Global HR Professional by HRCI of USA. Mr. Taneja has more than 40 years of experience.

b) **Mrs. Arati Nikhil Taskar**

Mrs. Arati Nikhil Taskar, 45 years, joined the IRB group on February 15, 1999. She has completed a bachelors' degree in commerce from Mumbai University in the year 1994 and started her career in finance. She has a total work experience of 23 years with 20 years' experience in road construction companies.

c) **Mr. Darshan Sangurdekar**

Mr. Darshan Sangurdekar, 42 years, is a chartered accountant and an independent director of the Investment Manager. Mr. Sangurdekar has worked with Wipro Water (a division of Wipro Enterprises Limited) as Manager Commercial Finance. He has experience in field of tax and finance. In 2013, he set up a firm called M/s. D. S. Sangurdekar & Co, Chartered Accountants. In 2019, he merged his proprietorship firm with two other firms and formed a partnership firm in the name of M/s HDO & Associates.

d) **Mr. Omprakash Singh**

Mr. Omprakash Singh, 43 years, is an independent director of the Investment Manager. Mr. Singh has a post-graduate degree in commerce from Mumbai University. He is also an associate member of the Institute of Chartered Accountants of India and has experience in the field of taxation. In 2007, Mr. Singh set up a firm called O.P. Singh & Co. In 2019, he merged his proprietorship firm with two other firms and formed a partnership firm in the name of M/s HDO & Associates.

The directors are not directors or members of the governing board of an investment manager of another infrastructure investment trust.

The composition of the board of directors of the Investment Manager will change on or about Allotment. For details, see "*Corporate Governance*" on page 134.

E. Brief Profiles of the Investment Manager's Key Personnel

a) **Mr. Dhananjay K. Joshi, Chief Executive Officer**

Mr. Dhananjay K. Joshi, 46 years, joined the IRB group in November 1998. He has been appointed as the Chief Executive Officer of MMK Toll Road Private Limited with effect from February 10, 2020. He holds a bachelor's degree in commerce and a bachelor's degree in law from

the University of Mumbai. He also holds a post-graduate diploma in business management and a masters in business administration from Shivaji University, Kolhapur. He has been a part of the IRB Group for over 21 years.

b) **Mr. Jitendra Sharma, Chief Financial Officer**

Mr. Jitendra Sharma, 45 years, is a chartered accountant certified by the Institute of Chartered Accountants of India. He holds a master of commerce degree from the University of Mumbai. Prior to joining the Investment Manager, he was associated with Super-Max Personal Care Private Limited, Tata Housing Development Company Limited, Clariant Chemicals (India) Limited and CEAT Limited.

c) **Ms. Shilpa C. Todankar, General Manager (Accounts) and Compliance Officer**

Ms. Shilpa C. Todankar, 36 years, joined the IRB group in September 2009. She is a member of the Institute of Chartered Accountants of India since 2011. She holds a diploma in Information System Audit from Institute of Chartered Accountants of India. She has approximately 10 years of experience in the fields of accountancy, audit and taxation in the IRB group.

d) **Mr. Vivek R. Jadhav, Manager (Accounts)**

Mr. Vivek R. Jadhav, 37 years, joined the IRB group in August 2014. He is a chartered accountant certified by the Institute of Chartered Accountants of India. He has approximately five years experience in the fields of accountancy, audit and taxation in the IRB group. Before joining IRB group, worked with M/s. Gokhale & Sathe, Chartered Accountants and with M/s. Parikh, Joshi & Kothare, Chartered Accountants.

e) **Mr. Kaustubh Shevade, Company Secretary**

Mr. Kaustubh Shevade, 33 years, joined the IRB group in December 2019. He is an associate member of the Institute of Company Secretaries of India. He holds a bachelor of legal sciences degree and a bachelor of laws degree from the University of Mumbai. He also holds a master of business laws degree from the National Law School of India University, Bengaluru. Prior to joining the Investment Manager, he was associated with Tata Realty and Infrastructure Limited and Reliance Infrastructure Limited.

F. Details of the Holding or the Proposed Holding by the Investment Manager and its Directors in the Trust

The Investment Manager and its directors do not hold any Units as on date. None of the directors of the Investment Manager or the Investment Manager propose to hold any Units in the Trust.

G. Summary of the Standalone Financial Statements of the Investment Manager

For a summary of the financial statements of the Investment Manager, as derived from the standalone financial statements of the Investment Manager, prepared in accordance with Ind AS and the Companies Act, as of and for the Financial Years 2019, 2018, 2017 and the four-month period ended July 31, 2019, see "*Summary Financial Information*" on page 40.

H. Functions, Duties and Responsibilities of the Investment Manager

Below is the brief description of the functions, duties and responsibilities of the Investment Manager provided in the Investment Management Agreement in accordance with the InvIT Regulations, which *inter-alia*, include:

a) Coordinating with the Trustee, as may be necessary, with respect to the operations of the Trust.
b) Ensuring that the valuation of the Trust Assets is done by the Valuer in accordance with the InvIT Regulations.
c) Arranging for adequate insurance coverage for the Trust Assets in accordance with the InvIT Regulations.

d) Maintaining proper books of accounts, documents and records with respect to the Trust, in the manner set out in the Indenture of Trust and in accordance with Applicable Law.

e) Ensuring that the audit of the accounts of the Trust by the Auditor is undertaken in accordance with the InvIT Regulations.

f) Making Distributions to Unitholders in accordance with Regulations 9(8) and 18 of the InvIT Regulations, the Trust Documents and the Investment Strategy. Subject to the Trust Documents, Applicable Law and the Investment Strategy, at least such percentage of the net distributable cash flows of the SPVs and Holdcos (as applicable) shall be distributed to the InvIT, as prescribed in the InvIT Regulations. The Distributions shall be made not less than once every year or at such other intervals as may be specified in the relevant Trust Documents or applicable under the InvIT Regulations;

g) To convene meetings of the Unitholders in accordance with Regulation 22 of the InvIT Regulations, including at the written request of the Unitholders as specified therein, and maintain records pertaining to the meetings in accordance with Regulation 26 of the InvIT Regulations.

h) To intimate the Trustee prior to any change in control of the Investment Manager to enable the Trustee to seek prior approval from the Unitholders (and the SEBI or any other governmental authority, if applicable) and ensuring that no such change is given effect to, until the approval of the Unitholders (and the SEBI or any other governmental authority, as applicable) has been obtained, or the Investemnt Management Agreement is terminated and a new investment manager has been appointed in accordance with the terms in the Investment Management Agreement, or in compliance with any other requirement under the InvIT Regulations, other applicable law and the Trust Documents.

i) To place before the board of directors, a report on the activity and performance of the Trust in accordance with the InvIT Regulations. To designate an appropriately qualified employee to act as the compliance officer for monitoring of compliance with the InvIT Regulations and any circulars or guidelines issued thereunder and intimating the SEBI in case of non-compliance.

j) Maintaining records pertaining to the activity of the Trust in terms of Regulation 26 of the InvIT Regulations.

k) To manage the Trust in accordance with applicable law (including the InvIT Regulations) and the Trust Documents and the investment strategy, to make all investment decisions with respect to the Trust Assets and ensure that the investments made by the Trust are in accordance with the investment conditions specified in the applicable provisions of the InvIT Regulations and in accordance with the investment strategy as specified in the Investment Management Agreement.

l) To appoint, in consultation with the Trustee, the Valuer, Auditor (for a period of not more than five consecutive years or such other period as may be prescribed under the InvIT Regulations), regsitrar and transfer agent, merchant bankers, custodians, credit rating agencies, and any other intermediaries or service providers.

m) To ensure all activities of the intermediaries, agents, or service providers appointed by the Investment Manager are in accordance with the InvIT Regulations and guidelines and circulars issued thereunder, as applicable.

n) Overseeing the activities of the Project Manager, ensuring that the Project Manager conplies with the InvIT Regulations, and reviewing the transactions carried out between the Project Manager and its Associates and where the Project Manager has advised that there may be a conflict of interest, to obtain confirmation from a practicing chartered accountant or valuer, as applicable, that such transaction is on an arms' length basis.

o) To ensure adequate and timely redressal of Unitholders' grievances pertaining to the activities of the Trust in accordance with the InvIT Regulations. The Investment Manager is required to submit quarterly reports on Unitholders' grievances to the Trustee, as applicable.

p) To provide to the SEBI, the stock exchanges and other governmental authorities, as applicable, information as may be requested or required under applicable law by the SEBI, the stock exchanges or other governmental authorities, as applicable, in relation to the activities of the Trust

q) To ensure that disclosures and reporting to the Unitholders, SEBI, the Trustee, and the stock exchanges are in accordance with the applicable provisions of the InvIT Regulations (including disclosure to the Trustee and the Unitholders of any information having a bearing on the operation or performance of the Trust) in accordance with the timelines specified in the InvIT Regulations.

r) To intimate the Trustee and the Unitholders on the occurrence of any event that may have a material impact on the Investment Manager and its ability to perform its obligations under the Trust Documents, including any change in control of the Investment Manager.

s) To be responsible for all activities pertaining to the issue of Units including filing of any placement memorandum, final placement memorandum, draft offer document, offer document or

final offer document with the SEBI and dealing with all matters relating to the allotment of Units to Unitholders.

t) To ensure that disclosures in the placement memorandum or offer document are material, true, correct and adequate and in accordance with the InvIT Regulations. The Trust may list its Units on one or more stock exchanges subject to compliance with the conditions specified under the InvIT Regulations and directions issued by the SEBI or the stock exchanges, as applicable.

u) Fulfiling its obligations under the applicable provisions of the InvIT Regulations and the Trust Documents.

v) The Investment Manager is required to submit to the Trustee:

i. quarterly reports on the activities of the Trust including receipts for all funds received by it and for all payments made, status of compliance with the InvIT Regulations, specifically Regulations 18, 19 and 20 of the InvIT Regulations, performance report, status of development of under-construction projects, within time period specified under the InvIT Regulations, whichever is earlier;

ii. valuation reports as required under the InvIT Regulations within the time period specified under the InvIT Regulations;

iii. decision to acquire or sell or develop or bid for any Trust Asset or project or expand existing completed Trust Assets or projects along with rationale for the same;

iv. details of any action which requires approval from the Unitholders as may be required under the InvIT Regulations; and

v. details of any other material fact including change in its directors, change in its shareholding, any legal proceedings that may have a significant bearing on the activity of the Trust, within the time period specified under the InvIT Regulations.

w) To submit within the time period prescribed under the InvIT Regulations, annual reports and half yearly reports to all the Unitholders electronically or provide physical copies and, if applicable, to the stock exchanges.

x) To keep segregated at all times the assets and liabilities of the Trust from the assets and liabilities of the Investment Manager and the assets and liabilities of any other trusts managed by the Investment Manager. The assets held under the Trust shall be held for the exclusive benefit of the Unitholders and such assets shall not be subject to the claims of any creditor or any person claiming under any other fund or trust administered or managed by the Investment Manager.

y) To be responsible for monitoring, administering and giving effect to all claims and adjustments arising out of the share purchase agreements executed in respect of the acquisition of Trust Assets and any payments required to be made by or to the Trust.

z) Other duties include:

i. ensuring that computation of the net asset value of the Trust is based on the valuation done by the Valuer in accordance with the InvIT Regulations;

ii. maintaining regular interaction with the Trustee on performance of the Trust and providing the Trustee with any information in relation to the operations of the Trust as may be required;

iii. conducting its affairs and the affairs of the Trust in such a manner that Unitholders will not have personal liability with respect to liabilities or obligations of the Trust;

iv. collecting all dividends, fees, property and other payments due and receivable by the Trust in the manner set out in the Indenture and in terms of the InvIT Regulations;

v. ensuring that no commission or rebate or any other remuneration, arising out of transaction pertaining to the Trust is collected by the Investment Manager or its Associates, other than as specified in the offer document or any other document as may be specified by SEBI for the purpose of the issue of the units of the Trust;

vi. ensuring that the Trust Assets have proper and legal marketable titles and that all the material contracts entered into or on behalf of the Trust or the Trust Assets or the SPVs, or the Holdcos are legal, valid, binding and enforceable by and on behalf of the Trust or the Trust Assets or the SPVs or the Holdcos, as applicable;

vii. keeping the Unitholders informed and updated on investment activities of the Trust in accordance with the Trust Documents;

viii. ensuring that any possible conflict of interest involving its role as an Investment Manager is reported to the Trustee and the Unitholders;

ix. ensuring that disclosures and reporting to the Unitholders, SEBI and the Trustee are in accordance with applicable law and InvIT Regulations;

x. to immediately notify the Trustee and the Unitholders of any act which is detrimental to the interest of the Unitholders;

xi. informing the Trustee and Unitholders in writing about any change in the representations and warranties provided by the Investment Manager under the Investment Management Agreement or any of the Trust Documents;

xii. providing assistance to the Trustee as may be required in fulfilling its obligations towards the Trustee and the Unitholders, under applicable law, by any governmental authority or under the Trust Documents;

xiii. providing to the SEBI, the Trustee and if applicable, the stock exchanges, such information as may be sought by the SEBI, the Trustee or the stock exchanges in relation to the activities of the Trust, and providing, in parallel, to the Unitholders a copy of all reports and submissions made hereunder;

xiv. taking any other actions incidental to any of the foregoing or necessary or convenient in order to fully effect or evidence any action or transaction contemplated under the Investment Management Agreement; and

xv. to perform any other duties specified in the InvIT Regulations and the Trust Documents.

I. Rights in relation to shareholding in the Investment Manager

Pursuant to the terms of the IM SHA, which will be effective from the date of closing under the IM SPA, the Sponsor and Croxley have agreed to the following arrangements in relation to their shareholding in the Investment Manager:

- ***Put option***: Croxley has the right to require the Sponsor to purchase the equity shares held by it in the Investment Manager upon the occurrence of certain events within the period of 12 months from the date of Allotment.

- ***Right of first refusal***: Croxley has a right of first refusal over equity shares of the Investment Manager proposed to be transferred by the Sponsor to any person other than the subsidiaries of the Sponsor.

- ***Tag along right***: Subject to lock-in below, if the Sponsor proposes to transfer equity shares of the Investment Manager held by it to a third party buyer (which is not a subsidiary of the Sponsor), Croxley has a right to require such buyer to purchase from the Investors, (i) the entire shareholding of Croxley if the Sponsor proposes to transfer in excess of 20% of the total outstanding equity shares or (ii) up to such percentage of equity shares held by Croxley that is *pro rata* to the percentage of equity shares proposed to be transferred by the Sponsor if the Sponsor proposes to transfer 20% or less of the total outstanding equity shares.

- ***Lock-in***: The Sponsor is not permitted to transfer the equity shares held by in the Investment Manager to any person, including to its affiliates without the prior written permission of Croxley.

- ***Deed of Adherence***: The Sponsor has agreed that any transfer of its shareholding to any person will be valid only if such person executes a deed of adherence and agrees to be bound by the terms and conditions of the IM SHA.

- ***Pre-emptive rights***: If the Investment Manager proposes to issue any new equity shares to any person including an existing shareholder, including by way of a preferential allotment, subject to certain exceptions specified in the IM SHA, then until the date of completion of any initial public offering of the Investment Manager, the Investment Manager will provide a right to the existing shareholders to subscribe to their respective proportionate share (in the proportion of their shareholding in the Investment Manager) of such proposed issuance at the same price as is offered to the proposed recipient, so as to maintain their respective proportionate ownership in the Investment Manager.

- ***Events of Default and consequences***: See *"Rights of Unitholders – Arrangements between the Sponsor and the Financial Investors*" on page 235.

THE TRUSTEE

The Sponsor has settled the Trust pursuant to the Indenture of Trust and appointed IDBI Trusteeship Services Limited in accordance with the provisions of the InvIT Regulations.

The details of the Trustee are as follows:

A. Details of the Trustee

a) **Name:** IDBI Trusteeship Services Limited;

b) **Registered Office:** Asian Building, Ground Floor, 17, R. Kamani Marg, Ballard Estate, Mumbai 400 001, Maharashtra, India;

c) **Correspondence Address:** Asian Building, Ground Floor, 17, R. Kamani Marg, Ballard Estate, Mumbai 400 001, Maharashtra, India;

d) **Telephone Number:** +91 22 4080 7016;

e) **E-mail:** itsl@idbitrustee.co.in

B. Details of the Contact Person of the Trustee

a) **Name:** Mr. Shivaji Gunware / Mr. Naresh Sachwani;

b) **Telephone Number:** +91 22 4080 7016; and

c) **E-mail:** sgunware@idbitrustee.com / naresh.sachwani@idbitrustee.com

C. Details of Trustee's Registration with SEBI

The Trustee is registered with SEBI as a debenture trustee with registration number IND000000460.

D. Background of the Trustee

The Trustee is a trusteeship company which has been registered with SEBI, and has been jointly promoted by IDBI Bank Limited, Life Insurance Corporation and General Insurance Corporation for providing corporate and other trusteeship services.

The Trustee is permitted to engage in the following activities.

a) Debenture / bond trustee;
b) Security trustee/ facility agent;
c) Securitization trustee;
d) Share pledge trustee / share monitoring agent;
e) Escrow agent;
f) VCF trustees/ AIF Trustees;
g) Safe keeping / lockers services;
h) Management of private trusts / execution of wills; and
i) Special corporate services (e.g. provision of nominee directors)

The Trustee is the one of the largest trusteeship companies in India. The Trustee provides trusteeship services to corporates across diverse industries as well as domestic and foreign banks and financial institutions.

The Trustee is not an Associate of the Sponsor or the Investment Manager. Further, Trustee (i) is not debarred from accessing the securities market by the SEBI; (ii) is not a promoter, director or person in control of any other company or a sponsor, investment manager or trustee of any other infrastructure

investment trust or infrastructure investment trust which is debarred from accessing the capital market under any order or directions made by the SEBI; or (iii) is not in the list of the wilful defaulters published by the RBI.

None of the promoters or directors of the Trustee (i) is debarred from accessing the securities market by SEBI; (ii) is a promoter, director or person in control of any other company or a sponsor, investment manager or trustee of any other infrastructure investment trust or an infrastructure investment trust which is debarred from accessing the capital market under any order or direction made by SEBI; or (iii) is in the list of wilful defaulters published by the RBI.

E. Names and Profiles of the Directors of the Trustee

The names and profiles of board of directors of the Trustee, are as follows:

S. No.	Name	Designation	DIN
1.	Mr. J. Samuel Joseph	Chairman	02262530
2.	Mr. Ravishankar Gangadhar Shinde	Director	03106953
3.	Mrs. Madhuri Jayant Kulkarni	Director	07787126
4.	Mr. Swapan Kumar Bagchi	Managing Director and Chief Executive Officer	07743570

The Trustee confirms that it has, and undertakes to ensure that it will at all times maintain, adequate infrastructure, personnel and resources to perform its functions, duties and responsibilities with respect to the Trust, in accordance InvIT Regulations, the Indenture of Trust and applicable law.

F. Functions, Duties and Responsibilities of the Trustee

a) Interests of the Unitholders

The Trustee shall carry on and conduct its business in a proper and efficient manner in the best interest of the Unitholders in accordance with the Trust Documents. The Trustee shall duly perform all its duties, responsibilities and powers as set out in the InvIT Regulations in the interest of the Unitholders and in accordance with the provisions of the Trust Documents.

b) Appointment of the Investment Manager, the Project Manager and enter into the Investment Management Agreement and the Project Implementation Agreements

The Trustee, on behalf of the Trust, shall within a reasonable time from the date of execution of the Indenture of Trust, appoint an Investment Manager and a Project Manager (in consultation with the Investment Manager) and enter into an Investment Management Agreement and the Project Implementation Agreements. The Trustee shall have the power to execute the Project Implementation Agreement or any other agreement or arrangement, from time to time, with the Project Manager, any holding company or the Project SPV in this regard. The Trustee shall obtain a compliance certificate from the Investment Manager and the Project Manager on a quarterly basis, or such other time and in the form as may be prescribed under the InvIT Regulations.

c) Supervision of the Investment Manager

i. The Trustee shall ensure that the Investment Manager complies with reporting and disclosure requirements in accordance with the InvIT Regulations and in case of any delay or discrepancy, the Trustee shall require the Investment Manager to rectify such delay or discrepancy on an urgent basis.

ii. The Trustee shall oversee the activities of the Investment Manager in the interest of the Unitholders, ensure that the Investment Manager complies with the applicable provisions of the InvIT Regulations, including in relation to reporting and disclosure requirements and shall obtain a compliance certificate from the Investment Manager on a quarterly basis.

iii. The Trustee shall review transactions between the Investment Manager and its Associates and where the Investment Manager has advised that there may be a conflict of interest,

obtain a confirmation that such transaction is on an arm's length basis from a practicing chartered account, a valuer or as may be otherwise prescribed under the InvIT Regulations, as applicable.

iv. The Trustee shall ensure that the Investment Manager reviews the valuation reports issued by the valuer and submitted to the Trustee by the Investment Manager in accordance with the InvIT Regulations.

v. The Trustee shall require the Investment Manager to set up such systems and procedures and submit such reports to the Trustee, as may be necessary for effective monitoring of the functioning of the Trust.

vi. The Trustee shall ensure that the Investment Manager convenes meetings of the Unitholders in accordance with the InvIT Regulations and oversees voting by the Unitholders and declaration of results (except where the Trustee is required to carry out such functions under the InvIT Regulations). The Trustee shall ensure that the Investment Manager convenes meetings of Unitholders within the period prescribed under the InvIT Regulations and the period between such meetings shall not exceed the period prescribed under the InvIT Regulations.

d) Providing information to the SEBI

The Trustee shall ensure that the Investment Manager shall provide to the SEBI and other governmental authorities, as applicable, information as may be requested or required under applicable law by the SEBI or other governmental authorities, as applicable, in relation to the activities of the Trust. The Trustee shall comply with the information and intimation requirements under the InvIT Regulations. The Trustee shall ensure that the activity of the Trust is operated in accordance with the provisions of the Indenture of Trust, the InvIT Regulations, other applicable law and the Trust Documents.

e) Documents and information to be provided to Unitholders

The Trustee shall, and shall ensure that the Investment Manager shall, provide documents and information to the Unitholders with respect to the activities carried on by the Trust, as may be required by the SEBI or other governmental authority, as applicable, under applicable law.

f) Change in Control

The Trustee shall obtain approvals, if required under the Trust Documents, the InvIT Regulations, other applicable law and any concession agreement, for any proposed change in control of the Trustee, the Investment Manager or the Project Manager, as applicable.

g) Change in Investment Manager or Project Manager

In the event of any proposed change or termination in the investment manager or project manager, the Trustee shall ensure that all conditions in connection with the removal of such investment manager or project manager and appointment of a new investment manager or project manager prescribed under the InvIT Regulations, the Trust Documents and other applicable law are complied with. The previous investment manager or project manager shall continue to act as such at the discretion of the Trustee until such time as the new investment manager or project manager is appointed. The Trustee shall ensure that the new investment manager or project manager shall stand substituted as a party in all the documents (to the extent applicable) to which the earlier investment manager or project manager was a party. The Trustee shall also ensure that the earlier investment manager or project manager continues to be liable for all its acts of omissions and commissions for the period during which it served as investment manager or project manager, notwithstanding its change or termination.

h) Subscription amounts

The Trustee shall and shall ensure that the Investment Manager ensures that subscription amounts in case of any offering by the Trust (including the Issue) are collected and utilized in accordance with the InvIT Regulations, the relevant Trust Documents and conditions specified by the SEBI, as applicable.

i) Distribution

The Trustee shall make Distributions and ensure that the Investment Manager makes timely declarations of Distributions to the Unitholders in accordance with the InvIT Regulations.

j) Maintenance of books of accounts and other records

The Trustee shall cause the books of accounts and other records of the Trust to be maintained in accordance with the Indenture of Trust, the Trust Documents and applicable law.

k) Payment of statutory charges, operation of bank accounts etc.

i. The Trustee shall ensure that the Investment Manager shall make payments of all taxes, duties and any other statutory charges or levies that may be payable by the Trust or on behalf of the Unitholders from the Trust Assets, subject to the provisions of the Trust Documents and applicable law.
ii. The Trustee shall be responsible for opening and operating bank accounts and demat accounts on behalf of the Trust.

l) Attainment of objects of the Trust

The Trustee shall ensure that all acts, deeds and things are done for the fulfilment of the investment objectives of the Trust in accordance with the InvIT Regulations, the Trust Documents and to secure the best interests of the Unitholders.

m) Reports to be filed by the Trust

The Trustee shall file such reports as may be required by the SEBI or any other governmental authority or as required under applicable law in relation to the activities carried on by the Trust.

n) Unitholder Complaints

The Trustee shall periodically review the status of Unitholders' complaints and their redressal by the Investment Manager. The Investment Manager shall provide quarterly reports on Unitholders' grievances to the Trustee, as applicable.

o) Segregation of assets and liabilities

The assets and liabilities of the Trust shall at all times be segregated from the assets and liabilities of the Trustee and the assets and liabilities of other trusts managed by the Trustee. The Trust Assets shall be held for the exclusive benefit of the Unitholders and such assets shall not be subject to the claims of any creditor or any Person claiming under any other fund or trust administered or managed by the Trustee or the Investment Manager.

p) Valuer

i. The Trustee shall ensure that the valuer is not an Associate of the Sponsor, the Investment Manager or the Trustee.
ii. The Trustee shall ensure that the Investment Manager ensures that a detailed valuation is undertaken of the Trust Assets by the valuer at such intervals and in the manner specified under the InvIT Regulations and the Trust Documents.
iii. The Trustee shall ensure that the remuneration of the valuer is not linked to or based on the value of the asset being valued.

q) Investment by Trustee

The Trustee shall invest in Units only if permitted under Applicable Law and such investments shall be in accordance with applicable law.

r) Compliance with the InvIT Regulations

The Trustee shall fulfil its obligations under applicable provisions of the InvIT Regulations.

s) Delegation to the Investment Manager

The Trustee shall delegate all such powers to the Investment Manager as may be required by the Investment Manager to carry out its obligations under the Investment Management Agreement and Applicable Law and as may be required for the benefit of the Unitholders. Also see "*Rights of Unitholders – Approval of Unitholders*"on page 236.

t) Related Party Transactions

The Trustee shall review the transactions carried out between the Investment Manager and its Associates and obtain a certificate from a practising chartered accountant with respect to any related party transactions involving the Investment Manager and its Associates, where the Investment Manager has advised that there may be a conflict of interest, stating that such transactions have been done at an arms-length basis.

u) Monitoring

The Trustee shall require the Investment Manager to set up such systems and procedures and submit such reports to the Trustee, as may be necessary for the effective monitoring or the functioning of the Trust. The Trustee shall oversee activities of the Investment Manager in the interest of the Unitholders, shall ensure that the Investment Manager is in compliance with the provisions of the InvIT Regulations at all times and shall obtain a compliance certificate from the Investment Manager on a quarterly basis. Further, the Trustee shall ensure that the Investment Manager complies with reporting and disclosure requirements in accordance with the InvIT Regulations and in case of any delay or discrepancy, the Trustee will ensure that the Investment Manager rectifies such delay or discrepancy on an urgent basis.

v) Unitholders Meeting

The Trustee shall ensure that the Investment Manager convenes meetings of the Unitholders in accordance with the InvIT Regulations and shall also oversee the voting by the Unitholders and the declaration of results (excpet where the Trustee is required to carry out such functions under the InvIt Regulations). The Trustee shall ensure that the Investment Manager convenes meetings of Unitholders within the period prescribed under the InvIT Regulations and the period between such meetings shall not exceed the period prescribed under the InvIT Regulations.

w) Others

The Trustee shall ensure that the activity of the Trust is operated in accordance with the Indenture of Trust, InvIT Regulations, other applicable law, the Trust Documents, this Preliminary Placement Memorandum and the Placement Memorandum. In the event, any discrepancy is noticed by the Trustee, then the Trustee shall promptly inform the SEBI in writing. The Trustee shall provide to the SEBI such information as may be sought by the SEBI pertaining to the activity of the Trust.

The Trustee shall have the power to take up with SEBI or with the stock exchanges, as applicable, any matter which has been approved in any meeting of Unitholders post the initial offer by the Trust, if the matter requires such action.

x) Compliance Certificate

The Trustee shall obtain a compliance certificate in the form and manner prescribed under applicable law on a quarterly basis, from each of the Investment Manager and the Project Manager.

SECTION VI – OTHER PARTIES

AUDITOR

The Investment Manager, in consultation with the Trustee, has appointed Gokhale & Sathe, Chartered Accountants as the Trust's Auditor until the conclusion of the first annual meeting of Unitholders of the Trust. The Auditor has audited the Combined Financial Statements, and their report in relation to such Combined Financial Statements dated February 13, 2020, has been included in this Preliminary Placement Memorandum.

Policy for Appointment of Auditor

The Investment Manager shall appoint an auditor of the Trust for a period of not more than five consecutive years, provided that an auditor, not being an individual, may be reappointed for a period of another five consecutive years, subject to the approval of the Unitholders in an annual meeting. With respect to the appointment of the auditor of the Trust and the fees of such an auditor, an approval from the Unitholders shall be required at the annual meeting in accordance with Regulation 22 of the InvIT Regulations.

The Investment Manager shall ensure that the auditor carries out an audit of the accounts of the Trust at such intervals as may be required under the InvIT Regulations.

In accordance with the InvIT Regulations, the auditor of the Trust shall:

a) conduct an audit of the accounts of the Trust and draft the audit report based on the accounts examined, after taking into account the relevant accounting and auditing standards, as may be specified by SEBI in this regard;

b) to the best of its information and knowledge, ensure that the accounts and financial statements give a true and fair view of the state of the affairs of the Trust, including profit or loss and cash flow for the period and such other matters as may be specified;

c) have a right of access at all times to the books of accounts and vouchers pertaining to activities of the Trust; and

d) have a right to require such information and explanation pertaining to activities of the Trust, as it may consider necessary for the performance of its duties as auditor from the employees of Trust or the Sponsor, the Investment Manager, the Project Manager or the Trustee or the Project SPVs or any other person in possession of such information.

Auditing Standards

The Auditor shall conduct an audit of the accounts of the Trust and issue the audit report based on the accounts examined, after taking into account the relevant accounting and auditing standards, as may be specified by SEBI and/or the ICAI, from time to time, in this regard.

VALUER

The Investment Manager, in consultation with the Trustee, has appointed Mr. Sunit Khandelwal as the Valuer of the Trust for a period of three years. Mr. Sunit Khandelwal is a co-founder of Incwert Advisory Private Limited. In accordance with the InvIT Regulations, the Valuer has undertaken a full valuation of the Project SPVs which are proposed to be acquired by the Trust pursuant to the Formation Transactions and its report in relation to such valuation dated February 13, 2020, has been included in this Preliminary Placement Memorandum.

The Valuer is not an Associate of the Sponsor, the Investment Manager or the Trustee, and has not less than five years of experience in the valuation of infrastructure assets.

SECTION VII – FINANCIAL INFORMATION

COMBINED FINANCIAL STATEMENTS

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Independent Auditor's Report on special purpose combined financial statements of proposed Project SPVs of the IRB Infrastructure Trust in connection with the proposed private placement of the Units.

To

IDBI Trusteeship Services Limited
(As Trustee of The IRB Infrastructure Trust)
Asian Building Ground Floor,
17, R. Kamani Marg
Ballard Estate,
Mumbai-400001

MMK Toll Road Private Limited
(As the Investment Manager Of IRB Infrastructure Trust)
Off no-11 th floor/1101
Hiranandani Knowledge Park,
Technology street ,Hill Side Avenue,
Powai, Mumbai -400076.

Dear Sirs,

Report on special purpose combined financial statements

Opinion

We have audited the accompanying special purpose combined financial statements consisting of the following nine subsidiaries of IRB Infrastructure Developers Limited ("IRBIDL" or "Sponsor"), namely -

1. IRB Westcoast Tollway Limited
2. Yedeshi Aurangabad Tollway Limited
3. Solapur Yedeshi Tollway Limited
4. Kaithal Tollway Limited
5. AE Tollway Limited
6. Udaipur Tollway Limited
7. CG Tollway Limited
8. Kishangarh Gulabpura Tollway Limited
9. IRB Hapur Moradabad Tollway Limited

(together referred as 'Project SPVs' or 'Project SPV Group' and individually 'Project SPV') which are proposed to be transferred from the IRBIDL to IRB Infrastructure Trust(the 'Trust') pursuant to the proposed private placement of Units of the Trust ('Private Placement'), and which comprise the combined balance sheet as at September 30, 2019, March 31, 2019, 2018 and 2017, the combined statement of profit and loss (including other comprehensive income), combined statement of cash flows and combined statement of changes in equity for the six months period ended September 30, 2019 and for the year ended as at March 31, 2019, 2018 and 2017 and combined statement of net assets at fair value as at September 30, 2019 and the combined statement of total returns at fair value for the six months period ended September 30, 2019 and a summary of significant accounting policies and other explanatory information (Together referred to as 'Special Purpose Combined Financial Statements').

In our opinion and based on the information and according to the explanations given to us, the aforesaid special purpose combined financial statements give a true and fair view in accordance with the basis of preparation as specified in note 2 to the special purpose combined financial statements in case of:

a) the combined balance sheet, of the state of affairs of the Project SPV Group as at September 30, 2019, March 31, 2019, 2018 and 2017;
b) the combined statement of profit and loss (including other comprehensive income) of the Project SPV Group's profit/loss for the six months period ended September 30, 2019 and for the year ended as at March 31, 2019, 2018 and 2017;
c) the combined cash flow statement, of the cash movements of the Project SPV Group for the for the six months period ended September 30, 2019 and for the year ended as at March 31, 2019, 2018 and 2017;
d) the combined statement of changes in equity, of the movement of the unit holders for the six months period ended September 30, 2019 and for the year ended as at March 31, 2019, 2018 and 2017;
e) the combined statement of net assets at fair value as at September 30, 2019; and
f) the combined statement of total returns at fair value for the six months period ended September 30, 2019.

Basis of Accounting and Restriction on Distribution and Use

Without modifying our opinion, we draw attention to note 2 to the Special Purpose Combined Financial Statements, which describes the basis of accounting including the approach to and purpose of preparation of these Special Purpose Combined Financial Statements.

These Combined Financial Statements have been prepared in accordance with the requirements of Securities and Exchange Board of India (Infrastructure Investment Trusts) Regulations, 2014, as amended from time to time including any guidelines and circulars issued thereunder, including the circular dated October 20, 2016 on disclosure of financial information in offer document/ placement memorandum for InVITs (together referred to as 'InvIT Regulations'), based on the Indian Accounting Standards as notified under the Companies (Indian Accounting Standards) Rules, 2015 prescribed under section 133 of the Companies Act, 2013 ('the Act'), as applicable ("Ind AS") and the Guidance Note on Combined and Carve Out Financial Statements issued by the Institute of Chartered Accountants of India (the 'Guidance Note') as more clearly specified in note 2: 'Basis of preparation' of the Special Purpose Combined Financial Statements.

Accordingly, these Special Purpose Combined Financial Statements have been prepared, as if the Trust structure was in place and 100% interest of the Project SPVs was part of the Trust since April 1, 2016 and have been approved by the Investment Manager of the Trust.

Consequently, these special purpose combined financial statements may not necessarily be indicative of financial performance, financial position and cash flows of the Project SPV Group that would have occurred if it had operated as a single group of entities during the periods presented.

This report is addressed to and is provided to the Trust, Trustee and the Investment Manager solely for the inclusion in the preliminary placement memorandum, placement memorandum in connection with the proposed Private Placement and may not be suitable for another purpose. Our report should not be used, referred to or distributed for any other purpose or to any other party without our prior written consent other than to the Financial Investors in connection with the private placement. Accordingly, we do not accept or assume any liability or any duty of care for any other purpose or to any other person to whom this report is shown or into whose hands it may come without our prior consent in writing.

Responsibility of the Management and Those Charged With Governance for the Special Purpose Combined Financial Statements

The Investment Manager of the Trust is responsible for the preparation of these special purpose combined financial statements that give a true and fair view of the combined financial position, combined financial performance (including other comprehensive income), combined cash flows, combined statement of change in equity in accordance with the basis of preparation specified in note 2 to the special purpose combined financial statements.

The respective Board of Directors of the Project SPVs are responsible for the maintenance of adequate accounting records in accordance with the provisions of the Act; for safeguarding the assets of the Project SPVs and for preventing and detecting frauds and other irregularities; the selection and application of appropriate accounting

policies; making judgements and estimates that are reasonable and prudent; and the design, implementation and maintenance of adequate internal financial controls, that were operating effectively for ensuring the accuracy and completeness of the accounting records, relevant to the preparation and presentation of the financial statements that give a true and fair view and are free from material misstatement, whether due to fraud or error, which have been used for the purpose of preparation of these special purpose combined financial statements by the Investment Manager, as aforesaid.

Auditor's Responsibility

Our objectives are to obtain reasonable assurance about whether the Special purpose combined financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance but is not a guarantee that an audit conducted in accordance with Standards on Auditing will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with Standards on Auditing, we exercise professional judgment and maintain professional skepticism throughout the audit. An audit involves performing procedures to obtain audit evidence about the amounts and the disclosures in the special purpose combined financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the Special Purpose Combined Financial Statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal financial controls relevant to the Project SPVs preparation of the Special Purpose Combined Financial Statements that give a true and fair view in order to design audit procedures that are appropriate in the circumstances but not for the purpose of expressing an opinion whether the Project SPVs have in place an adequate internal financial controls system over financial reporting and the operating effectiveness of such controls. An audit also includes evaluating the appropriateness of the accounting policies used and the reasonableness of the accounting estimates made by the Investment Manager, as well as evaluating the overall presentation of the financial statements.We communicate with those charged with governance of the Investment Manager of the Trust regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide those charged with governance with a statement that we have complied with relevant ethical requirements regarding independence, and to communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, related safeguards.

Other Matter

The financial statements of nine Project SPV for the relevant periods have been prepared as per Ind AS have been audited by the respective auditors of Project SPV and have been used for the purpose of preparation of the special purpose combined financial statements by the Investment Manager of the Trust and have been relied upon by us for our audit of these special purpose combined financial statements.

The Projects SPV and the periods which were audited by other auditors are as follows:

Sr. No.	Project SPV	Period	Revenue (In Rs. millions)	Total Assets (In Rs. millions)
1	AE Tollway Limited	Six months ended 30th September 2019	50.96	30771.79
		Year ended 31st March 2019	294.63	26398.18
		Year ended 31st March 2018	283.36	25454.03
		Year ended 31st March 2017	190.54	28701.87
2	Kaithal Tollway Limited	Six months ended 30th September 2019	589.35	20712.48
		Year ended 31st March 2019	888.58	20786.14
		Year ended 31st March 2018	782.98	20808.65
		Year ended 31st March 2017	462.73	19519.18

Sr. No.	Project SPV	Period	Revenue (In Rs. millions)	Total Assets (In Rs. millions)
3	Solapur Yedeshi Tollway Limited	Six months ended 30th September 2019	375.89	14066.63
		Year ended 31st March 2019	1216.16	14062.02
		Year ended 31st March 2018	194.30	13797.93
		Year ended 31st March 2017	456.18	12659.56
4	Yedeshi Aurangabad Tollway Limited	Six months ended 30th September 2019	611.55	36005.35
		Year ended 31st March 2019	146.38	33938.68
		Year ended 31st March 2018	75.10	28555.57
		Year ended 31st March 2017	180.89	23019.82
5	IRB Westcoast Tollway Limited	Year ended 31st March 2019	155.45	25460.61
		Year ended 31st March 2018	250.06	23538.52
		Year ended 31st March 2017	168.10	20224.30

Report on Other Legal and Regulatory Requirements

As required by circular number CIR/IMD/DF/114/2016 dated 20 October 2016 issued by Securities and Exchange Board of India; we report that:

a) we have obtained all information and explanations which, to the best of our knowledge and belief, were necessary for the purpose of our audit;
b) the combined balance sheet and the combined statement of profit and loss, are in agreement with the books of account of the respective Project SPV; and
c) the special purpose combined financial statements comply with the Indian Accounting Standards as notified under the Companies (Indian Accounting Standards) Rules, 2015 prescribed under section 133 of the Act and the basis of preparation as specified in note 2 to these special purpose combined financial statements.

For **Gokhale & Sathe**
Chartered Accountants
Firm's Registration No.: 103264W

Chinmaya Deval
Membership No.: 148652
UDIN: 20148652AAAACK3104
Place: Mumbai
Date: February 13, 2020

IRB Infrastructure Trust
Combined Balance sheet

(Amount in Millions.)

	Notes	As at September 30, 2019	As at March 31, 2019	As at March 31, 2018	As at March 31, 2017
ASSETS					
Non-current assets					
Property, Plant and Equipment	4	14.99	10.90	5.72	0.35
Other Intangible assets	4	169,974.62	135,725.68	108,852.49	24,146.39
Intangible assets under development		37,670.27	34,156.49	53,208.12	65,997.43
Financial assets					
i) Investments	5	-	-	477.23	-
ii) Loans	7	1.20	-	5.36	3.81
iii) Others	8	104.93	99.39	198.65	0.92
Other non-current assets	10	1,327.10	679.32	2,214.50	10,166.76
		209,093.11	**170,671.78**	**164,962.07**	**100,315.66**
Current assets					
Inventories	11	-	27.86	-	-
Financial assets					
i) Investments	5	510.92	184.38	1,105.64	-
ii) Trade receivables	6	-	14.02	31.51	85.66
iii) Cash and cash equivalents	12	205.41	325.82	999.45	351.79
iv) Bank balance other than (iii) above	12(a)	1,525.83	1,450.03	-	-
v) Loans	7	5.14	9.87	0.75	0.19
vi) Others	8	289.62	287.47	175.03	140.48
Current tax assets (net)	13	138.61	137.67	98.62	68.33
Other current assets	14	6,371.14	5,942.90	11,422.37	3,193.12
		9,046.67	**8,380.02**	**13,833.37**	**3,839.57**
Total assets		**218,139.78**	**179,051.80**	**178,795.44**	**104,155.23**
EQUITY AND LIABILITIES					
Equity					
Equity share capital	15	17,686.19	15,636.69	12,800.81	10,096.41
Share application money		-	-	696.58	-
Subordinate debt		30,594.34	25,969.07	21,740.02	19,351.74
Other equity	16				
Other reserves		458.88	1,548.37	554.09	80.84
Total Equity		**48,739.41**	**43,154.13**	**35,791.50**	**29,528.99**
Non-controlling interests				-	-
		48,739.41	**43,154.13**	**35,791.50**	**29,528.99**
Non-current liabilities					
Financial liabilities					
i) Borrowings	17	97,412.62	90,849.96	65,684.93	52,956.85
ii) Other financial liabilitie	19	67.14	2,084.34	21,044.27	20,214.15
Provisions	20	51.68	9.46	6.54	1.49
Deferred tax liabilities (net)	9	359.35	295.91	116.02	-
		97,890.79	**93,239.67**	**86,851.76**	**73,172.49**
Current liabilities					
Financial liabilities					
i) Borrowings	17	12,260.14	7,085.60	9,534.54	757.29
ii) Trade payables	18				
a) total outstanding dues of micro enterprises and small enterprises		-	-	-	-
b) total outstanding dues of creditors other than micro enterprises and small enterprises		16,174.69	8,529.24	6,581.21	58.14
iii) Other financial liabilities	19	42,102.26	26,923.81	39,866.33	486.02
Other current liabilities	21	949.05	107.41	133.05	152.18
Provisions	20	3.00	1.42	1.18	0.12
Current tax liabilities (net)		20.44	10.52	35.87	-
		71,509.58	**42,658.00**	**56,152.18**	**1,453.75**
Total liabilities		**169,400.37**	**135,897.67**	**143,003.94**	**74,626.24**
Total equity and liabilities		**218,139.78**	**179,051.80**	**178,795.44**	**104,155.23**

The accompanying summary of significant accounting policies and other explanatory information (notes) are an integral part of Combined Financial Statements.

As per our report of even date
For Gokhale & Sathe
Chartered Accountants
ICAI registration number: 103264W

Chinmaya Deval
Partner
Membership No. 148652

Place: Mumbai
Date: February 13, 2020

For and on behalf of the Board of Directors of
MMK Toll Road Private Limited
(As Investment Manager to IRB Infrastructure Trust)
CIN : U45200MH2002PTC135512

Arati Taskar
Director
DIN: 07089953

Naresh Taneja
Director
DIN: 07178896

Jitendra Sharma
Chief Financial Officer

Kaustubh Shevade
Company Secretary

Place: Mumbai
Date: February 13, 2020

IRB Infrastructure Trust
Combined Statement of Profit and Loss

(Amount in Millions.)

Particulars	Notes	For the six months ended September 30, 2019	For the year ended March 31, 2019	For the year ended March 31, 2018	For the year ended March 31, 2017
Income					
Revenue from operations	22	4,518.19	7,886.81	3,511.47	1,455.63
Other income	23	80.10	156.65	51.59	2.79
Total income		**4,598.29**	**8,043.46**	**3,563.06**	**1,458.42**
Expenses					
Cost of material consumed		41.44	-	-	-
Road work and site expenses	24	890.86	1,756.86	1,065.87	1,297.90
Employee benefits expenses	25	146.68	207.12	108.57	18.37
Depreciation and amortisation expenses	26	842.46	1,099.83	441.19	83.69
Finance costs	27	3,530.76	3,898.60	984.20	6.86
Other expenses	28	76.25	122.46	48.55	12.29
Total expenses		**5,528.45**	**7,084.87**	**2,648.38**	**1,419.11**
Profit/(loss) before tax		**(930.16)**	**958.59**	**914.68**	**39.31**
Tax expenses					
Current tax		3.60	527.45	326.18	20.50
Deferred tax		156.13	179.89	116.02	-
Total tax expenses		**159.73**	**707.34**	**442.20**	**20.50**
Profit/(loss) after tax		**(1,089.89)**	**251.25**	**472.48**	**18.81**
Other comprehensive income					
Item that will not be reclassified to profit or loss:					
(a) Re-measurement (loss)/gain on defined benefit plans (net of taxes)		0.41	(1.84)	0.77	-
Other comprehensive (loss) for the year/ period, net of tax		**0.41**	**(1.84)**	**0.77**	**-**
Total comprehensive income for the year/period		**(1,089.48)**	**249.41**	**473.25**	**18.81**
Profit/(loss) after tax		**(1,089.89)**	**251.25**	**472.48**	**18.81**
Attributable to:					
Owners of the Project SPV Group		(1,089.89)	251.25	472.48	18.81
Non-controlling interests		-	-	-	-
Total comprehensive income for the year/period					
Attributable to:					
Equity holders of the Project SPV Group		(1,089.48)	249.41	473.25	18.81
Non-controlling interests		-	-	-	-

The accompanying summary of significant accounting policies and other explanatory information (notes)are an integral part of Combined Financial Statements.

As per our report of even date
For Gokhale & Sathe
Chartered Accountants
ICAI registration number: 103264W

For and on behalf of the Board of Directors of
MMK Toll Road Private Limited
(As Investment Manager to IRB Infrastructure Trust)
CIN : U45200MH2002PTC135512

Chinmaya Deval
Partner
Membership No. 148652

Arati Taskar
Director
DIN: 07089953

Naresh Taneja
Director
DIN: 07178896

Jitendra Sharma
Chief Financial Officer

Kaustubh Shevade
Company Secretary

Place: Mumbai
Date: February 13, 2020

Place: Mumbai
Date: February 13, 2020

IRB Infrastructure Trust
Combined Cash Flow Statement

(Amount in Millions.)

Particulars	For the six months ended September 30, 2019	For the year ended March 31, 2019	For the year ended March 31, 2018	For the year ended March 31, 2017
Cash flow from operating activities				
Profit/(loss) before tax	(930.16)	958.59	914.68	39.31
Adjustment to reconcile profit before tax to net cash flows:				
Depreciation and amortisation	842.46	1,099.83	441.19	83.69
Resurfacing expenses	36.10	-	-	-
Fair value gain on mutual funds	(0.66)	(0.04)	(30.63)	-
Net (gain) on sale of current Investment	(19.20)	(81.95)	(17.35)	(1.91)
Finance costs	3,530.76	1,715.15	761.76	3,898.60
Interest income	(57.90)	-	-	-
Other non operative income	(2.34)	(0.32)	(0.21)	(3.23)
Dividend income on current investments	-	-	(1.83)	(0.17)
Operating profit before working capital changes	**3,399.06**	**3,691.27**	**2,067.61**	**4,016.29**
Movement in working capital:				
Increase/ (decrease) in trade payables	7,645.45	1,948.03	6,523.07	(947.77)
Increase/ (decrease) in provisions	8.12	1.30	6.89	1.61
Increase/ (decrease) in other financial liabilities	152.67	(83.40)	263.25	164.80
(Decrease)/ increase in other liabilities	841.64	(25.64)	(19.13)	115.81
Decrease / (increase) in trade receivables	14.02	17.49	54.15	(85.17)
Decrease / (increase) in inventories	27.86	(27.86)	-	-
Increase in loans	3.54	(3.76)	(2.11)	(4.00)
(Increase) / decrease in other financial assets	(42.16)	47.49	(232.24)	(26.41)
(Increase) / decrease in other assets	(1,044.20)	6,623.09	(686.13)	(1,745.05)
Cash generated from operations	**11,005.99**	**12,188.01**	**7,975.36**	**1,490.10**
Taxes paid (net)	(87.33)	(591.86)	(320.61)	(85.29)
Net cash flows generated from operating activities	**10,918.66**	**11,596.15**	**7,654.74**	**1,404.81**
Cash flows from investing activities				
Purchase of property, plant and equipment including CWIP, intangible assets including intangible assets under development and capital advances	(25,719.85)	(40,819.27)	(32,442.64)	(31,673.38)
Proceeds/ redemption from sale of non-current investments*	-	477.23	(477.23)	-
Proceeds from sale/ (purchase) of current investments (net)	(306.67)	1,003.24	(1,057.66)	1.91
Investments in bank deposits (having original maturity of more than three months) (net)	(75.80)	(1,450.03)	-	-
Interest received	94.70	(60.35)	0.17	3.23
Dividend received	-	-	1.83	0.17
Net cash flows (used in) investing activities	**(26,007.62)**	**(40,849.18)**	**(33,975.53)**	**(31,668.07)**
Cash flows from financing activities				
Proceeds from non-current borrowings	6,723.88	26,372.50	13,195.05	20,402.33
Repayment of non-current borrowings	(33.92)	(56.02)	(3.25)	0.00
Proceeds/ (Repayment) of current borrowings (net)	5,174.54	(2,448.94)	8,777.25	194.46
Issue of equity share capital	2,049.50	2,139.30	3,400.98	5,310.04
Issue of sub-ordinate debt	4,625.27	4,229.05	2,388.28	8,015.76
Finance cost paid	(3,570.71)	(1,656.50)	(789.87)	(3,855.80)
Net cash flows generated from financing activities	**14,968.56**	**28,579.40**	**26,968.44**	**30,066.79**
Net increase / (decrease) in cash and cash equivalents (A+B+C)	**(120.41)**	**(673.63)**	**647.66**	**(196.47)**
Cash and cash equivalents at the beginning of the year / period	325.82	999.45	351.79	548.26
Cash and cash equivalents at the end of the year (refer note 12)	**205.41**	**325.81**	**999.45**	**351.79**

IRB Infrastructure Trust
Combined Cash Flow Statement

(Amount in Millions.)

Particulars	For the six months ended September 30, 2019	For the year ended March 31, 2019	For the year ended March 31, 2018	For the year ended March 31, 2017
Components of cash and cash equivalents				
Balances with scheduled banks:				
- Trust, retention and other escrow accounts	44.24	82.88	35.17	176.32
- Others	127.98	199.19	810.39	171.95
- In deposit accounts with original maturity less than 3 months	-	-	130.88	0.03
Cash on hand	33.19	43.75	23.01	3.51
Total cash and cash equivalents	**205.41**	**325.82**	**999.45**	**351.79**
Debt reconciliation statement in accordance with Ind AS 7				
Opening balances				
Long term borrowing	91,817.88	66,246.26	53,054.46	32,652.13
Short term borrowing	7,085.60	9,534.54	757.29	562.82
Movements				
Cash Flows				
Long term borrowing	6,689.97	25,571.62	13,191.80	20,402.33
Short term borrowing	5,174.54	(2,448.94)	8,777.25	194.46
Closing balances				
Long term borrowing	98,507.84	91,817.88	66,246.26	53,054.46
Short term borrowing	12,260.14	7,085.60	9,534.54	757.29

Notes :

1. All figures in bracket are outflow.
2. Taxes paid are treated as arising from operating activities and are not bifurcated between investing and financing activities.
3. The Consolidated cash flow statement has been prepared under Indirect Method as per Ind AS 7 "Statement of Cash Flows".

The accompanying summary of significant accounting policies and other explanatory information (notes)are an integral part of Combined Financial Statements.

As per our report of even date
For Gokhale & Sathe
Chartered Accountants
ICAI registration number: 103264W

Chinmaya Deval
Partner
Membership No. 148652

Place: Mumbai
Date: February 13, 2020

For and on behalf of the Board of Directors of
MMK Toll Road Private Limited
(As Investment Manager to IRB Infrastructure Trust)
CIN : U45200MH2002PTC135512

Arati Taskar
Director
DIN: 07089953

Naresh Taneja
Director
DIN: 07178896

Jitendra Sharma
Chief Financial Officer

Kaustubh Shevade
Company Secretary

Place: Mumbai
Date: February 13, 2020

IRB Infrastructure Trust
Notes to Combined Financial Statements

Statement of changes in equity
A. Equity share capital:

(Amount in Millions.)

	September 30, 2019		March 31, 2019		March 31, 2018		March 31, 2017	
i) Equity shares issued, subscribed and fully paid	**No.**	**Rs.**	**No.**	**Rs.**	**No.**	**Rs.**	**No.**	**Rs.**
Shares having face value of Rs. 10/-								
Balance at the beginning of the year	1,563,669,304	15,636.69	1,280,081,804	12,800.82	1,009,641,304	10,096.41	504,245,002	5,042.45
Issue of share capital (Note 15)	204,950,000	2,049.50	283,587,500	2,835.88	270,440,500	2,704.41	505,396,302	5,053.96
Balance at the end of the year/period	**1,768,619,304**	**17,686.19**	**1,563,669,304**	**15,636.69**	**1,280,081,804**	**12,800.82**	**1,009,641,304**	**10,096.41**

The Project SPVs have only one class of equity shares having par value of Rs. 10/- per share.

(Amount in Millions.)

ii) Subordinate debt (in nature of equity)	**September 30, 2019**	**March 31, 2019**	**March 31, 2018**	**March 31, 2017**
Balance at the beginning of the year	25,969.07	21,740.02	19,351.74	11,335.98
Receipt of subordinate debt (Note 15)	4,625.27	4,229.05	2,388.28	8,015.76
Balance at the end of the year/period	**30,594.34**	**25,969.07**	**21,740.02**	**19,351.74**

B. Other equity

	September 30, 2019	**March 31, 2019**	**March 31, 2018**	**March 31, 2017**
i) Retained earnings				
Balance at the beginning of the year/period	804.56	553.31	80.84	62.03
Profit/(loss) for the year/period	(1,089.89)	251.25	472.48	18.81
Balance at the end of the year/period	**(285.33)**	**804.56**	**553.31**	**80.84**
ii) Other items of other comprehensive income				
a. Re-measurement gains/ (losses) on defined benefit plans				
Balance at the beginning of the year	(1.07)	0.77	-	-
Increase/(decrease) during the year/period	0.41	(1.84)	0.77	-
Balance at the end of the year/period	**(0.66)**	**(1.07)**	**0.77**	**-**
b. Mark to market (loss) on fair value measurement of investments				
At the beginning of the year/period	744.87	-	-	-
Increase/(decrease) during the year/period	-	744.87	-	-
At the end of the year/period	**744.87**	**744.87**	**-**	**-**
Balance at the end of the year of other equity	**458.88**	**1,548.37**	**554.09**	**80.84**

As per our report of even date attached

For Gokhale & Sathe
Chartered Accountants
ICAI registration number: 103264W

Chinmaya Deval
Partner
Membership No. 148652

Place: Mumbai
Date: February 13, 2020

For and on behalf of the Board of Directors of
MMK Toll Road Private Limited
(As Investment Manager to IRB Infrastructure Trust)
CIN : U45200MH2002PTC135512

Arati Taskar
Director
DIN: 07089953

Naresh Taneja
Director
DIN: 07178896

Jitendra Sharma
Chief Financial Officer

Kaustubh Shevade
Company Secretary

Place: Mumbai
Date: February 13, 2020

IRB Infrastructure Trust
Combined statement of net assets at fair value*

(Amount in Millions.)

Particulars	As at September 30, 2019	
	Book value	Fair value
A. Assets	218,139.78	201,341.89
B. Liabilities	169,400.37	130,114.74
C. Net assets (A-B)	**48,739.41**	**71,227.16**

* Fair values of total assets relating to the SPV Group as at 30 September 2019 as disclosed above are solely based on the fair valuation report of the independent valuer appointed under SEBI (Infrastructure Investment Trusts) Regulations, 2014.

The number of units that IRB Infrastrucure Trust will issue to investors in connection with the proposed private placement of units of the Trust in exchange of the shareholdings in the SPV Group is not presently ascertainable. Accordingly, disclosures in respect of Net Asset Value (NAV) per unit have not been given.

Project-wise breakup of fair value of assets as on is as under:

(Amount in Millions.)

Company name	Fair value #
IRBWTL	33,559.95
SYTL	17,847.43
YATL	31,727.32
KTL	29,139.06
AETL	20,023.44
UTL	15,673.53
CGTL	18,586.59
KGTL	15,343.64
IRBHMTL	19,440.93
Total	**201,341.89**

Fair values of assets as disclosed above are the fair values of the total assets of the SPV Group which are included in the Combined Financial Statements.

For Gokhale & Sathe
Chartered Accountants
ICAI registration number: 103264W

For and on behalf of the Board of Directors of
MMK Toll Road Private Limited
(As Investment Manager to IRB Infrastructure Trust)
CIN : U45200MH2002PTC135512

Chinmaya Deval
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Jitendra Sharma
Chief Financial Officer

Kaustubh Shevade
Company Secretary

Place: Mumbai
Date: February 13, 2020

Place: Mumbai
Date: February 13, 2020

IRB Infrastructure Trust
Combined statement of total return at fair value

(Amount in Millions.)

Particulars	For the six months ended September 30, 2019	For the year ended March 31, 2019
Total comprehensive income (As per the statement of profit and loss)	(1,089.48)	249.41
Add/Less: other changes in fair value (e.g., in investment property, property, plant & equipment (if cost model is followed)) not recognized in total comprehensive income	28,529.97	-
Total Return	**27,440.49**	**249.41**

As per our report of even date attached

For Gokhale & Sathe
Chartered Accountants
ICAI registration number: 103264W

Chinmaya Deval
Partner
Membership No. 148652

Place: Mumbai
Date: February 13, 2020

For and on behalf of the Board of Directors of
MMK Toll Road Private Limited
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Chief Financial Officer

Kaustubh Shevade
Company Secretary

Place: Mumbai
Date: February 13, 2020

1 **Corporate Information**

The IRB Infrastructure Trust (the "Fund" / "Trust") is a trust settled pursuant to the indenture of trust dated August 27, 2019 which is registered under the Registration Act, 1908 and under the Securities Exchange Board of India (Infrastructure Investment Trusts) Regulations, 2014 as amended from time to time. The Fund is settled by the Sponsor, IRB Infrastructure Developers Limited ("IRB" or the "Sponsor"), an infrastructure development company in India. The Trustee to the Fund is IDBI Trusteeship Services Limited (the "Trustee"). Investment manager for the Fund is MMK Toll Road Private Limited (the "Investment Manager"). The Trust has received registraion certificate from SEBI on November 25, 2019.

The Fund has been formed to invest in infrastructure assets primarily being in the road sector in India. The Fund's road projects are eligible infrastructure projects under the InvIT Regulations and held through special purpose vehicles ("Project SPVs" together as "Project SPV Group"). The Fund's portfolio subsequent to the completion of the proposed offering will comprise of nine road projects as listed below:-

Project SPV Name**	Residual Concession life*	Proposed shareholding	Nature of Investment	Status	Principal Activities	Country of incorporation
IRB Westcoast Tollway Limited (IRBWTL)	22 years 5 months 3 days	100%	Subsidiary	Under Construction	Construction and operation of road including toll collection.	India
Solapur Yedeshi Tollway Limited (SYTL)	23 years 3 months 23 days	100%	Subsidiary	Operating		India
Yedeshi Aurangabad Tollway Limited (YATL)	21 years 9 months 1 days	100%	Subsidiary	Operating		India
Kaithal Tollway Limited (KTL)	22 years 9 months 15 days	100%	Subsidiary	Operating		India
AE Tollway Limited (AETL)	20 years 10 months 1 days	100%	Subsidiary	Tolling and Construction		India
Udaipur Tollway Limited (UTL)	18 years 11 months 4 days	100%	Subsidiary			India
CG Tollway Limited (CGTL)	18 years 1 months 4 days	100%	Subsidiary			India
Kishangarh Gulabpura Tollway Limited (KGTL)	18 years 4 months 24 days	100%	Subsidiary			India
IRB Hapur Moradabad Tollway Limited (IRBHMTL)	21 years 7 months 27 days	100%	Subsidiary			India

* Represents residual concession life as at September 30, 2019 as per original concession period (without considering extension of concession period, if any).

** Of the above Project SPVs, IRBWTL, SYTL, YATL, AETL, CGTL, UTL and IRBHMTL have been converted to public companies on November 13, 2019 and KTLand KGTL November 14, 2019 respectively.

2 **Basis of preparation**

A. Statement of compliance

The Combined Financial Statements of Project SPV Group comprises of Combined Balance Sheets as at September 30, 2019, March 31, 2019, March 31, 2018 and March 31, 2017, Combined Statement of Profit and Loss, Combined Cash Flow Statement and Combined Statement of Changes in Equity for six months / years ended September 30, 2019, March 31, 2019, March 31, 2018 and March 31, 2017 and Combined Statement of Net Assets at Fair Value as at September 30, 2019 and the Combined Statement of Total Return at Fair Value for the six months ended Septemer 30, 2019, a summary of significant accounting policies, notes and other explanatory Information. The Combined Financial Statement has been prepared for inclusion in the Preliminary Placement Memorandum and Placement Memorandum (the "Private Placement Documents") to be issued in connection with the proposed offering (the "Offering") of the Fund.

The Combined Financial Statements of the Project SPV Group have been prepared in accordance with Indian Accounting Standards (Ind AS) as per the Companies (Indian Accounting Standards) Rules, 2015 notified under Section 133 of the Act, read with other relevant provisions of the Act.The Combined Financial Statements have been prepared on a historical cost basis, except for certain assets and liabilities which have been measured at fair value.

For all periods upto and including the year ended March 31, 2019, the Project SPVs prepared its financial statements in accordance with accounting standards notified under the Section 133 of the Companies Act 2013, read together with paragraph 7 of the Companies (Accounts) Rules, 2014 (Indian GAAP). For the period ended September 30, 2019, the Project SPVs prepared their financial statements in accordance with Indian Accounting Standards (Ind AS) as prescribed under Section 133 of Companies Act, 2013 read with relevant rule and other accounting principles.

In accordance with the requirements of Securities and Exchange Board of India (Infrastructure Investment Trusts) Regulations 2014, as amended from time to time including by circulars dated October 20, 2016, November 29, 2016 and any further guidelines and circulars (the "InvIT Regulations"), since the Fund is newly set up on August 27, 2019, to present the financial position and performance of the proposed Project SPV Group, the historical Combined Financial Statements have been prepared, as if the Fund structure was in place and 100% interest of the Project SPVs was part of the Fund since April 1, 2016.

The Combined Financial Statements are special purpose financial statements of the fund and have been prepared to meet the requirements of InvIT Regulations and for inclusion in the Private Placement Documents in connection with the proposed initial offer through private placement of units of Fund. As a result, the Combined Financial Statements may not be suitable for another purpose.

The Combined Financial Statements are presented in Rs. in millions, except when otherwise indicated.

B Basis of preparation of Combined Financial Statements

The Combined Financial Statements comprise the financial statements of the Project SPV Group.

Combined Financial Statements are prepared using uniform accounting policies for like transactions and other events in similar circumstances.

The financial statements of all Project SPVs used for the purpose of combination are drawn up to the same reporting date i.e. period ended on September 30/ year ended on March 31.

Combination procedure:

(a) Combine like items of assets, liabilities, equity, income, expenses and cash flows of Project SPVs.

(b) Eliminate in full intra Project SPVs assets and liabilities, income, expenses and cash flows relating to transactions between Project SPVs of the Project SPV Group (profits or losses resulting from intra Project SPV Group transactions that are recognised in assets, such as inventory and property, plant and equipment, are eliminated in full). Profit or loss and each component of other comprehensive income (OCI) are attributed to the equity holders of the Project SPV Group and to the non-controlling interests, even if this results in the non-controlling interests having a deficit balance.

3 **Summary of significant accounting policies**

3.01 **Current versus non-current classification**

The Project SPV Group has identified twelve months as its operating cycle. The operating cycle is the time between the acquisition of assets for processing and their realisation in cash and cash equivalents.

The Project SPV Group presents assets and liabilities in the balance sheet based on current/ non-current classification. An asset is treated as current when it is:

- Expected to be realised or intended to be sold or consumed in normal operating cycle
- Held primarily for the purpose of trading
- Expected to be realised within twelve months after the reporting period, or
- Cash or cash equivalent unless restricted from being exchanged or used to settle a liability for at least twelve months after the reporting period.

All other assets are classified as non-current.

A liability is current when:
- It is expected to be settled in normal operating cycle
- It is held primarily for the purpose of trading
- It is due to be settled within twelve months after the reporting period, or
- There is no unconditional right to defer the settlement of the liability for at least twelve months after the reporting period

The Project SPV Group classifies all other liabilities as non-current.
Deferred tax assets and liabilities are classified as non-current assets and liabilities.

3.02 **Use of estimates and judgements**

The preparation of the Project SPV Group's financial statements requires management to make judgements, estimates and assumptions that affect the reported amounts of revenue, expenses, assets and liabilities, and the accompanying disclosures, and the disclosure of contingent liabilities. Uncertainty about these assumptions and estimates could result in outcomes that require a material adjustment to the carrying amount of assets or liabilities affected in future years.

Estimates and assumptions

Estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are recognised in the year in which the estimates are revised and future periods are affected.

The key assumptions concerning the future and other key sources of estimation uncertainty at the reporting date, that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year, are described below. The Project SPV Group based its assumptions and estimates on parameters available when the financial statements were prepared. Existing circumstances and assumptions about future developments, however, may change due to market changes or circumstances arising that are beyond the control of the Group. Such changes are reflected in the assumptions when they occur.

Fair value measurement of financial instruments (refer note 34)
Employee benefits (refer note 25)
Measurement of employee defined benefit obligations; key actuarial assumptions (refer note 31)
Provision for major maintenance (refer note 20)
Impairment of non financial assets (refer note 3.19)

3.03 **Fair value measurement**

The Project SPV Group measures financial instruments, (refer note 34) at fair value at each balance sheet date.

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The fair value measurement is based on the presumption that the transaction to sell the asset or transfer the liability takes place either:

- In the principal market for the asset or liability, or
- In the absence of a principal market, in the most advantageous market for the asset or liability

The principal or the most advantageous market must be accessible by the Project SPV Group.
The fair value of an asset or a liability is measured using the assumptions that market participants would use when pricing the asset or liability, assuming that market participants act in their economic best interest.

A fair value measurement of a non-financial asset takes into account a market participant's ability to generate economic benefits by using the asset in its highest and best use or by selling it to another market participant that would use the asset in its highest and best use.

The Project SPV Group uses valuation techniques that are appropriate in the circumstances and for which sufficient data are available to measure fair value, maximising the use of relevant observable inputs and minimising the use of unobservable inputs.

All assets and liabilities for which fair value is measured or disclosed in the financial statements are categorised within the fair value hierarchy, described as follows, based on the lowest level input that is significant to the fair value measurement as a whole:

Level 1 - Quoted (unadjusted) market prices in active markets for identical assets or liabilities
Level 2- Valuation techniques for which the lowest level input that is significant to the fair value measurement is directly or indirectly observable
Level 3 -Valuation techniques for which the lowest level input that is significant to the fair value measurement is unobservable
For assets and liabilities that are recognised in the financial statements on a recurring basis, the Project SPV Group determines whether transfers have occurred between levels in the hierarchy by re-assessing categorisation (based on the lowest level input that is significant to the fair value measurement as a whole) at the end of each reporting period.

The Project SPV Group's Management determines the policies and procedures for both recurring fair value measurement, such as derivative instruments and unquoted financial assets measured at fair value, and for non-recurring measurement, such as assets held for distribution in discontinued operations.

At each reporting date, the Management analyses the movements in the values of assets and liabilities which are required to be remeasured or re-assessed as per the Project SPV Group's accounting policies. For this analysis, the Management verifies the major inputs applied in the latest valuation by agreeing the information in the valuation computation to contracts and other relevant documents.

The management also compares the change in the fair value of each asset and liability with relevant external sources to determine whether the change is reasonable.

On an annual basis, the Management presents the valuation results to the Audit Committee and the Project SPV Group's independent auditors. This includes a discussion of the major assumptions used in the valuations.

For the purpose of fair value disclosures, the Project SPV Group has determined classes of assets and liabilities on the basis of the nature, characteristics and risks of the asset or liability and the level of the fair value hierarchy as explained above.

This note summarises accounting policy for fair value. Other fair value related disclosures are given in the relevant notes.
Disclosures for valuation methods, significant estimates and assumptions (note 34)
Financial instruments (including those carried at amortised cost) (note 5,6,7,8,12,12A,17,18,19,34)
Quantative disclosure of fair value measurement hierarchy (note 34)

3.04 **Revenue recognition**

Transition to New standard

Ind AS 115, Revenue from contracts with customers was issued on March 28, 2018 and supersedes Ind AS 11, Construction Contracts and Ind AS 18, Revenue and it applies, with limited exception, to all revenue arising from contracts with its customers. Under Ind AS 115, revenue is recognised when a customer obtains control of goods or services. The Project SPV Group has adopted Ind AS 115 using the cumulative effect method (without practical expedients) with the effect of initially applying this standard recognised at the date of initial application i.e. April 1, 2018. Accordingly, the comparative information i.e. information for the year ended March 31, 2018, has not been restated. Additionally, the disclosure requirements in Ind AS 115 have not generally been applied to comparative information.

The Project SPV Group has applied the following accounting policy for revenue recognition:

Revenue from contracts with customers:

The Project SPV Group recognises revenue from contracts with customers based on a five step model as set out in Ind AS 115:

Step 1. Identify the contract(s) with a customer: A contract is defined as an agreement between two or more parties that creates enforceable rights and obligations and sets out the criteria for every contract that must be met.

Step 2. Identify the performance obligations in the contract: A performance obligation is a promise in a contract with a customer to transfer a good or service to the customer.

Step 3. Determine the transaction price: The transaction price is the amount of consideration to which the Company expects to be entitled in exchange for transferring promised goods or services to a customer, excluding amounts collected on behalf of third parties.

Step 4. Allocate the transaction price to the performance obligations in the contract: For a contract that has more than one performance obligation, the Company will allocate the transaction price to each performance obligation in an amount that depicts the amount of consideration to which the Company expects to be entitled in exchange for satisfying each performance obligation.

Step 5. Recognise revenue when (or as) the entity satisfies a performance obligation.

The Project SPV Group satisfies a performance obligation and recognises revenue over time, if one of the following criteria is met:

1. The customer simultaneously receives and consumes the benefits provided by the Project SPV Group's performance as the Project SPV Group performs; or
2. The Project SPV Group's performance creates or enhances an asset that the customer controls as the asset is created or enhanced; or
3. The Project SPV Group's performance does not create an asset with an alternative use to the Project SPV Group and the entity has an enforceable right to payment for performance completed to date.

Contract revenue (construction contracts)

Contract revenue and contract cost associated with the construction of road are recognised as revenue and expenses respectively by reference to the stage of completion of the projects at the balance sheet date. The stage of completion of project is determined by the proportion that contract cost incurred for work performed upto the balance sheet date bear to the estimated total contract costs. Where the outcome of the construction cannot be estimated reliably, revenue is recognised to the extent of the construction costs incurred if it is probable that they will be recoverable. If total cost is estimated to exceed total contract revenue, the Project SPV Group provides for foreseeable loss. Contract revenue earned in excess of billing has been reflected as unbilled revenue and billing in excess of contract revenue has been reflected as unearned revenue. As per the underlying construction contracts in force, the Project SPV Group bears certain indirect taxes as it's own expense, and are effectively acting as principals and collecting the indirect taxes on their own account. Accordingly, revenue from operations is presented as gross of indirect taxes. Claims recognised to the extent that it is probable that they will result in revenue, they are capable of being reliably measured and it is not unreasonable to expect ultimate collection.

Income from the concession arrangements earned under the intangible asset model consists of the (i) fair value of contract revenue, which is deemed to be fair value of consideration transferred to acquire the asset; and (ii) payments actually received from the users. The intangible asset is amortised over its expected useful life in a way that reflects the pattern in which the asset's economic benefits are consumed by the Project SPV Group, starting from the date when the right to operate starts to be used. Based on these principles, the intangible asset is amortised in line with the actual usage of the specific public utility facility, with a maximum of the duration of the concession.

Financial receivable is recorded at a fair value of guaranteed residual value to be received at the end of the concession period. This receivable is subsequently measured at amortised cost. In the financial assets model, the amount due from the grantor meet the identifiation of the receivable which is measured at fair value. Based on business model assessment, the Project SPV Group measures such financial assets at fair value and subsequently also classifies the same as fair value through profit and loss ("FVTPL"). Any asset carried under concession arrangements is derecognised on disposal or when no future economic benefits are expected from its future use or disposal or when the contractual rights to the financial asset expire.

Income from toll contracts

The income from Toll Contracts on BOT basis are recognised on actual collection of toll revenue (net of revenue share payable to NHAI) as per Concession Agreement. Revenue from electronic toll collection is recognised on accrual basis.

Interest income
For all financial assets measured either at amortised cost or at fair value through other comprehensive income, interest income is recorded using the effective interest rate (EIR). EIR is the rate that exactly discounts the estimated future cash payments or receipts over the expected life of the financial instrument or a shorter period, where appropriate, to the gross carrying amount of the financial asset or to the amortised cost of a financial liability. When calculating the effective interest rate, the Project SPV Group estimates the expected cash flows by considering all the contractual terms of the financial instrument (for example, prepayment, extension, call and similar options) but does not consider the expected credit losses. Interest income is included in finance income in the statement of profit and loss.

Dividends
Revenue is recognised when the Project SPV Group's right to receive the payment is established, which is generally when shareholders approve the dividend.

Trade receivables
A receivable represents the Project SPV Group's right to an amount of consideration that is unconditional i.e. only the passage of time is required before payment of consideration is due.

Contract liabilities
A contract liability is the obligation to transfer goods or services to a customer for which the Project SPV Group has received consideration (or an amount of consideration is due) from the customer. Contract liabilities are recognised as revenue when the Project SPV Group performs under the contract.

3.05 **Government Grants**
Grants and subsidies from the government are recognised if the following conditions are satisfied.

There is reasonable assurance that the Project SPV Group will comply with the conditions attached to it.
Such benefits are earned and reasonable certainty exists of the collection.
Government grants are recognised in accordance with the terms of the respective grant on accrual basis considering the status of compliance of prescribed conditions and ascertainment that the grant will be received.

Grant received are considered as a part of the total outlay of the construction project and accordingly, the same is reduced from the gross value of assets.

3.06 **Taxes**
Current income tax
Current income tax assets and liabilities are measured at the amount expected to be recovered from or paid to the taxation authorities in accordance the Income Tax Act, 1961. The tax rates and tax laws used to compute the amount are those that are enacted or substantively enacted at the reporting date in the country where the Company operates and generates taxable income.

Current income tax relating to items recognised outside profit or loss (either in other comprehensive income or in equity). Current tax items are recognised in correlation to the underlying transaction either in OCI or directly in equity. Management periodically evaluates positions taken in the tax returns with respect to situations in which applicable tax regulations are subject to interpretation and establishes provisions where appropriate.

Deferred tax
Deferred tax is provided using the liability method on temporary differences between the tax bases of assets and liabilities and their carrying amounts for financial reporting purposes at the reporting date.

Deferred tax liabilities are recognised for all taxable temporary differences, except:

- When the deferred tax liability arises from the initial recognition of goodwill or an asset or liability in a transaction that is not a business combination and at the time of the transaction, affects neither the accounting profit nor taxable profit or loss.

- In respect of taxable temporary differences associated with investments in subsidiaries, when the timing of the reversal of the temporary differences can be controlled and it is probable that the temporary differences will not reverse in the foreseeable future

Deferred tax assets are recognised for all deductible temporary differences, the carry forward of unused tax credits and any unused tax losses. Deferred tax assets are recognised to the extent that it is probable that taxable profit will be available against which the deductible temporary differences, and the carry forward of unused tax credits and unused tax losses can be utilised, except:

- When the deferred tax asset relating to the deductible temporary difference arises from the initial recognition of an asset or liability in a transaction that is not a business combination and, at the time of the transaction. affects neither the accounting profit nor taxable profit or loss.

The carrying amount of deferred tax assets is reviewed at each reporting date and reduced to the extent that it is no longer probable that sufficient taxable profit will be available to allow all or part of the deferred tax asset to be utilised. Unrecognised deferred tax assets are re-assessed at each reporting date and are recognised to the extent that it has become probable that future taxable profits will allow the deferred tax asset to be recovered.

Deferred tax assets and liabilities are measured at the tax rates that are expected to apply in the year when the asset is realised or the liability is settled, based on tax rates (and tax laws) that have been enacted or substantively enacted at the reporting date.

Deferred tax relating to items recognised outside statement of profit and loss is recognised outside statement of profit and loss (either in other comprehensive income or in equity). Deferred tax items are recognised in correlation to the underlying transaction either in OCI or directly in equity .

Deferred tax assets and deferred tax liabilities are offset if a legally enforceable right exists to set off current tax assets against current tax liabilities and the deferred taxes relate to the same taxable entity and the same taxation authority.

Tax benefits acquired as part of a business combination, but not satisfying the criteria for separate recognition at that date, are recognised subsequently if new information about facts and circumstances change. Acquired deferred tax benefits recognised within the measurement period reduce goodwill related to that acquisition if they result from new information obtained about facts and circumstances existing at the acquisition date. If the carrying amount of goodwill is zero, any remaining deferred tax benefits are recognised in OCI/ capital reserve depending on the principle explained for bargain purchase gains. All other acquired tax benefits realised are recognised in the consolidated statement of profit and loss. Deferred tax is recognised in consolidated statement of profit and loss on the consolidated adjustments.

Minimum Alternate Tax (MAT)

Minimum Alternate Tax (MAT) paid as per Indian Income Tax Act, 1961 is in the nature of unused tax credit which can be carried forward and utilised when the Project SPV Group will pay normal income tax during the specified period. Deferred tax assets on such tax credit is recognised to the extent that it is probable that the unused tax credit can be utilised in the specified future period. The net amount of tax recoverable from, or payable to, the taxation authority is included as part of receivables or payables in the balance sheet.

3.07 **Property, plant and equipment**

Property, plant and equipment are stated at cost, less accumulated depreciation and impairment losses if any. Cost comprises the purchase price and any attributable cost of bringing the asset to its working condition for its intended use.Any trade discount or rebates are deducted in arriving at the purchase price.

Depreciation is calculated on written down value method (WDV) using the useful lives as prescribed under the Schedule II to the Companies Act, 2013 or re-assessed by the Project SPV Group based on technical evaluation. The Project SPV Group has estimated the following useful lives for its tangible fixed assets:

Asset class	Useful life	As per Companies Act 2013
Building	30 years	30 years
Plant & Machinery	9 years - 15 years	9 years - 15 years
Office equipment	5 years	5 years
Computers	3 years	3 years
Servers	6 years	6 years
Vehicles	8 years	8 years
Furniture & fixtures	10 years	10 years

3.08 **Intangible assets**

The Project SPV Group exercised first time adoption under Ind AS 101 and has elected to continue with the carrying value of its "Toll Collection Rights" (Intangible Assets) including corresponding obligation, as recognised in the financial statements as at the date of transition April 1, 2016 measured as per the Previous GAAP and uses that as its deemed cost as at date of transition.

Toll collection rights are stated at cost, less accumulated amortisation , impairment losses and grant from government. Cost includes:
a) For acquired Toll Collection Rights - Upfront payments towards acquisition and incidental expenses related thereto.
b) Toll Collection Rights awarded by the grantor against construction service rendered by the Project SPV Group on BOT / DBFOT basis - Direct and indirect expenses on construction of roads, bridges, culverts, infrastructure and other assets at the toll plazas.

c) Toll Collection Rights in lieu of premium - Undiscounted premium obligation over the concession period.

Amortisation

Toll Collection Rights are amortised over the period of concession, using revenue based amortisation as prescribed in Ind As-36. Under this method, the carrying value of the rights is amortised in the proportion of actual toll revenue for the year to projected revenue for the balance toll period, to reflect the pattern in which the assets economic benefits will be consumed. At each balance sheet date, the projected revenue for the balance toll period is reviewed by the management. If there is any change in the projected revenue from previous estimates, the amortisation of toll collection rights is changed prospectively to reflect any changes in the estimates.

Intangible assets under development

Expenditure related to and incurred during implementation of project are included under "Intangible Assets under Development". The same will be transferred to the respective intangible assets on completion of project.

3.09 **Borrowing costs**

Borrowing costs directly attributable to the acquisition, construction or production of an asset that necessarily takes a substantial period of time to get ready for its intended use or sale are capitalised as part of the cost of the asset. All other borrowing costs are expensed in the period in which they occur. Borrowing costs consist of interest and other costs that an entity incurs in connection with the borrowing of funds. Borrowing cost also includes exchange differences between the foreign currency borrowing and the functional currency borrowing to the extent regarded as an adjustment to the borrowing costs.

3.10 **Leases**

The determination of whether an arrangement is (or contains) a lease is based on the substance of the arrangement at the inception of the lease. The arrangement is, or contains, a lease if fulfilment of the arrangement is dependent on the use of a specific asset or assets and the arrangement conveys a right to use the asset or assets, even if that right is not explicitly specified in an arrangement.

Project SPV Group as a lessee

A leased asset is depreciated over the useful life of the asset. However, if there is no reasonable certainty that the Project SPV Group will obtain ownership by the end of the lease term, the asset is depreciated over the shorter of the estimated useful life of the asset and the lease term.

A lease is classified at the inception date as a finance lease or an operating lease. A lease that transfers substantially all the risks and rewards incidental to ownership to the Project SPV Group is classified as a finance lease.

Operating lease payments are recognised as an expense in the consolidated statement of profit and loss on a straight-line basis over the lease term.

Ind AS 116 - Leases

Ind AS 116, Leases replaces existing lease accounting guidance i.e. Ind AS 17, Leases. It sets out principles for the recognition, measurement, presentation and disclosure of leases and requires lessees to account for all leases, except short-term leases and leases for low-value items, under a single on-balance sheet lease accounting model. A lessee recognises a right-of-use asset representing its right to use the underlying asset and a lease liability representing its obligation to make lease payments. Lessor accounting largely unchanged from the existing standard – Based on the preliminary assessment, the Company does not expect any significant impacts on transition to Ind AS 116. This assessment is based on currently available information and may be subject to changes arising from further reasonable and supportable information when the standard will be adopted.

Project SPV Group as a lessor

Leases in which the Project SPV Group does not transfer substantially all the risks and rewards of ownership of an asset are classified as operating leases. Rental income from operating lease is recognised on a straight-line basis over the term of the relevant lease. Initial direct costs incurred in negotiating and arranging an operating lease are added to the carrying amount of the leased asset and recognised over the lease term on the same basis as rental income.Contingent rents are recognised as revenue in the period in which they are earned.

Leases are classified as finance leases when substantially all of the risks and rewards of ownership transfer from the Project SPV Group to the lessee. Amounts due from lessees under finance leases are recorded as receivables at the Project SPV Group's net investment in the leases. Finance lease income is allocated to accounting periods so as to reflect a constant periodic rate of return on the net investment outstanding in respect of the lease.

3.11 **Inventories**

Inventories are valued as follows:

Construction materials, components, stores, spares and tools

Lower of cost and net realisable value. Cost is determined on weighted average basis and includes all applicable costs in bringing goods to their present location and condition.

Net realisable value is the estimated selling price in the ordinary course of business, less estimated costs of completion and the estimated costs necessary to make the sale.

3.12 **Provisions**

Provisions are recognised when the Project SPV Group has a present obligation (legal or constructive) as a result of a past event, it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation and a reliable estimate can be made of the amount of the obligation. When the Project SPV Group expects some or all of a provision to be reimbursed, for example, under an insurance contract, the reimbursement is recognised as a separate asset, but only when the reimbursement is virtually certain. The expense relating to a provision is presented in the statement of profit and loss net of any reimbursement.

If the effect of the time value of money is material, provisions are discounted using a current pre-tax rate that reflects, when appropriate, the risks specific to the liability. When discounting is used, the increase in the provision due to the passage of time is recognised as a finance cost. Provisions are reviewed at each balance sheet date and adjusted to reflect the current best estimates.

3.13 **Resurfacing expenses**

As per the Concession Agreements, the Project SPV Group is obligated to carry out resurfacing of the roads under concession. The Project SPV Group estimates the likely provision required towards resurfacing and accrues the cost on a straight line basis over the period at the end of which resurfacing would be required, in the consolidated statement of profit and loss in accordance with Ind AS 37 "Provisions, Contingent Liabilities and Contingent Assets."

3.14 **Contingent liability and Contingent assets**

A contingent liability is a possible obligation that arises from past events whose existence will be confirmed by the occurrence or non-occurrence of one or more uncertain future events beyond the control of the Project SPV Group or a present obligation that is not recognised because it is not probable that an outflow of resources will be required to settle the obligation. A contingent liability also arises in extremely rare cases where there is a liability that cannot be recognised because it cannot be measured reliably. The Project SPV Group does not recognise a contingent liability but discloses its existence in the financial statements.

A contingent assets is not recognised unless it becomes virtually certain that an inflow of economic benefits will arise. When an inflow of economic benefits is probable, contingent assets are disclosed in the financial statements.

Contingent liabilities and contingent assets are reviewed at each balance sheet date.

3.15 **Retirement and other employee benefits**

i. Defined contribution plan

Retirement benefits in the form of provident fund, Pension Fund and Employees State Insurance Fund are a defined contribution scheme and the contributions are charged to the Statement of profit and loss for the period when the employee renders related services. There are no other obligations other than the contribution payable to the respective authorities.

ii. Defined benefit plan

Gratuity liability for eligible employees are defined benefit obligation and are provided for on the basis of an actuarial valuation on projected unit credit method made at the end of each financial year. Obligation is measured at the present value of estimated future cash flows using discounted rate that is determined by reference to market yields at the balance sheet date on Government Securities where the currency and terms of the Government Securities are consistent with the currency and estimated terms of the defined benefit obligation.

Remeasurements, comprising of actuarial gains and losses excluding amounts included in net interest on the net defined benefit liability are recognised immediately in the balance sheet with a corresponding debit or credit to retained earnings through OCI in the period in which they occur. Remeasurements are not reclassified to statement of profit and loss in subsequent periods.

Past service costs are recognised in statement of profit and loss on the earlier of:

- The date of the plan amendment or curtailment, and
- The date that the Project SPV Group recognises related restructuring costs

Net interest is calculated by applying the discount rate to the net defined benefit liability or asset. The Project SPV Group recognises the following changes in the net defined benefit obligation as an expense in the statement of profit and loss:

- Service costs comprising current service costs, past-service costs, gains and losses on curtailments and non-routine settlements; and
- Net interest expense or income

iii. Compensated absences

As per the leave encashment policy of the Project SPV Group, the employees have to utilise their eligible leave during the calendar year and lapses at the end of the calendar year. Accrual towards compensated absences at the end of the financial year are based on last salary drawn and outstanding leave absence at the end of the financial year.

3.16 **Financial instruments**

A financial instrument is any contract that gives rise to a financial asset of one entity and a financial liability or equity instrument of another entity.

Financial assets

Initial recognition and measurement

All financial assets are recognised initially at fair value plus, in the case of financial assets not recorded at fair value through statement of profit and loss, transaction costs that are attributable to the acquisition of the financial asset.

On initial recognistion, a financial asset is classified as measured of
- amortised cost
- FVOCI - Debt instruments
- FVOCI - equity instruments
- FVTPL

Financial assets are not reclassified subsequent to their initial recognition, except if and in the year, the Project SPV Group changes its business model for managing financial assets.

Debt instruments at amortised cost

A 'debt instrument' is measured at the amortised cost if both the following conditions are met:
- The asset is held within a business model whose objective is to hold assets for collecting contractual cash flows, and
- Contractual terms of the asset give rise on specified dates to cash flows that are solely payments of principal and interest (SPPI) on the principal amount outstanding.

After initial measurement, such financial assets are subsequently measured at amortised cost using the effective interest rate (EIR) method. Amortised cost is calculated by taking into account any discount or premium on acquisition and fees or costs that are an integral part of the EIR. The EIR amortisation is included in finance income in the statement of profit and loss. The losses arising from impairment are recognised in the statement of profit and loss.

Debt instrument at FVTOCI

A 'debt instrument' is classified as at the FVTOCI if both of the following criteria are met:
- The objective of the business model is achieved both by collecting contractual cash flows and selling the financial assets, and
- The asset's contractual cash flows represent SPPI.

Debt instruments included within the FVTOCI category are measured initially as well as at each reporting date at fair value. Fair value movements are recognized in the other comprehensive income (OCI). However, the Project SPV Group recognizes interest income, impairment losses and reversals and foreign exchange gain or loss in the statement of profit and loss. On derecognition of the asset, cumulative gain or loss previously recognised in OCI is reclassified from the equity to Statement of profit and loss.Interest earned whilst holding FVTOCI debt instrument is reported as interest income using the EIR method.

Debt instrument at FVTPL

FVTPL is a residual category for debt instruments. Any debt instrument, which does not meet the criteria for categorization as at amortized cost or as at FVTOCI, is classified as at FVTPL.

In addition, the Project SPV Group may elect to designate a debt instrument, which otherwise meets amortized cost or FVTOCI criteria, as at FVTPL. However, such election is allowed only if doing so reduces or eliminates a measurement or recognition inconsistency (referred to as 'accounting mismatch'). The Project SPV Group has designated certain debt instrument as at FVTPL.

Debt instruments included within the FVTPL category are measured at fair value with all changes recognized in the Statement of profit and loss.

Equity investments

All equity investments in scope of Ind AS 109 are measured at fair value. Equity instruments which are held for trading are classified as at FVTPL. For all other equity instruments, the Project SPV Group may make an irrevocable election to present in other comprehensive income subsequent changes in the fair value. The Project SPV Group makes such election on an instrument-byinstrument basis. The classification is made on initial recognition and is irrevocable.

If the Project SPV Group decides to classify an equity instrument as at FVTOCI, then all fair value changes on the instrument, excluding dividends, are recognized in the OCI. There is no recycling of the amounts from OCI to P&L, even on sale of investment. However, the Project SPV Group may transfer the cumulative gain or loss within equity.

Equity instruments included within the FVTPL category are measured at fair value with all changes recognized in the Statement of profit and loss.

Derecognition

A financial asset (or, where applicable, a part of a financial asset or part of a Project SPV Group of similar financial assets) is primarily derecognised (i.e. removed from the Project SPV Group's consolidated balance sheet) when:

- The rights to receive cash flows from the asset has expired, or
-The Project SPV Group has transferred its rights to receive cash flows from the asset or has assumed an obligation to pay the received cash flows in full without material delay to a third party under a 'pass-through' arrangement; and either (a) the Project SPV Group has transferred substantially all the risks and rewards of the asset, or (b) the Project SPV Group has neither transferred nor retained substantially all the risks and rewards of the asset, but has transferred control of the asset.

When the Project SPV Group has transferred its rights to receive cash flows from an asset or has entered into a pass-through arrangement, it evaluates if and to what extent it has retained the risks and rewards of ownership. When it has neither transferred nor retained substantially all of the risks and rewards of the asset, nor transferred control of the asset, the Project SPV Group continues to recognise the transferred asset to the extent of the Project SPV Group's continuing involvement. In that case, the Project SPV Group also recognises an associated liability. The transferred asset and the associated liability are measured on a basis that reflects the rights and obligations that the Project SPV Group has retained.

Continuing involvement that takes the form of a guarantee over the transferred asset is measured at the lower of the original carrying amount of the asset and the maximum amount of consideration that the Project SPV Group could be required to repay.

Impairment of financial assets

In accordance with Ind AS 109, the Project SPV Group applies expected credit loss (ECL) model for measurement and recognition of impairment loss on the following financial assets and credit risk exposure:

-Financial assets that are debt instruments, and are measured at amortised cost e.g., loans, debt securities, deposits, trade receivables and bank balance
-Financial assets that are debt instruments and are measured as at FVTOCI
-Lease receivables under Ind AS 17
-Trade receivables or any contractual right to receive cash or another financial asset that result from transactions that are within the scope of Ind AS 18 (referred to as contractual revenue receivables' in these financial statements)

-Loan commitments which are not measured as at FVTPL
-Financial guarantee contracts which are not measured as at FVTPL

The Project SPV Group follows 'simplified approach' for recognition of impairment loss allowance on:
-Trade receivables; and
-Other receivables

The application of simplified approach does not require the Project SPV Group to track changes in credit risk. Rather, it recognises impairment loss allowance based on lifetime ECLs at each reporting date, right from its initial recognition.

For recognition of impairment loss on other financial assets and risk exposure, the Project SPV Group determines that whether there has been a significant increase in the credit risk since initial recognition. If credit risk has not increased significantly, 12-month ECL is used to provide for impairment loss. However, if credit risk has increased significantly, lifetime ECL is used. If, in a subsequent period, credit quality of the instrument improves such that there is no longer a significant increase in credit risk since initial recognition, then the entity reverts to recognising impairment loss allowance based on 12-month ECL.

Lifetime ECL are the expected credit losses resulting from all possible default events over the expected life of a financial instrument. The 12-month ECL is a portion of the lifetime ECL which results from default events that are possible within 12 months after the reporting date.

ECL is the difference between all contractual cash flows that are due to the Project SPV Group in accordance with the contract and all the cash flows that the entity expects to receive (i.e., all cash shortfalls), discounted at the original EIR. When estimating the cash flows, an entity is required to consider:

-All contractual terms of the financial instrument (including prepayment, extension, call and similar options) over the expected life of the financial instrument. However, in rare cases when the expected life of the financial instrument cannot be estimated reliably, then the entity is required to use the remaining contractual term of the financial instrument. -

-Cash flows from the sale of collateral held or other credit enhancements that are integral to the contractual terms
-Financial assets measured as at amortised cost, contractual revenue receivables and lease receivables: ECL is presented as an allowance, i.e., as an integral part of the measurement of those assets in the balance sheet. The allowance reduces the net carrying amount. Until the asset meets write-off criteria, the Project SPV Group does not reduce impairment allowance from the gross carrying amount.

Financial liabilities

Initial recognition and measurement

Financial liabilities are classified, at initial recognition, as financial liabilities at fair value through Statement of profit and loss, loans and borrowings, or payables, as appropriate.

All financial liabilities are recognised initially at fair value and, in the case of loans and borrowings and payables, net of directly attributable transaction costs.
The Project SPV Group's financial liabilities include trade and other payables, loans and borrowings including bank overdrafts and derivative financial instruments.

Subsequent measurement

The measurement of financial liabilities depends on their classification, as described below:

Financial liabilities at fair value through Statement of profit and loss

Financial liabilities at fair value through profit or loss include financial liabilities held for trading and financial liabilities designated upon initial recognition as at fair value through statement of profit and loss. Financial liabilities are classified as held for trading if they are incurred for the purpose of repurchasing in the near term. This category also includes derivative financial instruments entered into by the Project SPV Group that are not designated as hedging instruments in hedge relationships as defined by Ind AS 109.

Gains or losses on liabilities held for trading are recognised in the consolidated statement of profit and loss.

Loans and borrowings

This is the category most relevant to the Project SPV Group. After initial recognition, interest-bearing loans and borrowings are subsequently measured at amortised cost using the EIR method. Gains and losses are recognised in statement of profit and loss when the liabilities are derecognised as well as through the EIR amortisation process.

Amortised cost is calculated by taking into account any discount or premium on acquisition and fees or costs that are an integral part of the EIR. The EIR amortisation is included as finance costs in the statement of profit and loss.

This category generally applies to borrowings. For more information refer note 17.

Derecognition

A financial liability is derecognised when the obligation under the liability is discharged or cancelled or expires. When an existing financial liability is replaced by another from the same lender on substantially different terms, or the terms of an existing liability are substantially modified, such an exchange or modification is treated as the derecognition of the original liability and the recognition of a new liability. The difference in the respective carrying amounts is recognised in the consolidated statement of profit and loss.

Offsetting of financial instruments

Financial assets and financial liabilities are offset and the net amount is reported in the standalone balance sheet if there is a currently enforceable legal right to offset the recognised amounts and there is an intention to settle on a net basis, to realise the assets and settle the liabilities simultaneously.

3.17 **Cash and cash equivalents**

Cash and cash equivalent in the balance sheet comprises of cash at banks and on hand and short-term deposits with an original maturity of three months or less, which are subject to an insignificant risk of changes in value.

For the purpose of the statement of cash flows, cash and cash equivalents consist of cash and short-term deposits, as defined above, as they are considered an integral part of the Project SPV Group's cash management.

3.18 **Cash dividend to equity holders of the Project SPV Group**

The Project SPV Group recognises a liability to make cash or non-cash distributions to equity holders of the parent when the distribution is authorised and the distribution is no longer at the discretion of the Project SPV Group. As per the corporate laws in India, a distribution is authorised when it is approved by the shareholders. A corresponding amount is recognised directly in equity.

3.19 **Impairment of non-financial assets**

The Project SPV Group assesses, at each reporting date, whether there is an indication that an asset may be impaired. If any indication exists, or when annual impairment testing for an asset is required, the Project SPV Group estimates the asset's recoverable amount. An asset's recoverable amount is the higher of an asset's or cash-generating unit's (CGU) fair value less costs of disposal and its value in use. Recoverable amount is determined for an individual asset. unless the asset does not generate cash inflows that are largely independent of those from other assets or Project SPV Group's of assets. When the carrying amount of an asset or CGU exceeds its recoverable amount, the asset is considered impaired and is written down to its recoverable amount.

In assessing value in use, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset. In determining fair value less costs of disposal, recent market transactions are taken into account. If no such transactions can be identified, an appropriate valuation model is used. These calculations are corroborated by valuation multiples, quoted share prices for publicly traded companies or other available fair value indicators.

The Project SPV Group bases its impairment calculation on detailed budgets and forecast calculations, which are prepared separately for each of the Project SPV Group's CGUs to which the individual assets are allocated. These budgets and forecast calculations generally cover a period of five years. For longer periods, a long-term growth rate is calculated and applied to project future cash flows after the fifth year. To estimate cash flow projections beyond periods covered by the most recent budgets/forecasts, the Project SPV Group extrapolates cash flow projections in the budget using a steady or declining growth rate for subsequent years, unless an increasing rate can be justified. In any case, this growth rate does not exceed the long-term average growth rate for the products, industries, or country or countries in which the entity operates, or for the market in which the asset is used.

For assets excluding goodwill, an assessment is made at each reporting date to determine whether there is an indication that previously recognised impairment losses no longer exist or have decreased. If such indication exists, the Project SPV Group estimates the asset's or CGU's recoverable amount. A previously recognised impairment loss is reversed only if there has been a change in the assumptions used to determine the asset's recoverable amount since the last impairment loss was recognised. The reversal is limited so that the carrying amount of the asset does not exceed its recoverable amount, nor exceed the carrying amount that would have been determined, net of depreciation, had no impairment loss been recognised for the asset in prior years. Such reversal is recognised in the statement of profit and loss.

Goodwill is tested for impairment annually as at 31 March and when circumstances indicate that the carrying value may be impaired.
Impairment is determined for goodwill by assessing the recoverable amount of each CGU (or Project SPV Group of CGUs) to which the goodwill relates. When the recoverable amount of the CGU is less than its carrying amount, an impairment loss is recognised. Impairment losses relating to goodwill cannot be reversed in future periods.

Intangible assets with indefinite useful lives are tested for impairment annually as at 31 March at the CGU level, as appropriate, and when circumstances indicate that the carrying value may be impaired.

3.20 **Segment information**

Based on "Management Approach" as defined in Ind AS 108 - Operating Segments, the Management ("the Board of Directors") evaluates the Project SPV Group's performance and allocates the resources based on an analysis of various performance indicators by business segments. Inter segment sales and transfers are reflected at market prices.

Unallocable items includes general corporate income and expense items which are not allocated to any business segment.

Segment policies:

The Project SPV Group prepares its segment information in conformity with the accounting policies adopted for preparing and presenting the financial statements of the Project SPV Group as a whole. Common allocable costs are allocated to each segment on an appropriate basis.

3.21 **Earnings per share**

Basic earnings per share are calculated by dividing the net profit or loss for the period attributable to equity shareholders by the weighted average number of equity shares outstanding during the period. For the purpose of calculating diluted earnings per share, the net profit or loss for the period attributable to equity shareholders and the weighted average number of shares outstanding during the period are adjusted for the effects of all dilutive potential equity shares.

3.22 **Changes in accounting policies and disclosures**

New and amended Indian Accounting Standards (Ind AS)

Ministry of Corporate Affairs ("MCA"), through Companies (Indian Accounting Standards) Amendment Rules, 2019 and Companies (Indian Accounting Standards) Second Amendment Rules, has notified the following new and amendments to Ind ASs which the Company has not applied as they are effective from April 1, 2019:

The following amendments to existing standards have been issued, are not yet effective and are not expected to have a significant impact on the Company's financial statements:

Ind AS 109 – Financial Instruments (Prepayment Features with Negative Compensation)

The amendments relate to the existing requirements in Ind AS 109 regarding termination rights in order to allow measurement at amortised cost (or, depending on the business model, at fair value through other comprehensive income) even in the case of negative compensation payments. The Company does not expect this amendment to have any impact on its financial statements.

Ind AS 12 Income taxes (amendments relating to income tax consequences of dividend and uncertainty over income tax treatments)

Amendments to Ind AS 12, Income Taxes, clarify that all income tax consequences of dividends (including payments on financial instruments classified as equity) are recognized consistently with the transactions that generated the distributable profits – i.e. in profit or loss, other comprehensive income or equity. Further Appendix C, uncertainty over income tax treatments has been added to clarify how entities should reflect uncertainties over income tax treatments, in particular when assessing the outcome a tax authority might reach with full knowledge and information if it were to make an examination.

Ind AS 19 – Employee benefits (Plan Amendment, Curtailment or Settlement)

Amendment to Ind AS 19, Employee Benefits - The amendment to Ind AS 19 clarifies that on amendment, curtailment or settlement of a defined benefit plan, the current service cost and net interest for the remainder of the annual reporting period are calculated using updated actuarial assumptions – i.e. consistent with the calculation of a gain or loss on the plan amendment, curtailment or settlement. This amendment also clarifies that an entity first determines any past service cost, or a gain or loss on settlement, without considering the effect of the asset ceiling. This amount is recognized in profit or loss. The entity then determines the effect of the asset ceiling after plan amendment, curtailment or settlement. Any change in that effect is recognized in other comprehensive income (except for amounts included in net interest).

Ind AS 23 – Borrowing Costs

Amendments to Ind AS 23, Borrowing Costs, clarify that the general borrowings pool used to calculate eligible borrowing costs excludes only borrowings that specifically finance qualifying assets that are still under development or construction.

Impact on adoption of above changes in standards is not expected to be material.

Note 4 : Property, Plant and Equipment and Capital work in progress

(Amount in Millions.)

	Premises	Computer	Office Equipments	Furniture and Fixture	Total
At 31 March 2016	**-**	**-**	**-**	**-**	-
Additions	-	0.05	0.38	-	0.43
Disposals/ Adjustments	-	-	-	-	-
At 31 March 2017	**-**	**0.05**	**0.38**	**-**	0.43
Additions	5.41	0.18	0.22	0.04	5.85
Disposals/ Adjustments	-	-	-	-	-
At 31 March 2018	**5.41**	**0.23**	**0.60**	**0.04**	**6.28**
Additions	5.90	0.15	0.58	0.01	6.65
Disposals/ Adjustments	-	-	-	-	-
At 31 March 2019	**11.32**	**0.38**	**1.18**	**0.05**	**12.93**
Additions	4.78	0.01	0.11	0.35	5.25
Disposals/ Adjustments	-	-	-	-	-
At 30 September 2019	**16.09**	**0.40**	**1.29**	**0.40**	**18.18**

Depreciation

At 31 March 2016	**-**	**-**	**-**	**-**	**-**
Additions	-	0.02	0.06	-	0.08
Disposals/ Adjustments	-	-	-	-	-
At 31 March 2017	**-**	**0.02**	**0.06**	**-**	**0.08**
Additions	0.20	-	0.23	0.01	0.44
Disposals/ Adjustments	-	-	-	-	-
At 31 March 2018	**0.20**	**0.07**	**0.29**	**0.01**	**0.56**
Additions	1.04	0.14	0.28	0.01	1.47
Disposals/ Adjustments	-	-	-	-	-
At 31 March 2019	**1.23**	**0.21**	**0.57**	**0.02**	**2.03**
Additions	0.87	0.05	0.16	0.07	1.16
Disposals/ Adjustments	-	-	-	-	-
At 30 September 2019	**2.11**	**0.26**	**0.74**	**0.08**	**3.19**

Net Book value

At 30 September 2019	**13.98**	**0.14**	**0.56**	**0.32**	**14.99**
At 31 March 2019	**10.08**	**0.18**	**0.61**	**0.03**	**10.90**
At 31 March 2018	**5.22**	**0.16**	**0.31**	**0.03**	**5.72**
At 31 March 2017	**-**	**0.03**	**0.32**	**-**	**0.35**

Net Book value	**September 30, 2019**	**March 31, 2019**	**At 31 March 2018**	**At 31 March 2017**
Property, Plant and Equipment	14.99	10.90	5.72	0.35

Note 4 : Intangible Assets and Intangible Assets under development

Intangible Assets		(Amount in Millions.)
	Toll Collection Rights	**Total**
At 31 March 2016	-	**-**
Additions	24,230.00	**24,230.00**
Deletions	-	**-**
Adjustments	-	**-**
At 31 March 2017	**24,230.00**	**24,230.00**
Additions	**85,146.81**	**85,146.81**
Deletions	-	**-**
Adjustments	**-**	**-**
At 31 March 2018	**109,376.81**	**109,376.81**
Additions	28,045.21	28,045.21
Deletions	-	-
Adjustments	(73.66)	(73.66)
At 31 March 2019	**137,348.36**	**137,348.36**
Additions	35,090.24	35,090.24
Deletions	-	-
Adjustments	-	-
At September 30, 2019	**172,438.60**	**172,438.60**
Amortisation		
At 31 March 2016	-	-
Additions	83.61	83.61
Deletions	-	-
Adjustments	-	-
At 31 March 2017	**83.61**	**83.61**
Additions	**440.71**	**440.71**
Deletions	**-**	**-**
Adjustments	-	-
At 31 March 2018	**524.32**	**524.32**
Additions	1,098.36	1,098.36
Deletions	**-**	**-**
Adjustments	-	-
At 31 March 2019	**1,622.68**	**1,622.68**
Additions	841.30	841.30
Deletions	**-**	**-**
Adjustments	-	-
At September 30, 2019	**2,463.98**	**2,463.98**

Net Book value	
At 30 September 2019	169,974.62
At 31 March 2019	135,725.68
At 31 March 2018	108,852.49
At 31 March 2017	24,146.39

	September 30, 2019	**March 31, 2019**	**March 31, 2018**	**March 31, 2017**
Toll Collection Rights	169,974.62	135,725.68	108,852.49	24,146.39
Total	**169,974.62**	**135,725.68**	**108,852.49**	**24,146.39**

Tangible and Intangible assets given as security
Tangible and Intangible assets are subject to first charge to secured long-term borrowings from the lenders.

Notes:
1. Grant received/receivable from NHAI amounting to Rs. Nil millions (March 31, 2019: Rs. 2,294.16 millions, March 31, 2018: Rs. 5,440.25 millions, March 31, 2017 Rs. 7,437.79 millions) has been deducted from Intangible assets under development.

2. Interest cost amounting to Rs. 1,812.33 millions (March 31, 2019: Rs. 4,809.17 millions, March 31, 2018: Rs. 5,507.10 millions, March 31, 2017 Rs. 4,897.25 millions) has been capitalised as per Ind AS -23 for Intangible assets and Intangible assets under development calculated using a capitalisation rate of 10.50%.

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(Amount in Millions.)

Particulars		September 30, 2019			March 31, 2019			March 31, 2018			March 31, 2017		
	Face Value Rs.	No of Shares / Units	Current	Non-current	No of Shares / Units	Current	Non-current	No of Shares / Units	Current	Non-current	No of Shares / Units	Current	Non-current
Financial Assets													
Note 5 : Investment													
i) Investments in Mutual Funds (quoted)													
Fair Value Through Profit or Loss (FVTPL)													
Canara Robeco Liquid Fund - Direct Plan - Growth	1,000	-	-	-	-	-	-	220,365.43	463.10	-	-	-	-
IDBI Mutual Fund - Direct Plan - Growth	1,000	41,071.11	85.02	-	46,617.41	93.37	-	306,845.20	89.42	-	-	-	-
IDBI Ultra Short term Fund- Direct Growth	1,000	-	-	-	10,878.32	22.01	-	252,526.78	-	473.45	-	-	
ABSL Savings Fund - Direct Plan - Growth	100	-	-	-	-	-	-	10,989.76	-	3.78	-	-	-
ABSL Liquid Fund - Direct Plan - Growth	100	24,129.95	7.50	-	13,329.85	4.00	-	-	-	-	-	-	-
SBI Liquid Fund - Direct Growth	1,000	138,326.34	418.40	-	22,195.16	65.00	-	-	-	-	-	-	-
SBI Magnum Ultra Short Duration Fund - Direct Plan - Growth	1,000	-	-	-	-	-	-	143,922.68	553.12	-	-	-	-
			510.92	**-**		**184.38**	**-**		**1,105.64**	**477.23**		**-**	**-**
Total			**510.92**	**-**		**184.38**	**-**		**1,105.64**	**477.23**		**-**	**-**
Aggregate book value of quoted investments			**510.26**			**184.34**			**1,100.91**	**451.33**			
Market value of quoted investments			**510.92**			**184.38**			**1,105.64**	**477.23**			

(Amount in Millions.)

	September 30, 2019		March 31, 2019		March 31, 2018		March 31, 2017	
	Current	**Non-current**	**Current**	**Non-current**	**Current**	**Non-current**	**Current**	**Non-current**
Note 6 : Trade receivable								
(Unsecured, considered good)								
Others	-	-	14.02	-	31.51	-	85.66	-
Total	**-**	**-**	**14.02**	**-**	**31.51**	**-**	**85.66**	**-**
Less: Allowances for expected credit loss/ bad and doubtful debt	-	-	-	-	-	-	-	-
Total	**-**	**-**	**14.02**	**-**	**31.51**	**-**	**85.66**	**-**

Trade receivables are non-interest bearing and are generally on terms of 30 to 90 days.

'No trade or other receivables are due from directors or other officers of the Group either severally or jointly with any other person. Nor any trade or other receivables are due from firms or private companies respectively in which any director is a partner, a director or a member.

The Group has not identifed any credit impairment loss as at September 30, 2019, March 31, 2019, March 31, 2018 and March 31, 2017.

	September 30, 2019		March 31, 2019		March 31, 2018		March 31, 2017	
	Current	**Non-current**	**Current**	**Non-current**	**Current**	**Non-current**	**Current**	**Non-current**
Note 7 : Loans								
(Unsecured, considered good)								
Loans to employees	0.97	0.86	2.79	-	0.75	0.14	0.19	-
Security and other deposits	3.00	0.34	5.91	-	-	5.22	-	3.81
Loans to related parties (refer note 32)	1.17	-	1.17	-	-	-	-	-
Total	**5.14**	**1.20**	**9.87**	**-**	**0.75**	**5.36**	**0.19**	**3.81**

There are no current loans which has significant increase in credit.
Except as disclosed above, there is no amount due from director, other officer of the Company or firms in which any director is a partner or private companies in which any director is a director or member at anytime during the reporting period.

Note 8 : Other financial assets								
(Unsecured, considered good)								
Security and other deposits	-	-	-	-	-	-	-	0.38
Interest accrued on fixed deposits	26.25	-	60.71	-	0.04	-	-	-
Retention money receivable	-	34.70	149.01	29.15	2.72	27.68	-	-
BG Margin receivable								
- Related parties (refer note 32)	-	70.23	41.37	70.24	128.08	170.97	93.65	0.54
Receivable from Government Authorities (NHAI)	257.65	-	15.34	-	29.14	-	46.03	-
Other receivable	5.72	-	21.04	-	15.05	-	0.80	-
Total	**289.62**	**104.93**	**287.47**	**99.39**	**175.03**	**198.65**	**140.48**	**0.92**

Refer note 17 for details of security against term loans.
Except as disclosed above, there is no amount due from director, other officer of the Company or firms in which any director is a partner or private companies in which any director is a director or member at anytime during the reporting period.

(Amount in Millions.)

	September 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017
Note 9 : Deferred tax assets				
Deferred tax liabilities (net):				
Deferred tax liabilities:				
Difference in Depreciation and other differences in block of Property, Plant and equipment and Intangible assets as per tax books & financial books	1,270.32	3,920.88	272.22	-
Deferred tax assets:				
MAT credit entitlement	(910.98)	(823.96)	(156.20)	-
Tax losses	-	(2,801.01)	-	-
	359.35	**295.91**	**116.02**	**-**
Note 10 : Other non - current assets				
(Unsecured, considered good)				
Capital advances	-	-	0.51	-
Mobilisation advance				
- Related parties (refer note 32)	1,075.85	507.90	1,959.04	10,160.66
- Others	0.20	0.20	0.20	-
Prepaid expenses	251.05	171.22	254.75	6.10
Total	**1,327.10**	**679.32**	**2,214.50**	**10,166.76**
Note 11 : Inventories				
(valued at lower of cost and net realisable value)				
Construction material	-	27.86	-	-
Total	**-**	**27.86**	**-**	**-**
Note 12 : Cash and cash equivalents				
Cash and Bank balances				
Balances with banks:				
-on current accounts	127.98	199.19	810.39	171.95
-on trust, retention and other escrow accounts*	44.24	82.88	35.17	176.32
Deposits with banks				
-Original maturity less than 3 months	-	-	130.88	0.03
Cash on hand	33.19	43.75	23.01	3.51
Total	**205.41**	**325.82**	**999.45**	**351.79**

Note 12(a) : Bank balance other than cash and cash equivalent

	September 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017
Maturity more than 3 months less than 12 months				
Other deposits	75.83	-	-	-
Maturity more than 12 months				
Debt service reserve account with banks /earmarked balance**	1,450.00	1,450.00	-	-
Other deposits	-	0.03	-	-
Total	**1,525.83**	**1,450.03**	**-**	**-**

Debt service reserve account/ major maintenance reserve account and trust, retention and other escrow accounts
Bank deposits are marked lien / pledged against the non current secured loan as per term loan agreement with the lender, further the lenders have first charge on trust, retention and other escrow accounts.

* First charge on above to the extent of amount payable as per the waterfall mechanism as defined in the Concession Agreement / Common Loan Agreement.

** The deposits to the extent of Rs. 1,450.00 millions (March 31, 2019 : Rs. 1,450.00 millions) maintained by the Project SPV Group with bank includes time deposits, which are held against Debt Service Reserve (DSR), are considered as current portion under the head "Other bank balances" since the same are encashable by the lenders in the event of default by the Project SPV Group, if any.

Current deposits are made for varying periods of between one day and three months, depending on the immediate cash requirements of the group and earn interest at the respective current deposit rates. Other time deposits earn interest at the rate of 4.25 % to 8.25% p.a.

Refer note 17 for details of security against term loans.

For the purpose of statement of cash flows, cash and cash equivalents comprise the following:

	September 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017
Balance with banks:				
-on current accounts	127.98	199.19	810.39	171.95
-on trust, retention and other escrow accounts	44.24	82.88	35.17	176.32
Fixed deposits less than 3 months	-	-	130.88	0.03
Cash on hand	33.19	43.75	23.01	3.51
Less: Bank overdraft	-	-	-	-
Total	**205.41**	**325.82**	**999.45**	**351.79**

(Amount in Millions.)

	September 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017
Note 13 : Current tax assets (net)				
Advance income-tax (net of provision for tax)	138.61	137.67	98.62	68.33
Total	**138.61**	**137.67**	**98.62**	**68.33**
Note 14 : Other current assets				
(Unsecured, considered good unless otherwise stated)				
Advance with suppliers				
- Related parties (refer note 32)	4,039.08	2,014.08	-	3,073.93
- Others	96.08	78.36	64.95	48.17
Mobilisation advances (refer note 32)	2,151.93	3,811.02	11,245.05	-
Prepaid expenses	18.76	12.38	46.99	1.11
Bank Guarantee margin receivable -related party	-	-	-	22.02
Duties and taxes receivable	65.30	27.06	65.39	47.89
Total	**6,371.14**	**5,942.90**	**11,422.37**	**3,193.12**

Refer note 17 for details of security against term loans.

IRB Infrastructure Trust
Notes to Combined Financial Statements

Note : 15 : Equity share capital (Amount in Millions.)

	September 30, 2019		March 31, 2019		March 31, 2018		March 31, 2017	
Equity share capital								
Authorised share capital								
Shares having face value of Rs.10 each	1,803,444,303	18,034.44	1,568,044,303	15,680.44	1,354,444,303	13,544.44	1,039,744,303	10,397.44
	1,803,444,303	**18,034.44**	**1,568,044,303**	**15,680.44**	**1,354,444,303**	**13,544.44**	**1,039,744,303**	**10,397.44**
Issued share capital								
Shares having face value of Rs.10 each	1,768,619,304	17,686.19	1,563,669,304	15,636.69	1,280,081,804	12,800.81	1,009,641,304	10,096.41
Total	**1,768,619,304**	**17,686.19**	**1,563,669,304**	**15,636.69**	**1,280,081,804**	**12,800.81**	**1,009,641,304**	**10,096.41**
Share application money received		-		-		696.58		-
		-		**-**		**696.58**		**-**

The above authorised and issued equity share capital is a sum of equity share capital of all the Project SPVs.

Terms / rights attached to equity shares
The Project SPVs have only one class of equity shares having par value of Rs. 10/- per share Each holder of equity shares is entitled to one vote per share. The Project SPVs declares and pays dividend in Indian rupees.

In the event of liquidation of the Project SPV, the holders of equity shares will be entitled to receive remaining assets of the Project SPV, after distribution of all preferential amounts. The distribution will be in proportion to the number of equity shares held by the shareholders.

Reconciliation of the number of shares outstanding and the amount of share capital:

	September 30, 2019		March 31, 2019		March 31, 2018		March 31, 2017	
Equity shares issued, subscribed and fully	**No. of shares**	**Rs.**	**No. of shares**	**Rs.**	**No. of shares**	**Rs.**	**No. of shares**	**Rs.**
Shares having face value of Rs. 10/-								
At the beginning of the year	1,563,669,304	15,636.69	1,280,081,804	12,800.82	1,009,641,304	10,096.41	504,245,002	5,042.45
Increase/(decrease) during the year/period	204,950,000	2,049.50	283,587,500	2,835.88	270,440,500	2,704.41	505,396,302	5,053.96
At the end of the year/period	**1,768,619,304**	**17,686.19**	**1,563,669,304**	**15,636.69**	**1,280,081,804**	**12,800.82**	**1,009,641,304**	**10,096.41**

B) Subordinate debt (in nature of equity)	**September 30, 2019**	**March 31, 2019**	**March 31, 2018**	**March 31, 2017**
At the beginning of the year	25,969.07	21,740.02	19,351.74	11,335.98
Increase/(decrease) during the year/period	4,625.27	4,229.05	2,388.28	8,015.76
At the end of the year/period	**30,594.34**	**25,969.07**	**21,740.02**	**19,351.74**

Subordinate debt infused by Sponsor and/ or their subsidiaries
i) Subordinated debt is the part of Sponsors Equity from the promoters of the Project SPVs for the project, which is unsecured and interest free as per Common Loan Agreement with the lenders;

ii) No repayment/redemption/interest servicing allowed during the moratorium period of the long term project loan.

Note : 16 : Other equity

Attributable to the equity holders

Other reserves	**September 30, 2019**	**March 31, 2019**	**March 31, 2018**	**March 31, 2017**
Retained earnings				
At the beginning of the year	1,548.37	554.09	80.84	62.03
Profit for the year/period	(1,089.89)	251.25	472.48	18.81
Less: Appropriations				
Impact of Ind AS	-	744.87	-	-
Other comprehensive income/(loss) for the year/period				
- Re-measurement gains/ (losses) on defined benefit plans	0.41	(1.84)	0.77	-
At the end of the year/period	**458.88**	**1,548.37**	**554.09**	**80.84**
Total	**458.88**	**1,548.37**	**554.09**	**80.84**

(Amount in Millions.)

	September 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017
Financial liabilities				
Note : 17 : Borrowings				
Non-current Borrowings				
Term loans				
Indian rupee loan from banks (secured)				
Project loans for SPVs	78,273.17	72,451.82	54,967.87	45,203.99
Less : current maturities expected to be settled within 12 month from balance sheet date	(178.54)	(58.79)	(50.75)	-
Total (a)	**78,094.62**	**72,393.03**	**54,917.12**	**45,203.99**
Indian rupee loan from financial institutions (secured)				
Project loans for SPVs	14,559.37	13,711.16	11,278.39	7,850.47
Less : current maturities expected to be settled within 12 month from balance sheet date	(36.72)	(3.47)	(3.83)	-
Total (b)	**14,522.65**	**13,707.69**	**11,274.56**	**7,850.47**
Non-convertible debentures (secured)	5,494.15	5,498.17	-	-
Less : current maturities expected to be settled within 12 month from balance sheet date	(13.47)	(7.35)	-	-
Total (c)	**5,480.69**	**5,490.82**	**-**	**-**
(Unsecured)				
Loan from related parties (refer note 32)	181.15	156.73	-	-
Total (d)	**181.15**	**156.73**	**-**	**-**
Less: Unamortised transaction cost **(e)**	(866.49)	(898.31)	(506.75)	(97.61)
Total non current borrowings (f = a + b + c + d + e)	**97,412.62**	**90,849.96**	**65,684.93**	**52,956.85**
Current Borrowings				
Short-term borrowings (secured)				
Current maturity of long term loans				
Indian rupee loan from banks (secured)	178.54	58.79	50.75	-
Indian rupee loan from financial institutions (secured)	36.72	3.47	3.83	-
Non convertible debentures (secured)	13.47	7.35	-	-
(Unsecured, repayable on demand and interest free)				
Loan from related parties (refer note 32)	12,260.14	7,085.60	9,534.54	757.29
Total current borrowings (g)	**12,488.87**	**7,155.21**	**9,589.12**	**757.29**
less: Amount clubbed under "other current financial liabilities"	228.73	69.61	54.58	-
Net current borrowings	**12,260.14**	**7,085.60**	**9,534.54**	**757.29**
Total borrowings (f+g)	**109,901.49**	**98,005.17**	**75,274.05**	**53,714.14**
Aggregate secured loans	97,460.20	90,762.83	65,739.51	52,956.85
Aggregate unsecured loans	12,441.29	7,242.34	9,534.54	757.29

(i) Project loans for SPVs

Rs. 92,832.54 millions (March 31, 2019: Rs. 90,331.89 millions; March 31, 2018 : 86,162.98 ; March 31, 2017: Rs. 66,246.26) pertains to term loans taken by SPV's (Special Purpose Vehicles) for Project financing.

Rate of interest

Rate of interest on the Indian Rupee loan from banks and financial institutions varies from 9.25% to 12.20% p.a. (March 31, 2018: 9.40% to 13.15%) and are secured by pledge of shares of its subsidiaries and subservient charge on the current assets of the company to the extent of 125% of the outstanding loan.

Nature of security

i) Secured by first charge on the movable/immovable asset by way of mortgage/hypothecation; first charge on all intangible assets, present and future; assignment of all receivables; book debts and all rights and interest in project, both present and future, excluding the Project Assets of respective companies;

ii) Secured by first charge on the Escrow Account, Debt Service Reserve Account and any other reserves and other bank accounts of the respective Companies.

iii) An irrevocable and unconditional corporate guarantee from IRB Infrastructure Developers Limited to meet shortfall (if any) between debt due and termination payments received from Concessioning Authority in case of termination of Concession Agreement for any reason in case of Project SPV's.

Repayment terms

The Indian rupee loans are repayable in structured monthly installments commencing after commercial operation date such that the total tenor does not exceed 17 years and repayable as per the repayment schedule specified in common loan agreement with the Lenders.

Note : 18 : Trade payables				
Total outstanding dues of micro enterprises and small enterprises (refer note 30)	-	-	-	-
Total outstanding dues of creditors other than micro and small enterprises	-	-	-	58.14
- Related parties (refer note 32)	11,201.74	8,237.66	6,332.64	-
- Others	4,972.95	291.57	248.57	-
Total	**16,174.69**	**8,529.24**	**6,581.21**	**58.14**

Terms and conditions of the above financial liabilities:

Trade payables are non-interest bearing and are normally settled on 90 day terms.

For explanations on the Group's credit risk management processes, refer to Note 36.

(Amount in Millions.)

	September 30, 2019		March 31, 2019		March 31, 2018		March 31, 2017	
	Current	**Non-current**	**Current**	**Non-current**	**Current**	**Non-current**	**Current**	**Non-current**
Note 19 : Other financial liabilities								
Current maturities of non-current borrowings								
Indian rupee loan from banks	178.54	-	58.79	-	50.75	-	-	-
Indian rupee loan from fnancial institutions	36.72	-	3.47	-	3.83	-	-	-
Non-convertible debentures	13.47	-	7.35	-	-	-	-	-
Interest accrued but not due on borrowings	57.50	-	97.45	-	38.80	-	66.92	-
Premium obligation/ Negative grant to NHAI	78.53	-	74.42	-	70.88	-	69.19	-
Obligation for construction	39,285.63	-	22,020.05	2,009.15	37,834.62	20,958.07	-	20,211.22
Directors sitting fees payable	0.34	-	0.27	-	0.22	-	-	-
Deposit	1.28	-	1.05	-	0.36	-	1.65	-
Retention money payable	-	-	-	-	-	86.20	100.34	2.93
- Related parties (refer note 32)	99.71	0.41	26.29	-	-	-	-	-
- Others	130.92	66.74	78.09	75.19	33.57	-	-	-
Employee benefits payable	28.80	-	17.52	-	13.21	-	2.88	-
Other payable								
- Related parties (refer note 32)	253.64	-	235.31	-	387.13	-	151.33	-
- Others	0.49	-	0.04	-	-	-	-	-
Capital creditors								
- Related parties (refer note 32)	1,936.70	-	4,303.71	-	1,432.95	-	93.71	-
Total	**42,102.26**	**67.14**	**26,923.81**	**2,084.34**	**39,866.33**	**21,044.27**	**486.02**	**20,214.15**

Break up of financial liabilities carried at amortised cost

	September 30, 2019	**March 31, 2019**	**March 31, 2018**	**March 31, 2017**
Borrowings (secured)	**97,460.20**	90,762.83	65,739.51	52,956.85
Borrowings (unsecured)	**12,441.29**	7,242.34	9,534.54	757.29
Trade payables	**16,174.69**	8,529.24	6,581.21	58.14
Other financial liabilities	**41,940.67**	28,938.54	60,856.01	20,700.17
Total financial liabilities carried at amortised cos	**168,016.84**	**135,472.95**	**142,711.27**	**74,472.45**

Note 20 : Provisions

	September 30, 2019		March 31, 2019		March 31, 2018		March 31, 2017	
	Current	**Non-current**	**Current**	**Non-current**	**Current**	**Non-current**	**Current**	**Non-current**
Provision for employee benefits								
- Leave encashment	1.42	-	0.36	-	0.20	-	0.02	-
- Gratuity	1.58	15.58	1.06	9.46	0.98	6.54	0.10	1.49
Major maintenance expenses	-	36.10	-	-	-	-	-	-
Total	**3.00**	**51.68**	**1.42**	**9.46**	**1.18**	**6.54**	**0.12**	**1.49**

The movement in provision for resurfacing expenses is as follows:

	September 30, 2019	**March 31, 2019**	**March 31, 2018**	**March 31, 2017**
Opening balance	-	-	-	-
Obligation on new toll projects	36.10	-	-	-
Utilised / reversed during the year/period	-	-	-	-
Closing balance	**36.10**	-	-	-

The above provisions are based on current best estimation of expenses that may be required to fulfill the resurfacing obligation as per the service concession agreement with regulatory authorities. It is expected that significant portion of the costs will be incurred over the period. The actual expense incurred may vary from the above. No reimbursements are expected from any sources against the above obligation.

	September 30, 2019	**March 31, 2019**	**March 31, 2018**	**March 31, 2017**
Note 21 : Other current liabilities				
Duties and taxes payable	86.58	105.15	29.95	151.53
Capital creditors (refer note 32)	-	-	103.10	-
Other payable	-	-	-	0.65
Advance from customer- Others	862.47	2.26	-	-
Total	**949.05**	**107.41**	**133.05**	**152.18**

(Amount in Millions.)

	September 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017
Note 22 : Revenue from operations				
Contract revenue (road construction)	763.34	1,603.81	965.35	1,288.42
Income arising out of toll collection (net)	3,754.85	6,283.00	2,546.12	95.71
Other operating revenue	-	-	-	71.50
Total	**4,518.19**	**7,886.81**	**3,511.47**	**1,455.63**

IRB Infrastructure Trust
Notes to Combined Financial Statements

Note 22A: Gross toll collection and details of revenue share to NHAI

For the period ended September 30, 2019 (Amount Rs. in Millions)

Particulars	SYTL	YATL	KTL	AETL	UTL	CGTL	KGTL	IRBHMTL	Total
Toll collection (gross)	331.09	540.79	467.83	396.48	674.47	813.64	573.62	425.77	4,223.69
Less: revenue share to NHAI	-	-	-	468.84	-	-	-	-	468.84
Toll collection (net) (A)	**331.09**	**540.79**	**467.83**	**(72.35)**	**674.47**	**813.64**	**573.62**	**425.77**	**3,754.85**

FY 2018-19

Particulars	SYTL	YATL	KTL	AETL	UTL	CGTL	KGTL	IRBHMTL	Total
Toll collection (gross)	689.78	48.65	795.41	879.70	1,453.86	1,969.99	1,341.74	-	7,179.13
Less: revenue share to NHAI	-	-	-	896.14	-	-	-	-	896.14
Toll collection (net) (A)	**689.78**	**48.65**	**795.41**	**(16.44)**	**1,453.86**	**1,969.99**	**1,341.74**	**-**	6,283.00

FY 2017-18

Particulars	SYTL	YATL	KTL	AETL	UTL	CGTL	KGTL	IRBHMTL	Total
Toll collection (gross)	46.78	-	368.92	1,022.32	888.42	917.30	152.89	-	3,396.62
Less: revenue share to NHAI	-	-	-	850.50	-	-	-	-	850.50
Toll collection (net) (A)	**46.78**	**-**	**368.92**	**171.82**	**888.42**	**917.30**	**152.89**	**-**	**2,546.12**

FY 2016-17

Particulars	SYTL	YATL	KTL	AETL	UTL	CGTL	KGTL	IRBHMTL	Total
Toll collection (gross)	-	-	-	635.71	-	-	-	-	635.71
Less: revenue share to NHAI	-	-	-	540.00	-	-	-	-	540.00
Toll collection (net) (A)	**-**	**-**	**-**	**95.71**	**-**	**-**	**-**	**-**	**95.71**

(Amount in Millions.)

	September 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017
Note 23 : Other income				
Interest income on				
- Bank deposits	56.98	67.87	0.06	0.58
- Others	0.92	3.57	0.06	0.11
Dividend income on :				
- Other investments (non-trade, current)	-	-	1.83	0.17
Profit on sale of investments	19.20	81.95	17.35	1.91
Fair value gain on mutual funds	0.66	0.04	30.63	-
Other non operating income	2.34	3.23	1.66	0.02
Total	**80.10**	**156.65**	**51.59**	**2.79**
Note 24 : Road work and site expenses				
Contract expenses	715.72	1,233.46	769.31	1,267.97
Site and other direct expenses	99.85	394.81	226.83	8.67
Sub-contracting / Security expenses	72.37	115.35	69.73	21.27
Technical consultancy and supervision charges	2.92	13.25	-	-
Total	**890.86**	**1,756.86**	**1,065.87**	**1,297.90**
Note 25 : Employee benefits expense				
Salaries, wages and bonus	116.85	172.60	83.98	12.88
Contribution to provident and other funds	6.42	7.26	4.40	0.40
Leave encashment	-	-	0.18	0.02
Gratuity expenses	7.35	1.55	6.75	1.59
Staff welfare expenses	16.06	25.71	13.26	3.48
Total	**146.68**	**207.12**	**108.57**	**18.37**
Note 26 : Depreciation and amortisation expenses				
Depreciation on property, plant and equipment (refer note 4)	1.16	1.47	0.48	0.08
Amortisation on intangible assets (refer note 4)	841.30	1,098.36	440.71	83.61
Total	**842.46**	**1,099.83**	**441.19**	**83.69**
Note 27 : Finance cost				
Interest expense				
- Banks and financial institutions	3,454.09	3,829.63	968.46	-
Other borrowing costs				
- Amortisation of Transaction cost	35.41	48.90	4.98	-
- Others	41.26	20.07	10.76	6.86
Total	**3,530.76**	**3,898.60**	**984.20**	**6.86**

(Amount in Millions.)

	September 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017
Note 28 : Other expenses				
Power and fuel	21.99	32.32	15.94	2.71
Rent	4.68	6.29	3.24	0.67
Rates and taxes	7.44	14.53	1.55	1.56
Water charges	0.71	0.47	0.16	-
Insurance	3.26	5.55	3.42	2.17
Repairs and maintenance				
- Plant and machinery	-	5.74	0.13	-
- Others	7.67	-	0.56	0.05
Travelling and conveyance	5.77	8.56	3.42	0.21
Vehicle expenses	2.86	4.95	4.19	1.08
Communication cost	0.31	0.48	0.25	0.10
Advertisement expenses	-	-	-	0.02
Printing and stationery	6.12	9.36	5.81	1.50
Director sitting fees	0.48	1.15	0.73	0.45
Legal and professional expenses	4.40	11.84	5.41	0.86
Payment to auditor (including service tax/ GST)	1.43	2.09	1.52	0.50
Donations	0.02	0.05	-	-
Bank charges	2.12	6.86	0.49	0.38
Miscellaneous expenses	6.97	12.22	1.73	0.02
Total	**76.25**	**122.46**	**48.55**	**12.29**

IRB Infrastructure Trust
Notes to Combined Financial Statements

(Rs in millions)

Note 29 : Commitment and Contingencies

a. Leases
Rent / lease payments under operating lease are recognised as an expense in the Consolidated Statement of profit and loss on a straight line basis over the lease term.

Operating lease

(Rs in millions)

	September 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017
a) Future lease rental payments under non-cancellable operating lease are as follows:-				
i) Not later than one year	-	-	-	-
ii) Later than one year and not more than five year	-	-	-	-
iii) Later than five year	-	-	-	-
b) Lease payment recognised in the consolidated statement of profit and loss	4.68	6.29	3.24	0.67
c) General description of the leasing agreement				
i) Leased assets – accommodation for employees				
ii) Future lease rentals are determined on agreed terms				

b. Capital commitments

	September 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017
Estimated value of contracts in capital account remaining to be executed	2,577.32	2,947.70	4,388.84	15,992.71

c. Contingent liabilities
Contingent liabilities not provided for

	September 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017
Guarantees given by the Group to suppliers, government bodies and performance guarantee	-	-	-	-
For Service Tax, ESIC, Custom Duty, Other Finance expenses and Stamp duty matters	-	-	-	-
Total	-	-	-	-

The Hon'ble Supreme Court of India ("SC") by their order dated February 28, 2019, in the case of Surya Roshani Limited others v/s EPFO, set out the principles based on which allowances paid to the employees should be identified for inclusion in basic wages for the purposes of computation of Provident Fund contribution. Subsequently, a review petition against this decision has been filed and is pending before the SC for disposal. In view of the management, the liability for the period from date of the SC order to March 31, 2019 is not significant. Further, pending decision on the subject review petition and directions from the EPFO, the impact for the past period, if any, is not ascertainable and consequently no effect has been given in the accounts.

Note 30 : Details of dues to micro and small enterprises as per MSMED Act, 2006

Under the Micro, Small and Medium Enterprises Development Act, 2006 ('MSMED') which came into force from 2 October 2006, certain disclosures are required to be made relating to Micro, Small and Medium enterprises. On the basis or the informntion and records available with the management, there are no overdue amount to the Micro and Small enterprises as defined in the Micro, Small Medium Enterprises Development Act, 2006 as set out in the following disclosures:

The disclosure in respect of the amount payable to enterprises which have provided goods and services to the Group and which qualify under the definition of micro and small enterprises, as defined under Micro, Small and Medium Enterprises Development Act, 2006 has been made in the consolidated financial statement as at March 31, 2019 based on the information received and available with the Group.

Particulars	September 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017
Principal amount remaining unpaid to any supplier as at the period end	-	-	-	-
Interest due thereon	-	-	-	-
Amount of interest paid by the Company in terms of section 16 of the MSMED, along with the amount of the payment made to the supplier beyond the appointed day during the accounting period.	-	-	-	-
Amount of interest due and payable for the period of delay in making payment (which have been paid but beyond the appointed day during the period) but without adding the interest specified under the MSMED,	-	-	-	-
Amount of interest accrued and remaining unpaid at the end of the accounting period	-	-	-	-
The amount of further interest remaining due and payable even in the succeeding years, until such date when the interest dues as above are actually paid to the small enterprise for the purpose of disallowance as a deductible expenditure under the MSMED Act, 2006	-	-	-	-

(Rs in millions)

Note 31 : Gratuity and other post employment benefit plans

(a) Defined contribution plan

The following amount recoginsed as an expense in Consolidated Statement of profit and loss on account of provident fund and other funds. There are no other obligations other than the contribution payable to the respective authorities.

	September 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017
Contribution in Defined Plan	**6.42**	7.26	4.40	0.40

(b) Defined benefit plan

The Group has a unfunded defined benefit gratuity plan. The gratuity plan is governed by the Payment of Gratuity Act, 1972. Under the act, employee who has completed five years of service is entitled to specific benefit. The level of benefits provided depends on the member's length of service and salary at retirement age. Every employee who has completed five years or more of service gets a gratuity on departure at 15 days salary (last drawn salary) for each completed year of service as per the provision of the Payment of Gratuity Act, 1972

The following tables summarise the components of net benefit expense recognised in the Consolidated Statement of profit and loss and the funded status and amounts recognised in the balance sheet for the Gratuity plan.

	September 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017
Statement of profit and loss				
Net employee benefit expense recognised in the employee cost				
Current service cost	**6.87**	1.01	6.63	1.59
Past service cost	**-**	-	0.01	-
Interest cost on benefit obligation	**0.39**	0.55	0.12	-
Net benefit expense	**7.26**	1.56	6.76	1.59
Amount recorded in Other Comprehensive Income (OCI)				
Opening amount recognised in OCI outside statement of profit and loss	**1.07**	(0.77)	0.00	0.00
Remeasurement during the year due to :	**0.00**	0.00	0.00	0.00
Actuarial loss / (gain) arising from change in financial assumptions	**0.74**	1.56	(0.03)	0.00
Actuarial loss / (gain) arising from change in demographic assumptions	**0.00**	(0.13)	0.02	0.00
Actuarial loss / (gain) arising on account of experience changes	**(1.15)**	0.41	(0.76)	0.00
Amount recognised in OCI outside statement of profit and loss	**(0.41)**	**1.84**	**(0.77)**	**0.00**
Closing amount recognised in OCI outside profit and loss statement (including tax)	**0.66**	**1.07**	**(0.77)**	**-**
Reconciliation of net liability				
Opening defined benefit liability	**10.52**	7.54	1.59	0.00
Expense charged to statement of profit and loss	**7.26**	1.56	6.76	1.59
Actual benefits paid	**(0.20)**	(0.42)	(0.04)	0.00
Present value of unfunded defined benefit plan	**-**	-	-	0.00
Amount recognised in outside statement of profit and loss	**(0.41)**	1.84	(0.77)	0.00
Closing net defined benefit liability	**17.17**	10.52	7.54	1.59
Changes in the present value of the defined benefit obligation are as follows:				
Opening defined benefit obligation	**10.52**	7.54	1.59	-
Current service cost	**6.87**	1.01	6.63	1.59
Past service cost	**-**	-	0.01	-
Interest on defined benefit obligation	**0.39**	0.55	0.12	-
Remeasurement during the period due to :				
Actuarial (gain)/ arising from change in financial assumptions	**0.74**	1.56	(0.03)	-
Actuarial loss arising from change in demographic assumptions	**0.00**	(0.13)	0.02	-
Actuarial loss arising on account of experience changes	**(1.15)**	0.41	(0.76)	-
Benefits paid	**(0.20)**	(0.42)	(0.04)	-
Present value of unfunded defined benefit plan	**-**	**-**	**-**	-
Closing defined benefit obligation	**17.17**	10.52	7.54	1.59
Net liability is bifurcated as follows :				
Current	**1.59**	1.06	0.98	0.10
Non-current	**15.57**	9.46	6.54	1.49
Net liability	**17.16**	10.52	7.52	1.59

The principal assumptions used in determining gratuity benefit obligation for the Group's plans are shown below:

	September 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017
Discount rate	**7.10%**	7.75%	7.85%	7.5%
Expected rate of return on plan assets (p.a.)	**N.A.**	N.A.	N.A.	N.A.
Salary escalation	**8.50%**	8.50%	7.00%	7.00%
Mortality pre-retirement	**Indian Assured Lives Mortality (2012-14) Ult Table**	Indian Assured Lives Mortality (2012-14) Ult Table	Indian Assured Lives Mortality (2006-08) Ult Table	Indian Assured Lives Mortality (2006-08)

A quantitative analysis for significant assumption is as shown below:
Indian gratuity plan:

(Rs in millions)

	September 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017
Assumptions -Discount rate				
Sensitivity Level	**0.50%**	0.50%	0.50%	0.50%
Impact of Increase in 50 bps on defined benefit obligation	**(0.91)**	(0.53)	(0.29)	(0.10)
Impact of Decrease in 50 bps on defined benefit obligation	**0.99**	0.58	0.31	0.12
Assumptions - Salary Escalation rate				
Sensitivity Level	**0.50%**	0.50%	0.50%	0.50%
Impact on defined benefit obligation				
Impact of Increase in 50 bps on defined benefit obligation	**0.94**	0.56	0.31	0.11
Impact of Decrease in 50 bps on defined benefit obligation	**(0.87)**	(0.53)	(0.29)	(0.10)

The estimates of future salary increases, considered in actuarial valuation, take account of inflation, seniority, promotion and other relevant factors, such as supply and demand in the employment market.

The gratuity liabilities of the Group are unfunded and hence there are no assets held to meet the liabilities.

The following payments are expected contributions to the defined benefit plan in future years

(Rs in millions)

	September 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017
Within the next 12 months (next annual reporting period)	**1.59**	1.06	0.98	0.10
Between 2 and 5 years	**5.29**	3.49	3.25	0.44
Between 6 and 10 years	**4.21**	2.68	2.50	0.36
Beyond 10 years	**35.51**	23.26	10.13	5.25
Total expected payments	**46.59**	30.49	16.86	6.15
The weighted average duration of the defined benefit plan obligation at the end of the reporting period	**11.04 years**	10.50 years	7.86 years	13.80 Years

Compensated absences during the six month ended September 30, 2019 is Rs. 1.06 millions, year ended 31 March 2019 is Rs. 0.16 millions, year ended 31 March 2018 is Rs 0.18 millions and for year ended 31 March 2017 is Rs. 0.02 millions is charged to the Consolidated Statement of Profit and loss.

IRB Infrastructure Trust
Notes to Combined Financial Statements

Note 32 : Related party disclosures

List of Related parties of the Fund

(i)	Parties to the InvIT	IRB Infrastructure Developers Limited (Sponsor and Project Manager)
		MMK Toll Road Private Limited (Investment Manager)
		IDBI Trusteeship Services Limited (Trustee of the IRB Infrastructure Trust)
(ii)	Associates, Promoters, Directors and Partners of the persons mentioned in clause (i) and (ii)	As per table below

List of associates, promoters, directors and partners of the persons mentioned in clause (i) and (ii)

Particulars	**IRB Infrastructure Developers Limited (Sponsor and Project Manager)**	**MMK Toll Road Private Limited (Investment Manager)**	**IDBI Trusteeship Services Limited (Trustee of IRB Infrastructure Trust)**
Promoters	Mr. Virendra D. Mhaiskar Mrs. Deepali V. Mhaiskar Mr. Virendra D. Mhaiskar (HUF)	IRB Infrastructure Developers Limited (IRBIDL)	IDBI Bank Limited LIC Corporation Limited General Insurace Corporation
Directors	Mr. Virendra D. Mhaiskar Mrs. Deepali V. Mhaiskar Mr. Mukeshlal Gupta Mr. Sudhir Rao Hoshing **Independent Directors** Mr. Chandrashekhar S. Kaptan Mr. Sunil H. Talati Mr. Sandeep J. Shah Mr. Sunil Tandon Mrs. Heena H. Raja	Mr. Naresh Taneja Mrs. Arati Taskar **Independent Directors** Mr. Darshan Sangurdekar Mr. Omprakash Singh	Mr. J. Samuel Joseph Mr. Ravishankar G. Shinde Ms. Madhuri J. Kulkarni Mr. Swapan Kumar Bagchi Ms. Sashikala Muralidharan (upto Jan 16, 2020)
Associates	**A) Holding Company of Sponsor / Project Manager** Mhaiskar Ventures Private Limited **B) Subsidiary Companies of Sponsor / Project Manager** **Project SPVs** 1. IRB Westcoast Tollway Limited (IRBWTL) 2. Solapur Yedeshi Tollway Limited (SYTL) 3. Yedeshi Aurangabad Tollway Limited (YATL) 4. Kaithal Tollway Limited (KTL) 5. AE Tollway Limited (AETL) 6. Udaipur Tollway Limited (UTL) 7. CG Tollway Limited (CGTL) 8. Kishangarh Gulabpura Tollway Limited (KGTL) 9. IRB Hapur Muradabad Tollway Limited (IRBHMTL) **Others** 1. Ideal Road Builders Private Limited (IRBPL) 2. Mhaiskar Infrastructure Private Limited (MIPL) 3. Modern Road Makers Private Limited (MRMPL) 4. Aryan Toll Road Private Limited (ATRPL) 5. ATR Infrastructure Private Limited (ATRFL) 6. IRB Infrastructure Private Limited (IRBFL) 7. Thane Ghodbunder Toll Road Private Limited (TGTRPL) 8. Aryan Infrastructure Investments Private Limited (AIIPL) 9. NKT Road and Toll Private Limited (NKT) 10. MMK Toll Road Private Limited (MMK) 11. IRB Kolhapur Integrated Road Development Company Private Limited (IRBK) 12. Aryan Hospitality Private Limited (AHPL) 13. IRB Sindhudurg Airport Private Limited (IRBSA) 14. IRB Goa Tollway Private Limited (IRB Goa) 15. IRB PS Highway Private Limited (formerly known as MRM Highways Private Limited) (IRBPS) 16. IRB Ahmedabad Vadodara Super Express Tollway Private Limited (IRBAV) 17. MRM Mining Private Limited (Formerly "J J Patel Infrastructural and Engineering Private Limited") (Subsidiary of MRMPL) 18. IRB PP Project Private Limited (formerly known as Zozila Tunnel Project Private Limited) (IRBPP) 19. VK1 Expressway Private Limited (VK1) 20. Modern Estate (Partnership Firm)		

IRB Infrastructure Trust
Notes to Combined Financial Statements

Note 32 : Related party disclosures

List of Related parties of the Fund

	C) Other Associate Companies of Sponsor / Project Manager 1. Virendra D. Mhaiskar (HUF) 2. VCR Toll Services Private Limited 3. VDM Ventures Private Limited 4. DEUX Farming Films Private Limited 5. IRB Charitable Foundation **Key Managerial personnel of Project SPV Group** (Only with whom Project SPV Group had transactions during the year/ there was balance outstanding at the year end) 1. Mr. Mukeshlal Gupta 2. Mr.Ajay P. Deshmukh 3. Mr.Rajpaul S. Sharma 4. Mr.Dhananjay K. Joshi 5. Mr.Anil D. Yadav 6. Mrs. Kshama Vengsarkar 7. Mr. Rajendra Kumar Agarwal (upto March 30, 2018) 8. Mrs. Arati Taskar 9. Mr. Sudhir Rao Hoshing 10. Mr. Naresh Taneja 11. Mr. Darshan Sangurdekar 12. Mr. Omprakash Singh 13. Jitendra Sharma 14 Mrs. Heena Raja

IRB Infrastructure Trust
Notes to Combined Financial Statements

I. Related Party Transactions

(Rs. in millions)

Sr. No.	Particulars	Sponsor and Project Manager				Fellow subsidaries of Project SPV Group				Key Management Personnel of Project SPV Group			
		Sept 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017	Sept 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017	Sept 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017
1	**Contract expenses**	**3,475.05**	**605.34**	**2,027.03**	**5,820.11**	**405.51**	**2,591.46**	**2,239.42**	**-**	**-**	**-**	**-**	**-**
	IRB Infrastructure Developers Limited	3,475.05	605.34	2,027.03	5,820.11	-	-	-	-	-	-	-	-
	Modern Road Makers Private Limited	-	-	-	-	405.51	2,591.46	2,239.42	-	-	-	-	-
2	**Rent**	**-**	**-**	**-**	**-**	**-**	**-**	**0.08**	**0.04**	-	-	-	-
	Ideal Road Builders Private Limited	-	-	-	-	-	-	0.01	0.04	-	-	-	-
	Modern Road Makers Private Limited	-	-	-	-	-	-	0.07	-	-	-	-	-
3	**Rent (Pre-operative expenses)**	**-**	**-**	**-**	**-**	**-**	**-**	**0.01**	**0.02**	-	-	-	-
	Ideal Road Builders Private Limited	-	-	-	-	-	-	0.01	0.02	-	-	-	-
4	**Professional fees (Pre-operative expenses)**	**-**	**-**	**-**	**-**	**-**	**-**	**29.50**	**-**	-	-	-	-
	Modern Road Private Limited	-	-	-	-	-	-	29.50	-	-	-	-	-
5	**Finance Cost -Interest unwinding on loan**	**-**	**-**	**-**	**-**	**24.42**	**1.60**	**-**	**-**	-	-	-	-
	Mhaiskar Infrastructure Private Limited	-	-	-	-	24.42	1.60	-	-	-	-	-	-
6	**Share application money received**	**2,049.50**	**697.08**	**2,805.30**	**2,604.52**	**-**	**-**	**-**	**447.55**	**-**	**-**	**-**	**-**
	IRB Infrastructure Developers Limited	2,049.50	697.08	2,805.30	2,604.52	-	-	-	-	-	-	-	-
	IRB Goa Tollway Private Limited	-	-	-	-	-	-	-	447.55	-	-	-	-
7	**Allotment of Equity Share**	**2,049.50**	**2,835.88**	**2,108.73**	**4,830.22**	**-**	**-**	**-**	**447.55**	**-**	**-**	**-**	**-**
	IRB Infrastructure Developers Limited	2,049.50	2,835.88	2,108.73	4,830.22	-	-	-	-	-	-	-	-
	IRB Goa Tollway Private Limited	-	-	-	-	-	-	-	447.55	-	-	-	-
8	**Sub-ordinate debts (Unsecured & interest free)**	**2,805.27**	**4,229.05**	**2,388.28**	**5,702.65**	**-**	**-**	**-**	**1,544.86**	**-**	**-**	**-**	**-**
	IRB Infrastructure Developers Limited	2,805.27	4,229.05	2,388.28	5,702.65	-	-	-	-	-	-	-	-
	IRB Goa Tollway Private Limited	-	-	-	-	-	-	-	1,544.86	-	-	-	-
9	**Short-term borrowings taken (unsecured)**	**5,646.83**	**6,483.20**	**22,002.10**	**7,041.13**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	IRB Infrastructure Developers Limited	5,646.83	6,483.20	22,002.10	7,041.13	-	-	-	-	-	-	-	-
10	**Short-term borrowings repayment**	**472.29**	**8,917.95**	**10,926.06**	**6,707.42**	**-**	**14.20**	**-**	**-**	**-**	**-**	**-**	**-**
	IRB Infrastructure Developers Limited	472.29	8,917.95	10,926.06	6,707.42	-	-	-	-	-	-	-	-
	Modern Road Makers Private Limited	-	-	-	-	-	14.20	-	-	-	-	-	-

IRB Infrastructure Trust
Notes to Combined Financial Statements

I. Related Party Transactions

(Rs. in millions)

Sr. No.	Particulars	Sponsor and Project Manager				Fellow subsidaries of Project SPV Group				Key Management Personnel of Project SPV Group			
		Sept 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017	Sept 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017	Sept 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017
11	**Long-term borrowings taken (unsecured)**	-	-	-	-	-	**900.00**	-	-	-	-	-	-
	Mhaiskar Infrastructure Private Limited	-	-	-	-	-	900.00	-	-	-	-	-	-
		117.12	**46.81**	**114.50**	**23.09**	**3.09**	**77.26**	**-**	**-**	**-**	**-**	**-**	**-**
12	**Expenses incurred on our behalf**												
	IRB Infrastructure Developers Limited	117.12	46.81	114.50	23.09	-	-	-	-	-	-	-	-
	Modern Road Makers Private Limited	-	-	-	-	3.09	77.26	-	-	-	-	-	-
13	**Repayment for expenses incurred on our behalf**	**-**	**15.27**	**17.71**	**30.59**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	IRB Infrastructure Developers Limited	-	15.27	17.71	30.59	-	-	-	-	-	-	-	-
14	**Loans and advances (Long-term)**	**-**	**-**	**1,002.92**	**4,291.60**	**-**	**1.17**	**-**	**-**	**-**	**-**	**-**	**-**
	IRB Infrastructure Developers Limited	-	-	1,002.92	4,291.60	-	-	-	-	-	-	-	-
	Modern Road Makers Private Limited	-	-	-	-	-	1.17	-	-	-	-	-	-
15	**Mobilisation advances given**	**647.61**	**-**	**5,157.00**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	IRB Infrastructure Developers Limited	647.61	-	5,157.00	-	-	-	-	-	-	-	-	-
16	**Mobilisation advances recovered**	**1,214.94**	**3,838.28**	**4,876.53**	**6,759.59**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	IRB Infrastructure Developers Limited	1,214.94	3,838.28	4,876.53	6,759.59	-	-	-	-	-	-	-	-
17	**Additional advances recovered**	**55.21**	**3,953.22**	**2,991.14**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	IRB Infrastructure Developers Limited	55.21	3,953.22	2,991.14	-	-	-	-	-	-	-	-	-
18	**Retention money**	**-**	**-**	**-**	**-**	**9.96**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	Modern Road Makers Private Limited	-	-	-	-	9.96	-	-	-	-	-	-	-
19	**Advance received including BG margin**	**-**	**72.51**	**151.57**	**1,427.30**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	IRB Infrastructure Developers Limited	-	72.51	151.57	1,427.30	-	-	-	-	-	-	-	-
20	**Advance given including BG margin**	**-**	**57.51**	**38.71**	**5.16**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	IRB Infrastructure Developers Limited	-	57.51	38.71	5.16	-	-	-	-	-	-	-	-

IRB Infrastructure Trust
Notes to Combined Financial Statements

I. Related Party Transactions

(Rs. in millions)

Sr. No.	Particulars	Sponsor and Project Manager				Fellow subsidaries of Project SPV Group				Key Management Personnel of Project SPV Group			
		Sept 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017	Sept 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017	Sept 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017
21	**General advance given - EPC**	**2,025.00**	**3,501.27**	**-**	**4,815.16**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	IRB Infrastructure Developers Limited	2,025.00	3,501.27	-	4,815.16	-	-	-	-	-	-	-	-
22	**General advance recovered - EPC**	**468.60**	**2,456.81**	**109.55**	**3,078.34**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	IRB Infrastructure Developers Limited	468.60	2,456.81	109.55	3,078.34	-	-	-	-	-	-	-	-
23	**Construction cost**	**6,721.53**	**31,437.42**	**20,043.21**	**16,884.17**	**550.10**	**2,193.87**	**365.12**	**112.00**	**-**	**-**	**-**	**-**
	IRB Infrastructure Developers Limited	6,721.53	31,437.42	20,043.21	16,884.17	-	-	-	-	-	-	-	-
	Modern Road Makers Private Limited	-	-	-	-	550.10	2,193.87	365.12	112.00	-	-	-	-
24	**Amount held up**	**-**	**-**	**-**	**-**	**13.16**	**13.37**	**-**	**-**	**-**	**-**	**-**	**-**
	Modern Road Makers Private Limited	-	-	-	-	13.16	13.37	-	-	-	-	-	-
25	**BG margin receivable**	**-**	**18.75**	**154.80**	**16.86**	**-**	**69.69**	**-**	**-**	**-**	**-**	**-**	**-**
	IRB Infrastructure Developers Limited	-	18.75	154.80	16.86	-	-	-	-	-	-	-	-
	Modern Road Makers Private Limited	-	-	-	-	-	69.69	-	-	-	-	-	-
26	**Other payable**	**-**	**-**	**-**	**1.09**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	IRB Infrastructure Developers Limited	-	-	-	1.09	-	-	-	-	-	-	-	-
27	**Director sitting fees paid**	-	-	-	-	-	-	-	-	**0.51**	**1.18**	**1.12**	**0.82**
	Mr. Mukeshlal Gupta	-	-	-	-	-	-	-	-	0.08	0.12	0.07	0.07
	Mr. Dhananjay K. Joshi	-	-	-	-	-	-	-	-	0.06	0.09	0.11	0.12
	Mr. Ajay P. Deshmukh	-	-	-	-	-	-	-	-	0.08	0.18	0.17	0.16
	Mr. Rajendra kumar Agarwal	-	-	-	-	-	-	-	-	-	-	0.10	0.12
	Mrs. Arati Taskar	-	-	-	-	-	-	-	-	0.06	0.12	0.08	0.12
	Mr. Darshan Sangurdekar	-	-	-	-	-	-	-	-	0.02	0.13	0.15	0.07
	Mr. Mr. Omprakash Singh	-	-	-	-	-	-	-	-	0.03	0.10	0.13	0.04
	Mr. Sudhir Hoshing	-	-	-	-	-	-	-	-	0.05	0.14	0.10	0.06
	Mr. Jitendra Sharma	-	-	-	-	-	-	-	-	0.05	0.10	0.07	0.03
	Mrs. Heena Raja	-	-	-	-	-	-	-	-	-	0.05	0.09	0.03
	Mrs. Kshama Vengsarkar	-	-	-	-	-	-	-	-	0.05	0.07	-	-
	Mr. Rajpaul S. Sharma	-	-	-	-	-	-	-	-	0.03	0.07	0.05	-
28	**Director Sitting Fees (pre-operative expenses)**	-	-	-	-	-	-	-	-	-	**-**	**0.09**	**0.17**
	Mr. Mukeshlal Gupta	-	-	-	-	-	-	-	-	-	-	0.04	0.05
	Mr. Rajpaul S. Sharma	-	-	-	-	-	-	-	-	-	-	0.05	0.12

IRB Infrastructure Trust
Notes to Combined Financial Statements

II. Related party balances

(Rs. in millions)

Sr. No.	Particulars	Sponsor and Project Manager				Fellow subsidaries of Project SPV Group				Key Management Personnel of Project SPV Group			
		Sept 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017	Sept 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017	Sept 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017
1	**Subordinated debt (unsecured and interest free)**	**27,264.19**	**22,638.92**	**18,409.87**	**16,021.59**	**3,330.16**	**3,330.16**	**3,330.16**	**3,330.16**	**-**	**-**	**-**	**-**
	IRB Infrastructure Developers Limited	27,264.19	22,638.92	18,409.87	16,021.59	-	-	-	-	-	-	-	-
	Modern Road Makers Private Limited	-	-	-	-	1,785.30	1,785.30	1,785.30	1,785.30	-	-	-	-
	IRB Goa Tollway Private Limited	-	-	-	-	1,544.86	1,544.86	1,544.86	1,544.86	-	-	-	-
2	**Short-term borrowings**	**12,260.14**	**7,085.60**	**9,520.35**	**743.09**	**-**	**-**	**14.20**	**14.20**	**-**	**-**	**-**	**-**
	IRB Infrastructure Developers Limited	12,260.14	7,085.60	9,520.35	743.09	-	-	-	-	-	-	-	-
	Modern Road Makers Private Limited	-	-	-	-	-	-	14.20	14.20	-	-	-	-
3	**Long-term borrowings**	**-**	**-**	**-**	**-**	**181.15**	**156.73**	**-**	**-**	**-**	**-**	**-**	**-**
	Mhaiskar Infrastructure Private Limited	-	-	-	-	181.15	156.73	-	-	-	-	-	-
4	**Share application money**	**-**	**-**	**696.57**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	IRB Infrastructure Developers Limited	-	-	696.57	-	-	-	-	-	-	-	-	-
5	**Trade payable**	**4,990.46**	**3,352.53**	**5,651.03**	**-**	**6,211.28**	**4,885.13**	**681.61**	**-**	**-**	**-**	**-**	**-**
	IRB Infrastructure Developers Limited	4,990.46	3,352.53	5,651.03	-	-	-	-	-	-	-	-	-
	Modern Road Makers Private Limited	-	-	-	-	6,211.28	4,885.13	681.61	-	-	-	-	-
6	**Capital creditors**	**642.48**	**530.27**	**1,432.95**	**93.71**	**1,294.22**	**3,773.43**	**103.10**	**-**	**-**	**-**	**-**	**-**
	IRB Infrastructure Developers Limited	642.48	530.27	1,432.95	93.71	-	-	-	-	-	-	-	-
	Modern Road Makers Private Limited	-	-	-	-	1,294.22	3,773.43	103.10	-	-	-	-	-
7	**Mobilisation advances**	**3,227.79**	**4,318.93**	**13,204.10**	**10,160.66**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	IRB Infrastructure Developers Limited	3,227.79	4,318.93	13,204.10	10,160.66	-	-	-	-	-	-	-	-

IRB Infrastructure Trust
Notes to Combined Financial Statements

II. Related party balances

(Rs. in millions)

Sr. No.	Particulars	Sponsor and Project Manager				Fellow subsidaries of Project SPV Group				Key Management Personnel of Project SPV Group			
		Sept 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017	Sept 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017	Sept 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017
8	**Advance given**	**4,039.08**	**2,014.08**	**-**	**3,073.93**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	IRB Infrastructure Developers Limited	4,039.08	2,014.08	-	3,073.93	-	-	-	-	-	-	-	-
	Modern Road Makers Private Limited	-	-	-	-	-	-	-	-	-	-	-	-
9	**Retention payable**	**-**	**-**	**-**	**-**	**100.11**	**26.29**	**-**	**-**	**-**	**-**	**-**	**-**
	Modern Road Makers Private Limited	-	-	-	-	100.11	26.29	-	-	-	-	-	-
10	**Other payable including BG margin payable**	**173.30**	**158.06**	**387.14**	**151.33**	**80.34**	**77.26**	**0.01**	**-**	**-**	**-**	**-**	**-**
	IRB Infrastructure Developers Limited	173.30	158.06	387.14	151.33	-	-	-	-	-	-	-	-
	Modern Road Makers Private Limited	-	-	-	-	80.34	77.26	0.01	-	-	-	-	-
11	**Intangible asset under development**	**-**	**-**	**32,530.84**	**28,044.03**	**-**	**528.91**	**365.12**	**-**	**-**	**-**	**-**	**-**
	IRB Infrastructure Developers Limited	-	-	32,530.84	28,044.03	-	-	-	-	-	-	-	-
	Modern Road Makers Private Limited	-	-	-	-	-	528.91	365.12	-	-	-	-	-
12	**Short-term loans & advances**	**-**	**-**	**-**	**-**	**1.17**	**1.17**	**-**	**-**	**-**	**-**	**-**	**-**
	Modern Road Makers Private Limited	-	-	-	-	1.17	1.17	-	-	-	-	-	-
13	**BG margin money receivable**	**0.54**	**41.91**	**299.06**	**94.19**	**69.69**	**69.69**	**-**	**-**	**-**	**-**	**-**	**-**
	IRB Infrastructure Developers Limited	0.54	41.91	299.06	94.19	-	-	-	-	-	-	-	-
	Modern Road Makers Private Limited	-	-	-	-	69.69	69.69	-	-	-	-	-	-

IRB Infrastructure Trust
Notes to Combined Financial Statements

II. Related party balances

(Rs. in millions)

Sr. No.	Particulars	Sponsor and Project Manager				Fellow subsidaries of Project SPV Group				Key Management Personnel of Project SPV Group			
		Sept 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017	Sept 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017	Sept 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017
14	**Other receivable**	**-**	**-**	**-**	**22.02**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	IRB Infrastructure Developers Limited	-	-	-	22.02	-	-	-	-	-	-	-	-
15	**Director sitting fees Payable**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.32**	**0.25**	**0.23**	**-**
	Mr. Mukeshlal Gupta	-	-	-	-	-	-	-	-	0.05	0.03	0.02	-
	Mr. Dhananjay K. Joshi	-	-	-	-	-	-	-	-	0.04	0.02	0.02	-
	Mr. Ajay P. Deshmukh	-	-	-	-	-	-	-	-	0.05	0.04	0.05	-
	Mr. Rajendra kumar Agarwal	-	-	-	-	-	-	-	-	0.01	0.01	0.02	-
	Mrs. Arati Taskar	-	-	-	-	-	-	-	-	0.04	0.02	0.03	-
	Mr. Darshan Sangurdekar	-	-	-	-	-	-	-	-	0.01	0.02	0.03	-
	Mr. Omprakash Singh	-	-	-	-	-	-	-	-	0.02	0.01	0.01	-
	Mr. Sudhir Hoshing	-	-	-	-	-	-	-	-	0.03	0.03	0.04	-
	Mr. Jitendra Sharma	-	-	-	-	-	-	-	-	0.02	0.02	0.02	-
	Mr. Rajpaul S. Sharma	-	-	-	-	-	-	-	-	0.02	0.01	-	-
	Mrs. Heena Raja	-	-	-	-	-	-	-	-	-	0.01	-	-
	Mr. Naresh Taneja	-	-	-	-	-	-	-	-	0.02	0.01	-	-
	Mr. Anil D.Yadav	-	-	-	-	-	-	-	-	0.02	0.01	-	-

Note 33 : Disclosure pursuant to Appendix - A to Ind AS 11 - " Service Concession Arrangements" ('SCA')

(A) Disclosures with regard to Toll Collection Rights (Intangible Assets)

Sr. No.	Name of Concessionaire	Start of concession period under concession agreement (Appointed date)	End of concession period under concession agreement	Period of concession since the appointed date	Construction completion date or scheduled construction completion date under the concession agreement, as applicable
1	IRB Westcoast Tollway Limited	March 3, 2014	March 2, 2042	28 years	August 27, 2017
2	Solapur Yedeshi Tollway Limited	January 21, 2015	January 20, 2044	29 years	July 18, 2017
3	Yedeshi Aurangabad Tollway Limited	July 1, 2015	June 30, 2041	26 years	December 26, 2017
4	Kaithal Tollway Limited	July 15, 2015	July 14, 2042	27 years	January 9, 2018
5	AE Tollway Limited	August 1, 2016	July 31, 2040	24 years	January 27, 2019
6	Udaipur Tollway Limited	September 3, 2017	September 2, 2038	21 years from Appointed Date	February 29, 2020
7	CG Tollway Limited	November 4, 2017	November 3, 2037	20 years from Appointed Date	May 1, 2020
8	Kishangarh Gulabpura Tollway Limited	February 21, 2018	February 20, 2038	20 years from Appointed Date	August 19, 2020
9	IRB Hapur Moradabad Tollway Limited	May 28, 2019	May 26, 2041	22 years from Appointed Date	November 22, 2021

Note:

The above BOT/ DBFOT projects shall have following rights/ obligations in accordance with the Concession Agreement entered into with the Respective Government Authorities:-

a. Rights to use the Specified assets
b. Obligations to provide or rights to expect provision of services
c. Obligations to deliver or rights to receive at the end of the Concession.

(Rs in millions)

Note 34 : Fair values

The carrying values of financials instruments of the Group are reasonable and approximations of fair values.

	Carrying amount				Fair Value			
	September 30, 2019	**March 31, 2019**	**March 31, 2018**	**March 31, 2017**	**September 30, 2019**	**March 31, 2019**	**March 31, 2018**	**March 31, 2017**
Financial assets								
Financial assets measured at amortised cost								
Loans	**6.34**	9.87	6.11	4.00	**6.34**	9.87	6.11	4.00
Other Financial assets	**394.55**	386.86	373.68	141.40	**394.55**	386.86	373.68	141.40
Financial assets measured at fair value through statement of Profit & Loss								
Investments (Quoted)	**510.92**	184.38	1,582.87	-	**510.92**	184.38	1,582.87	-
Financial assets measured at fair value through other comprehensive income								
Investments (Quoted)	**-**	-	-	-	-	-	-	-
Investments (Unquoted)	**-**	-	-	-	-	-	-	-
Financial assets measured at amortised cost								
Investments (Unquoted)	**-**	-	-	-	-	-	-	-
Trade receivable	**-**	14.02	31.51	85.66	**-**	14.02	31.51	85.66
Cash and cash equivalents	**205.41**	325.82	999.45	351.79	**205.41**	325.82	999.45	351.79
Other Bank balances	**1,525.83**	1,450.03	-	-	**1,525.83**	1,450.03	-	-
Financial liabilities								
Financial liabilities measured at amortised cost								
Trade payables	**16,174.69**	8,529.24	6,581.21	58.14	**16,174.69**	8,529.24	6,581.21	58.14
Borrowings	**109,901.49**	98,005.17	75,274.06	53,714.14	**109,901.49**	98,005.17	75,274.06	53,714.14
Other financial liabilities	**41,940.67**	28,938.54	60,856.01	20,700.17	**41,940.67**	28,938.54	60,856.01	20,700.17

The management assessed that the fair value of cash and cash equivalents, trade receivables, trade payables, bank overdrafts and other current liabilities approximate their carrying amounts largely due to the short-term maturities of these instruments.

The fair value of the financial assets and liabilities is included at the amount at which the instrument could be exchanged in a current transaction between willing parties, other than in a forced or liquidation sale.

The discount for lack of marketability represents the amounts that the Group has determined that market participants would take into account when pricing the investments.

Note 35 : Fair value hierarchy

All financial instruments for which fair value is recognised or disclosed are categorised within the fair value hierarchy described as follows, based on the lowest level input that is significant to the fair value measurement as a whole.

Level 1: Quoted (unadjusted) price in active market for identical assets or liabilities

Level 2: Valuation technique for which the lowest level input that has a significant effect on the fair value measurement are observed, either directly or indirectly

Level 3: Valuation technique for which the lowest level input has a significant effect on the fair value measurement is not based on observable market data.

Quantitative disclosures fair value measurement hierarchy for financial instruments as at September 30, 2019:

	As on September 30, 2019	**Fair value measurement at end of the reporting year using**		
		Level 1	**Level 2**	**Level 3**
Assets				
Investments (Quoted)	**510.92**	**510.92**	**-**	**-**
Investments (Unquoted) **	**-**	-	-	-

Quantitative disclosures fair value measurement hierarchy for financial instruments as at March 31, 2019: (Rs in millions)

	As on March 31, 2019	**Fair value measurement at end of the reporting year using**		
		Level 1	**Level 2**	**Level 3**
Assets				
Investments (Quoted)	**184.38**	**184.38**	**-**	**-**
Investments (Unquoted) **	-	-	-	-

Quantitative disclosures fair value measurement hierarchy for financial instruments as at March 31, 2018: (Rs in millions)

	As on March 31, 2018	**Fair value measurement at end of the reporting year using**		
		Level 1	**Level 2**	**Level 3**
Assets				
Investments (Quoted)	1,582.87	1,582.87	-	-
Investments (Unquoted) **	-	-	-	-

(Rs in millions)

Quantitative disclosures fair value measurement hierarchy for financial instruments as at March 31, 2017: -

	As on March 31, 2017	Fair value measurement at end of the reporting year using		
		Level 1	Level 2	Level 3
Assets				
Investments (Quoted)	-	-	-	-
Investments (Unquoted) **	-	-	-	-

**The fair value in respect of the unquoted equity investments cannot be reliably estimated.

There have been no transfers between Level 1 and Level 2 during the year.

Note 36 : Financial risk management objectives and policies

The Group's risk management policies are established to identify and analyse the risks faced by the Group, to set appropriate risk limits and controls, and to monitor risks and adherence to limits. Risk management policies and systems are reviewed regularly to reflect changes in market conditions and the Group's activities.

The Board of Directors have overall responsibility for the establishment and oversight of the Group's risk management framework.

In performing its operating, investing and financing activities, the Group is exposed to the Credit risk, Liquidity risk and Currency risk.

Market risk

Market risk is the risk that the fair value of future cash flows of a financial instrument will fluctuate because of changes in market prices. Market risk comprises three types of risk: interest rate risk, currency risk and other price risk, such as equity price risk and commodity risk. Financial instruments affected by market risk include loans and borrowings, deposits, FVTOCI investments and derivative financial instruments.

Credit risk on financial assets

Credit risk is the risk that counterparty will not meet its obligations under a financial instrument or customer contract, leading to a financial loss. The Company is exposed to credit risk from its operating activities (primarily trade receivables) and from its financing activities, including deposits with banks and financial institutions, foreign exchange transactions and other financial instruments.

Financial instruments

Credit risk from balances with banks, trade receivables, loans and advances and financial institutions is managed by the Group's management in accordance with the Group's policy. Investments of surplus funds are made only with approved counterparties and within credit limits assigned to each counterparty. Counterparty credit limits are reviewed by the top management on an annual basis, and may be updated throughout the year subject to approval of the Company's board of directors. The limits are set to minimise the concentration of risks and therefore mitigate financial loss through counterparty's potential failure to make payments.

Trade receivables and Loans and Advances

Customer credit risk and Loans and advances is managed by each business unit subject to the Group's established policy, procedures and control relating to customer credit risk management. An impairment analysis is performed at each reporting date on an individual basis for major trade receivables and loan and advances. The Group has not identifed any impairment loss as at September 30, 2019, March 31, 2019, March 31, 2018 and March 31, 2017.

Other financial assets

Credit risk from balances with banks and financial institutions is managed by the Group in accordance with the Group's policy. Investments of surplus funds are made only in highly marketable debt instruments with appropriate maturities to optimise the cash return on instruments while ensuring sufficient liquidity to meet its liabilities.

Interest rate risk

Interest rate risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market interest rates. The Group's exposure to the risk of changes in market interest rates relates primarily to the Group's long-term debt obligations with floating interest rates.

The Group manages its interest rate risk by having a balanced portfolio of fixed and variable rate borrowings.

(Rs in millions)

Interest rate sensitivity

The following table demonstrates the sensitivity to a reasonably possible change in interest rates on that portion of loans and borrowings affected, after excluding the credit exposure on fixed rate borrowing. With all other variables held constant, the Group's profit before tax is affected through the impact on floating rate borrowings, as follows:

	Borrowings				Fixed Deposits			
Balance of Fixed Deposit and Borrowings	**September 30, 2019**	**March 31, 2019**	**March 31, 2018**	**March 31, 2017**	**September 30, 2019**	**March 31, 2019**	**March 31, 2018**	**March 31, 2017**
- INR Millions	92,832.54	86,162.98	66,246.26	53,054.46	**1,525.83**	1,450.03	-	-
- USD Millions	-	-	-	-	**-**	-	**-**	**-**
Increase in basis points								
- INR	**50 bps**	50 bps	50 bps	50 bps	**50 bps**	50 bps	**50 bps**	50 bps
- USD	**50 bps**	50 bps	50 bps	50 bps	**50 bps**	50 bps	**50 bps**	50 bps
Effect on profit before tax								
- INR Millions	**(464.16)**	(430.81)	(331.23)	(265.27)	**(7.63)**	(7.25)	**-**	-
- USD Millions	**-**	-	-	-	**-**	-	**-**	-
Decrease in basis points								
- INR	**50 bps**	50 bps	50 bps	50 bps	**50 bps**	50 bps	**50 bps**	50 bps
- USD	**50 bps**	50 bps	50 bps	50 bps	**50 bps**	50 bps	**50 bps**	50 bps
Effect on profit before tax								
- INR Millions	**464.16**	430.81	331.23	265.27	**7.63**	7.25	**-**	-
- USD Millions	**-**	-	-	-	**-**	-	**-**	-

Liquidity risk

Liquidity risk is the risk that the Group may not be able to meet its present and future cash and collateral obligations without incurring unacceptable losses. The Group's objective is to, at all times maintain optimum levels of liquidity to meet its cash and collateral requirements. The Group closely monitors its liquidity position and deploys a robust cash management system. It maintains adequate sources of financing including debt and overdraft from banks at an optimised cost.

The table below summarises the maturity profile of the Group's financial liabilities based on contractual undiscounted payments:

As at September 30, 2019	**Carrying amt**	**Total**	**Less than 1 year**	**1 to 5 years**	**> 5 years**
Borrowings	109,901.49	109,901.49	12,467.01	5,972.70	91,461.78
Other financial liabilities	41,940.67	41,940.67	41,844.08	67.13	29.46
Trade payables	16,174.69	16,174.69	16,174.69	-	-
Total	**168,016.85**	**168,016.85**	**70,485.78**	**6,039.83**	**91,491.24**

As at March 31, 2019	**Carrying amt**	**Total**	**Less than 1 year**	**1 to 5 years**	**> 5 years**
Borrowings	98,005.17	98,005.17	7,208.11	4,414.09	86,382.97
Other financial liabilities	28,938.54	28,938.54	26,866.86	2,071.68	-
Trade payables	8,529.24	8,529.24	8,529.24	-	-
Total	**135,472.95**	**135,472.95**	**42,604.21**	**6,485.77**	**86,382.97**

As at March 31, 2018	**Carrying amt**	**Total**	**Less than 1 year**	**1 to 5 years**	**> 5 years**
Borrowings	75,274.06	75,274.07	9,589.15	2,738.11	62,946.81
Other financial liabilities	60,856.01	60,856.01	39,811.94	21,044.07	-
Trade payables	6,581.21	6,581.21	6,581.21	-	-
Total	**142,711.28**	**142,711.29**	**55,982.30**	**23,782.18**	**62,946.81**

As at March 31, 2017	**Carrying amt**	**Total**	**Less than 1 year**	**1 to 5 years**	**> 5 years**
Borrowings	53,714.14	53,714.14	757.29	1,449.38	51,507.47
Other financial liabilities	20,700.17	20,700.17	20,697.43	2.74	-
Trade payables	58.14	58.14	58.14	-	-
Total	**74,472.45**	**74,472.45**	**21,512.86**	**1,452.12**	**51,507.47**

At present, the Group does expects to repay all liabilitiesat their contractual maturity. In order to meet such cash commitments, the operating activity is expected to generate sufficient cash inflows.

Borrowings are considered post transaction cost.

(Rs in millions)

Note 37 : Capital management

Capital includes equity attributable to the equity holders to ensure that it maintains an efficient capital structure and healthy capital ratios in order to support its business and maximise shareholder value. The Group manages its capital structure and makes adjustments to it, in light of changes in economic conditions or its business requirements. To maintain or adjust the capital structure, the Project SPV Group may adjust the dividend payment to shareholders, return capital to shareholders or issue new shares. No changes were made in the objectives, policies or processes during the year/ period ended September 30, 2019, March 31, 2019, March 31, 2018 and March 31, 2017.

The Group monitors capital using a gearing ratio, which is net debt divided by total capital plus net debt. Net debt is calculated as loans and borrowings less cash and cash equivalents.

	September 30, 2019	**March 31, 2019**	**March 31, 2018**	**March 31, 2017**
Borrowings (Note 17)	**109,901.49**	98,005.17	75,274.06	53,714.14
Less: cash and cash equivalents (Note 12A and 19)	(205.41)	(325.82)	(999.45)	(351.79)
Net debt	**109,696.08**	97,679.35	74,274.61	53,362.35
Equity (Note 15 and 16)	**48,739.41**	43,154.13	35,791.50	29,528.99
Total equity	**48,739.41**	43,154.13	35,791.50	29,528.99
Capital and net debt	**158,435.49**	140,833.48	110,066.11	82,891.34
Gearing ratio (%)	**69.24%**	69.36%	67.48%	64.38%

In order to achieve this overall objective, the Group's capital management, amongst other things, aims to ensure that it meets financial covenants attached to the interest-bearing loans and borrowings that define capital structure requirements. Breaches in meeting the financial covenants would permit the bank to immediately call loans and borrowings. There have been no breaches in the financial covenants of any interest-bearing borrowings in the current period.

Note 38

(a) During the half year ended September 30, 2019, the Group has paid/accrued Rs. 468.84 millions (March 31, 2019: Rs. 893.03 millions, March 31, 2018: Rs. 850.50 millions and March 31, 2017 : Rs. 540 millions)as Revenue Share to National Highways Authority of India ("NHAI") out of its toll collection in accordance with the Concession Agreements entered with NHAI. Income from Operations in the financials for the above periods is net off the above Revenue Share to NHAI.

(b) During the year ended March 31, 2017, AE Tollway Limited (AETL) has entered into a Concession agreement (CA) with NHAI for a period of 24 years. As per the terms of the CA, AETL has agreed to pay a premium in the form of "Additional Concession Fee" equal to Rs. 810.00 millions for the first year and each subsequent year such premium shall be determined by increasing the amount of premium in the respective year by an additional 5% as compared to the immediately preceding year. Management based on the legal opinion obtained and their evaluations of the terms of the CA, believes that such premium payable is restricted to the toll collection during the year and is in the form of revenue sharing arrangement. Accordingly, the premium payable for the year is accounted for as revenue share.

Note 39: Grant from Government Authorities

As per Article 25 of the respective Concession Agreement with the National Highways Authority of India ('NHAI' or 'the Grantor'), the Concessionaires are entitled to receive Grant for meeting the part of the project cost subject to the conditions laid down in the concession agreement. The details are as under:

(Rs in millions)

Name of the Company	**Eligible for Grant**	**Grant received in FY 2016-17**	**Grant received in FY 2017-18**	**Grant received in FY 2018-19**	**Grant yet to be received**
SYTL	1,890.00	1,391.70	403.80	**94.50**	-
KTL	2,340.00	1,533.79	806.21	**-**	-
YATL	5,580.00	-	4,230.24	**1,349.76**	-
IRBWTL	5,362.20	4,512.30	-	**849.90**	-
Total	**15,172.20**	**7,437.79**	**5,440.25**	**2,294.16**	**-**

40 Disclosures as required by SEBI Circular no. CIR/IMD/DF/114/2016 dated 20 October 2016

A Project wise operating cash flows :-

(Rs. in millions)

(i) IRB Westcoast Tollway Limited

Particulars	September 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017
Cash flow from operating activities				
Profit Before Tax	0.35	11.70	22.56	24.24
Adjustments :				
(Gain) / loss on sale of Investment	(0.14)	(0.28)	(0.27)	0.00
Operating profit/(loss) before working capital changes	**0.21**	**11.41**	**22.30**	**24.24**
Movement in working capital:				
Decrease/(increase) in loans	(0.79)	(0.39)	(0.03)	-
Decrease/(increase) in Trade receivables			85.66	(85.66)
Decrease/(increase) in others financial assets	(18.15)	(1.01)	(10.22)	(8.46)
Decrease/(increase) in other assets	70.39	1,334.42	2,023.31	(2,086.43)
Increase/(decrease) in trade payables	198.75	422.37	1.30	8.50
Increase/(decrease) in other financial liabilities	(1,930.23)	(17.68)	10.43	5.40
Increase/(decrease) in other liabilities	187.21	2,064.82	(84.59)	(959.44)
Cash generated from/(used in) operations	**(1,492.61)**	**3,813.94**	**2,048.16**	**(3,101.84)**
Direct taxes paid (net of refunds)	(3.28)	6.31	(21.43)	(14.89)
Net cash flows from/(used in) operating activities	**(1,495.89)**	**3,820.25**	**2,026.72**	**(3,116.73)**

40 Disclosures as required by SEBI Circular no. CIR/IMD/DF/114/2016 dated 20 October 2016

A Project wise operating cash flows :-

(Rs. in millions)

(ii) Solapur Yedeshi Tollway Limited

Particulars	September 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017
Cash flow from operating activities				
Profit Before Tax	(217.03)	(383.30)	(20.30)	20.43
Adjustments :				
Depreciation and amortisation expenses	53.11	95.17	5.62	-
Finance costs	469.79	921.69	64.06	-
Fair Value gain on Mutual Funds	(0.02)	(0.02)	(0.02)	-
(Gain) / loss on sale of Investment	(1.55)	(3.17)	(1.36)	(0.54)
Interest Income on				
- Bank deposits	(11.52)	(17.29)	-	(0.27)
- Others	(0.24)	(0.04)	(0.00)	(0.11)
Operating profit/(loss) before working capital changes	**292.54**	**613.05**	**48.01**	**19.52**
Movement in working capital:				
Decrease/(increase) in loans	0.19	(0.67)	(0.53)	-
Decrease/(increase) in Trade receivables	-	0.00	(0.00)	3.69
Decrease/(increase) in others financial assets	(2.54)	(17.22)	(6.56)	(0.54)
Decrease/(increase) in other assets	(2.79)	(1.34)	971.44	294.69
Increase/(decrease) in trade payables	3.79	215.38	262.96	12.60
Increase/(decrease) in other financial liabilities	3.82	11.87	1.47	10.94
Increase/(decrease) in other liabilities	259.88	(4.30)	5.36	(0.21)
Increase/(decrease) in provisions	0.25	0.23	1.09	0.00
Cash generated from/(used in) operations	**555.15**	**816.99**	**1,283.24**	**340.68**
Direct taxes paid (net of refunds)	1.55	(13.93)	(3.05)	(34.70)
Net cash flows from/(used in) operating activities	**556.70**	**803.06**	**1,280.19**	**305.98**

40 Disclosures as required by SEBI Circular no. CIR/IMD/DF/114/2016 dated 20 October 2016

A Project wise operating cash flows :-

(Rs. in millions)

(iii) Yedeshi Aurangabad Tollway Limited

Particulars	September 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017
Cash flow from operating activities				
Profit Before Tax	(510.46)	6.63	(5.04)	3.03
Adjustments :				
Depreciation and amortisation expenses	171.34	10.62	-	-
Finance costs	834.71	76.79	-	0.00
Fair Value gain on Mutual Funds	(0.01)	0.00	(0.44)	-
(Gain) / loss on sale of Investment	(2.67)	(2.65)	(1.01)	(0.31)
Interest Income on				
- Bank deposits	(22.98)	(39.45)	-	-
- Others	(0.01)	(0.14)	-	0.00
Operating profit/(loss) before working capital changes	**469.92**	**51.80**	**(6.49)**	**2.72**
Movement in working capital:				
Decrease/(increase) in loans	3.45	-	-	-
Decrease/(increase) in Trade receivables	0.00	0.49	(0.49)	0.49
Decrease/(increase) in Inventories	27.86	(27.86)	-	-
Decrease/(increase) in others financial assets	(8.70)	9.86	(1.35)	(27.69)
Decrease/(increase) in other assets	(27.85)	116.30	1,493.59	3,094.82
Increase/(decrease) in trade payables	1,223.44	2,727.82	2,476.33	80.12
Increase/(decrease) in other financial liabilities	72.87	1.75	(1.32)	43.83
Increase/(decrease) in other liabilities	383.85	20.85	(20.89)	18.28
Increase/(decrease) in provisions	4.64	-	-	-
Cash generated from/(used in) operations	**2,149.48**	**2,901.01**	**3,939.38**	**3,212.57**
Direct taxes paid (net of refunds)	(3.10)	(3.19)	(1.54)	(3.73)
Net cash flows from/(used in) operating activities	**2,146.38**	**2,897.82**	**3,937.84**	**3,208.84**

40 Disclosures as required by SEBI Circular no. CIR/IMD/DF/114/2016 dated 20 October 2016

A Project wise operating cash flows :-

(Rs. in millions)

(iv) Kaithal Tollway Limited

Particulars	September 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017
Cash flow from operating activities				
Profit Before Tax	(420.86)	(783.71)	(505.71)	(28.58)
Adjustments :				
Depreciation and amortisation expenses	107.03	178.90	72.58	-
Resurfacing expenses	36.10	0.00	0.00	-
Finance costs	714.89	1,364.25	740.39	-
Fair Value gain on Mutual Funds	(0.01)	(0.04)	(23.50)	-
(Gain) / loss on sale of Investment	(1.50)	(36.66)	(3.40)	(0.59)
Interest Income on				
- Bank deposits	(16.68)	(2.28)	-	(0.13)
- Others	(0.59)	(2.76)	(0.01)	0.00
Operating profit/(loss) before working capital changes	**418.38**	**717.71**	**280.35**	**(29.30)**
Movement in working capital:				
Decrease/(increase) in loans	0.00	(0.40)	(0.21)	-
Decrease/(increase) in Trade receivables	0.00	31.02	(31.02)	-
Decrease/(increase) in others financial assets	(33.98)	(18.21)	(0.83)	0.36
Decrease/(increase) in other assets	(15.32)	2.01	2,383.64	1,412.24
Increase/(decrease) in trade payables	(4.62)	50.12	668.18	27.18
Increase/(decrease) in other financial liabilities	34.37	(31.81)	8.21	22.39
Increase/(decrease) in other liabilities	(1.63)	3.82	(10.85)	11.12
Increase/(decrease) in provisions	0.15	0.27	1.43	-
Cash generated from/(used in) operations	**397.35**	**754.52**	**3,298.89**	**1,443.99**
Direct taxes paid (net of refunds)	4.19	(5.55)	(8.09)	(21.73)
Net cash flows from/(used in) operating activities	**401.54**	**748.97**	**3,290.80**	**1,422.26**

40 Disclosures as required by SEBI Circular no. CIR/IMD/DF/114/2016 dated 20 October 2016

A Project wise operating cash flows :-

(Rs. in millions)

(v) AE Tollway Limited

Particulars	September 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017
Cash flow from operating activities				
Profit Before Tax	(238.68)	(285.53)	(68.55)	20.21
Adjustments :				
Depreciation and amortisation expenses	109.97	159.53	149.37	83.69
Finance costs	4.49	9.11	8.89	6.86
(Gain) / loss Profit on sale of fixed assets				
Fair Value gain on Mutual Funds				
(Gain) / loss on sale of Investment	(0.49)	(2.06)	(1.56)	(0.65)
Interest Income on				
- Bank deposits	(0.00)	(0.31)	(0.00)	(0.18)
- Others	(0.03)	(0.54)	(1.31)	(0.03)
Operating profit/(loss) before working capital changes	**(124.74)**	**(119.81)**	**86.83**	**109.89**
Movement in working capital:				
Decrease/(increase) in loans	0.66	(0.51)	(0.04)	0.00
Decrease/(increase) in others financial assets	(6.92)	57.25	(5.63)	22.80
Decrease/(increase) in other assets	(2.54)	(1,117.60)	3,068.53	(4,415.68)
Increase/(decrease) in trade payables	4,046.77	20.34	1.18	4.35
Increase/(decrease) in other financial liabilities	(1,439.66)	(8,873.88)	(8,224.20)	20,379.62
Increase/(decrease) in other liabilities	(30.31)	31.64	(19.85)	20.88
Increase/(decrease) in provisions	0.16	0.21	0.38	1.64
Cash generated from/(used in) operations	**2,443.42**	**(10,002.37)**	**(5,092.79)**	**16,123.50**
Direct taxes paid (net of refunds)	(7.38)	(11.16)	(4.00)	(10.23)
Net cash flows from/(used in) operating activities	**2,436.04**	**(10,013.53)**	**(5,096.79)**	**16,113.27**

40 Disclosures as required by SEBI Circular no. CIR/IMD/DF/114/2016 dated 20 October 2016

A Project wise operating cash flows :-

(Rs. in millions)

(vi) Udaipur Tollway Limited

Particulars	September 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017
Cash flow from operating activities				
Profit before Tax	(88.45)	479.45	587.93	-
Adjustments :				
Depreciation and amortisation expenses	113.85	221.43	110.61	-
Exchange rate variation	-	-	-	-
Preliminary expenses and share issue expenses written off	-	-	-	-
Prior period (income)/expenses	-	-	-	-
Resurfacing expenses	-	-	-	-
Finance costs	627.98	707.10	161.12	-
(Gain) / loss Profit on sale of fixed assets	-	-	-	-
(Gain) / loss on Fair value on mutual funds	(0.01)	0.11	(4.14)	-
(Gain) / loss on sale of Investment	(1.31)	(6.58)	(4.22)	-
Interest Income on				
- Bank deposits	(5.79)	(8.44)	0.00	-
- Others	(0.00)	(0.01)	(0.00)	-
Dividend Income on				
- Other long-term investments	0.00	0.00	0.00	-
- Other investments (non-trade, current)	0.00	0.00	(1.83)	-
Interest unwinding on loans given				
Operating profit/(loss) before working capital changes	**646.27**	**1,393.05**	**849.48**	**-**
Movement in working capital:				
Decrease/(increase) in loans	0.00	(0.05)	(0.23)	-
Decrease/(increase) in trade receivables	14.02	(14.02)	0.00	-
Decrease/(increase) in Inventories	0.00	0.00	0.00	-
Decrease/(increase) in others financial assets	3.25	25.83	(67.10)	(6.20)
Decrease/(increase) in other assets	594.32	4,194.36	(5,208.93)	-
Increase/(decrease) in trade payables	(141.55)	(390.75)	1,193.05	0.31
Increase/(decrease) in other financial liabilities	(33.78)	(7.28)	108.21	-
Increase/(decrease) in other liabilities	(3.29)	13.88	2.81	7.29
Increase/(decrease) in provisions	0.12	0.20	0.95	-
Cash generated from/(used in) operations	**1,079.36**	**5,215.24**	**(3,121.75)**	**1.40**
Direct taxes paid (net of refunds)	(0.89)	(124.25)	(112.18)	-
Net cash flows from/(used in) operating activities	**1,078.48**	**5,090.99**	**(3,233.93)**	**1.40**

40 Disclosures as required by SEBI Circular no. CIR/IMD/DF/114/2016 dated 20 October 2016

A Project wise operating cash flows :-

(Rs. in millions)

(vii) CG Tollway Limited

Particulars	September 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017
Cash flow from operating activities				
Profit Before Tax	112.06	1,076.99	786.37	-
Adjustments :				
Depreciation and amortisation expenses	126.97	256.28	81.60	-
Finance costs	530.72	543.75	8.10	-
(Gain) / loss Profit on sale of fixed assets	(0.00)	-	-	-
Fair Value gain on Mutual Funds	(0.05)	(0.09)	(2.54)	-
(Gain) / loss on sale of Investment	(4.44)	(12.30)	(5.34)	-
Interest Income on				
- Bank deposits	-	(0.03)	(0.00)	-
- Others	(0.02)	(0.06)	(0.02)	-
Operating profit/(loss) before working capital changes	**765.24**	**1,864.54**	**868.16**	**0.00**
Movement in working capital:				
Decrease/(increase) in loans	0.28	(0.04)	(0.57)	-
Decrease/(increase) in Trade receivables	-	-	-	-
Decrease/(increase) in others financial assets	1.90	83.77	(79.62)	(10.66)
Decrease/(increase) in other assets	597.62	1,387.28	(2,669.58)	-
Increase/(decrease) in trade payables	(129.60)	(481.86)	1,254.75	0.01
Increase/(decrease) in other financial liabilities	7.81	(98.58)	100.47	11.91
Increase/(decrease) in other liabilities	(2.51)	4.96	5.78	0.00
Increase/(decrease) in provisions	0.22	0.32	2.26	-
Cash generated from/(used in) operations	**1,240.96**	**2,760.39**	**(518.36)**	**1.26**
Direct taxes paid (net of refunds)	(11.72)	(267.61)	(147.80)	-
Net cash flows from/(used in) operating activities	**1,229.24**	**2,492.78**	**(666.16)**	**1.26**

40 Disclosures as required by SEBI Circular no. CIR/IMD/DF/114/2016 dated 20 October 2016

A Project wise operating cash flows :-

(Rs. in millions)

(viii) Kishangarh Gulabpura Tollway Limited

Particulars	September 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017
Cash flow from operating activities				
Profit Before Tax	123.83	837.22	117.52	-
Adjustments :				
Depreciation and amortisation expenses	70.91	177.89	21.40	-
Finance costs	348.18	275.91	1.64	-
(Gain) / loss on sale of Investment	(3.54)	(18.24)	(0.21)	-
Interest Income on				
- Bank deposits	(0.01)	(0.06)	(0.05)	-
- Others	(0.02)	(0.02)	-	-
Operating profit/(loss) before working capital changes	**539.36**	**1,272.70**	**140.30**	**-**
Movement in working capital:				
Decrease/(increase) in loans	0.26	(0.55)	(0.07)	-
Decrease/(increase) in other financial assets	44.92	209.27	(39.40)	(5.16)
Decrease/(increase) in Inventories	-	-	-	-
Decrease/(increase) in other assets	469.16	1,015.49	(2,361.00)	-
Increase/(decrease) in trade payables	(26.14)	(616.03)	665.32	-
Increase/(decrease) in other financial liabilities	112.98	534.91	13,934.80	6.05
Increase/(decrease) in other liabilities	0.62	8.97	-	-
Increase/(decrease) in provisions	0.12	0.08	0.78	-
Cash generated from/(used in) operations	**1,141.28**	**2,424.84**	**12,340.73**	**0.89**
Direct taxes paid (net of refunds)	(28.88)	(172.47)	(22.52)	-
Net cash flows from/(used in) operating activities	**1,112.41**	**2,252.37**	**12,318.21**	**0.89**

40 Disclosures as required by SEBI Circular no. CIR/IMD/DF/114/2016 dated 20 October 2016

A Project wise operating cash flows :-

(Rs. in millions)

(ix) IRB Hapur Moradabad Tollway Limited

Particulars	September 30, 2019	March 31, 2019
Cash flow from operating activities		
Profit Before Tax	309.06	(0.81)
Adjustments :		
Depreciation and amortisation expenses	89.28	-
Exchange rate variation	0.00	-
(Gain) / loss Profit on sale of fixed assets	0.00	-
Fair Value gain on Mutual Funds	(0.36)	-
(Gain) / loss on sale of Investment	(3.77)	-
Interest Income on		
- Bank deposits	0.00	-
- Others	(0.01)	-
Operating profit/(loss) before working capital changes	**394.20**	**(0.81)**
Movement in working capital:		
Decrease/(increase) in loans	(0.50)	-
Decrease/(increase) in others financial assets	(0.56)	(69.69)
Decrease/(increase) in other assets	(2,759.00)	(0.22)
Increase/(decrease) in trade payables	2,474.60	0.64
Increase/(decrease) in other financial liabilities	2.68	85.06
Increase/(decrease) in other liabilities	47.78	0.55
Increase/(decrease) in provisions	2.44	-
Cash generated from/(used in) operations	**161.64**	**15.53**
Direct taxes paid (net of refunds)	(37.83)	
Net cash flows from/(used in) operating activities	**123.81**	**15.53**

40 Disclosures as required by SEBI Circular no. CIR/IMD/DF/114/2016 dated 20 October 2016

B Capitalisation statement

(Rs. in millions)

Particuars	Pre-issue as at September 30, 2019	As adjusted for issue*
Non-current borrowings (refer note 17)	97,412.62	
Current borrowings (refer note 17)	12,260.14	
Current maturities of non-current borrowings (refer note 19)	228.73	
Total debt (A)	**109,901.49**	
Equity share capital (refer note 15)	17,686.19	
Subordinate debt (refer note 15)	30,594.34	
Other equity (refer note 16)	458.88	
Total equity (B)	**48,739.41**	
Debt equity ratio [A/(A+B)]	69%	

* corresponding details post private placement are not available, hence the required disclosures in respect of the same have not been provided in the above table

IRB Infrastructure Trust

Notes to Combined Financial Statements

40 Disclosures as required by SEBI Circular no. CIR/IMD/DF/114/2016 dated 20 October 2016

C Debt payment history

(Rs. in millions)

AE Tollway Limited

Particulars	As at September 30, 2019			As at March 31, 2019			As at March 31, 2018			As at March 31, 2017		
	Term Loans	Non - Convertible Debentures	Loans from related parties	Term Loans	Non - Convertible Debentures	Loans from related parties	Term Loans	Non - Convertible Debentures	Loans from related parties	Term Loans	Non - Convertible Debentures	Loans from related parties
Carrying amount of debt at the beginning of the period/year	14,929.10	-	-	8,007.78	-	-	3,669.69	-	-	-	-	31.18
Additional borrowings during the period/year			1,699.01	6,915.20		-	4,332.00			3,767.30	-	
Repayments during the period/year						-				-		(31.18)
Other adjustments/settlements during the period/year	3.06			6.12			6.09			(97.61)		
Carrying amount of debt at the end of the period/year	14,932.16	-	1,699.01	14,929.10	-	-	8,007.78	-	-	3,669.69	-	-

CG Tollway Limited

Particulars	As at September 30, 2019			As at March 31, 2019			As at March 31, 2018			As at March 31, 2017		
	Term Loans	Non - Convertible Debentures	Loans from related parties	Term Loans	Non - Convertible Debentures	Loans from related parties	Term Loans	Non - Convertible Debentures	Loans from related parties	Term Loans	Non - Convertible Debentures	Loans from related parties
Carrying amount of debt at the beginning of the period/year	8,020.81	-	-	1,989.33	-	203.04	-	-	1.37	-	-	-
Additional borrowings during the period/year	2,325.60			6,022.35		-	2,267.25		1,783.50	-	-	1.37
Repayments during the period/year						(203.04)			(1,581.83)	-		
Other adjustments/settlements during the period/year	8.98			9.13			(277.92)					
Carrying amount of debt at the end of the period/year	10,355.39		-	8,020.81		-	1,989.33		203.04	-		1.37

IRB Infrastructure Trust

Notes to Combined Financial Statements

40 Disclosures as required by SEBI Circular no. CIR/IMD/DF/114/2016 dated 20 October 2016

C Debt payment history

IRB Hapur Moradabad Tollway Limited

Particulars	As at September 30, 2019			As at March 31, 2019			As at March 31, 2018			As at March 31, 2017		
	Term Loans	Non - Convertible Debentures	Loans from related parties	Term Loans	Non - Convertible Debentures	Loans from related parties	Term Loans	Non - Convertible Debentures	Loans from related parties	Term Loans	Non - Convertible Debentures	Loans from related parties
Carrying amount of debt at the beginning of the period/year	-	-	169.93	-	-	-	-	-	-	-	-	-
Additional borrowings during the period/year	-		70.61	-		170.15	-		-	-	-	
Repayments during the period/year						(0.22)				-		
Other adjustments/settlements during the period/year												
Carrying amount of debt at the end of the period/year			240.54			169.93						

IRB Westcoast Tollway Limited

Particulars	As at September 30, 2019			As at March 31, 2019			As at March 31, 2018			As at March 31, 2017		
	Term Loans	Non - Convertible Debentures	Loans from related parties	Term Loans	Non - Convertible Debentures	Loans from related parties	Term Loans	Non - Convertible Debentures	Loans from related parties	Term Loans	Non - Convertible Debentures	Loans from related parties
Carrying amount of debt at the beginning of the period/year	13,072.67	-	2,848.43	13,089.01	-	3,286.59	13,091.70	-	14.20	9,339.02	-	14.20
Additional borrowings during the period/year			2,781.02						3,595.53	3,752.68	-	
Repayments during the period/year	(10.55)			(16.34)		(438.17)	(2.69)		(323.13)	-		
Other adjustments/settlements during the period/year												
Carrying amount of debt at the end of the period/year	13,062.12	-	5,629.45	13,072.67	-	2,848.43	13,089.01	-	3,286.59	13,091.70	-	14.20

IRB Infrastructure Trust
Notes to Combined Financial Statements
40 Disclosures as required by SEBI Circular no. CIR/IMD/DF/114/2016 dated 20 October 2016
C Debt payment history

Kishangarh Gulabpura Tollway Limited

Particulars	As at September 30, 2019			As at March 31, 2019			As at March 31, 2018			As at March 31, 2017		
	Term Loans	Non - Convertible Debentures	Loans from related parties	Term Loans	Non - Convertible Debentures	Loans from related parties	Term Loans	Non - Convertible Debentures	Loans from related parties	Term Loans	Non - Convertible Debentures	Loans from related parties
Carrying amount of debt at the beginning of the period/year	5,110.94	-	-	-	-	1,352.51	-	-	-	-	-	-
Additional borrowings during the period/year	1,688.47		-	5,351.18			-		4,089.51	-	-	
Repayments during the period/year						(1,352.51)			(2,737.00)	-		
Other adjustments/settlements during the period/year	13.40			(240.24)								
Carrying amount of debt at the end of the period/year	6,812.81	-	-	5,110.94	-	-	-	-	1,352.51	-	-	-

Udaipur Tollway Limited

Particulars	As at September 30, 2019			As at March 31, 2019			As at March 31, 2018			As at March 31, 2017		
	Term Loans	Non - Convertible Debentures	Loans from related parties	Term Loans	Non - Convertible Debentures	Loans from related parties	Term Loans	Non - Convertible Debentures	Loans from related parties	Term Loans	Non - Convertible Debentures	Loans from related parties
Carrying amount of debt at the beginning of the period/year	9,810.12		136.16	3,596.59		2,849.19	0.00		2.05			0.00
Additional borrowings during the period/year	2,266.73		95.37	6,275.65		649.24	3,733.91		5,376.01			2.05
Repayments during the period/year			(208.23)			(3,362.27)			(2,528.87)			
Other adjustments/settlements during the period/year	4.47			(62.12)			(137.32)					
Carrying amount of debt at the end of the period/year	12,081.32	-	23.30	9,810.12	-	136.16	3,596.59	-	2,849.19	-	-	2.05

IRB Infrastructure Trust

Notes to Combined Financial Statements

40 Disclosures as required by SEBI Circular no. CIR/IMD/DF/114/2016 dated 20 October 2016

C Debt payment history

Yedeshi Aurangabad Tollway Limited

Particulars	As at September 30, 2019			As at March 31, 2019			As at March 31, 2018			As at March 31, 2017		
	Term Loans	Non - Convertible Debentures	Loans from related parties	Term Loans	Non - Convertible Debentures	Loans from related parties	Term Loans	Non - Convertible Debentures	Loans from related parties	Term Loans	Non - Convertible Debentures	Loans from related parties
Carrying amount of debt at the beginning of the period/year	16,955.38	-	2,949.33	17,018.94	-	308.82	15,141.57	-	272.45	8,892.86	-	139.24
Additional borrowings during the period/year	417.11		496.15			3,993.56	1,877.37		5,077.16	6,248.71	-	2,742.64
Repayments during the period/year	(8.85)			(63.56)		(1,353.04)			(5,040.79)	-		(2,609.43)
Other adjustments/settlements during the period/year												
Carrying amount of debt at the end of the period/year	17,363.64	-	3,445.48	16,955.38	-	2,949.33	17,018.94	-	308.82	15,141.57	-	272.45

Solapur Yedeshi Tollway Limited

Particulars	**As at September 30, 2019**			**As at March 31, 2019**			**As at March 31, 2018**			**As at March 31, 2017**		
	Term Loans	**Non - Convertible Debentures**	**Loans from related parties**	**Term Loans**	**Non - Convertible Debentures**	**Loans from related parties**	**Term Loans**	**Non - Convertible Debentures**	**Loans from related parties**	**Term Loans**	**Non - Convertible Debentures**	**Loans from related parties**
Carrying amount of debt at the beginning of the period/year	8,998.77	-	980.51	8,321.52	-	1,233.80	8,322.08	-	339.68	6,710.46	-	83.55
Additional borrowings during the period/year			223.00	687.10		388.00			923.72	1,611.62	-	1,061.24
Repayments during the period/year	(4.54)		(264.06)	(9.85)		(641.29)	(0.56)		(29.60)	-		(805.11)
Other adjustments/settlements during the period/year												
Carrying amount of debt at the end of the period/year	8,994.23		939.45	8,998.77		980.51	8,321.52		1,233.80	8,322.08		339.68

IRB Infrastructure Trust

Notes to Combined Financial Statements

40 Disclosures as required by SEBI Circular no. CIR/IMD/DF/114/2016 dated 20 October 2016

C Debt payment history

Kaithal Tollway Limited

Particulars	As at September 30, 2019			As at March 31, 2019			As at March 31, 2018			As at March 31, 2017		
	Term Loans	Non - Convertible Debentures	Loans from related parties	Term Loans	Non - Convertible Debentures	Loans from related parties	Term Loans	Non - Convertible Debentures	Loans from related parties	Term Loans	Non - Convertible Debentures	Loans from related parties
Carrying amount of debt at the beginning of the period/year	8,471.31	5,393.72	157.97	13,716.33	-	300.59	12,731.81	-	127.54	7,709.79	-	294.65
Additional borrowings during the period/year			281.66	265.67	5,500.00	1,858.26	984.52		1,156.67	5,022.02	-	1,608.05
Repayments / Refinancing during the period/year	(4.40)	(4.01)		(5,510.69)	(1.83)	(1,257.61)			(983.61)	-		(1,775.16)
(Discounting)/ Unwinding of interest						(743.27)						
Other adjustments/settlements during the period/year		1.92	24.43		(104.45)							
Carrying amount of debt at the end of the period/year	8,466.91	5,391.63	464.06	8,471.31	5,393.72	157.97	13,716.33		300.59	12,731.81		127.54

(Rs in millions)

Note 41: Information on segment reporting pursuant to Ind AS 108 - Operating Segments

The Project SPV Group has identified business segment in accordance with Indian Accounting Standard 108 "Operating Segment" notified under section 133 of the Companies Act 2013, read together with relevant rules issued thereunder. The Group has identified Built, Operate and Transfer ('BOT') as its single reportable segment. Moreover the Group's activities are restricted within India and hence no separate geographical segment disclosure is considered necessary.

Note 42: Earnings Per Unit (EPU)

The number of units that IRB Infrastructure Trust will issue to investors in the proposed private placement and to IRB Infrastructure Developers Limimted (referred to as 'the Sponsors') in exchange of the shareholdings in the Project SPV Group and against the loan from Sponsors is not presently ascertainable. Hence the disclosures in respect of Earnings per Unit have not been given.

Note 43 : Previous year comparatives

Consequent to the issuance of " Guidance Note on Division II – Ind AS Schedule III to the Companies Act, 2013" certain items of financial statements have been regouped/ reclassified.

As per our report of even date
For Gokhale & Sathe
Chartered Accountants
ICAI registration number: 103264W

CA Chinmaya Deval
Partner
Membership No. 148652

Place: Mumbai
Date: February 13, 2020

For and on behalf of the Board of Directors of
MMK Toll Road Private Limited
(As Investment Manager to IRB Infrastructure Trust)
CIN : U45200MH2002PTC135512

Arati Taskar
Director
DIN: 07089953

Naresh Taneja
Director
DIN: 07178896

Jitendra Sharma
Chief Financial Officer

Kaustubh Shevade
Company Secretary

Place : Mumbai
Date: February 13, 2020

MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

Investors should read the following discussion and analysis of the Project SPVs' financial condition and results of operations together with the sections "Summary Financial Information – Summary Combined Financial Statements" and "Combined Financial Statements" on pages 40 and 257, respectively. This discussion contains forward-looking statements and involves numerous risks and uncertainties, including, but not limited to, those described in the section "Risk Factors" on page 14. Actual results could differ materially from those contained in any forward-looking statements and for further details regarding forward-looking statements, refer to "Forward-Looking Statements and Financial Projections" on page 12.

Since the settlement and registration of the Trust, the Trust has not undertaken any meaningful business activities and therefore the Investment Manager does not believe that a discussion of the Trust's results of operations would be meaningful. Accordingly, the following discussion includes a discussion and analysis of the financial condition and results of operations of the Project SPVs on a combined basis as at and for the six-month period ended September 30, 2019 and the Financial Years 2019, 2018, 2017. Ind AS differs in certain material respects from Indian GAAP, IFRS and U.S. GAAP. Accordingly, the degree to which our financial statements will provide meaningful information to a prospective investor in countries other than India is entirely dependent on the reader's level of familiarity with Ind AS.

The Project SPVs' financial year ends on March 31 of each year. Accordingly, all references to a particular financial year are to the 12-month period ended March 31 of such year.

Overview

The Trust is a registered infrastructure investment trust under the InvIT Regulations. The Trust intends to own, build, operate and maintain a portfolio of nine toll-road assets in the states of Haryana, Uttar Pradesh, Rajasthan, Gujarat, Goa, Maharashtra and Karnataka in India. These toll roads are operated and maintained pursuant to concessions awarded by the NHAI. We believe that, upon the completion of the Issue, the Trust will be the first unlisted infrastructure investment trust focused on toll-road assets in India.

The Trust will acquire an initial portfolio comprised of the Project SPVs, all of which are currently wholly-owned subsidiaries of the Sponsor. Each of the Project SPVs is an eligible infrastructure project as defined under the InvIT Regulations. As of September 30, 2019, the Project SPVs owned the following toll road assets comprising 5,892 Lane Kilometers of highway:

- The Agra - Etawah NH-2 Project: A 124.52 km section of NH-2 between Agra and Etawah Bypass in Uttar Pradesh which is held by AETL;
- The Gulabpura - Chittorgarh NH-79 Project: A 124.87 km section of NH-79 between Gulabpura and Chittorgarh Bypass in Rajasthan which is held by CGTL;
- The Hapur - Moradabad NH-9 Project: A 99.867 km section of NH-9 between Hapur and Moradabad in Uttar Pradesh which is held by IRB HMTL;
- The Goa - Kundapur NH-17Project: A 187.28 km section of NH-17 between Goa/Karnataka border and Kundapur in Karnataka which is held by IRB WTL;
- The Kishangarh - Gulabpura NH-79/79A Project: A 90.00 km section of NH-79/79A between Kishangarh and Gulabpura in Rajasthan which is held by KGTL;
- The Kaithal - Rajasthan Border NH-152/65 Project: A 166.259 km section of NH-152/65 between Kaithal and Rajasthan Border in Haryana which is held by KTL;
- The Solapur - Yedeshi NH-211 Project: A 98.717 km section of NH-211 between Solapur and Yedeshi in Maharashtra which is held by SYTL;
- The Udaipur - Rajasthan Border NH-8 Project: A 113.80 km section of NH-8 between Udaipur and Rajasthan Border in Rajasthan and Gujarat which is held by UTL; and

- The Yedeshi - Aurangabad NH-211 Project: A 189.09 km section of NH-211 between Yedeshi and Aurangabad in Maharashtra which is held by YATL.

The map set out below depicts the location of the Initial Road Assets:



The Trust intends to acquire 100% of the equity shares of the Project SPVs after the Bid/Issue Closing Date and prior to the Allotment in the Issue, *i.e.*, the Acquisition Date pursuant to the Share Purchase Agreements. In addition, on the Acquisition Date, the subordinated debt and unsecured loans provided by the Sponsor and its Associates to the Project SPVs will stand novated in favor of the Trust pursuant to the Debt Novation Agreements. As consideration for the acquisition of the equity shares of the Project SPVs and the novation of a portion of the subordinated debt and unsecured loans, the Trust will issue Units to the Sponsor on or around the Acquisition Date. For details, see "*Background and Structure of the Trust – Formation Transactions*" on page 89. As of the date of this Preliminary Placement Memorandum, the Share Purchase Agreements and the Debt Novation Agreements have not been executed. See also "*Risk Factors - We have not yet executed binding agreements with respect to the Formation Transactions and the debt financing arrangements. Our completion of the Formation Transactions, pursuant to which we will acquire the Project SPVs, and the transactions contemplated by the debt financing documentation are subject to certain conditions precedent and closing conditions that may prevent us from acquiring the Project SPVs or providing debt financing to them.*" on page 14.

The Sponsor of the Trust is IRB Infrastructure Developers Limited, one of the largest infrastructure development and construction companies in India in terms of net worth in the roads and highways sector according to the NHAI's annual prequalification for public private partnerships in national highway projects report for 2016. The Sponsor has been listed on the Stock Exchanges since 2008. Excluding the toll-road assets being transferred by the Sponsor pursuant to the Formation Transactions, as at September 30, 2019, the Sponsor had four road projects of which three were operational and one was under-construction. The Sponsor will also act as the Project Manager. For further details, see "*Parties to the Trust – The Sponsor and Project Manager*" on page 240.

The Investment Manager of the Trust is MMK Toll Road Private Limited. The Investment Manager has experience in operating a road project for a period of 13 years. The Investment Manager is currently a wholly-owned subsidiary of the Sponsor. On or about the date of Allotment, 49% of the equity share capital of the Investment Manager will be transferred by the Sponsor to Croxley. For further details, see "*Parties to the Trust – The Investment Manager*" and "*Corporate Governance*" on pages 243 and 134, respectively.

The Trustee of the Trust is IDBI Trusteeship Services Limited. The Trustee is registered with the SEBI as a debenture trustee under the Debenture Trustees Regulations. For further details, see "*Parties to the Trust – The Trustee*" on page 249.

The Sponsor proposes to hold 51% of the units of the Trust on a post-Issue basis immediately after the Issue, with the remaining 49% held by the Financial Investors.

Factors affecting Results of Operations

Our business and results of operations have been affected and will continue to be affected in future by a number of important factors, including:

The terms of the concession agreements and traffic volumes

BOT and DBFOT projects restrict the Project SPVs operational and financial flexibility. Toll fees are typically pre-determined with the relevant government entity and cannot be modified to reflect prevailing circumstances, other than annual adjustments to account for inflation as specified in the concession agreements. Accordingly, a Project SPV's profitability is largely a function of how effectively it manages costs during the concession period. Significant costs during the concession period include construction costs and operating and maintenance expenses such as periodic maintenance, which is required to be performed as specified in the concession agreement. Periodic maintenance involves the repair of wear and tear of the roads and highways, including overlaying the surface of the roads and highways, if required. The Project Manager has agreed to provide the remaining portion of construction works for seven of the Project SPVs and operations and maintenance works for all the Project SPVs for an initial period of 10 years on a fixed-fee basis.

The Project SPVs are substantially dependent on the accuracy of the traffic volume forecasts for their respective projects. Projects undertaken on a BOT or DBFOT basis involve concession agreements that are long-term in nature, usually between 20 to 30 years. The agreed consideration for each of the Project SPVs' projects was based on forecasts of traffic volumes and expected revenues over the concession period. Any material shortfall between the actual traffic volume and the forecast traffic volume for a project could have a material adverse effect on their cash flows, results of operations and financial condition.

The Project SPVs' projects involve agreements that are long-term in nature. All long-term projects have inherent risks associated with them and involve variables that may not necessarily be within the Project SPVs' control. Accordingly, we may be exposed to a variety of construction, operation and maintenance and other risks, including unanticipated cost increases and overruns, inability to negotiate satisfactory arrangements with service providers and disagreements with service providers. In addition, the long-term nature of the Project SPVs' contracts may expose them to increased risk of unforeseen business and industry changes and developments which could have a material adverse effect on their business, financial condition and results of operations.

General economic conditions in India and the level of investment and activity in the infrastructure development sector

The Project SPVs derive their revenue from their toll-road operations. Demand for toll roads is primarily dependent on sustained economic development in the regions that they operate in and government policies relating to infrastructure development. It is also significantly dependent on budgetary allocations made by the Government of India and the State Governments for the roads and highways sector, as well as funding provided by international and multilateral development finance institutions for infrastructure projects. Investment by the private sector in infrastructure projects is dependent on the potential returns from such projects and is, therefore, linked to Government and State Government policies relating to private sector participation and sharing of risks and returns from such projects.

We believe that the Government's and State Governments' focus on, and sustained increases in budgetary allocation for, infrastructure, and the development of comprehensive infrastructure policies that encourage greater private sector participation and funding for infrastructure projects should further result in large infrastructure projects in India. We believe that we are likely to benefit from the Government and State Governments making infrastructure development a policy priority, which may lead to corresponding significant investment in the roads and highways sector. Since the Project SPVs focus on the roads and highways sector, macroeconomic factors in India relating to this sector will have a significant impact on their prospects and

results of operations. As the roads and highways sector is driven by increases in agriculture and manufacturing, any slowdown or perceived slowdown in the Indian economy, or in specific sectors of the Indian economy, could materially and adversely impact the Project SPVs business and financial performance.

Competition

The Project SPVs operate in a competitive environment. The competition for toll road and other infrastructure projects varies depending on the size, nature and complexity of the project and on the geographical region in which the project is to be executed. Some of their competitors may have greater financial resources, economies of scale and operating efficiencies than the Project SPVs do. There can be no assurance that they can effectively compete with their competitors in the future, and this failure to compete effectively may have a material adverse effect on the Project SPVs financial condition and results of operations.

Significant Accounting Policies

The preparation of financial statements in conformity with Ind AS, applicable accounting standards and the Companies Act requires our management to make judgments, estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent liabilities at the date of the financial statements and the results of operations during the reporting period end. By their nature, these judgments are subject to a degree of uncertainty. Although these estimates are based upon management's best knowledge of current events and actions, actual results could differ from these estimates.

While all aspects of the Project SPVs Combined Financial Statements should be read and understood in assessing their current and expected financial condition and results, we believe that the following critical accounting policies warrant particular attention:

Intangible assets

As permitted under Ind AS, the group has elected to continue with the carrying value of its toll collection rights (which form part of its intangible assets), as recognised in the financial statements as at the date of transition to Ind AS and measured as per the previous GAAP.

Intangible assets acquired separately are measured on initial recognition at cost. Following initial recognition, intangible assets are carried at cost less any accumulated amortisation and accumulated impairment losses. Internally generated intangibles, excluding capitalised development costs, are not capitalised and the related expenditure is reflected in statement of profit or loss in the period in which the expenditure is incurred.

Toll Collection Rights

Toll collection rights including premium to NHAI are stated at cost, net of accumulated amortisation and impairment losses. Cost includes toll collection rights awarded by the grantor against construction service rendered by the Project SPV on a DBFOT basis - direct and indirect expenses on construction of roads, bridges, culverts, infrastructure and other assets at the toll plazas.

Toll collection rights are amortised over the period of the concession, using revenue based amortisation as per the exemption provided in Ind AS 101. Under this method, the carrying value of the rights is amortised in the proportion of actual toll revenue for the year to projected revenue for the balance toll period, to reflect the pattern in which the asset's economic benefits will be consumed. At each balance sheet date, the projected revenue for the balance toll period is reviewed by the management. If there is any change in the projected revenue from previous estimates, the amortisation of toll collection rights is changed prospectively to reflect any changes in the estimates.

Intangible assets are assessed for impairment whenever there is an indication that the intangible asset may be impaired.

Amortisation of toll equipments

Toll equipments are amortized on a straight line basis over the estimated useful economic life not exceeding seven years.

Provisions

Provisions are recognised when the group has a present obligation (legal or constructive) as a result of a past event, and it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation and a reliable estimate can be made of the amount of the obligation. When the Group expects some or all of a provision to be reimbursed, for example, under an insurance contract, the reimbursement is recognised as a separate asset, but only when the reimbursement is virtually certain. The expense relating to a provision is presented in the statement of profit and loss net of any reimbursement.

If the effect of the time value of money is material, provisions are discounted using a current pre-tax rate that reflects, when appropriate, the risks specific to the liability. When discounting is used, the increase in the provision due to the passage of time is recognised as a finance cost.

Principal components of Income and Expenses

Income

The Project SPVs' total income comprises (i) revenue from operations and (ii) other income.

Revenue from operations

Revenue from operations comprises (i) contract revenue (road construction); (ii) income arising out of toll collection (net); and (iii) other operating revenue.

During the construction period of a project, the NHAI may ask the Project SPVs to carry out utility shifting work (which is incidental to the construction of the toll road and typically involves the shifting of utilities that are located at the construction site) or may award the Project SPVs additional scope of work, which is separately paid by the NHAI. Revenue from such utility shifting or change in scope contract, among others, also forms part of the Project SPVs' contract revenue. Note that contract revenue is typically incurred during the initial construction period of a project and is not recurring in nature. Other operating revenue comprises claims receivable from NHAI for the November - December 2016 period pursuant to the withdrawal of certain high-value currency denominations by the Government.

The following table provides a breakdown of revenue from operations for the Project SPVs for the periods indicated:

Revenue from Operations	Six-month period ended September 30, 2019		Financial Year 2019		Financial Year 2018		Financial Year 2017	
	Amount (in ₹ million)	*% of Total Revenue from Operations*	*Amount (in ₹ million)*	*% of Total Revenue from Operations*	*Amount (in ₹ million)*	*% of Total Revenue from Operations*	*Amount (n ₹ million)*	*% of Total Revenue from Operations*
Contract revenue (road construction)	763.34	16.89	1,603.81	20.34	965.35	27.49	1,288.42	88.51
Income arising out of toll collection (net)	3,754.85	83.11	6,283.00	79.66	2,546.12	72.51	95.71	6.58
Other operating income	-	-	-	-	-	-	71.5	4.91
Total	**4,518.19**	**100.00**	**7,886.81**	**100.00**	**3,511.47**	**100.00**	**1,455.63**	**100.00**

Other income

The key components of other income are interest income on bank deposits, dividend income on other investments, profit on sale of investments, fair value gain on mutual funds and other non-operating income.

The following table provides a breakdown of other income for the Project SPVs for the periods indicated:

Other income	Six-month period ended September 30, 2019	Financial Year 2019	Financial Year 2018	Financial Year 2017
Interest income on				
- Bank deposits	56.98	67.87	0.06	0.58
- Others	0.92	3.57	0.06	0.11
Dividend income on:				
- Other investments (non-trade, current)	-	-	1.83	0.17
Profit on sale of investments	19.20	81.95	17.35	1.91
Fair value gain on mutual funds	0.66	0.04	30.63	-
Other non-operating income	2.34	3.23	1.66	0.02
Total	**80.10**	**156.65**	**51.59**	**2.79**

Expenses

Our expenses primarily consist of the following:

- cost of material consumed, which comprise material consumed to carry out utility shifting work;
- road work and site expenses, which comprise contract expenses in relation to utility shifting or change in scope contracts, site and other direct expenses, sub-contracting/security expenses and technical consultancy and supervision charges;
- employee benefits expenses, which comprise salaries, wages and bonus, contribution to provident and other funds, leave encashment, gratuity expenses and staff welfare expenses;
- depreciation and amortization expenses, which comprise depreciation on property, plant and equipment and amortization on intangible assets;
- finance costs, which primarily comprise interest expenses on loans availed from banks/financial institutions and other borrowing costs which include amortization of transaction costs; and
- other expenses, which comprise various administration costs such as power and fuel costs, rent, rates and taxes, water charges, repairs and maintenance, travel and conveyance expenses, vehicle expenses, printing and stationery expenses, sitting fees for directors, legal and professional expenses, payments to the SPVs' auditors, bank charges, insurance and other miscellaneous expenses.

Results of Operations

This section discusses the results of operations of the Project SPVs for the Financial Years 2019, 2018 and 2017 and the six-month period ended September 30, 2019 on the basis of the Combined Financial Statements. The table below sets forth certain data from the Combined Financial Statements, by amount and as a percentage of the total income of the Project SPVs on a combined basis for the periods indicated.

Please note that each of the Project SPVs (other than IRB WTL) commenced tolling operations at different times during the last three Financial Years and the six-month period ended September 30, 2019. Further, interest cost for projects for which construction has not been completed has been capitalized. Accordingly, our results of operations as extracted from the Combined Financial Statements and set out below are not indicative of our future performance. Also see "*Risk Factors – We have a limited operating history and may not be able to operate our business successfully or generate sufficient cash flows to make or sustain distributions. The Combined Financial Statements presented in this Preliminary Placement Memorandum may not be indicative of the Trust's future financial condition and results of operations.*" on page 18.

Particulars	Six-month period ended September 30, 2019	Financial Year 2019	Financial Year 2018	Financial Year 2017
	Amount (in ₹ million)	*Amount (in ₹ million)*	*Amount (in ₹ million)*	*Amount (in ₹ million)*
Income				
Revenue from operations	4,518.19	7,886.81	3,511.47	1,455.63
Other income	80.10	156.65	51.59	2.79
Total income	**4,598.29**	**8,043.46**	**3,563.06**	**1,458.42**
Expenses				
Cost of material consumed	41.44	-	-	-
Road work and site expenses	890.86	1,756.86	1,065.87	1,297.90
Employee benefits expenses	146.68	207.12	108.57	18.37
Depreciation and amortization expenses	842.46	1,099.83	441.19	83.69
Finance costs	3,530.76	3,898.60	984.20	6.86
Other expenses	76.25	122.46	48.55	12.29
Total expenses	**5,528.45**	**7,084.87**	**2,648.38**	**1,419.11**
Profit before tax	**(930.16)**	**958.59**	**914.68**	**39.31**
Tax expenses				
Current tax	3.60	527.45	326.18	20.50
Deferred tax	156.13	179.89	116.02	-
Total tax expenses	**159.73**	**707.34**	**442.20**	**20.50**
Profit after tax	**(1,089.89)**	**251.25**	**472.48**	**18.81**
Other comprehensive income				
Item that will not be reclassified to profit or (a) re-measurement (loss)/gain on defined benefit plans (net of taxes)	0.41	(1.84)	0.77	-
Other comprehensive (loss) for the period/year, net of tax	**0.41**	**(1.84)**	**0.77**	**-**
Total comprehensive income for the period/year	**(1,089.48)**	**249.41**	**473.25**	**18.81**

Six-month period ended September 30, 2019

Total income

The total income of the Project SPVs was ₹4,598.29 million. The revenue from operations of the Project SPVs was ₹4,518.19 million. Contract revenue (road construction) was ₹763.34 million and income arising out of toll collection (net) was ₹3,754.85 million.

Expenses

The total expenses of the Project SPVs were ₹5,528.45 million. Finance costs were ₹3,530.76 million because certain Project SPVs commenced toll collection operations and high interest expenses. The cost of material consumed was ₹41.44 million. Road work and site expenses were ₹890.86 million. Employee benefits expenses were ₹146.68 million. Depreciation and amortization expenses were ₹842.46 million. Other expenses were ₹76.25 million.

Profit before tax

The Project SPVs recorded a loss before tax of ₹930.16 million on a combined basis.

Tax expenses

The Project SPVs recorded a current tax of ₹3.60 million and deferred tax of ₹156.13 million. Accordingly, the total tax expenses were ₹159.73 million.

Profit after tax and Total comprehensive income for the period

The loss after tax and total comprehensive income were ₹(1,089.89) million and ₹(1,089.48) million, respectively.

Financial Year 2019 compared to Financial Year 2018

Total income

The total income of the Project SPVs increased to ₹8,043.46 million in the Financial Year 2019 from ₹3,563.06 million in the Financial Year 2018. This increase in total income was primarily due to an increase in the revenue from operations and other income.

Revenue from operations

The revenue from operations of the Project SPVs increased to ₹7,886.81 million in the Financial Year 2019 from ₹3,511.47 million in the Financial Year 2018, primarily due to an increase in the income arising out of toll collection (net). This increase was due to the commencement of toll collection operations by certain Project SPVs during the second half of the Financial Year 2018. During the Financial Year 2018, UTL and KTL commenced toll collection operations in the month of September 2017 and CGTL, KGTL and SYTL commenced toll collection operations in the month of November 2017, February 2018 and March 2018, respectively. YATL commenced toll collection operations in the month of March 2019.

The income arising out of toll collection (net) increased to ₹6,283.00 million in the Financial Year 2019 from ₹2,546.12 million in the Financial Year 2018 due to the commencement of toll collection operations by CGTL, KGTL, SYTL and UTL during the Financial Year 2018. The contract revenue (road construction) increased to ₹1,603.81 million in the Financial Year 2019 from ₹965.35 million in the Financial Year 2018 due to utility shifting work.

Other income

The other income of the Project SPVs increased to ₹156.65 million in the Financial Year 2019 from ₹51.59 million in the Financial Year 2018. This increase was primarily due to an increase in the interest income on bank deposits and profit on sale of investments arising from temporary surplus funds.

Total expenses

The total expenses of the Project SPVs increased to ₹7,084.87 million in the Financial Year 2019 from ₹2,648.38 million in the Financial Year 2018. This increase was primarily due to an overall increase in the expenses, road work and site expenses, employee benefit expenses, depreciation and amortization expenses, finance costs and other expenses arising due to the commencement of toll collection operations by CGTL, KTL, KGTL, SYTL and UTL during the Financial Year 2018.

Road work and site expenses

Road work and site expenses increased to ₹1,756.86 million in the Financial Year 2019 from ₹1,065.87 million in the Financial Year 2018. This increase was primarily due to an increase in contract expenses, site and other direct expenses, sub-contracting/security expenses and technical consultancy and supervision charges. Contract expenses increased to ₹1,233.46 million in the Financial Year 2019 from ₹769.31 million in the Financial Year 2018 due to increase in utility shifting work. Site and other direct expenses increased to ₹394.81 million in the Financial Year 2019 from ₹226.83 million in the Financial Year 2018. Sub-contracting/security expenses increased to ₹115.35 million in the Financial Year 2019 from ₹69.73 million in the Financial Year 2018. Technical consultancy and supervision charges amounting to ₹13.25 million were paid in in the Financial Year 2019.

Employee benefits expenses

Employee benefits expenses increased to ₹207.12 million in the Financial Year 2019 from ₹108.57 million in the Financial Year 2018. This increase was primarily due to an increase in the number of employees of the Project SPVs and due to an increase in overall employee costs arising from CGTL, KTL, KGTL, SYTL and UTL being operational for part of the period in Financial Year 2018.

Depreciation and amortization expenses

Depreciation and amortization expenses increased by to ₹1,099.83 million in the Financial Year 2019 from ₹441.19 million in the Financial Year 2018. This increase was primarily due to certain Project SPVs becoming operational.

Finance costs

Finance costs increased by to ₹3,898.60 million in the Financial Year 2019 from ₹984.20 million in the Financial Year 2018. This increase was primarily due to an increase in availing of loan disbursements from banks/financial institutions for projects which were being constructed.

Other expenses

Other expenses increased to ₹122.46 million in the Financial Year 2019 from ₹48.55 million in the Financial Year 2018. This increase was primarily due to certain Project SPVs becoming operational.

Profit before tax

As a result of the factors discussed above, the profit before tax increased to ₹958.59 million in the Financial Year 2019 from ₹914.68 million in the Financial Year 2018.

Tax expenses

The Project SPVs recorded a current tax of ₹527.45 million in the Financial Year 2019 compared to ₹326.18 million in the Financial Year 2018. The increase in current tax in the Financial Year 2019 was primarily due to increase in profit. The Project SPVs also recorded deferred tax of ₹179.89 million in the Financial Year 2019 compared to ₹116.02 million in the Financial Year 2018. The increase in deferred tax in the Financial Year 2019 was primarily due to a difference in the timing of the tax liability. Accordingly, the total tax expenses of the Project SPVs increased to ₹707.34 million in the Financial Year 2019 from ₹442.20 million in the Financial Year 2018.

Profit after tax

The profit after tax of the Project SPVs decreased to ₹251.25 million in the Financial Year 2019 from ₹472.48 million in the Financial Year 2018. This decrease was primarily due to an increase in the total expenses and total tax expenses.

Total comprehensive income for the year

The total comprehensive income decreased to ₹249.41 million in the Financial Year 2019 from ₹473.25 million in the Financial Year 2018.

Financial Year 2018 compared to Financial Year 2017

Total income

The total income of the Project SPVs increased to ₹3,563.06 million in the Financial Year 2018 from ₹1,458.42 million in the Financial Year 2017. This increase in total income was primarily due to an increase in the revenue from operations and other income.

Revenue from operations

The revenue from operations of the Project SPVs increased to ₹3,511.47 million in the Financial Year 2018 from ₹1,455.63 million in the Financial Year 2017, primarily due to an increase in the income arising out of toll collection (net). This increase was due to the commencement of toll collection operations by certain Project SPVs during the Financial Year 2018.

The income arising out of toll collection (net) increased to ₹2,546.12 million in the Financial Year 2018 from ₹95.71 million in the Financial Year 2017 due to the commencement of toll collection operations by CGTL, KTL, KGTL and UTL. The contract revenue (road construction) decreased to ₹965.35 million in the Financial Year 2018 from ₹1,288.42 million in the Financial Year 2017 due to a reduction in utility shifting works.

Other income

The other income of the Project SPVs increased to ₹51.59 million in the Financial Year 2018 from ₹2.79 million in the Financial Year 2017. This increase was primarily due to an increase in profit on sale of investments and fair value gain on mutual funds arising from temporary surplus funds.

Total expenses

The total expenses of the Project SPVs increased to ₹2,648.38 million in the Financial Year 2018 from ₹1,419.11 million in the Financial Year 2017. This increase was primarily due to an overall increase in the expenses, employee benefit expenses, depreciation and amortization expenses, finance costs and other expenses arising from commencement of toll collection operations by certain Project SPVs, which was partially offset by a decrease in road work and site expenses due to a reduction in utility shifting works.

Road work and site expenses

Road work and site expenses decreased to ₹1,065.87 million in the Financial Year 2018 from ₹1,297.90 million in the Financial Year 2017. This decrease was primarily due to decrease in contract expenses arising from a reduction in utility shifting works which was partially offset by increase in site and other direct expenses and sub-contracting/security expenses arising from commencement of toll collection operations by certain Project SPVs. Site and other direct expenses increased to ₹226.83 million in the Financial Year 2018 from ₹8.67 million in the Financial Year 2017 due to operationalisation of certain Project SPVs. Sub-contracting/security expenses increased to ₹69.73 million in the Financial Year 2018 from ₹21.27 million in the Financial Year 2017 due to operationalisation of certain Project SPVs. Contract expenses decreased to ₹769.31 million in the Financial Year 2018 from ₹1,267.97 million in the Financial Year 2017 due to decrease in contract revenue.

Employee benefits expenses

Employee benefits expenses increased to ₹108.57 million in the Financial Year 2018 from ₹18.37 million in the Financial Year 2017. This increase was primarily due to an increase in the number of employees of the Project SPVs and due to an increase in overall employee costs arising from commencement of toll collection operations by certain Project SPVs.

Depreciation and amortization expenses

Depreciation and amortization expenses increased to ₹441.19 million in the Financial Year 2018 from ₹83.69 million in the Financial Year 2017. This increase was primarily due to the commencement of toll collection operations by certain Project SPVs.

Finance costs

Finance costs increased to ₹984.20 million in the Financial Year 2018 from ₹6.86 million in the Financial Year 2017. This increase was primarily due to an increase in loan disbursements availed by the Project SPVs (other than IRB HMTL and KGTL).

Other expenses

Other expenses increased to ₹48.55 million in the Financial Year 2018 from ₹12.29 million in the Financial Year 2017. This increase was primarily due to the commencement of toll collection operations by certain Project SPVs.

Profit before tax

As a result of the factors discussed above, the profit before tax increased to ₹914.68 million in the Financial Year 2018 from ₹39.31 million in the Financial Year 2017.

Tax expenses

The Project SPVs recorded a current tax of ₹326.18 million in the Financial Year 2018 compared to ₹20.50 million in the Financial Year 2017. The increase in current tax in the Financial Year 2018 was primarily due to increase in profits. The Project SPVs also recorded deferred tax of ₹116.02 million in the Financial Year 2018 compared to nil in the Financial Year 2017. The deferred tax in the Financial Year 2018 was primarily due to a difference in the timing of the tax liability. Accordingly, the total tax expenses of the Project SPVs increased to ₹442.20 million in the Financial Year 2018 from ₹20.50 million in the Financial Year 2017.

Profit after tax

The profit after tax of the Project SPVs increased to ₹472.48 million in the Financial Year 2018 from ₹18.81 million in the Financial Year 2017. This increase was primarily due to a majority of the Project SPVs becoming operational.

Total comprehensive income for the year

The total comprehensive income increased to ₹473.25 million in the Financial Year 2018 from ₹18.81 million in the Financial Year 2017.

Liquidity and Capital Resources

The Project SPVs operate in a capital-intensive industry and their principal liquidity requirements have been to finance their capital expenditures. To fund these costs, the Project SPVs have historically relied on equity contributions, short term and long-term borrowings and cash from operating activities.

The Project SPVs' funding and treasury activities are conducted consistent with corporate policies designed to enhance investment returns while maintaining appropriate liquidity for their requirements. Their short-term liquidity requirements relate to servicing debt and funding working capital requirements. Sources of short-term liquidity include cash balances and receipts from operations. Their long-term liquidity requirements include partial funding of investments in new projects, funding equity contributions in Project SPVs and repayment of long-term debt under credit facilities. Sources of funding for long-term liquidity requirements include loans, equity issuances or debt issues. The principal liquidity requirements have been, and are expected to continue to be, construction, development, implementation and maintenance costs of the BOT projects.

The Investment Manager believes that after taking into account the expected cash to be generated from our business and operations, we have sufficient funds for both our present and anticipated future requirements for working capital for 12 months following the date of this Preliminary Placement Memorandum.

Cash Flows

The following table sets forth certain information relating to the Project SPVs cash flows on a combined basis for the periods indicated:

(₹ in millions)

Particulars	Six-month period ended September 30, 2019	Financial Year 2019	Financial Year 2018	Financial Year 2017
Net cash flows generated from operating activities	10,918.66	11,596.16	7,654.74	1,404.81
Net cash flows (used in) investing activities	(26,007.62)	(40,849.18)	(33,975.53)	(31,668.07)
Net cash flows generated from financing activities	14,968.56	28,579.39	26,968.45	30,066.79
Net increase/ (decrease) in cash and	(120.41)	(673.62)	647.66	(196.47)

Particulars	Six-month period ended September 30, 2019	Financial Year 2019	Financial Year 2018	Financial Year 2017
cash equivalents				

Cash flows from operating activities

Six-month period ended September 30, 2019

In the six-month period ended September 30, 2019, the Project SPVs' net cash flow from operating activities was ₹10,918.66 million and the loss before tax was ₹930.16 million, which was adjusted for non-cash and other items in a net amount of ₹4,329.22 million and changes in working capital and other provisions, such as increase in trade payables of ₹7,645.45 million due to construction work execution, increase in other assets of ₹1,044.20 million due to mobilisation advance given to the EPC contractor and increase in other liabilities of ₹841.64 million due to increase in advance from customer. The cash generated from operations was ₹11,005.99 million and net taxes paid were ₹(87.33) million in the six-month period ended September 30, 2019.

Financial Year 2019

In the Financial Year 2019, the Project SPVs' net cash flow from operating activities was ₹11,596.16 million and the profit before tax was ₹958.59 million, which was adjusted for non-cash and other items in a net amount of ₹2,732.68 million and changes in working capital and other provisions, such as increase in trade payables of ₹1,948.03 million due to construction work execution and decrease in other assets of ₹6,623.09 million due to recovery of mobilization advance given to the EPC contractor. The cash generated from operations was ₹12,188.01 million and net taxes paid were ₹(591.85) million in the Financial Year 2019.

Financial Year 2018

In the Financial Year 2018, the Project SPVs' net cash flow from operating activities was ₹7,654.74 million and the profit before tax was ₹914.68 million, which was adjusted for non-cash and other items in a net amount of ₹1,152.93 million and changes in working capital and other provisions, such as increase in trade payables of ₹6,523.07 million due to construction work execution, increase in other financial assets of ₹232.24 million and increase in other assets of ₹686.13 million. The cash generated from operations was ₹7,975.36 million and net taxes paid were ₹(320.62) million in the Financial Year 2018.

Financial Year 2017

In the Financial Year 2017, the Project SPVs' net cash flow from operating activities was ₹1,404.81 million and the profit before tax was ₹39.31 million, which was adjusted for non-cash and other items in a net amount of ₹3,976.98 million and changes in working capital and other provisions, such as decrease in trade payables of ₹947.77 million, increase in other financial liabilities of ₹164.80 million and increase in other assets of ₹1,745.05 million due to mobilisation advance given to the EPC contractor. The cash generated from operations was ₹1,490.10 million and net taxes paid were ₹(85.29) million in the Financial Year 2017.

Cash used in investing activities

Six-month period ended September 30, 2019

The Project SPVs' net cash used in investing activities in the six-month period ended September 30, 2019 was ₹(26,007.62) million, primarily attributable to addition towards construction for projects (classified as toll collection rights under intangible assets).

Financial Year 2019

The Project SPVs' net cash used in investing activities in the Financial Year 2019 was ₹(40,849.18) million, primarily attributable to addition towards construction for projects (classified as toll collection rights under intangible assets).

Financial Year 2018

The Project SPVs' net cash used in investing activities in the Financial Year 2018 was ₹(33,975.53) million, primarily attributable to addition towards construction for projects (classified as toll collection rights under intangible assets).

Financial Year 2017

The Project SPVs' net cash used in investing activities in the Financial Year 2017 was ₹(31,668.07) million, primarily attributable to addition towards construction for projects (classified as toll collection rights under intangible assets).

Cash flows generated from financing activities

Six-month period ended September 30, 2019

Net cash generated from financing activities in the six-month period ended September 30, 2019 was ₹14,968.56 million, primarily consisting of borrowings from banks/financial institutions and issue of equity share capital and subordinated debt.

Financial Year 2019

Net cash generated from financing activities in the Financial Year 2019 was ₹28,579.39 million, primarily consisting of borrowings from banks/financial institutions and issue of equity share capital and subordinated debt.

Financial Year 2018

Net cash generated from financing activities in the Financial Year 2018 was ₹26,968.45 million, primarily consisting of borrowings from banks/financial institutions and issue of equity share capital and subordinated debt.

Financial Year 2017

Net cash generated from financing activities in the Financial Year 2017 was ₹30,066.79 million, primarily consisting of borrowings from banks/financial institutions and issue of equity share capital and subordinated debt.

Indebtedness

The table below provides the types and amounts of the Project SPVs' outstanding indebtedness as at September 30, 2019.

(₹ in million)

	September 30, 2019
Non-current Borrowings	
Term loans Indian rupee loan from banks (secured)	
Project loans for SPVs	78,273.17
Less : current maturities expected to be settled within 12 month from balance sheet date	(178.54)
Total (a)	**78,094.62**
Indian rupee loan from financial institutions (secured)	
Project loans for SPVs	14,559.37
Less : current maturities expected to be settled within 12 month from balance sheet date	(36.72)
Total (b)	**14,522.65**
Non-convertible debentures (secured)	5,494.15
Less : current maturities expected to be settled within 12 month from balance sheet date	(13.47)
Total (c)	**5,480.69**
(Unsecured)	
Loan from related parties	181.15
Total (d)	**181.15**

Less: Unamortised transaction cost **(e)**	(866.49)
Total non current borrowings (f = a + b + c + d + e)	**97,412.62**
Current Borrowings	
Short-term borrowings (secured)	
Current maturity of long term loans	
Indian rupee loan from banks (secured)	178.54
Indian rupee loan from financial institutions (secured)	36.72
Non convertible debentures (secured)	13.47
(Unsecured, repayable on demand and interest free)	
Loan from related parties	12,260.14
Total current borrowings (g)	**12,488.87**
less: Amount clubbed under "other current financial liabilities"	228.73
Net current borrowings	**12,260.14**
Total borrowings (f+g)	**109,901.49**
Aggregate secured loans	97,460.20
Aggregate unsecured loans	12,441.29

As at September 30, 2019, the Project SPVs had total borrowings aggregating to ₹109,901.49 million (comprising secured loans of ₹97,460.20 million and unsecured loans of ₹12,441.29 million). The Project SPVs' secured financing arrangements are secured by their movable and immovable assets, including a charge on equipment as well as on their intangible assets relating to toll collection rights under the various projects. Also see "*Financial Indebtedness*" on page 340.

Contractual Obligations and Commitments

The following table sets forth certain information relating to future payments due under contractual commitments as of September 30, 2019, aggregated by type of contractual obligation:

(₹ in million)

Particulars	Total	Less than 1 year	1 to 5 years	> 5 years
Borrowings	1,09,901.49	12,467.01	5,972.70	91,461.78
Other financial liabilities	41,940.67	41,844.08	67.13	29.46
Trade payables	16,174.69	16,174.69	-	-
Total	**1,68,016.85**	**70,485.78**	**6,039.83**	**91,491.24**

Contingent Liabilities and other Off-Balance Sheet Arrangements

Contingent liabilities not provided for

(₹ in millions)

Particulars	September 30, 2019	March 31, 2019	March 31, 2018	March 31, 2017
Guarantees given by the Group to suppliers, government bodies and performance guarantee for Service Tax, ESIC, Custom Duty, Other Finance expenses and Stamp duty matters	-	-	-	-
Total	-	-	-	-

The Supreme Court of India, pursuant to an order dated February 28, 2019, in the case of *Surya Roshani Limited others v. EPFO*, set out the principles based on which allowances paid to the employees should be identified for inclusion in basic wages for the purposes of computation of Provident Fund contribution. Subsequently, a review petition against this decision was filed and is pending before the Supreme Court for disposal. In the view of the management, the liability for the period from date of the Supreme Court order to March 31, 2019 is not significant. Further, pending decision on the subject review petition and directions from the EPFO, the impact for the past period, if any, is not ascertainable and consequently no effect has been given in the accounts.

There are no off-balance sheet arrangements that have or are reasonably likely to have an adverse effect on our financial condition, revenues or expenses, results of operations, liquidity, capital expenditures or capital resources that the Investment Manager believe are material to investors.

Transactions with Related Parties

The Project SPVs have in the course of their business entered into various transactions with related parties. These transactions include operation and maintenance charges paid for operation and maintenance activities sub-contracted, loans and advances, certain road work expenses for work road work contracted to various Sponsor entities in similar businesses.

For further information, see "*Related Party Transactions"* on page 225 and "*Combined Financial Statements*" on page 257.

Significant Post-Balance Sheet Events

Except as disclosed in this Preliminary Placement Memorandum, the Investment Manager is not aware of any circumstances that have arisen since September 30, 2019, that materially and adversely affect, or are likely to affect, the Trust's or the Project SPVs' operations or profitability, the value of the Trust's or the Project SPVs' respective assets, or the Trust's or the Project SPVs' ability to pay their respective liabilities within the next 12 months.

IRB WTL received a provisional completion certificate dated January 31, 2020 and commenced tolling operations on February 11, 2020. For details, see "*Business*" on page 109.

Quantitative and Qualitative Disclosure about Market Risk

Interest rate risk

As the infrastructure development and construction business is capital intensive, the Project SPVs are exposed to interest rate risk. Interest rates for borrowings have been volatile in India in recent periods. The Project SPVs infrastructure development and construction projects were funded to a large extent by debt and increases in interest expense could have an adverse effect on their results of operations and financial condition. The Project SPVs current debt facilities carry interest at variable rates as well as fixed rates with the provision for periodic reset of interest rates. As of September 30, 2019, the majority of the Project SPVs total indebtedness was subject to variable rates. Although from time to time we may engage in interest rate hedging transactions or exercise any rights available to us under these financing arrangements to terminate the existing debt financing arrangement on the respective reset dates and enter into new financing arrangements, there can be no assurance that we will be able to do so on commercially reasonable terms, that our counterparties will perform their obligations, or that these agreements, if entered into, will protect us adequately against interest rate risks.

Inflation Risk

In recent years, India has experienced relatively high rates of inflation. While we believe inflation has not had any material impact on our business and results of our operations, inflation generally impacts the overall economy and business environment and hence could affect us.

Quality of income

The majority of our income on a consolidated basis is from the collection of toll. This is based on actual receipts by each of the Project SPVs. There are no management estimates or judgement involved in the recognition of our revenues. For further information see " – *Factors Affecting Results of Operations*", " – *Significant Accounting Policies*", " – *Components of Income and Expenses*".

Unusual or Infrequent Events or Transactions

Except as described in this Preliminary Placement Memorandum, there have been no events or transactions to our knowledge which may be described as "unusual" or "infrequent".

Known Trends or Uncertainties

Except as described in "*Risk Factors*" on page 14 and elsewhere in this Preliminary Placement Memorandum, to our knowledge, there are no known trends or uncertainties that have had or are expected to have a material adverse impact on our revenues.

Future Relationships between Costs and Income

Except as discussed in "*Risk Factors*" and elsewhere in this Preliminary Placement Memorandum, there are no known factors that will have a material adverse impact on our operations or finances.

Competitive Conditions

Please see "*Risk Factors*" and "- *Factors affecting our results of Operations*" on pages 14 and 325, respectively.

Significant Economic Changes that Materially Affected or are Likely to Affect Income from Continuing Operations

Our business has been subject, and we expect it to continue to be subject, to significant economic changes that materially affect or are likely to affect our income from continuing operations identified above in "- *Factors Affecting our Results of Operations*" and the uncertainties described in "*Risk Factors*" on the pages 325 and 14, respectively.

FINANCIAL INDEBTEDNESS

The following is a summary of the indebtedness of the Project SPVs, together with a brief description of certain material covenants of the relevant financing agreements. Investors should also refer to "Use of Proceeds" and "Combined Financial Statements", on pages 60 and 257, respectively.

The Project SPVs have primarily availed loans, for financing, in part, the project costs in relation to the construction and development of their respective underlying road infrastructure asset. Certain Project SPVs have availed further financing, as necessary, for refinancing existing loans or with respect to the repayment obligations under previously availed loans.

Set forth below is a brief summary of the aggregate borrowings of the Project SPVs as at September 30, 2019:

Category of Borrowing	Aggregate Amount (₹ in Millions)	Outstanding amount as at September 30, 2019 (₹ in Millions)
AETL		
Term Loans		
Secured	16,500.00	15,014.50
Unsecured	-	-
Total	**16,500.00**	**15,014.50**
CGTL		
Term Loans		
Secured	14,000.00	10,615.20
Unsecured	-	-
Total	**14,000.00**	**10,615.20**
IRB HMTL		
Term Loans		
Secured	15,410.00	-
Unsecured	-	-
Total	**15,410.00**	**-**
IRB WTL		
Term Loans		
Secured	14,060.00	13,062.12
Unsecured	-	-
Total	**14,060.00**	**13,062.12**
KGTL		
Term Loans		
Secured	10,200.00	7,039.65
Unsecured	-	-
Total	**10,200.00**	**7,039.65**
KTL		
Term Loans		
Secured	8,500.00	8,466.92
Unsecured	-	-
Debentures	5,500.00	5,494.15
Total	**14,000.00**	**13,961.07**
SYTL		
Term Loans		
Secured	9,100.00	8,994.23
Unsecured	-	-
Total	**9,100.00**	**8,994.23**
UTL		
Term Loans		
Secured	14,609.00	12,276.29
Unsecured	-	-
Total	**14,609.00**	**12,276.29**
YATL		
Term Loans		
Secured	17,560.00	17,363.64
Unsecured	-	-
Total	**17,560.00**	**17,363.64**

Principal Terms of the Borrowings availed by the Project SPVs

1. **Interest and commissions:** In terms of the loans availed by the Project SPVs, the interest rate is a base rate specified by the lender plus applicable spread, if any, per annum. The applicable spread varies among different loans. The rate of interest upon non-convertible debentures is at a fixed rate per annum.

2. **Maturity and Repayment:** The final maturity period of the loans availed by the Project SPVs ranges from March 2033 to July 2036. These loans are repayable in accordance with the repayment schedule specified in the relevant financing agreements, which typically prescribe monthly instalments for rupee loans, semi-annual instalments for the foreign currency loan and monthly instalments with respect to the non-convertible debentures.

3. **Security:** In terms of borrowings where security needs to be created, the Project SPVs are typically required to create:

    a. A first charge by way of hypothecation of all Project SPV's movables, including moveable plant and machinery, machinery spares, tools and accessories, furniture, fixtures, vehicles and all other movable assets, present and future, excluding the project assets;

    b. A first ranking charge over all accounts of the Project SPV, including, *inter alia*, the escrow account, trust and retention account, DSR account and the sub-accounts that may be opened in accordance with the facility agreement/debenture trust deed and the supplementary escrow agreement, or any of the other project agreements and all funds from time to time deposited therein, the receivables and authorised investments or other securities for the purpose of being applied to the extent of the waterfall of priority specified in the concession agreement;

    c. A first charge on the Project SPVs intangibles, including but not limited to goodwill and uncalled capital, present and future, excluding the project assets;

    d. A first ranking *pari passu* charge over all of the Project SPV's immovable assets, both present and future, if any;

    e. A substitution agreement, as may be executed between the NHAI, the Project SPV and its respective lenders, whereby the NHAI may substitute the Project SPV by a selectee of its respective lenders, for the purpose of securing the payment of lender dues;

    f. A pledge of a certain specified percentage of the equity shares of the Project SPVs that are held by the Sponsor (directly or indirectly);

    g. An irrevocable and unconditional corporate guarantee from the Sponsor and/or certain other members of the Sponsor group to meet shortfall between outstanding amount of obligations and termination payments received from NHAI in case of termination of the concession agreements;

    h. Assignment on *pari passu* basis by way of hypothecation of all toll receivables, cash flows and revenue and other project documents;

    i. The right, title and interest of the Project SPV by way of first charge in, to and under all the applicable permits, insurance policies and uncalled capital of the Project SPV; and

    j. The right, title and interest of the Project SPV by way of first charge in, to and under (a) the project documents/project agreements and (b) the guarantees, other performance warranties, indemnities and security that may be furnished in favor of the Project SPV by various contractors.

4. **Covenants:** Borrowing arrangements entered into by the Project SPVs contain certain restrictive conditions and covenants restricting certain corporate actions and the respective Project SPV is required to take the prior approval of the lender before carrying out such activities. Each of the Project SPVs are also required to adhere to certain financial covenants, which include but are not limited to, maintaining a prescribed debt to equity ratio during the currency of the loan and maintaining a minimum debt service coverage ratio during certain periods.

A Project SPV is required to intimate and/or obtain prior written permission of its lenders, *inter alia*, in the following instances:

a. Effecting any change in the nature or scope of the project or any change in the financing plan;

b. Effecting any change in capital structure (including shareholding pattern);

c. Raising any equity or preference share capital;

d. Making any capital expenditure other than permitted investments;

e. Making any dividend payments to the Trust or making any other restricted payments (including redemption of any shares of any class, prepayment in relation to any indebtedness, payment of interest on unsecured loans, investment in any entity) except as permitted under the financing agreements;

f. Creation of any security interest in any of the secured property;

g. Incurrence of any other indebtedness, including the issue of debentures other than permitted indebtedness;

h. Entering into any partnership, profit-sharing or royalty agreement;

i. Removal of any person exercising substantial powers of management over the affairs of the Project SPVs in case of an event of default;

j. Amending the constitutional documents of the Project SPVs;

k. Undertaking of any new project or making of any investment or taking any assets on lease;

l. Providing guarantees, indemnities or similar assurances in respect of indebtedness of any other person, (other than in the ordinary course of business);

m. Repay or prepay any subordinated loan or loans brought in as equity taken by the Project SPVs from the Sponsor;

n. Create any subsidiary or permit the Project SPV to become a subsidiary;

o. Undertake or permit any scheme of arrangement or compromise with its creditors or shareholders; and

p. Change in the composition of the board of directors of the Project SPV.

Certain lenders have the ability to opt for a put/call option after a minimum period of five years from the scheduled commercial operation date or a refinance option after a block of five years as per their internal guidelines.

Additionally, if a Project SPV receives funds in respect of the following then the monies received to be utilized to prepay the loans, upon request from the lenders, on a *pro rata* basis to all the lenders without any prepayment premium: (a) any liquidated damages/ penalties received; (b) any proceeds arising in connection with a breach of warranty or guarantee; (c) any insurance proceeds; (d) any proceeds arising in relation to the expropriation or other taking by any government entity of the project assets; (e) any proceeds arising from any termination payments/ buy-out payments received; and (f) any proceeds resulting from an arbitral or judicial award received. The lenders of certain Project SPVs have the right to accelerate the repayment of the unamortized portion of the loans at any time, in the event the cash flows of such Project SPV are adequate for such acceleration.

In relation to outstanding debentures, the relevant Project SPV is required to undertake mandatory redemption on a *pro-rata* basis to all the debenture holders from the proceeds of any amount received by

and on behalf of the issuer from any such event if the event involves receipt of, *inter-alia*: (a) insurance proceeds; (b) proceeds from a breach of warranty or guarantee; (c) payments received on account of buy-out events; (d) liquidated damages or penalties paid under project agreement; or (e) proceeds from expropriation or takeover event.

5. **Events of Default:** Borrowing arrangements entered into by the Project SPVs contain standard events of default, including:

   a. Non-payment of principal amount by the Project SPV;

   b. Non-payment of interest, additional interest, liquidated damages, free or other amount by the Project SPV;

   c. Default by the borrower in creation of security interest to the satisfaction of the lenders within the period stipulated;

   d. Default or breach in the performance of any covenants and/or covenants under the agreement by the Project SPV;

   e. Misrepresentation made by the Project SPV under the agreement or any financing document provided in connection with the loan;

   f. Sale, disposal or creation of any charge or encumbrance on any of the land, building, structures or plant and machinery of the Project SPVs in breach of any of the provisions of the relevant project agreements, without prior written approval of the relevant lenders;

   g. Undertaking any action for reorganization of the Project SPV without the approval of the relevant lenders;

   h. Default in performance or observance of any covenant, condition, warranty or provision contained in any other financing agreement entered into by the Project SPV;

   i. Failure on the part of the Project SPV to maintain adequate insurances in accordance with the terms of the transaction documents;

   j. The Project SPV ceasing or threatening to cease to carry on its business or giving notice of its intention to do so;

   k. The Project SPV abandoning its project;

   l. Violation or breach of any environmental, health and safety standards requirement; and

   m. The Project SPV ceasing or threatening to cease to carry on its business or giving notice of its intention to do so or it becoming unlawful for the borrower to carry on its business.

The descriptions above are indicative, and there may be additional terms and conditions with respect to security, financial or other covenants and events of default under the various borrowing arrangements entered into by the Project SPVs. The Project SPVs are required to ensure that the aforementioned events of default and other events of default, as specified under the various documents and agreements entered into by such Project SPV for the purpose of availing of loans, are not triggered.

Consents from the Lenders of the Project SPVs

As at the date of this Preliminary Placement Memorandum, the Project SPVs have received consents from their respective lenders to undertake the various activities that are proposed by way of the Formation Transactions and the Issue, including but not limited to (i) transfer of shareholding and change in shareholding pattern of the Project SPVs to the Trust and appointment of the board of directors of the Project SPVs; (ii) temporary release of pledged shares for purposes of transfer to the Trust; (iii) novation of existing subordinated debt and unsecured loans provided by the Sponsor and its associates to the Project SPVs in favor of the Trust; (iv) availing further debt by the Project SPVs from the Trust and utilizing such debt for the partial prepayment of the existing senior

debt; and (v) appointment of the Sponsor as the Project Manager for the relevant project. Such consents are subject to, *inter-alia*, the following:

- the shares of the relevant Project SPV ate rquired to be pledged by the Trust in favor of the lenders within 30 days from the date of release of the pledge;
- the subordinated debt and unsecured loans after novation to the Trust will be subordinate to the existing senior debt at all times;
- IRB group is required to continue to hold 51% in the Trust during the currency of the facility;
- Any payments towards insecured loans extended by the Trust will be governed by clauses relating to "restricted payments" under existing financing documents; and
- any new appointment or removal of the Investment Manager or Project Manager is required to be with prior approval from the lenders.

For additional details, see "*Risk Factors - The consents obtained from the lenders in relation to the Formation Transactions impose certain obligations on the Trust. Any default under the existing financing arrangements by any of the Project SPVs could adversely impact the Trust's ability to continue to own a majority of each of the Project SPVs, its cash flows and its ability to make distributions to Unitholders*, "*Use of Proceeds*" and "*Background and Structure of the Trust*" on pages 18, 60 and 81, respectively.

SECTION VIII – LEGAL AND OTHER INFORMATION

MATERIAL LITIGATION AND REGULATORY ACTION

Except as stated below, there is no outstanding material litigation or regulatory action (i) involving the Project SPVs; (ii) against the Trust or its Associates; (iii) against the Investment Manager or its Associates; (iv) against the Sponsor/Project Manager or its Associates; and (v) against the Trustee.

*For purposes of this section, details of all regulatory actions and criminal matters that are currently outstanding involving the Project SPVs or against the Trust, the Investment Manager, the Sponsor/Project Manager and their respective Associates have been disclosed. Notices received by any of the above entities (collectively, the "**Relevant Parties**") from third parties (excluding notices from statutory, regulatory or tax authorities or notices threatening criminal action) shall not be evaluated for materiality until the Relevant Parties are impleaded as defendants in proceedings before any judicial forum.*

Outstanding litigation against any of the Project SPVs before any judicial forum involving a claim amount exceeding ₹40.22 million, being 0.5% of the income of the Project SPVs for the last completed Financial Year (i.e., the Financial Year 2019), in accordance with the Combined Financial Statements shall be considered material. In relation to outstanding litigation where the monetary liability is not quantifiable, such litigation shall be considered material in the event that the outcome of such litigation would have a material adverse effect on the position of the Project SPVs.

Outstanding litigation against the Sponsor/Project Manager, the Investment Manager and their respective Associates (excluding the Project SPVs) before any judicial forum involving a claim amount exceeding ₹345.13 million, being 0.5% of the income of the Sponsor for the last completed Financial Year (i.e., the Financial Year 2019), in accordance with its audited consolidated financial statements for the Financial Year 2019 shall be considered material. In relation to outstanding litigation where the monetary liability is not quantifiable, such litigation shall be considered material in the event that the outcome of such litigation would have a material adverse effect on the position of the Sponsor or the Investment Manager, as applicable, or the Trust.

Further, due to the nature and extent of their operations, the Sponsor/Project Manager and the Project Entities (including the Project SPVs) are and may be routinely required to file complaints and/or register first information reports against various persons, on account of such persons, inter-alia, refusing to pay toll, causing injury to the employees or contract labour of such entities and damage to the properties of such entities, which have been not been disclosed. Additionally, there have been various criminal complaints, compensation claims and first information reports filed against the employees and contract labour of the Sponsor/Project Manager and the Project Entities (including the Project SPVs), in which such entities are not impleaded, which have been not been disclosed.

With respect to the Trustee, details of all regulatory actions and criminal matters that are currently outstanding against the Trustee have been disclosed. Outstanding litigation against the Trustee that the Trustee has determined to be material has been disclosed.

Taxation proceedings against the Relevant Parties (and, in case of the Project SPVs, involving the Project SPVs) have been disclosed in a consolidated manner.

I. Material Litigation and Regulatory Action against the Trust and its Associates

Material Litigation and Regulatory Action against the Trust

As at the date of this Preliminary Placement Memorandum, there is no outstanding material litigation or regulatory action against the Trust. For details in relation to outstanding material litigation and regulatory action against the Associates of the Trust, please see below.

II. Material Litigation and Regulatory Action against the Sponsor/Project Manager and Associates of the Sponsor/Project Manager

Material Litigation and Regulatory Action against the Sponsor/Project Manager

As at the date of this Preliminary Placement Memorandum, there is no outstanding criminal litigation against the Sponsor/Project Manager. Other than as disclosed below, there is no outstanding material civil litigation or regulatory action against the Sponsor/Project Manager.

Outstanding Material Civil Litigation

1. Mr. Girdhari Lal Jat has filed a public interest litigation against the Sponsor and others before the High Court of Rajasthan, Jaipur bench. Mr. Jat has alleged, *inter-alia*, that barricades have been illegally installed in several villages on the NH 12 and accordingly, public transport vehicles and other utility vehicles have been prevented from plying on the road. The petitioner has also alleged that such barricades were constructed by the respondents to increase toll collection. The petitioner has sought orders directing the respondents to remove the barricades. The respondents have stated that the matter does not public interest and that the barricades have been constructed as per the directions of the local administration to prevent damage to the roads constructed by the local authorities. The matter is currently pending.

2. Mr. Shaikh Rafiq and others have filed a writ petition against the Sponsor, Modern Road Makers Private Limited (an Associate of the Sponsor), YATL and others before the High Court of Bombay, Aurangabad (the "**BHC Aurangabad**") bench in relation to acquisition of land for the four laning of Yedshi – Aurangabad road that forms a part of the Solapur – Aurangabad highway, i.e., NH 211. For details, see " – *Material Litigation and Regulatory Action involving the Project SPVs – YATL*" on page 358.

3. Mr. Panditrao Digambarrao Shete Chausalkar and another have filed a writ petition against the Sponsor, YATL and others before the BHC Aurangabad in relation to acquisition of land for the four laning of Yedshi – Aurangabad road that forms a part of the Solapur – Aurangabad highway, i.e., NH 211. For details, see " – *Material Litigation and Regulatory Action involving the Project SPVs – YATL*" on page 358.

4. Mr. Pruthviraj Shahane (the "**Petitioner**") has filed a civil suit against the Sponsor, YATL and others before the Civil Judge (Senior Division), Beed. For details, see " – *Material Litigation and Regulatory Action involving the Project SPVs – YATL*" on page 358.

Outstanding Regulatory Action

1. The Sponsor received a letter from the Ministry of Corporate Affairs ("**MCA**") dated May 14, 2018 seeking a clarification on the filing of Form CRL -1 made in accordance with Section 2(87) of Companies Act 2013. The Sponsor replied pursuant to a letter dated May 29, 2018 stating that as per the second proviso to rule 2(1) of the Companies (Restriction on number of layers) Rules, 2017, one layer which consists of one or more wholly owned subsidiary or subsidiaries is exempt from disclosure. The Sponsor has 24 direct wholly owned subsidiaries and three step down wholly owned subsidiaries in a single layer. It can thus be inferred that the Sponsor does not have more than two layers of subsidiaries, and thus it does not need to file a Form CRL-1. No further communication has been received from the MCA in this regard.

2. SEBI's Integrated Surveillance Department, in an e-mail (the "**SEBI E-mail**"), advised the Sponsor to provide certain information under Section 11 of the Securities and Exchange Board of India Act, 1992. The SEBI E-mail referred to an announcement made by the Sponsor to the stock exchanges pertaining to the receipt of a letter of award from NHAI for the project of four-laning of Kaithal to Rajasthan section of NH 152/65. The SEBI E-mail requested for the (i) names, designations, PAN numbers, addresses and DIN of the persons in the Sponsor who were, directly or indirectly, aware of the aforesaid announcement made to the stock exchanges; and (ii) names, designations, PAN numbers, addresses and DIN, of the dependents of the persons mentioned at point (i) above. The Sponsor thorugh an e-mail provided the said information as required by the SEBI in the SEBI E-mail. No further communication has been received from the SEBI in this regard.

3. The Registrar issued a show cause notice to the Sponsor and certain of its directors in relation to the alleged violation of Section 211, read with Clause 3(xi) (c) Part-II of Schedule VI, of the Companies Act, 1956. The aforesaid notice alleged that the Sponsor had shown the receipt of interest from long term investment of ₹266.78 million under schedule of income and had not shown the tax deduction at

source in the profit and loss account of the balance sheets as at March 31, 2011. The Sponsor replied to the aforesaid notice denying the above allegations and stated that it had fully complied with the above mentioned provisions by providing the required information. No further communication has been received from the Registrar in this regard.

4. The Registrar, in its letter to the Sponsor, sought comments/clarification and explanations in relation to a complaint by Sadashivrao Mandlik regarding alleged corrupt practices adopted by the Sponsor in relation to the award of the IRB Kolhapur Project. The Sponsor replied to the aforesaid letter and stated that the claims and contentions raised by the complainant were uncorroborated and misleading. No further communication has been received from the Registrar in this regard.

5. The Registar, in its letter to the Sponsor, sought comments/ clarifications and explanations in relation to the complaint filed by Mr. Sanjay Dave regarding the alleged violation of Section 123 (3) of the Companies Act, 2013. The aforesaid notice alleged that the Sponsor had declared interim dividend for the financial year 2014-15 after the end of the financial year. The Sponsor replied to the aforesaid letter clarifying that the Sponsor had fully complied with the above mentioned provisions by providing the required information. No further communication has been received from the Registrar in this regard.

6. The Registrar, in its letter to the Sponsor sought information under Section 234 of the Companies Act, 1956 with respect to its balance sheet as at March 31, 2011, details along with documentary evidence with respect to the loans given by the Sponsor to certain of its wholly owned subsidiaries along with terms and conditions, details of compliance of Sections 299, 300 and 301 of the Companies Act, 1956, and information relating to the initial public offer of the Sponsor. The Sponsor submitted the aforesaid information. No further communication has been received from the Registrar in this regard.

7. The Registrar, in its letter to the Sponsor called for information under Section 234 of the Companies Act, 1956, with respect to its balance sheet as at March 31, 2008, certificates from banks/financial institutions to prove repayment of loans, status of certain complaints as per statement of investor grievance report, details regarding compliance of Section 78 of the Companies Act, 1956, details of related party transactions with private limited companies as provided in initial public offer utilization statement, and compliance with AS-18 and Section 297 of the Companies Act, 1956. The Sponsor submitted the aforesaid information.

8. SEBI, in its letter had sought comments from the Sponsor in relation to a complaint that it had received, which alleged that the Sponsor had carried out certain sub-standard work in Kolhapur and had adopted illegal and corrupt practices to be awarded the said project. The Sponsor replied to SEBI through a letter and submitted that the allegations were uncorroborated and misleading. No further communication has been received in this regard.

9. NHAI issued a notice to the Sponsor asking to pay damages of ₹30,485 in relation to the toll plaza Krishnavaram. The Sponsor has replied in its letter. As on date, no legal proceedings have been initiated in relation to the aforesaid notice.

10. NSE in its letter to the Sponsor sought explanation in relation to the alleged non-compliance with regulation 19 of the SEBI (Listing Obligations and Disclosure Requirements) Regulations, 2015. The Sponsor has replied to the said letter. No further communication has been received in this regard.

Other Material Litigation

The Sponsor has initiated arbitration proceedings against Hyderabad Growth Corridor Limited (the "**Respondent**") in connection with a road project in Hyderabad. The Sponsor has claimed an amount of ₹982.69 million for losses suffered by the Sponsor due to a failure by the respondent to provide a toll management system. The Respondent has denied the allegations of the Sponsor and stated that it was not required to provide a toll management system under the terms of the contract between the parties. The Sponsor has received an arbitral award in its favor, but as of the date of this Preliminary Placement Memorandum, the Respondent has not made the payments as directed in the award.

Material Litigation and Regulatory Action against the Associates of the Sponsor/Project Manager

For details in relation to outstanding material litigation and regulatory action against the Project SPVs, see " – *Litigation and Regulatory Action involving the Project SPVs*" on page 356. Details of outstanding material litigation and regulatory action against the other Associates of the Sponsor/Project Manager are set out below.

I. *Aryan Hospitality Private Limited ("AHPL")*

As at the date of this Preliminary Placement Memorandum, there is no outstanding criminal litigation or regulatory action against AHPL. Other than as disclosed below, there is no outstanding material civil litigation against AHPL.

Jaykumar Govindrao Nikam and others (the "**Petitioners**") have filed a suit before the Civil Judge, Junior Division at Kolhapur alleging that AHPL has encroached the land owned by the Petitioners. The suit pertains to the plot leased for the IRDP Kolhapur project. The concession agreement in relation to the project was entered into between the Maharashtra State Road Development Corporation (the "**MSRDC**"), IRB Kolhapur Integrated Road Company Private Limited ("**IRB Kolhapur**"), and the Kolhapur Municipal Corporation (the "**KMC**"). Under the concession agreement, land owned by the KMC was leased to IRB Kolhapur for the project pursuant to a lease deed between KMC, MSRDC and IRB Kolhapur. The land was then sub-leased by IRB Kolhapur to AHPL. The IRDP Kolhapur project has been bought back by the government. AHPL has cancelled the sub-lease deed and the possession of the land as well as the structure thereon has been given back to IRB Kolhapur on an "*as is where is*" basis, free from encumbrances. AHPL no longer has any interest in the property. The matter is currently pending.

II. *Aryan Toll Road Private Limited ("ATRPL")*

As at the date of this Preliminary Placement Memorandum, there is no outstanding civil or criminal litigation against ATRPL. Other than as disclosed below, there is no outstanding regulatory action against ATRPL.

ATRPL received a mail from the MCA dated December 3, 2018 with a call for information under Section 206 of the Companies Act, 2013 in relation to compliance with the corporate social responsibility ("**CSR**") provisions under Section 135 and Section 134(3)(o) of the Companies Act, 2013 for the financial year 2015-16. ATRPL filed a form reply to the call for information dated December 10, 2018 stating its reasons for not spending the entirety of the prescribed CSR amount for the financial year 2015-16. ATRPL is part of the IRB group which has been involved in establishing schools in the vicinity of the group's projects to help the underprivileged sections of the society. This usually takes two or three years. Additionally, the IRB group in aggregate spent ₹158.91 million towards CSR activities for Financial Year 2016. No further response has been received from the MCA.

III. *ATR Infrastructure Private Limited ("ATRIPL")*

As at the date of this Preliminary Placement Memorandum, there is no outstanding criminal litigation against ATRIPL. Other than as disclosed below, there is no outstanding material civil litigation against ATRIPL.

Outstanding Material Civil Litigation

Kishore Dyanoba Shevkari (the "**Petitioner**") has filed a writ petition before the High Court of Bombay against the State of Maharashtra and ATRIPL, among others. The petition relates to the choking of the Hume Pipe Culvert because of garbage dumping. The Petitioner has alleged that the choking of the Hume Pipe Culvert has resulted in waterlogging and that has affected his land. The matter is currently pending.

Outstanding Regulatory Action

ATRIPL received a mail from the MCA dated December 3, 2018 with a call for information under Section 206 of the Companies Act, 2013 in relation to compliance with the CSR provisions under Section 135 and Section 134(3)(o) of the Companies Act, 2013 for the financial year 2015-16. ATRIPL filed a form reply to the call for information dated December 10, 2018 stating its reasons for not spending the entirety of the prescribed CSR amount for the Financial Year 2016. ATRIPL is part of the IRB group which has been involved in establishing schools in the vicinity of the group's projects to help the underprivileged sections of the society. This usually takes two or three years. Additionally, the IRB group in aggregate spent ₹158.91 million towards CSR activities for Financial Year 2016. No further response has been received from the MCA.

IV. *IRB Ahmedabad Vadodara Super Express Tollway Private Limited ("IRB AVSETPL")*

As at the date of this Preliminary Placement Memorandum, there is no outstanding criminal litigation against IRB AVSETPL. Other than as disclosed below, there is no outstanding material civil litigation, regulatory action or other material litigation against IRB AVSETPL.

Outstanding Material Civil Litigation

1. Shabbirbhai Noormohmmadbhai, the owner of Pragati Hotel, Bareja, Ahmedabad (the "**Petitioner**") has filed a suit before the Additional Civil Court Judge, Ahmedabad against the Director, IRB, Jetalpur, Ahmedabad, the Deputy Engineer, R&B, Ahmedabad, the District Collector, Ahmedabad, and the State Public Works Department, Gandhinagar seeking a permanent stay order on closing his access to the main carriage way. The suit relates to compensation for land acquisition. The matter is currently pending.

2. Jitendra Chandulal Amin, the owner of Rishi Petrol Pump, Nadiad has filed a suit before the Additional Civil Court Judge, Nadiad agaisnt IRB AVSETPL and others seeking a permanent stay order on closing his access to the main carriage way. The suit relates to compensation for land acquisition. The matter is currently pending.

Outstanding Regulatory Action

IRB AVSETPL received a mail from the MCA dated December 3, 2018 with a call for information under Section 206 of the Companies Act, 2013 in relation to compliance with the CSR provisions under Section 135 and Section 134(3)(o) of the Companies Act, 2013 for the financial year 2015-16. IRB AVSETPL filed a form reply to the call for information dated December 10, 2018 stating its reasons for not spending the entirety of the prescribed CSR amount for the Financial Year 2016. IRB AVSETPL is part of the IRB group which has been involved in establishing schools in the vicinity of the group's projects to help the underprivileged sections of the society. This usually takes two or three years. Additionally, the IRB group in aggregate spent ₹158.91 million towards CSR activities for Financial Year 2016. No further response has been received from the MCA.

Other Material Litigation

IRB AVSETPL invoked arbitration in relation to a competing road. The NHAI suggested that the matter be brought before the Conciliation Committee of Industrial Experts (the "**CCIE**"). IRB AVSETPL filed a writ petition in the High Court of Bombay, which directed the parties to immediately refer the matter to arbitration. IRB AVSETPL was also granted a waiver with respect to the payment of premium for three months subject to the submission of an undertaking. The CCIE, pursuant to order dated May 29, 2019 concluded that the conciliation had failed. IRB AVSETPL then invoked arbitration and appointed an arbitrator. The NHAI did not appoint an arbitrator. IRB AVSETPL then filed a writ petition in the High Court of Delhi, pursuant to which the NHAI was directed to form a tribunal. The interim relief granted by the High Court of Bombay was also extended. The NHAI had challenged the order of the High Court of Bombay in a special leave petition before the Supreme Court of India, but the petition was dismissed. IRB AVSETPL is claiming an amount of ₹4,149.10 million from the NHAI. The matter is currently pending.

V. *IRB Goa Tollway Private Limited ("IGTPL")*

As at the date of this Preliminary Placement Memorandum, there is no outstanding criminal litigation, regulatory action or material civil litigation against IGTPL. Other than as disclosed below, there is no outstanding material litigation involving IGTPL.

1. IGTPL had initiated arbitration proceedings against the NHAI for wrongful termination of contract by the NHAI with respect to the Goa/Karnataka to Panaji-Goa section of NH-4A in the State of Goa. The arbitral tribunal had passed an award in favor of IGTPL which allowed the following claims: (i) approximately ₹1,963.80 million towards 50% of the adjusted equity of ₹1,309.20 million arising out of the termination of contract by the NHAI; (ii) an amount of ₹47.10 million for damages on account of a delay in the fulfilment of the conditions of the contract; and (iii) interest on the amounts mentioned above. The aggregate amount involved is ₹3,039.80 million. The NHAI has filed a petition before the High Court of Delhi for setting aside the award passed by the arbitral tribunal and a stay on the operations of the award. The matter is currently pending.

2. The CCEA had approved Niti Aayog's proposal that where a government entity has challenged an arbitral award, 75% of such award is to be paid by the Government entity to the concessionaire against a bank guarantee. However the NHAI had modified the policy through its standard operating procedure and required the concessionaire to submit advance interest bank guarantees. The NHAI released ₹2,485 million to IGTPL under this policy and IGTPL had submitted bank guarantees amounting to ₹3,491.3 million. The CCEA revised this policy on November 20, 2019 to specify that 75% of the arbitral award must be paid by the Government Entity against bank guarantees for only the 75% and not for the interest component. However, by a letter November 21, 2019, the NHAI demanded and extension on all bank guarantees submitted by IGTPL, including the bank guarantees provided towards the interest and an advance bank guarantee amounting to ₹451.5 million. The NHAI stated that it would invoke the bank guarantees provided if IGTPL failed to comply with its instructions. IGTPL filed a petition before the High Court of Delhi seeking to restrain the NHAI from taking adverse action against it, and requesting that bank guarantees which had been provided towards the interest amounting to ₹1,006.3 million be returned. IGTPL has been granted interim relief and the NHAI letter dated November 21, 2019 has been stayed, provided that IGTPL keeps all the submitted bank guarantees alive. The matter is currently pending.

VI. *IRB Infrastructure Private Limited ("IRBIPL")*

As at the date of this Preliminary Placement Memorandum, there is no outstanding civil or criminal litigation against IRBIPL. Other than as disclosed below, there is no outstanding regulatory action against IRBIPL.

The compliance officer at IRIPL received a notice from the SEBI in 2019 in relation to the change in the assignment of obligations under the project implementation agreements of the IRB InvIT Fund. IRBIPL has responded to the letter stating that such assingment was in compliance with applicable law. No further correspondence has been received from the SEBI in relation to this matter.

VII. *Ideal Road Builders Private Limited ("Ideal Road Builders")*

As at the date of this Preliminary Placement Memorandum, there is no outstanding criminal litigation against Ideal Road Builders. Other than as disclosed below, there is no outstanding material civil litigation or regulatory action against Ideal Road Builders.

Outstanding Material Civil Litigation

1. Shamsuddin Miyalal Mushrif has filed a pulic interest litigation before the High Court of Bombay against the Union of India, Ideal Road Builders and others, to declare that the National Highways Act, 1956 and Rule 3 of National Highways (Collection of Fees by any Person for the Use of Section of National Highways/Permanent Bridge/Temporary/Bridge on National Highway) Rules, 1997 are contrary to and violate of the provisions of the Constitution of India, 1950. The petition also seeks the declaration of Section 7 of the National Highways Act, 1956 and Rules 7 and 11 of the National Highways (Fees for the use of National Highway Section and Permanent Bridge-Public Funded Projects) Rules, 1997 and the MoRTH Notifications dated March 4, 2005 and May 5, 2015 illegal, *ultra vires* and invalid, and to stop collection of toll. This is relation to the Ideal Road Builders Khambatki Ghat project. The project has been completed and handed back to the government. The matter is currently pending.

2. Nitin Sardesai and others have filed a public interest litigation before the High Court of Bombay against the State of Maharashtra, Ideal Road Builders and others, seeking the following: (i) to comply with the provisions of the manual of specifications; (ii) to take traffic census on NH 4 and expressway by electronic census system; (iii) to appoint independent agency to monitor traffic; (iv) to remove advertisements and hoardings; (v) to deposit the toll amount with government; and (vi) discount to local public. The matter relates to the Ideal Road Builders Mumbai-Pune project. The project has been completed and handed back to the government. The matter is currently pending.

3. Nitin Sardesai and others have filed a public interest litigation before the High Court of Bombay against the State of Maharashtra, Ideal Road Builders and others, seeking to quash and set aside a notification dated August 9, 2004 (no. PSP 2000/CR-106(1I) Road-8) and a notification dated September 5, 2006. The following prayers have also been made: (i) to comply with the manual of

specifications; (ii) to take traffic census by electronic traffic census system; (iii) to deposit toll amount in separate account of government; (iv) to appoint an independent agency to monitor traffic; and (v) to install advance traffic mentoring system. The matter relates to the Ideal Road Builders Mumbai-Pune project. The project has been completed and handed back to the government. The matter is currently pending.

4. Shrinivas Anant Ghanekar (the "**Petitioner**") has filed a public interest litigation before the High Court of Bombay against the State of Maharashtra, Ideal Road Builders and others, seeking to quash the toll notification and declare the concession agreement illegal and *ultra vires*. The matter relates to the Ideal Road Builders Thane-Godbunder project. The suit has been filed based on erronous information provided to the Petitioner's Right to Information Application by the Maharashtra State Road Transport Corporation, as has been admitted in the reply to the petition. The matter is currently pending.

Outstanding Regulatory Action

1. Ideal Road Builders received a mail from the MCA dated December 3, 2018 with a call for information under Section 206 of the Companies Act, 2013 in relation to compliance with the CSR provisions under Section 135 and Section 134(3)(o) of the Companies Act, 2013 for the financial year 2015-16. Ideal Road Builders filed a form reply to the call for information dated December 10, 2018 stating its reasons for not spending the entirety of the prescribed CSR amount for the Financial Year 2016. Ideal Road Builders is part of the IRB group which has been involved in establishing schools in the vicinity of the Group's projects to help the underprivileged sections of the society. This usually takes two or three years. Additionally, the IRB group in aggregate spent ₹158,910,000 towards CSR activities for the financial year 2015-16. No further response has been received from the MCA.

2. The Collector of Stamps (Thane) and Assistant District Collector (Class I), Thane issued a notice to Ideal Road Builders demanding a payment of ₹67.5 million as stamp duty payable on the agreement dated November 27, 2002 between Maharashtra State Road Development Corporation, Ideal Road Builders, and MEP Toll Road Private Limited. In addition to the deficit stamp duty, a penalty of 2% per month on the deficient amount of stamp duty was also to be paid. No further response has been received from the Collector of Stamps or the Assistant District Collector.

3. The Office of the Assistant District Registrar and District Collector of Stamps, Raigad, issued a notice to Ideal Road Builders requesting it to submit a reply as to why a stamp duty of ₹3.97 million and a fine of 2% of the stamp duty, aggregating to ₹11.92 million in connection with the agreement for recovery of toll on a BOT basis should not be recovered from it. Ideal Road Builders has replied to the notice and no further response has been received from the Assistant District Registrar or the District Collector of Stamps.

4. Ideal Road Builders has been issued certain notices demanding the payment of deficit stamp duty along with a penalty by various stamp authorities during the period 2005-2007. Ideal Road Builders has responded to these notices. No legal proceedings have been initiated in relation to these notices.

Other Material Litigation

1. Ideal Road Builders Private Limited and others (the "**Petitioners**") have filed a writ petition before the High Court of Bombay against the State of Maharshtra in relation to the Mohol Kurul – Kamti – Mandrup Road. For details, see " – *Material Litigation and Regulatory Action against the Investment Manager, the directors and Associates of the Investment Manager – Material Litigation against the Investment Manager – Other Material Litigation*" on page 358.

2. Ideal Road Builders Private Limited and others (the "**Petitioners**") have filed a writ petition before the High Court of Bombay against the State of Maharshtra to set aside a notification dated May 26, 2015 issued by the Public Works Department, Government of Maharashtra which rescinded the contract for the Nagar-Karmala-Tembhurni project. The project has been completed and handed back to the government, and compensation has been received from the Government of Maharashtra. The matter is currently pending.

3. Ideal Road Builders Private Limited and others (the "**Petitioners**") have filed a writ petition before the High Court of Bombay against the State of Maharshtra to set aside a notification issued by the

Government of Maharashtra exempting LMVs and buses of the Maharashtra State Road Transport Corporation from payment of toll taxes at the Thane Godbunder project. Compensation is being paid by the Government of Maharashtra to the the entity which operates the Thane Godbunder project. The matter is currently pending.

VIII. ***IRB Kolhapur Integrated Road Development Company Private Limited ("IRB Kolhapur")***

As at the date of this Preliminary Placement Memorandum, there is no outstanding criminal litigation against IRB Kolhapur. Other than as disclosed below, there is no outstanding material civil litigation or regulatory action against IRB Kolhapur.

Outstanding Material Civil Litigation

1. Jairaj Velyan (the "**Petitioner**") has filed a suit before the Civil Judge, Senior Division, Kolhapur, against the State of Maharashtra and others alleging that road construction has resulted in encroachment . The Petitioner has prayed that the encroachment should be removed and the road should be made available for use of the members of the society. IRB Kolhapur has constructed the project as per the concession agreement on land made available by the Kolhapur Municipal Corporation and the project has been bought back by the government. The matter is currently pending.

2. Ashish Shah and others (the "**Petitioners**") have filed a writ petition before the High Court of Bombay against the Kolhapur Municipal Corporation (the "**KMC**") and others seeking to (i) quash the reservation of the leased plot allotted to IRB Kolhapur as well as the related resolution; (ii) allot the Petitioners an alternate piece of the land for timber market purposes; (iii) recover the plot of the land from IRB Kolhapur; and (iv) restrain IRB Kolhapur from creating encumbrances on the leased plot or otherwise dealing with it. The leased land belongs to the KMC has been given to IRB Kolhapur pursuant to the concession agreement and a lease deed executed between the KMC and the Maharashtra State Road Development Corporation. The matter is currently pending.

Outstanding Regulatory Action

Mr. Dilip Desai has filed a complaint with the Collector of Stamps, Kolhapur alleging insufficient payment of stamp duty on the cancellation of the lease deed executed between Maharashtra State Road Development Corporation and the Kolhapur Municipal Corporation ("**KMC**") for the land leased to IRB Kolhapur in Kolhapur. As per a governmnet resolution, KMC is responsible for the payment of stamp duty. IRB Kolhapur has filed a reply. The matter is currently pending.

IX. ***IRB Sindhudurg Airport Private Limited ("IRB Sindhudurg")***

As at the date of this Preliminary Placement Memorandum, there is no outstanding criminal litigation or regulatory action involving IRB Sindhudurg. Other than as disclosed below, there is no outstanding material civil litigation against Ideal Road Builders.

Vijay Krishnaji Rane (the "**Petitioner**") has filed a suit before the Civil Court, Oras, Sindhudurg against IRB Sindhudurg and others (the "**Respondents**") praying for the following reliefs: (i) that the Respondents be prevented from creating obstacles on the suit property; and (ii) that the Respondents be prevented from cutting trees and fruits in the suit property. The Petitioner has also prayed that in the event that it is found that the Respondents are encroaching on the suit property, then the possession of the suit property should be given to him.

X. ***Mhaiskar Infrastructure Private Limited ("MIPL")***

As at the date of this Preliminary Placement Memorandum, there is no outstanding criminal litigation against MIPL. Other than as disclosed below, there is no outstanding material civil litigation or regulatory action against MIPL.

Outstanding Material Civil Litigation

1. Nitin Sardesai and others have filed a public interest litigation before the High Court of Bombay

against the State of Maharashtra, MIPL, Ideal Road Builders, and others, seeking compliance with certain specifications. For details, see " – *Material Litigation and Regulatory Action against the Sponsor/Project Manager and Associates of the Sponsor/Project Manager – Material Litigation and Regulatory Action against the Associates of the Sponsor – Ideal Road Builders Private Limited*" on page 350.

2. Nitin Sardesai and others have filed a public interest litigation before the High Court of Bombay against the State of Maharashtra, MIPL, Ideal Road Builders Private Limited, and others seeking to quash certain notifications. For details, see " – *Material Litigation and Regulatory Action against the Sponsor/Project Manager and Associates of the Sponsor/Project Manager – Material Litigation and Regulatory Action against the Associates of the Sponsor/Project Manager – Ideal Road Builders Private Limited*" on page 350.

3. Juilie Patil (the "**Petitioner**") has filed a suit before the Court of the Civil Judge, Khalapur against the Maharashtra State Road Development Corporation (the "**MSRDC**") and MIPL (together, the "**Respondents**") requesting the court to issue an order against the Respondents for the following: (i) to remove the encroachment caused by the construction of a toilet and a compound wall on the land that is the subject of the suit; (ii) to issue necessary orders for reimbursement of loss of income due to encroachment; and (iii) to order the Respondents to pay to the Petitioner the costs incurred in filing the suit. A written statement has been filed in the matter and an application has been made for the appointment of a court commissioner. The 15 year concession period in relation to the project has been completed and the project has been handed back to the government. The responsibility for land acquisition lies with the MSRDC. The matter is currently pending.

4. The Shree Ganesh Cooperative Housing Society, through Mr. Shrikrishna Parshuram Joshi and others (the "**Petitioner**") has filed a suit before the Court of the Civil Judge, Senior Division, Pune against MIPL and others challenging the encroachment removal notice issued by Maharashtra State Road Development Corporation on the basis of a survey conducted by MIPL. The 15 year concession period in relation to the project has been completed and the project has been handed back to the government. The matter is currently pending.

5. Pravin Wategaonkar and others have filed a public interest litigation before the High Court of Bombay against the Maharashtra State Road Development Corporation and others allegeing that MIPL is collecting excess toll on the Mumbai-Pune Expressway. The 15 year concession period in relation to the project has been completed and the project has been handed back to the government. The matter is currently pending.

Outstanding Regulatory Action

1. MIPL received a mail from the MCA dated July 25, 2018 and a letter dated July 12, 2018 with a call for information under Section 206 of the Companies Act, 2013 in relation to compliance with the CSR provisions under Section 135 and Section 134(3)(o) of the Companies Act, 2013. MILP also received a mail from the MCA dated January 31, 2019 referencing the MCA's letter dated July 12, 2018. MIPL replied through its letter dated August 7, 2018 providing the information and documents required by the MCA. MIPL also replied via a letter dated February 6, 2019 stating that it had spent ₹28,500,00 towards CSR in the Financial Year 2016 and had an unspent amount of ₹16,832,149 for the same financial year. In the financial year 2016-17, the MIPL should have spent ₹59,706,008, had instead spent an aggregate amount of ₹130,000,000 towards medical facilities as its CSR expenditure, including the earlier unspent amount of ₹16,832,149. No further response has been received from the MCA.

2. The Collector of Stamps, Andheri, Maharashtra sent a notice to MIPL demanding that stamp duty of ₹1,500,000 a penalty of ₹5,340,000 be paid on the agreement dated August 4, 2004 for the Mumbai Pune project. MIPL has replied to the notice, and has not received any response from the Collector of Stamps.

XI. *Mhaiskar Ventures Private Limited ("MVPL")*

As at the date of this Preliminary Placement Memorandum, there is no outstanding civil or criminal litigation

against MVPL. Other than as disclosed below, there is no outstanding regulatory action against MVPL.

MVPL received a letter from the MCA dated May 14, 2018 seeking a clarification on the filing of Form CRL -1 made in accordance with Section 2(87) of Companies Act 2013. MVPL replied via a letter dated May 29, 2018 stating that as per the second proviso to Rule 2(1) of the Companies (Restriction on number of layers) Rules, 2017, one layer which consists of one or more wholly owned subsidiary or subsidiaries is exempt from disclosure. IRB Infrastructure Developers Limited is a subsidiary of MVPL, and it further has 24 direct wholly owned subsidiaries and three step down wholly owned subsidiaries in a single layer. It can thus be inferred that MVPL does not have more than two layers of subsidiaries, and thus MVPL does not need to file a Form CRL-1. No further response has been received from the MCA.

XII. ***MRM Mining Private Limited ("MRMMPL")***

As at the date of this Preliminary Placement Memorandum, there is no outstanding civil or criminal litigation involving MTMMPL. Other than as disclosed below, there is no outstanding regulatory action against MRMMPL.

MRMMPL received a mail from the MCA dated November 27, 2018 with a call for information under Section 206 of the Companies Act, 2013 in relation to compliance with the CSR provisions under Section 135 and Section 134(3)(o) of the Companies Act, 2013 for the financial year 2015-16. MRMMPL filed a form reply to the call for information dated December 5, 2018 stating its reasons for not spending the entirety of the prescribed CSR amount for the Financial Year 2016. MRMMPL is part of the IRB group which has been involved in establishing schools in the vicinity of the group's projects to help the underprivileged sections of the society. This usually takes two or three years. Additionally, the IRB group in aggregate spent ₹158.91 million towards CSR activities for financial year 2015-16. No further response has been received from the MCA.

XIII. ***Modern Road Makers Private Limited ("MRM")***

As at the date of this Preliminary Placement Memorandum, there is no outstanding criminal litigation or regulatory action against MRM. Other than as disclosed below, there is no outstanding material civil litigation against MRM.

1. Arjun Rama Ghatal has filed complaint before the office of the Tahasildar and the Executive Magistrate, Palghar against MRM and others regarding the payment of land cess and seeking compensation for possession of land and damage to crops caused by the installation of a tar plant machine. The matter is currently pending.

2. Mr. V Sachhidananda Shetty (the "**Petitioner**") filed a petition against the NHAI, MRM and others (the "**Respondents**") before the Civil Judge at Kundapura alleging that he was not given permission to cut teakwood trees by one of the Respondents. The Petitioner has stated that he entered into an agreement with the NHAI for taking away the salvage in the form of timber and fire wood of felled trees from k.m. 93.700 to k.m. 283.300 of NH 66. The Petitioner has also alleged that the Respondents have colluded with each other to cut and remove the teakwood trees in violation of the agreement. The Petitioner has requested the court to grant a permanent injunction restraining the Respondents from cutting and transporting the teakwood trees. The matter is currently pending.

3. Mr. Venkatramana (the "**Petitioner**") has filed a petition against MRM and others before the court of Judicial Magistrate First Class at Bhatkar ("**JMFC**") disputing the acquisition of certain land and alleging that the compensation paid to the Petition is insufficient. The Petitioner has alleged that additional agricultural land has been acquired for the construction of a road. The Petitioner has, requested the JMFC to pass a decree of permanent injunction restraining the defendant from proceeding with the road work and to remove the alleged illegal construction. The matter is currently pending.

XIV. ***NKT Road and Toll Private Limited ("NKT")***

As at the date of this Preliminary Placement Memorandum, there is no outstanding criminal litigation or material civil litigation against NKT. Other than as disclosed below, there is no regulatory action or material litigation involving NKT.

Outstanding Regulatory Action

1. NKT received a mail from the MCA dated December 3, 2018 with a call for information under Section 206 of the Companies Act, 2013 in relation to compliance with the CSR provisions under Section 135 and Section 134(3)(o) of the Companies Act, 2013 for the financial year 2015-16. NKT filed a form reply to the call for information dated December 11, 2018 stating its reasons for not spending the entirety of the prescribed CSR amount for the Financial Year 2016. NKT is part of the IRB group which has been involved in establishing schools in the vicinity of the group's projects to help the underprivileged sections of the society. This usually takes two or three years. Additionally, the IRB group in aggregate spent ₹158.91 million towards CSR activities for financial year 2015-16. No further response has been received from the MCA.

2. The Collector of Stamps, Solapur has raised a demand for a deficit in stamp duty of ₹23,000 and a penalty, on the agreement dated November 28, 2001. In its letter dated July 3, 2015, NKT informed the Collector of Stamps that such stamp duty is not applicable to the agreement as the section referred to by the Collector of Stamps was not in existence at the time of execution of the agreement. There has been no further response from the Collector of Stamps.

Other Material Litigation

Ideal Road Builders Private Limited, NKT, and others have filed a writ petition before the High Court of Bombay against the State of Maharashtra through the chief secretary in relation to the Nagar-Karmala-Tembhurni project. For details, see " – *Material Litigation and Regulatory Action against the Sponsor/Project Manager and Associates of the Sponsor/Project Manager – Material Litigation and Regulatory Action against the Associates of the Sponsor/Project Manager – Ideal Road Builders Private Limited – Other material litigation*" on page 350.

XV. *Thane Godbunder Toll Road Private Limited ("TGRPL")*

As at the date of this Preliminary Placement Memorandum, there is no outstanding criminal litigation or regulatory action against TGRPL. Other than as disclosed below, there is no material civil litigation against or other material litigation involving TGRPL.

Outstanding Material Civil Litigation

Shrinivas Anant Ghanekar has filed a public interest litigation before the High Court of Bombay against the State of Maharashtra, Ideal Road Builders Private Limited, TGRPL, and others. For details, see " – *Material Litigation and Regulatory Action against the Sponsor/Project Manager and Associates of the Sponsor/Project Manager – Material Litigation and Regulatory Action against the Associates of the Sponsor/Project Manager – Ideal Road Builders*" on page 350.

Other Material Litigation

Ideal Road Builders Private Limited, TGRPL and others have filed a writ petition before the High Court of Bombay against the State of Maharashtra. For details, see " – *Material Litigation and Regulatory Action against the Sponsor/Project Manager and Associates of the Sponsor/Project Manager – Material Litigation and Regulatory Action against the Associates of the Sponsor/Project Manager – Ideal Road Builders – Other material litigation*" on page 351.

XVI. *VCR Toll Services Private Limited ("VCR")*

As at the date of this Preliminary Placement Memorandum, there is no outstanding criminal litigation against VCR. As at the date of this Preliminary Placement Memorandum, there is no outstanding material civil litigation against VCR. Other than as disclosed below, there is no material litigation involving or regulatory action against VCR.

Outstanding Regulatory Action

VCR received a mail from the MCA dated December 3, 2018 with a call for information under Section 206 of the Companies Act, 2013 in relation to compliance with the CSR provisions under Section 135 and Section

134(3)(o) of the Companies Act, 2013 for the financial year 2015-16. VCR filed a form reply to the call for information dated December 11, 2018 stating that it did not spend the entire amount prescribed for CSR activities as it could not find any suitable project in line with its business. No further response has been received from the MCA.

Other Material Litigation

VCR has filed a writ petition before the High Court of Bombay against the Executive Engineer, Public Works Department, and others, challenging an action of the Government which has prevented them from collecting the toll based on an allegation that they have not carried out repairs to the project road. The matter is currently pending.

Material Litigation and Regulatory Action involving the Project SPVs

A. *AETL*

As at the date of this Preliminary Placement Memorandum, there is no outstanding material civil litigation or criminal litigation involving AETL. Other than as disclosed below, there is no outstanding regulatory action involving AETL.

The NHAI imposed a penalty of ₹374.00 million and additional interest on AETL due to delay on its part to fulfil condition precedent and financial closure as per the undertaking given by it to the NHAI under the concession agreement. AETL responded to the NHAI citing that the delay in completion of the condition precedents was due to NHAI not informing the lenders about the total project cost. Further, AETL stated that the percentage of vacant land provided by the NHAI to AETL was less than 80% which is less than the required land to be provided under the concession agreement. Hence, the penalty and the damages claimed by the NHAI cannot be attributable to AETL and they should be waived off by the NHAI. The matter is currently pending.

B. *CGTL*

As at the date of this Preliminary Placement Memorandum, there is no outstanding criminal litigation or regulatory action involving CGTL. Other than as disclosed below, there is no outstanding material civil litigation involving CGTL.

Mr. Azad Sharma and others (the "**Petitioners**") filed a petition against the NHAI, CGTL and others (the "**Respondent**") before the Lok Adalat, Bhilwara alleging that the toll collection by the Respondents is illegal. The Petitioners have alleged that the toll is being collected on an existing four land road by construction of additional toll booths on the pretext of construction of six lane highway construction of which has not yet started. The Petitioners have, *inter-alia*, requested the court to pass an order directing the Respondents to stop collecting the tolls until the six laning work is completed. CGTL has filed its reply against the allegations made by the Petitioners whereby it has stated that the collection of toll is as per the concession agreement entered with the NHAI and the gazette notification for collection of toll user fee. CGTL has further stated that it is collecting only 75% of the toll fee which has been notified as the construction work on the six lane is ongoing and will be finished in phases as provided under the concession agreement. Hence, CGTL requested the court to dismiss the petition filed by the Petitioners. The matter is currently pending.

C. *IRB HMTL*

As at the date of this Preliminary Placement Memorandum, there is no outstanding material civil litigation, criminal litigation or regulatory action involving IRB HMTL.

D. *IRB WTL*

As at the date of this Preliminary Placement Memorandum, there is no outstanding criminal litigation or regulatory action involving IRB WTL. Other than as disclosed below, there is no outstanding material civil litigation involving IRB WTL.

1. Mr. Laxman Neelakantha Desai (the "**Petitioner**") has filed a petition against IRB WTL (the "**Respondent**") before the court of Civil Judge Karwar alleging that the blasting of rocks done by the

Respondent has caused damage to the property of the Petitioner. The Petitioner has requested a permanent injunction restraining the Respondent from undertaking such activity. The court had passed an order granting a temporary injunction against the Respondent. Subsequently, the parties entered into a mediation agreement, pursuant to which the court passed an order dated April 28, 2017, vacating the earlier injunction. The matter is currently pending.

2. Mr. V Sachhidananda Shetty (the "**Petitioner**") filed a petition against the NHAI, MRM and others (the "**Respondents**") before the Civil Judge at Kundapura alleging that he was not given permission to cut teakwood trees by one of the Respondents. For details, see " – *Material Litigation and Regulatory Action against the Sponsor/Project Manager and Associates of the Sponsor/Project Manager – Material Litigation and Regulatory Action against the Associates of the Sponsor/Project Manager – Modern Road Makers Private Limited*" on page 354.

3. Mr. Venkatramana (the "**Petitioner**") has filed a petition against MRM and others before the court of Judicial Magistrate First Class at Bhatkar ("**JMFC**") disputing the acquisition of certain land and alleging that the compensation paid to the Petition is insufficient. For details, see " – *Material Litigation and Regulatory Action against the Sponsor/Project Manager and Associates of the Sponsor/Project Manager – Material Litigation and Regulatory Action against the Associates of the Sponsor/Project Manager – Modern Road Makers Private Limited*" on page 354.

E. *KGTL*

As at the date of this Preliminary Placement Memorandum, there is no outstanding material civil litigation, criminal litigation or regulatory action involving KGTL.

F. *KTL*

As at the date of this Preliminary Placement Memorandum, there is no outstanding criminal litigation or regulatory action involving KTL. Other than as disclosed below, there is no outstanding material civil litigation involving KTL.

Sirsa Eagle Cooperative Transport Society and another (the "**Petitioners**") filed a writ petition against the NHAI, KTL and others (the "**Respondent**") before the Punjab and Haryana High Court. The Petitioners have challenged the provisional certificate dated September 6, 2017 granted to KTL and the gazette notifications dated September 5, 2017 and September 6, 2017 for toll collection. The Petitioners have alleged that the construction of the project is yet to be completed and the collection of tolls is not in compliance with the relevant NHAI rules. The Petitioners have also made allegations in relation to exempting certain categories of entities from payment of toll. The Petitioners have requested the court to quash the toll collection notifications and to pass an order to frame a policy for local cooperative transport societies who transport local villagers on a no-cost basis. KTL has stated that the central government, through its notification dated September 5, 2017, has fixed the amount of toll fees which KTL was authorized collection for from the date of receiving either the completion certificate or the provisional certificate. KTL has also stated that it has completed 95% of the work and was permitted to start the collecting toll. The matter is currently pending.

G. *SYTL*

As at the date of this Preliminary Placement Memorandum, there is no outstanding material civil litigation, criminal litigation or regulatory action involving SYTL.

H. *UTL*

As at the date of this Preliminary Placement Memorandum, there is no outstanding material civil litigation or regulatory action involving UTL. Other than as disclosed below, there is no outstanding criminal litigation involving UTL.

Hiteshkumar Ramanlal Gandhi, a shift in-charge working at the Kherwara-Khandi Obri toll plaza, the shift in charge at the Khandi Obri Toll Plaza, filed a first information report at the Kherwara police station, Udaipur against Bhairulal Salvi, a bus driver who refused the pay toll at the toll plaza. When the people working at the toll plaza tried to stop him, the bus driver along with others misbehaved with the workers and destroyed

equipment at the toll plaza resulting in the loss of about ₹0.80 million to ₹1.00 million. The matter is currently pending.

I. *YATL*

As at the date of this Preliminary Placement Memorandum, there is no outstanding criminal litigation or regulatory action involving YATL. Other than as disclosed below, there is no outstanding material civil litigation involving YATL.

1. Mr. Shaikh Rafiq and others (the "**Petitioners**") filed a writ petition against the Sponsor, Modern Road Makers Private Limited and others (the "**Respondents**") before the BHC Aurangaba**d** in relation to acquisition of land for the four laning of Yedshi – Aurangabad road that forms a part of the Solapur – Aurangabad highway, i.e., NH 211. The Petitioners alleged that certain of the Respondents tried to change the alignment of the land already acquired for the project to include additional land in order to protect interest of one of the Respondent which is illegal. The Sponsor filed its response to the petition filed by the Petitioners and *inter-alia* stated that (i) the correct party to be impleaded in the petition is YATL and not itself as YATL is responsible for the operations under the concession agreement and therefore the petition should be dismissed on account of misjoinder and non joinder of necessary parties; and (ii) acquisition of land is the responsibility of the NHAI and hence, no cause of action lies against itself. The matter is currently pending.

2. Mr. Panditrao Digambarrao Shete Chausalkar and another (the "**Petitioners**") filed a writ petition against the Sponsor and others (the "**Respondents**") before the BHC Aurangabad in relation to acquisition of land for the four laning of Yedshi – Aurangabad road that forms a part of the Solapur – Aurangabad highway, i.e., NH 211. The Petitioners have alleged that an award was passed acquiring land of the Petitioners without following the due procedure of law and the acquisition of the land of the Petitioners is illegal. The Petitioners requested the BHC Aurangabad to set aside the award for acquisition of the lands of the Petitioner and that the Respondents should be restrained from acquiring such land. The matter is currently pending.

3. Mr. Pruthviraj Shahane (the "**Petitioner**") filed a civil suit against the Sponsor and others (the "**Respondents**") before the Civil Judge (Senior Division), Beed, alleging that the Respondents encroached upon its land by erecting electric polls over them instead of erecting them over land which has been acquired for the project. The Petitioner has, *inter-alia*, requested the court to grant a decree of perpetual and mandatory injunction against the Respondents. The matter is currently pending.

III. Material Litigation and Regulatory Action against the Investment Manager, the directors and Associates of the Investment Manager

Material Litigation and Regulatory Action against the Investment Manager

As at the date of this Preliminary Placement Memorandum, there is no outstanding material civil litigation or criminal litigation against the Investment Manager. Other than as disclosed below, there is no outstanding regulatory action against or other material litigation involving the Investment Manager.

Outstanding Regulatory Action

The Collector of Stamps, Solapur sent a demand notice dated April 24, 2015 to the Investment Manager demanding a sum of ₹152,000 as deficit stamp duty and a penalty of ₹3,040 on the agreement dated May 29, 2002 executed between the Maharashtra State Road Development Corporation, Ideal Road Builders and the Investment Manager. The Investment Manager filed a reply denying the payment of deficit stamp duty on the grounds that (a) the demand of deficit amount of stamp duty was made payable by citing the provisions included in Section 63 of the Bombay Stamp Act, 1958 inserted vide amendment 12 of 2006 (effective from May 1, 2006)whereas the agreement was already executed prior to the amendment; and (b) Section 63 of the Bombay Stamp Act, 1958 does not have a retrospective effect. In its letter dated July 7, 2015, the Collector of Stamps issued a direction that the Investment Manager and Ideal Road Builders must pay the deficit stamp duty and the penalty within seven days, failing which recovery action for the said amount would be initiated as per the Maharashtra Land Revenue Code, 1966 and the toll would be sealed. The matter is currently pending.

Other Material Litigation

Ideal Road Builders Private Limited, the Investment Manager and others (the "**Petitioners**") have filed a civil writ petition against the State of Maharashtra and others (the "**Respondents**") before the Bombay High Court ("**BHC**") against the notifications issued by the Respondents to cancel levy of toll during the concession period on the project for the improvement of the Mohol Kurul – Kamti – Mandrup Road to NH no. 13 road, state highway no. 149 km 66.000 to 99.000 in the Solapur district. The Petitioners stated that notifications issued by the Respondents were arbitrary and unjust as they did not inform the Petitioners about the decision and the Petitioners came to now about the decision through various media reports. Subsequently, the Petitioners wrote to the Respondents stating the actions are against the principal of natural justice as the Petitioners will suffer grave loss and prejudice. The Respondents responded to the Petitioners informing them about the decision to cancel levy of toll after the letters were written by the Petitioners. Hence, the Petitioners were compelled to handover the project to the Respondents. The Petitioners wrote numerous letters to the Respondents seeking compensation, however, no response was provided. The Petitioners, *inter-alia*, requested the BHC to pass a writs of certiorari and mandamus to quash the notification issued by the Respondents to cancel the levy of toll. The matter is currently pending.

Material Litigation and Regulatory Action against the directors of the Investment Manager

As on the date of this Preliminary Placement Memorandum, there is no outstanding material civil litigation, criminal litigation, or regulatory action against the directors of the Investment Manager.

Material Litigation and Regulatory Action against the Associates of the Investment Manager

For details of material litigation and regulatory action against the associates of the Investment Manager, see " – *Material Litigation and Regulatory Action against the Sponsor/Project Manager and Associates of the Sponsor/Project Manager*" on page 345.

IV. Material Litigation and Regulatory Action against the Trustee

As at the date of this Preliminary Placement Memorandum, there is no outstanding criminal litigation or regulatory action against the Trustee.

Outstanding Material Civil Litigation

1. Hubtown Limited (the "**Petitioner**") filed a case before the High Court of Bombay against the Trustee and its directors for having informed the bankers of the Petitioner regarding the defaults committed by the Petitioner. The Trustee has stated that the Petitioner is a guarantor for the debt for which the Trustee is acting as a debenture trustee and in case of defaults, the relevant documents authorize the Trustee to share information about such default to CIBIL/RBI and other creditors. The aggregate amount claimed is ₹3,000 million. The matter is currently pending for settlement.

2. SBI Cap Trustee (the "**Petitioner**") filed a suit before the City Civil Court, Bangalore against the Trustee and others requiring sale of pledged shares for a particular price by SREI Fund/Investors, for whom the Trustee was acting as the share pledge trustee. The Petitioner was acting for a consortium of lenders and has residual interest. The aggregate claim amount is ₹1,550.30 million. The matter is currently pending.

3. Balmer Lawrie and Company Limited and another (the "**Petitioners**") had filed a petition before the Calcutta High Court against the Trustee and certain others (the "**Respondents**") challenging the validity of the sale transaction of 14,820,000 shares in Transafe Services Limited by the Respondents to the Petitioner. The Petitioners have *inter alia* sought (i) the recovery of consideration received by the Respondents for the allegedly void contract being ₹237.12 million; and (ii) interest at the rate of 18% per annum on the decreetal amount. The matter is currently pending.

4. Reliance Project Ventures and Management Private Limited and another (the "**Petitioners**") filed a commercial suit before the Bombay High Court against the Trustee and ECL Finance Limited and others (the "**Respondents**") declaring the sale and transfer of pledged shares by Respondents to be illegal, null and void and to restore and restitute the said pledged shares by making necessary purchases from the market. The aggregate claim amount of ₹27,344.10 million is against the Edelweiss entities and not against the Trustee. The single bench of the Bombay High Court has rejected the ad-interim reliefs of the Petitioners, therefore the Petitioners have now approached the Division Bench of the Bombay High Court

with their pleas. The Petitioners have withdrawn the said appeal filed before the Division Bench of the Bombay High Court and hence the said appeals stands dismissed as not pressed vide order dated July 9, 2019. The matter before the single bench of the Bombay High Court is currently pending.

5. Loancore Servicing Solutions Private Limited (the "**Petitioner**") had filed a company petition before the National Company Law Tribunal, Principal Bench at New Delhi (the "**NCLT**") against Religare Enterprise Limited and others including the Trustee (the "**Respondents**"), where the Trustee is Respondent no.2. The petition alleged that the Respondents sold the shares of Religare Enterprise Limited under the dominion and control of the Petitioners to Respondents no. 3-5. It was further alleged that the Trustee had appropriated the shares and transferred them to the Respondents no. 3 to 5 and that the pledged shares had been sold to consciously deprive the Petitioners of their rights and facilitate an illegal takeover of Respondent no. 1 by the Trustee, acting in concert with Respondent no. 5. The Petitioners have claimed ₹700 million as damages againt the Respondents no 2-5. The NCLT has refused to pass an interim order as requested by the Petitioner. The Petitioner has failed to produce any evidence or otherwise establish that it has any form of contractual privity or other relationship of any manner with the Trustee and therefore has no locus to make any claims against it. The petition is pending before the NCLT, Delhi.

V. Taxation Proceedings

Details of all outstanding direct tax and indirect tax proceedings (i) against the Trust, the Sponsor/Project Manager, the Investment Manager, their respective Associates and the Trustee and (ii) involving the Project SPVs, as at the date of this Preliminary Placement Memorandum are disclosed below:

Nature of Proceedings	Number of Proceedings	Amount involved (in ₹ million)
Direct Tax*		
Trust	Nil	-
Sponsor/Project Manager	Nil	-
Associates of the Sponsor/Project Manager	6	52.79
Project SPVs	Nil	-
Investment Manager	Nil	-
Associates of the Investment Manager	Nil	-
Directors of the Investment Manager		
1. Mr. Naresh Kumar Taneja	Nil	-
2. Mrs. Arati Nikhil Taskar	Nil	-
3. Mr. Darshan Sangurdekar	Nil	-
4. Mr. Omprakash Singh	Nil	-
Trustee	Nil	-
Indirect Tax*		
Trust	Nil	-
Sponsor/Project Manager	1	2,496.89
Associates of the Sponsor/Project Manager	6	3,088.63
Project SPVs	Nil	-
Investment Manager	Nil	-
Associates of the Investment Manager	Nil	-
Directors of the Investment Manager		
1. Mr. Naresh Kumar Taneja	Nil	-
2. Mrs. Arati Nikhil Taskar	Nil	-
3. Mr. Darshan Sangurdekar	Nil	-
4. Mr. Omprakash Singh	Nil	-
Trustee	Nil	-
**Such amount excludes any interest or penalty in relation to such direct and indirect tax proceedings.*		

GOVERNMENT AND OTHER APPROVALS

On the basis of the list of material approvals, consents, licenses and permissions provided below, the Trust can undertake the Issue and the Trust and the Project SPVs can undertake each of their respective current business activities and other than as stated below, no further material approval, consent, license or permission from any regulatory authority is required to undertake the Issue or continue such business activities. Unless otherwise stated, these approvals are valid as of the date of this Preliminary Placement Memorandum. For details in connection with the regulatory and legal framework within which we operate, see "Regulations and Policies" on page 213*.*

Certain licenses and/or approvals may expire/elapse periodically, in the ordinary course of business, and applications to the appropriate authorities for the renewal of such licenses and/or approvals are/will be submitted in accordance with applicable requirements and procedures.

A. Approvals in Relation to the Issue

1. Resolution dated August 6, 2019 passed by the board of directors of the Sponsor approving the settlement of the Trust and to act as the sponsor of the Trust.

2. Resolution dated September 26, 2019 passed by the shareholders of the Sponsor in relation to the sponsorship of the Trust and authorizing any sale or disposal of the whole or substantially the whole of the undertakings of the Sponsor, including the Project SPVs.

3. Approval dated January 3, 2020 issued by the NHAI for establishing the Trust and the transfer of the Project SPVs subject to, *inter-alia*, the following conditions:

(i) submission of no-objection certificates from the lenders of all the Project SPVs;
(ii) the concessionaire/developer is required to comply with all the provisions of the concession agreements including 51% holding in the Trust until two years after completion / provisional COD of the projects;
(iii) the incoming investor will comply to all relevant contractual obligations of the concession agreements;
(iv) the proposal submitted pursuant to the letter dated September 16, 2019 for establishing the Trust, transfer of the Project SPVs to the Trust and the transfer of 49% in the Trust shall not have the effect of jeopardizing the interests of the NHAI in any manner; and
(v) an undertaking that all statutory compliances as required by the SEBI guidelines shall be adhered to.

4. Resolution dated February 13, 2020 of the board of directors of the Investment Manager in relation to the Issue and other related matters.

5. We have submitted drafts of the Project Implementation Agreements, Debt Novation Agreements and Shareholder Loan Agreements to the NHAI pursuant to the terms of the concession agreements. The NHAI has not provided any comments to the drafts within the time period specified under the concession agreements and accordingly, the drafts are deemed to have been approved by the NHAI.

B. Registration of the Trust

The SEBI has issued a certificate dated November 25, 2019 for registration of the Trust as an infrastructure investment trust (registration number IN/InvIT/19-20/0012).

The registration certificate has been granted subject to the following conditions, *inter-alia*, as specified in Regulation 7 of the InvIT Regulations:

(i) the Trust shall abide by the provisions of the SEBI Act and the InvIT Regulations;
(ii) the Trust shall forthwith inform the SEBI in writing, if any information or particulars previously submitted to the SEBI are found to be false or misleading in any material particular or if there is any material change in the information already submitted;
(iii) the Trust and the parties to the Trust shall satisfy with the conditions specified in Regulation 4 of the InvIT Regulations at all times;

(iv) the Trust and the parties to the Trust shall comply, at all times, with the code of conduct as specified in Schedule VI of the InvIT Regulations, wherever applicable.

The certificate also states:

(i) that the investment conditions and other restrictions will apply to all investments, distributions etc. made;
(ii) that for issuance and listing of Units issued in terms of Chapter VIA of the InvIT Regulations, the Trust shall fulfill the conditions as may be prescribed by the SEBI from time to time;
(iii) that the transaction for transfer of the underlying assets/shares or interest in SPVs to the Trust and the corresponding issue of the Trust's Units to the transferor entity shall happen only after the closure of the initial offer;
(iv) the minimum investment and lot size for an InvIT for a public issue or a private placement;
(v) that the Trust shall keep and maintain the books of accounts, records and such other documents as may be required by the SEBI under the InvIT Regulations from time to time;
(vi) that the Trust shall ensure compliance with the guidelines/directives/instructions/circulars etc. as may be issued from time to time by the SEBI or the Government of India relating to the activities carried on by the Trust;
(vii) that the Trust shall not make use of its status as a SEBI registered InvIT in furtherance of unrelated activities or any other purpose which is not permitted under the InvIT Regulations;
(viii) that the Trust's actions shall be governed by the SEBI Act and the InvIT Regulations in respect of activities carried on as an InvIT;
(ix) that any material change in the information on the basis of which registration is granted must be communicated to SEBI immediately; and
(x) that the registration has been granted on the basis of information available with the SEBI at the relevant point of time and does not preclude the SEBI from cancelling the registration later if anything adverse is found against the Trust or in case of a conviction.

Pursuant to a letter dated January 30, 2020, the SEBI has, *inter-alia*, taken on record the rights and provided to the investors in the Trust.

C. Approvals in Relation to the Project SPVs

Completion Certificates

1. Completion certificate dated March 29, 2019, with respect to 167.04 km stretch of KTL's Kaithal-Rajasthan border section of NH 152/65 project.

2. Completion certificate dated November 25, 2019, effective from October 15, 2019, with respect to the four-laning of the Solapur to Yedeshi section km. 0.000 to km. 100.000 (design length 98.717 km) of NH 211 project.

3. Provisional completion certificate dated January 31, 2020 with respect to 141.00 km stretch of IRB WTL's Goa-Karnataka Border – Kundapur section of NH-17 (now NH-66). The aforesaid provisional completion certificate was issued along with a punch list containing certain items to be completed within 90 days from the date of issuance thereof, including, *inter alia*, (a) laying of earthwork, GSB, WMM, DBM, SDBC, RCC drain, and footpath in the service road; (b) laying of earthwork, GSB, DLC, PQC, toll plaza tunnel on RHS and kerb in the toll plaza on RHS at km 182+850; (c) slope dressing; (d) chute drain stetches; (e) slope protection which includes pithcing on structures and slope protection on high embankment slope; (f) avenue plantation; (g) structural numbering and construction of appron; (h) static weigh bridge construction; (i) construction of truck bay, bus shelter, and boundary stones; (j) cleaaning of waterway of structure and providing cut drain as per standards; and (k) surveying with network survey vehicle from Ch 93.70 to Ch 280.94.

4. Provisional completion certificate dated March 15, 2019 with respect to 161.87 km stretch of YATL's Yedeshi-Aurangabad section of NH 211 project. The aforesaid provisional completion certificate was issued along with a punch list containing certain items to be completed within 90 days from the date of issuance thereof, including, *inter alia*, (a) laying of earthwork, GSB, WMM, DBM, BC, RCC drain, footpath and structure in the service road; (b) slope dressing; (c) chute drain stretches; (d) slope protection which includes pithcing on structures and slope protection on high

embankment slope; (e) avenue plantation; (f) side draining and PRoW clearing; (g) structural numbering and construction of appron and toe wall; (h) static weigh bridge and utility ducts (longitudinal) construction; (i) construction of pedestrian guard rail, bus bay, bus shelter and boundary stones; and (j) cleaning of drain and waterway of structure.

Approvals for Continuing Commercial Operations

The Project SPVs are required to obtain and maintain certain permits, registrations, approvals and licenses during the commercial operations phase of their respective projects, as disclosed below:

1. Certificate of registration of establishment under the Maharashtra Shops and Establishment (Regulation of Employment and Condition of Service) Act, 2017.

2. Registrations under various tax laws, including but not limited to, permanent account number, professional tax and goods and services tax.

3. Registration under the Legal Metrology Act, 2009 and respective state government rules for weigh-in-motion and road weigh bridge.

4. Registrations under applicable labour laws including, but not limited to, registrations under the the Employees' Provident Funds and Miscellaneous Act, 1952, the Employees' State Insurance Act, 1948 and the Contract Labour (Regulation and Abolition) Act, 1970.

5. No-objection certificates and authroization from the relevant state pollution control board for consent to operate under the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981 and Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008.

The Project SPVs have obtained the necessary permits, registrations, approvals and licenses from the appropriate regulatory and governing authorities that are required to operate their respective businesses. Certain approvals may have lapsed in their normal course and the respective Project SPVs have either made applications to the appropriate authorities for renewal of such licenses and/or approvals or are in the process of making such applications.

D. Approvals applied for, but not yet received

As at the date of this Preliminary Placement Memorandum, except as disclosed below, there are no approvals required to be obtained by the Trust and the Project SPVs, for which applications have been made, but approvals have not been received:

Renewal application dated May 7, 2019 for a no-objection certificate from the Maharashtra State Pollution Control Board for consent to operate under the Water (Prevention and Control of Pollution), 1974, Air (Prevention and Control of Pollution) Act, 1981 and Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 for establishment of stone crushers in relation to YATL.

E. Approvals for which applications are yet to be made

As at the date of this Preliminary Placement Memorandum, there are no material approvals required to be obtained by the Trust or the Project SPVs for which applications are yet to be made.

F. Intellectual Property

The Project SPVs, the Investment Manager and the Trustee have entered into a name licensing agreement with the Sponsor. For details, see "*Related Party Transactions*" on page 225.

OTHER REGULATORY DISCLOSURES

Eligibility for the Issue

The Trust proposes to hold not less than 80% of its assets in eligible infrastructure projects and proposes to undertake the Issue in accordance with Regulation 26B(1) of the InvIT Regulations.

The Trust is eligible for the Issue in compliance with the Regulation 14(1) of InvIT Regulations, in the manner set out below:

a) The Trust is registered with SEBI under the InvIT Regulations;

b) The Trust proposes to enter into binding agreements with the relevant parties, by way of the Formation Transactions, such that the value of the assets held by the Trust is not less than ₹5,000 million prior to the Allotment of Units; and

c) The proposed Issue size is not less than ₹ 2,500 million.

Prohibition by SEBI or RBI

None of the Trust, the Sponsor, the Investment Manager, the Project Manager and the Trustee, or the promoter(s) or director(s) of any of the Sponsor, the Investment Manager, the Project Manager (i) is debarred from accessing the securities market by SEBI; (ii) is a promoter, director or person in control of any other company or a sponsor, investment manager or trustee of any other infrastructure investment trust or an infrastructure investment trust which is debarred from accessing the capital market under any order or direction made by SEBI; or (iii) is in the list of wilful defaulters published by the RBI.

None of the promoters or directors of the Trustee (i) is debarred from accessing the securities market by SEBI; (ii) is a promoter, director or person in control of any other company or a sponsor, investment manager or trustee of any other infrastructure investment trust or an infrastructure investment trust which is debarred from accessing the capital market under any order or direction made by SEBI; or (iii) is in the list of wilful defaulters published by the RBI.

Minimum Subscription and Minimum Allotment

The minimum subscription amount from an Eligible Investor shall be ₹10.00 million.

Prohibition on Offer of Incentives

No person connected with the Issue, including any person connected with the distribution of the Issue, shall offer any incentive, whether direct or indirect, in any manner, whether in cash or kind or services or otherwise to any person for making an application for Allotment of the Units.

Undertakings by the Investment Manager

The Investment Manager (on behalf of the Trust) undertakes the following:

- at any given time, there shall be only one denomination for the Units; and
- it shall comply with such disclosure and accounting norms specified by SEBI from time to time.

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

SECTION IX – ISSUE INFORMATION

ISSUE PROCEDURE

This section is a summary intended to provide a general outline of the procedures for the bidding, application, payment, allocation and Allotment of the Units to be offered pursuant to the Issue.

Eligible Investors are advised to inform themselves of any restrictions or limitations that may be applicable to them under applicable law to which they are subject, and are required to consult their respective advisors in this regard. Eligible Investors that apply in the Issue will be required to confirm, and will be deemed to have represented to the Trustee, the Investment Manager and their respective directors, officers, agents, affiliates and representatives, that they are eligible under all applicable law, rules, regulations and guidelines to acquire the Units. The Investment Manager, the Sponsor, the Trustee and their respective directors, officers, agents, affiliates and representatives accept no responsibility or liability for advising any investor on whether such investor is eligible to acquire the Units.

Authority for the Issue

The Issue was authorized and approved by the board of directors of the Investment Manager on February 13, 2020.

The Investment Manager has filed a copy of this Preliminary Placement Memorandum, and will file a copy of the Placement Memorandum, with the SEBI.

The Units have not been and will not be registered, listed or otherwise qualified in any jurisdiction outside India and may not be offered or sold, and Bids may not be made by persons in any such jurisdiction, except in compliance with the applicable law of such jurisdiction. The Units shall not be offered or sold where such offer or sale would require registration, qualification or listing.

Eligible Investors should note that Allotment to successful Bidders will only be in the dematerialized form. Application Forms which do not have the details of the Bidders' demat accounts including DP ID, PAN and Client ID will be treated as incomplete and rejected. Bidders will not have the option of receiving Allotment in physical form.

Issue Procedure

1. The Investment Manager shall electronically or physically circulate serially numbered copies of this Preliminary Placement Memorandum and the Application Form to Eligible Investors. The Application Form will be specifically addressed to each Eligible Investor. The list of Eligible Investors to whom the serially numbered copies of the Preliminary Placement Memorandum and the Application Form will be circulated shall be determined by the Investment Manager.

2. **Unless a serially numbered Preliminary Placement Memorandum along with an Application Form is addressed to a particular Eligible Investor, no invitation to subscribe shall be deemed to have been made to such Eligible Investor.** Even if such documentation were to come into the possession of any person other than the intended recipient, no offer or invitation to offer shall be deemed to have been made to such person and such person shall not be eligible to participate in the Issue.

3. Bidders may submit an Application Form to the Investment Manager only during the Bid/Issue Period.

4. Bidders will be required *inter-alia*, to indicate the following in the Application Form:

    a. name of the Bidder to whom the Units are to be Allotted;

    b. number of Units Bid for;

    c. the details of the Bid Amount deposited by the Bidder into the Designated Account;

    d. details of the demat accounts to which the Units should be credited;

e. a representation that such person is an "Institutional Investor" or a "Body Corporate" in terms of the InvIT Regulations;

f. the details of Bidder's bank account along with fund transfer details, in case of any refund;

g. that it is permitted to acquire the Units under the laws of any applicable jurisdiction and that it has necessary capacity and authority, and have obtained all necessary consents and authorizations to enable it to commit to this participation in the Issue and to perform its obligations in relation thereto (including, without limitation, on behalf of any person) and honor such obligations;

h. it is eligible to invest in India and in the Units under applicable law, including the FEMA Rules, and has not been prohibited by the SEBI or any regulatory authority from buying, selling or dealing in units or securities; and

i. any other information which may be relevant to the Bid.

Bids made by asset management companies or custodians of Mutual Funds, if permitted under applicable law, shall specifically state the names of the concerned schemes for which the Bids are made. In case of a Mutual Fund, a separate Bid can be made in respect of each scheme of the Mutual Fund registered with SEBI and such Bids in respect of more than one scheme of the Mutual Fund will not be treated as multiple Bids provided that the Bids clearly indicate the scheme for which the Bid has been made. Bidders are advised to ensure that any single Bid from them does not exceed the investment limits or maximum number of Units that can be held by them under applicable law.

5. Each Bidder shall be required to make payment of the entire Bid Amount for the Units at the Issue Price, only through electronic transfer to the Designated Account during the Bid/Issue Period, along with the Application Form.

6. No payment shall be made by Bidders in cash. Please note that any payment of Bid Amount for Units shall be made from the bank account of the relevant Bidder applying for Units. The Bid Amount payable on Units to be held by joint holders shall be paid from the bank account of the person whose name appears first in the Application Form. Pending Allotment, all Bid Amounts received from Bidders shall be kept by in the Designated Account.

7. Once a duly completed Application Form is submitted by a Bidder on the basis of disclosures in this Preliminary Placement Memorandum, such Application Form constitutes an irrevocable offer and cannot be withdrawn, subject to terms contained therein and the Preliminary Placement Memorandum.

8. Upon receipt of the Application Form and the receipt of Bid Amount in the Designated Account, the Investment Manager shall, after Bid/Issue Closing Date, determine the number of the Units to be Allotted pursuant to the Issue.

9. Allocation and Allotment will be at the absolute discretion of the Investment Manager and in accordance with any applicable contractual committments.

10. Allottees are advised to instruct their respective Depository Participant to accept the Units that may be Allotted to them pursuant to the Issue into their respective demat accounts.

11. The Bid Amounts will be transferred to the account of the Trust from the Designated Account only after Allotment of the Units.

Who can Bid?

Each Bidder should check if it is eligible to Bid under applicable law, including the FEMA Rules. Certain categories of Bidders may not be permitted to Bid in the Issue or hold Units in excess of the limits specified under applicable law.

Only Institutional Investors and Bodies Corporate are eligible to participate in the Issue.

The Trustee, the Valuer and the employees of the Valuer who were involved in the valuation of the Project SPVs are not permitted to Bid in the Issue.

Bids by FPIs

Foreign Portfolio Investors are permitted to participate in the Issue subject to compliance with Schedule 8 of the FEMA Rules. In case of Bids by FPIs, the payment should be made as inward remittance from abroad through banking channels or out of funds held in NRE or FCNR(B) accounts maintained in accordance with the Foreign Exchange Management (Deposit) Regulations, 2016, along with documentary evidence in support of the remittance. In case of Bids made by FPIs, a copy of the certificate of registration under the FPI Regulations is required to be attached with the Application Form.

Bids by SEBI registered VCFs and AIFs

The SEBI VCF Regulations prescribe, amongst others, the investment restrictions on VCFs registered with SEBI. Further, the SEBI AIF Regulations prescribe, amongst others, the investment restrictions on AIFs. VCFs and AIFs are subject to certain investment restrictions, including with respect to the percentage of investible funds held in each investee entity. Allotments made in respect of Bids by VCFs and AIFs in the Issue shall be subject to the rules and regulations that are applicable to each of them respectively.

Bids by Banking Companies

Bids may be made by banks as permitted by the RBI and is subject to conditions specified in the Prudential Guidelines – Banks' investment in units of REITs and InvITs dated April 18, 2017. In case of Bids made by banking companies registered with the RBI, certified copies of (i) the certificate of registration issued by the RBI, and (ii) the approval of such banking company's investment committee are required to be attached to the Application Form.

Bids by Provident Funds/Pension Funds

On March 2, 2015, the Ministry of Finance issued a notification allowing investments by non-government provident funds, super-annuation funds and gratuity funds up to 5% in infrastructure investment trusts, as specified. On June 26, 2015, the Ministry of Labour and Employment issued a notification allowing investments by provident funds up to 5% in infrastructure investment trusts, as specified. The Pension Fund Regulatory and Development Authority issued circulars dated June 3, 2015, September 2, 2015, November 4, 2016 and May 4, 2017, respectively, allowing investments by national pension funds up to 5% in infrastructure investment trusts, as specified. However such investments by provident funds and pension funds will be subject to, amongst others, the sponsor or in some cases the securities having a minimum of AA or equivalent rating from at least two credit rating agencies registered with SEBI. In case of Bids made by provident funds/ pension funds, subject to applicable law, with minimum corpus of ₹250 million, a certified copy of certificate from a chartered accountant certifying the corpus of the provident fund/pension fund must be attached to the Bid cum Application Form.

Bids by Mutual Funds

Bids may be made by mutual funds under all its schemes, existing and future, subject to the investment conditions and other restrictions prescribed under the Securities and Exchange Board of India (Mutual Funds) Regulations, 1996 (including, the circular on mutual funds dated February 28, 2017 and any other circulars, notifications and guidelines issued thereunder).

Bids by Insurance Companies

Bids may be made by insurance companies as permitted by the Insurance Regulatory and Development Authority of India in terms of the Master Circular – Investments, 2016 and the circular issued by the IRDAI entitled, Investment in Units of Real Estate Investment Trusts (REIT) & Infrastructure Investment Trusts (InvIT) dated March 14, 2017.

Bids under Power of Attorney

In case of Bids made pursuant to a power of attorney by Institutional Investors or Bodies Corporate, a certified copy of the power of attorney or the relevant resolution or authority, as the case may be, along with a certified copy of the memorandum of association and articles of association and/or bye laws must be lodged along with the Application Form. The Investment Manager, in its absolute discretion, reserves the right to relax the above condition of simultaneous lodging of the power of attorney along with the Application Form.

The Parties to the Trust are not liable for any amendment or modification or change to applicable law or regulations, which may occur after the date of this Preliminary Placement Memorandum. Eligible Investors are advised to make their independent investigations and satisfy themselves that they are eligible to apply in the Issue. Eligible Investors are advised to ensure that any single application from them does not exceed the investment limits or maximum number of Units that can be held by them under applicable law or regulation or as specified this Preliminary Placement Memorandum.

Maximum and Minimum Bid Size

(i) Each Bidder is required to Bid for a Minimum Bid Size of ₹10.00 million.

(ii) No Bidder shall Bid for that number of Units which exceeds the Issue size.

Application Process

Application Form

Bidders shall only use the Application Forms provided by the Investment Manager for the purpose of making a Bid in terms of the Preliminary Placement Memorandum.

A Bidder applying for the Units to be issued pursuant to the Issue must have at least one beneficiary account with a Depository Participant of either NSDL or CDSL prior to making the Bid. Allotment to a successful Bidder will be credited in electronic form directly to the beneficiary account (with the Depository Participant) of such Bidder.

By making a Bid for the Units through Application Forms, Bidders will be deemed to have made the following representations and warranties, respectively:

1. The Bidder confirms that it is an Institutional Investor or a Body Corporate, and is eligible to participate in the Issue;

2. The Bidder has deposited the Bid Amount in the Designated Account;

3. Subject to the terms of the Application Form and the Preliminary Placement Memorandum, the Bidder has no right to withdraw its Bid once such Bid is submitted; and

4. The Bidder confirms that it is eligible to apply for, and hold, any Units that may be Allotted to the Bidder pursuant to the Issue. The Bidder further confirms that any such Allotment of Units to, and the holding of Units by, the Bidder does not, and shall not, exceed the level permissible as per any law applicable to the Bidder.

ELIGIBLE INVESTORS MUST PROVIDE THEIR DEMAT ACCOUNT DETAILS, THEIR DEPOSITORY PARTICIPANT'S NAME, DEPOSITORY PARTICIPANT IDENTIFICATION NUMBER, BENEFICIARY ACCOUNT NUMBER AND BANK ACCOUNT DETAILS IN THE APPLICATION FORM. ELIGIBLE INVESTORS MUST ENSURE THAT THE NAME GIVEN IN THE APPLICATION FORM IS EXACTLY THE SAME AS THE NAME IN WHICH THE DEMAT ACCOUNT IS HELD.

Demographic details such as address and bank account details will be obtained from the Depositories as per the demat account details given above.

Instructions for completing the Application Form

Bidders may note that forms not filled completely or correctly as per instructions provided in the Preliminary Placement Memorandum and the Application Form are liable to be rejected. The Bids should adhere to the following:

(i) Bids must be made only in the prescribed Application Form;

(ii) Application Form must be completed in full, in BLOCK LETTERS in ENGLISH and in accordance with the instructions contained herein and in the Application Form. Incomplete Application Forms are liable to be rejected. Bidders must provide details of valid and active DP ID, Client ID and PAN clearly and without error. Invalid accounts, suspended accounts or where such account is classified as invalid or suspended shall not be considered for Allotment. Bidders should note that the Registrar and the Investment Manager will not be liable for errors in data entry due to incomplete or illegible Application Forms; and

(iii) Bidders are required to sign the Application Form. Bidders should ensure that the thumb impressions and signatures other than in the languages specified in the Eighth Schedule to the Constitution of India, are attested by a Magistrate or a Notary Public or a Special Executive Magistrate under official seal.

Submission of Application Form

All Application Forms must be duly completed with information including the name of the Bidder, the number of the Units applied for and the Bid Amount deposited in the Designated Account, and include details of the bank account from which payment of the Bid Amount was made as well as a confirmation of funds transfer. The Application Form shall be submitted to the Investment Manager either through electronic form or through physical delivery at the following address:

MMK Toll Road Private Limited
Off No-11th Floor/1101
Hiranandani Knowledge Park, Technology Street
Hill Side Avenue, Powai
Mumbai 400 076
Maharashtra, India
Attention: Mr. Jitendra Sharma
Email: jitendra.sharma@irb.co.in

The Investment Manager shall not be required to provide any written acknowledgement of the Application Form.

PAN

Each Eligible Investor must mention its Permanent Account Number ("PAN") allotted under the IT Act. Each Eligible Investor is required to submit a copy of its PAN card along with the Application Form. Eligible Investors should not submit the general index registrar number ("**GIR**") instead of the PAN. Applications without this information will be considered incomplete and are liable to be rejected, except from Eligible Investors which are not required to hold a PAN under applicable law.

Bank Account for Payment of Bid Amount

Bid Amounts are required to be remitted in favor of the Designated Account, i.e., "IRB Infrastructure Trust – Private Placement".

Payment Instructions

The payment of Bid Amount shall be made by the Bidders in the name of the Designated Account as per the payment instructions provided in the Preliminary Placement Memorandum and the Application Form.

Payments are to be made only through electronic fund transfer. Payments through cheques or cash or any mode other than electronic mode shall be rejected.

Bidders' Demat Account and Bank Account Details

Bidders should note that on the basis of Bidders' PAN, DP ID and Client ID provided by them in the Application Form, the Registrar will obtain from the Depository the demographic details including the Bidders' address and bank account details (the "**Demographic Details**"), from the Depository. The Demographic Details will be used for giving refunds (including through direct credit, NECS, NEFT and RTGS) to the Bidders. It is mandatory to provide the bank account details in the space provided in the Application Form and Application Forms that do not contain such details are liable to be rejected. Hence, Bidders are advised to immediately update their bank account details, PAN and Demographic Details as appearing on the records of the Depository Participant and ensure that they are true and correct. Failure to do so could result in delays in credit of refunds to Bidders at their sole risk and none of the Registrar, the Investment Manager or the Trustee will have any responsibility or undertake any liability for this. Accordingly, Bidders should carefully fill in their demat account details in the Application Form.

By signing the Application Form, the Bidder is deemed to have authorized the Depositories to provide to the Investment Manager and the Registrar, on request, the required Demographic Details as available in their records.

The Trustee, the Investment Manager will not be responsible or liable for the delay in the credit of the Units to be issued and transferred pursuant to the Issue due to errors in the Application Form, delay in payment of Bid Amount or otherwise on part of the Bidders.

Allotment of the Units

In accordance with the InvIT Regulations, the Units will be issued and Allotment shall be made only in dematerialized form to the Allottees. The Investment Manager and the Registrar have entered into:

- Agreement dated January 14, 2020 with NSDL; and
- Agreement dated January 16, 2020 with CDSL.

After the Bid/Issue Closing Date and the completion of the Formation Transactions, the Investment Manager will update this Preliminary Placement Memorandum with the Issue details and file the Placement Memorandum with the SEBI within the timelines specified under applicable law, and dispatch a serially numbered Placement Memorandum either in electronic form or by physical delivery to each successful Bidder.

Refunds

The Investment Manager will ensure that refunds are made to the Bidders, if applicable, in accordance with and subject to applicable law.

SECTION X – OTHER INFORMATION

MATERIAL CONTRACTS AND DOCUMENTS FOR INSPECTION

The following contracts, which are or may be deemed material have been entered or are to be entered into in due course. These contracts and also the documents for inspection referred to hereunder, may be inspected by Eligible Investors at the office of the Trust at New Delhi, from 10:00 A.M. to 5:00 P.M., from the date of this Preliminary Placement Memorandum until the Bid/Issue Closing Date, on Working Days.

A. Material Contracts

1. The Framework Agreement, among the Sponsor, the Investment Manager, Bricklayers Investment Pte. Ltd, Chiswick Investments Pte. Ltd, Dangenham Investment Pte. Ltd, Anahera Investment Pte. Ltd and Stretford End Investment Pte. Ltd., dated August 6, 2019, as amended;

2. The Indenture of Trust, between the Sponsor and the Trustee, dated August 27, 2019;

3. The Investment Management Agreement, among the Trustee and the Investment Manager, dated August 27, 2019, as amended;

4. The name licensing agreement among the Sponsor, the Trustee (on behalf of the Trust), the Investment Manager and each of the Project SPVs dated February 13, 2020.

5. Shareholders' agreement and share purchase agreement, each dated August 6, 2019, as amended, among the Sponsor, Croxley and the Investment Manager;

6. The concession agreement between AETL and NHAI dated September 1, 2015, together with any amendments or supplements thereto;

7. The concession agreement between CGTL and NHAI dated December 9, 2016, together with any amendments or supplements thereto;

8. The concession agreement between IRB HMTL and NHAI dated May 29, 2018, together with any amendments or supplements thereto;

9. The concession agreement between IRB WTL and NHAI dated March 25, 2013, together with any amendments or supplements thereto;

10. The concession agreement between KGTL and NHAI dated February 22, 2018, together with any amendments or supplements thereto;

11. The concession agreement between KTL and NHAI dated June 23, 2014, together with any amendements or supplements thereto;

12. The concession agreement between SYTL and NHAI dated March 3, 2014, together with any amendements or supplements thereto;

13. The concession agreement between UTL and NHAI dated December 9, 2016, together with any amendements or supplements thereto;

14. The concession agreement between YATL and NHAI dated May 30, 2014, together with any amendements or supplements thereto;

15. The Project Implementation Agreements, each dated February 3, 2020, among the Trustee (on behalf of the Trust), the Investment Manager, the Project Manager and each of the Project SPVs;

16. The Share Purchase Agreements to be entered into among the Sponsor, the Trust (acting through the Trustee), the Investment Manager and each of the Project SPVs;

17. The Debt Novation Agreement to be entered into among the Sponsor, the Trust (acting through the Trustee), the Investment Manager and AETL;

18. The Debt Novation Agreement to be entered into among the Sponsor, the Trust (acting through the Trustee), the Investment Manager and CGTL;

19. The Debt Novation Agreement to be entered into among the Sponsor, the Trust (acting through the Trustee), the Investment Manager and IRB HMTL;

20. The Debt Novation Agreement to be entered into among the Sponsor, Modern Road Makers Private Limited, IRB Goa Tollway Private Limited, the Trust (acting through the Trustee), the Investment Manager and IRB WTL;

21. The Debt Novation Agreement to be entered into among the Sponsor, the Trust (acting through the Trustee), the Investment Manager and KGTL;

22. The Debt Novation Agreement to be entered into among the Sponsor, IRB Goa Tollway Private Limited, the Trust (acting through the Trustee), the Investment Manager and KTL;

23. The Debt Novation Agreement to be entered into among the Sponsor, the Trust (acting through the Trustee), the Investment Manager and SYTL;

24. The Debt Novation Agreement to be entered into among the Sponsor, the Trust (acting through the Trustee), the Investment Manager and UTL;

25. The Debt Novation Agreement to be entered into among the Sponsor, IRB Goa Tollway Private Limited, the Trust (acting through the Trustee), the Investment Manager and YATL; and

26. The Shareholder Loan Agreements to be entered into among the Sponsor, the Trust (acting through the Trustee), the Investment Manager and each of the Project SPVs.

B. Material Documents

1. Certificate of registration of the Trust as an infrastructure investment trust dated November 25, 2019 issued by the SEBI and letter dated January 30, 2020 issued by the SEBI;

2. The resolution of the board of directors of the Investment Manager dated February 13, 2020 authorizing the Issue;

3. Consent of the Auditor in relation to its report on the Projections dated February 13, 2020, the statement of tax benefits dated February 13, 2020 and the report on the Combined Financial Statements dated February 13, 2020, included in this Preliminary Placement Memorandum;

4. Consent of the Traffic Consultants, the Registrar and Unit Transfer Agent, Legal Counsel and the Compliance Officer;

5. Consent of the Valuer in relation to its report dated February 13, 2020 included in this Preliminary Placement Memorandum;

6. The letter from the NHAI dated January 3, 2020 in connection with the Issue;

7. Tripartite Agreement dated January 14, 2020, among the Investment Manager (on behalf of the Trust), NSDL and the Registrar and Unit Transfer Agent; and

8. Tripartite Agreement dated January 16, 2020, among the Investment Manager (on behalf of the Trust), CDSL and the Registrar and the Unit Transfer Agent.

Any of the contracts or documents mentioned in this Preliminary Placement Memorandum may be amended or modified at any time if so required in the interest of the Trust or if required by the other parties, without reference to the Unitholders, subject to compliance with applicable law.

DECLARATION

The Investment Manager hereby declares and certifies that all relevant provisions of the InvIT Regulations, regulations and guidelines issued by the GoI or SEBI (as the case may be) have been complied with and no statement made in this Preliminary Placement Memorandum is contrary to the provisions of the InvIT Regulations, the SCRA, the SEBI Act, or rules, regulations, and guidelines issued thereunder (as the case may be). The Investment Manager further certifies that all the statements and disclosures in this Preliminary Placement Memorandum are material, true, correct, not misleading and are adequate in order to enable the investors to make an informed decision.

SIGNED BY THE DIRECTORS OF THE INVESTMENT MANAGER

Mr. Naresh Kumar Taneja Non-executive Director	**Mrs. Arati Nikhil Taskar** Non-executive Director
Mr. Darshan Sangurdekar Independent Director	**Mr. Omprakash Singh** Independent Director

Date: February 14, 2020
Place: Mumbai

DECLARATION

The Trustee (on behalf of the Trust) hereby declares and certifies that all relevant provisions of the InvIT Regulations, regulations and guidelines issued by the GoI or SEBI (as the case may be) have been complied with and no statement made in this Preliminary Placement Memorandum is contrary to the provisions of the InvIT Regulations, the SCRA, the SEBI Act, or rules, regulations, and guidelines issued thereunder (as the case may be). The Trustee (on behalf of the Trust) further certifies that all the statements and disclosures in this Preliminary Placement Memorandum are material, true, correct, not misleading and are adequate in order to enable the investors to make an informed decision.

SIGNED BY THE TRUSTEE (ON BEHALF OF THE TRUST)

For **IDBI Trusteeship Services Limited**

Date: February 14, 2020
Place: Mumbai

DECLARATION

The Sponsor hereby declares and certifies that all relevant provisions of the InvIT Regulations, regulations and guidelines issued by the GoI or SEBI (as the case may be) have been complied with and no statement made in this Preliminary Placement Memorandum is contrary to the provisions of the InvIT Regulations, the SCRA, the SEBI Act, or rules, regulations, and guidelines issued thereunder (as the case may be). The Sponsor further certifies that all the statements and disclosures in this Preliminary Placement Memorandum are material, true, correct, not misleading and are adequate in order to enable the investors to make an informed decision.

SIGNED BY THE DIRECTORS OF THE SPONSOR

Mr. Virendra D. Mhaiskar Chairman & Managing Director	**Mrs. Deepali V. Mhaiskar** Whole-time Director
Mr. Sudhir R. Hoshing Joint Managing Director	**Mr. Mukeshlal Gupta** Joint Managing Director
Mr. Sunil Talati Independent Director	**Mr. Chandrashekhar S. Kaptan** Independent Director
Mr. Sandeep J. Shah Independent Director	**Mrs. Heena Raja** Independent Director

Date: February 14, 2020
Place: Mumbai

ANNEXURE A

VALUATION REPORT

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SUNIT KHANDELWAL

Registered Valuer under Companies (Registered Valuers and Valuation) Rules, 2017
IBBI Registration No. IBBI/RV/05/2018/10426
Asset class: Securities or Financial Assets

STRICTLY PRIVATE & CONFIDENTIAL

To,
IRB Infrastructure Trust,
1101 Hiranandani Knowledge Park,
Technology Street,
Hill Side Avenue, Powai,
Mumbai – 400076

MMK Toll Road Private Limited
IRB Infrastructure Trust,
1101 Hiranandani Knowledge Park,
Technology Street,
Hill Side Avenue, Powai,
Mumbai - 400076

13 February 2020

Sub: Valuation of 9 SPVs as per Securities and Exchange Board of India (Infrastructure Investment Trusts) Regulations, 2014, as amended

Dear Sir(s)/ Madam(s),

I refer to the engagement letter dated 18 October 2019 to provide valuation services to IRB Infrastructure Trust acting through its Investment Manager, MMK Toll Road Private Limited (referred to as "the Client" or "You") to undertake an independent valuation of identified 9 Special Purpose Vehicles of the Sponsor which are proposed to be transferred to the Trust, as per Securities Exchange Board of India (Infrastructure Investment Trusts) Regulations, 2014, and amendments thereto including any circulars, notifications, clarifications and guidelines issued thereunder ("SEBI InvIT Regulations") in connection with the private placement of units by the Trust ("the Offering").

The valuation date is 30 September 2019 ("Valuation Date").

Sunit Khandelwal ("Valuer") is an IBBI Registered Valuer with registration number IBBI/RV/05/2018/10426.

The Valuer understands that as per SEBI InIT Regulations, the Sponsor ("the Management") has settled an Indian Infrastructure Investment Trust ("InvIT") named as IRB Infrastructure Trust ("the Trust"). MMK Toll Road Pvt. Ltd is appointed as the Investment Manager ("Investment Manager" or "IM") and IDBI Trusteeship Services Limited is the Trustee acting on behalf of the Trust ("Trustee").

The identified Special Purpose Vehicles which are proposed to be transferred to the Trust are as follows (hereinafter together referred to as "the InvIT Assets", "9 SPVs" or "the SPVs" or the "Business"):

1. IRB Westcoast Tollway Limited ("IWTL" or "Goa Kundapur")
2. Solapur Yedeshi Tollway Limited ("SYTL" or "Solapur Yedeshi")
3. Yedeshi Aurangabad Tollway Limited ("YATL" or "Yedeshi Aurangabad")
4. Kaithal Tollway Limited ("KTL" or "Kaithal Rajasthan")
5. AE Tollway Limited ("AETL" or "Agra Etawah")
6. Udaipur Tollway Limited ("UTL" or "Udaipur Rajasthan/ Gujarat border")
7. CG Tollway Limited ("CGTL" or "Gulabpura Chittorgarh")
8. Kishangarh Gulabpura Tollway Limited ("KGTL" or "Kishangarh Gulabpura")
9. IRB Hapur Moradabad Tollway Limited ("IHMTL" or "Hapur Moradabad")

Communication office:
507 A, 5th Floor, Spaze Platinum Towers,
Sector 47, Sohna Road,
Gurgaon 122001, Haryana
India

Registered office:
F 1502, GPL Eden Heights,
Sector 70,
Gurgaon 122010, Haryana
India

Telephone: +91 124-4696689
Mobile: +91 9560680444
Email: sunitkhandelwal@gmail.com;
sunitk@incwert.com

This valuation report ("Report") has been prepared for inclusion as part of the Preliminary Placement Memorandum ("PPM"), the Placement Memorandum ("PM") and such other documents as may be required for the Offering

In terms of the SEBI InvIT Regulations, the Valuer hereby confirms that he:

- complies with the definition of Valuer as per SEBI InvIT Regulations and is a resigtered valuer under the Companies Act, 2013;
- is competent and eligible to undertake the valuation including under the SEBI InvIT Regulations;
- is independent and has prepared the report on a fair, impartial and unbiased basis;
- has valued the 9 SPVs and the report is prepared in compliance with regulation 13(1), regulation 21 and Schedule V of SEBI InvIT Regulations.

The Valuer has not undertaken any valuation engagements of the SPVs in the previous 3 years

The Valuer has no present or planned future interest in the 9 SPVs, the Sponsor, the Trustee or the IM, except to the extent of the appointment as an independent valuer of the Trust in compliance with SEBI InvIT Regulations.

The Valuer hereby confirms that the valuation of InvIT Assets is carried out as per internationally accepted valuation methodologies and in cognizance of international valuation standards and ICAI Valuation Standards 2018 issued by the Institute of Chartered Accountants of India.

Find enclosed the Report providing the opinion on the fair value of the 9 SPVs on the standalone basis as at September 30, 2019 ("Valuation Date") under the SEBI InvIT Regulations. A summary of the valuation is presented in the accompanying report, as well as description of the methodology and procedure used, and the factors considered in formulating the opinion. In addition, listed the source of information used in this Report and the scope of the work in the course of the assignment, noting any limitations on the assignment. This Report is subject to the attached exclusions & limitations and to all terms and conditions in the engagement letter for this assignment.

The projections provided by the Management, based on independent traffic and technical studies, are only the best estimates of growth and sustainability of profitability margins. Valuer has reviewed the financial forecast provided by the Management for consistency and reasonableness and have relied on the estimates provided.

The fair market value of each SPV is assessed by using Discounted Cash Flow methodology under the income approach. The valuation approach assumes that the cash flows are free and available for distribution to the investors.

The aggregate valuation provided in this letter is a simple summation of the valuation of each of the InvIT Assets.

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The Enterprise Value ("EV") and equity value of the 9 SPVs as on the Valuation Date has been arrived as under:

Valuation summary of the SPVs

Sl. No	Name of Project	Short name of SPV	Enterprise value (INR Crores)
1	Goa Kundapur	IWTL	3,304.8
2	Solapur Yedeshi	SYTL	1,734.5
3	Yedeshi Aurangabad	YATL	3,094.7
4	Kaithal - Rajasthan	KTL	2,850.8
5	Agra Etawah	AETL	1,748.0
6	Udaipur Rajasthan Gujarat	UTL	1,501.8
7	Gulabpura Chittorgarh	CGTL	1,778.4
8	Kishangarh Gulabpura	KGTL	1,460.9
9	Hapur Moradabad	IHMTL	1,610.8
	Total EV	**Total**	**19,084.7**

Computation of fair value of equity of the portfolio of 9 SPVs

Valuation approach	Method	INR crores	Weight (%)
Income approach	DCF	19,084.7	100%
Market approach	Comparable companies method	n/a	n/a
Cost approach	NAV	n/a	n/a
Enterprise value for the combined portfolio of 9 SPVs (Note 1)		19,084.7	100%
Less: Debt (Note 2)		(6,842.1)	
Less: Deb-like-items		(584.6)	
Add: Cash and cash equivalents		28.1	
Add: Surplus assets		490.9	
Value of equity + quasi equity (Note 3)		**12,177.0**	

Notes

Note 1 - Management has represented that the liabilities (INR 1,396.5 crores) forming part of the other working capital shown on the balance sheets of the 9 SPVs as of the Valuation Date of 30 September 2019 has been settled to zero by infusion of sponsor debt before the transaction date. As such impact of change in one-time other working capital has not been considered in computation of the free cash flow and the enterprise valuation presented in the table above. Other working capital primarily comprises current tax assets, other financial liabilities, trade payables, provisions and other current liabilities.

Note 2 - Further, based on the 30 September 2019 financials, there are consolidated external borrowing of INR 9,842.1 crores across the 9 SPVs. There is additional debt in the form of subordinated debt (INR 2,974.5 crores) and sponsor debt (INR 1,269.8 crores) which Management has represented that they are quasi equity and hence have not been included in the debt but rather classified as equity. Management has further represented that out of the outstanding external debt, INR 3,000 crores shall be repaid on transaction date using sub-debt from the Trust. Accordingly, proforma debt is INR 6,842.1 crores. This has been reduced from the combined EV for the computation of combined equity value of the 9 SPVs.

Note 3: Management has represented that a total of INR 7,244.2 crores of debt is infused by Trust or sponsor or sponsor entities and hence Management has classified the same as quasi-equity. Break-up of the quasi equity is provided below.

Quasi-equity computation as represented by Management

Particulars	INR crores
Sub debt (from sponsor)	2,974.5
Sponsor debt	1,269.8
Sub debt from Trust to refinance existing external debt*	3,000.0
Total quasi-equity	**7,244.2**

**This refinancing will happen on the transaction date and has been included on proforma basis*

This letter should be read in conjunction with the attached Report.

I hereby consent to the inclusion of the Report and for the Summary of Valuation therein in any documents and material to be issued by the Client in connection with the Offering, including the PPM and PM. I consent to the Report being available as a material document for inspection in connection with the Offering and for the submission to any regulatory authorities as may be required, including the SEBI.

Respectfully submitted,



Sunit Khandelwal
Registered Valuer under Companies (Registered Valuers and Valuation) Rules, 2017
IBBI Registration No. IBBI/RV/05/2018/10426
Asset class: Securities or Financial Assets

Valuation report

Valuation date: 30 September 2019
Report date: 13 February 2020

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1. Definitions, abbreviations & glossary of terms

Abbreviations	Definitions/Meanings
AETL	AE Tollway Limited
BOT	Build, Operate and Transfer
BV	Break Up Value
CA	Concession Agreement
CAGR	Compounded Annual Growth Rate
CCM	Comparable Companies Multiple
CGTL	CG Tollway Limited
COD	Commercial Operation Date
D/E ratio	Debt-Equity ratio
DBFOT	Design, Build, Finance, Operate, Transfer
DCF	Discounted Cash Flow
EBIT	Earnings before interest and tax
EBITDA	Earnings before interest, taxes and depreciation and amortization
EPC	Engineering, Procurement and Construction
ETC	Electronic Toll Collection
EV	Enterprise Value
FCFF	Free Cash Flows to Firm
FY	Financial Year ending 31st March
GDP	Gross Domestic Product
GVA	Gross Value Added
HAM	Hybrid-Annuity Model
IHMTL	IRB Hapur Moradabad Tollway Limited
HUDCO	Housing and Urban Development Corporation
IBEF	India Brand Equity Foundation
INR	Indian Rupees
Investment Manager or IM	MMK Toll Road Pvt. Ltd
InvIT	Infrastructure Investment Trust
IRBIDL	IRB Infrastructure Developers Limited
IWTL	IRB Westcoast Tollway Limited
IRR	Internal rate of return
KGTL	Kishangarh Gulabpura Tollway Limited
Km	Kilometer
KTL	Kaithal Tollway Limited
MAT	Minimum Alternative Tax
MDR	Major District roads
MoRTH	Ministry of Road Transport & Highways
NAV	Net Asset Value
NH	National Highway
NHAI	National Highways Authority of India
NHDP	National Highways Development Project
ODR	Other district roads
OMT	Operate-Maintain-Transfer
PAT	Profit After Tax
PBT	Profit before Tax
PCU	Passenger Car Equivalent
PMGSY	Pradhan Mantri Gram Sadak Yojana
PPP	Public Private Partnership
SEBI InvIT Regulations	Securities and Exchange Board of India (Infrastructure Investment Trusts) Regulations, 2014
SH	State Highway
SPV	Special Purpose Vehicle
SYTL	Solapur Yedeshi Tollway Limited
the Management	The management and representatives of the Sponsor
The Trust	IRB Infrastructure Trust
TOT	Toll Operate and Transfer
Trustee	IDBI Trusteeship Services Limited
UTL	Udaipur Tollway Limited
Valuer or I or my or me	Sunit Khandelwal
WACC	Weighted Average Cost of Capital
WPI	Wholesale Price Index
YATL	Yedeshi Aurangabad Tollway Limited
You or Client	IRB Infrastructure Trust (acting through the Investment Manager)

2. Background

2.1 Brief Background and Purpose

1. IRB Infrastructure Developers Limited (referred as "IRBIDL" or "Sponsor") is one of the largest infrastructure development and construction companies in India in the roads and highways sector. It was incorporated on July 27,1998 and is based in Mumbai, India.
2. IRBIDL's Build Operate and Transfer ("BOT") infrastructure development business involves the construction, development, operation and maintenance of road projects.
3. IRBIDL's currently has 13 road BOT/ HAM projects, most of which are either operational or partly operational and few are being constructed.
4. IRBIDL is referred as "the Sponsor".
5. The management of the Sponsor ("the Management") has informed that it has registered an Indian Infrastructure Investment Trust ("InvIT") as per Securities Exchange Board of India (Infrastructure Investment Trusts) Regulations, 2014 ("SEBI InvIT Regulations") named as IRB Infrastructure Trust ("the Trust"). The Trust will undertake a private placement of units (the "Offering").
6. The Management further informed that the Trust will acquire 100% equity interest in the following identified Special Purpose Vehicles (hereinafter together referred to as "InvIT Assets", "9 SPVS" or "the SPVs"):
    I. IRB Westcoast Tollway Limited ("IWTL" or "Goa Kundapur")
    II. Solapur Yedeshi Tollway Limited ("SYTL" or "Solapur Yedeshi")
    III. Yedeshi Aurangabad Tollway Limited ("YATL" or "Yedeshi Aurangabad")
    IV. Kaithal Tollway Limited ("KTL" or "Kaithal Rajasthan")
    V. AE Tollway Limited ("AETL" or "Agra Etawah")
    VI. Udaipur Tollway Limited ("UTL" or "Udaipur Rajasthan/ Gujarat border")
    VII. CG Tollway Limited ("CGTL" or "Gulabpura Chittorgarh")
    VIII. KG Tollway Limited ("KGTL" or "Kishangarh Gulabpura")
    IX. IRB Hapur Moradabad Tollway Limited ("IHMTL" or "Hapur Moradabad")
7. As per the SEBI InvIT Regulations, the Preliminary Placement Memorandum ("PPM") and the Placement Memorandum ("PM") are required to include a valuation report from a Registered Valuer (as defined under section 247 of the Companies Act, 2013) and such valuation report is required to be in compliance with the SEBI InvIT Regulations ("Purpose").
8. In this regard, the Valuer has been appointed to determine Enterprise Value ("EV") of the 9 SPVs on a stand-alone basis as on September 30, 2019 ("Valuation Date") under the SEBI InvIT Regulations.

3. Sources of Information

We have relied on the following sources of information:

- As provided by the Management:
  - Information on business and profile of the SPVs as provided by the Management.
  - Concession Agreement of each SPV between NHAI and individual SPV.
  - Audited financial statements on a standalone basis from the date of operation of individual SPV till 30 September 2019.
  - Financial projections of the SPVs from FY 2020 till the end of the concession period of the respective SPV as provided by the Management.
  - Traffic consultant reports prepared by consultants as noted in the table below for each SPV as provided by the Management. Management has represented that the traffic studies shared are the most recent studies available. [Management has further represented that technical due diligence for the SPVs has not been conducted as operations and maintenance (O&M) would be done by IRBIDL (Sponsor and Project Manager) based on a fixed price contract. O&M payments are fixed for 10 years – after that the terms can be renegotiated upon renewal of the project implementation agreements

Traffic consultants for the various SPVs

Sl. No	Name of Project	Short name of SPV	Name of Traffic Consultant
1	Goa Kundapur	IWTL	GMD Consultants
2	Solapur Yedeshi	SYTL	Tractebel Engineering Pvt. Ltd.
3	Yedeshi Aurangabad	YATL	Steer
4	Kaithal - Rajasthan	KTL	GMD Consultants
5	Agra Etawah	AETL	LEA Associates South Asia Pvt. Ltd.
6	Udaipur Rajasthan Gujarat	UTL	Steer
7	Gulabpura Chittorgarh	CGTL	Steer
8	Kishangarh Gulabpura	KGTL	LEA Associates South Asia Pvt. Ltd.
9	Hapur Moradabad	IHMTL	LEA Associates South Asia Pvt. Ltd.

  - Completion certificates or provisional completion certificates as applicable for the various SPVs
  - Management has represented that the 9 SPVs being transferred have been recently operational or are being constructed. Management has assumed an increase for the end date of concession period with respect to all the SPVs except IHMTL based on formula as per the provisions of CA ("Concession Agreement"). However, the same have not been approved by NHAI yet.

Concession period extesion assumed by Management (not yet approved by NHAI)

Sl. No	Name of Project	Short name of SPV	Construction Phase	Lane Kms	Scheduled Concession period ends	Management expected concession period ends
1	Goa Kundapur	IWTL	Under Construction	758	Mar-42	May-45
2	Solapur Yedeshi	SYTL	Recently operational	395	Jan-44	Mar-45
3	Yedeshi Aurangabad	YATL	Recently operational	756	Jun-41	Sep-46
4	Kaithal - Rajasthan	KTL	Recently operational	665	Jul-42	Dec-47
5	Agra Etawah	AETL	Tolling & Under Construction	747	Jul-40	May-45
6	Udaipur Rajasthan Gujarat	UTL	Tolling & Under Construction	683	Sep-38	Aug-41
7	Gulabpura Chittorgarh	CGTL	Tolling & Under Construction	749	Nov-37	Nov-41
8	Kishangarh Gulabpura	KGTL	Tolling & Under Construction	540	Feb-38	Feb-42
9	Hapur Moradabad	IHMTL	Tolling & Under Construction	599	May-41	May-41

  - Toll rate notification/validation letters for the SPVs
  - The list of all the permits and licenses of the individual SPVs as provided by the Management.

- The estimates and timing of the proposed major repairs to be carried out by the SPVs as provided by the Management. Management has represented that the operations and maintenance (O&M) used in the financial projections are agreed with the financial investors and the agreement would be signed in due course.

- Proprietary databases
- Site Visits and Physical inspection for all the SPVs
- Other industry related information from various publicly available sources
- Other discussions with the Management
- In addition to the above, we have also obtained such other information and explanations which were considered relevant for the purpose of our analysis. While we have relied on the information, we have not independently verified or audited these information

Please note that with respect to the audited, provisional and projected financial statements, rounding-off of amounts in the underlying financial information could result in immaterial arithmetic differences

3.1 Details of Site Visit

The site visit of the 9 SPVs were conducted during the fortnight ending 15 November 2019. Please refer respective sections of each SPV in the later part of this report for the site photographs of the relevant SPV.

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4. Exclusions and Limitations

4.1 Context and Purpose

The Management has appointed the Valuer to determine the Enterprise Value of the 9 SPVs pursuant to the SEBI InvIT Regulations.

This valuation analysis exercise and valuation report are solely for the Purpose mentioned herein in the Report. As per the discussion held with the Management, the cut-off date for present valuation analysis exercise is 30 September 2019.

4.2 Restricted Audience

This report and the information contained herein are absolutely confidential and are intended for use only in connection with the Purpose set out in the report.

It should not be copied, disclosed, circulated, quoted or referred to, either in whole or in part, in correspondence or in discussion with any other person except to whom it is issued without the written consent of the Valuer. It can however be relied upon and disclosed in connection with any statutory and regulatory filing in connection with the Offering. This report and summary of valuation included herein can be reproduced and included in the PPM and PM proposed to be filed in connection with the Offering and may be made available for inspection in the manner specified therein and may be relied upon by the advisors in connection with the Offering. In the event, if the Client or its management extend the use of the report beyond the Purpose mentioned earlier in the report, with or without the consent of the Valuer, the Valuer will not accept any responsibility to any other party to whom this report may be shown or who may acquire a copy of the report.

It is clarified that this report is not a fairness opinion under any of the stock exchange / listing regulations. In case of any third-party having access to this report, please note that this report is not a substitute for the third party own due diligence / appraisal / enquiries / independent advice that the third party should undertake for its purpose.

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4.3 Limitation Clause

The report is subject to the limitations detailed hereinafter. This Report is to be read in totality, and not in parts, in conjunction with the relevant documents referred to therein.

The scope of the assignment did not include performing audit tests for the purpose of expressing an opinion on the fairness or accuracy of any financial or analytical information that was used during the course of the work. Further, conducting a financial or technical feasibility study was also not covered. During the course of this work, the Valuer has relied upon assumptions and projections related to the Trust and the SPVs made by the management of the Sponsor. These assumptions require exercise of judgment and are subject to uncertainties. Also, the Valuer has relied on the traffic study reports.

Further, this valuation Report is based on the extant regulatory environment and the financial, economic, monetary and business/market conditions, and the information made available to the Valuer or used by the Valuer up to the date hereof, which are dynamic in nature and may change in future, thereby impacting the valuation of the SPVs. Subsequent developments in the aforementioned conditions may affect this Report and the assumptions made in preparing this report and the Valuer shall not be obliged to update, review or reaffirm this report if the information provided to the Valuer changes. The information presented in this valuation Report does not reflect the outcome of any due diligence procedures, which may change the information contained herein and, therefore, the valuation Report materially.

Valuation is not a precise science and the conclusions arrived at in many cases will of necessity be subjective and dependent on the exercise of individual judgment. There is therefore no indisputable single value. While the Valuer has provided an assessment of the value based on an analysis of information available and within the scope of engagement, others may place a different value on the businesses.

Valuation is based on estimates of future financial performance or opinions, which represent reasonable expectations at a particular point in time, but such information, estimates or opinions are not offered as prediction or as assurances that a particular level of income or profit will be achieved, a particular event will occur or that a particular price will be offered or accepted. Actual results achieved during the period covered by the prospective financial analysis will vary from these estimates and the variations may be material.

The realization of these projections is dependent on the continuing validity of the assumptions on which they are based. Since the projections relate to the future, actual results are likely to be different from the projected results in case of events and circumstances not occurring as projected and the differences may be material. The Valuer's work did not constitute a validation of the financial projections of the Trust and the SPVs under consideration and accordingly, the Valuer does not express any opinion on the same. The Valuer has not commented on the appropriateness of or independently verified the assumptions or Information provided to us for arriving at the financial projections. Further, while the Valuer has discussed the assumptions and projections with the management of the Sponsor, Valuer's reliance on them for the purpose of valuation should not be construed as an assurance about the accuracy of the assumptions or the achievability of the financial projections.

This Report is based on information received from sources mentioned herein and discussions with the management of the Sponsor. This information has not been independently verified by the Valuer. The Valuer has assumed that the Sponsor has furnished all information, which it is aware of concerning the financial statements and respective liabilities, which may have an impact on my report.

The Valuer has not done any independent technical valuation or appraisal or due diligence of the

assets or liabilities of the Trust or a SPV or any of other entity mentioned in this Report and has considered them at the value as disclosed by the Trust in their regulatory filings or in submissions, oral or written, made to me. Nothing has come to the Valuer's knowledge to indicate that the material provided to the Valuer was misstated or incorrect or would not afford reasonable grounds upon which to base my Report.

The Valuer has not made any independent verification with respect to the Sponsor's claim to title of assets or property for the purpose of this valuation. With respect to claim to title of assets or property, the Valuer has solely relied on representations, whether verbal or otherwise, made by the Management to us for the purpose of this Report.

For the present valuation analysis exercise, the Valuer has also relied upon information available in the public domain; however, the accuracy and timeliness of the same has not been independently verified. Further, the Valuer has not verified the publicly available information cited in this Report.

In the particular circumstances of this case, the Valuer shall be liable only to the Sponsor, the Trust and the Investment Manager. The Valuer shall have no liability (in contract or under statute or otherwise) to any other party for any economic loss or damage arising out of or in connection with this engagement, however the loss or damage is caused other than in cases of fraud, gross negligence or wilful misconduct, or on account of any natural calamities, shall be limited to the amount of fees actually received by the Valuer as laid out in the engagement letter, for such valuation work.

Whilst, all reasonable care has been taken to ensure that facts stated in the Report are accurate and opinions given are fair and reasonable, neither the Valuer, nor any of the Valuer's team member shall in any way be responsible for the management content, third party content or other any content sourced from publicly available information, stated herein. Accordingly, the Valuer makes no representation or warranty, express or implied, in respect of the completeness, authenticity or accuracy of such content. The Valuer expressly disclaim any and all liabilities, which may arise based upon such content used in this Report.

This Report does not look into the business / commercial reasons behind the Offering nor the likely benefits arising out of the same. Similarly, it does not address the relative merits of investing in InvIT as compared with any other alternative business transaction, or other alternatives, or whether or not such alternatives, or whether or not such alternatives could be achieved or are available. The assessment of commercial and investment merits of the Trust are sole responsibility of the investors of the Trust and the Valuer does not express opinion on the suitability or otherwise of entering into any financial or other transactions with the Investment Manager, the Trust or the Sponsor.

The Valuer is not advisor with respect to legal tax and regulatory matters for the Offering. No investigation of the SPVs' claim to title or assets has been made for the purpose of this Report and the SPVs' claim to such right have been assumed to be valid. No consideration has been given to liens or encumbrances against the assets beyond the loans disclosed in the accounts. Therefore, no responsibility is assumed for matters of a legal nature.

Except to the extent required under the SEBI InvIT Regulations and other applicable law, the Valuer is not responsible for matters of legal nature including issues of legal title and compliance with local laws in respect of the SPVs and also no consideration has been given to litigation and other contingent liabilities that are not recorded in the financials of the SPVs.

The valuation analysis in this Report should not be construed as investment advice; specifically, and the Valuer do not express any opinion on the suitability or otherwise of entering into any financial or other transactions with the Investment Manager, the Trust or any of the SPVs.

The estimate of value contained herein are not intended to represent value of the SPVs at any time other than the dates specifically mentioned for each valuation result, as per the agreed scope of engagement and as required under the SEBI InvIT Regulations.

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5. Overview of the 9 SPVs

5.1 IRB Westcoast Tollway Limited ("IWTL" or "Goa Kundapur")

IRB Westcoast Tollway Limited ("**IWTL**"), a wholly owned subsidiary of the Sponsor and through its subsidiaries, is operating this asset. The project has been awarded on the basis of a grant of INR 536.22 crores receivable from the NHAI during the construction period. For this project, IWTL was engaged to expand the existing two-lane road to a four-lane road in the Goa/ Karnataka Border to Kundapur Section of NH17 (from 93.70 Km to 283.30 Km) in Karnataka under National Highway Development Program Phase IV on a Design-Build-Finance-Operate-Transfer basis. A concession agreement dated March 25, 2013 was entered into between the NHAI and IWTL. The project is expected to become operational in FY2020.

Concession Period: The concession period for this project is 28 years commencing from March 3, 2014. As per the concession agreement, IWTL is entitled to collect fees from project highway users, subject to the National Highways fee rules. The toll rates are revised annually on April 1st subject to and in accordance with such fee rules.

Operation and Maintenance: IWTL is required to carry out the operation and maintenance of this project, and if required, modify, repair or otherwise make improvements to the project highway in accordance with the concession agreement.









The key details of IRB Westcoast Tollway Limited are as follows:

Particulars	Details
Project name	Goa/Karnataka Border to Kundapur
Name of Concessionaire	IRB Westcoast Tollway Limited
State	Karnataka
NH/ SH	NH 17
PPP mode	Design, Build, Finance, Operate and Transfer ("DBFOT")
Execution of CA	March 25, 2013
Appointed date	March 3, 2014
Scheduled Concession End Date	March 2, 2042
Original Concession period	28 Years
Expected Concession End Date due to actual (estimated) traffic being lower than Target Traffic as per CA	May 30, 2045
Tollable Length (Kms)	189.6
Toll Plaza	3

The shareholding pattern of IRB Westcoast Tollway Limited as on 30 September 2019 is as follows:

Name of shareholder	No. of Shares held	Stake%
IRB Infrastructure Developers Ltd.	17,41,94,298	100
Nominee of IRB Infrastructure Developers Ltd.	5	Less than 0.01
Total	**17,41,94,303**	**100**

For the list of approvals and disclosure on litigation please refer relevant annexure related to the above SPV which have been spread between annexure I to IX

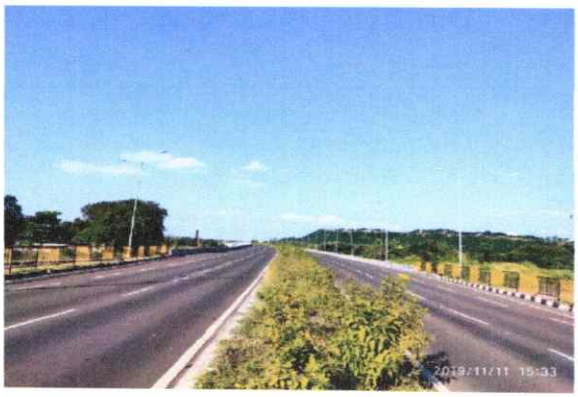
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5.2 Solapur Yedeshi Tollway Limited ("SYTL" or "Solapur Yedeshi")

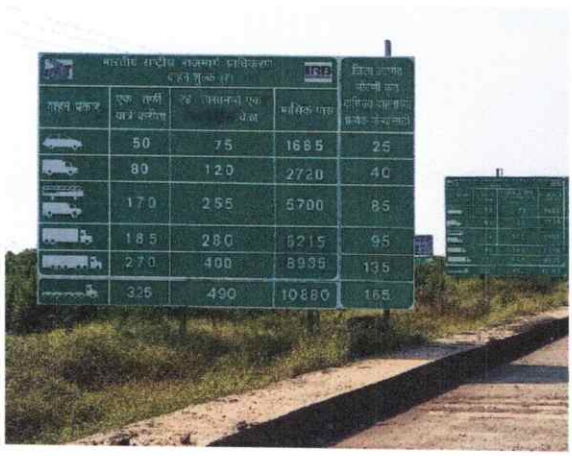
Solapur Yedeshi Tollway Limited ("SYTL"), a wholly owned subsidiary of the Sponsor, is operating this asset. The project has been awarded on the basis of a grant of INR 189 crores receivable from NHAI during the construction period. For this project, SYTL was engaged to expand the existing two-lane road to a four-lane road in the Solapur to Yedeshi Section of NH-211 from 0.00 Km to 100.00 Km (design length of 98.717 Km) in the State of Maharashtra under National Highway Development Program Phase IV on a Design-Build-Finance-Operate-Transfer basis. A concession agreement dated March 3, 2014 was entered into between the NHAI and SYTL. The project received a provisional completion certificate and commenced tolling in March 2018.

Concession Period: The concession period for this project is 29 years commencing from January 21, 2015. As per the concession agreement, SYTL is entitled to collect fees from project highway users, subject to the National Highways fee rules. The toll rates are revised annually on April 1st subject to and in accordance with such fee rules.

Operation and Maintenance: SYTL is required to carry out the operation and maintenance of this project, and if required, modify, repair or otherwise make improvements to the project highway in accordance with the concession agreement.









The key details of Solapur Yedeshi Tollway Limited are as follows:

Particulars	Details
Project name	Solapur Yedeshi
Name of Concessionaire	Solapur Yedeshi Tollway Limited
State	Maharashtra
NH/ SH	NH 211
PPP mode	Design, Build, Finance, Operate and Transfer ("DBFOT")
Execution of CA	March 3, 2014
Appointed date	January 21, 2015
Provisional Completion certificate date	March 5, 2018
Scheduled Concession End Date	January 20, 2044
Original Concession period	29 Years
Expected Concession End Date	March 14, 2045
Tollable Length (Kms)	98.7
Toll Plaza	2

The shareholding pattern of Solapur Yedeshi Tollway Limited as on 30 September 2019 is as follows:

Name of shareholder	No. of Shares held	Stake%
IRB Infrastructure Developers Ltd.	9,82,49,994	100
Nominee of IRB Infrastructure Developers Ltd.	6	Less than 0.01
Total	**9,82,50,000**	**100**

For the list of approvals and disclosure on litigation please refer relevant annexure related to the above SPV which have been spread between annexure I to IX

5.3 Yedeshi Aurangabad Tollway Limited ("YATL" or "Yedeshi Aurangabad")

Yedeshi Aurangabad Tollway Limited ("YATL"), a wholly-owned subsidiary of the Sponsor and through its subsidiaries, is operating this asset. The project has been awarded on the basis of a grant of INR 558 crores receivable from NHAI during the construction period. For this project, YATL was engaged to expand the existing two-lane road to a four-lane road in the Yedeshi to Aurangabad Section of NH-211 from 100.00 Km to 290.20 Km (design length of 189.09 Km) in the State of Maharashtra under National Highway Development Program Phase IV on a Design-Build-Finance-Operate-Transfer basis. A concession agreement dated May 30, 2014 was entered into between the NHAI and YATL. The project received a provisional completion certificate and commenced tolling in March 2019.

Concession Period: The concession period for this project is 26 years commencing from July 1, 2015. As per the concession agreement, YATL is entitled to collect fees from project highway users, subject to the National Highways fee rules. The toll rates are revised annually on April 1st subject to and in accordance with such fee rules.

Operation and Maintenance: YATL is required to carry out the operation and maintenance of this project, and if required, modify, repair or otherwise make improvements to the project highway in accordance with the concession agreement.









The key details of Yedeshi Aurangabad Tollway Limited are as follows:

Particulars	Details
Project name	Yedeshi Aurangabad
Name of Concessionaire	Yedeshi Aurangabad Tollway Limited
State	Maharashtra
NH/ SH	NH 211
PPP mode	Design, Build, Finance, Operate and Transfer ("DBFOT")
Execution of CA	May 30, 2014
Appointed date	July 1, 2015
Provisional Completion certificate date	March 17, 2018
Scheduled Concession End Date	June 30, 2041
Original Concession period	26 Years
Expected Concession End Date due to actual (estimated) traffic being lower than Target Traffic as per CA	September 11, 2046
Tollable Length (Kms)	189.1
Toll Plaza	3

The shareholding pattern of Yedeshi Aurangabad Tollway Limited as on 30 September 2019 is as follows:

Name of shareholder	No. of Shares held	Stake%
IRB Infrastructure Developers Limited	21,57,56,995	100
Nominee of IRB Infrastructure Developers Limited	6	Less than 0.01
Total	**21,57,57,001**	**100**

For the list of approvals and disclosure on litigation please refer relevant annexure related to the above SPV which have been spread between annexure I to IX

5.4 Kaithal Tollway Limited ("KTL" or "Kaithal Rajasthan")

Kaithal Tollway Limited ("**KTL**"), a wholly-owned subsidiary of the Sponsor and through its subsidiaries, is operating this asset. The project has been awarded on the basis of a grant of INR 234 crores receivable from NHAI during the construction period. For this project, KTL was engaged to expand the existing two-lane road to a four-lane road in the Kaithal to Rajasthan Border Section of NH-152/65 from 33.25 Km (design -0.500 Km) to 241.58 Km (design 165.759 Km i.e. total design length of 166.259 Km) in the State of Haryana under National Highway Development Program Phase IV on a Design-Build-Finance-Operate-Transfer basis. A concession agreement dated June 23, 2014 was entered into between the NHAI and KTL. The project received provisional completion certificates in September 2017 and July 2018 and commenced tolling in September 2017. The project received a final completion certificate in March 2019.

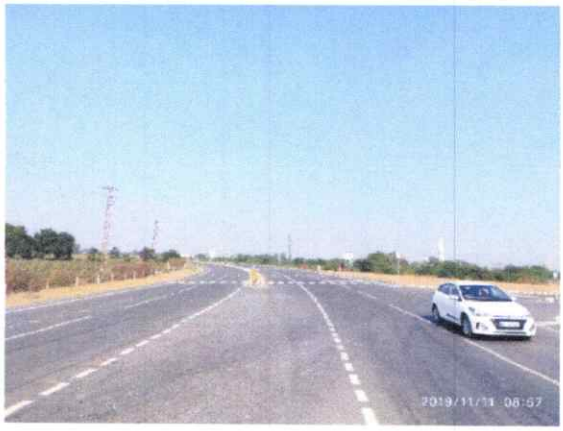
Concession Period: The concession period for this project is 27 years commencing from July 15, 2015. As per the concession agreement, KTL is entitled to collect fees from project highway users, subject to the National Highways fee rules. The toll rates are revised annually on 01 April subject to and in accordance with such fee rules.

Operation and Maintenance: KTL carries out the operation and maintenance of this project, and if required, modify, repair or otherwise make improvements to the project highway in accordance with the concession agreement.









The key details of Kaithal Tollway Limited are as follows:

Particulars	Details
Project name	Kaithal - Rajasthan Border
Name of concessionaire	Kaithal Tollway Limited
State	Haryana
NH	NH- 152/65
PPP mode	Design, Build, Finance, Operate and Transfer ("DBFOT")
Execution of concession agreement date	June 23, 2014
Appointed date	July 15, 2015
Provisional Completion certificate date – I	September 6, 2017
Provisional Completion certificate date – II	July 9, 2018
Completion certificate date	March 29, 2019
Scheduled concession end date	July 14, 2042
Original concession period (yrs)	27 years
Expected concession end date due to actual (estimated) traffic being lower than Target Traffic as per CA	December 7, 2047
Tollable length (Kms)	166.3
Toll plaza (No.)	3

The shareholding pattern of Kaithal Tollway Limited as on 30 September 2019 is as follows:

Name of shareholder	No. of Shares held	Stake%
IRB Infrastructure Developers Limited	32,79,99,994	100
Nominee of IRB Infrastructure Developers Limited	6	Less than 0.01
Total	**32,80,00,000**	**100**

For the list of approvals and disclosure on litigation please refer relevant annexure related to the above SPV which have been spread between annexure I to IX

5.5 AE Tollway Limited ("AETL" or "Agra Etawah")

AE Tollway Limited ("AETL"), a wholly-owned subsidiary of the Sponsor, is operating this asset. The project has been awarded on the basis of a premium of INR 81 crores payable to the NHAI in the first year of concession period increased annually at by an additional 5% as compared to the immediately preceding year. For this project, AETL was engaged to expand the Agra to Etawah Bypass Section of NH-2 from 199.660 Km to 323.525 Km (design length of 124.52 Km) in the State of Uttar Pradesh from four to six lanes under National Highway Development Program Phase V on a design-build-finance-operate-transfer basis. A concession agreement dated September 1, 2015 was entered into between the NHAI and AETL. Being a four to six laning project, tolling commenced in August 2016.

Concession Period: The concession period for this project is 24 years commencing from August 1, 2016. As per the concession agreement, AETL is entitled to collect fees from project highway users, subject to the National Highways fee rules. The toll rates are revised annually on April 1st subject to and in accordance with such fee rules.

Operation and Maintenance: During the concession period, AETL is required to operate and maintain the facilities relating to this project, and if required, modify, repair or otherwise make improvements to the project highway in accordance with the concession agreement.









The key details of AE Tollway Limited are as follows:

Particulars	Details
Project name	Agra - Ethawah
Name of concessionaire	AE Tollway Limited
State	Uttar Pradesh
NH	NH-2
PPP mode	Build, Operate and Transfer ("BOT")
Execution of concession agreement date	September 1, 2015
Appointed date	August 1, 2016
Provisional Completion certificate date	August 1, 2016
Scheduled concession end date	July 31, 2040
Original concession period (yrs)	24 years
Expected concession end date due to actual (estimated) traffic being lower than Target Traffic as per CA	May 19, 2045
Tollable length (Kms)	124.52
Toll plaza (No.)	2

The shareholding pattern of AE Tollway Limited as on 30 September 2019 is as follows:

Name of shareholder	No. of Shares held	Stake%
IRB Infrastructure Developers Limited	43,64,99,994	100
Nominee of IRB Infrastructure Developers Limited	6	Less than 0.01
Total	**43,65,00,000**	**100**

For the list of approvals and disclosure on litigation please refer relevant annexure related to the above SPV which have been spread between annexure I to IX

5.6 Udaipur Tollway Limited ("UTL" or "Udaipur Rajasthan/ Gujarat border")

Udaipur Tollway Limited ("**UTL**"), a wholly-owned subsidiary of the Sponsor, is operating this asset. The project has been awarded on the basis of a premium of INR 163.80 crores payable to the NHAI immediately after the third anniversary year of COD and for each subsequent year till the 9th anniversary of COD the premium shall increase by an additional 3% as compared to the previous year. From the 9th anniversary of COD until the end of the concession period the premium shall increase by an additional 8% each year as compared to the previous year. For this project, UTL was engaged to expand the Udaipur Bypass (287.40 Km) to Rajasthan/Gujarat Border (401.20 Km) section of NH-8 in the states of Rajasthan & Gujarat (approx. length 113.80 Km) from four to six lanes under National Highway Development Program Phase V on a design-build-finance-operate-transfer basis. A concession agreement dated 09 December 2016 was entered into between the NHAI and UTL. Being a four to six laning project, tolling commenced in September 2017.

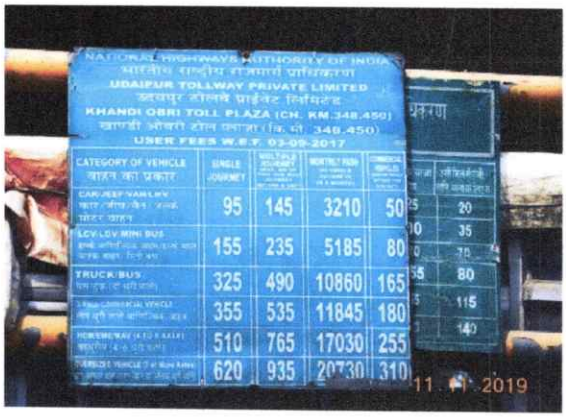
Concession Period: The concession period for this project is 21 years from September 3, 2017. As per the concession agreement, UTL is entitled to collect fees from project highway users, subject to the National Highways fee rules. The toll rates are revised annually on 01 April subject to and in

accordance with such fee rules. Being a four to six laning project, tolling commenced from appointed date i.e. 03 September 2017.

Operation and Maintenance: During the concession period, UTL is required to operate and maintain the facilities relating to this project, and if required, modify, repair or otherwise make improvements to the project highway in accordance with the concession agreement.









The key details of Udaipur Tollway Limited are as follows:

Particulars	Details
Project name	Udaipur Gujarat Border
Name of concessionaire	Udaipur Tollway Limited
State	Rajasthan/ Gujarat
NH	NH-8
PPP mode	Design, Build, Finance, Operate and Transfer ("DBFOT")
Execution of concession agreement date	December 9, 2016
Appointed date	September 3, 2017
Provisional Completion certificate date	September 3, 2017
Scheduled concession end date	September 2, 2038
Original concession period (yrs)	21 years
Expected concession end date	August 23, 2041
Tollable length (Kms)	113.8
Toll plaza (No.)	1

The shareholding pattern of Udaipur Tollway Limited as on 30 September 2019 is as follows:

Name of shareholder	No. of Shares held	Stake%
IRB Infrastructure Developers Limited	5,96,17,994	100
Nominee of IRB Infrastructure Developers Limited	6	Less than 0.01
Total	**5,96,18,000**	**100**

For the list of approvals and disclosure on litigation please refer relevant annexure related to the above SPV which have been spread between annexure I to IX

5.7 CG Tollway Limited ("CGTL" or "Gulabpura Chittorgarh")

CG Tollway Limited ("CGTL"), a wholly-owned subsidiary of the Sponsor, is operating this asset. The project has been awarded on the basis of a premium of INR 228.60 crores payable to the NHAI immediately after the third anniversary year of COD and for each subsequent year till the 9th anniversary of COD the premium shall increase by an additional 3% as compared to the previous year. From the 9th anniversary of COD until the end of the concession period the premium shall increase by an additional 8% each year as compared to the previous year. For this project, CGTL was engaged to expand the Gulabpura (90.00 Km) to end of Chittorgarh Bypass (214.87 Km) Section of NH-79 in the state of Rajasthan from four to six lanes under National Highway Development Program Phase V on a design-build-finance-operate-transfer basis. A concession agreement dated 09 December 2016 was entered into between the NHAI and CGTL. Being a four to six laning project, tolling commenced in November 2017.

Concession Period: The concession period for this project is 20 years commencing from 04 November 2017. As per the concession agreement, CGTL is entitled to collect fees from project highway users, subject to the National Highways fee Rules. The toll rates are revised annually on 01 April subject to and in accordance with such fee rules.

Operation and Maintenance: During the concession period, CGTL is required to operate and maintain the facilities relating to this project, and if required, modify, repair or otherwise make improvements to the project highway in accordance with the concession agreement.





The key details of CG Tollway Limited are as follows:

Particulars	Details
Project name	Gulabpura Chittorgarh
Name of concessionaire	CG Tollway Limited
State	Rajasthan
NH	NH-79
PPP mode	Build, Operate and Transfer ("BOT")
Execution of concession agreement date	December 9, 2016
Appointed date	November 4, 2017
Provisional Completion certificate date	November 4, 2017
Scheduled concession end date	November 3, 2037
Original concession period (yrs)	20 years
Expected concession end date due to actual (estimated) traffic being lower than Target Traffic as per CA	November 3, 2041
Tollable length (Kms)	124.87
Toll plaza (No.)	2

The shareholding pattern of CG Tollway Limited as on 30 September 2019 is as follows:

Name of shareholder	No. of Shares held	Stake%
IRB Infrastructure Developers Limited	14,24,49,994	100
Nominee of IRB Infrastructure Developers Limited	6	Less than 0.01
Total	**14,24,50,000**	**100**

For the list of approvals and disclosure on litigation please refer relevant annexure related to the above SPV which have been spread between annexure I to IX

5.8 Kishangarh Gulabpura Tollway Limited ("KGTL" or "Kishangarh Gulabpura")

Kishangarh Gulabpura Tollway Limited ("KGTL"), a wholly-owned subsidiary of the Sponsor, is operating this asset. The project has been awarded on the basis of a premium of INR 186.30 crores payable to the NHAI immediately after the third anniversary year of COD and for each subsequent year till the 9th anniversary of COD the premium shall increase by an additional 3% as compared to the previous year. From the 9th anniversary of COD until the end of the concession period the premium shall increase by an additional 8% each year as compared to the previous year. For this project, KGTL was engaged to expand the Kishangarh (0.83 Km to 36.10 Km of NH 79A and 15.00 KM to 69.73 Km of NH-79) to Gulabpura section of NH 79A and NH 79 in the state of Rajasthan (length 90.00 Km) from four to six lanes under National Highway Development Program Phase V on a design-build-finance-operate-transfer basis. A concession agreement dated 22 February 2017 was entered into between the NHAI and KGTL. Being a four to six laning project, tolling commenced in February 2018.

Concession Period: The concession period for this project is 20 years commencing from 21 February 2018. As per the concession agreement, KGTL is entitled to collect fees from project highway users, subject to the National Highways fee rules. The toll rates are revised annually on 01 April subject to and in accordance with such fee rules.

Operation and Maintenance: During the concession period, KGTL is required to operate and maintain the facilities relating to this project, and if required, modify, repair or otherwise make improvements to the project highway in accordance with the concession agreement.









The key details of Kishangarh Gulabpura Tollway Limited are as follows:

Particulars	Details
Project name	Kishangarh Gulabpura
Name of concessionaire	Krishangarh Gulabpura Tollway Limited
State	Rajasthan
NH	NH-79A & NH-79
PPP mode	Design, Build, Finance, Operate and Transfer ("DBFOT")
Execution of concession agreement date	February 22, 2017
Appointed date	February 21, 2018
Provisional Completion certificate date	February 21, 2018
Scheduled concession end date	February 20, 2038
Original concession period (yrs)	20 years
Expected concession end date	February 20, 2042
Tollable length (Kms)	90
Toll plaza (No.)	1

The shareholding pattern of Kishangarh Gulabpura Tollway Limited as on 30 September 2019 is as follows:

Name of shareholder	No. of Shares held	Stake%
IRB Infrastructure Developers Limited	12,43,49,994	99.99
Nominee of IRB Infrastructure Developers Limited	6	Less than 0.01
Total	**12,43,50,000**	**100**

For the list of approvals and disclosure on litigation please refer relevant annexure related to the

above SPV which have been spread between annexure I to IX

5.9 IRB Hapur Moradabad Tollway Limited ("IHMTL" or "Hapur Moradabad")

IRB Hapur Moradabad Tollway Limited ("**IHMTL**"), a wholly-owned subsidiary of the Sponsor, is operating this asset. The project has been awarded on the basis of a premium of INR 31.5 crores payable to the NHAI immediately after the third anniversary year of COD and for each subsequent year until the ninth anniversary of COD the premium will increase by an additional 3% as compared to the previous year. From the ninth anniversary of COD until the end of the concession period the premium will increase by an additional 8% each year as compared to the previous year. For this project, IHMTL was engaged to expand the Hapur Bypass (50.000 Km) to Moradabad (149.867 Km) Section of NH-9 (design length of 99.867 Km) in the state of Uttar Pradesh from four to six lanes under National Highway Development Program Phase V on a design-build-finance-operate-transfer basis. A concession agreement dated May 29, 2018 was entered into between the NHAI and IHMTL. Being a four to six laning project, tolling commenced in May 2019.

Concession Period: The concession period for this project is 22 years commencing from 28 May 2019. As per the concession agreement, IHMTL is entitled to collect fees from project highway users, subject to the National Highways fee rules. The toll rates are revised annually on 01 April subject to and in accordance with such fee rules.

Operation and Maintenance: During the concession period, IHMTL is required to operate and maintain the facilities relating to this project, and if required, modify, repair or otherwise make improvements to the project highway in accordance with the concession agreement.







The key details of IRB Hapur Moradabad Tollway Limited are as follows:

Particulars	Details
Project name	Hapur Moradabad
Name of concessionaire	IRB Hapur Moradabad Tollway Limited
State	Uttar Pradesh
NH	NH-24
PPP mode	Design, Build, Finance, Operate and Transfer ("DBFOT")
Execution of concession agreement date	May 29, 2018
Appointed date	May 28, 2019
Provisional Completion certificate date	May 28, 2019
Scheduled concession end date	May 27, 2041
Original concession period (yrs)	22 years
Expected concession end date	May 31, 2041
Tollable length (Kms)	99.87
Toll plaza (No.)	2

The shareholding pattern of IRB Hapur Moradabad Tollway Limited as on 30 September 2019 is as follows:

Name of shareholder	No. of Shares held	Stake%
IRB Infrastructure Developers Limited	18,94,99,994	100
Nominee of IRB Infrastructure Developers Limited	6	Less than 0.01
Total	**18,95,00,000**	**100**

For the list of approvals and disclosure on litigation please refer relevant annexure related to the above SPV which have been spread between annexure I to IX

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6. Industry Overview

6.1 Indian Economy

India has emerged as the fastest growing major economy in the world and is expected to be one of the top three economic powers of the world over the next 10-15 years, backed by its strong democracy and partnerships.

Market Size:

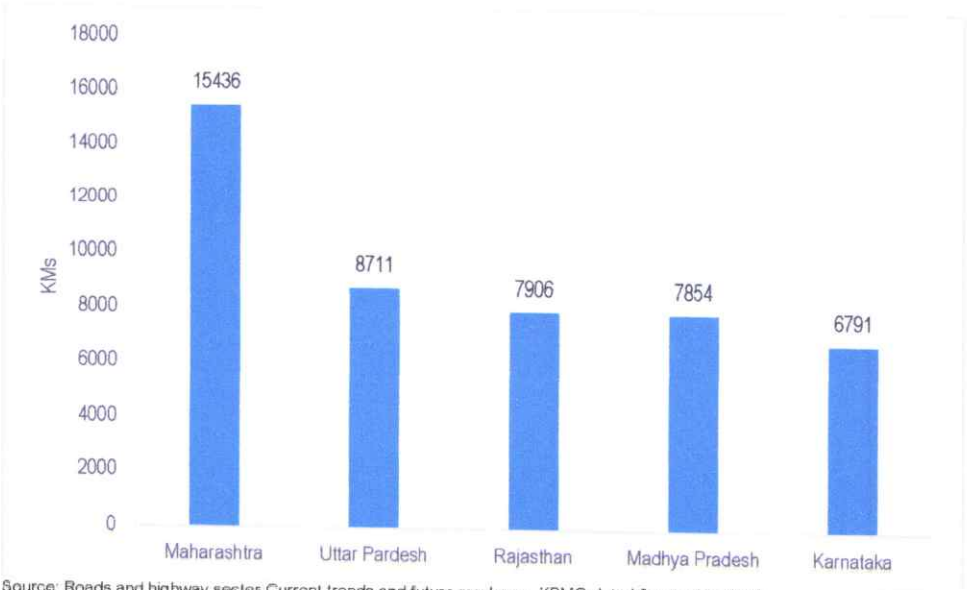
India's nominal GDP growth rate is estimated at 12 per cent in 2019-20. The estimate for 2018-19 was 11.5 per cent. During Q1 of 2019-20, GDP (at constant 2011-12 prices) grew by 5 per cent. India has retained its position as the third largest startup base in the world with over 4,750 technology startups, with about 1,400 new start-ups being founded in 2016, according to a report by NASSCOM.

6.2 Road and Highway Sector in India (Sector background)

India with total road network of 5.5 million Km comprises of national & state highways and urban & rural roads. Out of this around 1.14 lakh km are National Highways (NHs). National highways account for 2% of the total road network and carry over 40% of total traffic. The density of India's highway network -- at 0.66 Km of roads per square kilometer of land – is like that of the United States (0.65) and much greater than China's (0.16) or Brazil's (0.20).

The construction of highways reached 9,829 Km during 2017-18, with an all-time high average pace of 27 km per day. This represents 20% growth over 2016-17, when 8,231 km of highways were constructed. During 2017-18, 17,055 km road length was awarded as against 15,948 km in the previous year. The construction of national highways entailed an expenditure of USD 18 billion during 2017-18.

State Government also have a significant role to play in ensuring connectivity beyond NHs – development of Non NHs roads like SH, MDR, Other District Roads (ODR), ensuring last mile connectivity, providing strategic locations for logistic facilities and passenger transport amenities. States have varying levels of maturity in terms of road infrastructure development
(Source: KPMG report, PIB release)



Source: Roads and highway sector-Current trends and future road map, KPMG dated September 2019

https://assets.kpmg/content/dam/kpmg/in/pdf/2019/09/india-technology-issues-trends-roads-highways.pdf

India has a well-developed framework for Public-Private-Partnerships (PPP) in the highway sector. Asian Development Bank ranked India at first spot in PPP operational maturity and also designated India as a developed market for PPPs.

6.3 Sector Trends

At present, the focus of the sector is not only on efficient award and construction of roads, but also on smooth movement of passenger and freight through enhanced logistics efficiency.

- Bharatmala Pariyojana Programme:

  Approval of the major highway sector programme Bharatmala Pariyojana Phase I by the Cabinet in October 2017 reiterated the focus is on optimising efficiency of freight and passenger movement across the country.

Salient features of the Bharatmala Pariyojana

Sr. No	Components	Length-km	Outlay-Rs crore
1	Economic corridors development	9000.0	120000.0
2	Inter-corridor and feeder roads	6000.0	80000.0
3	National corridors efficiency improvements	5000.0	100000.0
4	Border and international connectivity roads	2000.0	25000.0
5	Coastal and port connectivity roads	2000.0	20000.0
6	Expressways	800.0	40000.0
	Total	24800.0	385000.0
	Balance Road works under NHDP	10000.0	150000.0
	Total		**535000.0**

Source: Roads and highway sector-Current trends and future road map, KPMG dated September 2019
https://assets.kpmg/content/dam/kpmg/in/pdf/2019/09/india-technology-issues-trends-roads-highways.pdf

- Implementation of important projects and expressways:

  Several important projects have been taken up in recent years like:

  - Char Dham Mahamarg Vikas Pariyojana which envisages development of easy access to the four dhams in India - Gangotri, Yamunotri, Kedarnath and Badrinath.
  - Setu bharatnam which replace level crossings on NHs with ROBs/RUBs. This aims to construct 174 such structures.

- Road Transport and Safety:

  Road transport is vital to India's economy. India's road network carries more than 60 per cent of its freight and about 85 per cent of passenger traffic. A number of measures have been undertaken to ensure easy and economic passenger and freight movement in recent years.

Some of such measures are revision of axle weight to bring down logistics cost, launch of ranking systems for toll plazas, revision in maximum speed of vehicles, encouraging development of Multi Modal Logistic Parks (MMLPs) and Inter modal stations for passenger transport. Road safety has been taken up as a priority. A number of initiatives have been taken regarding this, such as black spots rectification, setting up driver training institutes, SukhadYatra app and toll-free emergency number, capacity building of officers, etc.

- Increasing use of Information Technology (IT) applications

  IT applications are being progressively mainstreamed in all aspects of the road sector. Some major IT applications are; use of Electronic Toll Collection (ETC), development of Bidder Information Management System, Bhoomirashi, etc.

- Initiatives related to augmentation of existing funding sources

  There is a gap between the actual funding required in the sector, and the funding which has been incoming in the sector. This funding gap needs to be reduced by exploring alternate sources of financing. A number of options have been taken in this direction such as raising capital from Life Insurance Corporation, Employee Provident Fund Association and issuing rupee-denominated masala bonds in London Stock Exchange.

- Emphasis on green initiatives

  A number of green initiatives have also been taken up in the recent years to check the issue of environment pollution. Battery operated vehicles, and vehicles driven on methanol and ethanol have been exempted from permit. A Green Highway Division has been set up by NHAI to carry out plantation along highways and medians. Union Budget 2019-20 to encourage adoption of electric vehicles (EVs).

6.4 Momentum in Expansion of Roadways

- Highway construction in India increased at 23.25 per cent CAGR between FY14-18. In FY18, 9,829 Km of highways were constructed with an expenditure of INR 1.16 trillion (USD 18.05 billion). The Government of India aims to construct 65,000 Km of national highways at the cost of INR 5.35 lakh crore (USD 741.51 billion) by 2022.



Source: Road Network In India, ibef.org dated September 2019 https://www.ibef.org/download/Roads-September-2019.pdf

- The Government of India has set a target for construction of 10,000 Km national highway in FY19. During April-December 2018 a total of length of 6,715 Km of national highways were constructed.

- Highway construction revenues is forecasted to grow at a CAGR of 20 per cent by 2020. In March 2019, National Highway projects worth INR 1,10,154 crore were inaugurated. The Road Ministry is planning to build 12,000 Km highways by end of the 2019.

- The Special Accelerated Road Development Programme for the North Eastern region (SARDP-NE) is aimed at developing road connectivity between remote areas in the North East with state capitals and district headquarters.

- In April 2018, the Ministry of Road Transport and Highways approved Bharatmala Pariyojana Phase-I which includes improvement of 3,528 Km road in North East region from 2017-18 to 2021-22.

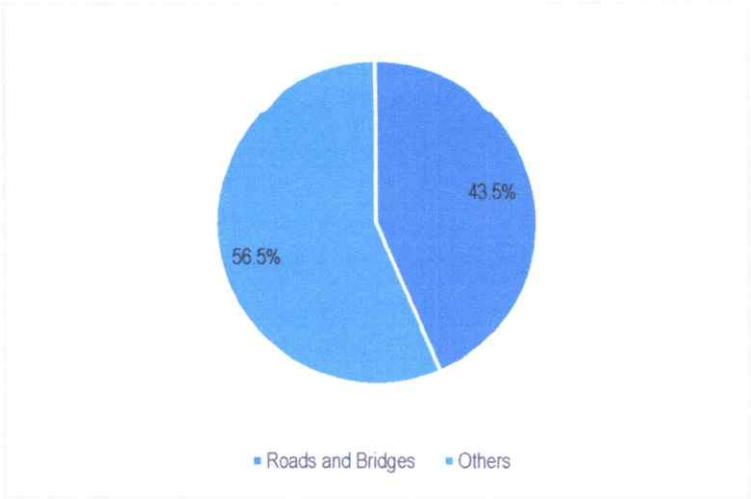
- The road transport and highways ministry is lending the final touches to a proposed infrastructure investment trust (InvIT), to be helmed by the National Highways Authority of India (NHAI), for a number of projects.

- The InvIT plan primarily involves picking highways with high-traffic volumes and bundling 3-4 of them under a trust or a special purpose vehicle (SPV). It will invite investors to invest in capital market and earn return based on its performance. The InvIT aims to help monetise NHAI's road assets by mobilising resources through capital market.

6.5 Private Financing under Public Private Partnership (PPP)

PPP framework was introduced to increase the efficiency of infrastructure projects through a long term collaboration between the public sector and private business.

Total PPP Projects in India (as on May 03, 2019)



Source: Road Network In India, ibef.org dated September 2019 https://www.ibef.org/download/Roads-September-2019.pdf

6.6 Evolution of PPP in road sector in India

PPP in the road sector in India has passed through a number of distinct phases:

- Build- Operate-Transfer:
  It is a form of project financing, wherein a private entity receives a concession from the private or public sector to finance, design, construct, own, and operate a facility stated in the concession contract. This enables the project proponent to recover its investment, operating and maintenance expenses in the project. But significant improvements in private participation were observed. Private sector participation in BOT projects peaked till Financial Year (FY)12. But a steep decline in PPP participation was observed in FY13 and FY14 with many viable projects unable to attract even a single bid.

- Hybrid Annuity Mode (HAM):
  HAM was introduced to reinvigorate PPP participation in the road sector after interest in BOT projects waned. It has mainly provided advantages to the developers in form of reduction in Initial funding requirements in PPP projects as 60 per cent of the bid project cost is to be arranged by the concessionaire. This reduces the initial equity requirement and encourages participation by mid-sized developers to invest in PPP projects. Further, debt requirements go down from 70 per cent to around 42 per cent of project cost. The introduction and strong implementation of HAM has seen HAM become the preferred PPP mode in India.

- Toll- Operate- Transfer (TOT)
  TOT is a model for monetising operational national highway projects where investors make a lump sum payment in return for long-term toll collection rights backed by a sound tolling system. Three TOT bundles have been floated by NHAI so far out of which financial closure of one bundle was achieved in August 2018 with a highest bidder bid at least 1.5 times the IECV and for one bundle bid process is ongoing.

  The National Highways Authority of India is looking to tweak the BOT framework as the Government plans to revive the BOT model to make it more attractive to private investors and lenders.

6.7 Policy Initiatives

- The Prime Minister's Gram Sadak Yojana (PMGSY) is a scheme for development of rural roads in India. The Government of India has succeeded in providing road connectivity to 85 per cent of rural habitations and all villages are expected to be connected through a road network by 2019. As per Union Budget 2019-20, Pradhan Mantri Gram Sadak Yojana (PMGSY) has brought many socio economic gains in the rural areas.

- Government of India has set up the India Infrastructure Finance Company (IIFCL) to provide long-term funding for infrastructure projects. As per the Union Budget 2019-20, government proposed to permit investments made by FIIs/FPIs in debt securities issued by Infrastructure Debt Fund – Non-Bank Finance Companies (IDF-NBFCs) to be transferred/sold to any domestic investor within the specified lock-in period.

- The Bhoomi Rashi portal of Ministry of Road Transport & Highways allows for totally digital and paper-less processing of land acquisition cases, and has resulted in transparent, quick, corruption-free and error-free handling of land acquisition cases.

- The Bidder Information Management System (BIMS) is aimed at streamlining the process of pre-qualification of bidders for EPC Mode of contracts for National Highway works with enhanced transparency and objectivity.

- The Ministry of Road Transport and Highway has started allocating funds under CRF scheme to state/ UTs for development of State roads (non-Rural roads) and roads of economic importance. In 2019-20, the transfer from CRIF is estimated at INR 54,539 crore (USD 7.80 billion) which is a 6 per cent increment from the revised estimates of INR 51,679 crore (USD 7.39 billion) in 2018-19.

- Some of the green initiatives are exemption of electric, ethanol and methanol vehicles from permit, emission standards for construction equipment vehicles and tractors, linking of PUC data (emission related data) with the VAHAN database etc.



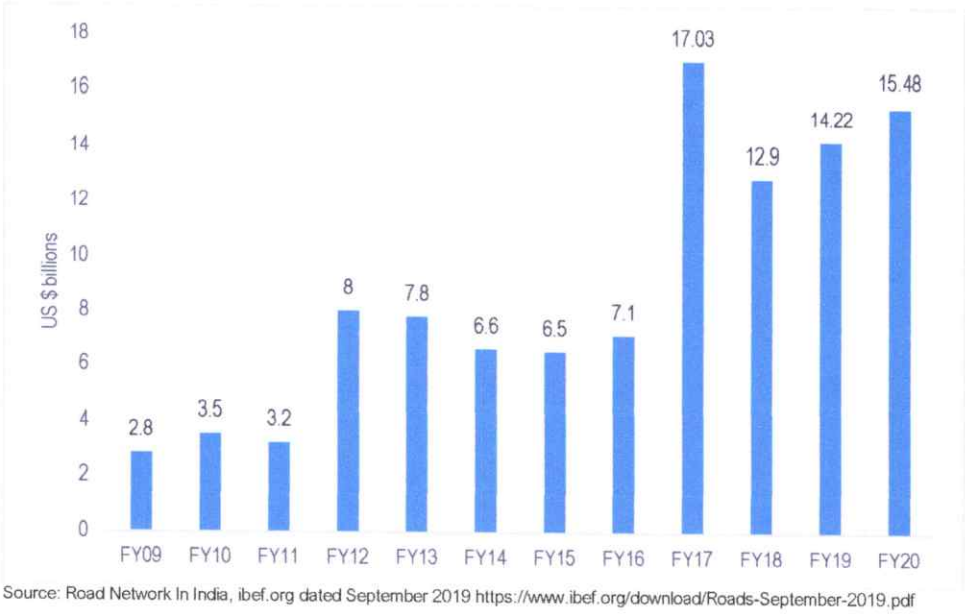
Source: Road Network In India, ibef.org dated September 2019 https://www.ibef.org/download/Roads-September-2019.pdf

6.8 Budgetary Outlay for Roads

Roadways has been the key focus area for budget allocations over the years. As per Union Budget 2019-20, the government provided an outlay of INR 1.12 trillion (USD 15.48 billion) under the Ministry of Road Transport and Highways.

Between FY09 and FY19, budget outlay for road transport and highways increased at a robust CAGR of 16.82 per cent.

Outlay for roads under respective Union Budgets (USD billion)



Source: Road Network In India, ibef.org dated September 2019 https://www.ibef.org/download/Roads-September-2019.pdf

6.9 Way Forward (Outlook)

- The financial year 2018-19 was declared the 'Year of Construction' by the Ministry of Road Transport & Highways (MoRTH). This was also a year for consolidating the gains accrued from the major policy decisions taken in the previous years.

- National Highway Development Project (NHDP) is a 7-phase project amounting to USD 60 billion. The projects aim to widening, upgradation and rehabilitation of 47,054 Km of national highways.
- In the coming years, NHAI's increased delegation autonomy along with Bharatmala Pariyojana initiative is expected to enable growth in awarding momentum. Overall, more than 61,300 Km of road projects, costing over 6.48 lakh crore, are in progress under the Bharatmala Pariyojana, which will be awarded to the private players in the coming years under different formats.

- A paradigm shift is expected from highway construction/ development to provision of quality service to highway users, both for freight and passenger transport. Enhanced use of technology applications will be a key requirement here.

- Promoting sustainability will be another significant focus area with increased reliance on e-mobility, use of biofuels and eco-friendly development/construction. Further, augmenting existing sources of finance in order to complete the required highway construction in the next five to six years shall also be an important consideration.

- Investment, merger and acquisition (M&A) activity in the roads sector has picked up pace this year as foreign investors pump in millions of dollars to acquire operating roads and developers look to sell assets to pare debt. About INR 1.4 trillion is estimated to be invested by the private sector between 2018-22 to build new road assets.

7. Valuation Approach

The standard of value used in our analysis is fair value which is often defined as the price, in terms of cash or equivalent, that a buyer could reasonably be expected to pay, and a seller could reasonably be expected to accept, if the business were exposed for sale on the open market for a reasonable period of time, with both buyer and seller being in possession of the pertinent facts and neither being under any compulsion to act.

There are several commonly used and internationally accepted methods for determining the fair value of companies, which have been considered in the present case, to the extent relevant and applicable. Accordingly, we have carried out valuation of the SPVs as on 30 September 2019.

It should be understood that the valuation of any company or its assets is inherently subjective and is subject to certain uncertainties and contingencies, all of which are difficult to predict and are beyond our control. In performing our analysis, we made assumptions with respect to industry performance and general business and economic conditions, many of which are beyond the control of the SPVs. In addition, this valuation will fluctuate with changes in prevailing market conditions, the conditions and prospects, financial and otherwise, of the SPVs, and other factors which generally influence the valuation analysis.

The application of any particular method of valuation depends on the purpose for which the valuation is done. Although different values may exist for different purposes, it cannot be too strongly emphasized that a valuer can only arrive at one value for one purpose. Our choice of methodology of valuation has been arrived at using usual and conventional methodologies adopted for transactions of a similar nature and our reasonable judgment, in an independent and bona fide manner is based on our previous experience of assignments of a similar nature.

In respect of going concerns, certain valuation techniques have evolved over time and are commonly in vogue. These can be broadly categorised as follows:

Market Price (MP) Method

The market price of an equity share as quoted on a Stock Exchange is generally considered as the value of the equity shares of that company where such quotations are arising from the shares being regularly and freely traded in, subject to the element of speculative support that may be inbuilt in the value of the shares.

Equity shares of the SPVs are not listed on any stock exchange. Hence, this method has not been considered for the purpose of valuation.

Comparable Companies Market Multiple ("CCM") Method

Under this method, the value of the equity shares of a company/ business undertaking is arrived at by using multiples derived from valuations of comparable companies, as apparent through stock market valuations of listed companies. This valuation is based on the principle that market valuations, taking place between informed buyers and informed sellers, incorporate all factors relevant for the assessment of the value of the company.

Relevant multiples need to be chosen carefully and adjusted for differences between the circumstances. We have not considered this method in our valuation analysis in the absence of closely comparable listed companies having similar geographical locations, stage of growth, size, terms and profitability.

Comparable Companies Transaction Multiple ("CTM") Method

Under the CTM method, the value of the equity shares of a company/ business undertaking is arrived

at by using the prices implied by reported transactions/ deals of comparable companies.

Relevant multiples need to be chosen carefully and adjusted for differences between the circumstances.

We have not been able to identify any comparable company to the SPVs for which a transaction has taken place in the last one year. We believe that the older transactions are not relevant for our valuation considering share price movements and changes in the macro-economic situation in India. Also, transactions multiples as times tend to be biased due to premium which may be embedded in the price for strategic benefits and synergies which an acquirer may perceive in the target. Accordingly, we have not applied the Comparable Transactions Multiple Method for the valuation of the SPVs.

Net Asset Value (NAV) Method

The asset-based valuation technique is based on the value of the underlying net assets of the business either on a book value basis or realisable value basis or replacement cost basis. The cost approach assumes that a prudent investor would pay no more for an entity than the amount for which he could replace or re-create it or an asset with similar utility. Under a going-concern premise, the cost approach usually is best suited for use in valuing asset-intensive companies, such as investment or real estate holding companies, or companies with unstable or unpredictable earnings.

In the present case of valuing the SPVs, we have not considered this method as the underlying earnings are fairly stable, and a going concern business plan has been provided by the Management.

Discounted Cash Flows (DCF) Method

Under the DCF method, the projected free cash flows to the firm are discounted at the weighted average cost of capital. The sum of the discounted value of such free cash flows is the value of the firm.

Using the DCF analysis involves determining the following:

Estimating future free cash flows:

Free cash flows are the cash flows expected to be generated by the company that is available to all providers of the company's capital — both debt and equity.

Appropriate discount rate to be applied to cash flows, i.e. the cost of capital:

This discount rate, which is applied to the free cash flows, should reflect the opportunity cost to all the capital providers (namely shareholders and creditors), weighted by their relative contribution to the total capital of the company. The opportunity cost to the capital provider equals the rate of return the capital provider expects to earn on other investments of equivalent risk.

The value so computed by discounting the cash flows to the firm is adjusted for net borrowings, surplus asset including investments, minority interests, equity instruments granted as part of the share-based payment, and other matters to arrive at an aggregate equity value of the company.

In the present case, we have been provided with the financial projections of all the 9 SPVs. As such, we have considered this method for valuing the SPVs.

8. Valuation Analysis

Discounted Cash Flow Method (Free Cash Flows to Firm)

Using the DCF analysis involves determining the following:

Estimating future free cash flows:
Free cash flows are the cash flows expected to be generated by each individual SPV and available to the capital providers in each SPV has been estimated based on projected financial information provided by the Management. Projections provided by the Management are only the best estimates of each individual SPV's growth and sustainability of profitability margins. Although we have reviewed the financial forecast provided by the Management for consistency and reasonableness, we have not specifically validated these financial projections and have relied on the estimates provided by the Management.

Appropriate discount rate to be applied to cash flows i.e. the cost of capital:
This discount rate, which is applied to the free cash flows, should reflect the opportunity cost to all the capital providers (namely shareholders and creditors), weighted by their relative contribution to the total capital for each individual SPV. The opportunity cost to the capital provider equals the rate of return the capital provider expects to earn on other investments of equivalent risk.

Arriving at equity value from enterprise value:
The fair value basis of combined equity of the 9 SPVs for this purpose would have to be determined after taking into consideration all the factors and methodologies mentioned hereinabove. As explained above, we have given 100% weightage to the DCF methodology to arrive at the EV of a specific SPV.

As a next step, we have then made adjustments for debt, debt-like-items, surplus assets, cash and cash equivalents and other adjustments to arrive at the value of equity in each SPV. Later, we have adopted a sum of parts methodology and arrived at the value of 100% interest in equity (on a control, marketable basis) for the entire portfolio of 9 SPVs by adding the equity value of the individual SPV

The key assumptions under the DCF Method

For the DCF analysis, we have relied on the projected financials of the SPVs provided by the Management based on their best estimates on the growth and sustainability of profitability margins of the individual SPVs. Please note that though we have reviewed the financial forecast provided by the Management for consistency and reasonableness based on site visits, data available in public domain and traffic consultant reports provided by the Management for each SPV, we have not independently investigated or otherwise verified the data and key inputs estimated by the Management for all the 9 SPVs. Nothing has come to our attention to indicate that the information provided by the Management had material mis-statements or would not afford reasonable grounds upon which to base our Report. The Free Cash Flows to Firm ("FCFF") have been calculated for each individual SPV as on the Valuation Date based on the Financial Projections.

The key assumptions and the basis for the valuation are explained in detail below:

<u>Discounting Factor</u>
The discount rate considered for arriving at the present value of the free cash flows to the firm is the Weighted Average Cost of Capital ("WACC"). The WACC for the SPVs as on the Valuation Date are derived as follows:

WACC= (ke x we) + (kd x (1 – t) x wd)
where,

we = weight of equity in the capital structure

wd = weight of debt in the capital structure

ke = cost of equity

kd = cost of debt, and

t = effective tax rate

Cost of Equity ("ke")

The cost of equity is computed using the Capital Asset Pricing Model (CAPM) as shown below:

ke = rf + β (rm-rf) where

ke = Cost of Equity,

rf = Risk Free Return,

β = Beta, a measure of Market Risk

rm = Market Return

Cost of Equity is estimated using the following factors:

- Risk Free Return (rf) – The risk free rate (rf) is the return on an investment with zero risk where actual returns are equal to the expected return. Rf at 6.5% has been considered for each SPV based on the 10 Year normalized Wholesale Debt Market Zero Coupon Bond Yield as of the Valuation Date

- Beta (β) – Beta has been computed by re-levering the average asset beta of companies in the construction and engineering segment and having more than 50% revenues from the road infrastructure. Beta has been considered based on 1 year daily trailing Beta of comparable companies, relevered for each of the SPV specific debt to equity ratio and effective taxes. Refer Appendix X for a list of comparable companies

- Debt to Equity Ratio (DER) – The DER of peers display significant variation owing to difference in the stage of operations and maturity. Accordingly, DER was concluded based on management input for debt to equity ratio of each individual SPV over the projected period.

- Income Tax – Effective tax rate has been applied after considering 80IA and 35AD benefits and applicable MAT credit (if any) in the projected period as represented to us by the Management for each SPV.

- Equity Risk Premium (ERP) – ERP is considered at 7.0% for each SPV.

Cost of Debt ("kd")

Marginal cost of raising debt for each SPV is considered at 9.25 per cent based on Management input. Management has represented that the debt can be refinanced at this rate of interest due to the following reasons:

• The company has past experience in refinancing debt for projects which have achieved COD at

such rate.
• The rating improvement due to transfer of Projects to InvIT will further aid in reducing the interest rate
• Pooling of cashflows at InvIT level with provide better comfort to lenders
The WACC Calculation for the SPVs is based on the Average DER of each SPV over the projected period.

Other notes

- Mid-year convention in arriving at the present value of free cash flows is considered appropriate
- Management has represented that the probability of devolvement of contingent liabilities is insignificant and accordingly no adjustment was required to be carried out in the valuation of the 9 SPVs.

Debt: Based on the 30 September 2019 financials, there are consolidated external borrowing of INR 9,842.1 crores across the 9 SPVs. There is additional debt in the form of subordinated debt (INR 2,974.5 crores) and sponsor debt (INR 1,269.8 crores) which Management has represented that they are quasi equity and hence have not been included in the debt but rather classified as equity. Management has further represented that out of the outstanding external debt, INR 3,000 crores shall be repaid on transaction date using sub-debt from the Trust. Accordingly, proforma debt is INR 6,842.1 crores. This has been reduced from the combined EV for the computation of combined equity value of the 9 SPVs.

Debt-like-items: Certain items like capital creditors and dues to related parties which were shown as part of current liabilities on the balance sheets of the SPVs have been reclassified as debt-like-item and accordingly reduced from current liabilities. The combined value of such debt-like-items is INR 584.6 crores. This has been reduced from the combined EV for the computation of combined equity value of the 9 SPVs.

Surplus assets: There are advances to related parties which are a part of the current assets of the SPVs. Such advances and other related items have been considered as surplus assets and have accordingly been removed from current assets. The combined value of such surplus assets is INR 490.9 crores. This has been added to the combined EV for the computation of combined equity value of the 9 SPVs.

Cash and cash equivalents: There is approximately INR 28.1 crores of cash and cash equivalent on the combined balance sheets of the 9 SPVs. This has been added to the to the combined EV for the computation of combined equity value of the 9 SPVs.

Other adjustments: There are other working capital items primarily comprises loans, current tax assets, other financial liabilities, trade payables, provisions and other current liabilities on the balance sheets of the 9 SPVs to the tune of INR 1,396.5 crores as of 30 September 2019. Management has represented us that these have been settled using sponsor debt. Hence, we have not reduced the free cash flow to firm for the computation of enterprise value of the 9 SPVs.

9. Valuation of the SPVs

9.1 IRB Westcoast Tollway Limited

Key Inputs in Projections:
The key inputs of the projections provided by the Management supported by independent traffic as

follows:

a) Revenue

Revenue is expected to grow at an average rate of 12% in the steady state forecasted period based on financial plan provided by management which is based on traffic study. However, there is a deviation in the revenue as per management plan as compared to traffic study report. The traffic numbers have been retained as per the traffic study report but there is deviation due to difference in toll rate assumptions and date for achievement of COD.

b) Traffic Volume

Traffic volume as received from the Management supported by traffic study report carried out by GMD Consultants dated June 2018 are considered.

c) Toll rates

- Since tolling has not yet commenced, standard NHAI WPI based tolling calculation has been used to arrive at the toll rates for this asset. The length used for each toll plaza has been used from concession agreement.

- WPI has been projected to grow by 5% for the projected period.

d) Periodic Maintenance & Routine Maintenance Costs

Estimates for projected Periodic Maintenance & Routine Maintenance cost from the Management are considered

DCF Method:

- The key assumptions and other key inputs, mentioned on the previous paragraphs, as provided by the Management are considered in the projections.

- The projections provided by the Management, based on Independent traffic, are only the best estimates of growth and sustainability of profitability margins. The financial forecast provided by the Management were reviewed for consistency and reasonableness and have relied on them.

- The explicit period has been considered from October 1, 2019 to March 31, 2046.

- The tax has been calculated as per the provisions of the Income Tax Act, 1961. The interest expense is adjusted in the same for arriving at the tax computation under FCFF.

- The assumptions for Weighted average cost of capital is as follows:

WACC calculation		
		Basis
Risk free rate of return	6.5%	10yrs ZCYC
India risk premium	7.0%	
Beta	1.0	Peer median of 1 yr daily beta
Alpha	(0.5)%	Valuer judgement
Cost of Equity	**13.2%**	
Cost of Debt	9.3%	Management input
Tax Rate	17.5%	Rates as per IT Act as applicable here
After Tax Cost of Debt	**7.6%**	
Debt/Equity	2.33	Management input
Debt to Capital %	70.0%	
Equity to Capital %	30.0%	
Weighted Average Cost of Capital	**9.3%**	
Marginal tax rate	17.5%	*MAT rates as per IT applicable here*

- The Business/ Enterprise Value of IWTL as on September 30, 2019 is arrived at INR 3,304.8 crores

Discounted cash flow														
INR crores	**FY2020** 6 months	**FY2021** 12 months	**FY2022** 12 months	**FY2023** 12 months	**FY2024** 12 months	**FY2025** 12 months	**FY2026** 12 months	**FY2027** 12 months	**FY2028** 12 months	**FY2029** 12 months	**FY2030** 12 months	**FY2031** 12 months	**FY2032** 12 months
Net Revenue	56.3	143.8	183.8	205.5	230.6	255.1	283.6	316.1	353.4	390.0	432.7	479.6	534.2
yoy growth	*n/a*	*156%*	*28%*	*12%*	*12%*	*11%*	*11%*	*11%*	*12%*	*10%*	*11%*	*11%*	*11%*
EBITDA	**45.5**	**121.2**	**160.2**	**140.0**	**163.9**	**185.8**	**255.8**	**285.9**	**323.4**	**248.5**	**360.1**	**446.7**	**500.2**
EBITDA margin	*81%*	*84%*	*87%*	*68%*	*71%*	*73%*	*90%*	*90%*	*92%*	*64%*	*83%*	*93%*	*94%*
Depreciation	8.4	21.4	27.4	30.6	34.3	38.0	42.2	47.0	52.6	58.0	64.4	71.4	79.5
EBIT	37.1	99.8	132.8	109.4	129.6	147.8	213.6	238.9	270.8	190.5	295.7	375.3	420.7
EBIT margin	*66%*	*69%*	*72%*	*53%*	*56%*	*58%*	*75%*	*76%*	*77%*	*49%*	*68%*	*78%*	*79%*
Less: tax on EBIT	(6.5)	(17.4)	(23.2)	(19.1)	(22.6)	(25.8)	(37.3)	(41.7)	(47.3)	(33.3)	(51.7)	(65.6)	(73.5)
Change in working capital	12.8	-	-	-	-	-	-	-	-	-	-	-	-
Capex	(255.7)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	0.0	(0.0)	0.0	-	0.0	0.0	0.0
Free cash flows to the Firm	**(203.9)**	**103.8**	**137.0**	**120.9**	**141.2**	**160.0**	**218.5**	**244.2**	**276.1**	**215.2**	**308.5**	**381.1**	**426.7**
Continuing value													
Discounting period (mid-period)	0.25	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00	11.00	12.00
Discount factor	0.98	0.91	0.84	0.77	0.70	0.64	0.59	0.54	0.49	0.45	0.41	0.38	0.34
Present value of cash flows as at 30 Sep 2019	**(199.4)**	**94.9**	**114.6**	**92.6**	**98.9**	**102.5**	**128.1**	**131.0**	**135.5**	**96.6**	**126.7**	**143.2**	**146.7**

Discounted cash flow														
INR crores	**FY2033** 12 months	**FY2034** 12 months	**FY2035** 12 months	**FY2036** 12 months	**FY2037** 12 months	**FY2038** 12 months	**FY2039** 12 months	**FY2040** 12 months	**FY2041** 12 months	**FY2042** 12 months	**FY2043** 12 months	**FY2044** 12 months	**FY2045** 12 months	**FY2046** 12 months
Net Revenue	592.1	654.0	723.8	802.3	887.2	983.2	1,084.1	1,198.4	1,319.2	1,457.4	1,609.9	1,775.8	1,949.4	352.9
yoy growth	*11%*	*10%*	*11%*	*11%*	*11%*	*11%*	*10%*	*11%*	*10%*	*10%*	*10%*	*10%*	*10%*	*(82)%*
EBITDA	**555.5**	**606.1**	**520.3**	**762.3**	**848.1**	**943.1**	**894.6**	**1,103.0**	**1,275.0**	**1,411.0**	**1,561.2**	**1,724.5**	**1,895.7**	**343.7**
EBITDA margin	*94%*	*93%*	*72%*	*95%*	*96%*	*96%*	*83%*	*92%*	*97%*	*97%*	*97%*	*97%*	*97%*	*97%*
Depreciation	88.1	97.3	107.7	119.4	132.0	146.3	161.3	178.4	196.3	216.9	239.6	264.3	290.1	52.5
EBIT	467.4	508.8	412.5	642.9	716.1	796.8	733.2	924.7	1,078.7	1,194.1	1,321.6	1,460.2	1,605.6	291.1
EBIT margin	*79%*	*78%*	*57%*	*80%*	*81%*	*81%*	*68%*	*77%*	*82%*	*82%*	*82%*	*82%*	*82%*	*82%*
Less: tax on EBIT	(81.7)	(88.9)	(72.1)	(112.3)	(125.1)	(139.2)	(128.1)	(161.6)	(188.5)	(208.6)	(230.9)	(255.1)	(280.5)	(50.9)
Change in working capital	-	32.2	-	-	-	-	-	-	-	-	-	-	-	-
Capex	(0.0)	0.0	0.0	0.0	(0.0)	(0.0)	(0.0)	0.0	(0.0)	-	-	-	-	-
Free cash flows to the Firm	**473.8**	**549.4**	**448.2**	**650.0**	**723.0**	**803.9**	**766.5**	**941.5**	**1,086.5**	**1,202.4**	**1,330.3**	**1,469.3**	**1,615.2**	**292.8**
Continuing value														
Discounting period (mid-period)	13.00	14.00	15.00	16.00	17.00	18.00	19.00	20.00	21.00	22.00	23.00	24.00	25.00	26.00
Discount factor	0.31	0.29	0.26	0.24	0.22	0.20	0.18	0.17	0.15	0.14	0.13	0.12	0.11	0.10
Present value of cash flows as at 30 Sep 2019	**149.0**	**158.1**	**118.0**	**156.6**	**159.3**	**162.1**	**141.4**	**158.9**	**167.7**	**169.8**	**171.9**	**173.7**	**174.7**	**29.0**

Valuation Conclusion	
Present value of cash flows	3,302.3
Present value of terminal value	-
Release of WC at the end of concession period	2.5
Enterprise value	**3,304.8**

9.2 Solapur Yedeshi Tollway Limited

Key Inputs in Projections:

The key inputs of the projections provided by the Management supported by independent traffic as follows:

a) Revenue

Revenue is expected to grow at CAGR of 11%-12% over a period of 26 years driven by traffic study report and financial plan provided by management. However, management has represented that there is deviation from Traffic study report because the financial plan of management considers the actual traffic numbers as base and projections are made considering the same growth numbers from the Traffic study.

b) Traffic Volume

Traffic volume as received from the Management supported by Traffic report carried out by Tractebel Engineering Pvt. Ltd are considered.

c) Toll Rates

- The current toll rates provided by the management is in accordance with toll notifications issued by NHAI shared by the management.
- The concession agreements and the toll notification specify the toll calculation process for every toll plaza of the Asset. This allows changes in toll levels at each of the plazas to be directly linked to inflation (WPI) changes.

d) Periodic Maintenance & Routine Maintenance Costs

Estimates for projected Periodic Maintenance & Routine Maintenance cost from the Management are considered.

DCF Method:

- The key assumptions and other key inputs, mentioned on the previous paragraphs, as provided by the Management are considered in the projections.
- The projections provided by the Management, based on Independent traffic and technical studies, are only the best estimates of growth and sustainability of profitability margins. The financial forecast provided by the Management were reviewed for consistency and reasonableness and have relied on them.
- The explicit period has been considered from October 1, 2019 to March 31, 2045
- The tax has been calculated as per the provisions of the Income Tax Act, 1961. The interest expense is adjusted in the same for arriving at the tax computation under FCFF.
- The assumptions for Weighted average cost of capital is as follows:

WACC calculation		
		Basis
Risk free rate of return	6.5%	10yrs ZCYC
India risk premium	7.0%	
Beta	1.0	Peer median of 1 yr daily beta
Alpha	(0.5)%	Valuer judgement
Cost of Equity	**13.2%**	
Cost of Debt	9.3%	Management input
Tax Rate	17.5%	Rates as per IT Act as applicable here
After Tax Cost of Debt	**7.6%**	
Debt/Equity	2.33	Management input
Debt to Capital %	70.0%	
Equity to Capital %	30.0%	
Weighted Average Cost of Capital	**9.3%**	
Marginal tax rate	17.5%	*MAT rates as per IT applicable here*

- The Business/ Enterprise Value of SYTL as on September 30, 2019 is arrived at INR 1,734.5 crores.

Discounted cash flow													
INR crores	**FY2020** 6 months	**FY2021** 12 months	**FY2022** 12 months	**FY2023** 12 months	**FY2024** 12 months	**FY2025** 12 months	**FY2026** 12 months	**FY2027** 12 months	**FY2028** 12 months	**FY2029** 12 months	**FY2030** 12 months	**FY2031** 12 months
Net Revenue	36.3	77.8	87.6	97.6	109.9	122.7	137.1	152.9	172.7	191.3	213.8	239.2
yoy growth	*1%*	*12%*	*12%*	*11%*	*13%*	*12%*	*12%*	*12%*	*13%*	*11%*	*12%*	*12%*
EBITDA	**24.2**	**62.5**	**71.4**	**80.6**	**92.1**	**85.6**	**98.1**	**111.9**	**151.0**	**168.6**	**190.0**	**214.1**
EBITDA margin	*67%*	*80%*	*82%*	*83%*	*84%*	*70%*	*72%*	*73%*	*87%*	*88%*	*89%*	*90%*
Depreciation	4.3	10.8	12.2	13.6	15.3	17.1	19.1	21.3	24.0	26.6	29.8	33.3
EBIT	19.8	51.7	59.2	67.0	76.8	68.5	79.0	90.7	127.0	142.0	160.3	180.8
EBIT margin	*55%*	*66%*	*68%*	*69%*	*70%*	*56%*	*58%*	*59%*	*74%*	*74%*	*75%*	*76%*
Less: tax on EBIT	(3.5)	(9.0)	(10.3)	(11.7)	(13.4)	(12.0)	(13.8)	(15.8)	(22.2)	(24.8)	(28.0)	(31.6)
Change in working capital	13.2	-	-	-	-	-	-	-	-	-	-	-
Capex	-	(0.0)	(0.0)	0.0	(0.0)	-	0.0	(0.0)	0.0	(0.0)	0.0	-
Free cash flows to the Firm	**33.9**	**53.5**	**61.1**	**68.9**	**78.6**	**73.6**	**84.3**	**96.1**	**128.8**	**143.8**	**162.0**	**182.5**
Continuing value												
Discounting period (mid-period)	0.25	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00	11.00
Discount factor	0.98	0.91	0.84	0.77	0.70	0.64	0.59	0.54	0.49	0.45	0.41	0.38
Present value of cash flows as at 30 Sep 2019	**33.2**	**48.9**	**51.1**	**52.7**	**55.1**	**47.2**	**49.4**	**51.6**	**63.2**	**64.6**	**66.6**	**68.6**

Discounted cash flow														
INR crores	**FY2032** 12 months	**FY2033** 12 months	**FY2034** 12 months	**FY2035** 12 months	**FY2036** 12 months	**FY2037** 12 months	**FY2038** 12 months	**FY2039** 12 months	**FY2040** 12 months	**FY2041** 12 months	**FY2042** 12 months	**FY2043** 12 months	**FY2044** 12 months	**FY2045** 12 months
Net Revenue	267.1	296.1	330.2	367.7	411.5	455.2	505.5	562.8	626.3	695.8	771.3	856.3	953.1	1,006.5
yoy growth	*12%*	*11%*	*12%*	*11%*	*12%*	*11%*	*11%*	*11%*	*11%*	*11%*	*11%*	*11%*	*11%*	*6%*
EBITDA	**240.7**	**207.3**	**237.0**	**270.0**	**379.6**	**421.8**	**470.4**	**525.9**	**587.5**	**655.1**	**686.4**	**767.3**	**859.3**	**959.4**
EBITDA margin	*90%*	*70%*	*72%*	*73%*	*92%*	*93%*	*93%*	*93%*	*94%*	*94%*	*89%*	*90%*	*90%*	*95%*
Depreciation	37.2	41.2	45.9	51.2	57.3	63.3	70.3	78.3	87.1	96.8	107.3	119.1	132.6	140.0
EBIT	203.5	166.1	191.0	218.8	322.3	358.5	400.1	447.6	500.3	558.3	579.1	648.1	726.7	819.3
EBIT margin	*76%*	*56%*	*58%*	*60%*	*78%*	*79%*	*79%*	*80%*	*80%*	*80%*	*75%*	*76%*	*76%*	*81%*
Less: tax on EBIT	(35.6)	(29.0)	(33.4)	(38.2)	(56.3)	(62.6)	(69.9)	(78.2)	(87.4)	(97.6)	(101.2)	(113.2)	(127.0)	(143.2)
Change in working capital	-	-	-	16.8	-	-	-	-	-	-	-	-	-	-
Capex	-	-	-	-	-	-	(0.0)	-	-	-	-	-	-	-
Free cash flows to the Firm	**205.1**	**178.3**	**203.6**	**248.5**	**323.3**	**359.2**	**400.5**	**447.7**	**500.0**	**557.6**	**585.2**	**654.0**	**732.4**	**816.2**
Continuing value														
Discounting period (mid-period)	12.00	13.00	14.00	15.00	16.00	17.00	18.00	19.00	20.00	21.00	22.00	23.00	24.00	25.00
Discount factor	0.34	0.31	0.29	0.26	0.24	0.22	0.20	0.18	0.17	0.15	0.14	0.13	0.12	0.11
Present value of cash flows as at 30 Sep 2019	**70.5**	**56.1**	**58.6**	**65.4**	**77.9**	**79.1**	**80.7**	**82.6**	**84.4**	**86.1**	**82.7**	**84.5**	**86.6**	**88.3**

Valuation Conclusion	
Present value of cash flows	1,735.6
Present value of terminal value	-
Release of WC at the end of concession period	(1.1)
Enterprise value	**1,734.5**

9.3 Yedeshi Aurangabad Tollway Limited

Key Inputs in Projections:

The key inputs of the projections provided by the Management supported by independent traffic reports as follows:

a) Revenue

Revenue is expected to grow at an average rate of 11% in the steady state forecasted period based on financial plan provided by management which is based on traffic study. However, Management has represented that there is deviation from traffic study report because the financial plan of management considers the actual traffic numbers as base and projections are made considering the same growth numbers from the Traffic study.

b) Traffic Volume

Traffic volume as received from the Management supported by Traffic report carried out by Steer dated Nov 2018 are considered.

c) Toll rates

- The current toll rates provided by the management is in accordance with toll notifications issued by NHAI shared by the management.
- The concession agreements and the toll notification specify the toll calculation process for every toll plaza of the Asset. This allows changes in toll levels at each of the plazas to be directly linked to inflation (WPI) changes.

d) Periodic Maintenance & Routine Maintenance Costs

Estimates for projected Periodic Maintenance & Routine Maintenance cost from the Management are considered.

DCF Method:

- The key assumptions and other key inputs, mentioned on the previous paragraphs, as provided by the Management are considered in the projections.

- The projections provided by the Management, based on Independent traffic and technical studies, are only the best estimates of growth and sustainability of profitability margins. The financial forecast provided by the Management were reviewed for consistency and reasonableness and have relied on them.

- The explicit period has been considered from October 1, 2019 to March 31, 2047.

- The tax has been calculated as per the provisions of the Income Tax Act, 1961. The interest expense is adjusted in the same for arriving at the tax computation under FCFF.
- .

- The assumptions for Weighted average cost of capital is as follows:

WACC calculation		
		Basis
Risk free rate of return	6.5%	10yrs ZCYC
India risk premium	7.0%	
Beta	1.0	Peer median of 1 yr daily beta
Alpha	(0.5)%	Valuer judgement
Cost of Equity	**13.2%**	
Cost of Debt	9.3%	Management input
Tax Rate	17.5%	Rates as per IT Act as applicable here
After Tax Cost of Debt	**7.6%**	
Debt/Equity	2.33	Management input
Debt to Capital %	70.0%	
Equity to Capital %	30.0%	
Weighted Average Cost of Capital	**9.3%**	
Marginal tax rate	17.5%	*MAT rates as per IT applicable here*

- The Business/ Enterprise Value of YATL as on September 30, 2019 is arrived at INR 3,094.7 crores

Discounted cash flow

INR crores	FY2020 6 months	FY2021 12 months	FY2022 12 months	FY2023 12 months	FY2024 12 months	FY2025 12 months	FY2026 12 months	FY2027 12 months	FY2028 12 months	FY2029 12 months	FY2030 12 months	FY2031 12 months	FY2032 12 months	FY2033 12 months
Net Revenue	62.3	137.9	153.9	172.2	191.7	212.6	236.3	262.8	293.8	323.9	358.8	397.7	442.2	490.1
yoy growth	*2,295%*	*18%*	*12%*	*12%*	*11%*	*11%*	*11%*	*11%*	*12%*	*10%*	*11%*	*11%*	*11%*	*11%*
EBITDA	**46.5**	**116.7**	**131.5**	**148.6**	**167.0**	**157.8**	**178.6**	**202.2**	**263.8**	**292.5**	**325.8**	**363.0**	**405.7**	**342.1**
EBITDA margin	*75%*	*85%*	*85%*	*86%*	*87%*	*74%*	*76%*	*77%*	*90%*	*90%*	*91%*	*91%*	*92%*	*70%*
Depreciation	5.6	26.9	30.0	33.6	37.4	41.5	46.1	51.2	57.3	63.1	69.9	77.5	86.2	95.6
EBIT	41.0	89.8	101.5	115.1	129.6	116.3	132.5	151.0	206.5	229.3	255.9	285.5	319.5	246.6
EBIT margin	*66%*	*65%*	*66%*	*67%*	*68%*	*55%*	*56%*	*57%*	*70%*	*71%*	*71%*	*72%*	*72%*	*50%*
Less: tax on EBIT	(7.2)	(15.7)	(17.7)	(20.1)	(22.6)	(20.3)	(23.2)	(26.4)	(36.1)	(40.1)	(44.7)	(49.9)	(55.8)	(43.1)
Change in working capital	12.3	-	-	-	-	-	-	-	-	-	-	-	-	-
Capex	(39.3)	-	-	-	-	-	-	-	-	-	-	-	-	-
Free cash flows to the Firm	**12.4**	**101.0**	**113.8**	**128.5**	**144.3**	**137.5**	**155.5**	**175.9**	**227.7**	**252.4**	**281.1**	**313.1**	**349.9**	**299.0**
Continuing value														
Discounting period (mid-period)	0.25	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00	11.00	12.00	13.00
Discount factor	0.98	0.91	0.84	0.77	0.70	0.64	0.59	0.54	0.49	0.45	0.41	0.38	0.34	0.31
Present value of cash flows as at 30 Sep 2019	**12.1**	**92.4**	**95.2**	**98.4**	**101.1**	**88.1**	**91.2**	**94.3**	**111.8**	**113.3**	**115.5**	**117.7**	**120.3**	**94.1**

Discounted cash flow

INR crores	FY2034 12 months	FY2035 12 months	FY2036 12 months	FY2037 12 months	FY2038 12 months	FY2039 12 months	FY2040 12 months	FY2041 12 months	FY2042 12 months	FY2043 12 months	FY2044 12 months	FY2045 12 months	FY2046 12 months	FY2047 12 months
Net Revenue	540.1	597.2	662.2	730.2	808.3	890.3	983.4	1,080.2	1,190.6	1,312.5	1,451.8	1,599.2	1,765.6	875.8
yoy growth	*10%*	*11%*	*11%*	*10%*	*11%*	*10%*	*10%*	*10%*	*10%*	*10%*	*11%*	*10%*	*10%*	*(50)%*
EBITDA	**384.6**	**434.2**	**617.9**	**684.0**	**759.7**	**839.2**	**869.3**	**960.7**	**1,065.0**	**1,250.5**	**1,386.5**	**1,530.8**	**1,693.7**	**841.9**
EBITDA margin	*71%*	*73%*	*93%*	*94%*	*94%*	*94%*	*88%*	*89%*	*89%*	*95%*	*95%*	*96%*	*96%*	*96%*
Depreciation	105.3	116.4	129.1	142.4	157.6	173.6	191.7	210.6	232.1	255.9	283.0	311.8	344.2	170.7
EBIT	279.3	317.8	488.8	541.6	602.1	665.7	677.6	750.1	832.9	994.6	1,103.5	1,219.0	1,349.5	671.1
EBIT margin	*52%*	*53%*	*74%*	*74%*	*74%*	*75%*	*69%*	*69%*	*70%*	*76%*	*76%*	*76%*	*76%*	*77%*
Less: tax on EBIT	(48.8)	(55.5)	(85.4)	(94.6)	(105.2)	(116.3)	(118.4)	(131.1)	(145.5)	(173.8)	(192.8)	(213.0)	(235.8)	(117.3)
Change in working capital	41.7	-	-	-	-	-	-	-	-	-	-	-	-	-
Capex	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Free cash flows to the Firm	**377.5**	**378.7**	**532.5**	**589.3**	**654.5**	**722.9**	**750.9**	**829.6**	**919.5**	**1,076.7**	**1,193.7**	**1,317.8**	**1,457.9**	**724.6**
Continuing value														
Discounting period (mid-period)	14.00	15.00	16.00	17.00	18.00	19.00	20.00	21.00	22.00	23.00	24.00	25.00	26.00	27.00
Discount factor	0.29	0.26	0.24	0.22	0.20	0.18	0.17	0.15	0.14	0.13	0.12	0.11	0.10	0.09
Present value of cash flows as at 30 Sep 2019	**108.6**	**99.7**	**128.3**	**129.9**	**132.0**	**133.3**	**126.7**	**128.1**	**129.9**	**139.1**	**141.1**	**142.5**	**144.3**	**65.6**

Valuation Conclusion	
Present value of cash flows	3,094.5
Present value of terminal value	-
Release of WC at the end of concession period	0.2
Enterprise value	**3,094.7**

9.4 Kaithal Tollway Limited

Key Inputs in Projections:

The key inputs of the projections provided by the Management supported by independent traffic study report as follows:

a) Revenue

Revenue is expected to grow at CAGR of 11%-12% over a period of 29 years driven by traffic study report and financial plan provided by management. However, Management has represented that there is deviation from traffic study report because the financial plan of management considers the actual traffic numbers as base and projections are made considering the same growth numbers from the Traffic study.

b) Traffic Volume

Traffic volume as received from the Management supported by Traffic report carried out by GMD Consultants dated June 2018 are considered.

c) Toll rates

Toll rates has been estimated as per the recent MoRTH notification dated January 12, 2011. Factor of inflation / growth has been incorporated as per Schedule R. WPI are available up to 2018. A moderate growth in Wholesale Price Index (WPI) has been assumed after that.

d) Periodic Maintenance & Routine Maintenance Costs

Estimates for projected Periodic Maintenance & Routine Maintenance cost from the Management are considered.

DCF Method:

- The key assumptions and other key inputs, mentioned on the previous paragraphs, as provided by the Management are considered in the projections.
- The projections provided by the Management, based on Independent traffic studies, are only the best estimates of growth and sustainability of profitability margins. The financial forecast provided by the Management were reviewed for consistency and reasonableness and have relied on them.
- The explicit period has been considered from October 1, 2019 to March 31, 2048.
- The tax has been calculated as per the provisions of the Income Tax Act, 1961. The interest expense is adjusted in the same for arriving at the tax computation under FCFF.
- The assumptions for Weighted average cost of capital is as follows:

WACC calculation		
		Basis
Risk free rate of return	6.5%	10yrs ZCYC
India risk premium	7.0%	
Beta	1.0	Peer median of 1 yr daily beta
Alpha	(0.5)%	Valuer judgement
Cost of Equity	**13.2%**	
Cost of Debt	9.3%	Management input
Tax Rate	17.5%	Rates as per IT Act as applicable here
After Tax Cost of Debt	**7.6%**	
Debt/Equity	2.33	Management input
Debt to Capital %	70.0%	
Equity to Capital %	30.0%	
Weighted Average Cost of Capital	**9.3%**	
Marginal tax rate	*17.5%*	*MAT rates as per IT applicable here*

- The Business/ Enterprise Value of KTL as on September 30, 2019 is arrived at INR 2,850.8 crores

Discounted cash flow

INR crores	FY2020 6 months	FY2021 12 months	FY2022 12 months	FY2023 12 months	FY2024 12 months	FY2025 12 months	FY2026 12 months	FY2027 12 months	FY2028 12 months	FY2029 12 months	FY2030 12 months	FY2031 12 months	FY2032 12 months	FY2033 12 months	FY2034 12 months
Net Revenue	45.9	106.2	118.0	131.5	160.3	178.3	198.4	220.8	246.8	274.1	305.2	340.1	380.4	423.0	471.7
yoy growth	*(2)%*	*15%*	*11%*	*11%*	*22%*	*11%*	*11%*	*11%*	*12%*	*11%*	*11%*	*11%*	*12%*	*11%*	*12%*
EBITDA	**35.9**	**88.7**	**99.6**	**112.2**	**96.6**	**111.8**	**128.4**	**197.3**	**222.1**	**248.2**	**278.0**	**311.5**	**222.3**	**257.8**	**298.2**
EBITDA margin	*78%*	*84%*	*84%*	*85%*	*60%*	*63%*	*65%*	*89%*	*90%*	*91%*	*91%*	*92%*	*58%*	*61%*	*63%*
Depreciation	(1.1)	11.0	12.2	13.6	16.5	18.4	20.5	22.8	25.5	28.3	31.5	35.1	39.3	43.7	48.7
EBIT	37.0	77.7	87.4	98.6	80.0	93.4	108.0	174.5	196.6	219.9	246.5	276.4	183.0	214.1	249.5
EBIT margin	*81%*	*73%*	*74%*	*75%*	*50%*	*52%*	*54%*	*79%*	*80%*	*80%*	*81%*	*81%*	*48%*	*51%*	*53%*
Less: tax on EBIT	(6.5)	(13.6)	(15.3)	(17.2)	(14.0)	(16.3)	(18.9)	(30.5)	(34.4)	(38.4)	(43.1)	(48.3)	(32.0)	(37.4)	(43.6)
Change in working capital	28.9	-	-	-	-	-	-	-	-	-	-	-	-	-	16.1
Capex	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Free cash flows to the Firm	**58.3**	**75.1**	**84.3**	**94.9**	**82.6**	**95.5**	**109.6**	**166.8**	**187.7**	**209.8**	**234.9**	**263.2**	**190.3**	**220.4**	**270.7**
Continuing value															
Discounting period (mid-period)	0.25	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00
Discount factor	0.98	0.91	0.84	0.77	0.70	0.64	0.59	0.54	0.49	0.45	0.41	0.38	0.34	0.31	0.29
Present value of cash flows as at 30 Sep 2019	**57.1**	**68.7**	**70.6**	**72.7**	**57.9**	**61.2**	**64.3**	**89.5**	**92.1**	**94.2**	**96.5**	**98.9**	**65.4**	**69.3**	**77.9**

Discounted cash flow

INR crores	FY2035 12 months	FY2036 12 months	FY2037 12 months	FY2038 12 months	FY2039 12 months	FY2040 12 months	FY2041 12 months	FY2042 12 months	FY2043 12 months	FY2044 12 months	FY2045 12 months	FY2046 12 months	FY2047 12 months	FY2048 12 months
Net Revenue	525.2	587.8	653.9	729.3	814.3	912.3	1,015.2	1,133.6	1,267.8	1,420.4	1,582.2	1,768.9	1,977.4	1,520.8
yoy growth	*11%*	*12%*	*11%*	*12%*	*12%*	*12%*	*11%*	*12%*	*12%*	*12%*	*11%*	*12%*	*12%*	*(23)%*
EBITDA	**490.6**	**551.3**	**615.8**	**689.2**	**772.2**	**773.9**	**870.3**	**981.2**	**1,216.6**	**1,366.6**	**1,525.8**	**1,709.7**	**1,915.3**	**1,476.0**
EBITDA margin	*93%*	*94%*	*94%*	*95%*	*95%*	*85%*	*86%*	*87%*	*96%*	*96%*	*96%*	*97%*	*97%*	*97%*
Depreciation	54.2	60.7	67.5	75.3	84.1	94.2	104.8	117.0	130.9	146.6	163.3	182.6	204.1	157.0
EBIT	436.4	490.6	548.3	613.9	688.1	679.7	765.5	864.2	1,085.8	1,219.9	1,362.5	1,527.1	1,711.2	1,319.0
EBIT margin	*83%*	*83%*	*84%*	*84%*	*85%*	*75%*	*75%*	*76%*	*86%*	*86%*	*86%*	*86%*	*87%*	*87%*
Less: tax on EBIT	(76.2)	(85.7)	(95.8)	(107.3)	(120.2)	(118.8)	(133.7)	(151.0)	(189.7)	(213.1)	(238.1)	(266.8)	(299.0)	(230.5)
Change in working capital	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Capex	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Free cash flows to the Firm	**414.4**	**465.6**	**520.0**	**582.0**	**651.9**	**655.1**	**736.5**	**930.2**	**1,026.9**	**1,153.4**	**1,287.8**	**1,442.9**	**1,616.3**	**1,245.5**
Continuing value														
Discounting period (mid-period)	15.00	16.00	17.00	18.00	19.00	20.00	21.00	22.00	23.00	24.00	25.00	26.00	27.00	28.00
Discount factor	0.26	0.24	0.22	0.20	0.18	0.17	0.15	0.14	0.13	0.12	0.11	0.10	0.09	0.08
Present value of cash flows as at 30 Sep 2019	**109.1**	**112.1**	**114.6**	**117.3**	**120.2**	**110.5**	**113.7**	**117.3**	**132.7**	**136.4**	**139.3**	**142.8**	**146.3**	**103.1**

Valuation Conclusion	
Present value of cash flows	2,851.7
Present value of terminal value	-
Release of WC at the end of concession period	(0.9)
Enterprise value	**2,850.8**

9.5 AE Tollway Limited

Key Inputs in Projections:

The key inputs of the projections provided by the Management supported by independent traffic study report as follows:

a) Revenue

Revenue is expected to grow at an average rate of 11% in the steady state forecasted period based on traffic study report and financial plan provided by management. However, Management has represented that there is deviation from Traffic study report because the financial plan of management considers the actual traffic numbers as base and projections are made considering the same growth numbers from the Traffic study.

b) Traffic Volume

Traffic volume as received from the Management supported by Traffic report carried out by LEA Associates South Asia Pvt Ltd. dated Jan 2019 are considered.

c) Toll rates

- The toll policy defines six categories of vehicles and provides for differential toll rates for each category. The base rate of 2007-2008 has been considered.
- The toll policy provides for annual revision of toll rates in response to inflation and has been partially pegged to the WPI, which is a standard measure of inflation in India.
- The rate of inflation of WPI has been assumed to be 5% per annum for the purpose of calculation of toll rates.

d) Periodic Maintenance & Routine Maintenance Costs

Estimates for projected Periodic Maintenance & Routine Maintenance cost from the Management are considered.

e) Premium Payable to NHAI

The Premium payable to NHAI is considered as given by the management and validated the same from concession agreement

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DCF Method:

- The key assumptions and other key inputs, mentioned on the previous paragraphs, as provided by the Management are considered in the projections.
- The projections provided by the Management, based on Independent traffic study, are only the best estimates of growth and sustainability of profitability margins. The financial forecast provided by the Management were reviewed for consistency and reasonableness and have relied on them.
- The explicit period has been considered from October 1, 2019 to March 31, 2046.
- The tax has been calculated as per the provisions of the Income Tax Act, 1961. The interest expense is adjusted in the same for arriving at the tax computation under FCFF.

- The assumptions for Weighted average cost of capital is as follows:

WACC calculation		
		Basis
Risk free rate of return	*6.5%*	10yrs ZCYC
India risk premium	*7.0%*	
Beta	1.0	Peer median of 1 yr daily beta
Alpha	*(0.5)%*	Valuer judgement
Cost of Equity	***13.2%***	
Cost of Debt	*9.3%*	Management input
Tax Rate	*17.5%*	Rates as per IT Act as applicable here
After Tax Cost of Debt	***7.6%***	
Debt/Equity	2.33	Management input
Debt to Capital %	*70.0%*	
Equity to Capital %	*30.0%*	
Weighted Average Cost of Capital	***9.3%***	
Marginal tax rate	*17.5%*	*MAT rates as per IT applicable here*

- The Business/ Enterprise Value of AETL as on September 30, 2019 is arrived at INR 1,748.0 crores.

Discounted cash flow

INR crores	FY2020 6 months	FY2021 12 months	FY2022 12 months	FY2023 12 months	FY2024 12 months	FY2025 12 months	FY2026 12 months	FY2027 12 months	FY2028 12 months	FY2029 12 months	FY2030 12 months	FY2031 12 months	FY2032 12 months	FY2033 12 months
Net Revenue	14.6	40.1	53.7	69.9	87.0	107.1	129.3	156.5	188.1	218.4	252.8	292.5	338.4	388.7
yoy growth	*(302)%*	*445%*	*34%*	*30%*	*24%*	*23%*	*21%*	*21%*	*20%*	*16%*	*16%*	*16%*	*16%*	*15%*
EBITDA	**(11.1)**	**7.8**	**19.6**	**34.1**	**11.9**	**28.7**	**46.8**	**113.1**	**142.5**	**170.5**	**202.6**	**116.6**	**153.2**	**195.1**
EBITDA margin	*(76)%*	*19%*	*37%*	*49%*	*14%*	*27%*	*36%*	*72%*	*76%*	*78%*	*80%*	*40%*	*45%*	*50%*
Depreciation	4.9	21.7	24.7	28.0	31.6	35.6	40.0	45.3	51.3	57.1	63.7	71.1	79.6	88.8
EBIT	(16.0)	(14.0)	(5.0)	6.1	(19.7)	(6.9)	6.8	67.8	91.1	113.4	139.0	45.5	73.5	106.3
EBIT margin	*-110%*	*-35%*	*-9%*	*9%*	*-23%*	*-6%*	*5%*	*43%*	*48%*	*52%*	*55%*	*16%*	*22%*	*27%*
Less: tax on EBIT	2.8	2.4	0.9	(1.1)	3.4	1.2	(1.2)	(11.8)	(15.9)	(19.8)	(24.3)	(7.9)	(12.9)	(18.6)
Change in working capital	54.5	-	-	(0.0)	0.0	-	-	-	-	-	-	-	-	-
Capex	(233.9)	-	-	-	-	-	-	-	-	-	-	-	-	-
Free cash flows to the Firm	**(187.7)**	**10.2**	**20.5**	**33.1**	**15.3**	**29.9**	**45.6**	**101.2**	**126.6**	**150.7**	**178.3**	**108.6**	**140.3**	**176.5**
Continuing value														
Discounting period (mid-period)	0.25	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00	11.00	12.00	13.00
Discount factor	0.98	0.91	0.84	0.77	0.70	0.64	0.59	0.54	0.49	0.45	0.41	0.38	0.34	0.31
Present value of cash flows as at 30 Sep 2019	**(183.5)**	**9.4**	**17.2**	**25.3**	**10.8**	**19.2**	**26.8**	**54.3**	**62.1**	**67.7**	**73.3**	**40.8**	**48.3**	**55.5**

Discounted cash flow

INR crores	FY2034 12 months	FY2035 12 months	FY2036 12 months	FY2037 12 months	FY2038 12 months	FY 2039 12 months	FY2040 12 months	FY2041 12 months	FY2042 12 months	FY2043 12 months	FY2044 12 months	FY2045 12 months	FY2046 12 months
Net Revenue	441.8	500.7	571.0	647.3	734.2	820.0	921.9	1,029.2	1,149.7	1,284.6	1,425.4	1,570.5	233.1
yoy growth	*14%*	*13%*	*14%*	*13%*	*13%*	*12%*	*12%*	*12%*	*12%*	*12%*	*11%*	*10%*	*(85)%*
EBITDA	**380.8**	**436.8**	**503.6**	**576.8**	**586.7**	**665.0**	**758.8**	**943.5**	**1,059.7**	**1,190.2**	**1,326.0**	**1,466.4**	**218.4**
EBITDA margin	*86%*	*87%*	*88%*	*89%*	*80%*	*81%*	*82%*	*92%*	*92%*	*93%*	*93%*	*93%*	*94%*
Depreciation	98.5	109.2	121.9	135.4	150.7	165.9	183.9	202.6	223.6	246.9	271.4	296.4	43.6
EBIT	282.3	327.5	381.8	441.5	436.0	499.0	574.9	740.9	836.2	943.3	1,054.6	1,170.0	174.8
EBIT margin	*64%*	*65%*	*67%*	*68%*	*59%*	*61%*	*62%*	*72%*	*73%*	*73%*	*74%*	*74%*	*75%*
Less: tax on EBIT	(49.3)	(57.2)	(66.7)	(77.1)	(76.2)	(87.2)	(100.4)	(129.5)	(146.1)	(164.8)	(184.3)	(204.4)	(30.5)
Change in working capital	-	45.5	-	-	-	-	-	-	-	-	-	-	-
Capex	-	-	-	-	-	-	-	-	-	-	-	-	-
Free cash flows to the Firm	**331.5**	**425.0**	**436.9**	**499.7**	**510.5**	**577.8**	**658.3**	**814.0**	**913.6**	**1,025.3**	**1,141.7**	**1,262.0**	**187.9**
Continuing value													
Discounting period (mid-period)	14.00	15.00	16.00	17.00	18.00	19.00	20.00	21.00	22.00	23.00	24.00	25.00	26.00
Discount factor	0.29	0.26	0.24	0.22	0.20	0.18	0.17	0.15	0.14	0.13	0.12	0.11	0.10
Present value of cash flows as at 30 Sep 2019	**95.4**	**111.9**	**105.2**	**110.1**	**102.9**	**106.6**	**111.1**	**125.7**	**129.0**	**132.5**	**135.0**	**136.5**	**18.6**

Valuation Conclusion	
Present value of cash flows	1,747.4
Present value of terminal value	-
Release of WC at the end of concession period	0.5
Enterprise value	**1,748.0**

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9.6 Udaipur Tollway Limited

Key Inputs in Projections:

The key inputs of the projections provided by the Management supported by independent traffic and study report as follows:

a) Revenue

Revenue is expected to grow at an average rate of 11%-12% in the steady state forecasted period based on traffic study report and financial plan provided by management. However, Management has represented that there is deviation from traffic study report because the financial plan of management considers the actual traffic numbers as base and projections are made considering the same growth numbers from the traffic study.

b) Traffic Volume

Traffic volume as received from the Management supported by Traffic report carried out by Steer dated Jan 2019 are considered.

c) Toll rates

- The current toll rates provided by the management is in accordance with toll notifications issued by NHAI shared by the management.
- The concession agreements and the toll notification specify the toll calculation process for every toll plaza of the asset. This allows changes in toll levels at each of the plazas to be directly linked to inflation (WPI) changes.
- WPI forecasts are calculated using the forecasts provided by the Reserve Bank of India (RBI), these have also been agreed with the client.

d) Periodic Maintenance & Routine Maintenance Costs

Estimates for projected Periodic Maintenance & Routine Maintenance cost from the Management are considered.

e) Premium Payable to NHAI

The Premium payable to NHAI is considered as given by the management and validated the same from concession agreement.

DCF Method:

- The key assumptions and other key inputs, mentioned on the previous paragraphs, as provided by the Management are considered in the projections.
- The projections provided by the Management, based on Independent traffic studies, are only the best estimates of growth and sustainability of profitability margins. The financial forecast provided by the Management were reviewed for consistency and reasonableness and have relied on them.
- The explicit period has been considered from October 1, 2019 to March 31, 2042.

- The tax has been calculated as per the provisions of the Income Tax Act, 1961. The interest expense is adjusted in the same for arriving at the tax computation under FCFF.

- The assumptions for Weighted average cost of capital is as follows:

WACC calculation		
		Basis
Risk free rate of return	*6.5%*	10yrs ZCYC
India risk premium	*7.0%*	
Beta	1.0	Peer median of 1 yr daily beta
Alpha	*(0.5)%*	Valuer judgement
Cost of Equity	***13.2%***	
Cost of Debt	*9.3%*	Management input
Tax Rate	*17.5%*	Rates as per IT Act as applicable here
After Tax Cost of Debt	***7.6%***	
Debt/Equity	2.33	Management input
Debt to Capital %	*70.0%*	
Equity to Capital %	*30.0%*	
Weighted Average Cost of Capital	***9.3%***	
Marginal tax rate	*17.5%*	*MAT rates as per IT applicable here*

- The Business/ Enterprise Value of UTL as on September 30, 2019 is arrived at INR 1,501.8 crores.

Discounted cash flow											
INR crores	**FY2020** 6 months	**FY2021** 12 months	**FY2022** 12 month	**FY2023** 12 months	**FY2024** 12 months	**FY2025** 12 months	**FY2026** 12 months	**FY2027** 12 months	**FY2028** 12 months	**FY2029** 12 months	**FY2030** 12 months
Net Revenue	72.7	123.3	77.7	102.7	132.0	163.6	198.7	239.1	273.5	308.8	346.4
yoy growth	*8%*	*(12)%*	*(37)%*	*32%*	*29%*	*24%*	*21%*	*20%*	*14%*	*13%*	*12%*
EBITDA	**61.0**	**104.8**	**58.4**	**82.5**	**53.9**	**72.6**	**99.4**	**211.4**	**249.1**	**163.8**	**194.9**
EBITDA margin	*84%*	*85%*	*75%*	*80%*	*41%*	*44%*	*50%*	*88%*	*91%*	*53%*	*56%*
Depreciation	8.5	31.0	34.9	39.2	44.1	49.3	55.0	61.6	68.7	76.1	84.0
EBIT	52.5	73.8	23.5	43.3	9.8	23.3	44.4	149.9	180.3	87.8	110.9
EBIT margin	*72%*	*60%*	*30%*	*42%*	*7%*	*14%*	*22%*	*63%*	*66%*	*28%*	*32%*
Less: tax on EBIT	(9.2)	(12.9)	(4.1)	(7.6)	(1.7)	(4.1)	(7.8)	(26.2)	(31.5)	(15.3)	(19.4)
Change in working capital	-	-	-	(0.5)	0.5	-	-	-	-	-	-
Capex	(707.1)	-	-	-	-	-	-	-	-	-	-
Free cash flows to the Firm	(655.3)	91.9	54.3	74.4	52.7	68.5	91.7	185.3	217.5	148.5	175.5
Continuing value											
Discounting period (mid-period)	0.25	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
Discount factor	0.98	0.91	0.84	0.77	0.70	0.64	0.59	0.54	0.49	0.45	0.41
Present value of cash flows as at 30 Sep 2019	(640.9)	84.0	45.4	57.0	36.9	43.9	53.8	99.4	106.8	66.7	72.1

Discounted cash flow												
INR crores	**FY2031** 12 months	**FY2032** 12 months	**FY2033** 12 months	**FY2034** 12 months	**FY2035** 12 months	**FY2036** 12 months	**FY2037** 12 months	**FY2038** 12 months	**FY2039** 12 months	**FY2040** 12 months	**FY2041** 12 months	**FY2042** 12 months
Net Revenue	390.6	439.1	489.5	548.7	612.5	688.6	767.7	857.8	958.9	1,075.7	1,198.7	532.1
yoy growth	*13%*	*12%*	*11%*	*12%*	*12%*	*12%*	*11%*	*12%*	*12%*	*12%*	*11%*	*(56)%*
EBITDA	**236.1**	**406.4**	**460.9**	**433.3**	**491.0**	**538.1**	**735.7**	**825.0**	**925.5**	**1,040.6**	**1,161.9**	**516.8**
EBITDA margin	*60%*	*93%*	*94%*	*79%*	*80%*	*78%*	*96%*	*96%*	*97%*	*97%*	*97%*	*97%*
Depreciation	93.0	103.0	113.3	125.2	138.0	153.1	168.6	186.1	205.6	227.9	251.2	110.3
EBIT	143.1	303.4	347.6	308.1	353.0	385.0	567.2	638.9	719.9	812.7	910.8	406.5
EBIT margin	*37%*	*69%*	*71%*	*56%*	*58%*	*56%*	*74%*	*74%*	*75%*	*76%*	*76%*	*76%*
Less: tax on EBIT	(25.0)	(53.0)	(60.7)	(53.8)	(61.7)	(67.3)	(99.1)	(111.6)	(125.8)	(142.0)	(159.1)	(71.0)
Change in working capital	-	-	-	-	38.9	-	-	-	-	-	-	-
Capex	-	-	-	-	-	-	-	-	-	-	-	-
Free cash flows to the Firm	211.1	353.4	400.2	379.5	468.2	470.8	636.6	713.4	799.7	898.6	1,002.8	445.7
Continuing value												
Discounting period (mid-period)	11.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00	19.00	20.00	21.00	22.00
Discount factor	0.38	0.34	0.31	0.29	0.26	0.24	0.22	0.20	0.18	0.17	0.15	0.14
Present value of cash flows as at 30 Sep 2019	79.3	121.5	125.9	109.2	123.3	113.4	140.3	143.8	147.5	151.6	154.8	63.0

Valuation Conclusion	
Present value of cash flows	1,498.7
Present value of terminal value	-
Release of WC at the end of concession period	3.1
Enterprise value	**1,501.8**

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9.7 CG Tollway Limited

Key Inputs in Projections:
The key inputs of the projections provided by the Management supported by independent traffic study report as follows:

a) Revenue

Revenue is expected to grow at an average rate of 10% in the steady state forecasted period based on traffic study report and financial plan provided by management. However, management has represented that there is deviation from traffic study report because the financial plan of management considers the actual traffic numbers as base and projections are made considering the same growth numbers from the Traffic study.

b) Traffic Volume

Traffic volume as received from the Management supported by traffic report carried out by Steer dated Jan 2019 are considered.

c) Toll rates

- The current toll rates provided by the management is in accordance with toll notifications issued by NHAI shared by the management.
- The concession agreements and the toll notification specify the toll calculation process for every toll plaza of the Asset. This allows changes in toll levels at each of the plazas to be directly linked to inflation (WPI) changes.

d) Periodic Maintenance & Routine Maintenance Costs

Estimates for projected Periodic Maintenance & Routine Maintenance cost from the Management are considered.

e) Premium Payable to NHAI

The Premium payable to NHAI is considered as given by the management and validated the same from concession agreement.

DCF Method:

- The key assumptions and other key inputs, mentioned on the previous paragraphs, as provided by the Management are considered in the projections.
- The projections provided by the Management, based on Independent traffic study, are only the best estimates of growth and sustainability of profitability margins. The financial forecast provided by the Management were reviewed for consistency and reasonableness and have relied on them.
- The explicit period has been considered from October 1, 2019 to March 31, 2042.
- The tax has been calculated as per the provisions of the Income Tax Act, 1961. The interest expense is adjusted in the same for arriving at the tax computation under FCFF.

- The assumptions for Weighted average cost of capital is as follows:

WACC calculation		
		Basis
Risk free rate of return	*6.5%*	10yrs ZCYC
India risk premium	*7.0%*	
Beta	1.0	Peer median of 1 yr daily beta
Alpha	*(0.5)%*	Valuer judgement
Cost of Equity	***13.2%***	
Cost of Debt	*9.3%*	Management input
Tax Rate	*17.5%*	Rates as per IT Act as applicable here
After Tax Cost of Debt	***7.6%***	
Debt/Equity	2.33	Management input
Debt to Capital %	*70.0%*	
Equity to Capital %	*30.0%*	
Weighted Average Cost of Capital	***9.3%***	
Marginal tax rate	*17.5%*	*MAT rates as per IT applicable here*

- The Business/ Enterprise Value of CGTL as on September 30, 2019 is arrived at INR 1,778.4 crores.

Discounted cash flow												
	FY2020	**FY2021**	**FY2022**	**FY2023**	**FY2024**	**FY2025**	**FY2026**	**FY2027**	**FY2028**	**FY2029**	**FY2030**
INR crores	6 months	12 month	12 month	12 month	12 month	12 month	12 month	12 month	12 month	12 month	12 month
Net Revenue	81.2	158.3	56.7	84.2	115.3	147.3	186.9	227.9	262.8	299.0	337.3
yoy growth	*(120)%*	*(3)%*	*(64)%*	*49%*	*37%*	*28%*	*27%*	*22%*	*15%*	*14%*	*13%*
EBITDA	**73.1**	**131.4**	**25.7**	**51.6**	**81.0**	**84.5**	**120.8**	**158.5**	**221.3**	**255.5**	**291.6**
EBITDA margin	*90%*	*83%*	*45%*	*61%*	*70%*	*57%*	*65%*	*70%*	*84%*	*85%*	*86%*
Depreciation	3.1	24.7	28.5	31.8	35.6	39.4	44.0	48.8	54.4	60.2	66.4
EBIT	69.9	106.7	(2.7)	19.8	45.4	45.0	76.7	109.7	166.8	195.3	225.3
EBIT margin	*86%*	*67%*	*-5%*	*24%*	*39%*	*31%*	*41%*	*48%*	*63%*	*65%*	*67%*
Less: tax on EBIT	(12.2)	(18.6)	0.5	(3.5)	(7.9)	(7.9)	(13.4)	(19.2)	(29.2)	(34.1)	(39.4)
Change in working capital	-	-	-	0.0	(0.0)	-	-	-	-	-	-
Capex	(362.7)	(77.7)	-	-	-	-	-	-	-	-	-
Free cash flows to the Firm	**(301.8)**	**35.0**	**26.2**	**48.2**	**73.1**	**76.6**	**107.4**	**139.3**	**192.1**	**221.3**	**252.3**
Continuing value											
Discounting period (mid-period)	0.25	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00
Discount factor	0.98	0.91	0.84	0.77	0.70	0.64	0.59	0.54	0.49	0.45	0.41
Present value of cash flows as at 30 Sep 2019	**(295.2)**	**32.0**	**21.9**	**36.9**	**51.2**	**49.1**	**62.9**	**74.7**	**94.3**	**99.4**	**103.6**

Discounted cash flow												
	FY2031	**FY2032**	**FY2033**	**FY2034**	**FY2035**	**FY2036**	**FY2037**	**FY2038**	**FY2039**	**FY2040**	**FY2041**	**FY2042**
INR crores	12 month	12 month	12 month	12 month	12 month	12 months	12 months	12 months	12 months	12 months	12 months	12 months
Net Revenue	381.6	434.0	488.2	549.3	617.6	696.1	780.5	875.7	983.6	1,109.2	1,242.1	829.2
yoy growth	*13%*	*14%*	*12%*	*13%*	*12%*	*13%*	*12%*	*12%*	*12%*	*13%*	*12%*	*(33)%*
EBITDA	**247.4**	**292.6**	**340.5**	**493.7**	**550.4**	**588.4**	**668.0**	**757.5**	**912.9**	**1,034.8**	**1,164.2**	**780.5**
EBITDA margin	*65%*	*67%*	*70%*	*90%*	*89%*	*85%*	*86%*	*87%*	*93%*	*93%*	*94%*	*94%*
Depreciation	73.4	81.5	89.8	99.1	109.4	121.1	133.5	147.3	162.8	180.6	199.1	130.9
EBIT	174.0	211.2	250.8	394.6	441.0	467.3	534.5	610.2	750.1	854.2	965.0	649.6
EBIT margin	*46%*	*49%*	*51%*	*72%*	*71%*	*67%*	*68%*	*70%*	*76%*	*77%*	*78%*	*78%*
Less: tax on EBIT	(30.4)	(36.9)	(43.8)	(68.9)	(77.1)	(81.6)	(93.4)	(106.6)	(131.1)	(149.2)	(168.6)	(113.5)
Change in working capital	-	-	-	50.0	-	-	-	-	-	-	-	-
Capex	-	-	-	-	-	-	-	-	-	-	-	-
Free cash flows to the Firm	**217.0**	**255.7**	**296.7**	**474.8**	**473.4**	**506.7**	**574.6**	**650.9**	**781.9**	**885.5**	**995.6**	**667.0**
Continuing value												
Discounting period (mid-period)	11.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00	19.00	20.00	21.00	22.00
Discount factor	0.38	0.34	0.31	0.29	0.26	0.24	0.22	0.20	0.18	0.17	0.15	0.14
Present value of cash flows as at 30 Sep 2019	**81.6**	**87.9**	**93.3**	**136.6**	**124.6**	**122.1**	**126.6**	**131.2**	**144.2**	**149.4**	**153.7**	**94.2**

Valuation Conclusion	
Present value of cash flows	1,776.4
Present value of terminal value	-
Release of WC at the end of concession period	2.0
Enterprise value	**1,778.4**

9.8 Kishangarg Gulabpura Tollway Private Limited

Key Inputs in Projections:
The key inputs of the projections provided by the Management supported by independent traffic study report as follows:

a) Revenue

Revenue is expected to grow at CAGR of 10% over a period of 23 years driven by traffic study report and financial plan provided by management. However, management has represented that there is deviation from traffic study report because the financial plan of management considers the actual traffic numbers as base and projections are made considering the same growth numbers from the Traffic study.

b) Traffic Volume

Traffic volume as received from the Management supported by Traffic report carried out by LEA Associates South Asia Pvt Ltd. dated Dec 2018 are considered.

c) Toll rates

- The toll policy defines six categories of vehicles and provides for differential toll rates for each category. The base rate of 2007-2008 has been considered.
- The toll policy provides for annual revision of toll rates in response to inflation and has been partially pegged to the WPI, which is a standard measure of inflation in India.
- The rate of inflation of WPI has been assumed to be 5% per annum for the purpose of calculation of toll rates.

d) Periodic Maintenance & Routine Maintenance Costs

Estimates for projected Periodic Maintenance & Routine Maintenance cost from the Management are considered.

e) Premium Payable to NHAI

The Premium payable to NHAI is considered as given by the management and validated the same from concession agreement.

DCF Method:

- The key assumptions and other key inputs, mentioned on the previous paragraphs, as provided by the Management are considered in the projections.
- The projections provided by the Management, based on Independent traffic study, are only the best estimates of growth and sustainability of profitability margins. The financial forecast

provided by the Management were reviewed for consistency and reasonableness and have relied on them.

- The explicit period has been considered from October 1, 2019 to March 31, 2042.
- The tax has been calculated as per the provisions of the Income Tax Act, 1961. The interest expense is adjusted in the same for arriving at the tax computation under FCFF.
- The assumptions for Weighted average cost of capital is as follows:

WACC calculation		
		Basis
Risk free rate of return	*6.5%*	10yrs ZCYC
India risk premium	*7.0%*	
Beta	1.0	Peer median of 1 yr daily beta
Alpha	*(0.5)%*	Valuer judgement
Cost of Equity	***13.2%***	
Cost of Debt	*9.3%*	Management input
Tax Rate	*17.5%*	Rates as per IT Act as applicable here
After Tax Cost of Debt	***7.6%***	
Debt/Equity	2.33	Management input
Debt to Capital %	*70.0%*	
Equity to Capital %	*30.0%*	
Weighted Average Cost of Capital	***9.3%***	
Marginal tax rate	*17.5%*	*MAT rates as per IT applicable here*

- The Business/ Enterprise Value of KGTL as on September 30, 2019 is arrived at INR 1,460.9 crores.

Discounted cash flow (Management base case)										
INR crores	**FY2020** 6 months	**FY2021** 12 months	**FY2022** 12 months	**FY2023** 12 months	**FY2024** 12 months	**FY2025** 12 months	**FY2026** 12 months	**FY2027** 12 months	**FY2028** 12 months	**FY2029** 12 months
Net Revenue	56.7	150.4	27.2	50.9	76.6	104.5	138.1	174.9	208.7	239.1
yoy growth	*(1)%*	*32%*	*(82)%*	*87%*	*50%*	*36%*	*32%*	*27%*	*19%*	*15%*
EBITDA	**51.5**	**129.9**	**5.6**	**28.2**	**52.8**	**79.6**	**111.9**	**47.0**	**179.8**	**208.8**
EBITDA margin	*91%*	*86%*	*21%*	*55%*	*69%*	*76%*	*81%*	*27%*	*86%*	*87%*
Depreciation	2.6	14.0	18.5	21.0	23.8	26.6	30.0	33.6	38.0	42.2
EBIT	48.9	115.8	(12.9)	7.2	29.0	53.0	81.9	13.4	141.8	166.7
EBIT margin	*86%*	*77%*	*-47%*	*14%*	*38%*	*51%*	*59%*	*8%*	*68%*	*70%*
Less: tax on EBIT	(8.5)	(20.2)	2.3	(1.3)	(5.1)	(9.3)	(14.3)	(2.3)	(24.8)	(29.1)
Change in working capital	-	-	-	-	-	-	-	-	-	-
Capex	(238.2)	(167.3)	-	-	-	-	-	-	-	-
Free cash flows to the Firm	**(195.3)**	**(57.7)**	**7.9**	**27.0**	**47.7**	**70.3**	**97.5**	**44.6**	**155.1**	**179.7**
Continuing value										
Discounting period (mid-period)	0.25	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00
Discount factor	0.98	0.91	0.84	0.77	0.70	0.64	0.59	0.54	0.49	0.45
PV of cash flows as at 30 Sep 2019	**(191.0)**	**(52.8)**	**6.6**	**20.7**	**33.4**	**45.1**	**57.2**	**23.9**	**76.1**	**80.7**

Discounted cash flow (Management base case)													
INR crores	FY2030 12 months	FY2031 12 months	FY2032 12 months	FY2033 12 months	FY2034 12 months	FY2035 12 months	FY2036 12 months	FY2037 12 months	FY2038 12 months	FY2039 12 months	FY2040 12 months	FY2041 12 months	FY2042 12 months
Net Revenue	273.0	312.8	360.6	410.2	462.3	522.0	590.3	662.8	747.2	827.7	923.4	1,021.0	1,010.9
yoy growth	*14%*	*15%*	*15%*	*14%*	*13%*	*13%*	*13%*	*12%*	*13%*	*11%*	*12%*	*11%*	*(1)%*
EBITDA	**241.2**	**279.4**	**325.4**	**268.9**	**321.6**	**370.9**	**547.6**	**618.1**	**700.3**	**778.5**	**871.6**	**966.7**	**960.0**
EBITDA margin	*88%*	*89%*	*90%*	*66%*	*70%*	*71%*	*93%*	*93%*	*94%*	*94%*	*94%*	*95%*	*95%*
Depreciation	46.8	52.1	58.2	64.6	71.4	79.0	87.7	96.7	107.1	117.4	129.4	141.7	138.8
EBIT	194.4	227.3	267.1	204.4	250.3	291.9	460.0	521.4	593.2	661.0	742.1	825.1	821.1
EBIT margin	*71%*	*73%*	*74%*	*50%*	*54%*	*56%*	*78%*	*79%*	*79%*	*80%*	*80%*	*81%*	*81%*
Less: tax on EBIT	(34.0)	(39.7)	(46.7)	(35.7)	(43.7)	(51.0)	(80.4)	(91.1)	(103.6)	(115.5)	(129.7)	(144.2)	(143.5)
Change in working capital	-	-	-	36.0	-	-	-	-	-	-	-	-	-
Capex	-	-	-	-	-	-	-	-	-	-	-	-	-
Free cash flows to the Firm	**207.3**	**239.7**	**278.7**	**269.2**	**277.9**	**319.9**	**467.3**	**527.0**	**596.7**	**663.0**	**741.9**	**822.6**	**816.5**
Continuing value													
Discounting period (mid-period)	10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00	19.00	20.00	21.00	22.00
Discount factor	0.41	0.38	0.34	0.31	0.29	0.26	0.24	0.22	0.20	0.18	0.17	0.15	0.14
PV of cash flows as at 30 Sep 2019	**85.1**	**90.1**	**95.8**	**84.7**	**80.0**	**84.2**	**112.5**	**116.1**	**120.3**	**122.3**	**125.2**	**127.0**	**115.3**

Valuation Conclusion	
Present value of cash flows	1,458.6
Present value of terminal value	-
Release of WC at the end of concession period	2.3
Enterprise value	**1,460.9**

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9.9 IRB Hapur Moradabad Tollway Private Limited

Key Inputs in Projections:

The key inputs of the projections provided by the Management supported by independent traffic study report as follows:

a) Revenue

Revenue is expected to grow at an average rate of 11% in the steady state forecasted period based on traffic study report and financial plan provided by management. However, Management has represented that there is deviation from Traffic study report because the financial plan of management considers the actual traffic numbers as base and projections are made considering the same growth numbers from the Traffic study.

b) Traffic Volume

Traffic volume as received from the Management supported by traffic report carried out by LEA Associates South Asia Pvt Ltd. dated Dec 2018 are considered.

c) Toll rates

- The toll policy defines six categories of vehicles and provides for differential toll rates for each category. The base rate of 2007-2008 has been considered.
- The toll policy provides for annual revision of toll rates in response to inflation and has been partially pegged to the WPI, which is a standard measure of inflation in India.
- The rate of inflation of WPI has been assumed to be 5% per annum for the purpose of calculation of toll rates.

d) Periodic Maintenance & Routine Maintenance Costs

Estimates for projected Periodic Maintenance & Routine Maintenance cost from the Management are considered.

e) Premium Payable to NHAI

The Premium payable to NHAI is considered as given by the management and validated the same from concession agreement.

DCF Method:

- The key assumptions and other key inputs, mentioned on the previous paragraphs, as provided by the Management are considered in the projections.
- The projections provided by the Management, based on Independent traffic and technical studies, are only the best estimates of growth and sustainability of profitability margins. The financial forecast provided by the Management were reviewed for consistency and reasonableness and have relied on them.
- The explicit period has been considered from October 1, 2019 to March 31, 2042.
- The tax has been calculated as per the provisions of the Income Tax Act, 1961. The interest expense is adjusted in the same for arriving at the tax computation under FCFF.

- The assumptions for Weighted average cost of capital is as follows:

WACC calculation		
		Basis
Risk free rate of return	*6.5%*	10yrs ZCYC
India risk premium	*7.0%*	
Beta	1.0	Peer median of 1 yr daily beta
Alpha	*(0.5)%*	Valuer judgement
Cost of Equity	***13.2%***	
Cost of Debt	*9.3%*	Management input
Tax Rate	*17.5%*	Rates as per IT Act as applicable here
After Tax Cost of Debt	***7.6%***	
Debt/Equity	2.33	Management input
Debt to Capital %	*70.0%*	
Equity to Capital %	*30.0%*	
Weighted Average Cost of Capital	***9.3%***	
Marginal tax rate	*17.5%*	*MAT rates as per IT applicable here*

- The Business/ Enterprise Value of IHMTL as on September 30, 2019 is arrived at INR 1,610.8 crores.

Discounted cash flow

INR crores	FY2020 6 months	FY2021 12 months	FY2022 12 months	FY2023 12 months	FY2024 12 months	FY2025 12 months	FY2026 12 months	FY2027 12 months	FY2028 12 months	FY2029 12 months	FY2030 12 months	FY2031 12 month
Net Revenue	62.0	135.0	178.6	250.8	279.8	316.8	359.5	406.4	464.6	516.5	578.3	643.4
yoy growth	*46%*	*29%*	*32%*	*40%*	*12%*	*13%*	*13%*	*13%*	*14%*	*11%*	*12%*	*11%*
EBITDA	**59.1**	**127.3**	**170.6**	**242.4**	**266.7**	**307.8**	**260.9**	**306.7**	**369.2**	**506.0**	**562.0**	**557.9**
EBITDA margin	*95%*	*94%*	*95%*	*97%*	*95%*	*97%*	*73%*	*75%*	*79%*	*98%*	*97%*	*87%*
Depreciation	9.6	23.9	31.6	49.0	55.3	62.0	69.7	78.2	88.7	98.0	109.5	121.6
EBIT	49.5	103.4	139.0	193.4	211.4	245.8	191.2	228.6	280.5	408.0	452.6	436.3
EBIT margin	*80%*	*77%*	*78%*	*77%*	*76%*	*78%*	*53%*	*56%*	*60%*	*79%*	*78%*	*68%*
Less: tax on EBIT	(8.6)	(18.1)	(24.3)	(33.8)	(36.9)	(42.9)	(33.4)	(39.9)	(49.0)	(71.3)	(79.1)	(76.2)
Change in working capital	-	-	-	-	-	-	-	-	-	-	-	-
Capex	(727.2)	(1,048.0)	(729.5)	-	-	-	-	-	-	-	-	-
Free cash flows to the Firm	**(676.8)**	**(938.8)**	**(583.2)**	**208.6**	**229.7**	**264.8**	**227.5**	**266.8**	**320.1**	**434.7**	**483.0**	**481.6**
Continuing value												
Discounting period (mid-period)	0.25	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00	11.00
Discount factor	0.98	0.91	0.84	0.77	0.70	0.64	0.59	0.54	0.49	0.45	0.41	0.38
Present value of cash flows as at 30 Sep 2019	**(661.9)**	**(858.9)**	**(488.2)**	**159.7**	**160.9**	**169.7**	**133.4**	**143.1**	**157.1**	**195.2**	**198.4**	**181.0**

Discounted cash flow

INR crores	FY2032 12 month	FY2033 12 month	FY2034 12 months	FY2035 12 months	FY2036 12 months	FY2037 12 months	FY2038 12 months	FY2039 12 months	FY2040 12 months	FY2041 12 months	FY2042 12 months
Net Revenue	720.3	799.1	884.3	980.1	1,090.5	1,204.1	1,338.4	1,470.6	1,619.6	1,780.5	327.3
yoy growth	*12%*	*11%*	*11%*	*11%*	*11%*	*10%*	*11%*	*10%*	*10%*	*10%*	*(82)%*
EBITDA	**632.0**	**730.3**	**869.6**	**967.5**	**865.7**	**961.3**	**1,086.8**	**1,449.6**	**1,605.2**	**1,765.4**	**324.7**
EBITDA margin	*88%*	*91%*	*98%*	*99%*	*79%*	*80%*	*81%*	*99%*	*99%*	*99%*	*99%*
Depreciation	135.8	150.4	166.2	183.9	204.3	225.3	250.1	274.5	302.0	331.7	60.9
EBIT	496.2	579.9	703.4	783.6	661.4	736.0	836.7	1,175.1	1,303.2	1,433.7	263.7
EBIT margin	*69%*	*73%*	*80%*	*80%*	*61%*	*61%*	*63%*	*80%*	*80%*	*81%*	*81%*
Less: tax on EBIT	(86.7)	(101.3)	(122.9)	(136.9)	(115.6)	(128.6)	(146.2)	(205.3)	(227.7)	(250.5)	(46.1)
Change in working capital	-	-	-	-	-	60.0	-	-	-	-	-
Capex	-	-	-	-	-	-	-	-	-	-	-
Free cash flows to the Firm	**545.3**	**629.0**	**746.7**	**830.6**	**750.2**	**892.7**	**940.6**	**1,244.3**	**1,377.5**	**1,514.9**	**278.6**
Continuing value											
Discounting period (mid-period)	12.00	13.00	14.00	15.00	16.00	17.00	18.00	19.00	20.00	21.00	22.00
Discount factor	0.34	0.31	0.29	0.26	0.24	0.22	0.20	0.18	0.17	0.15	0.14
Present value of cash flows as at 30 Sep 2019	**187.5**	**197.9**	**214.9**	**218.7**	**180.7**	**196.7**	**189.6**	**229.5**	**232.4**	**233.9**	**39.3**

Valuation Conclusion	
Present value of cash flows	1,610.8
Present value of terminal value	-
Release of WC at the end of concession period	-
Enterprise value	**1,610.8**

9.10 Valuation Summary

The derived enterprise value and equity value, based on the valuation approach and methodology as discussed above, as on 30 September 2019 is as under:

Valuation summary of the SPVs

Sl. No	Name of Project	Short name of SPV	Enterprise value (INR Crores)
1	Goa Kundapur	IWTL	3,304.8
2	Solapur Yedeshi	SYTL	1,734.5
3	Yedeshi Aurangabad	YATL	3,094.7
4	Kaithal - Rajasthan	KTL	2,850.8
5	Agra Etawah	AETL	1,748.0
6	Udaipur Rajasthan Gujarat	UTL	1,501.8
7	Gulabpura Chittorgarh	CGTL	1,778.4
8	Kishangarh Gulabpura	KGTL	1,460.9
9	Hapur Moradabad	IHMTL	1,610.8
	Total EV	**Total**	**19,084.7**

Computation of fair value of equity of the portfolio of 9 SPVs

Valuation approach	Method	INR crores	Weight (%)
Income approach	DCF	19,084.7	100%
Market approach	Comparable companies method	n/a	n/a
Cost approach	NAV	n/a	n/a
Enterprise value for the combined portfolio of 9 SPVs (Note 1)		19,084.7	100%
Less: Debt (Note 2)		(6,842.1)	
Less: Deb-like-items		(584.6)	
Add: Cash and cash equivalents		28.1	
Add: Surplus assets		490.9	
Value of equity + quasi equity (Note 3)		**12,177.0**	

Notes

Note 1 - Management has represented that the liabilities (INR 1,396.5 crores) forming part of the other working capital shown on the balance sheets of the 9 SPVs as of the Valuation Date of 30 September 2019 has been settled to zero by infusion of sponsor debt before the transaction date. As such impact of change in one-time other working capital has not been considered in computation of the free cash flow and the enterprise valuation presented in the table above. Other working capital primarily comprises current tax assets, other financial liabilities, trade payables, provisions and other current liabilities.

Note 2 - Further, based on the 30 September 2019 financials, there are consolidated external borrowing of INR 9,842.1 crores across the 9 SPVs. There is additional debt in the form of subordinated debt (INR 2,974.5 crores) and sponsor debt (INR 1,269.8 crores) which Management has represented that they are quasi equity and hence have not been included in the debt but rather classified as equity. Management has further represented that out of the outstanding external debt, INR 3,000 crores shall be repaid on transaction date using sub-debt from the Trust. Accordingly, proforma debt is INR 6,842.1 crores. This has been reduced from the combined EV for the computation of combined equity value of the 9 SPVs.

Note 3: Management has represented that a total of INR 7,244.2 crores of debt is infused by Trust or sponsor or sponsor entities and hence Management has classified the same as quasi-equity. Break-up of the quasi equity is provided below.

Quasi-equity computation as represented by Management	
Particulars	**INR crores**
Sub debt (from sponsor)	2,974.5
Sponsor debt	1,269.8
Sub debt from Trust to refinance existing external debt*	3,000.0
Total quasi-equity	**7,244.2**

**This refinancing will happen on the transaction date and has been included on proforma basis*

10. Annexures

Additional procedures to be complied with in accordance with SEBI InvIT Regulations List of Disclosures

Additional procedures to be complied with in accordance with SEBI InvIT regulations as per Schedule V of the SEBI InvIT Regulations:

a) List of one-time sanctions/approvals which are obtained or pending along with up to date/overdue periodic clearances

As given by the Management, the list of one-time sanctions/approvals which are obtained or pending along with up to date/overdue periodic clearances of all the 9 SPVs are included in earlier sections in the Report and details are mentioned in Annexures.

b) Statement of assets

Management has represented that all assets and liabilities of the 9 SPVs till the date of transfer of assets to InvIT will be taken over by the Trust.

c) Estimates of already carried as well as proposed major repairs & improvements

Past major repairs and improvements as on the Valuation Date

Management has represented that major repairs have not been carried out in the past as the 9 SPVs being transferred have been recently operationalized or are being constructed.

Future estimate of major repairs and improvements as on the Valuation Date

Future estimate of major repairs and improvements as on the Valuation Date (Amt in INR crores)

Name of SPV	FY2019 12mths Actual	FY2020 12mths Forecast	FY2021 12mths Forecast	FY2022 12mths Forecast	FY2023 12mths Forecast	FY2024 12mths Forecast	FY2025 12mths Forecast	FY2026 12mths Forecast	FY2027 12mths Forecast	FY2028 12mths Forecast	FY2029 12mths Forecast	FY2030 12mths Forecast	FY2031 12mths Forecast
IWTL	-	-	-	-	40.8	40.9	42.5	-	1.3	-	110.6	40.6	-
SYTL	-	-	-	-	-	-	18.4	19.4	20.3	-	-	-	-
YATL	-	-	-	-	-	-	29.0	30.5	32.1	-	-	-	-
KTL	-	-	-	-	-	43.3	45.2	47.6	-	-	-	-	-
AETL	-	-	-	-	-	37.4	39.1	41.1	-	-	-	-	123.1
UTL	-	-	-	-	-	57.1	69.1	76.5	4.1	-	119.7	125.5	127.5
CGTL	-	-	-	-	-	-	27.0	28.4	29.9	-	-	-	86.1
KGTL	-	-	-	-	-	-	-	-	100.4	-	-	-	-
IHMTL	-	-	-	-	-	4.4	-	89.2	89.9	85.2	-	5.4	74.3

Future estimate of major repairs and improvements as on the Valuation Date (Amt in INR crores) (Cont.)

Name of SPV	FY2032 12mths Forecast	FY2033 12mths Forecast	FY2034 12mths Forecast	FY2035 12mths Forecast	FY2036 12mths Forecast	FY2037 12mths Forecast	FY2038 12mths Forecast	FY2039 12mths Forecast	FY2040 12mths Forecast	FY2041 12mths Forecast	FY2042 12mths Forecast	FY2043 12mths Forecast	FY2044 12mths Forecast
IWTL	-	1.6	11.9	166.5	1.9	-	-	148.5	53.2	-	-	-	-
SYTL	-	61.2	64.3	67.4	-	-	-	-	-	-	42.1	44.2	46.5
YATL	-	109.8	115.4	120.9	-	-	-	-	60.4	63.3	66.5	-	-
KTL	128.0	133.7	140.5	-	-	-	-	-	94.1	98.6	103.6	-	-
AETL	129.6	135.4	-	-	-	-	73.5	77.3	81.3	-	-	-	-
UTL	4.8	-	85.9	91.2	119.3	-	-	-	-	-	-	-	-
CGTL	90.7	94.7	-	8.9	46.3	48.4	50.8	-	-	-	-	-	-
KGTL	-	104.4	102.0	110.5	-	-	-	-	-	-	-	-	-
IHMTL	76.7	56.9	2.4	-	211.8	229.5	238.0	7.0	-	-	-	-	-

d) Revenue pendencies including local authority taxes associated with InvIT asset & compounding charges

Management has represented that there are no revenue pendencies including local authority taxes pending to be payable to the Government authorities with respect to all the 9 SPVs.

e) On-going material litigations including tax disputes in relation to the assets

As represented by the Management, the list of the ongoing material litigations of all the 9 SPVs, have been included In Annexures 1 to 9

f) Vulnerability to natural to induced hazards that may not have been covered in town planning/building control

Management has represented that there are no such natural or induced hazards which have been not considered in town planning/building control with respect to all the 9 SPVs.

g) Site Visit Photographs

Site visit of all the 9 SPVs was conducted. Photographs taken during the site visit have been included in earlier sections in the Report.

Caveat to Disclosures in Annexures:

The Valuer has not independently verified the documents related to the disclosures mentioned in the Annexures and have relied on the representation by the Management for the same.

10.1 Annexure I IWTL – Table 1: List of one-time sanctions/approvals

Sl.No	Description	Remarks
A	Permission of State government for extraction of boulders from quarry.	Received
B	Permission of Village Panchayat & Pollution control board for installation of crushers	Received, Applied for renewal
C-1	License for use of explosives.	Received
C-2	Permission of state government for drawing water from Rivers & reservoir.	Not Applicable
D-1	License from Inspector of factories or competent authorities for setting up Batching Plant	Received
D-2	Clearance from Pollution control board for Setting up Batching Plant	Received
E-1	Permission of Village Panchayat & Pollution control board for Asphalt Plant	Received
E-2	Permission of Village Panchayat & State government for Borrow earth	Received
F-1	Permission of State Government for Cutting of trees	Received
F-2	Any other permits or clearance required under applicable Laws	Labour License taken.

10.2 Annexure I IWTL – Table 2 List of ongoing material litigations or litigations where financial implication cannot be ascertained

Sl. No.	Brief Description of Case	Status as on date	Financial implications
1	The plaintiff has filed this suit praying that stay should be given for the stoppage work of NH-66 to set right certain anomalies in the tree cutting tender awarded to him by the NHAI in Kundapur forest division in respect of cutting of reserved categories of trees like teak, Bethonne, Matti, Sandalwood & seasom.	There are no Adverse orders against the company. The matter is pending	Land acquisition and related cost, cutting the necessary trees for road widening work, and related cost, etc are the sole responsibilities of NHAI. Further the concessionaire is not a party in the tender awarded to the plaintiff for cutting of the trees. Hence, there are no financial implications in this matter.
2	The plaintiff has filed the suit to restrain the defendants from undertaking the blasting of the rocks/hill in unscientific manner as it has caused loss to the plaintiff.	There are no Adverse orders against the company. The matter is pending	The company and plaintiff had mediated the dispute party and the company has paid a sum of Rs. 175000/- to the plaintiff in the interest of the project. The matter is pending for final determination. As the company has complied with all the necessary provisions and undertaken the work with all safety precautions, the company feels that there are no financial implications in this matter.
3	The plaintiff has filed this suit challenging the land acquisition and has prayed that the respondents should be restrained from doing the work against the provisions of the land acquisition act	There are no Adverse orders against the company. The matter is pending	The responsibility of the entire process of land acquisition and payment of compensation is of NHAI. Hence, that there are no financial implications in this matter.

10.3 Annexure II SYTL – Table 1: List of one-time sanctions/Approvals

None. Management has represented that one-time sanctions/approvals are not applicable for SYTL as the project has achieved commercial operational date (COD). These sanctions / approvals are applicable during the construction phase only.

10.4 Annexure II SYTL – Table 2: List of ongoing material litigations

Nil

10.5 Annexure III YATL – Table 1: List of one-time sanctions/approvals

Sl.No	Description	Remarks
A	Permission of the State Government for extraction of boulder from quarry.	
	1. For Washi	Received
	2. For Manjarsumba & Khandavi	Presently not operational hence extention not in process
	3. For Kolibodkha/Murma	Premission awaited
B	Permission for installation of crusher;	
	From Village Panchayat (NOC for installation of crusher from Grampanchayat)	Received
	From Pollution Control Board (Consent to operate)	Received
C	License for use of explosives (NOC from Additional District Magistrate)	Received
D	Permission of State Government for drawing water from river/reservoir.	Not Applicable
E	License from the inspector of factories or other competent authority for setting up Batching plant	Not Applicable
F	Clearance of Pollution Control Board for setting up Batching Plant (Consent to Operate)	Received
G	Clearance for Asphalt Plant	
	From Village Panchayat (NOC for installation of Asphalt Plant)	Received
	From Pollution Control Board (Consent to Operate)	Received
H	Permission of Village Panchayat and State Government for borrow areas (Permit for extraction of Murum: Transit passes : Royalty permit)	Received
J	Any other permits or clearances	
	From Pollution Control Board (Consent to operate)	Received

10.6 Annexure III YATL – Table 2: List of ongoing material litigations

Sl. No.	Brief Description of Case	Status as on date	Financial implications
1	This matter is pertaining to Yedeshi Aurangabad Project The petitioner is aggrieved by the award wherein his land is acquired by NHAI, for construction of highway. Hence, the petitioners have prayed not to change the existing alignment of the proposed road widening of NH 211 passing through petitioners village and to restrain respondents from proceeding further with any change in the existing alignment	The matter is pending.	The responsibility of the entire process of land acquisition and payment of compensation is of NHAI. Hence, there are no financial implications on the company.
2	This matter is pertaining to Yedeshi Aurangabad Project The petitioner is aggrieved by the award wherein his land is acquired by NHAI, for construction of highway. Hence, the petitioners have prayed that the land acquisition should be set aside, the respondents should be restrained from acquiring the land belonging to the petitioners, etc..	The matter is pending.	The responsibility of the entire process of land acquisition and payment of compensation is of NHAI. Hence, there are no financial implications on the company.
3	This matter is pertaining to Yedeshi Aurangabad Project The Plaintiff claims that the electricity poles & DP coming within road alignment / area have been replaced but erected & installed within his private land which has not been acquired.	The matter is pending.	The responsibility of the entire process of land acquisition and payment of compensation is of NHAI. Utility shifting is being done on the land provided by NHAI Hence, there are no financial implications on the company.

10.7 Annexure IV KTL – Table 1: List of one-time sanctions/approvals

None. Management has represented that one-time sanctions/approvals are not applicable for KTL as the project has achieved commercial operational date (COD). These sanctions / approvals are applicable during the construction phase only.

10.8 Annexure IV KTL – Table 2: List of ongoing material litigations

Sl. No.	Brief Description of Case	Status as on date	Financial implications
1	The Petitioner has challenged the levy and collection of toll on the project, and has prayed that the notification by which the toll is collected should be quashed and issue the directions for frame policy for the local transporters which may not act against the financial interest of the poor local villagers who travel in busses.	The matter is pending.	Financial implications cannot be ascertained as not mentioned in the petition. Similar writ petition challenging the toll collection on the project was filed in Punjab and Haryana High Court by Azad Singh (reported under closed litigations writ petition number 22648/2017), has been dismissed by the High Court. The concessionaire has been collecting the toll on the project as per the concession agreement and the toll notification. The provisional completion certificate has been issued to the concessionaire as per the terms of the concession agreement. Considering the merits of the case, there are no financial implications in this matter.

10.9 Annexure V AETL – Table 1: List of one-time sanctions/approvals

Sl.No	Description	Remarks
A	Permission of State government for extraction of boulders from quarry.	Received
B	Permission of Village Panchayat & Pollution control board for installation of crushers	Received
C	License for use of explosives	Received
D	Permission of the state government for drawing water from river/reservoir	Applied for approval
E	License from inspector of factories or other competent authority for setting up Batching Plant	Received
F	Clearance of pollution control board for setting up Batching plant	Received
G	Clearance of village Panchayats & pollution control board for asphalt plant	Received
H	Permission of village panchayat & state government for borrow earth	Received
I	Permission of state government for cutting of trees	Received
J	Any other permits or clearances under applicable laws	Not applicable

10.10 Annexure V AETL – Table 2: List of ongoing material litigations

Sl. No.	Brief Description of Case	Status as on date	Financial implications
1	1. NHAI levied damages on Concessionaire citing delay in fulfilment of Conditions Precedent and achievement of Financial Close as per Concession Agreement. 2. However, the Concessionaire asserted that the damages levied by NHAI are not applicable since the delay in achieving Financial Close was on account of delay by NHAI in appraising the Total Project Cost assessed by the Lenders and eventually NHAI refused to appraise the same. This delay was not attributable to the Concessionaire and it had also affected the fulfilment of Concessionaire's Conditions Precedent as per Clause 4.1.3 (b), (c), (e) & (f) of the Concession Agreement which were all linked to Financial Close. 3. The Concessionaire also put on record that as on Appointed Date (i.e. 01/08/2016), the percentage of vacant land handed over by NHAI to Concessionaire was less than 80% as required under Clauses 10.3.2 & 10.3.5 of the Concession Agreement. 4. Hence, the penalties claimed by NHAI on account of delay in Financial Close may be waived off since this delay cannot be attributed to the Concessionaire. Thus, the dispute was crystallised. As per the Clause number 44.3 of the Concession Agreement, the arbitration was invoked. 5. The matter was referred to (**Conciliation Committee of Independent Expert**) CCIE-1 for Conciliation. The issue was whether 80% of vacant land was available to the Concessionaire at the time of Financial Close/ Appointed Date. Concessionaire submitted land acquisition officer's CALA (**Competent Authority of Land Acquisition**) record confirming less than 80% of land availability at the time of Financial Close/ Appointed Date. 6. In the final meeting it was directed by the CCIE-1 to jointly inspect the CALA record and verify the land status as on Financial Close/Appointed Date. Even after Concessionaire followed up several times, NHAI did not deploy their representative for the joint inspection.	Since there was no response, the Concessionaire had intimated to NHAI stating that the CALA record submitted by the Concessionaire is genuine and dispute is therefore settled amicably. NHAI has not responded to this. In the meantime, the arbitration has been kept on hold.	Rs 37.4 Crore + Interest

10.11 Annexure VI UTL – Table 1: List of one-time sanctions/approvals

Sl.No	Description	Remarks
A	Permission of State government for extraction of boulders from quarry.	Received
B	Permission of Village panchayat& Pollution control board for installation of crushers	Received
C	License for use of explosives.	Received
D	Permission of state government for drawing water from Rivers & reservoir.	Not applicable
E	License from Inspector of factories or competent authorities for setting up Batching Plant	Received
F	Clearance from Pollution control board for Setting up Batching Plant	Received
G	Permission of Village panchayat& Pollution control board for Asphalt Plant	Received
H	Permission of Village panchayat& State government for Borrow earth	Received
I	Permission of State Government for Cutting of trees	Received
J	Any other permits or clearance required under applicable Laws	Labour License taken.

10.12 Annexure VI UTL – Table 2: List of ongoing material litigations

Sl. No.	Brief Description of Case	Status as on date	Financial implications
1	Bus driver Mr. Bhairulal Salvi has damaged the toll booths by pelting the stone & created violence in smooth tolling operations at Khandiobri Toll.	The matter is being investigated by the police.	The FIR is filed against the Bus driver, by the employee of the company. The FIR is filed by the employee of the company against the bus driver. There are no proceedings against the company.

10.13 Annexure VII CGTL – Table 1: List of one-time sanctions/approvals

Sl.No	Description	Remarks
A	Permission of State Govt for Extraction of Boulders	Received
B	Permission of Village Panchyat & Pollution Control Board for Installation of Crushers	Received
C	License for Use of Explosives	Not applicable
D	Permission of State Govt for Extraction for Drawing Water from Reservior/river	Not applicable
E	License from Inspector of factories for setting up Batching Plant	Received
F	Clearance from Pollution Control Board for setting up Batching Plant	Received
G	Clearance from Pollution Control Board & Village Panchyat for setting up Asphalt Plant	Received
H	Permission of State Govt & Village Panchyat for Borrow Earth	Received
I	Permission of State Govt for Cutting Trees	Received
J	Environmental Clearance	Received
K	Change of Land	Received

10.14 Annexure VII CGTL – Table 2: List of ongoing material litigations

Sl. No.	Brief Description of Case	Status as on date	Financial implications
1	The plaintiff has filed case challenging the collection of toll without completion of six lane. Plaintiff /Petitioners have prayed that collection of toll shall be stopped until works of six lanes are completed and toll collected in the name of six laning shall be returned with interest.	The matter is pending	The company is collecting the toll as per the toll notification and concession agreement with NHAI. Since, the project consists from 4 laining to 6 laining, hence, during the construction period, the company collects only 75% of the prescribed toll amount as per the toll fee notification. These toll rates are fixed for construction period. The company has good case on merits. The company has not violated any of the concession agreement provisions and hence, there are no financial implications in the matter.

10.15 Annexure VIII KGTL – Table 1: List of one-time sanctions/approvals

Sl.No	Description	Remarks
A	Permission of the State Government for extraction of boulder from quarry.	Received
B	Permission of Village Panchayat and Pollution Control Board for installation of crusher.	Received
C	License for use of explosives	Received
D	Permission of state government for drawing water from river/reservoir	Not Applicable
E	License from the inspector of factories or other competent authority for setting up Batching plant	Received
F	Clearance of Pollution Control Board for setting up Batching Plant;	Received
G	Clearance of Village Panchayats and Pollution Control Board for Asphalt Plant	Received
H	Permission of Village Panchayat and State Government for borrow areas.	Received
I	Permission of State Government for cutting of trees	Received
J	Any other permits or clearances required under Applicable Laws	-

10.16 Annexure VIII KGTL – Table 2: List of ongoing material litigations

Nil

10.17 Annexure IX IHMTL – Table 1: List of one-time sanctions/approvals

Sl.No	Description	Remarks
A	Permission of the state for extraction of boulder from the quarry	Not applicable
B	Permission of Village Panchayat & pollution control board for installation of crushers	Not applicable
C	License for use of explosives	Not applicable
D	Permission of the state government for drawing water from river/reservoir	Received
E	License from inspector of factories or other competent authority for setting up Batching Plant	Received
F	Clearance of pollution control board for setting up Batching plant	Received
G	Clearance of village Panchayats & pollution control board for asphalt plant	Received
H	Permission of village panchayat & state government for borrow earth	Received
I	Permission of state government for cutting of trees	Received
J	Any other permits or clearances under applicable laws	Not applicable

10.18 Annexure IX IHMTL – Table 2: List of ongoing material litigations

Nil

10.19 Annexure X – Comparable companies description

List of comparable companies taken for the computation of beta
Sadbhav Infrastructure Project Limited
MEP Infrastructure Developers Limited
IRB Infrastructure Developers Limited
Ashoka Buildcon Limited
PNC Infratech Limited

10.20 Annexure XI – Parties to the InvIT

- IRB Infrastructure Trust ("the Trust")
- IRB Infrastructure Developers Limited (in its capacity as "Sponsor" of the Trust)
- MMK Toll Road Private Limited (in its capacity as "Investment Manager" of the Trust) &
- IDBI Trusteeship Services Limited (as the "Trustee" of the Trust)

**********END OF REPORT**********

ANNEXURE B

PROJECTIONS

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Report of auditors on examination of prospective financial information

To,
IDBI Trusteeship Services Limited
(As Trustee Of the IRB Infrastructure Trust)
Asian Building, Ground Floor,
17,R. Kamani Marg,
Ballard Estate,
Mumbai-400001

MMK Toll Road Private Limited
(As the Investment Manager of IRB Infrastructure Trust)
Off no-11th Floor/1101,
Hiranandani Knowledge Park,
Technology Street, Hill Side Avenue,
Powai, Mumbai 400076.

Dear Sirs,

We have reviewed the attached projected revenue from operations and cash flow from operating activities of the Project SPVs and Project SPV Group for the years ended March 31, 2021, 2022 and 2023, (defined below) and the Basis and Notes to these projections ("Projections") along with the Significant assumptions underlying the projections ("Projection Assumptions" together with the Projections as ("Projected Revenue from operations and Cash Flow from operating activities")) of the following entities, namely:

1. IRB Westcoast Tollway Limited
2. Yedeshi Aurangabad Tollway Limited
3. Solapur Yedeshi Tollway Limited
4. Kaithal Tollway Limited
5. AE Tollway Limited
6. Udaipur Tollway Limited
7. CG Tollway Limited
8. Kishangarh Gulabpura Tollway Limited
9. IRB Hapur Moradabad Tollway Limited

(Collectively referred as 'Project SPVs' or 'Project SPV Group' and individually 'Project SPV') which are proposed to be transferred from the IRB Infrastructure Developers Limited to IRB Infrastructure Trust (the 'Trust') prior to the allotment of Units ("Units"), pursuant to the proposed private placement of Units of the Trust ('Private Placement'), in accordance with Standard on Assurance Engagement 3400, "The Examination of Prospective Financial Information", issued by the Institute of Chartered Accountants of India.

The Projected Revenue from operations and Cash Flow from operating activities have been prepared in relation to the proposed Private Placement of Units of the Trust (the 'Issue'), under the Securities and Exchange Board of India (Infrastructure Investment Trusts) Regulations, 2014, as amended from time to time, including the circulars, notifications, clarifications and guidelines issued thereunder, ("InvIT Regulations").

The preparation and presentation of the Projected Revenue from operations and Cash Flow from operating activities in accordance with the InvIT Regulations, is the responsibility of the Investment Manager of Trust and has been approved by the Investment Manager of the Trust for inclusion in the preliminary placement memorandum and placement memorandum.

We have examined the evidence supporting the assumptions and other information in the Projections. Our responsibility does not include verification of the accuracy of the Projections. Therefore, we do not vouch for the accuracy of the same. The assumptions used for the preparation of these Projections have been provided to us by the Investment Manager of the Trust and relied upon by us as certain matters included are of technical nature.

We have examined and reviewed the projected revenue from operations and cash flow from operating activities, which comprises of the following:

1. Projected revenue from operations and cash flow from operating activities for the Project SPVs for the financial years ended March 31, 2021, 2022 and 2023;

2. Projected revenue from operations and cash flow from operating activities for the Project SPV Group for the financial years ended March 31, 2021, 2022 and 2023;

Based on our review of the evidence supporting the assumptions, nothing has come to our attention which causes us to believe that these Projection Assumptions do not provide a reasonable basis for the Projections and confirm that the Projection Assumptions are appropriate for the purpose of these Projections.

We have verified the arithmetical accuracy of the Projections and found them to be accurate and appropriate. Further, in our opinion, the Projections are properly prepared on the basis of the assumptions as set forth in the basis and notes to Projections and are consistent with the accounting policies of the Project SPV Group and with the financial statements of the Project SPVs and the significant accounting policies adopted by the Project SPV Group in line with the Indian Accounting Standard (Ind AS) as prescribed under Section 133 of the Companies Act, 2013 read with relevant rules and other accounting principles generally accepted in India and the InvIT Regulations.

Events and circumstances frequently do not occur as expected; even if the events anticipated under the hypothetical assumptions described herewith in the attached documents occur. Actual results are still likely to be different from the Projections since other anticipated events frequently do not occur as expected and the variation may be material. The actual results may therefore differ materially from those forecasted and projected, for the reasons set out above. Therefore, we do not express any opinion as to the possibility of achievement of the Projections.

This report is intended solely for inclusion in the preliminary placement memorandum and placement memorandum in connection with the proposed Private Placement of the Units of the Trust and is not to be used, referred to or distributed for any other purpose without our written consent.

For **Gokhale & Sathe**
Chartered Accountants
Firm's Registration No.: 103264W

Chinmaya Deval
Membership No.: 148652
UDIN: 20148652AAAACL4828
Place: Mumbai
Date: February 13, 2020

Projections of revenue from operations and cash flow from operations for the Project SPV
Solapur Yedeshi Tollway Limited
(All amounts in ₹ millions unless otherwise stated)

Particulars	For the Financial year ended 31.03.2021	For the Financial year ended 31.03.2022	For the Financial year ended 31.03.2023
Projected revenue from operations:			
Income from toll collection	778.48	875.69	975.54
	778.48	**875.69**	**975.54**
Projected cash flow from operating activities :			
Cash inflow from revenue from operations	778.48	875.69	975.54
Less:			
Actual Operation & maintenance expenses	(153.20)	(161.56)	(169.91)
Cash generated from operations	**625.28**	**714.13**	**805.63**
Less : Direct taxes paid (net of refunds)	-	-	-
Net cash flow from operating activities	**625.28**	**714.13**	**805.63**

For and on behalf of the Board of Directors of
MMK Toll Road Private Limited
(As Investment Manager to IRB Infrastructure Trust)
CIN : U45200MH2002PTC135512

For Gokhale & Sathe
Chartered Accountants
ICAI registration number: 103264W

CA Chinmaya Deval
Partner
Membership No. 148652

Arati Taskar
Director
DIN: 07089953

Naresh Taneja
Director
DIN: 07178896

Jitendra Sharma
Chief Financial Officer

Kaustubh Shevade
Company Secretary

Place: Mumbai
Date: February 13, 2020

Place : Mumbai
Date: February 13, 2020

Projections of revenue from operations and cash flow from operations for the Project SPV
Yedeshi Aurangabad Tollway Limited
(All amounts in ₹ millions unless otherwise stated)

Particulars	For the Financial year ended 31.03.2021	For the Financial year ended 31.03.2022	For the Financial year ended 31.03.2023
Projected revenue from operations:			
Income from toll collection	1,378.81	1,538.54	1,721.60
	1,378.81	**1,538.54**	**1,721.60**
Projected cash flow from operating activities :			
Cash inflow from revenue from operations	1,378.81	1,538.54	1,721.60
Less:			
Actual Operation & maintenance expenses	(212.11)	(223.67)	(235.24)
Cash generated from operations	**1,166.71**	**1,314.86**	**1,486.36**
Less : Direct taxes paid (net of refunds)	-	-	-
Net cash flow from operating activities	**1,166.71**	**1,314.86**	**1,486.36**

For and on behalf of the Board of Directors of
MMK Toll Road Private Limited
(As Investment Manager to IRB Infrastructure Trust)
CIN : U45200MH2002PTC135512

For Gokhale & Sathe
Chartered Accountants
ICAI registration number: 103264W

CA Chinmaya Deval
Partner
Membership No. 148652

Arati Taskar
Director
DIN: 07089953

Naresh Taneja
Director
DIN: 07178896

Jitendra Sharma
Chief Financial Officer

Kaustubh Shevade
Company Secretary

Place: Mumbai
Date: February 13, 2020

Place : Mumbai
Date: February 13, 2020

Projections of revenue from operations and cash flow from operations for the Project SPV
IRB Westcoast Tollway Limited
(All amounts in ₹ millions unless otherwise stated)

Particulars	For the Financial year ended 31.03.2021	For the Financial year ended 31.03.2022	For the Financial year ended 31.03.2023
Projected revenue from operations:			
Income from toll collection	1,438.47	1,838.27	2,055.15
	1,438.47	**1,838.27**	**2,055.15**
Projected cash flow from operating activities :			
Cash inflow from revenue from operations	1,438.47	1,838.27	2,055.15
Less:			
Actual Operation & maintenance expenses	(226.35)	(236.64)	(654.93)
Cash generated from operations	**1,212.11**	**1,601.62**	**1,400.21**
Less : Direct taxes paid (net of refunds)	-	-	-
Net cash flow from operating activities	**1,212.11**	**1,601.62**	**1,400.21**

For and on behalf of the Board of Directors of
MMK Toll Road Private Limited
(As Investment Manager to IRB Infrastructure Trust)
CIN : U45200MH2002PTC135512

For Gokhale & Sathe
Chartered Accountants
ICAI registration number: 103264W

CA Chinmaya Deval
Partner
Membership No. 148652

Arati Taskar
Director
DIN: 07089953

Naresh Taneja
Director
DIN: 07178896

Jitendra Sharma
Chief Financial Officer

Kaustubh Shevade
Company Secretary

Place: Mumbai
Date: February 13, 2020

Place : Mumbai
Date: February 13, 2020

Projections of revenue from operations and cash flow from operations for the Project SPV
Kaithal Tollway Limited
(All amounts in ₹ millions unless otherwise stated)

Particulars	For the Financial year ended 31.03.2021	For the Financial year ended 31.03.2022	For the Financial year ended 31.03.2023
Projected revenue from operations:			
Income from toll collection	1,061.77	1,180.05	1,315.41
	1,061.77	**1,180.05**	**1,315.41**
Projected cash flow from operating activities :			
Cash inflow from revenue from operations	1,061.77	1,180.05	1,315.41
Less:			
Actual Operation & maintenance expenses	(174.78)	(184.32)	(193.85)
Cash generated from operations	**886.98**	**995.73**	**1,121.55**
Less : Direct taxes paid (net of refunds)	-	-	-
Net cash flow from operating activities	**886.98**	**995.73**	**1,121.55**

For and on behalf of the Board of Directors of
MMK Toll Road Private Limited
(As Investment Manager to IRB Infrastructure Trust)
CIN : U45200MH2002PTC135512

For Gokhale & Sathe
Chartered Accountants
ICAI registration number: 103264W

CA Chinmaya Deval
Partner
Membership No. 148652

Arati Taskar
Director
DIN: 07089953

Naresh Taneja
Director
DIN: 07178896

Jitendra Sharma
Chief Financial Officer

Kaustubh Shevade
Company Secretary

Place: Mumbai
Date: February 13, 2020

Place : Mumbai
Date: February 13, 2020

Projections of revenue from operations and cash flow from operations for the Project SPV
AE Tollway Limited
(All amounts in ₹ millions unless otherwise stated)

Particulars	For the Financial year ended 31.03.2021	For the Financial year ended 31.03.2022	For the Financial year ended 31.03.2023
Projected revenue from operations:			
Income from toll collection	1,385.28	1,570.51	1,784.69
Less: Premium payment to NHAI	(984.56)	(1,033.79)	(1,085.48)
	400.72	**536.72**	**699.21**
Projected cash flow from operating activities :			
Cash inflow from revenue from operations	400.72	536.72	699.21
Less:			
Actual Operation & maintenance expenses	(322.81)	(340.42)	(358.03)
Cash generated from operations	**77.91**	**196.30**	**341.19**
Less : Direct taxes paid (net of refunds)	-	-	-
Net cash flow from operating activities	**77.91**	**196.30**	**341.19**

For and on behalf of the Board of Directors of
MMK Toll Road Private Limited
(As Investment Manager to IRB Infrastructure Trust)
CIN : U45200MH2002PTC135512

For Gokhale & Sathe
Chartered Accountants
ICAI registration number: 103264W

CA Chinmaya Deval
Partner
Membership No. 148652

Arati Taskar
Director
DIN: 07089953

Naresh Taneja
Director
DIN: 07178896

Jitendra Sharma
Chief Financial Officer

Kaustubh Shevade
Company Secretary

Place: Mumbai
Date: February 13, 2020

Place : Mumbai
Date: February 13, 2020

Projections of revenue from operations and cash flow from operations for the Project SPV
Udaipur Tollway Limited
(All amounts in ₹ millions unless otherwise stated)

Particulars	For the Financial year ended 31.03.2021	For the Financial year ended 31.03.2022	For the Financial year ended 31.03.2023
Projected revenue from operations:			
Income from toll collection (net)	2,188.16	2,464.23	2,764.26
Less: Premium payment to NHAI	(955.50)	(1,687.14)	(1,737.75)
	1,232.66	**777.09**	**1,026.51**
Projected cash flow from operating activities :			
Cash inflow from revenue from operations	1,232.66	777.09	1,026.51
Less:			
Actual Operation & maintenance expenses	(185.09)	(193.50)	(201.92)
Cash generated from operations	**1,047.57**	**583.59**	**824.59**
Less : Direct taxes paid (net of refunds)	-	-	-
Net cash flow from operating activities	**1,047.57**	**583.59**	**824.59**

For and on behalf of the Board of Directors of
MMK Toll Road Private Limited
(As Investment Manager to IRB Infrastructure Trust)
CIN : U45200MH2002PTC135512

For Gokhale & Sathe
Chartered Accountants
ICAI registration number: 103264W

CA Chinmaya Deval
Partner
Membership No. 148652

Arati Taskar
Director
DIN: 07089953

Naresh Taneja
Director
DIN: 07178896

Jitendra Sharma
Chief Financial Officer

Kaustubh Shevade
Company Secretary

Place: Mumbai
Date: February 13, 2020

Place : Mumbai
Date: February 13, 2020

Projections of revenue from operations and cash flow from operations for the Project SPV
CG Tollway Limited
(All amounts in ₹ millions unless otherwise stated)

Particulars	For the Financial year ended 31.03.2021	For the Financial year ended 31.03.2022	For the Financial year ended 31.03.2023
Projected revenue from operations:			
Income from toll collection	2,535.52	2,921.81	3,267.58
Less: Premium payment to NHAI	(952.50)	(2,354.58)	(2,425.22)
	1,583.02	**567.23**	**842.37**
Projected cash flow from operating activities :			
Cash inflow from revenue from operations	1,583.02	567.23	842.37
Less:			
Actual Operation & maintenance expenses	(269.43)	(309.96)	(325.99)
Cash generated from operations	**1,313.59**	**257.27**	**516.38**
Less : Direct taxes paid (net of refunds)	-	-	-
Net cash flow from operating activities	**1,313.59**	**257.27**	**516.38**

For and on behalf of the Board of Directors of
MMK Toll Road Private Limited
(As Investment Manager to IRB Infrastructure Trust)
CIN : U45200MH2002PTC135512

For Gokhale & Sathe
Chartered Accountants
ICAI registration number: 103264W

CA Chinmaya Deval
Partner
Membership No. 148652

Arati Taskar
Director
DIN: 07089953

Naresh Taneja
Director
DIN: 07178896

Jitendra Sharma
Chief Financial Officer

Kaustubh Shevade
Company Secretary

Place: Mumbai
Date: February 13, 2020

Place : Mumbai
Date: February 13, 2020

Projections of revenue from operations and cash flow from operations for the Project SPV
Kishangarh Gulabpura Tollway Limited
(All amounts in ₹ millions unless otherwise stated)

Particulars	For the Financial year ended 31.03.2021	For the Financial year ended 31.03.2022	For the Financial year ended 31.03.2023
Projected revenue from operations:			
Income from toll collection	1,659.58	2,190.98	2,485.78
Less: Premium payment to NHAI	(155.25)	(1,918.89)	(1,976.46)
	1,504.33	**272.09**	**509.33**
Projected cash flow from operating activities :			
Cash inflow from revenue from operations	1,504.33	272.09	509.33
Less:			
Actual Operation & maintenance expenses	(205.45)	(215.72)	(226.88)
Cash generated from operations	**1,298.88**	**56.37**	**282.45**
Less : Direct taxes paid (net of refunds)	(53.25)	-	-
Net cash flow from operating activities	**1,245.63**	**56.37**	**282.45**

For and on behalf of the Board of Directors of
MMK Toll Road Private Limited
(As Investment Manager to IRB Infrastructure Trust)
CIN : U45200MH2002PTC135512

For Gokhale & Sathe
Chartered Accountants
ICAI registration number: 103264W

CA Chinmaya Deval
Partner
Membership No. 148652

Arati Taskar
Director
DIN: 07089953

Naresh Taneja
Director
DIN: 07178896

Jitendra Sharma
Chief Financial Officer

Kaustubh Shevade
Company Secretary

Place: Mumbai
Date: February 13, 2020

Place : Mumbai
Date: February 13, 2020

Projections of revenue from operations and cash flow from operations for the Project SPV
IRB Hapur Moradabad Tollway Limited
(All amounts in ₹ millions unless otherwise stated)

Particulars	For the Financial year ended 31.03.2021	For the Financial year ended 31.03.2022	For the Financial year ended 31.03.2023
Projected revenue from operations:			
Income from toll collection	1,349.58	1,786.04	2,770.25
Less: Premium payment to NHAI	-	-	(262.50)
	1,349.58	**1,786.04**	**2,507.75**
Projected cash flow from operating activities :			
Cash inflow from revenue from operations	1,349.58	1,786.04	2,507.75
Less:			
Actual Operation & maintenance expenses	(76.98)	(80.48)	(83.98)
Cash generated from operations	**1,272.59**	**1,705.56**	**2,423.77**
Less : Direct taxes paid (net of refunds)	-	-	-
Net cash flow from operating activities	**1,272.59**	**1,705.56**	**2,423.77**

For and on behalf of the Board of Directors of
MMK Toll Road Private Limited
(As Investment Manager to IRB Infrastructure Trust)
CIN : U45200MH2002PTC135512

For Gokhale & Sathe
Chartered Accountants
ICAI registration number: 103264W

CA Chinmaya Deval
Partner
Membership No. 148652

Arati Taskar
Director
DIN: 07089953

Naresh Taneja
Director
DIN: 07178896

Jitendra Sharma
Chief Financial Officer

Kaustubh Shevade
Company Secretary

Place: Mumbai
Date: February 13, 2020

Place : Mumbai
Date: February 13, 2020

Projections of revenue from operations and cash flow from operations of the Project SPV Group
(All amounts in ₹ millions unless otherwise stated)

Particulars	For the Financial year ended 31.03.2021	For the Financial year ended 31.03.2022	For the Financial year ended 31.03.2023
Projected revenue from operations:			
Income from toll collection	13,775.63	16,366.11	19,140.27
Less: Premium payment to NHAI	(3,047.81)	(6,994.40)	(7,487.41)
	10,727.82	**9,371.71**	**11,652.86**
Projected cash flow from operating activities :			
Cash inflow from revenue from operations	10,727.82	9,371.71	11,652.86
Less:			
Actual Operation & maintenance expenses	(1,826.21)	(1,946.28)	(2,450.74)
InvIT Expenses (incl IM, Trustee, Valuer Fees)	(39.60)	(43.56)	(47.92)
Cash generated from operations	**8,862.01**	**7,381.87**	**9,154.21**
Less : Direct taxes paid (net of refunds)	(53.25)	-	-
Net cash flow from operating activities	**8,808.77**	**7,381.87**	**9,154.21**

For and on behalf of the Board of Directors of
MMK Toll Road Private Limited
(As Investment Manager to IRB Infrastructure Trust)
CIN : U45200MH2002PTC135512

For Gokhale & Sathe
Chartered Accountants
ICAI registration number: 103264W

CA Chinmaya Deval
Partner
Membership No. 148652

Arati Taskar
Director
DIN: 07089953

Naresh Taneja
Director
DIN: 07178896

Jitendra Sharma
Chief Financial Officer

Kaustubh Shevade
Company Secretary

Place: Mumbai
Date: February 13, 2020

Place : Mumbai
Date: February 13, 2020

IRB Infrastructure Trust

Basis and Notes to Projected revenue from operations and cash flow from operating activities

1. General information

The IRB Infrastructure Trust (the "Fund") is a trust settled pursuant to the indenture of trust dated August 27, 2019 (which is registered under the Registration Act, 1908) and registered under the Securities Exchange Board of India (Infrastructure Investment Trusts) Regulations, 2014. The Fund is settled by the Sponsor, IRB Infrastructure Developers Limited ("IRB" or the "Sponsor"), an infrastructure development company in India. The Trustee to the Fund is IDBI Trusteeship Services Limited (the "Trustee"). The Investment manager for the Fund is MMK Toll Road Private Limited (the "Investment Manager" or the "Management"). The Fund along with nine Project SPVs as stated below shall be together called as the "Project SPV Group".

2. Purpose and the basis of preparation

The projected revenue from operations and cash flow from operating activities of nine Project SPVs, namely AE Tollway Limited ("AETL"), CG Tollway Limited ("CGTL"), IRB Hapur Moradabad Tollway Limited ("IRB HMTL"), IRB Westcoast Tollway Limited ("IRB WTL"), Kishangarh Gulabpura Tollway Limited ("KGTL"), Kaithal Tollway Limited ("KTL"), Solapur Yedeshi Tollway Limited ("SYTL"), Udaipur Tollway Limited ("UTL") and Yedeshi Aurangabad Tollway Limited ("YATL") (together called as "Project SPV Group" and individually a "Project SPV") for the years ending March 31, 2021, 2022 and 2023 (the "Projections"). The Projections have been compiled solely for the purpose of being included in the preliminery placement memorandum and placement memoradum in connection with the private placement of the units of the Fund. Therefore, the use of the Projections is not appropriate and should not be used or relied upon for any purpose other than described above.

The Projections have been prepared based on the assumption that once the private placement is complete, the Fund will acquire equity interests in the Project SPVs immediately prior to allotment in the private placement. Out of the total net proceeds, Rs. 30,000 million will be infused to replace part of existing bank debt.

The Projections are prepared based on the accounting policies that are expected to be used for the Fund's financial information for the corresponding periods in accordance with Indian Accounting Standards ("Ind AS") and / or any addendum thereto as defined in Rule 2(1)(a) notified under the Companies (Indian Accounting Standards) Rules, 2015 and the Companies (Indian Accounting Standards) Amendment Rules, 2016 and subsequent amendments.

The Projections only include the following information:

1. Projected revenue from operations and cash flow from operating activities for the Project SPVs for the financial years ended March 31, 2021, 2022 and 2023;
2. Projected revenue from operations and cash flow from operating activities for the Trust Group for the financial years ended March 31, 2021, 2022 and 2023;
3. Basis and Notes to projections;
4. Significant assumptions underlying the projections.

Though the aforesaid Projections are prepared under the Ind-AS framework, they do not provide for all the detailed disclosures as required under Ind-AS.

The accounting year end of the Fund is March 31 of each year. Accordingly, the Projections are prepared for the years ending March 31, 2021, 2022 and 2023. However, the assumed date of acquisition (April 1, 2020) may be postponed and accordingly, the actual result in the first financial period of the Fund as well as subsequent financial periods will be different from the projection period in the Projections.

The Projections have been prepared and disclosed in INR millions, unless otherwise specifically mentioned.

The Projections contain forecasts and projections that relate to future events, which are, by their nature, subject to significant risks and uncertainties. The future events referred to involve risks, uncertainties and other factors which may cause the actual results or performance to be materially different from any future results or performance expressed or implied.

Significant assumptions for the Projections

The Projections have been prepared based on the significant assumptions summarised below. The Investment Manager considers the assumptions to be appropriate and reasonable as at the date of the report. However, the investors should consider these assumptions as well as the Projections and make their own assessment of the future performance of the Fund.

1. **Revenue from operations:**

The Project SPVs' income mainly consists of revenue from operations and other income. Projected Revenue from operations primarily consists of income from toll collection.

The significant assumptions used in projection of income from toll collection are described below:-

The base data for the projections is based on the actual traffic data for the six months ended September, 2019 and tariff based on wholesale price index ('WPI') upto December, 2019. Key variables for toll revenue growth are traffic growth and WPI which are based on Management estimates and details of the assumptions are as set forth below:-

Assumptions for Traffic growth rate

Project SPVs	AETL	CGTL	IRB HMTL	IRB WTL	KGTL	KTL	SYTL	UTL	YATL
FY2021	7.94%	6.46%	7.82%	6.46%	8.00%	11.00%	7.44%	7.07%	6.37%
FY2022	8.04%	6.48%	7.88%	6.54%	8.01%	6.00%	6.66%	7.13%	6.44%
FY2023	8.14%	6.35%	7.94%	6.57%	8.03%	6.00%	6.68%	6.99%	6.49%

As per the relevant concession agreements, the tariff rates of Project SPVs are based on a rate of 3% + 40% of WPI. Management has estimated WPI at 5% per annum.

As per the provisions of Concession Agreement, the AETL, UTL, CGTL, KGTL and IRB HMTL are obligated to pay an annual premium to National Highways Authority of India (NHAI). Projected Revenue from operations has been considered net of premium payment to NHAI as per Concession Agreement.

2. **Operating and maintenance cost**

The operating and maintenance cost includes routine, periodic/major maintenance, manpower costs and operational expenses, including, but not limited to, road and site work expenses, employee benefit expenses and other operating and maintenance costs. The operation and maintenance costs are projected based on the costs as stated in the Project Implementation Agreement.

The projected operating and maintenance cost corresponds with the projected traffic and the projected revenue and is primarily based on the currently available information on actual operating and maintenance cost associated with the operation of the Project SPVs.

3. **InvIT expenses**

The Fund expenses are mainly projected based on the quotations obtained from various intermediaries or expected terms and conditions of the relevant agreements and / or based on Management's experience and judgement. The nature for the Fund expenses are described below.

Investment Manager Fee

Pursuant to the IMA, the Investment Manager shall be paid fees for the services provided by the Investment Manager of Rs. 36.00 million on pro rata basis. The fees shall be increased at 10% year-on-year. The said shall include all expenses including trustee fees, valuer fees, auditor fees and other service providers.

4. **Capital expenditure**

Some of the projects are currently under construction phase.

5. **Depreciation and amortisation**

Depreciation on tangible assets is calculated based on the written down value method (WDV) using the useful lives as prescribed under the Schedule II to the Companies Act, 2013 or as re-assessed by the Project SPVs.

Toll Collection rights

Toll collection rights including premium obligation are amortised over the period of concession, using revenue based amortisation. Under this method, the carrying value of the rights is amortised in the proportion of actual toll revenue for the year to projected revenue for the balance toll period, to reflect the pattern in which the assets economic benefits will be consumed. At each balance sheet date, the projected revenue for the balance toll period is reviewed by the Management.

6. **Finance costs**

It is assumed that the proceeds from issue shall be utilised for partial repayment of Project SPV loans from bank/ financial institutions. The balance bank debt of the Project SPVs is assumed to be refinanced at Trust level @ 9.25%. These loans shall be replaced by debt issued to the Project SPVs by the Fund carrying a coupon rate at 14.00% per annum.

7. **Taxes**

Current income tax assets and liabilities are measured at the amount expected to be recovered from, or paid to, the taxation authorities. The tax rates and tax laws used to compute the amount are those that are enacted or substantively enacted at the reporting date in India where the Group operates and generates taxable income.

The Project SPVs which have commenced before 1st April, 2017 are eligible for deduction under section 80IA of the Income Tax Act, 1961 for ten consecutive years. Accordingly, the tax is calculated under MAT provisions of Section 115JB of the Income Tax Act, 1961 based on the book profits of the Project SPVs. MAT credit is considered in accordance with the provisions of Section 115JAA of the Income Tax Act, 1961.

The Project SPVs which have become commenced after 1st April, 2017 are eligible for deduction under section 35AD of the Act. Accordingly, the tax is calculated under MAT provisions of Section 115JB of the Income Tax Act, 1961 based on the book profits of the Project SPVs. MAT credit is considered in accordance with the provisions of Section 115JAA of the Income Tax Act, 1961.

8. **Changes in working capital**

The entire collection of tolls is in cash and routine expenses are in cash or a credit period is available. In these cases the effective working capital deployed is relatively small or negative in certain instances. Further we believe the working capital is fairly stable and not expected to vary drastically over a period of time. Hence, changes in working capital are immaterial and no impact of that has been considered in the projected cash flows.

9. **Other Assumptions**

The Investment Manager has made the following additional assumptions in preparing the Projections:

i. The initial portfolio of Project SPVs remains unchanged throughout the FYs 2021, 2022 and 2023
ii. No further assets are acquired during the period.
iii. Capital will be raised during the forecast period as per the requirement of project.
iv. There will be no material change in taxation legislation or other applicable legislation
v. The relevant tax exemptions, tax remissions, and preferential tax treatments granted remain valid and applicable and that the terms and conditions thereto are complied with.
vi. No further loss/gain has been considered for forex and related derivative instruments.
vii. The Projections are based on assumptions and are subject to a number of factors. Investors should be aware that future events, including actual traffic growth rates, cannot be predicted with any certainty and there may be deviations from the figures projected in the Projections. The Projections have been prepared based on the Traffic Report's base case scenario for traffic volume growth rates, and no analysis has been performed to demonstrate the sensitivity of the Projections to changes in traffic volume growth rates or other assumptions.

For Gokhale & Sathe
Chartered Accountants
Firm Regn No : 103264W

For and on behalf of MMK Toll Road Private Limited
(Investment Manager to IRB Infrastructure Trust)
CIN : U45200MH2002PTC135512

Chinmaya Deval
Partner
Membership No.: 148652

Arati Taskar
Director
DIN: 07089953

Naresh Taneja
Director
DIN: 07178896

Jitendra Sharma
Chief Financial Officer

Kaustubh Shevade
Company Secretary

Place: Mumbai
Date: February 13, 2020

Place: Mumbai
Date : February 13, 2020

ANNEXURE C

TRAFFIC REPORTS

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Traffic Reports

by

Technical Consultants

Traffic Consultants for each of the Project SPVs:

AETL	LEA Associates South Asia Private Limited
CGTL	Steer
IRB HMTL	LEA Associates South Asia Private Limited
IRB WTL	GMD Consultants
KGTL	LEA Associates South Asia Private Limited
KTL	GMD Consultants
SYTL	Tractebel Engineering Private Limited
UTL	Steer
YATL	Steer

IRB INFRASTRUCTURE DEVELOPERS LIMITED.

TRAFFIC REPORT (FINAL)



SIX LANING OF AGRA – ETAWAH SECTION OF NH-2 (NEW NH-19)

LEA Associates South Asia Pvt. Ltd.
New Delhi, India

A subsidiary of IRB INFRASTRUCTURE DEVELOPERS LTD

January, 2019

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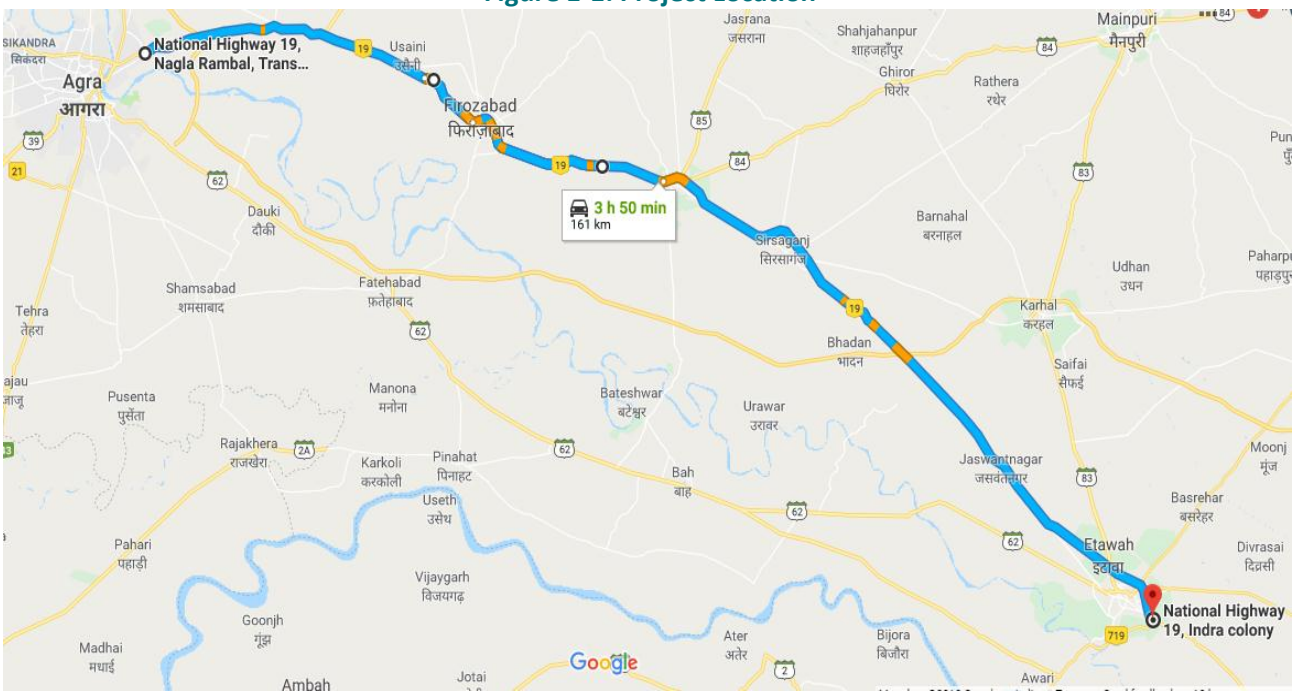
1 INTRODUCTION

1.1 PROJECT CORRIDOR

The Project study corridor starts from Agra (Km 199.660) and ends at Etawah (Km 323.525), end of Etawah Bypass). The length of project road is 123.865 Kms. The project road is section of NH-2, which starts from Delhi and ends at Kolkata and is a part of the Golden Quadrilateral Project. The project road section passes through the districts of Agra, Firozabad and Etawah.

Project road alignment passes through the towns/ built-up areas of Tundla, Firozabad, Shikohabad, Sirsaganj, & Jaswantnagar. The project location has been shown in Figure 1-1.

Figure 1-1: Project Location



1.2 PROJECT INFLUENCE AREA

The project road is a link between Agra and Kanpur in the state of Uttar Pradesh. The main project influence area of the project road consists of the three districts through which the project road passes. In addition the project influence area includes the districts of Kanpur, Mathura and Aligarh also. While most of the traffic on the project road section is observed to be to and from within the state of Uttar Pradesh, significant influence of Delhi, Haryana, Rajasthan, Madhya Pradesh, Bihar and West Bengal is also present.

1.3 SCOPE OF STUDY

The scope of the study includes

- To assess the traffic volumes and traffic characteristics by conducting Classified Traffic Volume Counts.
- To assess the travel characteristics and travel patterns by conducting Origin & Destination Surveys

- To assess the traffic growth and diversion potentials to make projections for future traffic on the project road.
- To estimate toll revenue based on projected traffic and toll policy applicable for the project highway.

1.4 REPORT STRUCTURE

The report has been presented in seven chapters. The contents of each chapter have been briefly described below.

1. Introduction: This gives the project back ground and the scope of study.
2. Traffic Surveys and Methodology: This presents the traffic surveys conducted and the survey methodology adopted along with basic traffic characteristics.
3. Traffic Survey Analysis: This presents the analysis of existing pattern and characteristics of traffic on the project road section based on traffic surveys.
4. Travel Characteristics: This presents the travel pattern and trip characteristics of passenger and freight vehicles based on Origin Destination studies
5. Surrounding Road Network & Development Potential: This chapter presents the analysis of network conditions and explores possibility of alternative routes or diversions. It also identifies the development potential of the surrounding areas to understand its traffic generation and growth potential.
6. Traffic Projections: This chapter elaborates on the growth potential of the influence area and presents the estimated traffic growth rates, future traffic projections.
7. Toll Estimation and Projections: The chapter elaborates on the toll rates determination and escalation rules and presents the estimate and projections of likely toll collections on the project corridor.

2 TRAFFIC SURVEYS & METHODOLOGY

2.1 OBJECTIVES OF TRAFFIC SURVEYS

Traffic surveys are an essential task to assess the likely quantum and composition of traffic over the design period on the project corridor. The details of various traffic surveys conducted, methodologies adopted, collection of data in understandable formats and analysis, including traffic forecast and revenue estimation has been discussed in detail in subsequent paragraphs and chapters.

The main objectives of the traffic surveys are:

- To assess the volumes of traffic flows on existing / proposed toll plaza locations.
- To assess the traffic and travel characteristics.
- Project design traffic for the concession period of 24 years.
- Traffic estimates for assessment of highway capacity and lanes

2.2 TRAFFIC SURVEYS AND SURVEY METHODOLOGY

To understand the characteristics and the volume of traffic using the project corridor, data on road network and traffic & travel pattern of vehicles plying on the project corridor were collected through primary surveys. Traffic Volume count and Origin-Destination surveys were conducted at the proposed toll plaza locations. Reconnaissance survey was also carried out to identify any possible alternate routes where the traffic could divert to / from the project corridor after the project road is improved and tolled.

A reconnaissance of the project corridor indicates that region is more of agricultural areas with a few small towns of Tundla, Firozabad, and Shikohabad in between.

The project corridor consists of NH-2 (New NH-19) of Agra to Etawah Section including Agra from km 199.660 to km 323.525 of NH-2 (New NH-19) and the entire sections of road are having four lane facilities with regular traffic flow.

As per the requirements, the following surveys were undertaken at the two toll plaza locations namely Gurau Km 285+200 and Tundla KM 224+950.

- Classified Traffic Volume for 7 days.
- Origin and Destination Survey for 24 hours.
- Registration Plate Survey for 24 hours.

2.2.1 Classified Traffic Volume Count

Classified traffic volume counts for seven days were carried out at 2 location at Km 224+950 from 06 September 2018 to 13 September 2018 and at Km 285+200, NH19, from 07 September 2018 to 14 September 2018 using video graphic analysis. The vehicles were broadly classified into fast moving / motorized and slow moving / non-motorized vehicles, which were further classified into specific categories of vehicles as per the Toll Categories defined in the Concession Agreement. The groupings of commercial vehicles have also been duly considered for design purpose. The detailed vehicle classification system is

presented in Table 2-1. A camera was installed for each direction of traffic flow separately, with elaborate arrangements for power backup and monitoring to ensure full coverage. The videos were processed, and data was recorded at 15-minute intervals for each vehicle group for each direction of travel separately. Hourly totals were summarized at the end of each shift.

Table 2-1: Vehicle Classification System

Motorized / Fast Vehicles		Non-Motorized / Slow Vehicles
Passenger Car		Bicycle
Taxi		Cycle Rickshaw
Ambulance/ Police/ Military/ VIP Cars (Exempted)		Hand/ Animal Cart
2-Wheeler		
3-Wheeler		
Other Passenger Vehicle		
Bus	Minibus	
	Standard Bus	
	Police/ Military Bus (Exempted)	
Truck	Tempo/ LCV	
	2-Axle Truck	
	3-Axle Truck	
	Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	
	Oversized Vehicle (>6 Axles)	
	Police/ Military Truck (Exempted)	
Tractor		

2.2.2 Origin Destination Surveys

Origin & Destination survey has been carried out continuously for 24 hours at both the toll plaza locations, viz on 11 September 2018 at Tundla KM 224+950 and on 10 September 2018 at Gurau Km 285+200.

The origin-destination survey was carried out with the primary objective of studying the travel pattern of goods and passenger traffic along the study corridor. The results have also been used for identifying the Influence area of the project corridor and estimating the growth rates of traffic on the project corridor.

The O-D survey was carried out along with the classified traffic volume counts. Roadside interview method as described in IRC: 102-1988 was adopted for the survey. The survey was carried out for both passenger and goods vehicles in both directions. The vehicles were stopped on random sample basis with the help of police, and the drivers were interviewed by trained enumerators to obtain the required data. During the surveys the information pertaining to origin, destination, district registration number plate, national permit, trip frequency, trip-length, commodity types, loading pattern, trip purpose and occupancy as applicable for various vehicle types were recorded. The survey was carried out for both passenger and goods vehicles in

both directions. Trained enumerators under the supervision of Traffic Engineers collected the trip characteristics using the survey forms designed for this purpose.

2.2.3 Registration Plate Survey

Registration Plate Number survey was conducted to identify local traffic for the purpose of estimation of toll discounts. The survey was conducted for 24 hours with the help of trained enumerators. The registration number of each category of vehicle was recorded and analysed. The registration numbers starting with UP83 belong to the Firozabad RTO and shall be considered local for toll plaza at Tundla KM 224+950, while registration numbers starting with UP83 belonging to Firozabad RTO will be local for toll plaza at Gurau Km 285+200.

3 TRAFFIC SURVEYS ANALYSIS

3.1 TRAFFIC CHARACTERISTICS

The survey data collected from the Classified Volume Count were coded and processed in order to analyze the results with respect to existing traffic intensity, flow pattern, hourly variation and composition of traffic on the study road network. The various vehicle types having different sizes and characteristics were converted into a single unit called Passenger Car Unit (PCU). Passenger Car Unit for various vehicles are adopted based on recommendations of Indian Road Congress prescribed in IRC: 64-1990, "Gudelines for Capacity of Roads in Rural areas". The adopted passenger car unit values (PCU) are presented in Table 3-1.

Table 3-1: Recommended PCU's as per IRC: 64-1990

Fast Vehicles	PCU	Slow Vehicles	PCU
Passenger Car/ Taxi	1.0	Cycle	0.5
Two-Wheeler	0.5	Cycle Rickshaw	2.0
Three-Wheeler/ Other Passenger Vehicle	1.0	Hand/ Animal Cart	6.0
Minibus	1.5		
Standard Bus	3.0		
Tempo/ LCV	1.5		
2 Axle Truck	3.0		
3 Axle Truck	3.0		
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	4.5		
Oversized Vehicle (>6 Axles)	4.5		
Tractor	4.5		

The various traffic characteristics have been presented in the following:

- Average Daily Traffic (ADT)
- Annual Average Daily Traffic (AADT)
- Daily Variation
- Hourly variation and Peak Hour Factor (PHF)
- Directional distribution
- Traffic composition

3.1.1 Average Daily and Annual Average Daily Traffic

The traffic volume count data collected over seven days was averaged to determine the Average Daily Traffic (ADT).

The traffic plying on any road generally varies over the different periods of the year depending on the cycle of different socio-economic activities in the regions through which it passes. Therefore, in order to have

more realistic picture of the traffic on the project corridor, it is required to assess seasonal variation in traffic to estimate Annual Average Daily Traffic (AADT). Therefore, the ADT observed during the survey duration is multiplied by a Seasonal Correction Factor (SCF) to derive AADT. The seasonal correction factor is generally derived from secondary data.

Secondary data for sales of fuel at the Fuel Pump Stations located on the project road were collected to arrive at the Seasonal Correction Factor.

The SCF is calculated separately for petrol driven and diesel driven vehicles on the project corridor and is presented in Table 3-2.

Table 3-2: Seasonal Variations in Fuel Sales

Month	Average Daily Sales (KL)		Correction Factor	
	HSD	MS	HSD	MS
April	**63.8**	**14.0**	**0.986**	**1.021**
May	61.9	15.3	1.016	0.937
June	63.3	14.7	0.993	0.975
July	62.2	13.4	1.010	1.069
August	55.1	13.6	1.139	1.057
September	**61.6**	**13.3**	**1.020**	**1.078**
October	63.9	14.1	0.983	1.020
November	65.4	15.6	0.961	0.917
December	65.5	14.0	0.960	1.022
January	57.2	12.8	1.099	1.116
February	68.6	16.2	0.916	0.886
March	66.2	15.1	0.949	0.947
Annual Average	**62.8**	**14.3**	**1.000**	**1.000**

The collected ADT is converted into Annual Average Daily Traffic (AADT) by multiplying with the seasonal correction factors. Since the traffic surveys were carried out in the month of September 2018, the correction factors for the corresponding month would be used. The seasonal correction factor for goods traffic and diesel driven passenger traffic is 1.020 and for petrol driven passenger traffic is 1.078 respectively. As petrol and diesel sales are a proxy parameter and may be subject to some local issues at the local service stations, it was considered appropriate to also evaluate the national pattern of fuel sales.

National level fuel sales statistics were collated and analyzed for the last 18 years. The national level trends appear consistent over the years with very few exceptions. Based on the national trends the SCF for diesel and petrol vehicles comes out to be **1.124** and **1.033** respectively. Table 3-3 and Table 3-4 show the year wise and month wise factors of diesel and petrol sales nationally.

The national seasonal correction factors were adopted for diesel and petrol respectively, considering the higher consistency of data as well as the national character of the road traffic, which is coming from other states too.

Table 3-3: Seasonal Variation Factors on Diesel Sales (National)

Month	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	Average
JAN	1.03	1.04	1.03	1.02	1.00	0.98	0.94	0.99	1.01	1.02	1.02	1.01	1.03	1.01	1.01	1.11	1.04	1.019
FEB	1.03	0.99	0.94	0.99	0.90	0.95	0.92	0.92	0.93	0.94	0.93	0.98	0.97	0.92	0.92	0.95	0.95	0.946
MAR	0.96	1.01	0.89	0.92	0.95	0.91	0.92	0.91	0.93	0.93	0.91	0.95	0.95	1.00	0.93	0.95	0.94	0.939
APR	0.94	0.92	1.09	0.93	0.98	0.96	0.98	0.94	0.97	0.92	0.97	0.96	0.91	0.96	0.94	0.92	0.96	0.953
MAY	0.92	0.91	1.01	0.95	0.96	0.89	0.98	0.91	1.00	0.96	0.94	0.92	0.91	0.91	0.98	0.93	0.91	0.938
JUN	0.94	0.98	0.92	0.99	0.97	1.08	0.99	1.05	0.95	0.95	0.99	0.94	0.95	0.93	0.97	0.98	0.98	0.971
JUL	1.10	1.01	1.04	0.99	1.10	1.13	1.09	1.08	1.06	1.05	1.08	1.02	1.08	1.03	1.11	1.11	1.09	1.069
AUG	1.15	1.13	1.14	1.31	1.08	1.16	1.22	1.21	1.14	1.18	1.20	1.16	1.15	1.15	1.17	1.05	1.16	1.158
SEP	**1.02**	**1.12**	**1.16**	**1.04**	**1.17**	**1.09**	**1.17**	**1.08**	**1.12**	**1.17**	**1.15**	**1.15**	**1.14**	**1.16**	**1.04**	**1.20**	**1.10**	**1.124**
OCT	1.03	1.02	1.02	0.96	1.03	1.07	1.01	1.04	1.00	1.03	1.03	1.03	1.03	1.08	1.00	0.97	1.05	1.023
NOV	0.96	0.99	0.92	1.07	0.98	0.95	0.95	0.95	0.98	1.00	0.93	0.98	0.96	0.95	1.00	0.93	0.92	0.962
DEC	0.97	0.93	0.91	0.94	0.93	0.92	0.92	0.99	0.95	0.92	0.93	0.96	0.97	0.96	0.97	0.98	0.97	0.953
Total	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**

Table 3-4: Seasonal Variation Factors on Petrol Sales (National)

Month	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	Average
JAN	1.03	1.05	1.07	1.02	1.03	1.02	0.99	0.99	1.04	1.06	1.09	1.03	1.05	0.99	1.02	1.12	1.06	1.042
FEB	0.99	0.96	0.97	0.95	0.92	0.95	1.00	0.91	0.93	0.96	0.97	0.95	0.95	0.90	0.94	0.96	0.96	0.949
MAR	0.93	1.01	0.92	0.92	0.96	0.90	0.93	0.90	0.94	0.95	0.90	0.93	0.98	0.96	0.90	0.96	0.92	0.935
APR	1.04	1.00	1.07	1.00	1.06	1.04	1.03	0.98	1.04	1.04	1.02	1.04	1.11	1.04	1.00	0.98	1.03	1.028
MAY	0.96	0.91	1.00	0.96	0.92	0.88	0.96	0.91	0.98	0.96	0.94	1.03	0.86	0.96	1.01	0.97	0.92	0.949
JUN	0.98	1.02	0.94	0.99	0.98	1.08	0.99	1.15	0.96	0.94	0.98	0.96	0.99	0.97	1.01	1.06	1.04	1.004
JUL	1.06	1.01	1.00	1.00	1.05	1.08	1.02	1.05	1.08	1.04	1.05	1.02	1.03	1.09	1.11	1.05	1.04	1.050
AUG	1.02	1.01	1.01	1.11	0.97	1.04	1.06	1.07	1.04	1.03	1.04	1.02	0.98	1.01	1.05	0.92	1.01	1.015
SEP	**1.02**	**1.02**	**1.04**	**1.00**	**1.07**	**1.02**	**1.04**	**1.03**	**1.02**	**1.03**	**1.03**	**1.05**	**1.14**	**1.05**	**0.95**	**1.08**	**1.00**	**1.033**
OCT	1.02	1.04	1.01	1.01	1.03	1.03	1.03	1.02	0.98	1.01	1.01	1.01	1.00	1.00	1.00	0.96	1.00	1.004
NOV	0.98	1.03	1.00	1.07	1.02	1.04	0.98	1.01	1.04	0.98	1.06	0.98	0.96	1.04	1.01	0.96	1.01	1.005
DEC	0.99	0.97	1.00	1.00	1.00	0.98	0.99	1.03	0.98	1.00	0.95	0.99	1.00	0.99	1.02	1.03	1.02	1.000
Total	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**

The ADT and AADT by vehicle types on the project section of NH19 are presented in Table 3-5.

Table 3-5: Average Daily Traffic (ADT) at Tundla KM 224+950 and Gurau Km 285+200

Vehicle Type		Location		Adopted PCU Factors
		NH-2 (Agra Etawah)		
		Tundla KM 224+950	Gurau Km 285+200	
Tollable	Passenger Car	7,094	1,784	1.0
	Taxi	848	79	1.0
Non Tollable	Two Wheeler	14,916	4,052	0.5
	Three Wheeler	3,730	259	1.0
	Other Passenger Vehicle	18	14	1.0
Tollable	Minibus	41	9	1.5
	Standard Bus	1,279	541	3.0
	Tempo/ LCV	2,461	1,328	1.5
	2-Axle Truck	1,223	900	3.0
	3-Axle Truck	1,041	962	3.0
	Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	1,460	1,490	4.5
Non Tollable	Tractors	251	119	4.5
Tollable	Oversized Vehicle (>6 Axles)	1	2	4.5
Non Tollable	Bycycle	1,542	566	0.5
	Cycle Rickshaw	38	11	2.0
	Hand/ Animal Cart	7	3	6.0
Toll Exempted	Ambulance/ Police/ Military/ VIP Car	80	26	1.0
	Police/ Military/ Cemetry Bus	32	8	3.0
	Police/ Military Truck	9	2	3.0
Vehicle	Motorised Traffic	34,484	11,576	
	Non Motorised Traffic	1,587	579	
	Total	**36,071**	**12,156**	
PCU	Motorised Traffic	41,438	20,684	
	Non Motorised Traffic	887	322	
	Total	**42,325**	**21,006**	
Tollable Traffic	**Vehicles**	**15,449**	**7,095**	
	PCUs	**28,901**	**17,791**	
Non Tollable Traffic	**Vehicles**	**20,622**	**5,061**	
	PCUs	**13,424**	**3,215**	

At Tundla KM 224+950 the average daily tollable traffic observed is 15,449 vehicles and 28,901 PCUs while at Gurau Km 285+200 the ADT is 7,095 vehicles and 17,791 PCUs.

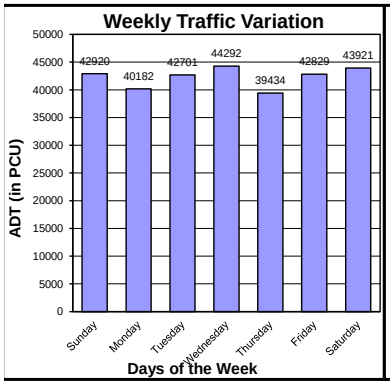
The AADT at Tundla KM 224+950 is 16,717 vehicles & 31,833 PCUs while at Gurau Km 285+200 the AADT is 7,811 vehicles & 19,830 PCUs based on the national level SCF of **1.124** for commercial and **1.033** for passenger vehicles respectively.

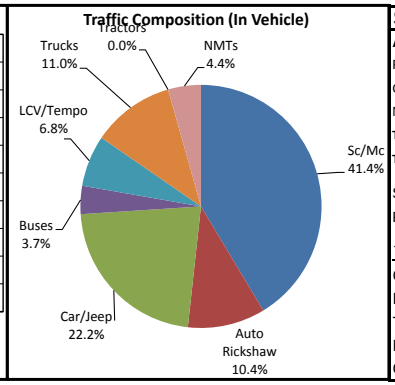
Table 3-6: Annual Average Daily Traffic (AADT) at Tundla KM 224+950 and Gurau Km 285+200

Vehicle Type		Location		Adopted PCU Factors
		NH-2 (Agra Etawah)		
		Tundla KM 224+950	Gurau Km 285+200	
Tollable	Passenger Car	7,329	1,843	1.0
	Taxi	953	88	1.0
Non Tollable	Two Wheeler	15,409	4,186	0.5
	Three Wheeler	3,854	267	1.0
	Other Passenger Vehicle	20	16	1.0
Tollable	Minibus	46	11	1.5
	Standard Bus	1,437	608	3.0
	Tempo/ LCV	2,766	1,493	1.5
	2-Axle Truck	1,375	1,011	3.0
	3-Axle Truck	1,170	1,081	3.0
	Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	1,641	1,674	4.5
Non Tollable	Tractors	282	134	4.5
Tollable	Oversized Vehicle (>6 Axles)	1	2	4.5
Non Tollable	Bycycle	1,542	566	0.5
	Cycle Rickshaw	38	11	2.0
	Hand/ Animal Cart	7	3	6.0
Toll Exempted	Ambulance/ Police/ Military/ VIP Car	80	26	1.0
	Police/ Military/ Cemetry Bus	32	8	3.0
	Police/ Military Truck	9	2	3.0
Vehicle	Motorised Traffic	36,402	12,451	
	Non Motorised Traffic	1,587	579	
	Total	**37,989**	**13,031**	
PCU	Motorised Traffic	44,882	22,867	
	Non Motorised Traffic	887	322	
	Total	**45,769**	**23,189**	
Tollable Traffic	**Vehicles**	**16,717**	**7,811**	
	PCUs	**31,833**	**19,830**	
Non Tollable Traffic	**Vehicles**	**21,272**	**5,220**	
	PCUs	**13,936**	**3,359**	

Table 3-7: Summary of Classified Traffic Volume Count at Tundla KM 224+950

Time Period (Hours)	Motorized Vehicles													Non Motorized Vehicle			Toll Exempted			Total Number (Both Direction)		Hourly (%age) (Both Direction)		Etawah To Agra (UP)		Agra To Etawah (DN)		Time Period (Hours)
	Passenger Vehicle							Goods Vehicle																			
	Passenger Car	Taxi	Two Wheeler	Three Wheeler	Other Passenger	Minibus	Standard Bus	Tempo/ LCV	2-Axle Truck	3-Axle Truck	Multi Axle Vehicle/ HCM/ EMV (4 to 6	Tractors	Oversized Vehicle (>6 Axles)	Bycycle	Cycle Rickshaw	Hand/ Animal Cart	Ambulance/ Police/ Military/ VIP Car	Police/ Military Bus	Police/ Military Truck	Vehicle	PCU	Vehicle	PCU	Vehicle	PCU	Vehicle	PCU	
00:00-01:00	107	2	30	19	1	1	51	63	63	55	88	1	0	1	0	0	3	1	0	486	1155	1.35	2.73	248	610	238	544	00:00-01:00
01:00-02:00	80	2	16	10	0	1	41	57	52	49	79	1	0	2	1	0	2	1	0	393	976	1.09	2.31	184	466	208	511	01:00-02:00
02:00-03:00	63	1	11	8	0	0	49	66	57	39	70	0	0	0	0	0	2	1	0	367	933	1.02	2.20	142	364	225	568	02:00-03:00
03:00-04:00	47	4	10	11	0	0	55	71	59	46	65	1	0	0	0	0	2	1	0	372	955	1.03	2.26	141	373	231	581	03:00-04:00
04:00-05:00	52	2	24	20	0	0	38	74	64	48	69	5	0	2	0	0	1	0	0	400	985	1.11	2.33	140	351	260	634	04:00-05:00
05:00-06:00	67	5	80	80	0	1	27	85	70	54	74	7	0	27	0	0	1	1	0	578	1157	1.60	2.73	279	512	299	644	05:00-06:00
06:00-07:00	108	17	244	150	0	1	34	94	45	41	66	6	0	68	1	0	2	0	0	880	1271	2.44	3.00	492	702	388	569	06:00-07:00
07:00-08:00	186	32	541	159	1	8	50	92	35	28	45	9	0	140	1	0	4	1	0	1332	1459	3.69	3.45	738	815	594	644	07:00-08:00
08:00-09:00	278	59	827	238	1	3	54	100	33	25	35	12	0	159	2	1	4	2	0	1834	1791	5.08	4.23	1042	996	792	795	08:00-09:00
09:00-10:00	377	73	982	270	1	1	60	118	41	33	41	17	0	97	3	0	5	1	0	2120	2119	5.88	5.01	1151	1149	970	970	09:00-10:00
10:00-11:00	452	67	1164	256	1	2	68	111	37	30	42	20	0	72	3	1	4	3	1	2331	2267	6.46	5.36	1253	1227	1078	1040	10:00-11:00
11:00-12:00	468	67	1193	260	1	2	67	114	35	29	49	21	0	86	3	1	2	2	1	2400	2340	6.65	5.53	1320	1307	1080	1033	11:00-12:00
12:00-13:00	475	68	1179	250	1	2	65	116	40	30	43	21	0	103	4	1	5	2	2	2408	2336	6.68	5.52	1354	1322	1054	1015	12:00-13:00
13:00-14:00	477	66	1215	260	1	7	83	121	40	36	47	18	0	126	3	1	5	1	1	2507	2454	6.95	5.80	1290	1246	1217	1208	13:00-14:00
14:00-15:00	449	61	1105	240	1	2	79	122	41	36	50	17	0	99	3	1	5	1	1	2312	2328	6.41	5.50	1215	1225	1097	1102	14:00-15:00
15:00-16:00	453	65	1051	243	1	1	67	125	36	42	50	17	0	110	5	0	6	2	1	2275	2295	6.31	5.42	1167	1187	1108	1109	15:00-16:00
16:00-17:00	468	65	1124	276	1	1	65	119	38	44	53	19	0	97	3	0	5	2	0	2380	2384	6.60	5.63	1167	1204	1214	1181	16:00-17:00
17:00-18:00	469	60	1234	283	1	1	61	133	43	42	50	21	0	140	3	0	4	1	1	2548	2475	7.06	5.85	1297	1273	1251	1201	17:00-18:00
18:00-19:00	483	51	1127	235	2	1	58	126	39	39	48	16	0	134	1	0	4	2	0	2367	2306	6.56	5.45	1190	1198	1178	1108	18:00-19:00
19:00-20:00	489	33	913	183	1	1	45	130	40	44	43	11	0	60	0	0	3	1	0	1997	2025	5.54	4.78	969	1016	1028	1009	19:00-20:00
20:00-21:00	366	21	440	112	1	2	38	120	46	44	51	4	0	15	0	0	2	2	0	1265	1557	3.51	3.68	575	734	689	823	20:00-21:00
21:00-22:00	308	15	236	86	1	1	40	114	72	66	82	3	0	4	0	0	3	1	0	1033	1628	2.86	3.85	454	714	579	914	21:00-22:00
22:00-23:00	220	7	119	51	1	1	39	105	112	76	118	3	0	0	0	0	4	1	0	857	1730	2.38	4.09	451	993	406	737	22:00-23:00
23:00-24:00	152	3	53	30	0	1	44	86	86	63	103	1	0	0	0	0	3	1	0	628	1402	1.74	3.31	339	813	290	589	23:00-24:00
Grand Total	**7094**	**848**	**14916**	**3730**	**18**	**41**	**1279**	**2461**	**1223**	**1041**	**1460**	**251**	**1**	**1542**	**38**	**7**	**80**	**32**	**9**	**36071**	**42325**	**100**	**100**	**18598**	**21797**	**17472**	**20528**	**Grand Total**
% Share	19.67	2.35	41.35	10.34	0.05	0.11	3.54	6.82	3.39	2.89	4.05	0.70	0.00	4.28	0.11	0.02	0.22	0.09	0.02	100		Directional Split:		51.6	51.5	48.4	48.5	**% Share**
PEAK CHARACTERISTICS																												
11:00-12:00	468	67	1193	260	1	2	67	114	35	29	49	21	0	86	3	1	2	2	1	**2400**	**2340**	6.7	5.5	1320	1307	1080	1033	11:00-12:00
17:00-18:00	469	60	1234	283	1	1	61	133	43	42	50	21	0	140	3	0	4	1	1	**2548**	**2475**	7.1	5.8	1297	1273	1251	1201	17:00-18:00





SALIENT FEATURES

Average Daily Traffic

Passenger Motor: 28,013 Vehs 77.7%

Goods Motorized: 6,470 Vehs 17.9%

Non Motorized: 1,587 Vehs 4.4%

Total ADT 36,071 Vehs 42,325 PCU

Total AADT 37,989 Vehs 45,769 PCU

Significant Peak Hour: 17:00-18:00

Peak Hour Traffic: 2,475 PCU 5.8%

Tollable Vehicles

Car/Jeeps 7,942

LCV/Mini Buses 2,502

Truck/Buses 3,543

Multi-Axle Trucks 1,460

Oversized Vehicles 1

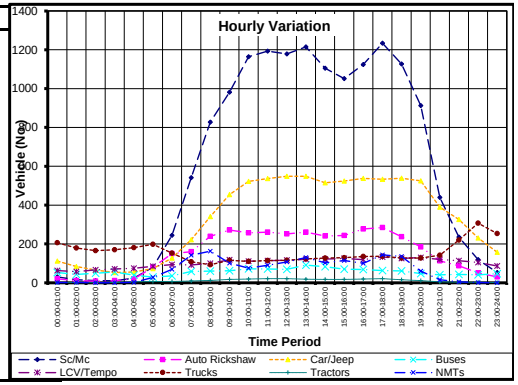
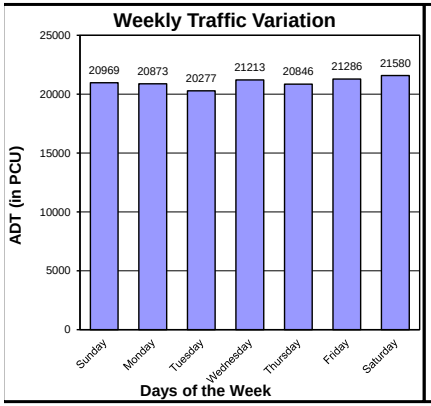
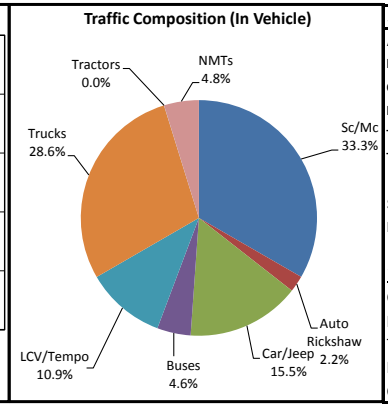


Table 3-8: Summary of Classified Traffic Volume Count at Gurau Km 285+200

Time Period (Hours)	Motorized Vehicles													Non Motorized Vehicle			Toll Exempted			Total Number (Both Direction)		Hourly (%age) (Both Direction)		Etawah To Agra (UP)		Agra To Etawah (DN)		Time Period (Hours)
	Passenger Vehicle							Goods Vehicle																			
	Passenger Car	Taxi	Two Wheeler	Three Wheeler	Other Passenger Vehicle	Minibus	Standard Bus	Tempo/ LCV	2-Axle Truck	3-Axle Truck	Multi Axle Vehicle/ HCM/ EMV (4 to 6	Tractors	Oversized Vehicle (>6 Axles)	Bycycle	Cycle Rickshaw	Hand/ Animal Cart	Ambulance / Police/ Military/	Police/ Military Bus	Military Truck	Vehicle	PCU	Vehicle	PCU	Vehicle	PCU	Vehicle	PCU	
00:00-01:00	41	1	6	0	0	0	17	39	31	52	75	1	0	0	0	0	1	0	0	267	751	2.20	3.57	107	306	160	444	00:00-01:00
01:00-02:00	37	1	5	0	0	0	22	41	32	51	61	0	0	0	0	0	2	0	0	252	696	2.08	3.31	116	327	136	369	01:00-02:00
02:00-03:00	31	1	4	0	0	0	19	35	33	47	69	0	0	0	0	0	1	0	0	241	698	1.98	3.32	117	347	124	351	02:00-03:00
03:00-04:00	27	1	5	1	0	1	24	38	31	35	55	1	0	0	0	0	1	0	0	219	611	1.80	2.91	106	302	114	309	03:00-04:00
04:00-05:00	24	1	11	1	0	0	31	41	31	34	50	1	0	2	0	0	0	0	0	229	616	1.88	2.93	97	273	131	343	04:00-05:00
05:00-06:00	26	1	27	2	0	0	31	48	43	36	52	3	0	7	0	0	0	0	0	277	694	2.28	3.30	126	311	150	384	05:00-06:00
06:00-07:00	49	6	72	5	0	1	21	66	45	40	65	4	0	17	0	0	1	0	0	394	838	3.24	3.99	188	393	205	445	06:00-07:00
07:00-08:00	64	3	148	10	0	0	17	68	47	46	68	5	0	75	1	0	1	0	0	553	953	4.55	4.54	240	387	312	566	07:00-08:00
08:00-09:00	67	4	238	17	1	2	19	70	32	33	63	7	0	27	1	0	1	1	0	584	906	4.80	4.31	285	437	299	469	08:00-09:00
09:00-10:00	89	4	313	22	1	0	17	70	33	34	58	8	0	28	1	0	0	0	0	679	943	5.58	4.49	354	471	324	472	09:00-10:00
10:00-11:00	94	5	337	19	2	0	21	66	36	32	54	8	0	51	1	0	1	1	0	729	967	6.00	4.60	372	500	357	467	10:00-11:00
11:00-12:00	95	6	334	19	1	0	22	65	35	30	54	7	0	25	1	0	2	1	0	697	943	5.73	4.49	370	491	326	452	11:00-12:00
12:00-13:00	112	6	342	23	1	1	25	69	32	32	45	10	0	26	1	0	1	0	0	728	951	5.99	4.53	381	498	347	453	12:00-13:00
13:00-14:00	109	6	371	25	1	0	22	62	31	35	50	9	0	74	0	0	0	0	1	796	990	6.55	4.71	418	533	378	456	13:00-14:00
14:00-15:00	99	7	319	21	1	0	27	57	32	34	50	9	0	43	1	0	2	1	0	705	951	5.80	4.53	350	492	355	459	14:00-15:00
15:00-16:00	99	5	295	21	1	0	26	56	29	34	52	9	0	36	0	0	2	1	0	666	920	5.48	4.38	313	446	352	473	15:00-16:00
16:00-17:00	93	5	309	19	1	0	26	59	36	35	50	10	0	34	1	0	2	1	0	682	949	5.61	4.52	312	449	370	500	16:00-17:00
17:00-18:00	119	5	329	20	1	0	23	60	38	39	59	8	0	46	1	0	2	1	0	751	1033	6.18	4.92	379	536	372	497	17:00-18:00
18:00-19:00	111	3	294	16	1	0	21	63	36	39	67	7	0	46	0	0	1	0	0	707	1023	5.82	4.87	368	550	339	473	18:00-19:00
19:00-20:00	117	1	175	9	2	1	19	56	46	46	72	5	0	16	1	1	1	1	0	566	996	4.66	4.74	283	558	283	438	19:00-20:00
20:00-21:00	94	2	61	4	1	0	19	55	60	52	76	3	0	7	0	0	2	1	0	435	966	3.58	4.60	251	605	184	361	20:00-21:00
21:00-22:00	78	2	30	3	0	0	25	51	49	50	77	2	0	2	0	0	1	0	0	369	905	3.04	4.31	207	528	162	377	21:00-22:00
22:00-23:00	60	0	18	1	0	0	24	45	39	41	77	1	0	2	0	0	1	0	0	309	803	2.54	3.82	173	472	136	332	22:00-23:00
23:00-24:00	49	0	10	0	1	0	24	49	42	55	91	0	0	0	0	0	2	0	0	323	905	2.66	4.31	147	402	176	502	23:00-24:00
Grand Total	**1784**	**79**	**4052**	**259**	**14**	**9**	**541**	**1328**	**900**	**962**	**1490**	**119**	**2**	**566**	**11**	**3**	**26**	**8**	**2**	**12156**	**21006**	**100**	**100**	**6060**	**10613**	**6095**	**10394**	**Grand Total**
% Share	14.68	0.65	33.34	2.13	0.12	0.08	4.45	10.93	7.40	7.91	12.26	0.98	0.02	4.65	0.09	0.02	0.21	0.07	0.02	100		Directional Split:		49.9	50.5	50.1	49.5	**% Share**
PEAK CHARACTERISTICS																												
10:00-11:00	94	5	337	19	2	0	21	66	36	32	54	8	0	51	1	0	1	1	0	**729**	**967**	6.0	4.6	372	500	357	467	10:00-11:00
17:00-18:00	119	5	329	20	1	0	23	60	38	39	59	8	0	46	1	0	2	1	0	**751**	**1033**	6.2	4.9	379	536	372	497	17:00-18:00





SALIENT FEATURES

Average Daily Traffic

Passenger Motor: 6,767 Vehs 55.7%

Goods Motorized: 4,809 Vehs 39.6%

Non Motorized: 579 Vehs 4.8%

Total ADT 12,156 Vehs 21,006 PCU

Total AADT 13,031 Vehs 23,189 PCU

Significant Peak Hour: 17:00-18:00

Peak Hour Traffic: 1,033 PCU 4.9%

Tollable Vehicles

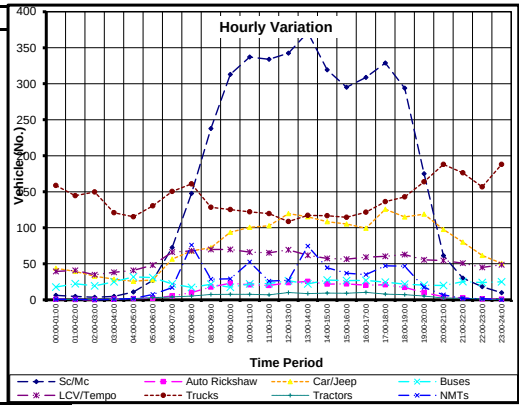
Car/Jeeps 1,863

LCV/Mini Buses 1,338

Truck/Buses 2,402

Multi-Axle Trucks 1,490

Oversized Vehicles 2



3.1.2 Tollable / Commercial Traffic

For the purpose of toll estimation and capacity assessment as per the concession agreement, only tollable traffic is considered. Table 3-9 and Table 3-10 show the ADT and AADT of tollable traffic on the toll plaza locations.

Table 3-9: ADT Tollable / Commercial Traffic

Vehicle Type		Location	
		NH-2 (Agra Etawah)	
		Tundla KM 224+950	Gurau Km 285+200
Passenger Car		7094	1784
Taxi		848	79
Minibus		41	9
Standard Bus		1279	541
Tempo/ LCV		2461	1328
2-Axle Truck		1223	900
3-Axle Truck		1041	962
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)		1460	1490
Oversized Vehicle (>6 Axles)		1	2
Toll Exempted	Ambulance/ Police/ Military/ VIP Car	80	26
	Police/ Military/ Cemetry Bus	32	8
	Police/ Military Truck	9	2
Total	**Vehicle**	15569	7132
	PCU	29104	17849
Tolled Traffic	**Vehicle**	**15449**	**7095**
	PCU	**28901**	**17791**
Toll Exempted	**Vehicle**	**121**	**37**
	PCU	**203**	**58**

Table 3-10: AADT Tollable / Commercial Traffic

Vehicle Type		Location	
		NH-2 (Agra Etawah)	
		Tundla KM 224+950	Gurau Km 285+200
Passenger Car		7329	1843
Taxi		953	88
Minibus		46	11
Standard Bus		1437	608
Tempo/ LCV		2766	1493
2-Axle Truck		1375	1011
3-Axle Truck		1170	1081
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)		1641	1674
Oversized Vehicle (>6 Axles)		1	2
Toll Exempted	Ambulance/ Police/ Military/ VIP Car	80	26
	Police/ Military/ Cemetry Bus	32	8
	Police/ Military Truck	9	2
Total	**Vehicle**	16837	7848
	PCU	32036	19888
Tolled Traffic	**Vehicle**	**16717**	**7811**
	PCU	**31833**	**19830**
Toll Exempted	**Vehicle**	**121**	**37**
	PCU	**203**	**58**

3.1.2.1 *Special Event*

There was a call for Bharat Bandh on the 10th of September by the opposition parties. The ADT was analyzed and compared for the total 7 day survey duration and 5 day period excluding the period of Bharat Bandh and time just before and after that. Table 3-11 shows the variation between the 7 day and 5 day average traffic.

Table 3-11: Comparison of 7 day and 5 day Average Daily Traffic

Vehicle Type		NH-2 (Agra Etawah)					
		Tundla KM 224+950			Gurau Km 285+200		
		7 Day ADT	5 Day ADT	Var %	7 Day ADT	5 Day ADT	Var %
Passenger Car		7094	7224	1.8%	1784	1729	-3.1%
Taxi		848	855	0.8%	79	80	1.4%
Minibus		41	38	-5.7%	9	10	3.9%
Standard Bus		1279	1285	0.5%	541	535	-1.1%
Tempo/ LCV		2461	2503	1.7%	1328	1312	-1.3%
2-Axle Truck		1223	1267	3.5%	900	923	2.6%
3-Axle Truck		1041	1065	2.3%	962	980	1.9%
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)		1460	1480	1.3%	1490	1480	-0.7%
Oversized Vehicle (>6 Axles)		1	1	-6.7%	2	2	10.0%
Toll Exempted	Ambulance/ Police/ Military/ VIP Car	80	78	-2.0%	26	23	-10.3%
	Police/ Military/ Cemetry Bus	32	34	4.7%	8	7	-12.2%
	Police/ Military Truck	9	10	10.2%	2	1	-50.6%
Total	**Vehicle**	15569	15839	1.7%	7132	7082	-0.7%
	PCU	29104	29614	1.8%	17849	17823	-0.1%
Tolled Traffic	**Vehicle**	**15449**	**15718**	**1.7%**	**7095**	**7050**	**-0.6%**
	PCU	**28901**	**29406**	**1.7%**	**17791**	**17774**	**-0.1%**
Toll Exempted	**Vehicle**	**121**	**121**	**0.7%**	**37**	**32**	**-13.4%**
	PCU	**203**	**208**	**2.8%**	**58**	**49**	**-16.1%**

In order to exclude the impact of the Bharat Bandh, the AADT based on the 5 day average has been projected and used for toll revenue estimation.

3.1.3 Daily Variation

The daily variation of traffic over the survey duration has been studied. Daily variation of traffic during different days of week in terms of Vehicles and PCUs for each of the locations has been illustrated in Figure 3-1 and Figure 3-2. There is little daily variation in traffic at both Tundla and Gurau locations.

Figure 3-1: Daily Variation at Tundla KM 224+950 (Vehicles and PCU's)

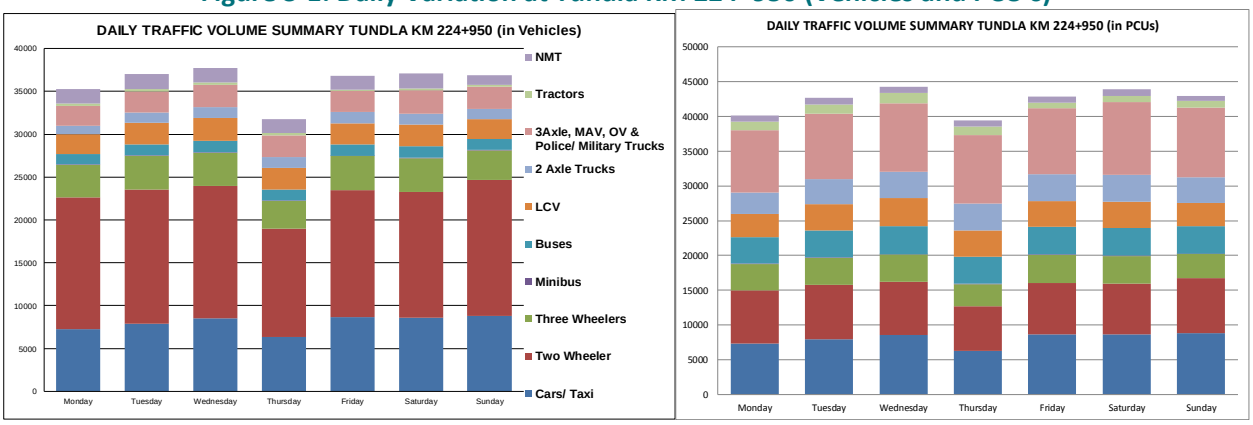
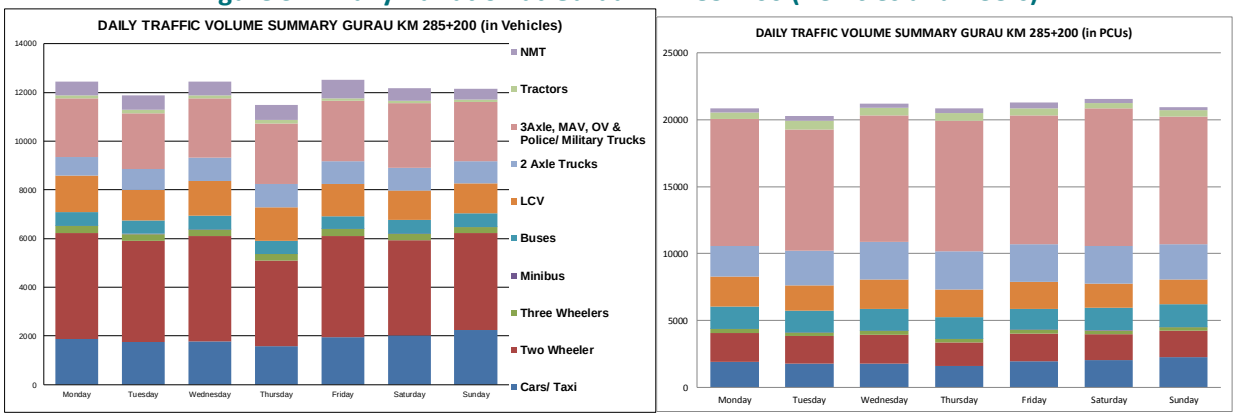


Figure 3-2: Daily Variation at Gurau Km 285+200 (Vehicles and PCU's)



3.1.4 Hourly Variation and Peak Hour Factor (PHF)

The hourly variation of traffic illustrates the distribution of traffic over the day with respect to time and the peak hour factor is the maximum percentage of the total traffic that uses the project highway in one single hour of the day. It is of significance as highway capacities and design calculations are based on peak hour factor. The peak hour factors observed at the count locations is summarized in Table 3-12 and has been illustrated pictorially in Figure 3-3.

Table 3-12: Peak Hour Traffic at Toll Plaza Locations

Survey Location	Morning Peak duration	Peak Hour Flow		Evening Peak duration	Peak Hour Flow	
		PCUs	Peak hour share (%)		PCUs	Peak hour share (%)
Tundla KM 224+950	11:00-12:00	2340	5.5	17:00-18:00	2475	5.8
Gurau Km 285+200	10:00-11:00	967	4.6	17:00-18:00	1033	4.9

It is observed that the morning peak hour at Tundla KM 224+950 is between 11:00-12:00 hours. The evening peak occurs during 17:00-18:00 hours at same location. While there isn't much variation between the morning and evening peaks the evening peak is slightly more prominent. The morning peak at Gurau Km 285+200 location is 10:00-11:00 hours while the evening peak at 17:00-18:00 hours with very little variation between the two in terms of traffic.

Figure 3-3 and Figure 3-4 show the intraday variation of traffic at the survey locations. It is apparent that the traffic flow persists at similar intensity (PCU terms) throughout the day with a major dip during wee hours of the morning.

Figure 3-3: Hourly Variation of Traffic at Tundla KM 224+950Tundla KM 224+950 (Vehicles and PCUs)

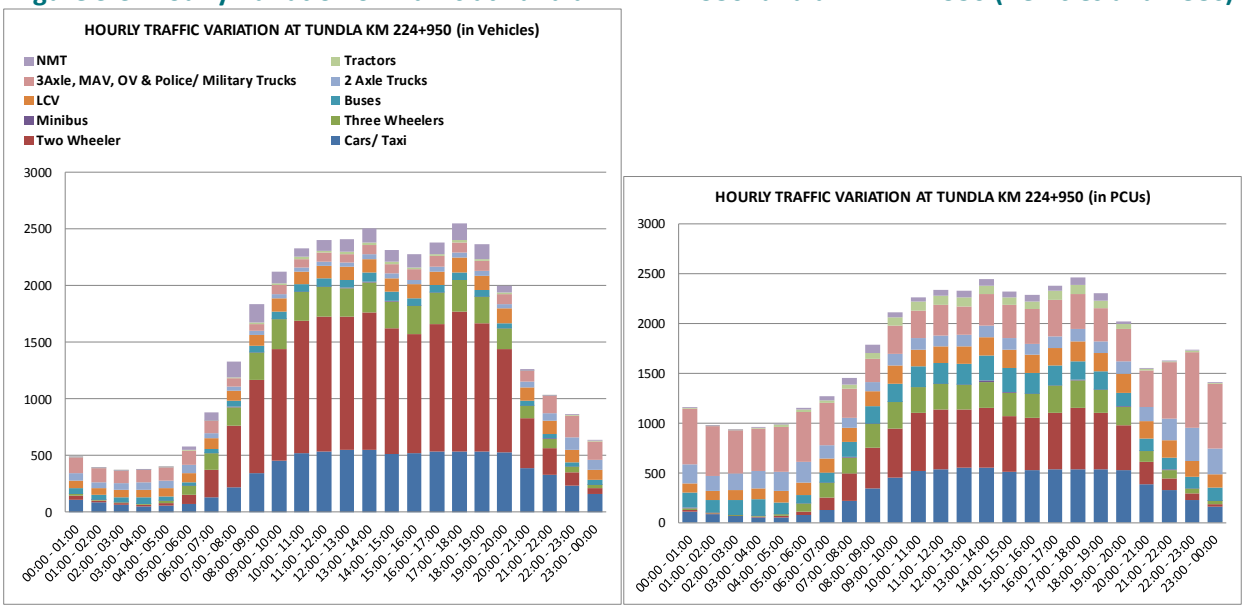
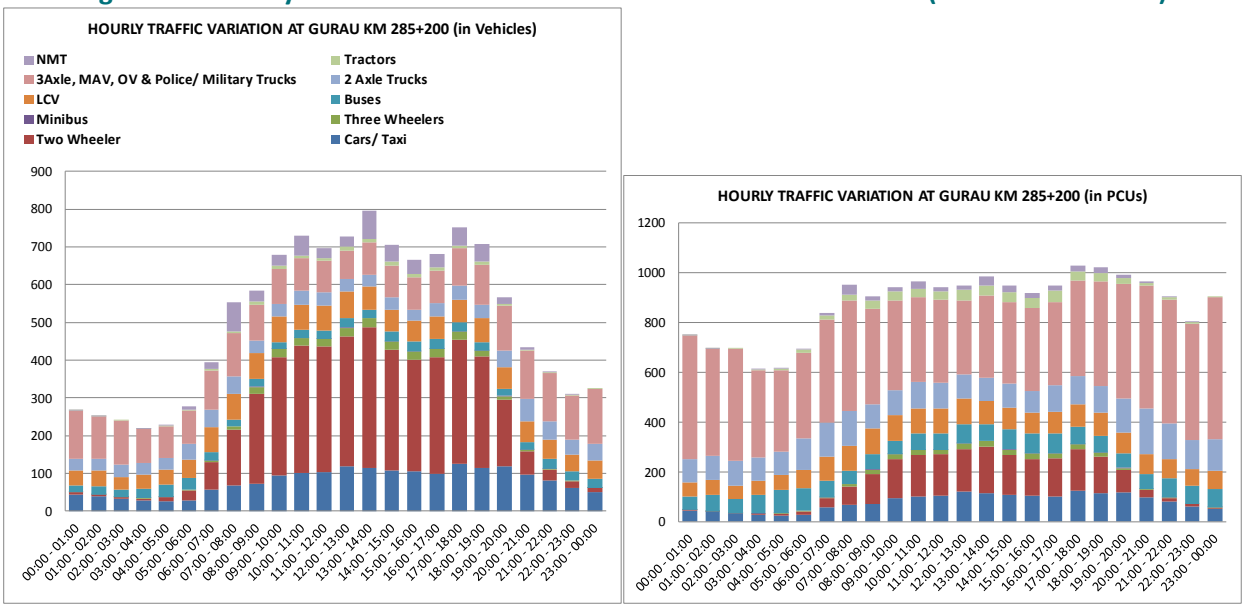


Figure 3-4: Hourly Variation of Traffic Variation at Gurau Km 285+200 (Vehicles and PCUs)



3.1.5 Directional Distribution

The directional traffic data was analyzed to establish the directional distribution of traffic. The observed variation of directional traffic in terms of percentage is presented in the Table 3-13.

Table 3-13: Directional Distribution Share

S No.	Location	Directional Distribution (%) in PCU	
		Etawah To Agra (UP)	Agra To Etawah (DN)
1	Tundla KM 224+950	51.5%	48.5%
2	Gurau Km 285+200	50.5%	49.5%

The directional traffic distribution is almost equal.

3.1.6 Traffic Composition

The traffic composition on the project corridor has been analyzed to derive the vehicle mode which travels on the project corridor and the travel pattern. The composition of traffic as observed at survey location on the project corridor is presented in Figure 3-5.

The share of freight traffic at the Tundla KM 224+950 survey location is about 19% in vehicles but over 43% in PCU terms, while at Gurau Km 285+200 it is 39% and 71% respectively.

Figure 3-5: Composition of Traffic at Tundla KM 224+950

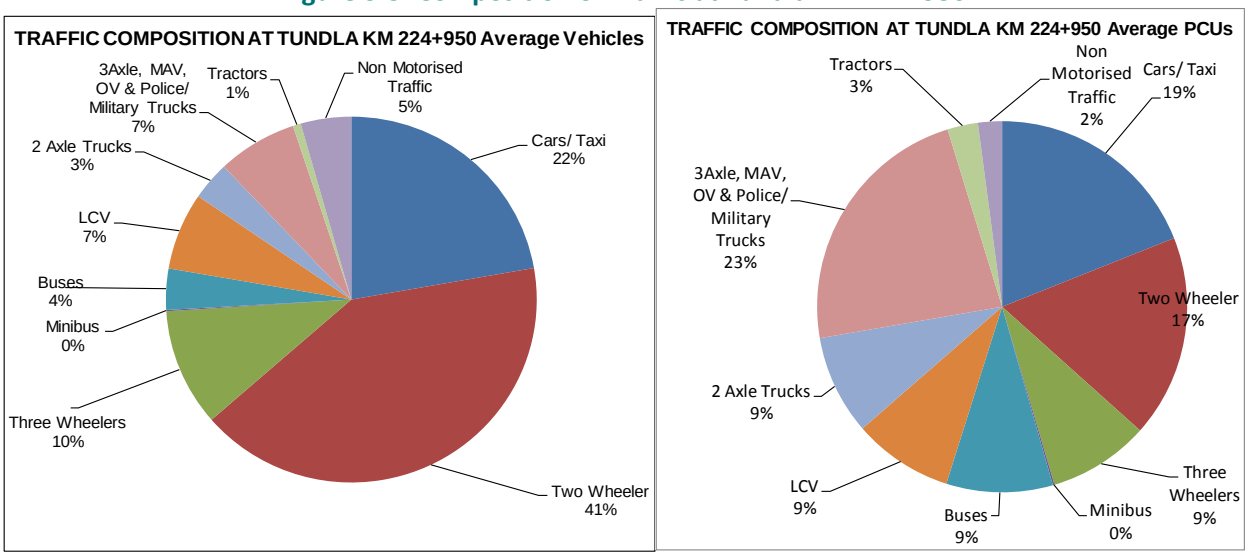
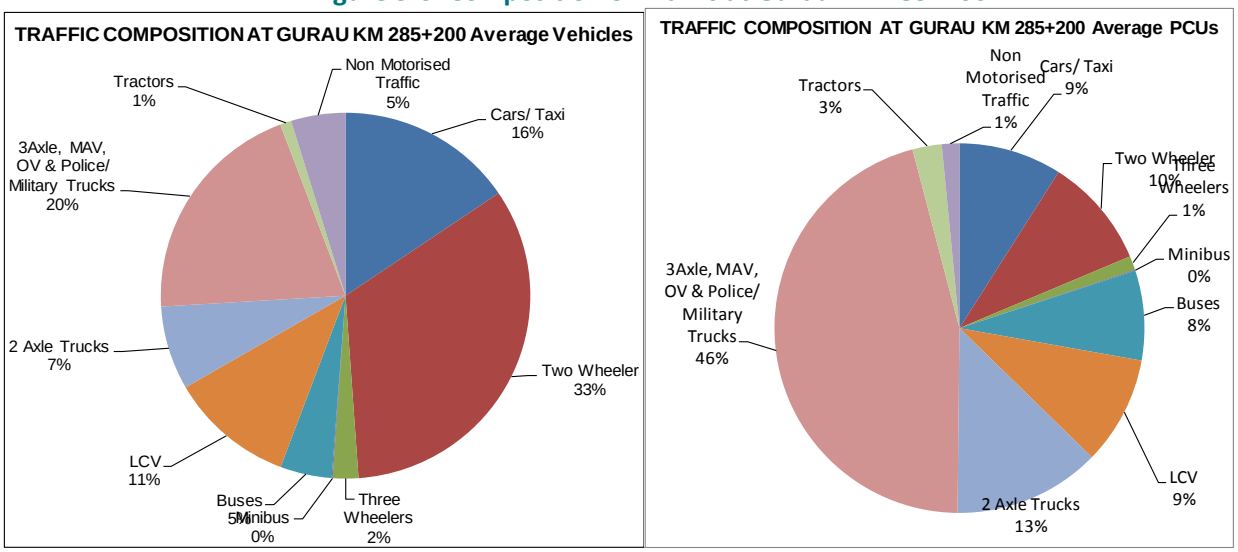


Figure 3-6: Composition of Traffic at Gurau Km 285+200



4 TRAVEL CHARACTERISTICS

To estimate travel characteristics in the region and the tollable traffic streams, Origin & Destination (O-D) survey at two locations on the project corridor was carried out for 24 hours respectively. Both passenger and commercial vehicles plying on the project corridor were stopped on a random sampling basis and interviewed. Along with the OD survey, volume count survey has been carried out at both locations to observe the sample size.

The travel characteristics obtained by O-D survey facilitate the identification of:

- Travel Characteristics and Commodity Movement Pattern
- Growth Potential of traffic along the project corridor
- Local and through traffic on the project corridor.
- The tollable traffic on the project corridor.

Travel characteristics like origin, destination and frequency of trip collected for passenger vehicles. For goods vehicles, the survey elicited characteristics like origin, destination, frequency and commodity being transported. The collected data was analyzed to obtain the trip distribution based on a zoning system suitably designed for the present study. Additional information regarding the district registration number and national permit was also collected for determining the toll concessions.

4.1 SAMPLE SIZE

The vehicles during the OD surveys were interviewed on a random sample basis. The traffic volume count and the sample size (both in absolute numbers and in percentage terms) captured at the survey locations on the project corridor is given in Table 4-1

Table 4-1: O-D Survey Sample Size

Location		Passenger Car	Taxi	Minibus	Standard Bus	Tempo/ LCV	2-Axle Truck	3-Axle Truck	Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)
Gurau Km 285+200	Average Traffic	7094	848	41	1279	2461	1223	1041	1460
	Average Sample	375	29	5	99	222	201	253	310
	Sample %	5.3	3.4	11.1	7.7	9.0	16.4	24.3	21.2
Tundla KM 224+950	Average Traffic	1784	79	9	541	1328	900	962	1490
	Average Sample	622	93	14	174	300	242	200	203
	Sample %	34.9	118.1	148.5	32.2	22.5	26.8	20.7	13.6

4.2 ZONING SYSTEM

The zoning system has been defined by district level at the first stage and states at the second level. The project corridor lies within three districts namely Agra, Firozabad and Etawah in Uttar Pradesh. With a view to understand the distribution of trips, all the districts in Uttar Pradesh have been assigned separate zone

codes. The remaining states excluding Uttar Pradesh have been taken as zones and assigned separate codes. Nepal has also been assigned a separate zone code as traffic has been observed during the OD surveys. In all, total 55 traffic zones were considered for the analysis of travel pattern on the project corridor.

The traffic zones considered for travel analysis is listed in Table 4-2.

Table 4-2: Traffic Zones for O-D Analysis

Zone No	Zone Name	Zone No	Zone Name
102000	Andhra Pradesh	130000	Sikkim
104000	Assam	131000	Tamil Nadu
105000	Bihar	132000	Telangana
106000	Chandigarh	134565	Uttar Pradesh-Agra
107000	Chhattisgarh	134566	Uttar Pradesh-Aligarh
110000	Delhi	134567	Uttar Pradesh-Allahabad
112000	Gujarat	134569	Uttar Pradesh-Auraiya
113000	Haryana	134573	Uttar Pradesh-Ballia
114000	Himachal Pradesh	134577	Uttar Pradesh-Bareilly
115000	Jammu and Kashmir	134586	Uttar Pradesh-Deoria
116000	Jharkhand	134587	Uttar Pradesh-Etah
117000	Karnataka	134588	Uttar Pradesh-Etawah
118000	Kerala	134590	Uttar Pradesh-Farrukhabad
120000	Madhya Pradesh	134592	Uttar Pradesh-Firozabad
121000	Maharashtra	134593	Uttar Pradesh-Gautam Buddha Nagar
125000	Nagaland	134594	Uttar Pradesh-Ghaziabad
126000	Odisha	134597	Uttar Pradesh-Gorakhpur
128000	Punjab	134599	Uttar Pradesh-Hardoi
129000	Rajasthan	134600	Uttar Pradesh-Hathras
134639	Uttar Pradesh-Varanasi	134601	Uttar Pradesh-Jalaun
135000	Uttarakhand	134603	Uttar Pradesh-Jhansi
136000	West Bengal	134604	Uttar Pradesh-Jyotiba Phule Nagar (J.P. Nagar)
291000	Nepal	134605	Uttar Pradesh-Kannauj
		134607	Uttar Pradesh-Kanpur Nagar
		134608	Uttar Pradesh-Kanshiram Nagar (Kasganj)
		134613	Uttar Pradesh-Lucknow
		134616	Uttar Pradesh-Mainpuri
		134617	Uttar Pradesh-Mathura
		134619	Uttar Pradesh-Meerut
		134621	Uttar Pradesh-Moradabad

4.3 COMMODITY CLASSIFICATION

The commodities being transported were classified into 13 categories and used during the O-D survey for recording the type of commodity. The commodity has been classified with emphasis to include all possible commodities and categorize them into homogeneous groups. The list of classified commodities is given in Table 4-3

Table 4-3: Classification of Commodities

Code	Commodity Type
1	Food Item/ Fruit/ Vegetable/ Dairy/ Meat (Raw/ Processed)
2	Cotton or Synthetic Yarn/ Fibre/ Textile/ Garment/ Handicraft/ Leather
3	Petroleum Product/ HSD/ Petrol
4	Iron & Steel (Aluminum or Metal) Rod/ Bar/ Sheet
5	Mineral and Ore
6	Coke/ Coal
7	Automobile/ Machine & Auto Spare Part
8	Rubber/ Plastic/ Tyre
9	Chemical/ Fertilizer/ Pharmaceutical Product
10	Building Material/ Cement/ Timber
11	Electronic/ Computer/ Electrical Appliance
12	Empty
13	Others

4.4 EXPANSION FACTORS

The origin-destination details were collected from the trip makers during the O-D survey on sample basis by stopping and interviewing the fast-moving vehicles. The sample size varied for different survey locations depending upon the quantum of traffic volume moving on the road. Sampling rate varied with the changes in traffic flow during different parts of the day at the same location as well. Care has been taken to eliminate any element of bias in the sampling method. Since the data was collected on the sample basis, expansion factors are required to replicate the pattern as reflected in the sample to the total number of vehicular trips made during the day. These expansion factors are calculated separately for each class of vehicle. For Example if "xc " is the number of cars interviewed and "Xc" is the total number of cars counted during the day, then "Xc/xc" would be the expansion factor for Cars.

OD Matrices are developed to assess the traffic movement pattern. These matrices actually provide distribution of trips for each zone as various inter-zonal movements. The vehicle wise O-D matrices for each survey locations are developed by multiplying the sample O-D matrix obtained from the survey data with the expansion factor. On the basis of O-D matrices, travel pattern of the vehicles moving on the project corridor is discussed below.

4.5 TRAVEL DESIRE PATTERN

The origins and destinations of various types of vehicles observed at the O-D survey locations have been analyzed for O-D matrices as per the zoning system presented above.

The following tables present Zone Influence Factors (ZIF) for understanding of trip generation in the PIA. ZIF has been defined as:

$$ZIFi = \frac{Oi + Di}{2\sum_{k=1}^{n}(Ok + Dk)}$$

Where,

ZIF_i is the Zone Influence Factor of Zone i

O_i is the number of trip productions at Zone i

D_i is the number of trip attractions at Zone i

N is set of zones

A detailed analysis of the travel characteristics reveals that the most significant traffic generating location for the corridor are Firozabad, Agra, Etawah, Kanpur and Mathura in the immediate project vicinity and Delhi, Haryana, West Bengal and Rajasthan in the surrounding region. The project influence area is presented in Table 4-4.

Table 4-4: Project Influence Area (%)

Zone Name	Cars	Buses	Trucks	Total
Uttar Pradesh-Firozabad	37.7	20.8	18.3	26.61
Uttar Pradesh-Agra	24.7	27.8	14.8	20.03
Uttar Pradesh-Etawah	14.3	16.2	11.5	13.04
Uttar Pradesh-Kanpur Nagar	6.6	8.9	10.8	8.88
Delhi	3.6	5.6	7.4	5.64
Uttar Pradesh-Mathura	2.4	3.8	4.6	3.62
Uttar Pradesh-Lucknow	0.7	2.0	4.5	2.69
Haryana	1.4	1.2	3.8	2.56
West Bengal	0.1	0.3	3.6	1.83
Rajasthan	0.8	1.1	2.6	1.74
Uttar Pradesh-Mainpuri	1.6	1.4	1.2	1.37
Uttar Pradesh-Auraiya	1.4	3.4	0.9	1.35
Uttar Pradesh-Gautam Buddha Nagar	0.7	0.8	1.8	1.22
Bihar	0.1	0.4	1.9	1.04
Punjab	0.2	0.2	1.4	0.80
Madhya Pradesh	0.3	0.5	1.2	0.74
Uttar Pradesh-Aligarh	0.4	0.1	0.8	0.59
Uttar Pradesh-Hardoi	0.3	0.5	0.7	0.54
Uttar Pradesh-Allahabad	0.1	0.2	1.0	0.53
Uttar Pradesh-Hathras	0.5	0.3	0.6	0.51
Jharkhand	0.3	0.1	0.7	0.48
Total (21 Highest Traffic Zones)	**60.3**	**74.9**	**75.6**	**69.2**

4.6 PASSENGER TRIP CHARACTERISTICS

The trip characteristics of passenger vehicles is discussed below

4.6.1 Trip Frequency

The trip frequency distribution of different mode of passenger vehicles plying on the project corridor has been analyzed and the average trip frequency distribution of each mode of passenger vehicle plying on the corridor is presented in Table 4-5**.** It can be seen that regular and daily travelers contribute the maximum trip frequency at Tundla, while at Gurau weekly and multiple times a week trips contribute highest with significantly high percentage of daily travelers.

Table 4-5: Average Passenger Trip Frequency Distribution (%)

Location	2,3 Times a Day	Daily	2,3 Times a week	Weekly	Occasionally	Total
Tundla KM 224+950						
Passenger Car	11.8	39.5	23.5	18.6	6.5	**100**
Taxi	12.4	33.4	24.1	20.9	9.1	**100**
Gurau Km 285+200						
Passenger Car	1.6	16.3	21.7	32.9	27.6	**100**
Taxi	3.5	23.0	7.4	31.1	34.9	**100**

4.6.2 Purpose of Trips

The purpose of trips carried out by passenger vehicles and passengers at location is presented in Table 4-6. Maximum trips were observed for work/ business followed by education, social and other purpose trips.

Table 4-6: Distribution of Trips by Purpose (%)

Location	Work/ Business	Education	Social/ Recreation	Shopping	Health	Return	Others	Total
Tundla KM 224+950								
Vehicles	66.6	10.0	2.5	13.9	4.0	2.8	0.2	**100**
Passengers	68.3	8.9	2.3	13.5	4.0	2.7	0.1	**100**
Gurau Km 285+200								
Vehicles	37.1	6.7	5.0	4.4	7.0	15.3	24.5	**100**
Passengers	33.2	6.4	5.3	4.6	7.7	16.5	26.4	**100**

4.6.3 Occupancy Analysis

The occupancy of passenger vehicles was analyzed. The average occupancy by vehicle mode at said location has been presented in Table 4-7.

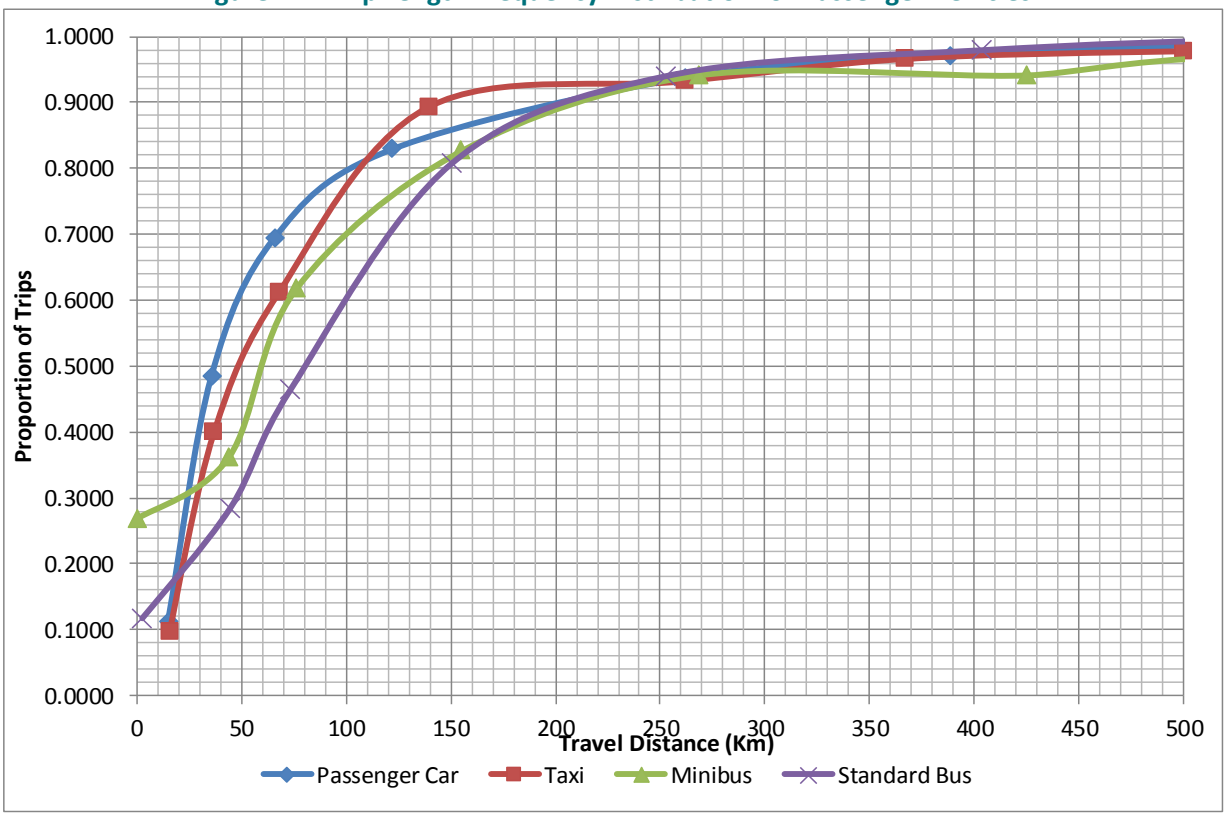
Table 4-7: Average Occupancy

Mode	Passenger Car	Taxi	Minibus	Standard Bus
Tundla KM 224+950	3.5	3.9	36.2	34.8
Gurau Km 285+200	4.1	3.9	31.5	35.2

4.6.4 Lead Analysis

The lead distribution for passenger vehicles was analyzed and the trip length frequency distribution is shown in Figure 4-1. A majority of trips are short distance with 60% car trips less than 50Km in length. Similarly, about 50% taxi trips are under 50Km and almost 80% less than 100Km in length. Bus trips have a slightly longer range with 50% of the minibus and bus trips being longer than 60Km and 80Km respectively.

Figure 4-1: Trip Length Frequency Distribution for Passenger Vehicles



4.7 FREIGHT TRIP CHARACTERISTICS

The trip characteristics of goods vehicles are discussed below.

4.7.1 Trip Frequency

The average trip frequency distribution of each mode of goods vehicles plying on the corridor is presented in Table 4-8**.** It can be clearly seen maximum trip frequency is weekly and occasional journeys.

Table 4-8; Average Freight Trip Frequency Distribution (%)

Location	2,3 Times a Day	Daily	2,3 Times a week	Weekly	Occasionally	Total
Tundla KM 224+950						
Tempo/ LCV	5.7	50.4	17.8	20.0	6.1	**100**
2-Axle Truck	1.3	45.1	18.5	24.3	10.9	**100**
3-Axle Truck	2.8	37.0	23.2	25.6	11.4	**100**
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	2.0	29.2	25.8	29.8	13.1	**100**
Gurau Km 285+200						
Tempo/ LCV	2.1	10.1	16.3	32.8	38.7	**100**
2-Axle Truck	2.9	9.0	16.0	35.1	37.0	**100**
3-Axle Truck	1.9	9.2	15.6	31.0	42.4	**100**
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	1.0	4.7	13.1	36.1	45.1	**100**

4.7.2 Commodity Analysis

During the O-D surveys, information of goods pertaining to commodity and tonnage were recorded along with the origin and destination details. The information was analyzed to assess the kind of goods movement on the project corridor. The commodity wise goods movement pattern at all locations across different vehicle categories in terms of percent share has been presented in Table 4-9.

Table 4-9: Commodity Wise Goods Movement Pattern (%)

Commodity Tyoe	Food Item/ Fruit/ Vegetable/ Dairy/ Meat (Raw/ Processed)	Cotton or Synthetic Yarn/ Fibre/ Textile/ Garment/ Handicraft/ Leather	Petroleum Product/ HSD/ Petrol	Iron & Steel (Aluminum or Metal) Rod/ Bar/ Sheet	Mineral and Ore	Coke/ Coal	Automobile/ Machine & Auto Spare Part	Rubber/ Plastic/ Tyre	Chemical/ Fertilizer/ Pharmaceutical Product	Building Material/ Cement/ Timber	Electronic/ Computer/ Electrical Appliance	Empty	Others
Tundla KM 224+950													
Tempo/ LCV	25.32	1.71	4.65	20.86	0.00	0.00	4.42	0.33	0.68	4.76	0.65	25.03	11.60
2-Axle Truck	15.41	1.46	4.82	3.96	0.00	0.00	6.41	0.87	0.61	3.02	0.00	52.16	11.27
3-Axle Truck	23.33	0.33	3.46	4.29	0.00	0.00	7.93	0.00	0.53	5.55	1.18	41.60	11.79
Multi Axle Vehicle/ HCM (4 to 6 Axles)	22.39	0.60	6.56	5.64	0.00	0.00	8.91	1.20	0.71	7.73	0.51	35.21	10.54
Gurau Km 285+200													
Tempo/ LCV	10.58	4.33	4.07	5.02	0.00	0.00	5.67	0.52	0.50	3.89	0.00	60.06	5.37
2-Axle Truck	11.52	3.90	2.93	6.72	0.00	0.00	9.47	0.21	0.53	3.87	0.00	55.07	5.78
3-Axle Truck	21.45	3.22	4.93	3.91	0.00	0.00	10.41	0.00	0.00	4.87	0.00	45.31	5.89
Multi Axle Vehicle/ HCM (4 to 6 Axles)	19.09	5.00	3.22	3.44	0.00	0.00	6.49	0.24	0.00	7.08	0.00	50.59	4.85

The major commodities plying on the project corridor were observed to be food items, petroleum products and building material. The other main commodities transported are mineral ores and textiles. The share of empty vehicles has been observed to be significantly high.

4.7.3 Load Analysis

The distribution of load among various goods vehicles observed at each location is presented in the Table 4-10.

Table 4-10: Load Distribution Pattern (%)

Load Range (Tonnes) / Location	Empty	Less than 2	2 - 4	4 - 6	6 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 45	Greater than 45	Total
Tundla KM 224+950												
Tempo/ LCV	26.3	30.5	28.4	10.9	3.8	0.0	0.0	0.2	0.0	0.0	0.0	100.0
2-Axle Truck	52.6	0.0	0.0	0.9	5.2	23.0	17.5	0.9	0.0	0.0	0.0	100.0
3-Axle Truck	41.6	0.0	0.0	0.6	1.7	3.1	49.9	2.3	0.8	0.0	0.0	100.0
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	36.0	0.0	0.0	0.0	0.9	6.1	47.0	6.4	1.3	2.3	0.0	100.0
Gurau Km 285+200												
Tempo/ LCV	54.5	7.6	8.7	12.3	16.9	0.0	0.0	0.0	0.0	0.0	0.0	100.0
2-Axle Truck	51.0	0.0	0.4	3.9	17.6	11.3	13.5	2.4	0.0	0.0	0.0	100.0
3-Axle Truck	38.4	0.0	0.0	0.8	18.6	17.6	19.9	2.6	2.1	0.0	0.0	100.0
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	47.0	0.0	0.0	0.0	19.8	10.8	14.7	2.7	2.6	2.5	0.0	100.0

The analysis of reported loading pattern indicates that the load range of LCV is up to about 10 tonnes, 2-Axle trucks carries load ranges up to 25 tonnes and 3-Axle truck carries load ranges upto 30 tonnes. It has been also observed that MAV has varying load distribution ranging upto 45 tonnes. The percentage of overloading reported is relatively insignificant.

The average load carried by freight vehicles on the project corridor is presented in Table 4-11. The average load for freight vehicles vary for all loaded vehicles and for loaded including empty vehicles as the share of share of empty vehicles is significant.

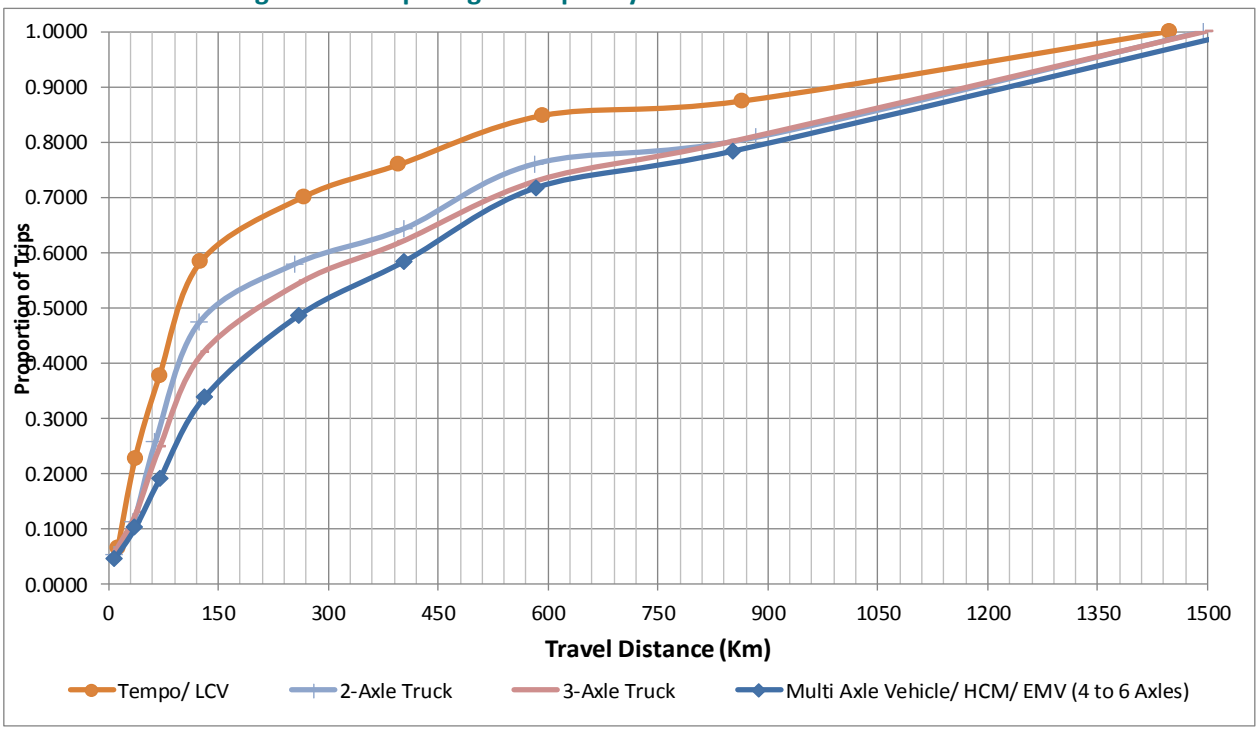
Table 4-11: Average Loading

Mode	Tundla KM 224+950		Gurau Km 285+200	
	including Empty Vehicles	excluding Empty Vehicles	including Empty Vehicles	excluding Empty Vehicles
Tempo/ LCV	2.5	3.4	2.6	5.7
2-Axle Truck	7.6	16.0	6.6	13.4
3-Axle Truck	10.4	17.8	9.4	15.3
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	13.1	20.4	8.6	16.2

4.7.4 Lead Analysis

The lead distribution for goods vehicles at each location in percentage terms has been analyzed and the trip length frequency distribution for goods vehicles is given in Figure 4-2. A significant majority of trips is long distance with median trip lengths being approximately 120Km for LCV and 2Axle, while that of MAVs and 3 Axle trucks being about 165 and 190 Km respectively.

Figure 4-2: Trip Length Frequency distribution for Goods Vehicles



5 SURROUNDING ROAD NETWORK & DEVELOPMENT POTENTIAL

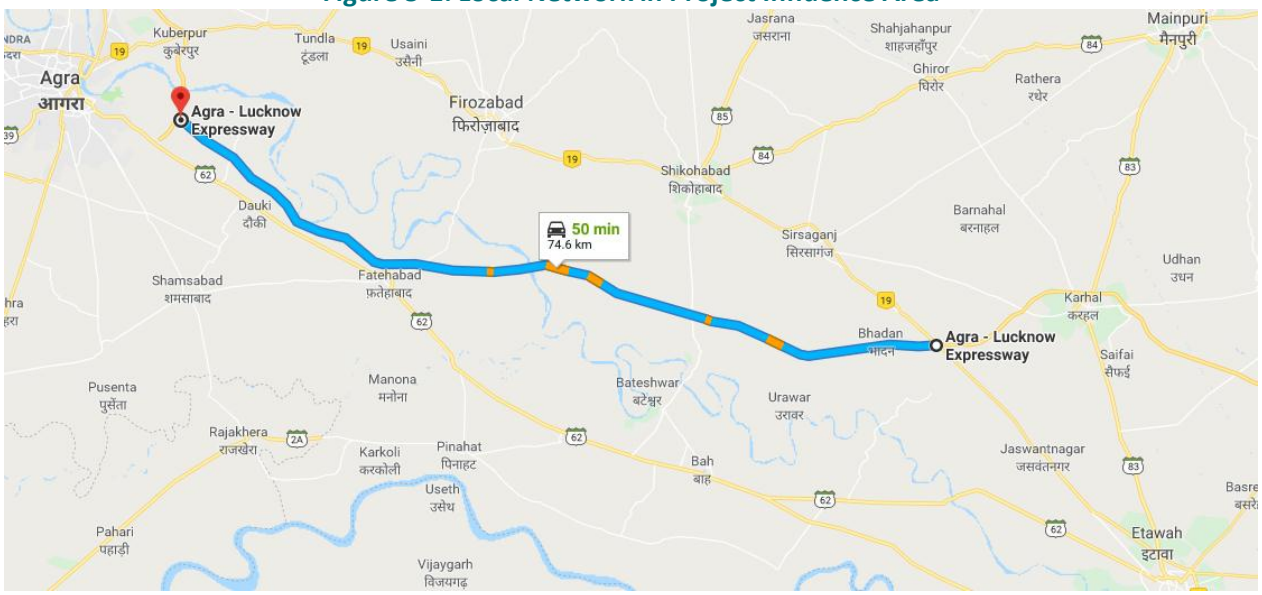
5.1 NETWORK APPRECIATION

The network study is undertaken to assess the potential for traffic diversion. Typically traffic diversions are expected when toll are newly introduced on a section or if a significant change is created in the network due to the project under consideration. Since the project is an existing toll road, diversions if any would have already taken place and as such there is little possibility of further diversions. The preceding section of the NH-2 (New NH-19) from Delhi to Agra is presently being Six laned, however, Yamuna Expressway provides good connectivity at this end. The next section of the highway is Etawah to Kanpur, which is already six laned.

5.1.1 Local Alternative Routes

There are alternate routes between Eatwah and Agra via Agra-Lucknow Expressway and Etawah – Agra SH-62 via Fatehabad. The SH-62 is unviable because of poor road conditions and limited width & capacity. The Agra-Lucknow Expressway provide high speed travel and good road conditions because of which it shall be the route for Lucknow and north-eastern UP bound traffic. At the moment due to the ongoing works the condition on the project road has deteriorated such that even Etawah bound traffic has started using the expressway. Six laning of the project road may bring back some of this traffic on this link. The local network in the project influence area is shown in Figure 5-1.

Figure 5-1: Local Network in Project Influence Area



5.1.2 Regional Alternative Routes

At a regional level, there are alternate routes available for the traffic around the project corridor. The alternate routes are NH-24 and NH-91. NH-91 connects Delhi to Kanpur via Aligarh is one of the alternatives but that is a much slower route and has limited capacity. NH-24 is another alternate route available at a

regional level but the route is not viable as it is much longer and post complete four / six laning NH-24 will have significantly higher toll rates compared to NH-2 due to a number of structures and bypasses.

Table 5-1 shows the likely diversion that has happened from the project road. Another count on the same locations in the year 2016, when the Agra Lucknow Expressway was not yet operational, shows significantly higher levels of traffic across all categories except buses, LCVs and 2 Axle Trucks. These vehicle categories can be considered extremely localized and catering to settlements on the project road itself and therefore have no alternative.

Table 5-1: Traffic (AADT) Comparison on Project Road

Location	Tundla KM 224+950				Gurau Km 285+200			
Mode	2018	2016	Diff (count)	Diff (%)	2018	2016	Diff (count)	Diff (%)
Passenger Car	7,329	9,937	-2,609	-26%	1,843	3,763	-1,920	-51%
Taxi	953	1,048	-95	-9%	88	104	-16	-15%
Minibus	46	226	-180	-80%	11	49	-39	-79%
Standard Bus	1,437	1,018	419	41%	608	479	129	27%
Tempo/ LCV	2,766	2,167	599	28%	1,493	1,658	-165	-10%
2-Axle Truck	1,375	980	395	40%	1,011	552	459	83%
3-Axle Truck	1,170	1,977	-807	-41%	1,081	2,192	-1,112	-51%
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	1,641	2,000	-360	-18%	1,674	1,942	-267	-14%
Total	16,715	19,353	-2,637	-14%	7,809	10,739	-2,930	-27%

5.1.3 Diverted/ Induced Traffic

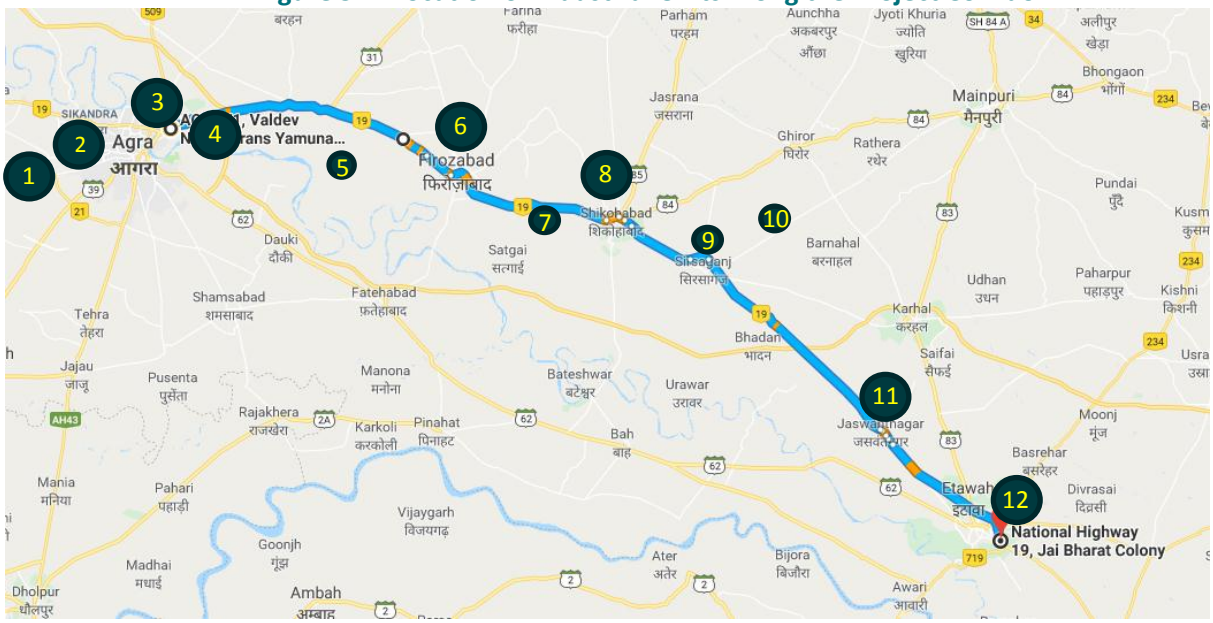
There has been significant diversion of traffic from the project road, however there in no further potential any diversion. Rather, after completion of six laning there is possibility of some of the diverted traffic to return to using the upgraded facility on the project road.

Induced traffic from developments around the project corridor and also due to the improved facility is likely in the future.

5.1.4 Traffic Growth Outlook

This Highway Crosses from three districts of Uttar Pradesh (Agra, Firozabad and Etawah), where there are over 2000 industrial units. Agra is famous for leather and Firozabad for its glass industry. There are 5 large Scale and 13 Medium Scale industries in this area. Traffic Generated from these industries is expected to be captive to this Highway. Figure 5-2 shows the locations of major industrial units or clusters along the project corridor followed by a list of the same.

Figure 5-2: Location of Industrial Units Along the Project Corridor



1. Leather Park, **Agra**
2. Export Promotional Industrial Park (EPIP)
3. Foundry Nagar (BK Casting, Agricultural Industries, Paint Industries, Plastic Industries, Metal Industries), **Agra**
4. Industrial Estate, **Agra**
5. Agarbatti Industry
6. Glass Industries, **Firozabad**
7. Pipe Industries, Glass Bulb Industries
8. Agro Industries, Glass Industries, Cold Storage
9. Food Processing Industries
10. PVC Pipe Industries
11. Rural Industrial Estate, **Jaswant Nagar**
12. **Etawah** (Caplock Industries Private Limited, Rice Mills)

Other than the immediate proximity there is the Mathura Refinery, a large public sector refinery located about 35 Km from the Agra end of the project corridor. Major economic and industrial hubs of Delhi and Kanpur also are situated about 200 Km from extreme ends of the project corridor.

Though growth of Uttar Pradesh has been consistently below the national average economic growth, it is the largest state in terms of population and consumption driven demand for goods and services will remain significantly high. The rate of growth of NSDP also seems to be catching up with the national average over the years. Other regions in the influence area states namely Delhi, Haryana and Uttarakhand are all growing significantly faster than the national average. Considering the scenario, it may be assumed that the traffic growth on the project highway would remain high and the growth risks would also be negligible.

Table 5-2: GDP of India and NSDP of Uttar Pradesh and other Influence Region States

Year	India (GDP)	Bihar	Haryana	Madhya Pradesh	Maharashtra	Odisha	Punjab	Rajasthan	Uttar Pradesh	Uttarakhand	West Bengal	Delhi
1980-81	12336	514	357	623	1464	529	504	560	1631	138	830	269
1981-82	13030	543	371	639	1498	528	551	607	1670	141	808	291
1982-83	13411	548	394	668	1556	497	568	620	1800	152	840	328
1983-84	14464	601	402	702	1654	597	578	761	1871	158	939	320
1984-85	15037	658	418	668	1675	569	623	706	1900	161	964	333
1985-86	15663	672	493	726	1807	635	670	704	1975	167	1005	386
1986-87	16339	725	493	694	1832	643	694	771	2060	174	1045	411
1987-88	16917	685	484	789	1955	623	730	718	2154	182	1101	447
1988-89	18635	772	602	847	2159	754	769	1014	2434	206	1148	486
1989-90	19778	759	610	865	2515	805	834	993	2502	212	1188	531
1990-91	20824	831	674	987	2629	668	849	1149	2651	224	1251	553
1991-92	21122	784	688	916	2620	753	888	1061	2662	225	1349	638
1992-93	22254	737	688	983	3017	740	930	1220	2690	228	1389	660
1993-94	23519	755	719	1088	3349	788	970	1121	2757	233	1490	705
1994-95	25023	842	771	1107	3414	826	995	1325	2901	254	1594	790
1995-96	26846	712	787	1174	3791	864	1032	1374	2995	251	1713	804
1996-97	28987	893	879	1252	3941	804	1107	1535	3327	267	1832	915
1997-98	30234	850	887	1318	4158	920	1137	1721	3292	270	1985	1063
1998-99	32255	904	934	1405	4324	948	1203	1797	3316	274	2112	1116
1999-00	34837	950	1002	1552	4735	1008	1267	1801	3440	274	2264	1170
2000-01	36282	1106	1081	1426	4589	982	1309	1743	3511	308	2343	1215
2001-02	38236	1043	1165	1528	4751	1042	1326	1941	3575	323	2512	1262
2002-03	39719	1175	1236	1449	5079	1034	1348	1708	3690	353	2600	1359
2003-04	42883	1099	1358	1611	5471	1185	1433	2251	3885	381	2753	1433
2004-05	45906	1238	1475	1664	5948	1340	1504	2196	4079	431	2936	1588
2005-06	50257	1207	1608	1748	6810	1399	1577	2344	4317	492	3121	1752
2006-07	55066	1416	1791	1907	7748	1574	1748	2620	4660	551	3366	1969
2007-08	60199	1489	1931	1997	8650	1708	1899	2739	4959	648	3627	2191
2008-09	64248	1716	2080	2250	8786	1837	2004	2969	5336	716	3774	2464
2009-10	69769	1798	2340	2463	9634	1852	2132	3142	5668	839	4067	2667
2010-11	75987	2073	2498	2592	10732	1968	2270	3614	6120	927	4313	2888
2011-12	81069	2285	2712	2824	11222	2042	2392	3953	6451	1020	4471	3147
2012-13	85463	2369	2894	3069	11842	2163	2518	4098	6736	1095	4838	3342
2013-14	90636	2469	3142	3226	12671	2331	2675	4343	7075	1178	5247	3565
2014-15	97121	2557	3314	3394	13322	2359	2777	4656	7297	1257	5633	3882
2015-16	105033	2749	3612	3597	14417	2557	2926	4981	7894	1355	-	4291
2016-17	112476	3033	3927	4129	15744	2828	3095	5352	8457	1448	-	4658
2017-18	119762	-	-	4432	-	3029	-	5736	9011	1547	-	5035
Growth 1981-2018	6.34	5.05	6.88	5.44	6.82	4.83	5.17	6.49	4.73	6.75	5.79	8.24
Growth 1994-2018	7.02	6.23	7.66	6.03	6.96	5.77	5.17	7.04	5.06	8.20	6.54	8.53
Growth 2000-2018	7.10	7.07	8.37	6.00	7.32	6.30	5.40	6.65	5.50	10.10	6.27	8.45

6 TRAFFIC AND TOLL PROJECTIONS

6.1 GENERAL

The traffic growth on a road facility is generally estimated on the basis of historical trends. Demand changes are usually because of shifts in the pattern of economic activities in the surrounding regions. Hence, future traffic estimation necessitates a preview, however imprecise, of the probable pattern of future growth of the economy.

The traffic growth rates established for this study are based on the elasticity procedure outlined in IRC: 108-1996 "Guidelines for Traffic Prediction on Rural Highways". In the elasticity approach, a relationship is established between traffic and socio-economic indicators of influence area. The methodology thus adopted incorporates the perspective growth envisaged in the economic indicators of these project influence area and the changes in transport demand elasticity over a period. Traffic growth rates by vehicle type, for the project road sections, have been forecasted considering the concession period of 24 years.

The project section of National Highway 2 originates from Agra and ends at Etawah (End of Etawah Bypass). The project road is a section between Agra and Etawah passing through the districts of Agra, Firozabad, and Etawah. The project road caters to the traffic between west, northern and east Uttar Pradesh and between Delhi and Kolkata.

6.2 METHODOLOGY

The following methodology has been adopted for estimating traffic growth rates. The methodology uses the basic principle of elasticity of traffic growth with respect to economic growth.

- Step 1: Analysis of past vehicle registration data with economic growth parameters of PIA to derive elasticity of traffic in relation to NSDP.
- Step 2: Development of future GDP growth scenario.
- Step 3: Correlation of NSDP of PIA with GDP.
- Step 4: Estimation of future NSDP and Derivation of traffic growth rates.

6.3 ELASTICITY OF TRAFFIC GROWTH IN RELATION TO ECONOMIC GROWTH

The following section describes the methodology in detail.

6.3.1 Traffic Projection – Trip Ends Method

The trip ends method relates the growth in transportation demand with the growth and development of the PIA at the zonal level. This method incorporates regional disparities in terms of its economic activities and contribution towards traffic.

The model used to estimate future traffic can be expressed as follows:

$$T_{ym} = T_{(y-1)m} \times \left[1 + \left(\frac{\sum_{z=1}^{n} (E_z \times TE_{mz})}{\sum_{z=1}^{n} TE_{mz}} \times e_{ym} \right) \right]$$

Where

T_{ym}	=	Trips by Mode and Year
$T_{(y-1)\,m}$	=	Trips by Mode in Previous Year
E_z	=	Zonal Economic Growth Rates
e_{ym}	=	Year and Mode Elasticity values
TE_{mz}	=	Trip end by Mode and Zone
n	=	Number of zones

The results of O-D analysis on the project road section indicate that the districts of Agra, Firozabad, Etawah, Mathura, Auraiya, Noida Kanpur and Delhi have the highest influence on traffic moving on the project road section. The shares of traffic for other major zones as per the O-D pattern have been presented in Table 6-1.

Table 6-1: Mode Wise PIA Percentage Share

Zone Name	Cars	Buses	Trucks	Total
Uttar Pradesh-Firozabad	37.7	20.8	18.3	26.61
Uttar Pradesh-Agra	24.7	27.8	14.8	20.03
Uttar Pradesh-Etawah	14.3	16.2	11.5	13.04
Uttar Pradesh-Kanpur Nagar	6.6	8.9	10.8	8.88
Delhi	3.6	5.6	7.4	5.64
Uttar Pradesh-Mathura	2.4	3.8	4.6	3.62
Uttar Pradesh-Lucknow	0.7	2.0	4.5	2.69
Haryana	1.4	1.2	3.8	2.56
West Bengal	0.1	0.3	3.6	1.83
Rajasthan	0.8	1.1	2.6	1.74
Uttar Pradesh-Mainpuri	1.6	1.4	1.2	1.37
Uttar Pradesh-Auraiya	1.4	3.4	0.9	1.35
Uttar Pradesh-Gautam Buddha Nagar	0.7	0.8	1.8	1.22
Bihar	0.1	0.4	1.9	1.04
Punjab	0.2	0.2	1.4	0.80
Madhya Pradesh	0.3	0.5	1.2	0.74
Uttar Pradesh-Aligarh	0.4	0.1	0.8	0.59
Uttar Pradesh-Hardoi	0.3	0.5	0.7	0.54
Uttar Pradesh-Allahabad	0.1	0.2	1.0	0.53
Uttar Pradesh-Hathras	0.5	0.3	0.6	0.51
Jharkhand	0.3	0.1	0.7	0.48
Total (21 Highest Traffic Zones)	**60.3**	**74.9**	**75.6**	**69.2**

6.3.2 Transport Demand Elasticities

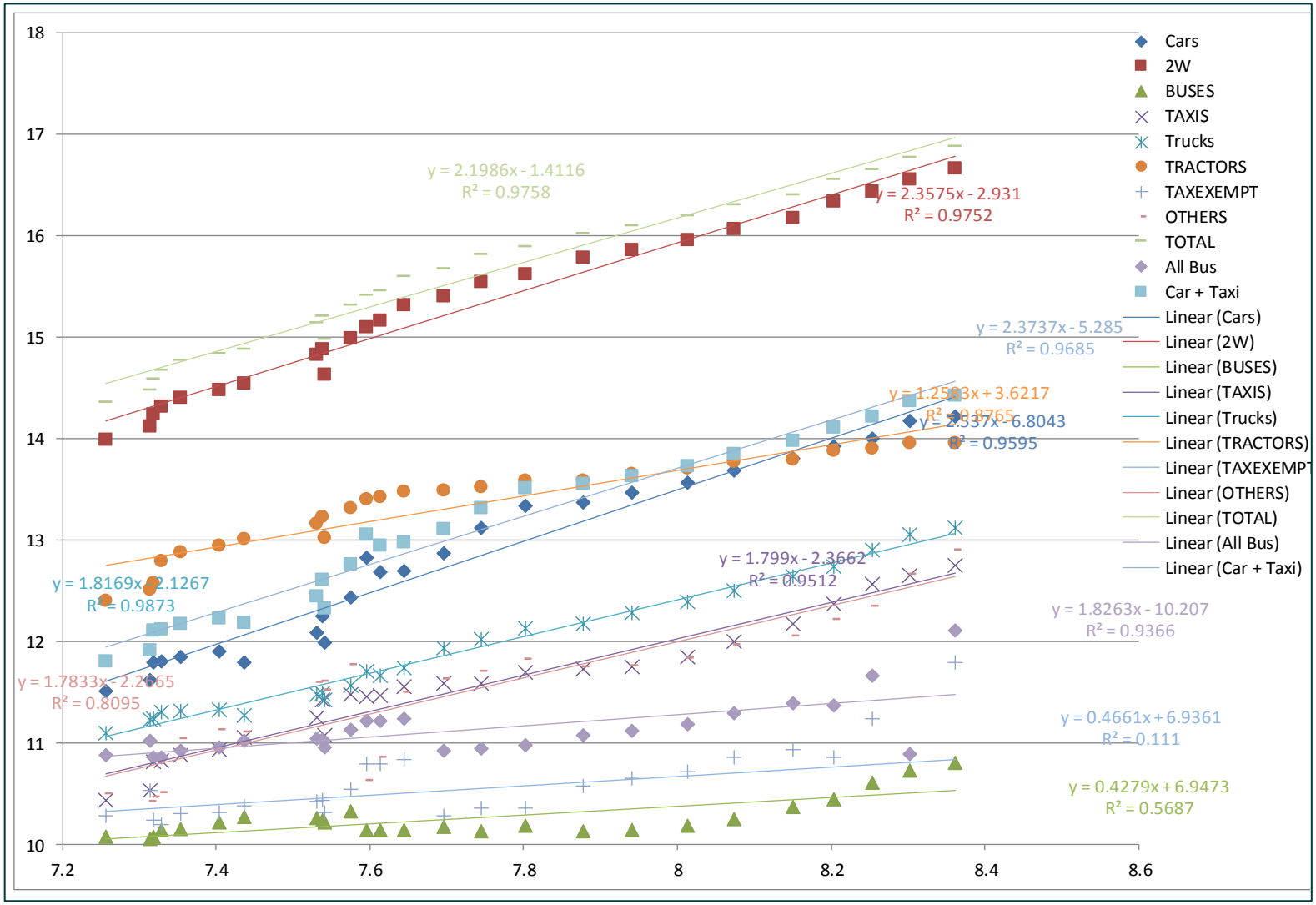
The Consultant has used elasticity approach for determining the growth rates of future traffic. This involved establishing a quantitative relationship between traffic growth as the dependent variable and growth in NSDP/ GDP as the independent variable. The methodology involved fitting log-log regression equations to the time series data.

As the time series traffic data on project road is not available, elasticity values are established by using registered vehicles as dependent variable and the states NSDP as independent variable. The vehicle registration data for Uttar Pradesh is presented in Table 6-2. The regression equations for traffic elasticities for Uttar Pradesh are shown in Figure 6-1. Further, for states that have a minor share of trip-ends or for which the vehicle registration data was not available, it was deemed suitable to use national level elasticity. The arrived elasticity values of each project influence region/ states have been weighted by the trip end factor as revealed from the O-D survey results.

Table 6-2: Vehicle Registration Data for Uttar Pradesh

Year	Car	2 Wheeler	Bus	Taxi	Truck	Tractor	Tax Exempt	Other	Total	NSDP (₹ Crore)
1989-90	1,00,065	11,82,344	23,824	33,791	65,541	2,42,743	29,123	36,378	17,13,809	1,417.07
1990-91	1,11,383	13,51,877	23,304	37,345	74,930	2,71,672	37,574	33,602	19,41,687	1,501.35
1991-92	1,31,583	15,18,840	23,816	49,416	75,995	2,89,100	27,764	34,973	21,51,487	1,507.49
1992-93	1,33,134	16,42,127	25,170	50,440	81,319	3,59,132	26,772	36,790	23,54,884	1,523.72
1993-94	1,39,423	18,02,523	25,559	53,245	81,544	3,93,012	29,651	62,382	25,87,339	1,561.50
1994-95	1,47,939	19,41,356	27,295	56,091	82,401	4,19,096	30,189	67,964	27,72,331	1,642.95
1995-96	1,31,848	20,57,408	28,740	62,861	78,770	4,47,546	32,205	66,845	29,06,223	1,696.03
1996-97	1,60,123	22,64,232	27,367	64,284	91,216	4,50,088	30,067	1,00,965	31,88,342	1,884.26
1997-98	1,76,689	27,31,484	28,489	76,909	96,745	5,22,333	33,722	1,08,721	37,75,092	1,864.22
1998-99	2,08,106	29,04,555	27,972	91,604	97,268	5,53,954	33,928	1,09,991	40,27,378	1,877.95
1999-00	2,50,572	32,36,415	30,472	96,700	1,05,268	6,05,240	37,843	1,29,601	44,92,111	1,948.55
2000-01	3,70,570	35,83,551	25,389	94,784	1,21,203	6,63,384	48,778	41,403	49,49,062	1,988.39
2001-02	3,21,747	38,34,680	25,397	95,082	1,16,268	6,77,366	48,771	51,631	51,70,942	2,024.56
2002-03	3,26,604	44,88,426	25,357	1,04,214	1,25,010	7,09,797	50,689	98,298	59,28,395	2,090.07
2003-04	3,86,202	48,93,070	26,162	1,07,516	1,51,711	7,17,675	29,201	1,11,934	64,23,471	2,200.12
2004-05	4,99,148	56,52,044	25,081	1,07,847	1,65,123	7,42,717	31,557	1,20,969	73,44,486	2,310.29
2005-06	6,15,739	60,83,655	26,549	1,19,789	1,84,428	7,91,411	31,616	1,35,947	79,89,134	2,445.14
2006-07	6,41,939	71,38,789	25,134	1,23,458	1,93,465	7,97,990	39,038	1,25,886	90,85,699	2,639.35
2007-08	7,03,071	77,37,237	25,339	1,26,753	2,15,825	8,47,329	42,220	1,28,287	98,26,061	2,808.51
2008-09	7,75,569	85,21,189	26,331	1,39,203	2,40,433	8,93,683	45,164	1,37,231	1,07,78,803	3,021.92
2009-10	8,73,251	94,93,677	28,124	1,62,335	2,68,617	9,53,959	51,600	1,56,786	1,19,88,349	3,209.89
2010-11	9,84,937	1,05,63,850	31,922	1,93,715	3,07,058	9,78,627	56,240	1,70,883	1,32,87,232	3,466.21
2011-12	11,08,100	1,24,10,064	34,428	2,35,028	3,38,977	10,64,284	51,600	2,02,793	1,54,45,274	3,653.75
2012-13	12,05,374	1,37,24,495	40,501	2,84,587	4,00,061	10,88,058	75,550	2,29,558	1,70,48,184	3,844.58
2013-14	14,23,020	1,53,95,363	45,473	3,12,423	4,67,786	11,47,190	7,998	3,15,305	1,91,14,558	4,035.09
2014-15	14,86,669	1,72,74,293	49,368	3,44,365	4,99,207	11,54,649	1,32,124	4,01,461	2,13,42,136	4,277.59
1990 - 2015	11.4%	11.3%	3.0%	9.7%	8.5%	6.4%	6.2%	10.1%	10.6%	4.5%
2000 - 2015	12.6%	11.8%	3.3%	8.8%	10.9%	4.4%	8.7%	7.8%	10.9%	5.4%

Figure 6-1: Regression for Traffic Elasticities for Uttar Pradesh



The transport demand elasticity arrived by regression analysis between vehicle registration and state NSDP for each mode for the immediate project influence area as depicted by the O-D survey result is presented in Table 6-3.

It may be noted that the state of Uttar Pradesh shows high demand elasticities for most categories of vehicles compared to national average. With most of the traffic on the project road coming in from within the state, it may be expected to experience significantly high growth in traffic.

Table 6-3: Zonal Transport Demand Elasticity using Vehicle Registration Data

Zone Name	Passenger Car	Taxi	Minibus	Standard Bus	Tempo/ LCV	2-Axle Truck	3-Axle Truck	Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	Oversized Vehicle (>6 Axles)
Uttar Pradesh	2.5	1.8	0.4	0.4	1.1	0.9	1.8	1.6	1.3
Uttar Pradesh-Agra	2.5	1.8	0.4	0.4	1.1	0.9	1.8	1.6	1.3
Uttar Pradesh-Kanpur Na	2.5	1.8	0.4	0.4	1.1	0.9	1.8	1.6	1.3
Haryana	2.0	2.2	1.2	1.2	1.5	1.2	2.4	2.2	1.7
West Bengal	1.0	0.7	0.7	0.8	0.5	0.4	0.9	0.8	0.6
Rajasthan	1.9	1.9	1.2	1.2	4.5	0.7	1.4	1.4	1.0
Uttar Pradesh-Mainpuri	2.5	1.8	0.4	0.4	1.1	0.9	1.8	1.6	1.3
Uttar Pradesh-Auraiya	2.5	1.8	0.4	0.4	1.1	0.9	1.8	1.6	1.3
Bihar	1.6	1.7	0.6	1.2	0.8	0.7	1.4	1.3	1.0
Madhya Pradesh	1.9	1.6	1.8	1.8	0.7	0.6	1.1	1.0	0.8
Jharkhand	2.1	1.5	1.4	1.4	1.2	0.8	1.6	1.6	1.1
Assam	1.6	1.7	0.6	1.2	0.8	0.7	1.4	1.3	1.0
India	**1.6**	**1.7**	**0.6**	**1.2**	**0.8**	**0.7**	**1.4**	**1.3**	**1.0**

The projected elasticity values are based on the premise that transport demand elasticity for both freight and passenger traffic tend to decline over time as regional imbalances are corrected and regions become self-sufficient. Moreover, irrational traffic flows are being gradually cut down, with an increase in road network and improved accessibility. The project elasticity values have been rationalized for freight vehicles as per the trend in the growth of these vehicles. The past trend in the growth of vehicles has seen more growth in 3-axle trucks, slow growth in 2-axle trucks and re-categorization of LCV and 2-axle trucks. The elasticity value for LCV has been considered as per the past trend of growth of vehicles. The projected elasticity values adopted in the study for 5 yearly intervals are presented in Table 6-4.

Table 6-4: Projected Transport Demand Elasticity

Modes	2019-23	2024-28	2029-33	2034-38	2039-43	2044-48
Passenger Car	2.5	2.3	2.0	1.9	1.7	1.5
Taxi	1.8	1.7	1.4	1.4	1.2	1.1
Minibus	0.6	0.5	0.5	0.4	0.4	0.4
Standard Bus	0.5	0.5	0.4	0.4	0.4	0.3
Tempo/ LCV	1.1	1.0	0.9	0.8	0.8	0.7
2-Axle Truck	0.8	0.8	0.7	0.6	0.6	0.5
3-Axle Truck	1.6	1.6	1.3	1.3	1.1	1.0
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	1.5	1.4	1.2	1.2	1.0	0.9
Oversized Vehicle (>6 Axles)	1.2	1.1	0.9	0.9	0.8	0.7

6.3.3 Economic Perspective

The rate of change in NSDP at constant prices is the main economic indicator for measuring the real growth in the economy. The time series of state income at constant prices for the NSDP of for all states have been studied to assess the past performance of the state economy with respect to the growth of India's GDP for a period of almost forty years starting from 1980-81 to 2017-18. The average annual growth rates for Uttar Pradesh and other influence area are presented in Table 6-5.

Table 6-5: Economic Growth Rate

State	2020-24	2025-29	2030-34	2035-39	2040-44	2045-49
India	7.00	6.50	6.00	5.50	5.00	4.50
Uttar Pradesh	4.86	4.51	4.23	3.88	3.62	3.25
Delhi	8.41	7.81	7.21	6.61	5.86	5.27
Rajasthan	6.48	6.01	5.91	5.41	5.05	4.54
Haryana	7.56	7.02	6.45	5.91	5.24	4.72
West Bengal	6.43	5.97	5.68	5.21	4.86	4.37
Bihar	5.93	5.51	5.09	4.66	4.35	3.91
Madhya Pradesh	5.80	5.38	4.98	4.56	4.25	3.83

Regression analysis was conducted with NSDP being the dependent variable and GDP as the independent variable for different periods to estimate likely future NSDP growth pattern based on GDP growth forecasts. The GDP forecasts have been made based on the recent trends for the short term and long term trends for the long term. Based on the current trends and outlook the average GDP growth has been assumed to be 7.0% per annum for the next 5-year period after which it has been assumed to slow down to 6.5% per annum during 2025-29 period and finally taper off to 5% by 2040.

6.3.4 Projected Traffic Growth Rates

The traffic growth rates by each mode, over the next 30 years are given in Table 6-6. These growth rates are based on transport demand elasticity as presented in Table 6-4 and economic perspective for different influence areas in Table 6-5.

Table 6-6: Projected Likely Traffic Growth Rates using Econometric Model (%)

Modes	2020-24	2025-29	2030-34	2035-39	2040-44	2045-49	2020-43
Passenger Car	12.2	10.6	8.5	7.5	6.2	5.2	9.1
Taxi	8.9	7.7	6.2	5.4	4.5	3.8	6.7
Minibus	2.9	2.5	2.0	1.8	1.5	1.2	2.2
Standard Bus	2.5	2.2	1.8	1.6	1.3	1.1	1.9
Tempo/ LCV	5.8	5.0	4.1	3.5	2.9	2.4	4.3
2-Axle Truck	4.5	3.9	3.1	2.7	2.2	1.9	3.3
3-Axle Truck	8.9	7.7	6.2	5.4	4.4	3.7	6.6
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	8.2	7.1	5.8	5.0	4.1	3.5	6.1
Oversized Vehicle (>6 Axles)	6.3	5.5	4.4	3.9	3.2	2.7	4.7

The cumulative likely annual growth rate for the next 24 years which is the concession period for the project is also given in Table 6-6.

The likely growth rates are estimated on the assumption of a modest economic growth scenario which has been prevailing over a medium to long term in India. However, there are many structural and policy changes happening that may significantly alter this trend. Considering the domestic and global economic scenario and emerging growth outlook a higher than 7% average growth rate is very likely. So as a relatively more optimistic scenario a 7.5% average GDP growth was considered for the next five years. The traffic growth rates of the optimistic scenario are presented in Table 6-7.

Table 6-7: Projected Optimistic Traffic Growth Rates using Econometric Model (%)

Modes	2020-24	2025-29	2030-34	2035-39	2040-44	2045-49	2020-43
Passenger Car	13.2	11.5	9.4	8.2	6.8	5.7	10.0
Taxi	9.6	8.3	6.8	5.9	4.9	4.2	7.2
Minibus	3.1	2.7	2.2	1.9	1.6	1.4	2.4
Standard Bus	3.0	2.6	2.1	1.8	1.5	1.3	2.2
Tempo/ LCV	6.2	5.4	4.4	3.8	3.2	2.7	4.7
2-Axle Truck	4.8	4.2	3.4	2.9	2.4	2.1	3.6
3-Axle Truck	9.5	8.3	6.7	5.9	4.8	4.1	7.2
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	8.7	7.6	6.2	5.4	4.4	3.8	6.5
Oversized Vehicle (>6 Axles)	6.7	5.8	4.8	4.1	3.4	2.9	5.1

For scenario building a pessimistic scenario too was developed considering an average GDP growth of 6.5% per annum for the initial 5-year period. There are some short-term issues that may affect the GDP and consequently traffic growth in the immediate term, but this scenario is unlikely to pan out over a longer period. The growth traffic rates under the pessimistic scenario are presented in Table 6-8.

Table 6-8: Projected Pessimistic Traffic Growth Rates using Econometric Model (%)

Modes	2020-24	2025-29	2030-34	2035-39	2040-44	2045-49	2020-43
Passenger Car	11.4	9.8	7.9	6.8	5.5	4.6	8.4
Taxi	8.3	7.2	5.8	5.0	4.0	3.4	6.2
Minibus	2.7	2.4	1.9	1.6	1.3	1.1	2.0
Standard Bus	2.4	2.1	1.7	1.4	1.2	1.0	1.8
Tempo/ LCV	5.4	4.7	3.7	3.2	2.6	2.2	4.0
2-Axle Truck	4.2	3.6	2.9	2.5	2.0	1.7	3.1
3-Axle Truck	8.3	7.2	5.7	4.9	4.0	3.3	6.1
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	7.7	6.6	5.3	4.6	3.7	3.1	5.7
Oversized Vehicle (>6 Axles)	5.9	5.1	4.1	3.5	2.8	2.4	4.4

6.4 TRAFFIC FORECAST

Long term forecasting of traffic on project road for next 20-25 years is required to assess the project revenues as per the concession agreement. The traffic has been forecasted as per the projected traffic growth rate in Table 6-6. The traffic forecast has been carried out as per the base traffic numbers derived from the classified volume count and likely growth scenario. The mode-wise forecasted traffic for the concession period is presented in Table 6-9

Table 6-9: Mode Wise Forecasted (Likely Scenario) Traffic at Tundla KM 224+950

Year	Passenger Car	Taxi	Minibus	Standard Bus	Tempo/ LCV	2-Axle Truck	3-Axle Truck	Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	Oversized Vehicle (>6 Axles)	Total Vehicles	Total PCUs
Tundla KM 224+950											
2019	7463	961	43	1444	2813	1423	1197	1663	1	17008	32389
2020	8395	1048	44	1482	2979	1489	1306	1803	1	18548	34927
2021	9444	1144	46	1521	3156	1557	1425	1955	2	20248	37700
2022	10624	1249	47	1560	3343	1628	1555	2119	2	22126	40731
2023	11951	1363	49	1601	3541	1703	1696	2298	2	24203	44046
2024	13266	1472	50	1638	3727	1771	1833	2469	2	26228	47248
2025	14727	1591	51	1675	3923	1843	1980	2652	2	28445	50718
2026	16348	1719	53	1714	4129	1917	2139	2850	2	30871	54483
2027	18148	1858	54	1754	4346	1994	2311	3062	2	33528	58569
2028	20146	2007	55	1794	4574	2075	2497	3289	2	36440	63006
2029	21912	2135	57	1827	4764	2141	2657	3484	2	38980	66843
2030	23833	2272	58	1861	4963	2210	2827	3691	3	41715	70946
2031	25922	2417	59	1895	5169	2280	3007	3909	3	44662	75334
2032	28195	2571	60	1930	5384	2354	3200	4141	3	47838	80029
2033	30667	2736	61	1965	5608	2429	3404	4386	3	51260	85054
2034	33011	2888	63	1997	5813	2496	3594	4612	3	54476	89741
2035	35535	3049	64	2028	6024	2566	3795	4849	3	57913	94718
2036	38306	3222	65	2061	6246	2638	4009	5103	3	61654	100097
2037	41294	3405	66	2095	6477	2713	4235	5369	3	65657	105816
2038	44515	3598	67	2129	6716	2789	4475	5649	3	69941	111901
2039	47364	3765	68	2158	6919	2853	4681	5889	4	73702	117206
2040	50395	3940	69	2187	7129	2919	4897	6140	4	77681	122790
2041	53621	4123	70	2216	7346	2986	5123	6402	4	81890	128669
2042	57052	4314	72	2246	7568	3055	5360	6674	4	86345	134861
2043	60703	4514	73	2276	7798	3126	5607	6959	4	91060	141382
2044	63843	4684	73	2301	7989	3184	5817	7199	4	95094	146940
2045	67144	4861	74	2326	8184	3244	6034	7448	4	99319	152738
2046	70617	5044	75	2351	8384	3305	6259	7706	4	103745	158788
2047	74269	5234	76	2377	8589	3366	6492	7972	5	108380	165102
2048	78109	5432	77	2402	8799	3429	6734	8248	5	113236	171691

Table 6-10: Mode Wise Forecasted (Likely Scenario) Traffic at Gurau Km 285+200

Year	Passenger Car	Taxi	Minibus	Standard Bus	Tempo/ LCV	2-Axle Truck	3-Axle Truck	Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	Oversized Vehicle (>6 Axles)	Total Vehicles	Total PCUs
Gurau Km 285+200											
2019	1786	90	11	601	1474	1037	1101	1663	2	7765	19815
2020	2009	98	11	617	1561	1084	1201	1803	3	8388	21300
2021	2260	107	12	633	1654	1134	1310	1955	3	9068	22909
2022	2542	117	12	650	1752	1186	1430	2120	3	9811	24654
2023	2860	127	12	667	1856	1241	1560	2298	3	10624	26548
2024	3175	137	13	682	1954	1291	1686	2469	3	11409	28362
2025	3524	148	13	698	2056	1343	1821	2653	4	12259	30314
2026	3912	160	13	714	2164	1397	1968	2850	4	13182	32415
2027	4343	173	14	730	2278	1453	2126	3062	4	14183	34677
2028	4821	187	14	747	2397	1511	2297	3290	4	15269	37114
2029	5244	199	14	761	2497	1560	2444	3485	4	16208	39204
2030	5703	212	15	775	2601	1610	2600	3691	5	17211	41423
2031	6203	226	15	789	2709	1661	2766	3910	5	18284	43781
2032	6747	240	15	803	2822	1715	2943	4142	5	19432	46287
2033	7339	255	16	818	2939	1770	3131	4387	5	20660	48949
2034	7900	270	16	831	3046	1819	3306	4613	5	21806	51413
2035	8503	285	16	845	3157	1869	3490	4850	6	23022	54012
2036	9167	301	17	858	3274	1922	3688	5103	6	24335	56797
2037	9882	318	17	872	3394	1976	3896	5370	6	25731	59740
2038	10652	336	17	886	3520	2032	4116	5650	6	27215	62848
2039	11334	351	17	898	3626	2079	4306	5890	7	28509	65536
2040	12060	368	18	910	3736	2127	4505	6141	7	29871	68349
2041	12831	385	18	923	3850	2176	4712	6403	7	31304	71294
2042	13653	403	18	935	3966	2226	4930	6675	7	32814	74377
2043	14526	421	19	948	4087	2277	5158	6960	8	34403	77605
2044	15277	437	19	958	4187	2320	5350	7200	8	35756	80343
2045	16068	454	19	968	4289	2363	5550	7449	8	37168	83185
2046	16898	471	19	979	4394	2408	5757	7707	8	38641	86136
2047	17772	489	19	990	4501	2453	5972	7973	8	40177	89201
2048	18691	507	20	1000	4611	2499	6194	8249	9	41780	92384

7 TOLL REVENUE ESTIMATION

7.1 TOLL POLICY

The tolling on the project highway is governed by the National Highway Fee (Determination of Rates and Collection) Rules 2008 (also known as the toll policy) and their subsequent amendments. The rules define the method of determining toll rates and collection of the same for different vehicle categories being used by the road users. The toll revenue for the project road has been estimated in compliance with the toll policy and the project parameters as defined in the Concession Agreement and its schedules:

a. Tollable, exempted and non-tollable vehicle categories.

b. Differential toll rates for different categories of vehicles.

c. Discounted tolling for frequent and local road users

d. Project length and toll plaza locations

e. Provisions for additional fees for structures and bypasses on project road.

f. Escalation of toll rates in relation to inflation.

g. Penal Tolling provisions for over loaded vehicles

h. Toll rates during construction period

7.2 TOLL RATES AND VEHICLE CATEGORIES

The toll policy defines six categories of vehicles and provides for differential toll rates for each category. Sub rule 2 of rule 4 provides the following base rates of fee on a per kilometer basis considering 2007-08 as the base year.

Table 7-1: Base Rate of Toll for Different Categories of Traffic

S No	Vehicle Category	Toll Rate (`/Km)
1	Car, Jeep, Van or Light Motor Vehicle	0.65
2	Light Commercial Vehicle, Light Goods Vehicle or Mini Bus	1.05
3	Bus or Truck (Two Axles)	2.20
4	Three Axle Commercial Vehicles	2,40
5	Heavy Construction Machinery (HCM) or Earth Moving Equipment (EME) or Multi Axle Vehicle (MAV) (4 to 6 axles)	3.45
6	Oversized Vehicles (7 or more Axles)	4.20

7.2.1 Non Tollable Vehicles

Apart from the above mentioned vehicle categories the other such as two-wheelers, three wheelers, tractors and non-motorized vehicles are not to be subject to toll. However, wherever there is a provision of service roads these vehicles shall compulsorily use the service road.

7.2.2 Exempted Vehicles

There is a long descriptive list of categories of users who by law are exempted from paying toll. These primarily cover

i. top level officials from legislative, executive and judicial arms of the government,
ii. military, para military and police vehicles on duty,
iii. emergency services (Fire, Ambulance, Funeral Vans)

7.3 REVISION IN TOLL RATES

The toll policy provides for annual revision of toll rates in response to inflation and has been partially pegged to the WPI, which is a standard measure of inflation in India.

The formula for determining the applicable rate of fee is as follows

$$Applicable\ Rate\ of\ Fee = \text{Base Rate} + \text{Base Rate X} \left\{\frac{\text{WPI A} - \text{WPI B}}{\text{WPI B}}\right\} \text{X } 0.4$$

Where;

(a) applicable rate of fee shall be the rate payable by the user;
(b) base rate is the rate as shown in Table 7-1 above inflated by a simple interest of 3% per annum;
(c) WPI A means the wholesale price index of the week ending on or subsequent to 1st January immediately preceding the date of revision under these rules: and
(d) WPI B means the wholesale price index of the week ending on 6' January, 2007 i.e. 208.7. While the WPI was being estimated with 1993-94 as the base year, however, recently the estimation of WPI has been reset with the base year as 2004-05. The future WPI values shall be available with the 2004-05 base only, the WPI B would then translate to about 112.1 under the 2004-05.

7.3.1 Inflation Rate

The rate of inflation of WPI has been assumed to be 5% per annum for the purpose of calculation of toll rates as per the above formula.

7.4 TOLL RATES DURING CONSTRUCTION PERIOD

During the construction period i.e. till the completion of six laning is achieved the toll rates applicable shall be 75% of the toll rates determined to be applicable at the beginning of the concession period and free from escalation. It is assumed that the six laning shall be complete by the year 2020 after which full toll rates would become applicable.

7.5 TOLL RATES FOR OVERLOADED VEHICLES

As per the policy provisions (National Highways Fee Amendment Rules 2013) the overloaded vehicles are to be charged 10 times the toll applicable in their respective categories. Considering the low reported prevalence of overloading, it is unlikely to have a major impact on toll collections. Also, if effectively administered this would significantly reduce the prevalence of overloading as the financial incentive of overloading will be negated by the high toll disincentive. The additional toll revenue on overloaded vehicles is therefore conservatively ignored for the purpose of estimation of toll revenue.

7.6 SEGMENTATION OF TOLLABLE TRAFFIC

Based on the earlier discussion the toll is to be collected according to the following categories:

7.6.1 One Way Traffic

The commuters who use the project facility only once in a day are covered under this category. These commuters are required to pay the complete notified one way fee.

7.6.2 Return Trip

The commuters who complete one round trip within 24 hours are covered under this category. These commuters are required to pay 1.5 times the normal one-way fee.

- During the OD surveys the respondents were asked whether they would be returning the same day.
- Further, it was assumed that local traffic and monthly pass holders will also most likely return the same day. Therefore, this component was deleted from the return traffic share to avoid double counting of concessional traffic.

7.6.3 Monthly Pass

The commuters who want to use the project facility on a regular basis can opt for monthly pass by paying 33.3 times of normal one way fee for performing 50 one way trips.

7.6.4 Local Traffic

Local Traffic means and includes a **personal vehicle** (car/passenger van/jeep) which is registered with the Concessionaire by any person who normally resides or works at a place that can normally be approached only by using a part of the project road and such person is, therefore, required to use such vehicles for commuting on a part of the said section in the course of normal travel to and from his place of work or residence. Only persons residing or working within 20Km of any one toll plaza can be categorized as Local.

The trips with a travel distance within 20Km of the toll plaza and showing a regular frequency, as revealed during the OD survey, were considered as local traffic. Since for commercial traffic there is the condition of the vehicle being registered in the same district as the toll plaza, the data was also analyzed to extract the proportion of locally registered vehicles. Such traffic is supposed to register with the concessionaire and will be issued a local pass costing Rs.150 per month for cars and pay 50% of the toll rate for rest of the categories.

Table 7-2 shows the adopted segmentation of traffic in categories described above.

Table 7-2: Segmentation (Percentage) of Tollable Traffic

Tundla KM 224+950		RTO Code: UP83 District Firozabad				
S No	Mode	One Way	Return	Monthly	Local	Total
1	Passenger Car	16.0	36.1	26.0	21.9	100
2	Taxi	27.3	33.3	20.5	18.9	100
3	Minibus	17.3	35.6	32.0	15.1	100
4	Standard Bus	25.0	49.4	20.2	5.5	100
5	Tempo/ LCV	52.5	9.7	30.8	7.0	100
6	2-Axle Truck	65.8	6.8	23.2	4.3	100
7	3-Axle Truck	68.7	5.7	21.9	3.7	100
8	Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	77.8	5.9	13.9	2.4	100
Gurau Km 285+200		**RTO Code: UP83 District Firozabad**				
S No	Mode	One Way	Return	Monthly	Local	Total
1	Passenger Car	40.1	43.6	9.8	6.6	100
2	Taxi	32.7	48.2	10.9	8.1	100
3	Minibus	45.3	54.7	0.0	0.0	100
4	Standard Bus	35.5	46.7	11.1	6.7	100
5	Tempo/ LCV	92.2	0.0	6.7	1.2	100
6	2-Axle Truck	91.3	0.0	6.0	2.6	100
7	3-Axle Truck	92.9	0.0	4.4	2.7	100
8	Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	96.2	0.0	3.8	0.0	100

7.7 ESTIMATION OF TOLL FEE

The toll fees were estimated taking into consideration the base rates, inflation, discounting rules and the length chargeable at each of the toll plazas. Further, it is stipulated that the toll fees so derived shall be rounded off to the nearest multiple of 5 rupees to ensure ease of transaction. Table 7-3 shows the estimated toll rates during different years for different modes.

Table 7-3: Estimated Toll Rates Mode Wise at Tundla KM 224+950

Tundla KM 224+950	2020	2025	2030	2035	2040
Passenger Car	60.00	100.00	130.00	170.00	220.00
Taxi	60.00	100.00	130.00	170.00	220.00
Minibus	95.00	165.00	210.00	270.00	355.00
Standard Bus	205.00	345.00	440.00	570.00	740.00
Tempo/ LCV	95.00	165.00	210.00	270.00	355.00
2-Axle Truck	205.00	345.00	440.00	570.00	740.00
3-Axle Truck	220.00	375.00	480.00	620.00	805.00
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	320.00	540.00	695.00	895.00	1160.00
Oversized Vehicle (>6 Axles)	390.00	660.00	845.00	1090.00	1410.00

Table 7-4: Estimated Toll Rates Mode Wise at Gurau Km 285+200

Gurau Km 285+200	2020	2025	2030	2035	2040
Passenger Car	60.00	105.00	135.00	175.00	225.00
Taxi	60.00	105.00	135.00	175.00	225.00
Minibus	95.00	170.00	220.00	280.00	365.00
Standard Bus	200.00	360.00	460.00	590.00	765.00
Tempo/ LCV	95.00	170.00	220.00	280.00	365.00
2-Axle Truck	200.00	360.00	460.00	590.00	765.00
3-Axle Truck	220.00	390.00	500.00	645.00	835.00
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	315.00	560.00	720.00	930.00	1200.00
Oversized Vehicle (>6 Axles)	385.00	685.00	875.00	1130.00	1465.00

7.8 ESTIMATION OF REVENUE

Toll revenue has been estimated and a summary of average daily toll collection estimates, for different years during the concession period, taking into account the traffic projections, toll rates and discounts as discussed in earlier sections. The summary of toll revenue is presented in Table 7-5.

Table 7-5: Mode wise Average Daily and Annual Toll Collection (Rs in Thousands) in Likely Scenario at Tundla KM 224+950

Year	Passenger Car	Taxi	Minibus	Standard Bus	Tempo/ LCV	2-Axle Truck	3-Axle Truck	Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	Oversized Vehicle (>6 Axles)	Total Daily (Rs in Lakhs)	Total Annual (Rs in Crores)
Tundla KM 224+950											
2019	279.0	43.5	3.0	230.1	225.9	257.3	235.7	492.6	0.5	17.7	64.52
2020	415.1	63.2	4.2	312.9	323.9	355.5	344.1	709.6	0.7	25.3	92.32
2021	489.4	72.1	4.5	337.4	358.2	391.7	394.7	805.8	0.8	28.5	104.20
2022	578.2	83.3	4.9	363.6	394.5	431.1	451.4	914.0	0.9	32.2	117.60
2023	682.2	94.0	5.3	392.6	444.6	473.4	515.9	1043.5	1.0	36.5	133.32
2024	791.4	107.2	5.7	420.2	486.5	516.2	589.1	1178.0	1.1	41.0	149.48
2025	930.5	121.7	6.1	450.7	541.0	561.9	664.5	1327.6	1.3	46.1	168.09
2026	1076.8	138.1	6.6	485.2	602.6	611.3	755.9	1504.4	1.4	51.8	189.16
2027	1261.2	156.2	7.1	521.2	658.1	670.4	858.1	1689.3	1.6	58.2	212.55
2028	1472.2	179.4	7.7	561.2	729.3	734.0	972.2	1906.5	1.8	65.6	239.59
2029	1683.7	199.2	8.2	600.2	799.3	795.5	1092.3	2131.1	1.9	73.1	266.87
2030	1921.5	222.9	8.8	643.1	874.5	861.0	1214.6	2376.2	2.1	81.2	296.56
2031	2190.2	248.9	9.5	690.5	956.5	938.3	1359.6	2644.6	2.3	90.4	329.98
2032	2516.6	278.7	10.2	739.2	1057.3	1019.7	1529.5	2937.3	2.6	100.9	368.32
2033	2888.0	312.4	11.0	789.9	1154.1	1105.8	1705.4	3273.9	2.8	112.4	410.39
2034	3271.2	348.4	11.8	846.0	1264.9	1193.4	1896.7	3633.0	3.1	124.7	455.10
2035	3730.1	390.1	12.6	904.2	1367.2	1293.6	2105.3	4021.4	3.4	138.3	504.72
2036	4184.7	429.0	13.6	967.3	1495.7	1400.1	2347.2	4445.8	3.7	152.9	557.97
2037	4763.1	478.8	14.5	1035.3	1632.2	1512.7	2612.7	4926.5	4.0	169.8	619.77
2038	5408.8	533.0	15.6	1109.0	1796.3	1641.2	2902.2	5469.6	4.4	188.8	689.13
2039	6053.9	586.5	16.6	1181.5	1940.4	1767.1	3202.8	6004.0	4.8	207.6	757.65
2040	6850.3	652.6	17.9	1265.0	2115.6	1910.0	3526.6	6600.5	5.2	229.4	837.45
2041	7638.0	715.0	19.1	1351.3	2282.2	2059.6	3893.5	7239.1	5.7	252.0	919.92
2042	8603.2	791.6	20.4	1440.3	2478.4	2216.2	4290.6	7951.0	6.2	278.0	1014.62
2043	9621.1	872.3	21.9	1541.3	2706.8	2392.1	4736.4	8740.9	6.8	306.4	1118.35
2044	10669.8	953.4	23.4	1643.7	2915.7	2575.1	5176.3	9541.9	7.3	335.1	1222.99
2045	11811.3	1039.8	24.9	1752.4	3154.1	2766.7	5664.7	10422.9	7.9	366.4	1337.54

Table 7-6: Mode wise Average Daily and Annual Toll Collection (Rs in Thousands) in Likely Scenario at Gurau Km 285+200

Year	Passenger Car	Taxi	Minibus	Standard Bus	Tempo/ LCV	2-Axle Truck	3-Axle Truck	Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	Oversized Vehicle (>6 Axles)	Total Daily (Rs in Lakhs)	Total Annual (Rs in Crores)
Gurau Km 285+200											
2019	85.5	4.3	0.9	97.8	136.2	200.5	235.4	517.2	1.0	12.8	46.67
2020	134.7	6.6	1.3	140.4	204.7	293.5	356.2	783.2	1.4	19.2	70.16
2021	154.6	7.4	1.4	151.3	225.1	323.3	407.6	887.9	1.6	21.6	78.85
2022	182.6	8.4	1.5	163.6	247.1	355.4	465.8	1014.9	1.8	24.4	89.10
2023	218.3	9.8	1.6	175.5	279.5	389.6	538.2	1157.1	2.0	27.7	101.17
2024	253.3	11.0	1.8	188.5	313.0	424.2	606.3	1304.1	2.2	31.0	113.31
2025	297.1	12.6	1.9	203.2	339.8	467.1	690.4	1466.7	2.4	34.8	127.07
2026	343.4	14.2	2.1	218.1	378.5	506.4	784.2	1660.1	2.7	39.1	142.70
2027	401.1	16.2	2.3	233.9	420.4	554.7	888.6	1874.2	3.0	43.9	160.39
2028	477.1	18.6	2.4	252.5	465.8	606.4	1015.5	2111.2	3.3	49.5	180.78
2029	543.1	20.8	2.6	269.6	509.4	656.1	1128.5	2356.5	3.7	54.9	200.40
2030	617.2	23.1	2.8	289.6	556.0	715.8	1263.7	2623.7	4.0	61.0	222.50
2031	712.7	26.0	3.0	310.3	605.6	778.7	1412.0	2914.5	4.4	67.7	247.00
2032	806.9	28.9	3.2	332.0	658.5	845.2	1587.5	3250.6	4.9	75.2	274.39
2033	927.0	32.4	3.4	355.2	728.3	915.0	1780.2	3616.6	5.4	83.6	305.27
2034	1044.1	35.9	3.7	379.5	799.1	984.7	1975.9	4007.6	5.9	92.4	337.13
2035	1181.7	39.7	4.0	405.1	859.4	1066.3	2188.6	4452.8	6.4	102.0	372.45
2036	1346.5	44.4	4.2	435.3	939.0	1160.9	2437.3	4912.4	7.0	112.9	411.97
2037	1530.2	49.4	4.6	465.1	1038.8	1251.5	2707.8	5459.8	7.7	125.1	456.79
2038	1734.6	54.9	4.9	497.2	1128.8	1355.4	3019.9	6051.5	8.4	138.6	505.73
2039	1936.7	60.3	5.2	531.9	1216.4	1466.7	3326.8	6629.4	9.2	151.8	554.17
2040	2171.2	66.7	5.6	566.9	1325.7	1573.0	3656.5	7275.7	10.0	166.5	607.77
2041	2454.1	74.0	6.0	606.3	1440.7	1703.4	4031.1	7996.4	10.8	183.2	668.79
2042	2722.9	80.8	6.4	646.1	1561.6	1829.1	4456.5	8798.0	11.8	201.1	734.14
2043	3077.5	89.9	6.9	692.0	1707.6	1981.0	4913.0	9687.5	12.9	221.7	809.14
2044	3410.3	98.2	7.3	736.6	1831.4	2119.5	5381.7	10556.0	14.0	241.6	881.66
2045	3787.9	107.7	7.8	787.0	1980.4	2284.4	5879.8	11509.5	15.1	263.6	962.13

Table 7-7: Project Corridor Total Average Daily and Annual Toll Collection (Rs in Thousands) in Likely Scenario

Year	Passenger Car	Taxi	Minibus	Standard Bus	Tempo/ LCV	2-Axle Truck	3-Axle Truck	Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	Oversized Vehicle (>6 Axles)	Total Daily (Rs in Lakhs)	Total Annual (Rs in Crores)	Cumulative Revenue (Rs in Crores)
2019	364.5	47.8	4.0	327.8	362.1	457.8	471.0	1009.8	1.5	30	111.19	111
2020	549.8	69.8	5.5	453.3	528.6	649.0	700.3	1492.8	2.1	45	162.47	274
2021	644.0	79.5	6.0	488.7	583.3	715.0	802.4	1693.7	2.4	50	183.05	457
2022	760.9	91.8	6.4	527.2	641.6	786.5	917.1	1928.9	2.7	57	206.70	663
2023	900.5	103.8	7.0	568.1	724.1	863.0	1054.0	2200.6	3.0	64	234.48	898
2024	1044.7	118.2	7.5	608.7	799.5	940.4	1195.4	2482.1	3.3	72	262.79	1161
2025	1227.6	134.3	8.0	653.9	880.8	1028.9	1354.9	2794.3	3.7	81	295.16	1456
2026	1420.1	152.3	8.7	703.3	981.2	1117.7	1540.1	3164.5	4.1	91	331.86	1788
2027	1662.3	172.4	9.4	755.1	1078.6	1225.1	1746.7	3563.5	4.6	102	372.94	2161
2028	1949.3	198.0	10.1	813.7	1195.0	1340.4	1987.7	4017.7	5.1	115	420.37	2581
2029	2226.8	219.9	10.8	869.8	1308.7	1451.6	2220.8	4487.6	5.6	128	467.26	3048
2030	2538.7	246.0	11.6	932.6	1430.5	1576.8	2478.3	4999.9	6.1	142	519.06	3567
2031	2902.8	275.0	12.5	1000.7	1562.1	1717.0	2771.5	5559.1	6.7	158	576.98	4144
2032	3323.5	307.6	13.4	1071.2	1715.8	1864.9	3117.0	6187.9	7.4	176	642.72	4787
2033	3815.1	344.9	14.5	1145.1	1882.4	2020.8	3485.6	6890.6	8.2	196	715.66	5503
2034	4315.3	384.3	15.5	1225.5	2064.0	2178.1	3872.6	7640.6	8.9	217	792.23	6295
2035	4911.7	429.8	16.6	1309.3	2226.7	2359.8	4293.9	8474.2	9.8	240	877.16	7172
2036	5531.2	473.3	17.8	1402.5	2434.7	2561.0	4784.5	9358.2	10.7	266	969.95	8142
2037	6293.3	528.2	19.1	1500.4	2671.0	2764.2	5320.5	10386.4	11.7	295	1076.56	9219
2038	7143.4	588.0	20.5	1606.2	2925.1	2996.6	5922.1	11521.1	12.9	327	1194.85	10413
2039	7990.5	646.8	21.8	1713.4	3156.8	3233.8	6529.6	12633.4	14.0	359	1311.81	11725
2040	9021.5	719.3	23.5	1832.0	3441.3	3483.0	7183.1	13876.2	15.2	396	1445.22	13170
2041	10092.2	789.0	25.1	1957.5	3722.8	3763.1	7924.6	15235.5	16.5	435	1588.71	14759
2042	11326.1	872.4	26.8	2086.4	4040.0	4045.3	8747.1	16749.0	18.0	479	1748.76	16508
2043	12698.6	962.3	28.8	2233.3	4414.4	4373.1	9649.4	18428.5	19.6	528	1927.49	18435
2044	14080.1	1051.6	30.7	2380.3	4747.1	4694.7	10558.0	20097.9	21.3	577	2104.65	20540
2045	15599.2	1147.5	32.7	2539.4	5134.6	5051.1	11544.5	21932.5	23.0	630	2299.67	22840


NATIONAL HIGHWAYS AUTHORITY OF INDIA
GURAU TOLL PLAZA KM (RP) 550 TO KM 323+529
TYPE OF VEHICLE

Report
January 2019

Gulabpura - Chittorgarh: Traffic and Revenue Forecasts



IRB Infrastructure Developers limited
Our ref: 23287902
Client ref:

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Report
January 2019

Gulabpura - Chittorgarh: Traffic and Revenue Forecasts

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Disclaimer

This report has been produced for the sole benefit of IRB Infrastructure Developers limited. The report may only be relied upon by Approved Addressees in accordance with the terms of our engagement letter.

The projections of traffic contained within this document represent Steer's best estimates. While they are not precise forecasts, they do represent, in our view, a reasonable expectation for the future, based on the most credible information available as of the date of this report.

The estimates contained within this document rely on numerous assumptions and professional judgements that are influenced by external circumstances. These can change quickly and that can affect the outcome of our forecasts. In addition, it has been necessary to base most of this analysis on data collected by third parties. This has been independently checked whenever possible. However, Steer does not guarantee the accuracy of this data.

Finally, it is important to note that the traffic forecasts presented represent long term growth profiles. In reality, there will be a degree of year-on-year oscillation of actual traffic levels around these growth rates in line with macroeconomic cycles. We do not believe it is feasible to include such oscillations within our concession life forecast, and would recommend that such uncertainties are addressed through "stress tests" within the financial model.

Glossary Items

Acronym	Meaning
AADT	Annual Average Daily Traffic
CJV	Cars / Jeeps / Vans
COD	Commercial Operations Date
DFC	Dedicated Freight Corridor
DMIC	Delhi Mumbai Industrial Corridor
EMV	Electric Motor Vehicles
FY	Financial Year
GSDP	Gross State Domestic Production
HCM	Heavy Commercial Vehicles
IRB	IRB Infrastructure Developers Ltd.
LCV	Light Commercial Vehicles
MAV	Multi Axle Vehicle
NH	National Highway
NHAI	National Highways Authority of India
NSDP	National State Domestic Production
PCI	Per Capita Income
SCF	Seasonality Correction Factors
SH	State Highway
TP	Toll Plaza
WPI	Whole sale price index

1 Introduction

The assignment

1.1 IRB Infrastructure Developers Ltd. (the "Client") has commissioned Steer to act as the traffic and revenue advisor, in the evaluation of Gulabpura-Chittorgarh (NH-79/NH-48) (the "Asset") which forms part of the portfolio of infrastructure concessions currently being operated by the Client, in India. The Asset is 125km in length and located in the state of Rajasthan.

1.2 We understand that the Client is looking to obtain a Fair Market Valuation of the Asset through this evaluation, consisting of a robust assessment of the current condition and potential of the Asset from a traffic and revenue perspective. The aim of this study is therefore to identify the traffic and revenue potential of the Asset.

1.3 The following table summarises the Asset and its operating history. As can be seen, it is currently comprised of 4 lanes, with expansion being carried out from 4 to 6 lanes on the Asset. The remaining concession period for the Asset is 19 years.

Table 1.1: Description of Asset

Asset Name	State	Length	Toll plazas	Code	Tolling History	Improvements	Remaining Concession Period
Gulabpura-Chittorgarh (NH-79/NH-48)	Rajasthan	125km	km 121+020 Lambia Kalan km 184+020 Jojro Ka Khera	TP1 TP2	November 2017	4-lane to 6-lane expansion ongoing	19 years

Source: Steer analysis based on NHAI data

1.4 This report constitutes our draft final deliverable under this study and includes the traffic and revenue forecasts for the Asset.

Our approach

1.5 The approach employed by Steer in the preparation of the traffic and revenue forecasts was developed to take advantage of the existing knowledge of the Asset and of the available data. It follows normal practices well established in addressing the issue of forecasting on-going traffic growth on a brownfield project.

1.6 The analysis focused on two sets of issues:

- understanding and verifying the traffic which is at present using the Asset; and
- identifying how and why that traffic will change in the future.

1.7 Regarding the former (i.e. current traffic on the Asset), independent primary data collection was commissioned as part of this study and then compared against the Client's traffic and revenue datasets.

1.8 The estimation of future traffic demand on the Asset is driven by:

- **Growth of 'background' traffic**: this depends to a certain extent on the on-going socio-economic and demographic development of the area served by the Asset;
- **Change in the local and international industry**: which drives heavy goods traffic on the Asset; and
- **Change in the competitive position of the Asset**: this reflects changes in highway capacity of competing roads and the relative changes in service levels (time, congestion, price, etc.) for the Asset, and its competitors.

Contents of this report

1.9 This report is divided into 7 chapters, including this introduction:

- Chapter 2 describes the key features of the Asset based on site visit;
- Chapter 3 summarizes the traffic volumes and user/commodity profile, on the Asset;
- Chapter 4 discusses the socio-economic context in the corridors containing the Asset;
- Chapter 3 reports the approach developed to forecast future traffic demand on the Asset;
- Chapter 6 presents our base year traffic estimates and forecasting assumptions; and
- Chapter 7 presents the traffic and revenue forecasts for the Asset.

2 The Asset

Introduction

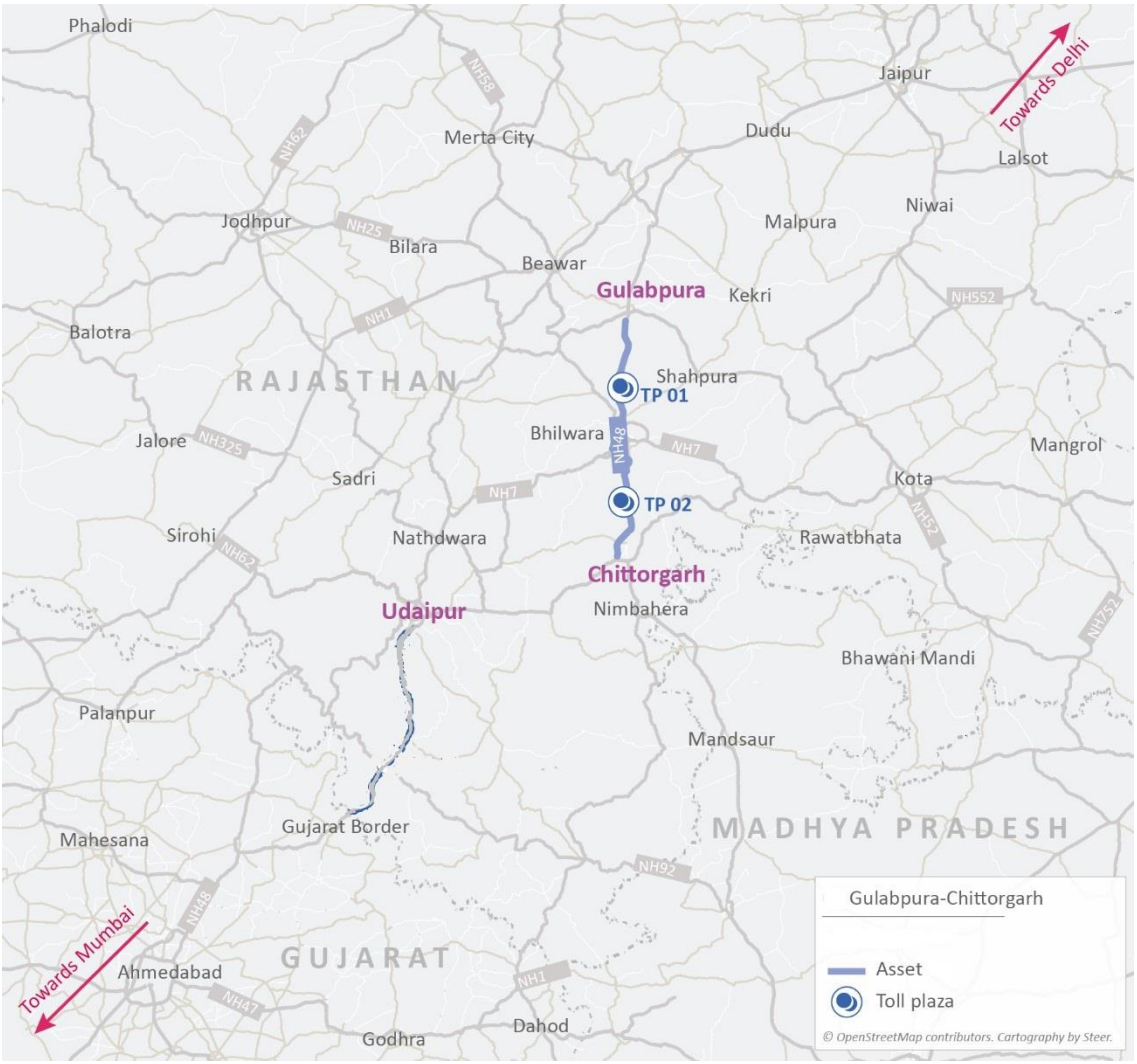
2.1 This chapter provides a description of the Asset, prepared using available information, and our own analysis based on site visits and understanding of the local areas around the Asset.

2.2 We also describe the key alternative routes to the Asset (if any), the relative competitive advantage between the Asses and the alternatives, and places of interest which could be attractors/generators of travel demand along the corridor.

Asset Description

2.3 The Asset is a 124-km four-lane toll road and has 2 toll plazas as shown in the following figure.

Figure 2.1: Location of the Asset: Gulabpura-Chittorgarh, and corresponding toll plaza



Source: Steer cartography using OpenStreetMap data

2.4 The Asset is being upgraded from 4 to 6 lanes. According to information provided by the Client, tolling commenced on November 2017 at 75% toll rates and full COD is expected to be in FY20. Appendix A details the toll rates for FY19, by toll plaza, for this Asset.

2.5 The following images indicate the toll plaza(s) on the Asset, as well as, a typical cross-section.

Figure 2.2: Gulabpura-Chittorgarh, typical cross-section



Source: Steer site visit

2.6 We observed multiple traffic leakages via local diversions around the Lambia toll plaza. There are entry and exit points to local roads which allow traffic to circumvent the toll plaza approx. 500m from the toll plaza in either directions. Some efforts were being made to prevent traffic loss by gaining support from villagers in adding preventive structures to stop traffic diversion.

2.7 The following images indicate the entrance to one of the local diversion roads and a typical cross-section of the same. As can be seen, the village roads are muddy, unpaved and narrow in width, and as such, we believe that they are unlikely to result in a significant loss of heavy vehicles.

Figure 2.3: Lambia toll plaza – Local Diversion Road

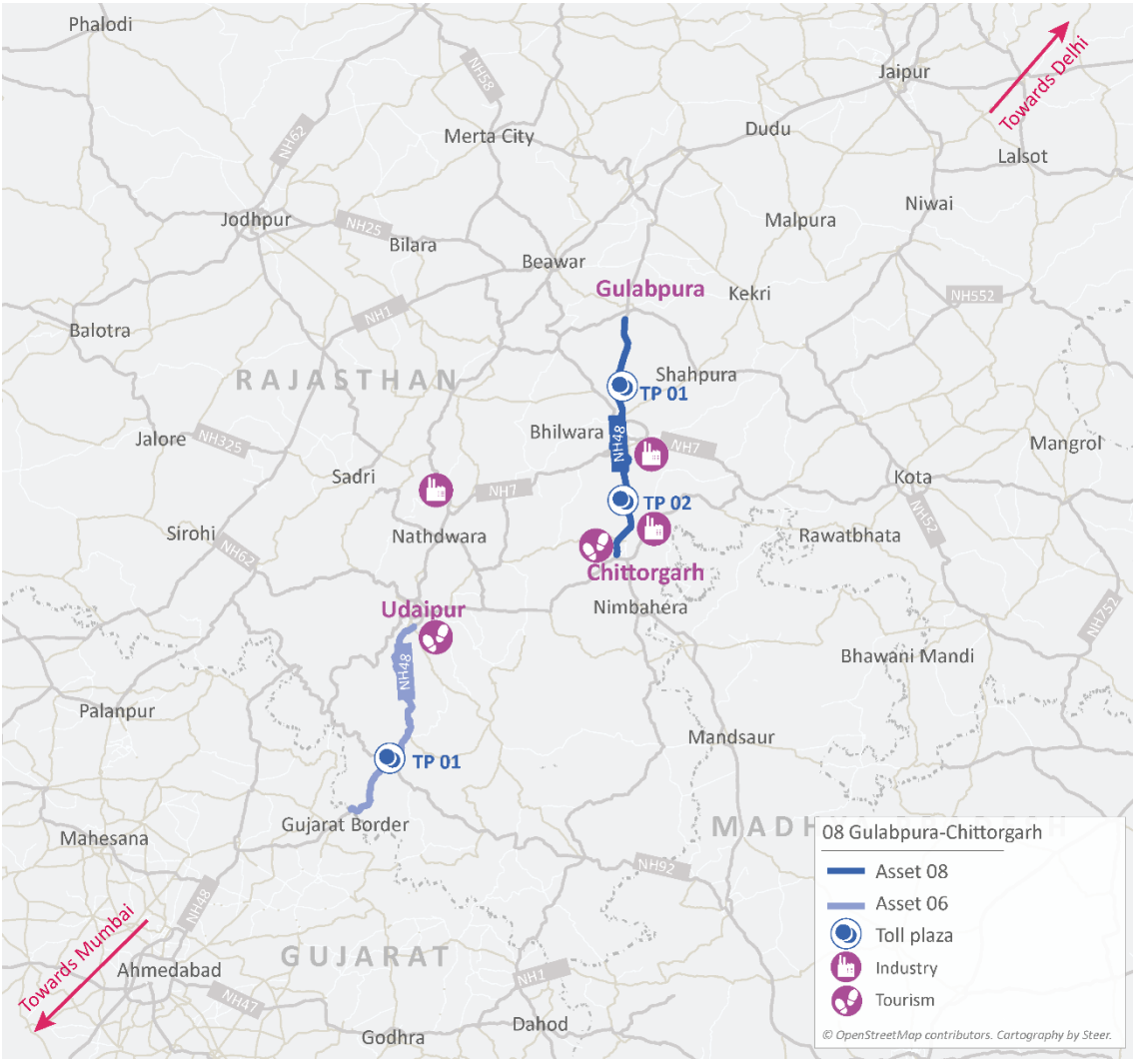




Source: Steer site visit

Economic activities in the region

2.8 The below map indicates the various industrial settlements in the vicinity.



Source: Steer cartography and observations from site visit

2.9 This Asset primarily serves traffic travelling between Delhi, Rajasthan, Gujarat and Maharashtra. We observed the vehicle distribution to be dominated by heavy vehicles. We further noticed several textile industries and marble/granite industries bordering the Asset. Udaipur serves as a big tourism hub as well as a consumption centre which also result in traffic feeding into the demand being generated.

2.10 In addition, Chittorgarh has 4 major cement plants located in Chanderiya and Nimbahera villages. There is a regular movement of Cement bulkers to and from these locations along asset. Chanderiya Lead-Zinc Smelter, is the one of the largest zinc-lead smelting complexes in the world, is also located in Chittorgarh. Bhilwara is home to textiles industry and only centre in the country producing insulation bricks. Mining is another major sector for large scale mining of sandstone, soap stone feldspar, quartz, mica China clay and granite. Also, Iron Ore, Led, and Zinc is mined and processed in Bhilwara.

Potential network impacts and competition

2.11 Long-distance traffic travelling south from Delhi and Jaipur branches out towards Ajmer and Bhilwara at Kishangar, and the traffic going towards Bhilwara passes through the Lambian Kalan toll plaza. At Bhilwara, a part of the traffic continues further south to cross Jojro Ka Khera to reach Chittorgarh. The rest of the traffic diverts on to NH-758 through Gangapur to reach Rajsamand, Udaipur and other destinations further south of the traffic that branches out towards Ajmer, some divert on to the Beawar-Pali road and others continue further south to reach Udaipur and other destinations.

3 Data Analysis

Introduction

3.1 This chapter outlines the current traffic and revenues on the Asset, as well as our analysis of Origin Destination (OD) data, as provided by the Client/based on Vendor's reports.

3.2 Traffic demand data is used to understand the volume and vehicle composition of demand using the Asset, and OD data is used to obtain a better understanding of trip purposes/areas of influence in the vicinity of the Asset, as well as, the commodities being moved by goods vehicles. This analysis, combined with our understanding of the Asset (based on our site visit), enables us to identify the key drivers of demand.

Current traffic and revenue

Overview

3.3 On existing (brownfield) assets, actual toll plaza data is usually used as the basis on which the current/base year demand is established. As we were provided with partial FY19 toll plaza data for this Asset, we have synthesised the rest of FY19 using toll plaza data from FY18 and seasonality data from regional reference assets. We have then used the independent traffic volume counts (TVC) counts to validate the AADT and estimate shares of violations and exemptions for tolling on this Asset.

3.4 The following table indicates the dates for the TVC counts conducted at the toll plazas for the Asset.

Table 3.1: Dates for TVC Counts

Asset Name	TVC counts (7 days)
Gulabpura-Chittorgarh	09/09/2018 - 15/09/2018

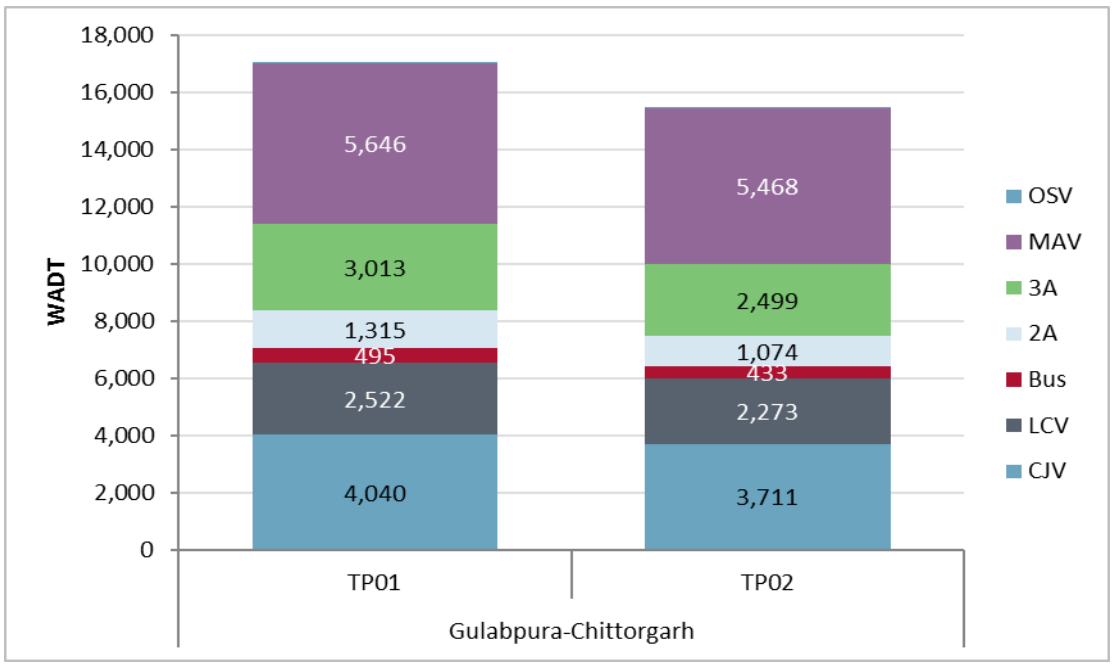
Source: Steer analysis

3.5 Traffic along the national highways shows variation across the week due to the nature of industrial and port activity, and economic activities surrounding the Assets. To derive a representative TVC count considering daily variation, three-day to seven-day traffic counts are generally recommended, and hence, in order to fully understand this weekly fluctuation, we collected seven-day counts for each toll plaza.

Traffic

3.6 Taking a simple average of the seven-day TVC counts, we have arrived at the following weekly average daily traffic (WADT). This WADT includes non-tollable, exempt and toll-violating vehicles, which we remove while estimating AADT.

Figure 3.1: WADT



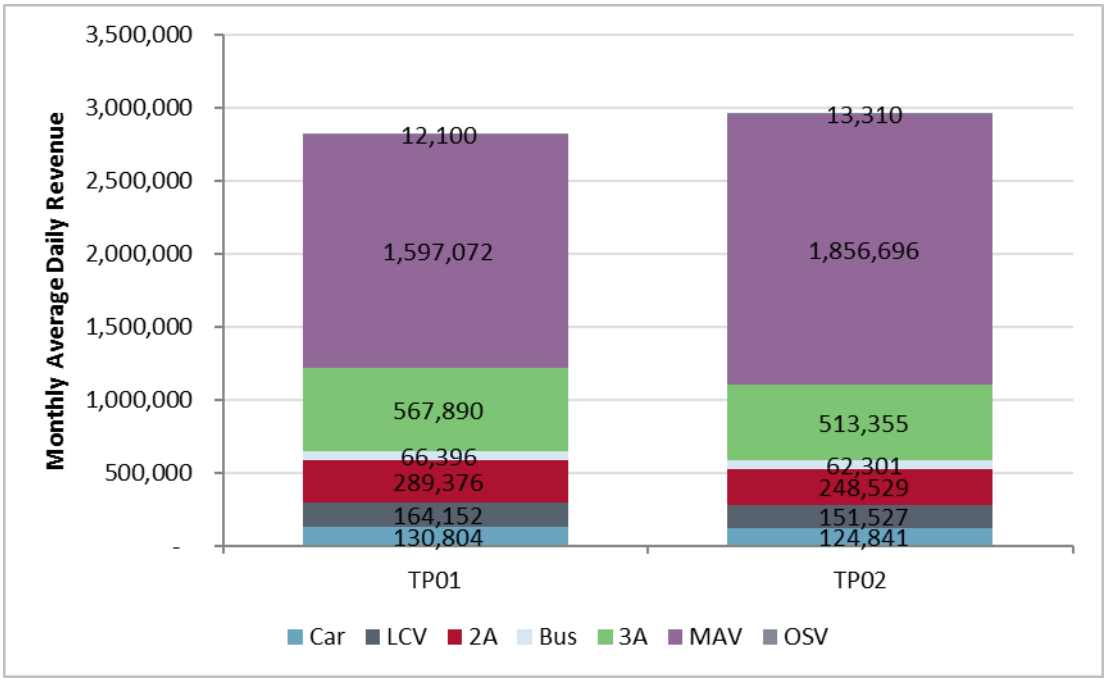
Source: Steer analysis of independent data collection

Revenues

3.7 The concessionaire submits toll plaza data to NHAI in the form of Schedule-M and Schedule-N documents. While Schedule M presents the number of tickets sold for each vehicle type and ticket type (at a monthly level), Schedule N presents the number of trips made by different vehicles by ticket type (at a weekly level). We were provided with Schedule M (toll plaza data) by the Client, for this Asset.

3.8 The data provided in Schedule M was from April to August 2018, on the basis of which we calculated the monthly average daily revenue (MADR), as presented in the figure below. It should be noted that the actual annual average daily revenue could be higher or lower than the presented MADR, as this would depend on the seasonality of traffic between April and August.

Figure 3.2: Monthly Average Daily Revenue (MADR) (April to August)



Source: Steer analysis of Schedule M Data

Origin-Destination analysis

Overview

3.9 Origin-destination (OD) analysis enables the understanding of the nature of traffic movement on the Asset. While zoning analysis helps to understand 'where' people and goods travel, commodity distribution and trip purpose throw light on 'why' people travel or 'what' goods get transported.

3.10 This analysis is generally used to estimate the key drivers of traffic and aid the making of informed forecasting assumptions around traffic demand elasticities, growth drivers and exogenous impacts. As part of this assignment, we have analysed the regional drivers of demand based on a zoning of OD data, commodity distribution and trip purpose for the Asset.

Data source and categories

3.11 The following table presents the sources of data used to perform this analysis. While data provided by the Client was available in raw format, the Vendor reports were at a more aggregate level.

Table 3.2: Sources of data for OD Analysis

Zoning Analysis	Commodity Distribution	Trip Purpose
Vendor Report	Vendor Report	Vendor Report

3.12 We have grouped various commodities into fewer aggregate categories for ease of interpretation, as shown in the table below. Empty vehicles have been excluded from the proportions presented in this Chapter for better understanding.

Table 3.3: Aggregate commodity categories

Aggregate Commodity Category	Commodity Description
Agricultural/Food	Agricultural, Food, Groceries, Fruit, Vegetables, Fish, Meat, etc.
Construction	Cement, tar, tiles, stones, JCB, fly ash, etc.
Petroleum Products	Petrol, Diesel, Gas, LPG, Sulphur, Oil, CNG, etc.
Industrial/Manufacturing	Container; Machinery, Equipment, Industrial goods; Car/bike manufacturing; Chemicals, Fertilizers; Leather, Textile; Mining Minerals (coal, zinc, etc.)
Miscellaneous	Couriers / Parcels; Others

Source: Steer analysis

3.13 To facilitate better interpretation of key regional drivers of traffic as determined by their OD zones, and influenced by various towns, cities, states and regions in the vicinity of the Asset, we have aggregated zonal data as described in the following table.

Table 3.4: Zone aggregation

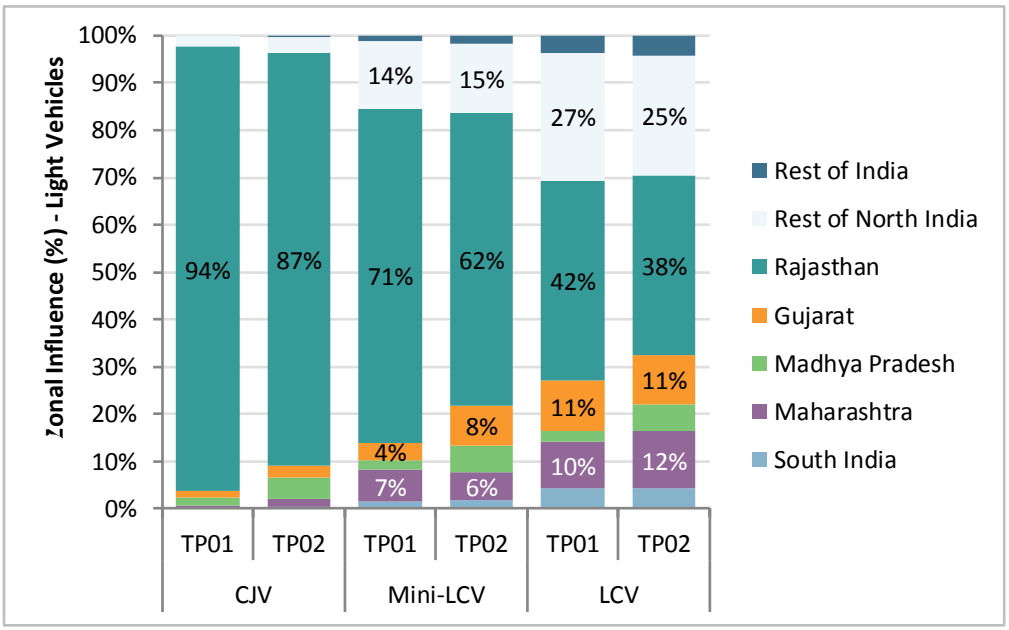
Aggregate Zone	Description
Local	Towns or cities lying on or very close to the asset
Immediate area of influence (IAOI)	Towns, cities and zones up to about 100 km from the asset
Rest of the State	Towns, cities or districts in the state that do not fall in the Local and IAOI categories
North India	The national region comprising the states of Chandigarh, Delhi, Haryana, Punjab, Himachal Pradesh, Jammu & Kashmir, Rajasthan, Uttaranchal and Uttar Pradesh.
East & Northeast India	The national region comprising Bihar, Odisha, West Bengal, Jharkhand, Assam, Sikkim, Arunachal Pradesh, Nagaland, Manipur, Mizoram, Tripura and Meghalaya.
Central India	The national region comprising the states of Chhattisgarh and Madhya Pradesh
West India	The national region comprising the states of Gujarat, Maharashtra, Daman & Diu, and Dadra & Nagar Haveli
South India	The national region comprising the states of Telangana, Tamil Nadu, Karnataka, Kerala, Goa, Lakshadweep, Puducherry, and Andaman & Nicobar Islands

Source: Steer analysis

Zonal influence

3.14 The following figure shows the zonal influence on light vehicles on the Asset. As can be seen, CJVs are largely from Rajasthan (87-94%), while mini-LCVs show around 60-70% zonal contribution from Rajasthan and around 15% from the Rest of India.

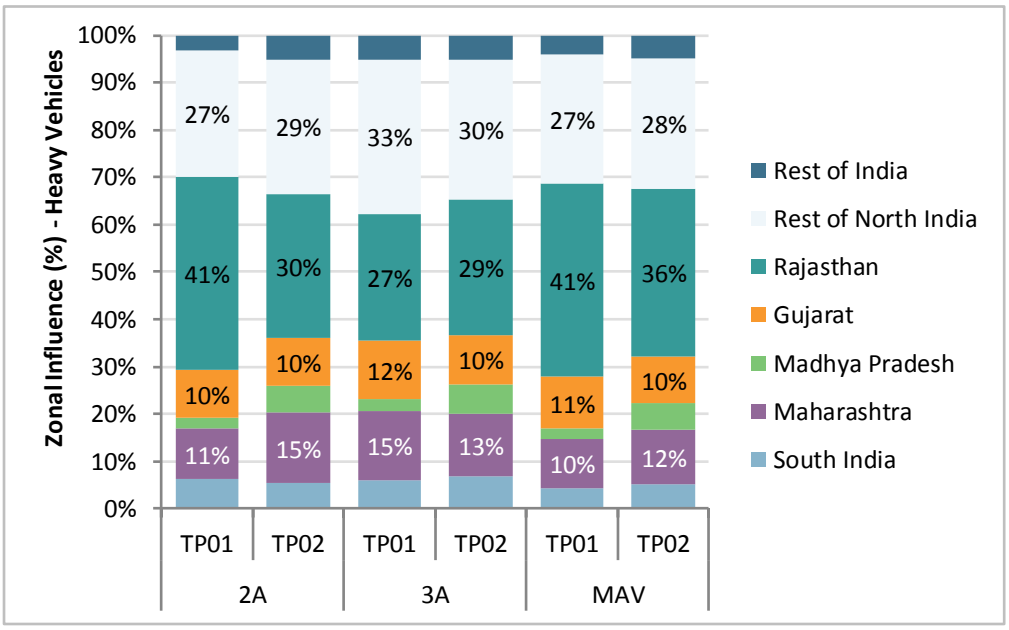
Figure 3.3: Zonal influence on CJVs, Mini-LCVs and LCVs



Source: Vendor Report and Steer analysis

3.15 The figure below shows the zonal influence on heavy vehicles. Understandably, given the long-distance nature of heavy vehicles on the Asset, zonal influence of Rajasthan is only around 30-40% with the rest of the traffic is from Gujarat (10-12%), Maharashtra (10-15%), and the Rest of North India (27-44%), of which Delhi is a major contributor.

Figure 3.4: Zonal influence on 2As, 3As and MAVs



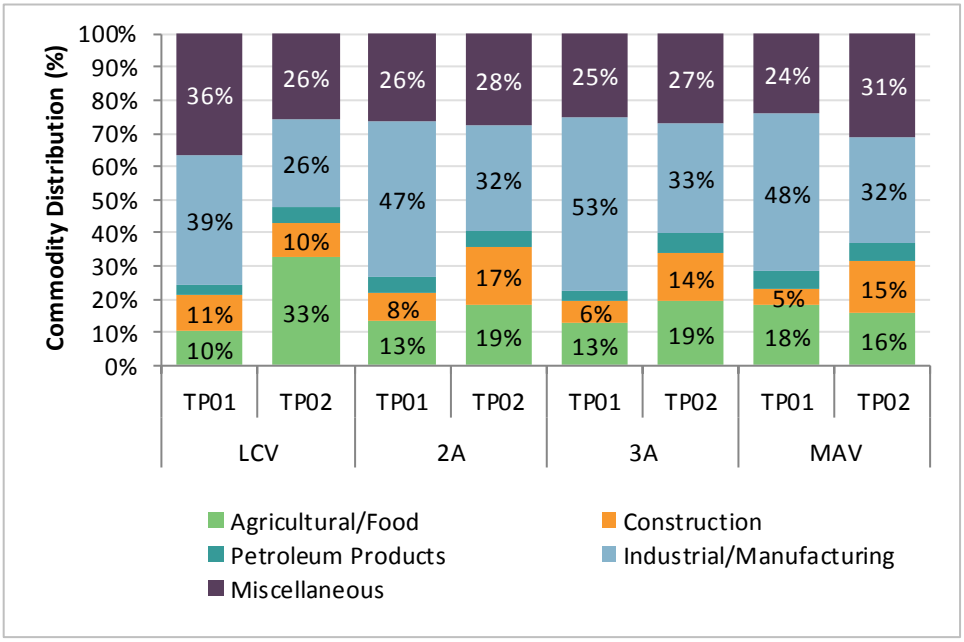
Source: Vendor Report and Steer analysis

Commodity distribution

3.16 The figure shown below presents the commodity distribution of goods vehicles. As discussed earlier, this Asset predominantly carries long distance traffic. Further it also serves the major

industrial towns of Bhilwara, Chittorgarh, Udaipur which are also major attractors and generators of goods traffic.

Figure 3.5: Commodity distribution for goods vehicles



Source: Vendor Report and Steer Analysis

Summary of OD analysis

3.17 The following table summarises the OD analysis and highlights the key influences/drivers of traffic on the Asset, by vehicle type.

Table 3.5: Summary of OD analysis

Vehicle type	Zonal influence	Commodities	Trip purposes
CJV	Over 40% local, coming from Udaipur	N/A	More than 50% related to work/business, with limited leisure trips.
LCV	% of local traffic decreases with increasing size of goods vehicle, and contribution of rest of Gujarat, Rajasthan and the north increases, indicating strategic nature of Asset	Share of agriculture decreases and industry/manufacturing increases by increasing goods vehicle size - latter is dominated by petroleum and construction related goods	N/A
2A			
3A			
MAV			

Source: Steer analysis based on Vendor's reports and Client data

4 Socio-Economic Context

Introduction

4.1 The growth of traffic on existing (brownfield) roads depends on, firstly, how fast the background travel demand grows (background growth); and secondly, how successful the roads are in attracting that traffic (traffic capture). Background travel demand is driven by the socio-economic conditions in the regions where the Asset is located and the country as a whole. These include:

- Changes in factors such as population, economic growth (regional and national) and industrial production; and
- Other local factors such as strategic port growth, and growth in local industries near the Asset.

4.2 In turn, the change in the relative competitive position of the Asset (and thus of the traffic capture it can achieve) derives from how the relative offer for the roads changes, i.e. the service offered, and the tolls charged on the Asset, in comparison to that on competing roads; and whether any competing road facilities are planned.

4.3 In this Chapter, we have assessed the trends of the above growth drivers, as indicators of the socio-economic conditions in the regions surrounding the Asset.

Population growth

4.4 To capture state and regional disparities, we have analysed the key socioeconomic drivers of the background traffic demand by state. The Asset lies in the state of Rajasthan, which has been used as a basis of the analysis.

National level

4.5 Total population in India has grown at a CAGR of 1.5% from 2000, decreasing over the decades from 2.3% in 1970 – 1985 and 2.0% from 1985 – 2000. The World Bank forecasts this growth to decrease even further, till it reaches 0.6% CAGR (2030 – 45).

4.6 The growth rate of urban populations has been consistently higher than that of total population, indicating a trend towards urban agglomerations. The urbanisation trend is forecasted to continue, with an expected shrinking of the rural population over the next 30 years.

State level

4.7 The following table shows the evolution of population in the state containing the Asset, compared to that of the country. Overall, as can be seen, the trend observed at the country level is also noticeable at the state level, namely, a move towards urban agglomeration with the growth in rural population being slower than that of urban population.

Table 4.1: Population Growth in India (2001 – 2011)

State	2001 Population (m)			2011 Population (m)			CAGR (2001 – 2011)		
	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
Rajasthan	56	43	13	69	52	17	2.1%	1.9%	2.7%
India	1,028	742	286	1,210	833	377	1.6%	1.2%	2.8%

Source: National Institution for Transforming India (NITI Aayog) – Census Data

4.8 Due to the complexities of the patterns in which urbanisation takes place, and the very dynamic nature of local population migration (which are very difficult to forecast with accuracy), we do not propose to use population growth as a proxy for understanding future travel demand growth on the Asset. It has been included in this section simply to provide a socio-economic context of the state/trends in the regions in which the Asset is located.

GDP Growth

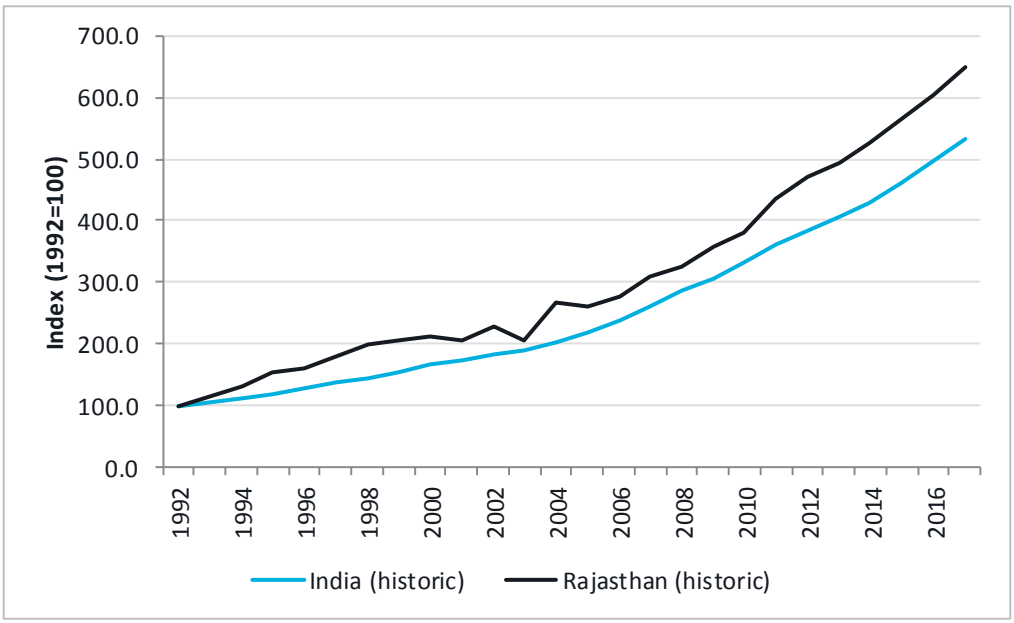
4.9 The Indian economy has grown at a CAGR of 7.5% over the past decade, aided by a strong growth in the services/tertiary sector (9.4% CAGR, 2005 – 2013), which includes the infrastructure and construction sector. The economic performance of thestate however, is different, and various drivers contribute to the disparities in performance observed, at the state level.

4.10 Figure 4.1 shows Rajasthan's historical GDP growth compared to the national growth. Since 1992, the state of Rajasthan had a stronger economic performance than the national average with a CAGR of 8.2% between 2011 and 2016.

4.11 Rajasthan is rich in natural resources and benefits from its strategic geographic location in India. The state is pre-eminent in quarrying, mining in India and has been a leader in crude oil extraction over the past the few years. Moreover, Rajasthan is also a relevant tourism attractor in India, having received around 36.6 million tourists during 2015-2016.[1]

[1] IBF. (2017). *Rajasthan: Royal Heritage.* India Brand Foundation.

Figure 4.1: Comparison of Evolution of Rajasthan's state GDP and national GDP

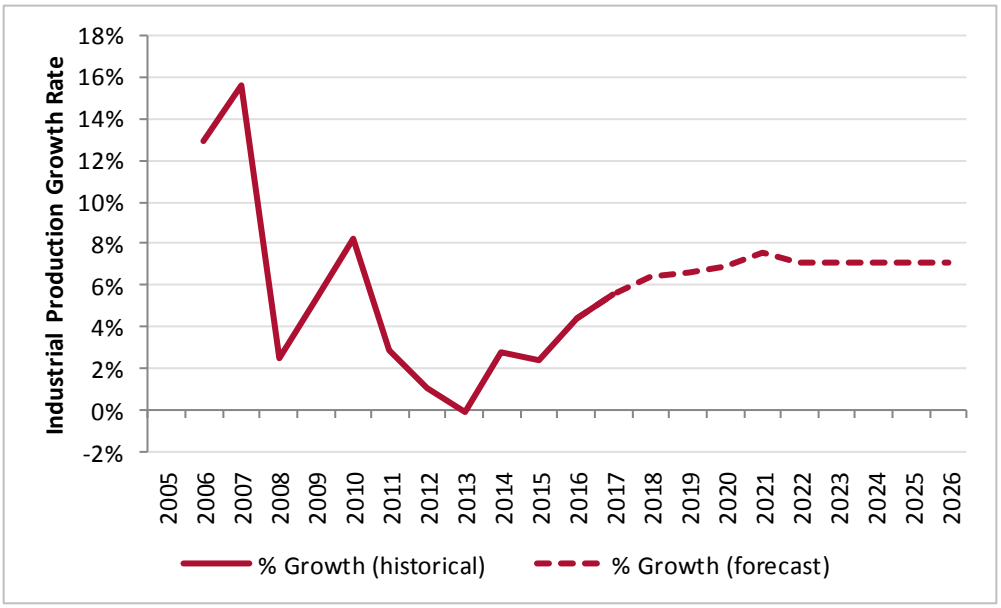


Source: Open Government Data (OGD) Platform (State GDPs) and IMF (National GDP)

Industrial Production

4.12 Industrial production (IP) is often a key driver of heavy goods traffic along road networks. As can be seen in the following figure, industrial production has grown at a steady pace in recent years, recovering from a slowdown between 2010 and 2013.

Figure 4.2: Historical and forecast growth rates of Industrial Production



Source: Consensus Global Outlook 2016 – 2026

4.13 National IP forecasts are encouraging for the coming decades, indicating growth in line with national GDP, but at a slightly slower rate. No information is available at the state level.

5 Traffic Growth

Introduction

5.1 For brownfield assets, it is common practice to use the relationship between historic traffic and key socioeconomic drivers (e.g. GDP, population, employment etc.), in order to forecast future traffic growth.

5.2 However, in the case of the Asset under consideration, there is very limited time series data available (ranging between no data to a few months/1 year of data), the Asset has only recently been taken over by the Client. We have therefore conducted a benchmarking analysis based on our experience of having studied trends on other roads in the states in which the Asset is located, to develop forecasting assumptions for the elasticity of traffic demand to key macroeconomic variables.

Elasticity selection

Overview of our approach

5.3 We have applied the approach described in this section to the Asset, as limited time-series data of historic traffic was available, as mentioned above. To benchmark traffic demand growth elasticities, we selected a series of relevant benchmark projects, which complied with the following characteristics:

- Roads that were relevant to the corresponding Asset in terms of geographical proximity, traffic and commodity composition, and similar drivers of growth;
- Quality of historical data series available; and
- Consistency in concession agreement conditions across the time series (e.g. no transfer from public funded (PF) to build, operate, transfer (BOT) during the selected period), wherever possible.

5.4 Additionally, in cases where the benchmarking assets did not entirely match the previous characteristics, we carried out an analysis of data sourced from the NHAI. This set of data covers plaza wide toll revenue collection on sections of National Highways (NHs) across India, covering the period since the inception of Public Funded tolling, between FY2002 until 2016, inclusive. This dataset was only recently made publicly available and proved useful in providing another reference point, against which to benchmark our assumptions.

5.5 To develop our views on the most suitable set of drivers for traffic for each vehicle type across the Assets studied, we considered the following sources of information:

- Client Data/third-party reports
  - Asset characterisation;
  - OD surveys;
- Geographic location of the Asset;
- Socio-economic profile of the state;
- Site visits
  - Interviews with toll plaza managers;
  - Visual observation of traffic composition and industries along the project road; and
- Behaviour of benchmarked assets.

Summary of assumptions

5.6 Based on the assessment described above, we have established a general socio-economic relationship for each vehicle type and each toll plaza, which is detailed in the table below and in the following sections. Elasticities and long-term assumptions around the same, by toll plaza, are described later in this Chapter.

Table 5.1: Socio-economic indicator used in growth forecasting, by vehicle type

Vehicle Type	Socio-Economic Indicator Used
CJV	Gross State Domestic Production (GSDP)
Bus	Gross State Domestic Production (GSDP)
LCV	Gross State Domestic Production (GSDP)
2-Axle Trucks	Gross Domestic Production (GDP)
3-Axle Trucks/MAV/OSV	Gross Domestic Production (GDP)

Source: Steer analysis

5.7 **CJV traffic growth**: State GDP (GSDP) is assumed to be the key driver for CJV traffic, with a relationship of either 1 to 1 or above – as observed from our elasticity estimation on other relevant Assets. This is in line with the observation that in fast-growing economies such as India with relatively low car ownership levels, car traffic growth rates are often in line with/slightly higher than growth in GDP.

5.8 **Bus traffic growth**: Bus traffic is assumed to grow at very low rates during the concession period. Based on our experience with Assets of a similar nature, bus volumes are generally small and traffic history shows volatile growth patterns. As the economy grows, passenger numbers on public transport are expected to increase too, but at rates below car growth rates as an increase in car ownership levels will also lead to a reduction of potential passengers. As this Asset is a predominantly long-distance corridor and does not support substantial local movements, we have used an elasticity of 0.25.

5.9 **LCV traffic growth**: Again, for LCVs, GSDP is assumed to be the key driver of traffic growth, as these vehicles tend to serve more local movements, which is confirmed by our observations and the analysis of data from OD surveys. For the Asset (which has predominantly long-distance traffic) we have assumed a relationship with GSDP that is below 1.00. This is in line with trends on similar Assets where we have observed that for long-distance movements small commercial vehicles such as LCVs and 2A trucks are increasingly being replaced by larger vehicle types.

5.10 **2A Truck growth:** Historically, the share of 2A trucks has been decreasing across the country. The lower unit costs offered by higher productivity trucks (3A and MAV) for freight transport make them a better alternative for long-distance trips where the road network capacity and configuration allow it. With significant improvements in road infrastructure and a continuing shift towards larger vehicles, we expect 2A truck growth to be below that of larger commercial vehicles.

5.11 **3A and MAV growth:** Based on the OD analysis and our observations/experience, we believe that heavy vehicles generally cater to long distance movements beyond the state level, and have therefore linked 3A and MAV traffic growth to growth in the economy at a national (GDP) and not a state-level.

5.12 Given the strategic location of the Asset around the Delhi – Mumbai arm of the Golden Quadrilateral, as well as the influence of the economic activity that characterises Rajasthan, the Asset is expected to maintain its existing behaviour in future years. This understanding is reflected in the set of elasticities presented in the table below. Given its current performance in traffic volume, we used higher elasticities reflecting higher growth expectations.

Table 5.2: Elasticity assumptions for Gulabpura – Chittorgarh

Toll Plaza	CJV	LCV	Bus	2A	3A	MAV
TP01 Lambia Kalan	1.30	0.20	0.25	0.50	1.00	1.00
TP02 Jojro Ka Khera	1.30	0.23	0.25	0.50	1.00	1.00
Long term dampening	No dampening				Reduce by 0.1 after two years to reach 0.90 then constant	Reduce by 0.1 after two years to reach 0.90 then constant

Source: Steer analysis

Growth driver forecasts

5.13 In the following sections we describe the assumptions in relation to forecasts of the key socio-economic drivers of traffic.

National GDP

5.14 India's GDP is the core variable that drives our socio-economic forecasts. We have reviewed several independent sources providing national GDP forecasts, as detailed in the table below.

Table 5.3: Summary of Independent Economic Forecasts of India's GDP

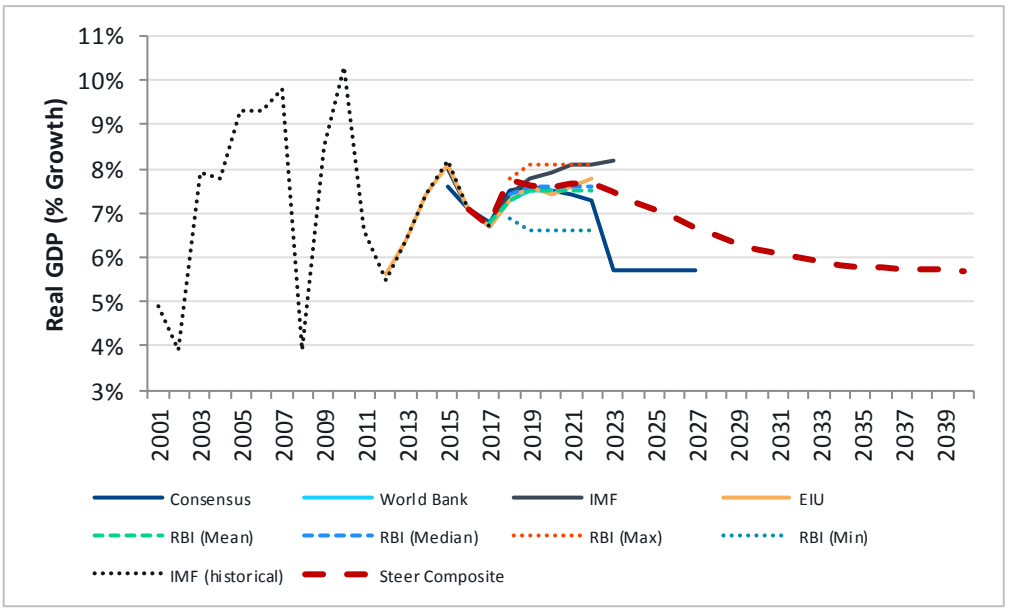
Source	Month/year of data	Forecasted Period
Consensus Forecasts	October 2017	2015 – 2027
World Bank (WB)	June 2018	2015 – 2020
Economist Intelligence Unit (EIU)	August 2018	2012 – 2022
Reserve Bank of India (RBI)	August 2018	2017 – 2022
International Monetary Fund (IMF)	April 2018	2015 – 2023

Source: Steer analysis based on third party forecasts

5.15 Based on the information detailed above and after discussion with the client, we created a composite GDP forecast for India that considers the following assumptions, and is illustrated in the following figure.

- For the years 2019 – 2023, we used an average of the growth rates from all the sources listed in the table above, smoothed to avoid minor variations across sources. This resulted in a 7.6% growth rate per annum for the period;
- Subsequently, we reduced the annual growth rate gradually to reach 6.3% in 2029. This is the value forecast by the using the long-term sources available; and
- Until FY40 years, we assumed a linear reduction, till it stabilises at 5.7% and remains constant thereafter.

Figure 5.1: Historic and forecast GDP growth



Source: Steer analysis with information using publicly available data from Consensus, WB, EIU, RBI and IMF and as agreed with the client

State GDP (GSDP)

5.16 As discussed in Chapter 4, some states have historically been growing at a faster pace than others. For forecasting, we have assumed that as the Indian economy grows, the states which have historically grown at a faster pace than the national average will (over 10 years) see a slowdown in GSDP growth (tending to GDP) as other states, such as Jharkhand, Sikkim, Assam start growing faster than the national average/GDP.

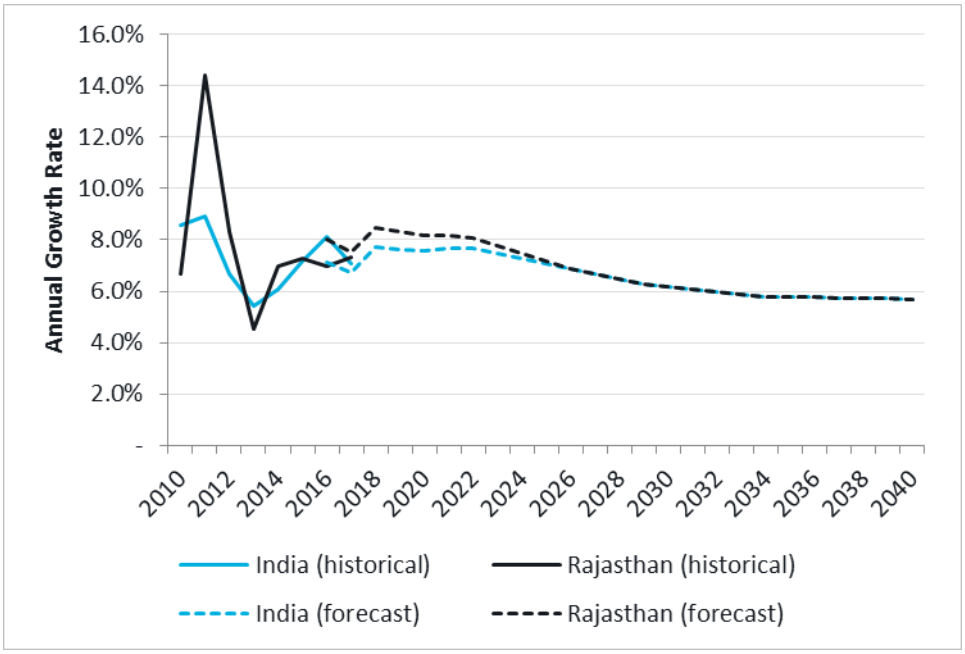
5.17 The following table summarises the historic differentials between GSDPs and GDP, and the assumptions employed to forecast GSDP going forwards. The resulting forecasts have been illustrated in Figure 5.2.

Table 5.4: GSDP/GDP differentials and forecasting assumptions

GSDP/GDP	Average growth			GSDP minus GDP			Assumptions for forecasting
	1992-05	2001-10	2011-17	1992-05	2001-10	2011-17	
Rajasthan	7.1%	(6.5%)	8.0%	1.2%	(0.7%)	0.9%	0.9%
India	5.8%	7.2%	7.1%	-	-	-	-

Source: Steer analysis based on data from the Central Statistics Office, Ministry of Statistics and Programme Implementation, Government of India

Figure 5.2: Historic and forecast GSDP growth



Source: Steer analysis and as agreed with the client

6 Forecasting assumptions

Introduction

6.1 In this chapter, we present the forecasting inputs and assumptions used within our modelling framework to develop forecasts the Asset. We cover:

- Base year traffic estimation (including seasonality assumptions);
- Exogenous impacts which are expected to influence traffic demand on each of the Asset, covering:
  - Capacity/quality augmentation;
  - Introduction of tolling;
  - Wider network changes;
  - Reductions in construction vehicles (currently part of ongoing construction); and
  - Overloading.

6.2 We further detail the assumptions around ticket types, trip factors and whole sale price index (WPI), in order to determine the evolution of toll rates and revenues.

6.3 It should be noted that the base year for all traffic presented in this chapter is FY19[2]. Further, we only report tollable traffic, and as such, exemptions/violations have not been included in this Chapter, or in our forecasts.

Base traffic

6.4 As discussed in previous chapters, our independent traffic count surveys (TVCs) were conducted in September 2018. The average of the seven-day TVC counts provided the weekly average daily traffic (WADT) which pertains to the specific month of the year when the surveys were conducted.

Further, we have received toll transaction data from the start of tolling until August. Table 6.1: Tolling history (Schedule M)

Asset Name	Tolling start date (Schedule M)
Gulabpura - Chittorgarh	Nov 2017

Source: Steer analysis based on tolling data (Schedule M)

Seasonality correction factors (SCF)

6.5 SCFs specify how much traffic in a specific period within the financial year (FY) varies from the annual average, e.g. monthly variation in traffic due to local events/festivals, weather patterns, production cycles, etc. They are defined as the ratio between AADT for the full FY and ADT of the specific period within the FY.

[2] FY19 runs from April 2018 until March 2019

6.6 To be able to establish SCFs, it is essential to have information on the seasonality of a full FY. Further, SCFs should be established for each vehicle category individually, as different factors affect different vehicle types in unique manners, e.g. agricultural/industrial production cycles have little impact on car traffic.

6.7 We have considered 2 alternative approaches to establish SCFs:

- Calculation of SCFs from monthly toll transaction data of the Asset itself; and
- Calculation of SCFs from monthly toll transaction data of Assets in similar geographies and with comparable characteristics (regional references). These are Assets for which long time series of data is available.

6.8 The preferred approach would be the former, i.e. to use data of the respective Asset itself. However, for the Asset, the data is not sufficient to cover one full FY, but covers a 12 months period between September in FY2018 and August in FY2019. When using this data without further adjustments (e.g. for growth) this can lead to a misrepresentation of the ratio between traffic in the first half and the second half of the FY, especially on corridors with substantial year-on-year growth.

6.9 For this Asset, as at least 12 months of data was available we have established the ratio between ADT in period April to August 2018 (within FY19) and ADT in the period September 2017 to March 2018 (within FY18). We have then compared this ratio with the ratio between both periods within the same FY (e.g. April to August 2017 (within FY18) and September 2017 to March 2018 (within FY18)) obtained from toll transaction data on Assets with similar characteristics, Regional References (RR).

6.10 The analysis of RRs showed that generally ADT in the period September to March is higher than ADT in the period April to August in the same FY. However, when 12 months toll transaction data across FY18 and FY19 was analysed, this relationship was inverted. The analysis therefore suggests that part of seasonality in the toll transaction data is a result of underlying growth. We have thus concluded it to be most reasonable to use RRs instead of cross-FY toll transaction data to obtain SCFs.

Base year traffic (tollable, FY19)

6.11 As mentioned earlier, the independent traffic count surveys were conducted in September 2018. Using the traffic counts and the seasonality factors described above, the base traffic for year FY19 was synthesised.

6.12 This Asset lies in the state of Rajasthan. It is part of the ambitious golden quadrilateral project, formalised in early 2000's by the NDA government, and form the main arm of Delhi-Mumbai corridor. As shown in the following table, the toll plaza carries a significant number of 3A and MAV's.

Table 6.2: Base year traffic (tollable) (FY19)

Vehicle Category	TP01 – Lambian Kalan	TP02 – Jojora Ka Kheda
CJV	3,379	2,698
LCV	2,015	1,639
Bus	440	400
2A	1,675	1,401
3A	2,862	2,322

Vehicle Category	TP01 – Lambian Kalan	TP02 – Jojora Ka Kheda
MAV (4-6A)	5,789	5,677
MAV (>6A)	32	34
Total	16,193	14,170
PCU	47,530	43,222

6.13 Major traffic generators in the area include the city of Bhilwara and Chittorgarh, both of which have marble and granite industries, along with other industries such as cement. The asset is under expansion and are currently tolling at 75% of toll rates.

Exogenous Impacts

Overview

6.14 The sections below detail on the various impacts which we believe would affect traffic on the Assets during their concession periods. As mentioned previously, there are five main impacts which we have considered – these are summarised below and their individual impact on each Asset is detailed in following sections:

- Capacity and quality augmentation post completion of construction on the Asset;
- Traffic responsiveness to the increase in toll rates on Asset post construction/expansion completion;
- Network changes due to completion of strategic corridors;
- Reduction in construction vehicles on the Asset (which are currently part of ongoing construction works); and
- Overloading vehicles which are charged a higher toll on the Asset.

Capacity and quality augmentation

6.15 The Asset under consideration is currently undergoing an upgrade process, from 4 to 6 lanes. Once construction on the Asset is complete, it is expected that an improved level of service – with higher capacity and better quality of road surface, will offer an improved drive quality for all users.

6.16 In our experience of working on assets in similar conditions across the country where construction has recently been completed, we have observed an increase in the levels of traffic, over and above the background growth driven by socio-economic drivers, which can be attributed to users' responsiveness to improvements in capacity and road quality on these assets. The scale of this impact is typically seen to be larger for local users who travel part of the length of the asset. The timing of this impact is typically seen in the period immediately after the construction activity has been completed.

6.17 Therefore, for the Asset under consideration where construction activities are expected to be completed in the near future, we have estimated that it is likely that there would be an increased level of travel of local/relatively short distance traffic that would start using the Asset due to savings in journey time and improved ride quality. This could in turn lead to an increase in traffic on the asset.

Introduction of tolling

6.18 On Gulabhpura - Chittrogarh tolling is currently 75% of the FY18 toll rates due to road expansion. In our experience of working on greenfield and brownfield assets in India and across the world, where tolling has been introduced or increased significantly, a drop-in traffic

levels is typically observed, depending on the levels of tolls imposed/change in toll levels and alternative route options available to existing users, amongst other factors.

6.19 For the purposes of this study we have calculated the impact of toll imposition/increases by comparing the generalised journey cost (GJC) a road user incurs as a result of new tolls for each vehicle type by using an elasticity of traffic level with respect to toll changes based on our observations for each toll plaza under consideration.

6.20 In our analysis we have estimated a short term negative impact on vehicles, especially light vehicles (CJV's and LCV's) which generally try to find local alternate routes to avoid paying tolls or change their travel patterns by making fewer trips to save on travel costs, however the level of service improvement would result in an increase in the number of vehicles. Hence the net impact of both toll increase and level of service on the local traffic is expected to be negligible. The quantification of such an event is presented in Appendix B.

Reduction in construction vehicles

6.21 As discussed in Chapter 2, the Asset is currently under construction. During our site visit it was observed that several construction vehicles are used specifically for ongoing construction works on the Asset. We believe that once the construction is complete these vehicles would no longer be using the Asset.

6.22 We have assumed that only LCV, 2A, 3A and MAV will carry construction material – no other vehicle types have been considered in this analysis. The table in Appendix B presents the number of construction vehicles that would be reduced from the traffic volumes per Asset, as they are currently non-toll paying and will not use the Asset once construction is complete.

Impacts of overloading

6.23 Overloaded vehicles damage road surfaces and this damage is almost exponentially related to the amount that the vehicle is overloaded. The concession agreements allow the concessionaire to charge up to 9 times penalty (10 times the toll rate) in case a vehicle is carrying load more than its legal permissible limit.

6.24 The Schedule N and Schedule M data shared by the client, details the number of vehicles that are overloaded. The proportion of such vehicles is presented in Appendix B.

6.25 Based on Steer's experience of other similar road sections in India, we believe the reported proportion of overloading is within expectations/benchmarks. For the purposes of forecasting, we have assumed that the proportions of overloading will continue for the length of the concession.

Diversion analysis

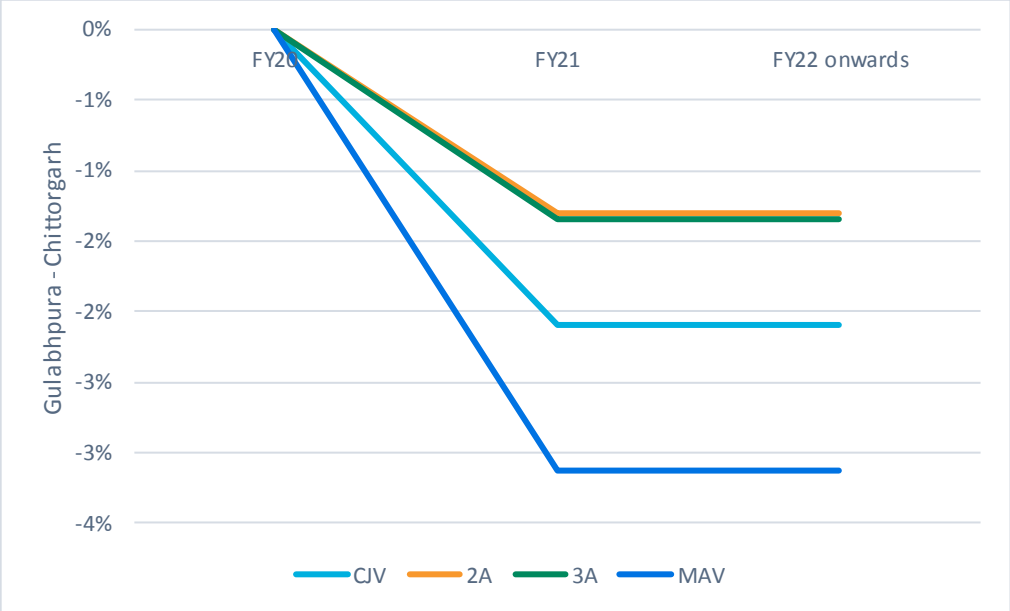
6.26 The Gulabpura – Chittorgarh section is under expansion from 4 lanes to 6 lanes, and is currently tolling at 75% of the actual toll rates as discussed. There is an alternate route available which starts at Kishangarh through Ajmer and Rajasamand to meet the project road at Udaipur. The total length of the diversion (Kishangarh-Ajmer-Rajasamad-Udaipur) is 292 km and total project road length is 325 km.

6.27 However, since the tolling is currently at 75% and road expansion is ongoing we believe that there might some diversion, due to construction (negative) and reduced tolling (positive), taking place on the Asset. Once the construction is complete there would likely be a resultant

increase in the level of service of the Asset, which would increase travel speeds on it, thus making it more attractive for the user.

6.28 Based on our generalised journey cost (GJC) calculations, we estimate that, after considering the combined impact of increasing the toll to a 100% (from the current 75%) and improvement in journey times, the Asset would become more expensive to use for the long distance vehicles in comparison to competing roads. We believe that this would lead to a small proportion of the traffic diverting away from the Asset once construction completes in FY21 and tolls are increased. The overall impact on the asset is shown in the figure below, and has been included in our forecasts.

Figure 6.1: Vehicle type diversion away from Asset 8 over the concession period



Source: Steer analysis

3A/MAV share shift

6.29 In our analysis of the trends on different toll roads across the country, we have observed a consistent shift between the shares of 3A/MAV on most roads, i.e. a move from 3A to MAVs. This shift is primarily caused by the increasing preference for MAV vehicles for long-distance movements due to their higher load capacity that generate economies of scale.

6.30 We believe that transition trend to MAVs will continue till a certain cap is reached, as it is unlikely that all 3A trucks will disappear from the market – there are likely to always be certain transporters for whom 3A's will be preferable. Forecasting assumptions regarding the expected share of 3A/MAV are presented in the table in Appendix B.

6.31 In calculating growth for 3A and MAV during the transition period, we have used the elasticities described in Chapter 5. The share adjustment is then applied to obtain the final implied elasticity. Post this expected transition period, both 3A and MAVs are assumed to continue growing using the estimated elasticity relationship.

Revenue forecasting assumptions

Toll level changes

6.32 To forecast the revenues, traffic forecast for each vehicle type was multiplied by the relevant toll level for each year. The assumption was that toll levels will continue to increase at normal inflation-linked rates as specified in the concession agreement.

6.33 As per the concession agreements (refer Schedule R), the effective toll-able lengths will change from the current toll notifications as issued by NHAI, once construction is complete. This is primarily because new structures and bypasses are currently being built on the Asset. The old and the new lengths are given for each of the toll plazas, in Appendix B.

6.34 The old toll lengths have been used to calculate toll rates until full COD is achieved on each of the toll plaza on annual basis.

Inflation Linked Changes

6.35 The concession agreements and the toll notification specify the toll calculation process for every toll plaza of the Asset. This allows changes in toll levels at each of the plazas to be directly linked to inflation (WPI) changes. The concession agreement based toll escalation formula also includes a rounding of the toll levels to the nearest INR 5. The exact formula as prescribed in the latest toll notification notices issued by the government for the concession has been implemented in our forecasting model.

6.36 WPI forecasts are calculated using the forecasts provided by the Reserve bank of India (RBI) and after discussion with the client, these are used as an input to the toll level calculation. The upward trend in inflation is expected to continue in the medium term, before diminishing back to current levels in the long term. Note that the toll level is set in this formula is in nominal terms, hence the total revenue calculated in our forecast model is also the nominal revenue. The table below shows the assumed WPI rates.

Table 6.3: WPI forecast assumptions

Financial year	Growth rates
FY19	5.0%
FY20	5.5%
FY21	5.4%
FY22	5.3%
FY23	5.2%
FY24	5.2%
FY25	5.1%
FY26	5.0%
FY27	5.0%
FY28	5.0%
FY29	5.0%
FY30	5.0%
FY31	5.0%
FY32	5.0%
FY33	5.0%

Financial year	Growth rates
FY34	5.0%
FY35	5.0%
FY36	5.0%
FY37	5.0%
FY38	5.0%
FY39	5.0%
FY40	5.0%
FY41	5.0%
FY42	5.0%

Source: Steer analysis and as agreed with the client

Ticket type shares (trip frequencies)

6.37 To forecast ticket types (Single, Return, Local, Monthly, Local commercial), we have used Schedule N and Schedule M data. Schedule N[3], provided by the client lists weekly data by number of vehicles using the toll plaza. The data presented is segregated by the type of the ticket used by the vehicle. It also includes vehicles which are overloaded – these trips are all single trips but pay a higher toll as for the overloading penalty.

6.38 As we believe the toll plaza data to be the most reliable to calculate trip frequencies, data from schedule M has been used to calculate these. The percentages for the local commercial category have been benchmarked against the schedule M data shared by the client.

6.39 We have assumed that the split between ticket types will remain the same in the future for all plazas. This assumes that further changes in toll categories, unless specific discounts are offered, are unlikely. The proportions for each of the toll plazas are presented in Appendix B.

6.40 Assumptions pertaining to the number of trips made using non-single journey ticket types, are as follows:

- Return ticket for each vehicle type is presented below:

Table 6.4: Trip factors for return trips for TP1 and TP2

Return Trip Factor	TP1	TP2
CJV	1.66	1.66
LCV	1.67	1.67
Bus	1.76	1.76
2A	1.67	1.67
3A	1.80	1.80
MAV/OSV	1.87	1.87

Source: Steer analysis of the toll revenue data shared by client

- Monthly ticket = 1.67 trips per day (based on an assumed 50 trips in a 30-day month)

[3] Schedule N only provides data for exempt vehicles, violations are not reported.

- Local ticket = a monthly ticket applicable only for CJV's residing within 20 km from the toll plaza.

7 Traffic and Revenue Forecasts

Introduction

7.1 In this chapter, we present our traffic and revenue forecasts (including the base year, FY19) forecasts for all the toll plazas. Assumptions around the expected future values of various parameters (such as changes in GDP, IP and the road network) have been benchmarked against independent data where possible.

7.2 All traffic is presented as tollable traffic (tollable AADT at each plaza or total traffic summed across all plazas). All revenue is presented in INR (nominal terms).

7.3 Details of traffic and revenue forecasts at vehicle type level have already been provided as separate Excel files which should be read in read in conjunction with this report.

7.4 The volumes for the base year (FY19) are largely based on observed numbers during the surveys conducted and the data shared by the Client in the schedule N and schedule M, adjusted for seasonality, as described in previous Chapters.

7.5 The reduction in growth rates across all vehicle types is largely related to the slowing growth rates assumed for national GDP and state GSDP, as derived from publicly available data, as these are the primary drivers in our forecasts.

Traffic and Revenue forecasts

7.6 The AADT forecasts and the corresponding CAGRs for toll plaza on this asset are shown in the tables below.

Figure 7.1: Tollable AADT and CAGR for each toll plaza, for the length of the concession

		AADT					CAGR		
Asset	Vehicle Type	FY19	FY20	FY25	FY30	FY36	FY 19 - 25	FY 25-30	FY 30 - 36
Lambia Kalan	CJV	3,379	3,710	5,435	7,683	11,199	8.24%	7.17%	6.48%
	LCV	2,015	2,048	2,207	2,355	2,527	1.53%	1.30%	1.18%
	Bus	440	449	494	536	585	1.95%	1.63%	1.47%
	2A	1,675	1,739	2,065	2,424	2,886	3.55%	3.26%	2.95%
	3A	2,862	2,942	3,297	3,958	5,397	2.38%	3.72%	5.30%
	MAV (4-6A)	5,789	6,270	8,892	12,277	16,739	7.42%	6.66%	5.30%
	MAV (>6A)	32	35	46	61	83	5.94%	5.86%	5.30%
	AADT	16,193	17,193	22,437	29,295	39,415	5.59%	5.48%	5.07%
	PCU's	47,530	50,543	66,536	87,492	117,289	5.77%	5.63%	5.01%
Jojro Ka Khera	CJV	2,698	2,962	4,339	6,134	8,941	8.24%	7.17%	6.48%
	LCV	1,639	1,670	1,821	1,961	2,126	1.77%	1.50%	1.36%

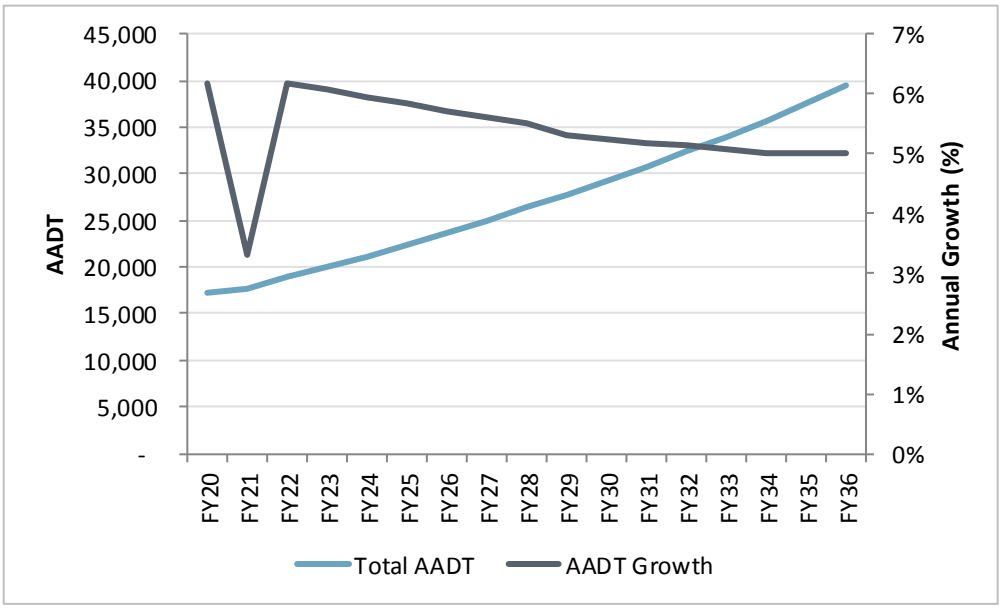
Asset	Vehicle Type	AADT					CAGR		
		FY19	FY20	FY25	FY30	FY36	FY 19 - 25	FY 25-30	FY 30 - 36
	Bus	400	408	449	487	531	1.95%	1.63%	1.47%
	2A	1,401	1,454	1,727	2,027	2,413	3.55%	3.26%	2.95%
	3A	2,322	2,429	2,967	3,732	5,088	4.17%	4.70%	5.30%
	MAV (4-6A)	5,677	6,102	8,331	11,267	15,361	6.60%	6.22%	5.30%
	MAV (>6A)	34	36	48	64	87	5.94%	5.86%	5.30%
	AADT	14,170	15,061	19,681	25,672	34,548	5.63%	5.46%	5.07%
	PCU's	43,222	45,959	60,202	78,801	105,745	5.68%	5.53%	5.02%

Source: Steer analysis

7.7 As can be seen from the table above, PCU growth at each toll plaza is at an average of 6% in the short term, for TP01 and TP02.This level of growth is assumed to be reasonable since the Asset serves the Delhi- Mumbai corridor which one of the key national strategic movements. the growth of the Asset reduces to an average of 5.5% between FY25 and 30, and further to just under 5.0% in the long term due to stabilising long-term macro assumptions. Detailed year on year vehicle wise growth rates have been presented in appendix C.

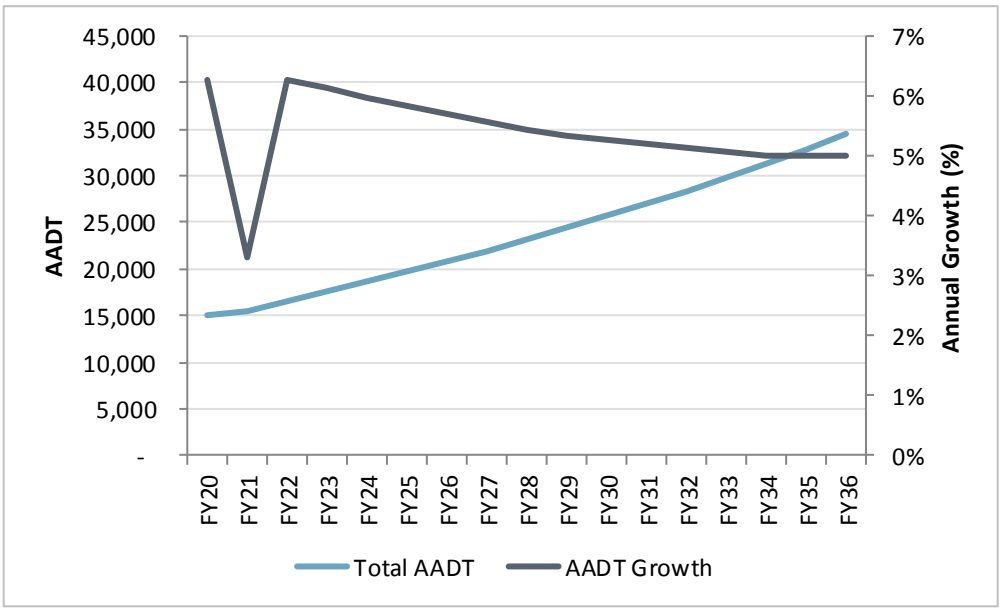
7.8 The figures below show the tollable AADT and the growth rates of traffic across the concession period.

Figure 7.2: TP01 Total AADT forecast and growth Rates, FY20-FY36



Source: Steer analysis

Figure 7.3: TP02 Total AADT forecast and growth Rates, FY20-FY36

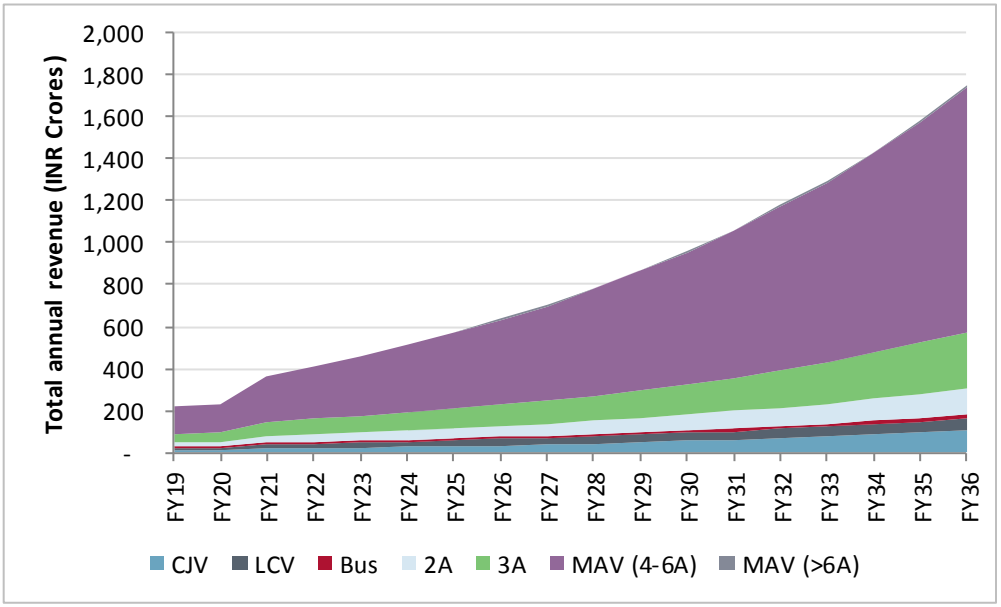


Source: Steer analysis

7.9 As we can see in the figure above for both the toll plazas, the AADT growth drops in the FY21 since diversion due to full tolling implementation would take place. However, FY22 onwards the growth stabilises with respect to the relationship between the GDP and proposed elasticities. A minor flattening of growth in FY28 can be attributed to the 3A/MAV share adjustment as well as the long-term dampening in the macro forecasts.

7.10 The following chart show the variation of total annual revenue and the contribution of each vehicle type to the revenue across the concession period.

Figure 7.4: Total revenues (Nominal, INR Crore) by vehicle type, FY19-FY36



Source: Steer analysis

7.11 In the revenue figures presented above, we can see that heavy vehicles (3A and MAV) form the major contributors to revenue, this is in line with our expectations since this asset caters to long distance movement connecting Delhi to Mumbai in addition to the traffic generated by industries present in the region.

7.12 Since tolling started in September 2017, FY19 is the first full year of tolling. FY19-FY20 see a flat revenue profile since the toll rates have been kept contestant at 75% of FY18 toll rates, the minor revenue growth is achieved due to the traffic growth on the asset. The spike in revenue collection in FY21 is a result of the increase in toll rates to full tolling (100%) as per the NHAI notifications. From FY21 onwards the growth stabilises over the concession period. Detailed vehicle wise growth rates are presented in Appendix C.

Appendices

A Toll rates by plaza

Overview

A.1 This Appendix covers the toll rates charged at each plaza, by vehicle type.

Table A.1: FY18 toll rates (INR) for Gulabpura-Chittorgarh

Toll Plaza	Category of Vehicle	Fee per vehicle per Single trip	Return Trips within 24hrs	Monthly Pass for 50 single journeys	Fee for Commercial vehicles registered in District	Monthly Pass for local car (Car/ Jeep/Van/LMW)
TP01 Lambia	Car, Passenger Van, Jeep and Light Motor Vehicle	55	80	1,765	25	245
	Light Commercial Vehicle, LGV or Mini Bus	85	130	2,850	45	NA
	Bus or Truck	180	270	5,970	90	NA
	MAV (3 Axle)	195	295	6,510	100	NA
	MAV (4-6 Axle)	280	420	9,360	140	NA
	Oversized Vehicle (7+ Axle)	340	515	11,395	170	NA
TP02 Jojro Ka Khera	Car, Passenger Van, Jeep and Light Motor Vehicle	55	80	1,830	25	245
	Light Commercial Vehicle, LGV or Mini Bus	90	135	2,955	45	NA
	Bus or Truck	185	280	6,190	95	NA
	MAV (3 Axle)	205	305	6,755	100	NA
	MAV (4-6 Axle)	290	435	9,710	145	NA
	Oversized Vehicle (7+ Axle)	355	530	11,820	175	NA

Source: NHAI toll notifications

Seasonality Correction Factors

A.2 The table below presents the SCF's used to arrive at FY19 base tollable traffic:

Table A.2: SCF used to arrive at Sept-Mar (FY19) traffic using the Apr-Aug (FY19) toll plaza data and RR

Gulabhpura - Chittorgarh	TP1	TP2
Car	1.46	1.46
LCV	1.58	1.58
2A	1.58	1.58
Bus	1.45	1.45
3A +	1.42	1.42

Source: Steer analysis of toll plaza data and regional references (RR)

B Forecasting assumptions

Construction impacts

B.1 The construction vehicles which are currently using the Asset for road upgradation purposes are given below:

Table B.1: Construction vehicles used for roadworks

Assets	Vehicle Category	COD Year	Vehicles to be Reduced (AADT)
TP1 - Lambia Kalan	2A	FY21	3
	3A	FY21	13
	MAV (4-6A)	FY21	32
TP2 - Jojro Ka Khera	2A	FY21	2
	3A	FY21	16
	MAV (4-6A)	FY21	2

Overloading

B.2 The proportion of overloaded vehicles is presented in the table below:

Table B.2: Overloading proportions (%) as per Schedule N and Schedule M data

Asset	Toll Plaza	LCV	2A	3A	MAV
- CGBOT	TP01- Lambian Kalan	1.7	0.7	0.2	0.3
	TP02- JoJoro ka Khera	4.0	0.3	1.6	1.7

Source: Steer Analysis based on Schedule N and Schedule M data provided by Client

Diversion analysis methodology

7.13 For each asset, the methodology to calculate the diversion impacts is given below:

- In-scope demand
  - Analysis of the OD data to ascertain proportion of traffic (for each vehicle category) that could divert on to the competing road
  - Where OD data is available on competing road a proportion of traffic (for each vehicle category) that could divert on to the Asset is estimated. In absence of OD data plausible assumptions are made based on-site visit observations
  - Combined total of the two traffic sources is then defined as in-scope traffic which can choose between the Asset and competing road
- GJC (Generalised journey cost) Analysis
  - For both the Asset and the competing corridor the total Generalised Journey Cost (GJCa, GJCc) is estimated by combining all cost elements using the following equation:

$$GJC_a = VOT \times Time_a + VOC \times Distance_a + Toll_a$$

  - This calculation is carried out at a vehicle type level with Values of Time (VOT) and Vehicle Operating Costs (VOC) parameters based on industry standards
- Logit Choice based Capture Model:
  - For each vehicle category a logit choice model is applied to estimate the capture rates (Asset Share/Competition Share) using the GJC inputs using the following equation:

$$P_c = \frac{1}{(1 + e^{-\lambda K(GJC_a - GJC_c - C)})}$$

  - Where Pc represents the capture rate and λ is the scaling parameter and K and C are constants used for calibration of the model
  - The modelled capture rates are then matched against those observed in the in-scope traffic data
- With a calibrated capture model, forecast scenarios are developed where the competing road undergoes construction, is upgraded with improved speeds post construction, tolls are levied on the competing road, construction on the Asset resulting in delays during upgrades, etc. For each scenario the GJC is re-calculated and the resultant impact on the capture rate of in-scope traffic is estimated using the logit choice model.
- This calculated impact is then transferred on to forecasts in form of diversion impacts which are estimated using the shares of in-scope traffic to total traffic

3A/MAV shift

B.3 3A/MAV share shift assumptions between FY20 and FY28 are given below:

Table B.3: 3A/MAV share shift between FY20 and FY28

Toll Plaza	3A/MAV Share	
	Current Share	New share by FY28
TP01	33/67	25/75
TP02	29/71	25/75

Toll level changes

B.4 Tolling lengths as per the concession agreement are presented below.

Table B.4: Equitable Toll-able Lengths for Each toll Plaza, Till Construction Completes

Toll Plaza	Old tollable road length (km)	New tolling length (km)
TP01	66.354	67.164
TP02	68.841	69.651

Source: As per 2018 toll notifications issued by NHAI, and schedule R of the concession agreements

B.5 As per the tolling notifications issued by NHAI, a toll road which is under expansion from 4 lane to 6 lane undergoes tolling at 75% of the Toll (at the start of the concession), and remain constant until the end of the concession. In the case of Asset, construction started in FY18 and is expected to complete by FY20. Hence once tolling finishes, after agreement with the client and as per the NHAI notification No. H-25016/01/2014-Toll which refers to NHAI D.O. letter no NHAI/CO/2015/60473; the revision in toll rates to normal tolling will be effective from FY21 itself. The change in toll rates is presented below:

Table B.5: Proportion increase in toll rates port construction completion in FY20, TP1

Vehicle type	FY20 Toll	FY21 Toll	% increase

CJV	55	80	45.5%
LCV	85	135	58.8%
Bus	180	280	55.6%
2A	180	280	55.6%
3A	195	305	56.4%
MAV (4-6A)	280	435	55.4%

Source: Steer analysis

Table B.6: Proportion increase in toll rates port construction completion in FY20, TP2

Vehicle type	FY20 Toll	FY21 Toll	% increase
CJV	55	85	54.5%
LCV	90	140	55.6%
Bus	185	290	56.8%
2A	185	290	56.8%
3A	205	315	53.7%
MAV (4-6A)	290	455	56.9%

Source: Steer analysis

B.6 As we can see, from the table above that the tolls increase by more than 50% for different vehicle classes, we believe that there is a risk of local traffic being diverted away, due to this toll increase. The table below presents the proportion of the total traffic which is assumed to be at risk because of such a steep one-time toll increase in FY21.

Table B.7: Vehicle wise proportion of traffic at risk of being diverted away from asset due to toll increase in FY21, TP1

TP1	Proportion of Local traffic	Impact (as a proportion of total traffic)
CJV	40%	5.5%
LCV	20%	3.5%
Bus	15%	2.5%
2A	4%	0.7%
3A	1%	0.2%
MAV (4-6A)	4%	0.7%

Source: Steer analysis, Proportion of local traffic is the sum of local commercial and local categories

Table B.8: Vehicle wise proportion of traffic at risk of being diverted away from asset due to toll increase in FY21, TP2

TP1	Proportion of Local traffic	Impact (as a proportion of total traffic)
CJV	13%	2.1%
LCV	6%	1.0%
Bus	21%	3.6%
2A	1%	0.2%
3A	2%	0.3%

MAV (4-6A)	3%	0.5%

Source: Steer analysis, Proportion of local traffic is the sum of local commercial and local categories

Ticket Type Assumptions

B.7 The ticket type assumptions for each plaza are as shown below:

Table B.9: TP01 ticket type assumptions

Vehicle Category	Single	Return	Monthly	Local Commercial	Violations	Exemptions	Discounts	Local Monthly Pass
CJV	40%	18%	2%	33%	0%	0%	0%	7%
LCV	63%	17%	0%	19%	0%	0%	0%	1%
Bus	31%	52%	2%	15%	0%	0%	0%	0%
2A	92%	4%	0%	4%	0%	0%	0%	0%
3A	97%	2%	0%	1%	0%	0%	0%	0%
MAV (4-6A)	89%	7%	0%	4%	0%	0%	0%	0%
MAV (>6A)	89%	7%	0%	4%	0%	0%	0%	0%

Source: Steer analysis

Table B.10: TP02 ticket type assumptions

Vehicle Category	Single	Return	Monthly	Local Commercial	Violations	Exemptions	Discounts	Local Monthly Pass
CJV	51%	34%	2%	9%	0%	0%	0%	4%
LCV	70%	23%	0%	6%	0%	0%	0%	0%
Bus	27%	52%	0%	21%	0%	0%	0%	0%
2A	93%	6%	0%	1%	0%	0%	0%	0%
3A	96%	3%	0%	2%	0%	0%	0%	0%
MAV (4-6A)	87%	10%	0%	3%	0%	0%	0%	0%
MAV (>6A)	87%	10%	0%	3%	0%	0%	0%	0%

Source: Steer analysis

C Traffic and Revenue forecasts

C.1 The below sections present the YoY vehicle and toll plaza wise traffic and revenue growth:

AADT Growth

Table C.1: Forecasted annual AADT growth at TP1, FY20-FY45

	TP1: Lambian Kalan						
	CJV	LCV	Bus	2A	3A	MAV (4-6A)	MAV (>6A)
FY20	9.8%	1.6%	2.0%	3.8%	2.8%	8.3%	6.8%
FY21	6.1%	1.5%	2.0%	2.8%	0.6%	3.8%	2.3%
FY22	8.9%	1.6%	2.0%	3.8%	2.8%	8.4%	6.9%
FY23	8.6%	1.6%	1.9%	3.7%	2.8%	8.2%	6.7%
FY24	8.2%	1.5%	1.9%	3.6%	2.7%	8.0%	6.6%
FY25	7.9%	1.4%	1.8%	3.5%	2.6%	7.8%	6.4%
FY26	7.6%	1.4%	1.7%	3.4%	2.5%	7.6%	6.2%
FY27	7.4%	1.3%	1.7%	3.3%	2.5%	7.4%	6.0%
FY28	7.2%	1.3%	1.6%	3.3%	2.4%	7.2%	5.8%
FY29	6.9%	1.3%	1.6%	3.1%	5.7%	5.7%	5.7%
FY30	6.8%	1.2%	1.6%	3.1%	5.6%	5.6%	5.6%
FY31	6.7%	1.2%	1.5%	3.0%	5.5%	5.5%	5.5%
FY32	6.6%	1.2%	1.5%	3.0%	5.4%	5.4%	5.4%
FY33	6.5%	1.2%	1.5%	2.9%	5.3%	5.3%	5.3%
FY34	6.4%	1.2%	1.5%	2.9%	5.2%	5.2%	5.2%
FY35	6.4%	1.2%	1.4%	2.9%	5.2%	5.2%	5.2%
FY36	6.3%	1.2%	1.4%	2.9%	5.2%	5.2%	5.2%
FY37	6.3%	1.1%	1.4%	2.9%	5.2%	5.2%	5.2%
FY38	6.3%	1.1%	1.4%	2.9%	5.2%	5.2%	5.2%
FY39	6.3%	1.1%	1.4%	2.9%	5.1%	5.1%	5.1%
FY40	6.3%	1.1%	1.4%	2.9%	5.1%	5.1%	5.1%
FY41	6.3%	1.1%	1.4%	2.9%	5.1%	5.1%	5.1%
FY42	6.3%	1.1%	1.4%	2.8%	5.1%	5.1%	5.1%
FY43	6.3%	1.1%	1.4%	2.9%	5.1%	5.1%	5.1%
FY44	6.3%	1.1%	1.4%	2.9%	5.1%	5.1%	5.1%
FY45	6.3%	1.1%	1.4%	2.9%	5.1%	5.1%	5.1%

Source: Steer Analysis

Table C.2: Forecasted annual AADT growth at TP2, FY20-FY45

	TP2 : Jojoro ka Khera						
	CJV	LCV	Bus	2A	3A	MAV(4-6A)	MAV (>6A)
FY20	9.8%	1.9%	2.0%	3.8%	4.6%	7.5%	6.8%
FY21	6.1%	1.7%	2.0%	2.8%	2.4%	3.0%	2.3%
FY22	8.9%	1.9%	2.0%	3.8%	4.7%	7.6%	6.9%
FY23	8.6%	1.8%	1.9%	3.7%	4.6%	7.4%	6.7%
FY24	8.2%	1.7%	1.9%	3.6%	4.4%	7.2%	6.6%
FY25	7.9%	1.7%	1.8%	3.5%	4.3%	7.0%	6.4%
FY26	7.6%	1.6%	1.7%	3.4%	4.2%	6.8%	6.2%
FY27	7.4%	1.5%	1.7%	3.3%	4.1%	6.6%	6.0%
FY28	7.2%	1.5%	1.6%	3.3%	4.0%	6.4%	5.9%
FY29	6.9%	1.4%	1.6%	3.2%	5.7%	5.7%	5.7%
FY30	6.8%	1.4%	1.5%	3.1%	5.6%	5.6%	5.6%
FY31	6.7%	1.4%	1.5%	3.1%	5.5%	5.5%	5.5%
FY32	6.6%	1.4%	1.5%	3.0%	5.4%	5.4%	5.4%
FY33	6.5%	1.4%	1.5%	2.9%	5.3%	5.3%	5.3%
FY34	6.4%	1.3%	1.5%	2.9%	5.2%	5.2%	5.2%
FY35	6.4%	1.3%	1.4%	2.9%	5.2%	5.2%	5.2%
FY36	6.3%	1.3%	1.4%	2.9%	5.2%	5.2%	5.2%
FY37	6.3%	1.3%	1.4%	2.9%	5.2%	5.2%	5.2%
FY38	6.3%	1.3%	1.4%	2.9%	5.2%	5.2%	5.2%
FY39	6.3%	1.3%	1.4%	2.9%	5.1%	5.1%	5.1%
FY40	6.3%	1.3%	1.4%	2.9%	5.1%	5.1%	5.1%
FY41	6.3%	1.3%	1.4%	2.9%	5.1%	5.1%	5.1%
FY42	6.3%	1.3%	1.4%	2.9%	5.1%	5.1%	5.1%
FY43	6.3%	1.3%	1.4%	2.9%	5.1%	5.1%	5.1%
FY44	6.3%	1.3%	1.4%	2.9%	5.1%	5.1%	5.1%
FY45	6.3%	1.3%	1.4%	2.8%	5.1%	5.1%	5.1%

Source: Steer Analysis

Revenue Growth

Table C.3: Forecasted annual revenue growth at TP1, FY20-FY45

	TP1: Lambian Kalan						
	CJV	LCV	Bus	2A	3A	MAV (4-6A)	MAV (>6A)
FY20	9.9%	0.8%	2.0%	3.3%	2.7%	8.2%	6.8%
FY21	59.7%	58.6%	58.7%	59.8%	57.3%	61.3%	59.4%
FY22	16.6%	6.0%	7.0%	9.3%	7.9%	14.6%	12.9%
FY23	13.0%	5.8%	7.6%	9.1%	7.6%	14.1%	12.4%

FY24	16.0%	7.3%	6.4%	8.6%	8.8%	13.6%	12.0%
FY25	11.9%	8.0%	6.9%	8.4%	7.0%	13.0%	11.5%
FY26	14.5%	5.0%	7.2%	9.5%	8.1%	12.7%	11.9%
FY27	10.9%	7.3%	6.8%	7.7%	7.7%	13.1%	11.5%
FY28	13.4%	6.9%	7.0%	8.8%	7.4%	12.6%	11.0%
FY29	13.4%	6.6%	6.7%	8.4%	11.8%	11.6%	11.2%
FY30	12.4%	6.3%	6.9%	9.2%	11.4%	10.5%	10.9%
FY31	12.0%	6.0%	6.6%	7.8%	9.9%	10.9%	11.1%
FY32	12.1%	5.8%	6.7%	8.6%	11.7%	11.2%	10.8%
FY33	11.3%	7.4%	7.0%	8.3%	10.3%	10.9%	11.0%
FY34	13.4%	6.0%	6.7%	8.0%	10.9%	10.5%	10.6%
FY35	10.7%	6.8%	6.6%	8.6%	10.6%	10.9%	10.9%
FY36	12.7%	6.5%	6.8%	8.4%	11.2%	11.1%	10.6%
FY37	12.3%	6.8%	7.0%	8.1%	10.8%	10.3%	10.7%
FY38	10.4%	5.9%	6.9%	8.6%	10.5%	11.0%	10.9%
FY39	13.4%	6.4%	7.0%	8.3%	11.0%	10.8%	10.6%
FY40	11.4%	7.1%	6.9%	8.7%	10.7%	10.9%	11.1%
FY41	12.5%	6.9%	6.7%	7.8%	10.4%	10.6%	10.7%
FY42	11.3%	6.6%	6.9%	8.8%	11.4%	10.8%	10.8%
FY43	12.2%	6.3%	7.2%	8.6%	10.5%	10.9%	10.9%
FY44	11.7%	6.2%	6.9%	8.3%	11.3%	11.0%	10.9%
FY45	12.0%	7.1%	6.7%	8.5%	10.5%	11.0%	10.9%

Source: Steer Analysis

Table C.4: Forecasted annual revenue growth at TP2, FY20-FY45

	TP2: Jojoro ka Khera						
	CJV	LCV	Bus	2A	3A	MAV (4-6A)	MAV (>6A)
FY20	9.8%	0.6%	2.0%	3.6%	4.0%	6.7%	6.8%
FY21	67.9%	57.3%	58.6%	61.0%	57.4%	61.4%	58.7%
FY22	14.2%	6.5%	6.8%	9.2%	9.7%	12.5%	12.7%
FY23	13.6%	8.0%	7.5%	8.9%	10.9%	13.0%	12.3%
FY24	14.9%	5.4%	7.1%	8.5%	8.9%	12.6%	11.8%
FY25	12.4%	8.0%	6.9%	9.7%	10.0%	13.0%	12.2%
FY26	13.6%	4.9%	6.5%	7.8%	9.6%	12.6%	11.7%
FY27	13.1%	7.3%	7.2%	8.9%	9.2%	11.3%	11.3%
FY28	11.0%	7.0%	6.8%	8.5%	10.0%	12.5%	11.5%
FY29	14.7%	6.6%	7.0%	8.2%	10.4%	10.6%	11.1%
FY30	11.3%	6.4%	6.6%	9.0%	11.2%	11.1%	10.8%
FY31	11.4%	7.9%	7.1%	8.7%	10.8%	11.4%	10.9%
FY32	14.2%	6.1%	6.5%	7.4%	11.5%	11.0%	11.2%

FY33	10.7%	5.9%	7.2%	9.1%	10.1%	10.7%	10.8%
FY34	12.0%	7.3%	6.5%	7.8%	10.7%	10.9%	10.5%
FY35	12.8%	6.8%	6.9%	8.5%	11.3%	10.6%	11.1%
FY36	10.7%	6.6%	6.6%	8.2%	10.9%	10.4%	10.8%
FY37	12.2%	6.7%	6.9%	8.7%	10.6%	11.1%	10.5%
FY38	11.9%	6.4%	6.7%	8.4%	10.4%	10.8%	10.7%
FY39	13.1%	7.2%	6.9%	8.1%	10.8%	10.6%	10.8%
FY40	11.3%	7.2%	7.1%	8.6%	11.1%	10.7%	10.8%
FY41	11.8%	5.8%	6.8%	8.3%	10.8%	10.9%	10.9%
FY42	12.6%	7.6%	6.9%	8.6%	10.6%	11.0%	10.6%
FY43	12.3%	6.3%	7.0%	8.3%	10.8%	10.7%	11.0%
FY44	11.0%	7.2%	7.1%	8.6%	11.1%	10.8%	10.7%
FY45	13.3%	7.0%	6.8%	8.3%	10.8%	11.2%	11.0%

Source: Steer Analysis

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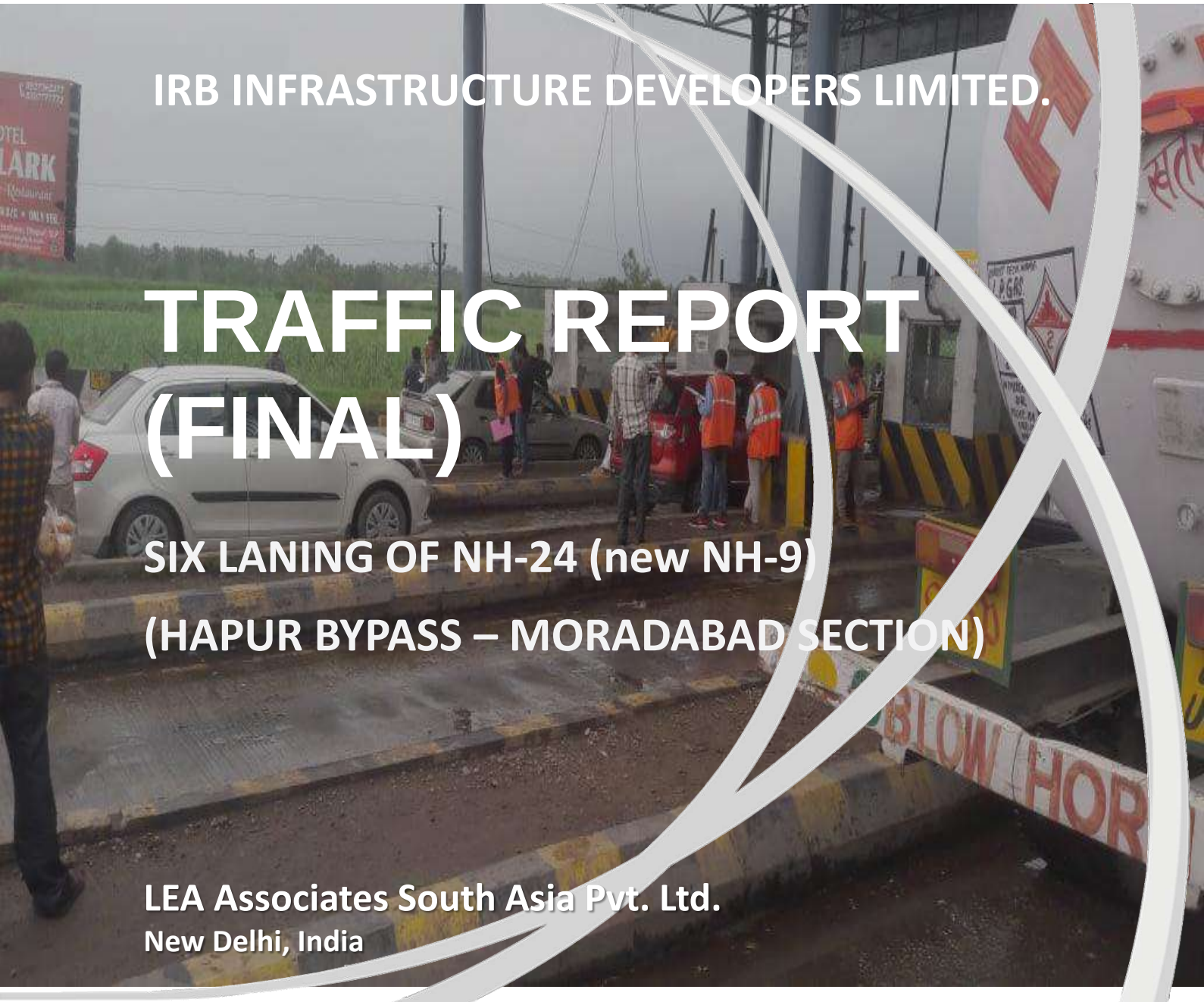
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IRB INFRASTRUCTURE DEVELOPERS LIMITED.

TRAFFIC REPORT (FINAL)

SIX LANING OF NH-24 (new NH-9)

(HAPUR BYPASS – MORADABAD SECTION)

LEA Associates South Asia Pvt. Ltd.
New Delhi, India

A subsidiary of IRB INFRASTRUCTURE DEVELOPERS LTD

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1 INTRODUCTION

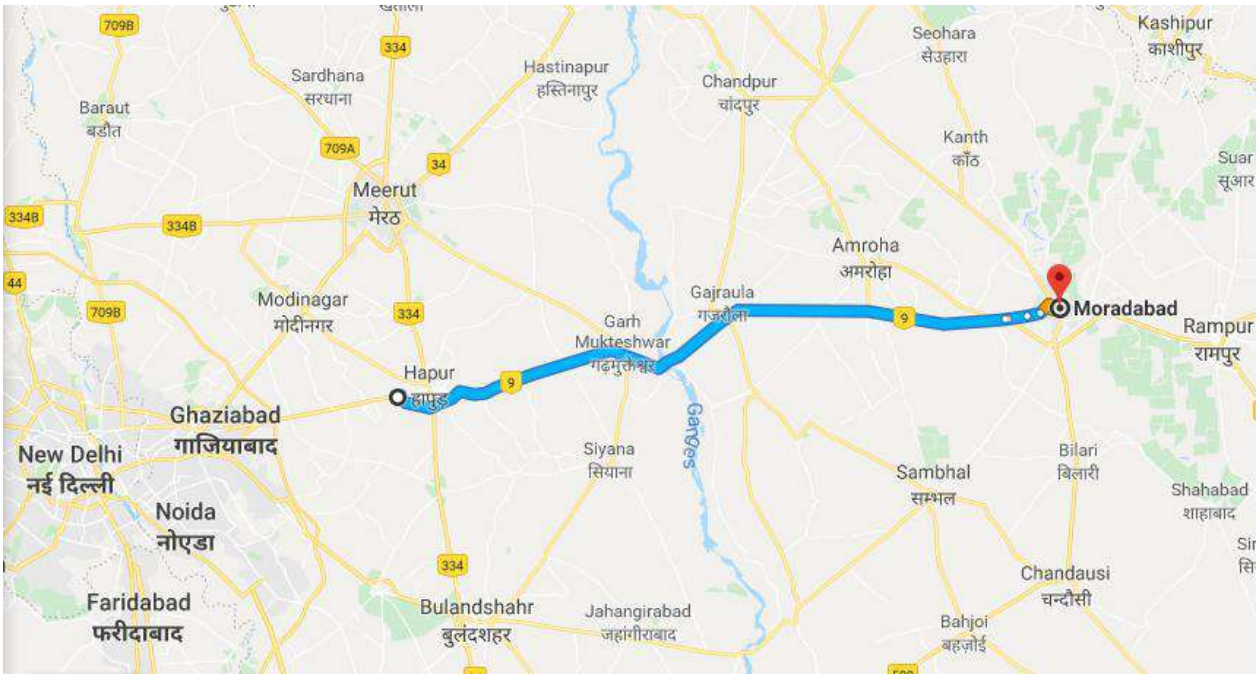
1.1 PROJECT CORRIDOR

The project road is the section of the former NH-24 which has now been re-designated as NH-9 connecting Fazilka in Punjab to Pithoragarh in Uttarakhand. On the way it connects several important cities in five states in North India (from west towards east): Malout, Sirsa, Hisar, Rohtak, Bahadurgarh, Delhi, Ghaziabad, Hapur, Moradabad, Rampur, Rudrapur, Sitarganj, Khatima, Pithoragarh, Ogla, Askot. The total length of the highway is 811 Km. After renumbering of all national highways by National Highway Authority of India in 2010, the current NH 9 was formed by merging five differently numbered national highways in 2010, including Old NH 10 (Fazilka-Delhi section), Old NH 24 (Delhi-Rampur section), Old NH 87 (Rampur-Rudrapur section), Old NH 74 (Rudrapur-Sitarganj-Khatima section) and Old NH 125 (Tanakpur-Pithoragarh section).

The Project section starts from Hapur Bypass (Km 50.000) and ends in Moradabad (Km 148.277). The total design length of project road section is about 100 Kms. The existing road is four lane divided carriageway, which is proposed to be six laned. The road passes through the districts of Hapur, Amroha and Moradabad; all in Uttar Pradesh.

Project road alignment passes through the small towns / built-up areas of Pakwara, Joya and Babugarh. Simbhaoli, one of the largest integrated sugar refinery complexes is right on the project road. The project location has been shown in Figure 1-1 below.

Figure 1-1: Project Location



1.2 PROJECT INFLUENCE AREA

The project road is a link between major cities of Hapur, Amroha and Moradabad districts in the state of Uttar Pradesh apart from connecting other major cities of North like NCT Delhi, Rohtak, Bahadurgarh, Hisar

with cities of Pithoragarh, Ogla and Askot. The main project influence area of the project road consists of the three districts through which the project road passes namely of Hapur, Amroha and Moradabad (Uttar Pradesh). In addition, the project influence area includes the districts of Gaziabad, bareilly and Bulandshahr in the state of Uttar Pradesh. While most of the traffic on the project road section is observed to be to and from the state of Uttar Pradesh and Uttarakhand. Significant influence of NCT Delhi, Haryana and Panjab state are also present on the project road.

1.3 SCOPE OF STUDY

The scope of the study includes

- To assess the traffic volumes and traffic characteristics by conducting Classified Traffic Volume Counts.
- To assess the travel characteristics and travel patterns by conducting Origin & Destination Surveys
- To assess the traffic growth and diversion potentials to make projections for future traffic on the project road.
- To estimate toll revenue based on projected traffic and toll policy applicable for the project highway.

1.4 REPORT STRUCTURE

The report has been presented in seven chapters. The contents of each chapter have been briefly described below.

1. Introduction: This gives the project back ground and the scope of study.
2. Traffic Surveys and Methodology: This presents the traffic surveys conducted and the survey methodology adopted along with basic traffic characteristics.
3. Traffic Survey Analysis: This presents the analysis of existing pattern and characteristics of traffic on the project road section based on traffic surveys.
4. Travel Characteristics: This presents the travel pattern and trip characteristics of passenger and freight vehicles based on Origin Destination studies
5. Surrounding Road Network & Development Potential: This chapter presents the analysis of network conditions and explores possibility of alternative routes or diversions. It also identifies the development potential of the surrounding areas to understand its traffic generation and growth potential.
6. Traffic Projections: This chapter elaborates on the growth potential of the influence area and presents the estimated traffic growth rates, future traffic projections.
7. Toll Estimation and Projections: The chapter elaborates on the toll rates determination and escalation rules and presents the estimate and projections of likely toll collections on the project corridor.

2 TRAFFIC SURVEYS & METHODOLOGY

2.1 OBJECTIVES OF TRAFFIC SURVEYS

Traffic surveys are an essential task to assess the likely quantum and composition of traffic over the design period on the project corridor. The details of various traffic surveys conducted, methodologies adopted, collection of data in understandable formats and analysis, including traffic forecast and revenue estimation has been discussed in detail in subsequent paragraphs and chapters.

The main objectives of the traffic surveys are:

- To assess the volumes of traffic flows on existing / proposed toll plaza locations.
- To assess the traffic and travel characteristics.
- Project design traffic for the concession period of 22 years.
- Traffic estimates for assessment of highway capacity and lanes

2.2 TRAFFIC SURVEYS AND SURVEY METHODOLOGY

To understand the characteristics and the volume of traffic using the project corridor, data on road network and traffic & travel pattern of vehicles plying on the project corridor were collected through primary surveys. Traffic Volume count and Origin-Destination surveys were conducted at the proposed toll plaza locations. Reconnaissance survey was also carried out to identify any possible alternate routes where the traffic could divert to / from the project corridor after the project road is improved and tolled.

A reconnaissance of the project corridor indicates that region is more of agricultural areas with a few small towns of Pakwara, Joya and Babugarh in between.

The project corridor consists of NH-24 (New NH-9) of Hapur Bypass to Moradabad Section including Hapur Bypass from km 50.000 (Design chainage 50.000) to km 148.277 (Design Chainage 149.867) of NH-24 (New NH-9) and the entire sections of road are having four lane facilities with regular traffic flow.

As per the requirements, the following surveys were undertaken at the two toll plaza locations namely Garh Km 090+661 and Joya Km 123+875.

- Classified Traffic Volume for 7 days.
- Origin and Destination Survey for 24 hours.
- Registration Plate Survey for 24 hours.

2.2.1 Classified Traffic Volume Count

Classified traffic volume counts for seven days were carried out at 2 location at Km 90+661, Km 123+875, NH9, from 04 September 2018 to 11 September 2018 using video graphic analysis. The vehicles were broadly classified into fast moving / motorized and slow moving / non-motorized vehicles, which were further classified into specific categories of vehicles as per the Toll Categories defined in the Concession Agreement. The groupings of commercial vehicles have also been duly considered for design purpose. The

detailed vehicle classification system is presented in Table 2-1. A camera was installed for each direction of traffic flow separately, with elaborate arrangements for power backup and monitoring to ensure full coverage. The videos were processed and data was recorded at 15-minute intervals for each vehicle group for each direction of travel separately. Hourly totals were summarized at the end of each shift.

Table 2-1: Vehicle Classification System

Motorized / Fast Vehicles		Non-Motorized / Slow Vehicles
Passenger Car		Bicycle
Taxi		Cycle Rickshaw
Ambulance/ Police/ Military/ VIP Cars (Exempted)		Hand/ Animal Cart
2-Wheeler		
3-Wheeler		
Other Passenger Vehicle		
Bus	Minibus	
	Standard Bus	
	Police/ Military Bus (Exempted)	
Truck	Tempo/ LCV	
	2-Axle Truck	
	3-Axle Truck	
	Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	
	Oversized Vehicle (>6 Axles)	
	Police/ Military Truck (Exempted)	
Tractor		

2.2.2 Origin Destination Surveys

Origin & Destination survey has been carried out continuously for 24 hours at both the toll plaza locations, viz on 07 September 2018 at Garh Km 090+661 and on 06 September 2018 at Joya Km 123+875.

The origin-destination survey was carried out with the primary objective of studying the travel pattern of goods and passenger traffic along the study corridor. The results have also been used for identifying the Influence area of the project corridor and estimating the growth rates of traffic on the project corridor.

The O-D survey was carried out along with the classified traffic volume counts. Roadside interview method as described in IRC: 102-1988 was adopted for the survey. The survey was carried out for both passenger and goods vehicles in both directions. The vehicles were stopped on random sample basis with the help of police, and the drivers were interviewed by trained enumerators to obtain the required data. During the surveys the information pertaining to origin, destination, district registration number plate, national permit, trip frequency, trip-length, commodity types, loading pattern, trip purpose and occupancy as applicable for various vehicle types were recorded. The survey was carried out for both passenger and goods vehicles in

both directions. Trained enumerators under the supervision of Traffic Engineers collected the trip characteristics using the survey forms designed for this purpose.

2.2.3 Registration Plate Survey

Registration Plate Number survey was conducted to identify local traffic for the purpose of estimation of toll discounts. The survey was conducted for 24 hours with the help of trained enumerators. The registration number of each category of vehicle was recorded and analysed. The registration numbers starting with UP37 belong to the Hapur RTO and shall be considered local for toll plaza at Garh Km 090+661, while registration numbers starting with UP23 belonging to Jyotiba Phule (Amroha) RTO will be local for toll plaza at Joya Km 123+875.

3 TRAFFIC SURVEYS ANALYSIS

3.1 TRAFFIC CHARACTERISTICS

The survey data collected from the Classified Volume Count were coded and processed in order to analyze the results with respect to existing traffic intensity, flow pattern, hourly variation and composition of traffic on the study road network. The various vehicle types having different sizes and characteristics were converted into a single unit called Passenger Car Unit (PCU). Passenger Car Unit for various vehicles are adopted based on recommendations of Indian Road Congress prescribed in IRC: 64-1990, "Gudelines for Capacity of Roads in Rural areas". The adopted passenger car unit values (PCU) are presented in Table 3-1.

Table 3-1: Recommended PCU's as per IRC: 64-1990

Fast Vehicles	PCU	Slow Vehicles	PCU
Passenger Car/ Taxi	1.0	Cycle	0.5
Two-Wheeler	0.5	Cycle Rickshaw	2.0
Three-Wheeler/ Other Passenger Vehicle	1.0	Hand/ Animal Cart	6.0
Minibus	1.5		
Standard Bus	3.0		
Tempo/ LCV	1.5		
2 Axle Truck	3.0		
3 Axle Truck	3.0		
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	4.5		
Oversized Vehicle (>6 Axles)	4.5		
Tractor	4.5		

The various traffic characteristics have been presented in the following:

- Average Daily Traffic (ADT)
- Annual Average Daily Traffic (AADT)
- Daily Variation
- Hourly variation and Peak Hour Factor (PHF)
- Directional distribution
- Traffic composition

3.1.1 Average Daily and Annual Average Daily Traffic

The traffic volume count data collected over seven days was averaged to determine the Average Daily Traffic (ADT).

The traffic plying on any road generally varies over the different periods of the year depending on the cycle of different socio-economic activities in the regions through which it passes. Therefore, in order to have more realistic picture of the traffic on the project corridor, it is required to assess seasonal variation in

traffic to estimate Annual Average Daily Traffic (AADT). Therefore, the ADT observed during the survey duration is multiplied by a Seasonal Correction Factor (SCF) to derive AADT. The seasonal correction factor is generally derived from secondary data.

Secondary data for sales of fuel at the Fuel Pump Stations located on the project road were collected to arrive at the Seasonal Correction Factor.

The SCF is calculated separately for petrol driven and diesel driven vehicles on the project corridor and is presented in Table 3-2.

Table 3-2: Seasonal Variations in Fuel Sales

Month	Average Daily Sales (KL)		Correction Factor	
	HSD	MS	HSD	MS
April	**32.1**	**12.4**	**1.060**	**0.985**
May	38.6	12.7	0.881	0.961
June	40.0	13.2	0.850	0.924
July	36.6	12.6	0.929	0.967
August	38.2	11.7	0.890	1.038
September	**32.0**	**12.7**	**1.064**	**0.959**
October	32.5	12.7	1.048	0.962
November	31.9	12.7	1.067	0.963
December	28.2	11.1	1.205	1.102
January	28.7	10.1	1.185	1.211
February	31.8	11.8	1.071	1.036
March	37.4	12.8	0.909	0.954
Annual Average	**34.0**	**12.2**	**1.000**	**1.000**

The collected ADT is converted into Annual Average Daily Traffic (AADT) by multiplying with the seasonal correction factors. Since the traffic surveys were carried out in the month of September 2018, the correction factors for the corresponding month would be used. The seasonal correction factor for goods traffic and diesel driven passenger traffic is 1.064 and for petrol driven passenger traffic is 0.959 respectively. As petrol and diesel sales are a proxy parameter and may be subject to some local issues at the local service stations, it was considered appropriate to also evaluate the national pattern of fuel sales.

National level fuel sales statistics were collated and analyzed for the last 18 years. The national level trends appear consistent over the years with very few exceptions. Based on the national trends the SCF for diesel and petrol vehicles comes out to be **1.124** and **1.033** respectively. Table 3-3 and Table 3-4 show the year wise and month wise factors of diesel and petrol sales nationally.

The national seasonal correction factors were adopted for diesel and petrol respectively, considering the higher consistency of data as well as the national character of the road traffic, which is coming from other states too.

Table 3-3: Seasonal Variation Factors on Diesel Sales (National)

Month	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	Average
JAN	1.03	1.04	1.03	1.02	1.00	0.98	0.94	0.99	1.01	1.02	1.02	1.01	1.03	1.01	1.01	1.11	1.04	1.019
FEB	1.03	0.99	0.94	0.99	0.90	0.95	0.92	0.92	0.93	0.94	0.93	0.98	0.97	0.92	0.92	0.95	0.95	0.946
MAR	0.96	1.01	0.89	0.92	0.95	0.91	0.92	0.91	0.93	0.93	0.91	0.95	0.95	1.00	0.93	0.95	0.94	0.939
APR	0.94	0.92	1.09	0.93	0.98	0.96	0.98	0.94	0.97	0.92	0.97	0.96	0.91	0.96	0.94	0.92	0.96	0.953
MAY	0.92	0.91	1.01	0.95	0.96	0.89	0.98	0.91	1.00	0.96	0.94	0.92	0.91	0.91	0.98	0.93	0.91	0.938
JUN	0.94	0.98	0.92	0.99	0.97	1.08	0.99	1.05	0.95	0.95	0.99	0.94	0.95	0.93	0.97	0.98	0.98	0.971
JUL	1.10	1.01	1.04	0.99	1.10	1.13	1.09	1.08	1.06	1.05	1.08	1.02	1.08	1.03	1.11	1.11	1.09	1.069
AUG	1.15	1.13	1.14	1.31	1.08	1.16	1.22	1.21	1.14	1.18	1.20	1.16	1.15	1.15	1.17	1.05	1.16	1.158
SEP	**1.02**	**1.12**	**1.16**	**1.04**	**1.17**	**1.09**	**1.17**	**1.08**	**1.12**	**1.17**	**1.15**	**1.15**	**1.14**	**1.16**	**1.04**	**1.20**	**1.10**	**1.124**
OCT	1.03	1.02	1.02	0.96	1.03	1.07	1.01	1.04	1.00	1.03	1.03	1.03	1.03	1.08	1.00	0.97	1.05	1.023
NOV	0.96	0.99	0.92	1.07	0.98	0.95	0.95	0.95	0.98	1.00	0.93	0.98	0.96	0.95	1.00	0.93	0.92	0.962
DEC	0.97	0.93	0.91	0.94	0.93	0.92	0.92	0.99	0.95	0.92	0.93	0.96	0.97	0.96	0.97	0.98	0.97	0.953
Total	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**

Table 3-4: Seasonal Variation Factors on Petrol Sales (National)

Month	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	Average
JAN	1.03	1.05	1.07	1.02	1.03	1.02	0.99	0.99	1.04	1.06	1.09	1.03	1.05	0.99	1.02	1.12	1.06	1.042
FEB	0.99	0.96	0.97	0.95	0.92	0.95	1.00	0.91	0.93	0.96	0.97	0.95	0.95	0.90	0.94	0.96	0.96	0.949
MAR	0.93	1.01	0.92	0.92	0.96	0.90	0.93	0.90	0.94	0.95	0.90	0.93	0.98	0.96	0.90	0.96	0.92	0.935
APR	1.04	1.00	1.07	1.00	1.06	1.04	1.03	0.98	1.04	1.04	1.02	1.04	1.11	1.04	1.00	0.98	1.03	1.028
MAY	0.96	0.91	1.00	0.96	0.92	0.88	0.96	0.91	0.98	0.96	0.94	1.03	0.86	0.96	1.01	0.97	0.92	0.949
JUN	0.98	1.02	0.94	0.99	0.98	1.08	0.99	1.15	0.96	0.94	0.98	0.96	0.99	0.97	1.01	1.06	1.04	1.004
JUL	1.06	1.01	1.00	1.00	1.05	1.08	1.02	1.05	1.08	1.04	1.05	1.02	1.03	1.09	1.11	1.05	1.04	1.050
AUG	1.02	1.01	1.01	1.11	0.97	1.04	1.06	1.07	1.04	1.03	1.04	1.02	0.98	1.01	1.05	0.92	1.01	1.015
SEP	**1.02**	**1.02**	**1.04**	**1.00**	**1.07**	**1.02**	**1.04**	**1.03**	**1.02**	**1.03**	**1.03**	**1.05**	**1.14**	**1.05**	**0.95**	**1.08**	**1.00**	**1.033**
OCT	1.02	1.04	1.01	1.01	1.03	1.03	1.03	1.02	0.98	1.01	1.01	1.01	1.00	1.00	1.00	0.96	1.00	1.004
NOV	0.98	1.03	1.00	1.07	1.02	1.04	0.98	1.01	1.04	0.98	1.06	0.98	0.96	1.04	1.01	0.96	1.01	1.005
DEC	0.99	0.97	1.00	1.00	1.00	0.98	0.99	1.03	0.98	1.00	0.95	0.99	1.00	0.99	1.02	1.03	1.02	1.000
Total	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**

The ADT and AADT by vehicle types on the project section of NH9 are presented in Table 3-5.

Table 3-5: Average Daily Traffic (ADT) at Garh Km 090+661 and Joya Km 123+875

Vehicle Type		Location		Adopted PCU Factors
		NH-24 Hapur - Moradabad Section		
		Garh Km 090+661	Joya Km 123+875	
Tollable	Passenger Car	14,548	10,458	1.0
	Taxi	424	616	1.0
Non Tollable	Two Wheeler	8,865	8,388	0.5
	Three Wheeler	1,110	220	1.0
	Other Passenger Vehicle	6	3	1.0
Tollable	Minibus	131	88	1.5
	Standard Bus	2,094	1,772	3.0
	Tempo/ LCV	4,141	2,810	1.5
	2-Axle Truck	487	346	3.0
	3-Axle Truck	1,240	908	3.0
	Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	1,555	1,076	4.5
Non Tollable	Tractors	400	397	4.5
Tollable	Oversized Vehicle (>6 Axles)	-	-	4.5
Non Tollable	Bycycle	234	319	0.5
	Cycle Rickshaw	319	76	2.0
	Hand/ Animal Cart	79	14	6.0
Toll Exempted	Ambulance/ Police/ Military/ VIP Car	128	116	1.0
	Police/ Military/ Cemetry Bus	35	38	3.0
	Police/ Military Truck	23	30	3.0
Vehicle	Motorised Traffic	35,186	27,267	
	Non Motorised Traffic	631	409	
	Total	**35,817**	**27,676**	
PCU	Motorised Traffic	47,491	35,865	
	Non Motorised Traffic	1,226	394	
	Total	**48,716**	**36,260**	
Tollable Traffic	**Vehicles**	**24,619**	**18,075**	
	PCUs	**39,840**	**29,343**	
Non Tollable Traffic	**Vehicles**	**11,197**	**9,601**	
	PCUs	**8,876**	**6,917**	

At Garh Km 090+661 the average daily tollable traffic observed is 24,619 vehicles and 39,840 PCUs while at Joya Km 123+875 the ADT is 18,075 vehicles and 29,343 PCUs.

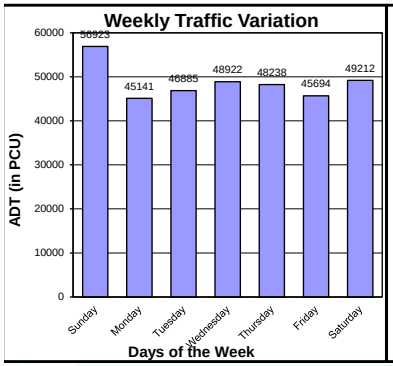
The AADT at Garh Km 090+661 is 26,346 vehicles & 43,450 PCUs while at Joya Km 123+875 the AADT is 19,363 vehicles & 32,025 PCUs based on the national level SCF of **1.124** for commercial and **1.033** for passenger vehicles respectively.

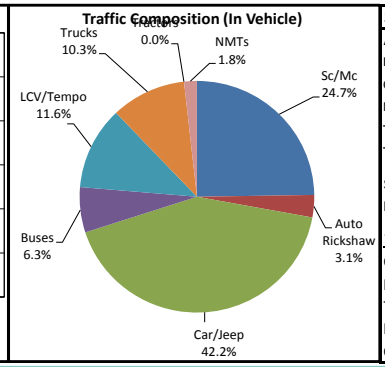
Table 3-6: Annual Average Daily Traffic (AADT) at Garh Km 090+661 and Joya Km 123+875

Vehicle Type		Location		Adopted PCU Factors
		NH-24 Hapur - Moradabad Section		
		Garh Km 090+661	Joya Km 123+875	
Tollable	Passenger Car	15,029	10,804	1.0
	Taxi	476	692	1.0
Non Tollable	Two Wheeler	9,158	8,666	0.5
	Three Wheeler	1,146	228	1.0
	Other Passenger Vehicle	7	4	1.0
Tollable	Minibus	147	99	1.5
	Standard Bus	2,353	1,991	3.0
	Tempo/ LCV	4,653	3,158	1.5
	2-Axle Truck	548	389	3.0
	3-Axle Truck	1,394	1,020	3.0
	Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	1,747	1,209	4.5
Non Tollable	Tractors	450	446	4.5
Tollable	Oversized Vehicle (>6 Axles)	-	-	4.5
Non Tollable	Bycycle	234	319	0.5
	Cycle Rickshaw	319	76	2.0
	Hand/ Animal Cart	79	14	6.0
Toll Exempted	Ambulance/ Police/ Military/ VIP Car	128	116	1.0
	Police/ Military/ Cemetry Bus	35	38	3.0
	Police/ Military Truck	23	30	3.0
Vehicle	Motorised Traffic	37,293	28,890	
	Non Motorised Traffic	631	409	
	Total	**37,924**	**29,299**	
PCU	Motorised Traffic	51,507	38,914	
	Non Motorised Traffic	1,226	394	
	Total	**52,733**	**39,309**	
Tollable Traffic	**Vehicles**	**26,346**	**19,363**	
	PCUs	**43,450**	**32,025**	
Non Tollable Traffic	**Vehicles**	**11,578**	**9,935**	
	PCUs	**9,283**	**7,284**	

Table 3-7: Summary of Classified Traffic Volume Count at Garh Km 090+661

Time Period (Hours)	Motorized Vehicles													Non Motorized Vehicle			Toll Exempted			Total Number (Both Direction)		Hourly (%age) (Both Direction)		Hapur To Moradabad (UP)		Moradabad To Hapur (DN)		Time Period (Hours)
	Passenger Vehicle							Goods Vehicle																				
	Passenger Car	Taxi	Two Wheeler	Three Wheeler	Other Passenger Vehicle	Minibus	Standard Bus	Tempo/ LCV	2-Axle Truck	3-Axle Truck	Multi Axle Vehicle/ HCM/ EMV (4 to 6	Tractors	Oversized Vehicle (>6 Axles)	Bycycle	Cycle Rickshaw	Hand/ Animal Cart	Ambulance/ Police/ Military/ VIP Car	Police/ Military Bus	Police/ Military Truck	Vehicle	PCU	Vehicle	PCU	Vehicle	PCU	Vehicle	PCU	
00:00-01:00	397	5	46	5	0	3	110	228	43	132	132	9	0	0	0	0	4	1	0	1116	2277	3.12	4.67	611	1209	505	1068	00:00-01:00
01:00-02:00	341	3	32	4	0	3	151	221	38	110	118	14	0	1	0	0	4	1	0	1042	2203	2.91	4.52	535	1074	507	1129	01:00-02:00
02:00-03:00	238	4	24	4	0	3	134	204	33	100	110	14	0	0	0	0	5	1	0	873	1933	2.44	3.97	458	976	415	958	02:00-03:00
03:00-04:00	220	5	27	7	0	3	96	174	32	84	86	13	0	0	0	1	3	1	0	753	1607	2.10	3.30	414	854	339	753	03:00-04:00
04:00-05:00	215	3	48	13	0	3	52	154	21	57	79	14	0	1	2	0	2	0	0	665	1307	1.86	2.68	358	715	307	593	04:00-05:00
05:00-06:00	382	10	117	22	0	3	53	160	16	42	61	12	0	3	5	0	3	0	0	889	1396	2.48	2.87	448	754	441	642	05:00-06:00
06:00-07:00	601	20	345	46	0	13	83	168	22	40	62	17	0	12	10	2	6	2	1	1450	1953	4.05	4.01	693	1017	757	936	06:00-07:00
07:00-08:00	767	23	627	86	0	11	83	172	19	39	43	21	0	26	18	11	5	1	1	1951	2297	5.45	4.71	945	1159	1006	1138	07:00-08:00
08:00-09:00	771	22	662	76	0	6	68	142	14	29	36	14	0	19	23	7	4	1	1	1896	2090	5.29	4.29	906	1057	990	1033	08:00-09:00
09:00-10:00	846	24	666	81	0	7	70	131	14	28	35	20	0	12	22	5	4	2	1	1968	2166	5.50	4.45	920	1060	1048	1106	09:00-10:00
10:00-11:00	858	31	658	73	0	4	71	120	13	26	36	18	0	11	21	8	5	1	2	1953	2157	5.45	4.43	920	1066	1033	1090	10:00-11:00
11:00-12:00	803	32	647	66	0	4	76	126	13	25	33	18	0	11	22	3	6	3	6	1894	2091	5.29	4.29	938	1070	956	1021	11:00-12:00
12:00-13:00	709	30	555	66	0	3	81	141	15	23	35	17	0	10	22	1	5	2	0	1716	1957	4.79	4.02	769	899	947	1058	12:00-13:00
13:00-14:00	736	29	573	76	0	4	96	149	15	25	40	21	0	12	18	2	5	1	0	1802	2101	5.03	4.31	818	959	984	1143	13:00-14:00
14:00-15:00	710	25	549	74	1	4	100	161	14	24	42	22	0	13	22	3	8	3	6	1780	2136	4.97	4.39	834	997	946	1139	14:00-15:00
15:00-16:00	764	35	628	93	0	3	97	170	12	25	48	28	0	20	37	10	9	3	2	1983	2375	5.54	4.88	943	1144	1040	1231	15:00-16:00
16:00-17:00	791	35	654	86	1	9	100	153	10	25	44	31	0	25	35	11	9	2	1	2023	2395	5.65	4.92	939	1116	1084	1279	16:00-17:00
17:00-18:00	811	32	615	71	1	13	89	161	13	33	48	26	0	22	24	7	8	2	1	1977	2344	5.52	4.81	923	1087	1054	1256	17:00-18:00
18:00-19:00	764	29	540	55	0	11	85	157	12	36	59	16	0	17	20	4	7	2	1	1813	2189	5.06	4.49	860	1020	954	1169	18:00-19:00
19:00-20:00	755	6	385	48	0	8	90	175	15	43	59	17	0	13	12	2	6	1	0	1635	2112	4.56	4.34	772	978	863	1135	19:00-20:00
20:00-21:00	647	5	205	26	0	6	78	207	16	53	77	12	0	4	3	1	5	1	0	1346	1962	3.76	4.03	646	882	700	1081	20:00-21:00
21:00-22:00	533	4	123	14	0	3	74	209	19	66	75	11	0	2	1	0	6	1	0	1141	1806	3.18	3.71	571	822	570	985	21:00-22:00
22:00-23:00	470	6	83	9	0	2	72	228	29	74	92	7	0	2	1	0	5	1	0	1081	1854	3.02	3.81	550	858	531	997	22:00-23:00
23:00-24:00	422	6	56	8	0	2	85	229	41	102	104	8	0	0	0	0	5	1	0	1068	2006	2.98	4.12	529	929	540	1078	23:00-24:00
Grand Total	**14548**	**424**	**8865**	**1110**	**6**	**131**	**2094**	**4141**	**487**	**1240**	**1555**	**400**	**0**	**234**	**319**	**79**	**128**	**35**	**23**	**35817**	**48716**	**100**	**100**	**17298**	**23702**	**18519**	**25014**	**Grand Total**
% Share	40.62	1.18	24.75	3.10	0.02	0.36	5.85	11.56	1.36	3.46	4.34	1.12	0.00	0.65	0.89	0.22	0.36	0.10	0.06	100		Directional Split:		48.3	48.7	51.7	51.3	**% Share**
PEAK CHARACTERISTICS																												
07:00-08:00	767	23	627	86	0	11	83	172	19	39	43	21	0	26	18	11	5	1	1	**1951**	**2297**	5.4	4.7	945	1159	1006	1138	07:00-08:00
16:00-17:00	791	35	654	86	1	9	100	153	10	25	44	31	0	25	35	11	9	2	1	**2023**	**2395**	5.6	4.9	939	1116	1084	1279	16:00-17:00





SALIENT FEATURES

Average Daily Traffic

Passenger Motor: 27,328 Vehs 76.3%

Goods Motorized: 7,858 Vehs 21.9%

Non Motorized: 631 Vehs 1.8%

Total ADT 35,817 Vehs 48,716 PCU

Total AADT 37,924 Vehs 52,733 PCU

Significant Peak Hour: 16:00-17:00

Peak Hour Traffic: 2,395 PCU 4.9%

Tollable Vehicles

Car/Jeeps 14,971

LCV/Mini Buses 4,272

Truck/Buses 3,822

Multi-Axle Trucks 1,555

Oversized Vehicles

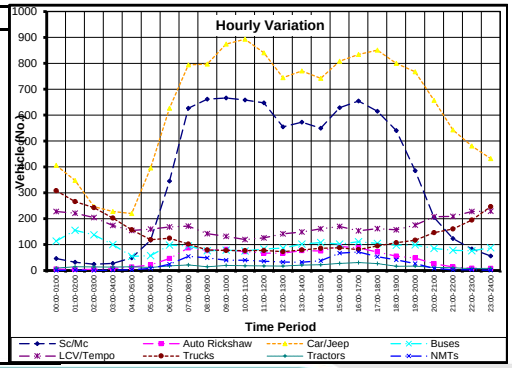
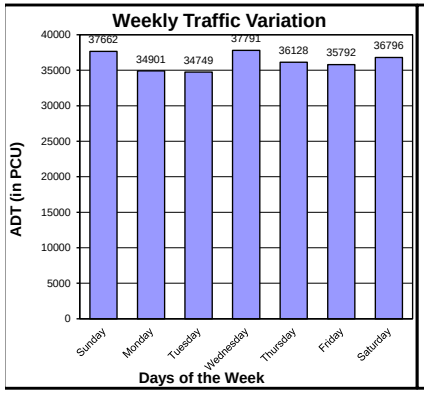
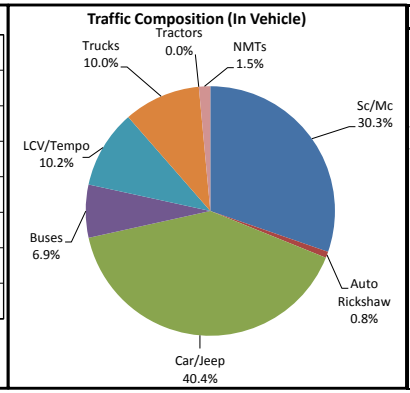


Table 3-8: Summary of Classified Traffic Volume Count at Joya Km 123+875

Time Period (Hours)	Motorized Vehicles													Non Motorized Vehicle			Toll Exempted			Total Number (Both Direction)		Hourly (%age) (Both Direction)		Hapur To Moradabad (UP)		Moradabad To Hapur (DN)		Time Period (Hours)
	Passenger Vehicle							Goods Vehicle																			
	Passenger Car	Taxi	Two Wheeler	Three Wheeler	Other Passenger Vehicle	Minibus	Standard Bus	Tempo/ LCV	2-Axle Truck	3-Axle Truck	Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	Tractors	Oversized Vehicle (>6 Axles)	Bycycle	Cycle Rickshaw	Hand/ Animal Cart	Ambulance / Police/ Military/ Police/ Military Bus	Military	Military Truck	Vehicle	PCU	Vehicle	PCU	Vehicle	PCU	Vehicle	PCU	
00:00-01:00	283	4	23	3	0	2	133	162	17	53	71	14	0	0	0	0	3	1	0	768	1544	2.77	4.26	367	649	401	894	00:00-01:00
01:00-02:00	241	2	22	1	0	2	146	143	20	62	70	11	0	0	0	0	3	1	0	726	1530	2.62	4.22	405	791	321	739	01:00-02:00
02:00-03:00	193	3	18	2	0	2	139	126	23	72	72	8	0	0	0	0	5	1	0	663	1469	2.40	4.05	395	834	268	636	02:00-03:00
03:00-04:00	155	3	18	3	0	2	84	129	19	57	74	7	0	0	0	0	3	1	0	555	1215	2.00	3.35	372	798	183	418	03:00-04:00
04:00-05:00	170	4	33	2	0	2	57	115	18	54	56	7	0	1	0	0	3	0	0	524	1046	1.89	2.88	339	712	185	334	04:00-05:00
05:00-06:00	236	7	87	6	0	5	55	117	22	39	40	14	0	2	1	0	3	1	0	637	1077	2.30	2.97	331	633	306	444	05:00-06:00
06:00-07:00	342	23	181	7	0	9	50	127	9	32	28	15	0	9	2	1	3	0	0	841	1160	3.04	3.20	363	552	479	609	06:00-07:00
07:00-08:00	483	28	354	10	0	6	53	118	15	31	38	15	0	82	4	0	4	1	0	1243	1480	4.49	4.08	622	770	621	711	07:00-08:00
08:00-09:00	501	37	529	12	0	3	60	116	15	29	31	12	0	15	6	1	4	1	0	1373	1531	4.96	4.22	718	847	655	684	08:00-09:00
09:00-10:00	568	50	647	16	0	4	50	107	11	27	33	19	0	13	5	1	5	3	1	1562	1665	5.64	4.59	817	892	745	773	09:00-10:00
10:00-11:00	555	53	720	17	0	4	55	98	11	21	26	18	0	10	5	1	7	2	5	1608	1648	5.81	4.54	904	930	704	718	10:00-11:00
11:00-12:00	566	45	718	19	0	2	70	102	12	18	27	24	0	20	7	2	6	3	6	1649	1745	5.96	4.81	893	963	756	782	11:00-12:00
12:00-13:00	555	45	646	18	0	1	72	96	7	20	25	22	0	17	6	1	6	3	2	1542	1642	5.57	4.53	774	824	767	817	12:00-13:00
13:00-14:00	533	50	662	17	0	3	81	93	6	16	28	27	0	48	7	1	6	3	1	1581	1691	5.71	4.66	738	805	843	886	13:00-14:00
14:00-15:00	525	44	567	14	0	3	79	92	8	17	26	26	0	14	4	0	6	3	8	1434	1605	5.18	4.43	653	725	780	880	14:00-15:00
15:00-16:00	573	42	584	15	0	3	73	102	8	20	28	22	0	18	7	1	8	2	1	1507	1651	5.45	4.55	673	757	834	894	15:00-16:00
16:00-17:00	598	39	619	12	1	4	67	92	9	23	34	20	0	15	6	1	7	2	1	1551	1687	5.60	4.65	719	789	833	898	16:00-17:00
17:00-18:00	612	48	656	14	0	6	70	102	9	23	33	21	0	20	8	1	7	2	1	1634	1765	5.90	4.87	753	805	881	960	17:00-18:00
18:00-19:00	602	43	543	12	0	5	54	104	9	28	37	21	0	23	3	1	6	1	1	1493	1661	5.40	4.58	706	779	787	882	18:00-19:00
19:00-20:00	562	18	367	7	0	6	55	114	12	36	47	14	0	8	3	1	3	1	1	1255	1560	4.54	4.30	619	756	636	804	19:00-20:00
20:00-21:00	482	12	172	5	0	4	55	112	17	49	50	16	0	1	2	1	5	1	0	985	1438	3.56	3.97	457	630	527	808	20:00-21:00
21:00-22:00	411	6	111	4	0	3	59	130	19	59	54	14	0	1	0	0	5	1	0	878	1404	3.17	3.87	417	599	462	805	21:00-22:00
22:00-23:00	385	3	70	3	0	3	68	151	26	65	74	15	0	0	0	0	3	1	1	869	1545	3.14	4.26	412	638	457	908	22:00-23:00
23:00-24:00	327	5	40	3	0	3	88	161	24	57	71	15	0	0	0	0	3	1	0	799	1502	2.89	4.14	369	607	429	896	23:00-24:00
Grand Total	**10458**	**616**	**8388**	**220**	**3**	**88**	**1772**	**2810**	**346**	**908**	**1076**	**397**	**0**	**319**	**76**	**14**	**116**	**38**	**30**	**27676**	**36260**	**100**	**100**	**13816**	**18082**	**13860**	**18178**	**Grand Total**
% Share	37.79	2.23	30.31	0.80	0.01	0.32	6.40	10.15	1.25	3.28	3.89	1.43	0.00	1.15	0.27	0.05	0.42	0.14	0.11	100		Directional Split:		49.9	49.9	50.1	50.1	**% Share**
PEAK CHARACTERISTICS																												
11:00-12:00	566	45	718	19	0	2	70	102	12	18	27	24	0	20	7	2	6	3	6	**1649**	**1745**	6.0	4.8	893	963	756	782	11:00-12:00
17:00-18:00	612	48	656	14	0	6	70	102	9	23	33	21	0	20	8	1	7	2	1	**1634**	**1765**	5.9	4.9	753	805	881	960	17:00-18:00





SALIENT FEATURES

Average Daily Traffic

Passenger Motor: 21,692 Vehs 78.4%

Goods Motorized: 5,575 Vehs 20.1%

Non Motorized: 409 Vehs 1.5%

Total ADT 27,676 Vehs 36,260 PCU

Total AADT 29,299 Vehs 39,309 PCU

Significant Peak Hour: 17:00-18:00

Peak Hour Traffic: 1,765 PCU 4.9%

Tollable Vehicles

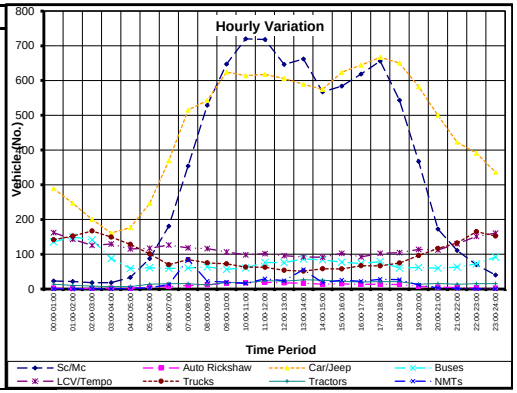
Car/Jeeps 11,074

LCV/Mini Buses 2,898

Truck/Buses 3,026

Multi-Axle Trucks 1,076

Oversized Vehicles



3.1.2 Tollable / Commercial Traffic

For the purpose of toll estimation and capacity assessment as per the concession agreement, only tollable traffic is considered. Table 3-9 and Table 3-10 show the ADT and AADT of tollable traffic on the toll plaza locations.

Table 3-9: ADT Tollable / Commercial Traffic

Vehicle Type		Location	
		NH-24 Hapur - Moradabad Section	
		Garh Km 090+661	Joya Km 123+875
Passenger Car		14548	10458
Taxi		424	616
Minibus		131	88
Standard Bus		2094	1772
Tempo/ LCV		4141	2810
2-Axle Truck		487	346
3-Axle Truck		1240	908
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)		1555	1076
Oversized Vehicle (>6 Axles)		0	0
Toll Exempted	Ambulance/ Police/ Military/ VIP Car	128	116
	Police/ Military/ Cemetry Bus	35	38
	Police/ Military Truck	23	30
Total	**Vehicle**	24805	18259
	PCU	40141	29662
Tolled Traffic	**Vehicle**	**24619**	**18075**
	PCU	**39840**	**29343**
Toll Exempted	**Vehicle**	**186**	**184**
	PCU	**301**	**319**

Table 3-10: AADT Tollable / Commercial Traffic

Vehicle Type		Location	
		NH-24 Hapur - Moradabad Section	
		Garh Km 090+661	Joya Km 123+875
Passenger Car		15029	10804
Taxi		476	692
Minibus		147	99
Standard Bus		2353	1991
Tempo/ LCV		4653	3158
2-Axle Truck		548	389
3-Axle Truck		1394	1020
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)		1747	1209
Oversized Vehicle (>6 Axles)		0	0
Toll Exempted	Ambulance/ Police/ Military/ VIP Car	128	116
	Police/ Military/ Cemetry Bus	35	38
	Police/ Military Truck	23	30
Total	**Vehicle**	26532	19547
	PCU	43750	32344
Tolled Traffic	**Vehicle**	**26346**	**19363**
	PCU	**43450**	**32025**
Toll Exempted	**Vehicle**	**186**	**184**
	PCU	**301**	**319**

3.1.2.1 Special Event

There was a call for Bharat Bandh on the 10th of September by the opposition parties. The ADT was analyzed and compared for the total 7 day survey duration and 5 day period excluding the period of Bharat Bandh and time just before and after that. Table 3-11 shows the variation between the 7 day and 5 day average traffic.

Table 3-11: Comparison of 7 day and 5 day Average Daily Traffic

Vehicle Type		NH-24 Hapur - Moradabad Section					
		Garh Km 090+661			Joya Km 123+875		
		7 Day ADT	5 Day ADT	Var %	7 Day ADT	5 Day ADT	Var %
Passenger Car		14548	15006	3.1%	10458	10668	2.0%
Taxi		424	435	2.6%	616	612	-0.7%
Minibus		131	139	6.2%	88	96	9.1%
Standard Bus		2094	2126	1.5%	1772	1789	1.0%
Tempo/ LCV		4141	4252	2.7%	2810	2879	2.4%
2-Axle Truck		487	496	1.7%	346	358	3.5%
3-Axle Truck		1240	1250	0.8%	908	910	0.2%
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)		1555	1586	2.0%	1076	1116	3.7%
Oversized Vehicle (>6 Axles)		0	0		0	0	
Toll Exempted	Ambulance/ Police/ Military/ VIP Car	128	117	-8.3%	116	108	-6.4%
	Police/ Military/ Cemetry Bus	35	36	4.3%	38	37	-1.4%
	Police/ Military Truck	23	16	-29.1%	30	19	-35.3%
Total	**Vehicle**	24805	25459	2.6%	18259	18594	1.8%
	PCU	40141	41054	2.3%	29662	30216	1.9%
Tolled Traffic	**Vehicle**	**24619**	**25289**	**2.7%**	**18075**	**18429**	**2.0%**
	PCU	**39840**	**40779**	**2.4%**	**29343**	**29938**	**2.0%**
Toll Exempted	**Vehicle**	**186**	**170**	**-8.5%**	**184**	**165**	**-10.1%**
	PCU	**301**	**275**	**-8.7%**	**319**	**278**	**-12.8%**

In order to exclude the impact of the Bharat Bandh, the AADT based on 5 day average traffic has been projected and used for toll revenue estimation.

3.1.3 Daily Variation

The daily variation of traffic over the survey duration has been studied. Daily variation of traffic during different days of week in terms of Vehicles and PCUs for each of the locations has been illustrated in Figure 3-1 and Figure 3-2. Sunday is the day of highest traffic at Garh location, while at Joya there is little daily variation in traffic.

Figure 3-1: Daily Variation at Garh Km 090+661 (Vehicles and PCU's)

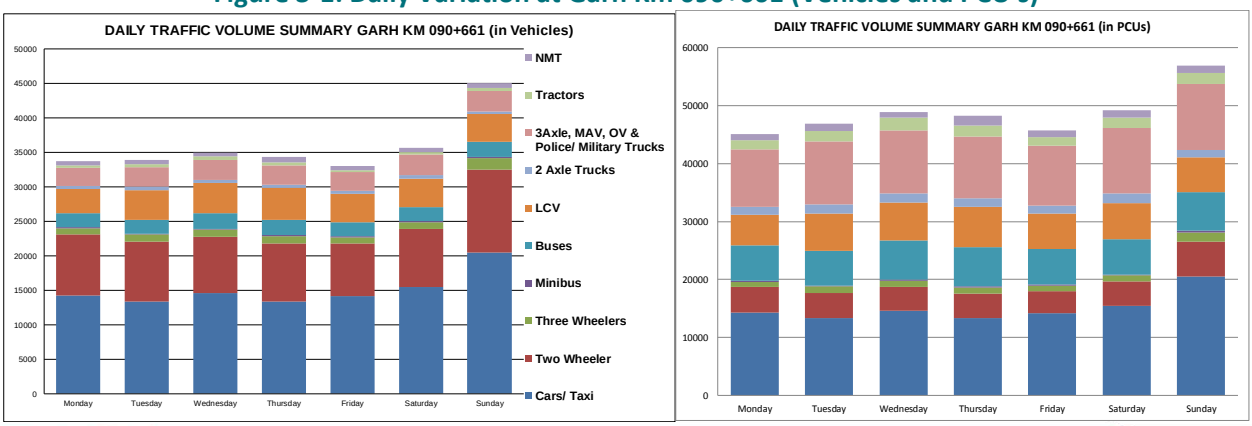
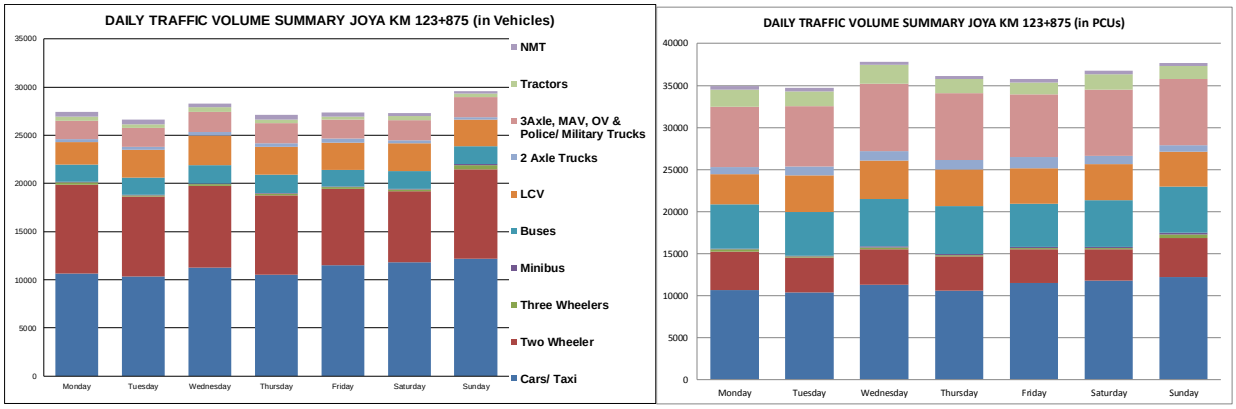


Figure 3-2: Daily Variation at Joya Km 123+875 (Vehicles and PCU's)



3.1.4 Hourly Variation and Peak Hour Factor (PHF)

The hourly variation of traffic illustrates the distribution of traffic over the day with respect to time and the peak hour factor is the maximum percentage of the total traffic that uses the project highway in one single hour of the day. It is of significance as highway capacities and design calculations are based on peak hour factor. The peak hour factors observed at the count locations is summarized in Table 3-12 and has been illustrated pictorially in Figure 3-3.

Table 3-12: Peak Hour Traffic at Toll Plaza Locations

Survey Location	Morning Peak duration	Peak Hour Flow		Evening Peak duration	Peak Hour Flow	
		PCUs	Peak hour share (%)		PCUs	Peak hour share (%)
Garh Km 090+661	07:00-08:00	2297	4.7	16:00-17:00	2395	4.9
Joya Km 123+875	11:00-12:00	1745	4.8	17:00-18:00	1765	4.9

It is observed that the morning peak hour at Garh Km 090+661 is between 07:00-08:00 hours. The evening peak occurs during 16:00-17:00 hours at same location. While there isn't much variation between the morning and evening peaks the evening peak is slightly more prominent. The morning peak at Joya Km 123+875 location is 11:00-12:00 hours while the evening peak at 17:00-18:00 hours with very little variation between the two in terms of traffic.

Figure 3-3 and Figure 3-4 show the intraday variation of traffic at the survey locations. It is apparent that the traffic flow persists at similar intensity (PCU terms) throughout the day with a major dip during wee hours of the morning.

Figure 3-3: Hourly Variation of Traffic at Garh Km 090+661 (Vehicles and PCUs)

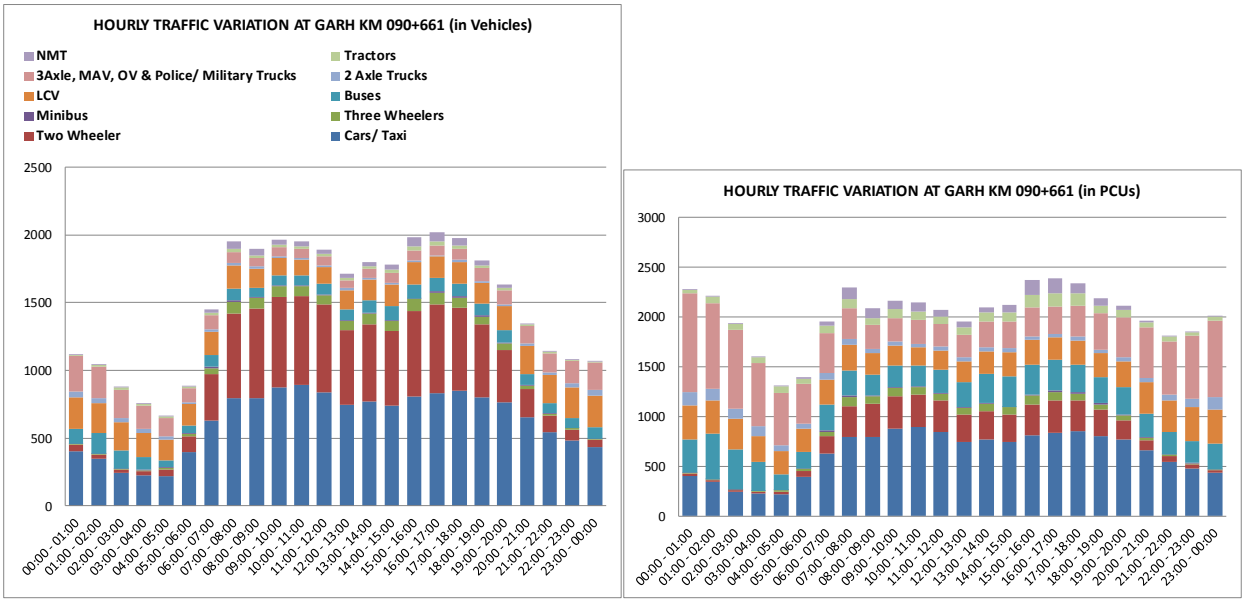
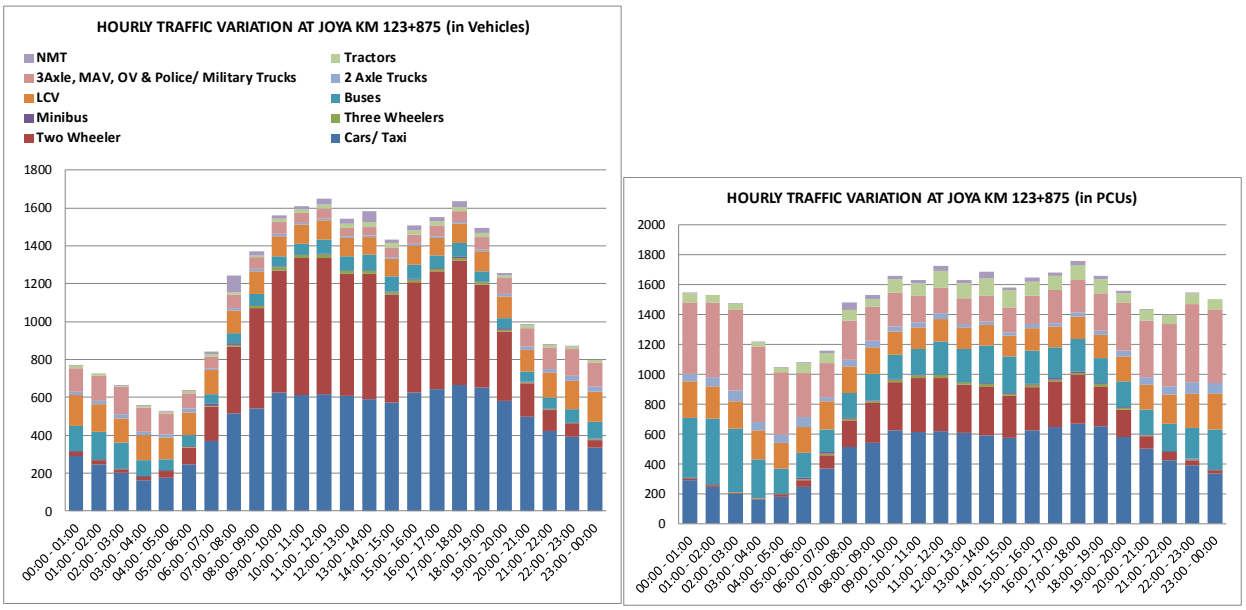


Figure 3-4: Hourly Variation of Traffic Variation at Joya Km 123+875 (Vehicles and PCUs)



3.1.5 Directional Distribution

The directional traffic data was analyzed to establish the directional distribution of traffic. The observed variation of directional traffic in terms of percentage is presented in the Table 3-13.

Table 3-13: Directional Distribution Share

S No.	Location	Directional Distribution (%) in PCU	
		Hapur To Moradabad (UP)	Moradabad To Hapur (DN)
1	Garh Km 090+661	48.7%	51.3%
2	Joya Km 123+875	49.9%	50.1%

The directional traffic distribution is almost equal.

3.1.6 Traffic Composition

The traffic composition on the project corridor has been analyzed to derive the vehicle mode which travels on the project corridor and the travel pattern. The composition of traffic as observed at survey location on the project corridor is presented in Figure 3-5.

The share of freight traffic at the Garh Km 090+661 survey location is about 22% in vehicles but over 42% in PCU terms, while at Joya Km 123+875 it is 20% and 41% respectively.

Figure 3-5: Composition of Traffic at Garh Km 090+661

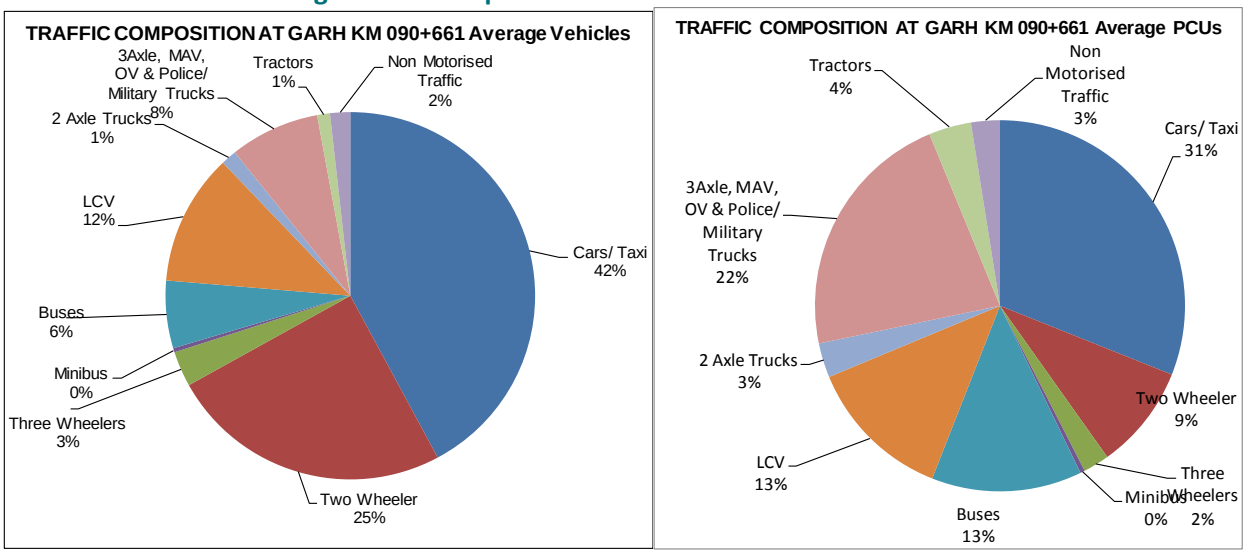
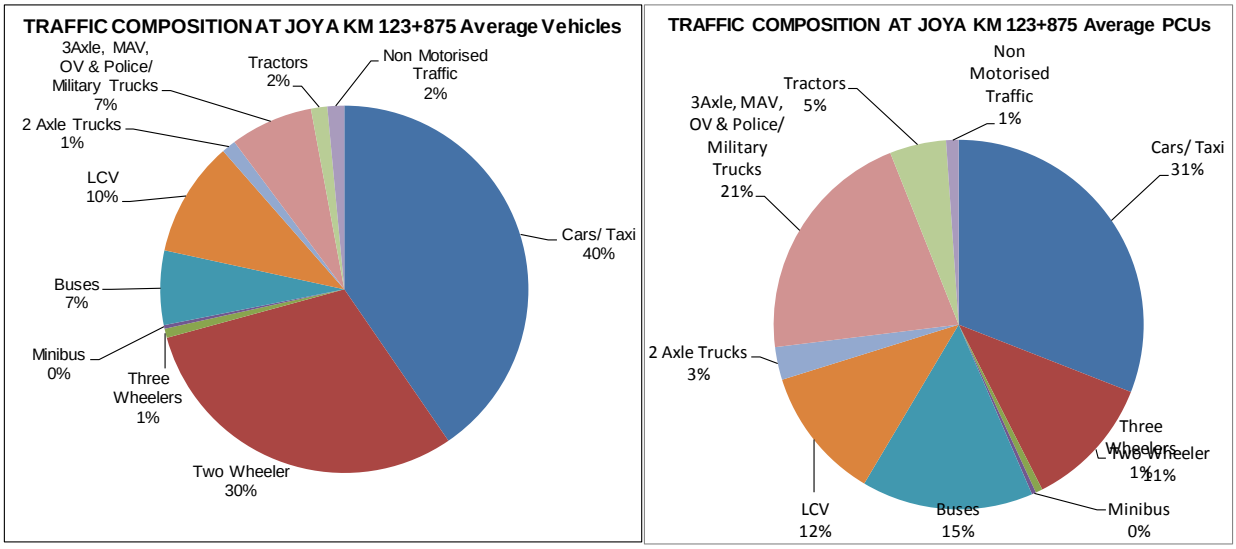


Figure 3-6: Composition of Traffic at Joya Km 123+875



4 TRAVEL CHARACTERISTICS

To estimate travel characteristics in the region and the tollable traffic streams, Origin & Destination (O-D) survey at two locations on the project corridor was carried out for 24 hours respectively. Both passenger and commercial vehicles plying on the project corridor were stopped on a random sampling basis and interviewed. Along with the OD survey, volume count survey has been carried out at both locations to observe the sample size.

The travel characteristics obtained by O-D survey facilitate the identification of:

- Travel Characteristics and Commodity Movement Pattern
- Growth Potential of traffic along the project corridor
- Local and through traffic on the project corridor.
- The tollable traffic on the project corridor.

Travel characteristics like origin, destination and frequency of trip collected for passenger vehicles. For goods vehicles, the survey elicited characteristics like origin, destination, frequency and commodity being transported. The collected data was analyzed to obtain the trip distribution based on a zoning system suitably designed for the present study. Additional information regarding the district registration number and national permit was also collected for determining the toll concessions.

4.1 SAMPLE SIZE

The vehicles during the OD surveys were interviewed on a random sample basis. The traffic volume count and the sample size (both in absolute numbers and in percentage terms) captured at the survey locations on the project corridor is given in Table 4-1

Table 4-1: O-D Survey Sample Size

Location		Passenger Car	Taxi	Minibus	Standard Bus	Tempo/ LCV	2-Axle Truck	3-Axle Truck	Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)
Garh Km 090+661	Average Traffic	14548	424	131	2094	4141	487	1240	1555
	Average Sample	1006	91	42	437	441	141	153	175
	Sample %	6.9	21.4	31.7	20.9	10.6	28.8	12.3	11.3
Joya Km 123+875	Average Traffic	10458	616	88	1772	2810	346	908	1076
	Average Sample	907	118	30	210	280	161	151	183
	Sample %	8.7	19.1	33.5	11.9	10.0	46.5	16.6	17.0

4.2 ZONING SYSTEM

The zoning system has been defined by district level at the first stage and states at the second level. The project corridor lies within three districts namely Hapur (Previously part of Ghaziabad), Jyotiba Phule Nagar (Amroha) and Moradabad in Uttar Pradesh. With a view to understand the distribution of trips, all the

districts in Uttar Pradesh have been assigned separate zone codes. The remaining states excluding Uttar Pradesh have been taken as zones and assigned separate codes. Nepal has also been assigned a separate zone code as traffic has been observed during the OD surveys. In all, total 54 traffic zones were considered for the analysis of travel pattern on the project corridor.

The traffic zones considered for travel analysis is listed in Table 4-2.

Table 4-2: Traffic Zones for O-D Analysis

Zone No	Zone Name	Zone No	Zone Name
104000	Assam	134565	Uttar Pradesh-Agra
105000	Bihar	134566	Uttar Pradesh-Aligarh
107000	Chhattisgarh	134571	Uttar Pradesh-Baghpat
110000	Delhi	134572	Uttar Pradesh-Bahraich
112000	Gujarat	134574	Uttar Pradesh-Balrampur
113000	Haryana	134576	Uttar Pradesh-Barabanki
114000	Himachal Pradesh	134577	Uttar Pradesh-Bareilly
115000	Jammu and Kashmir	134580	Uttar Pradesh-Bijnor
116000	Jharkhand	134581	Uttar Pradesh-Budaun
117000	Karnataka	134582	Uttar Pradesh-Bulandshahr
120000	Madhya Pradesh	134585	Uttar Pradesh-Chitrakoot
121000	Maharashtra	134586	Uttar Pradesh-Deoria
125000	Nagaland	134593	Uttar Pradesh-Gautam Buddha Nagar
126000	Odisha	134594	Uttar Pradesh-Ghaziabad
128000	Punjab	134595	Uttar Pradesh-Ghazipur
129000	Rajasthan	134597	Uttar Pradesh-Gorakhpur
131000	Tamil Nadu	134604	Uttar Pradesh-Jyotiba Phule Nagar (J.P. Nagar)
132000	Telangana	134607	Uttar Pradesh-Kanpur Nagar
133000	Tripura	134608	Uttar Pradesh-Kanshiram Nagar (Kasganj)
134639	Uttar Pradesh-Varanasi	134610	Uttar Pradesh-Kushinagar (Padrauna)
135000	Uttarakhand	134611	Uttar Pradesh-Lakhimpur - Kheri
136000	West Bengal	134613	Uttar Pradesh-Lucknow
291000	Nepal	134616	Uttar Pradesh-Mainpuri
		134617	Uttar Pradesh-Mathura
		134619	Uttar Pradesh-Meerut
		134621	Uttar Pradesh-Moradabad
		134622	Uttar Pradesh-Muzaffarnagar
		134624	Uttar Pradesh-Pilibhit
		134628	Uttar Pradesh-Rampur
		134629	Uttar Pradesh-Saharanpur
		134634	Uttar Pradesh-Siddharth Nagar
		134637	Uttar Pradesh-Sultanpur

4.3 COMMODITY CLASSIFICATION

The commodities being transported were classified into 13 categories and used during the O-D survey for recording the type of commodity. The commodity has been classified with emphasis to include all possible commodities and categorize them into homogeneous groups. The list of classified commodities is given in Table 4-3

Table 4-3: Classification of Commodities

Code	Commodity Type
1	Food Item/ Fruit/ Vegetable/ Dairy/ Meat (Raw/ Processed)
2	Cotton or Synthetic Yarn/ Fibre/ Textile/ Garment/ Handicraft/ Leather
3	Petroleum Product/ HSD/ Petrol
4	Iron & Steel (Aluminum or Metal) Rod/ Bar/ Sheet
5	Mineral and Ore
6	Coke/ Coal
7	Automobile/ Machine & Auto Spare Part
8	Rubber/ Plastic/ Tyre
9	Chemical/ Fertilizer/ Pharmaceutical Product
10	Building Material/ Cement/ Timber
11	Electronic/ Computer/ Electrical Appliance
12	Empty
13	Others

4.4 EXPANSION FACTORS

The origin-destination details were collected from the trip makers during the O-D survey on sample basis by stopping and interviewing the fast-moving vehicles. The sample size varied for different survey locations depending upon the quantum of traffic volume moving on the road. Sampling rate varied with the changes in traffic flow during different parts of the day at the same location as well. Care has been taken to eliminate any element of bias in the sampling method. Since the data was collected on the sample basis, expansion factors are required to replicate the pattern as reflected in the sample to the total number of vehicular trips made during the day. These expansion factors are calculated separately for each class of vehicle. For Example if “xc “ is the number of cars interviewed and “Xc“ is the total number of cars counted during the day, then “Xc/xc“ would be the expansion factor for Cars.

OD Matrices are developed to assess the traffic movement pattern. These matrices actually provide distribution of trips for each zone as various inter-zonal movements. The vehicle wise O-D matrices for each survey locations are developed by multiplying the sample O-D matrix obtained from the survey data with the expansion factor. On the basis of O-D matrices, travel pattern of the vehicles moving on the project corridor is discussed below.

4.5 TRAVEL DESIRE PATTERN

The origins and destinations of various types of vehicles observed at the O-D survey locations have been analyzed for O-D matrices as per the zoning system presented above.

The following tables present Zone Influence Factors (ZIF) for understanding of trip generation in the PIA. ZIF has been defined as:

$$ZIFi = \frac{Oi + Di}{2\sum_{k=1}^{n}(Ok + Dk)}$$

Where,

ZIF_i is the Zone Influence Factor of Zone i

O_i is the number of trip productions at Zone i

D_i is the number of trip attractions at Zone i

N is set of zones

A detailed analysis of the travel characteristics reveals that the most significant traffic generating location for the corridor are Delhi, Hapur, Ghaziabad, Moradabad, Jyotiba Phule Nagar (Amroha), Gautam Buddha Nagar (Noida), Bareilly and Meerut in the immediate project vicinity and Haryana, Uttarakhand and Bihar in the surrounding region. The project influence area is presented in Table 4-4.

Table 4-4: Project Influence Area (%)

Zone Name	Cars	Buses	Trucks	Total
Delhi	21.4	32.9	17.9	21.48
Uttar Pradesh-Moradabad	22.8	17.3	20.2	21.42
Uttar Pradesh-Ghaziabad	13.1	9.6	11.7	12.30
Bihar	9.2	7.8	6.8	8.31
Uttar Pradesh-Jyotiba Phule Nagar (J.P. Nagar)	8.8	3.9	8.2	8.12
Uttar Pradesh-Bareilly	5.8	8.9	4.9	5.83
Uttar Pradesh-Meerut	2.8	0.7	7.0	3.85
Uttarakhand	2.3	4.5	1.9	2.41
Haryana	1.5	1.1	4.0	2.21
Madhya Pradesh	2.4	2.2	0.0	1.64
Rajasthan	1.4	1.1	1.4	1.37
Uttar Pradesh-Deoria	0.8	1.5	2.1	1.30
Punjab	1.2	0.2	1.8	1.29
Odisha	0.5	1.2	1.6	0.95
Uttar Pradesh-Bulandshahr	0.9	0.7	0.7	0.85
Chhattisgarh	0.6	0.8	1.0	0.76
Uttar Pradesh-Gautam Buddha Nagar	0.6	0.3	1.1	0.75
Uttar Pradesh-Pilibhit	0.5	1.4	0.7	0.66
Uttar Pradesh-Bijnor	0.6	0.5	0.5	0.55
Uttar Pradesh-Ghazipur	0.3	0.1	0.5	0.35
West Bengal	0.1	0.2	0.6	0.29
Total (21 Highest Traffic Zones)	**76.2**	**64.1**	**76.9**	**75.2**

4.6 PASSENGER TRIP CHARACTERISTICS

The trip characteristics of passenger vehicles is discussed below

4.6.1 Trip Frequency

The trip frequency distribution of different mode of passenger vehicles plying on the project corridor has been analyzed and the average trip frequency distribution of each mode of passenger vehicle plying on the corridor is presented in Table 4-5**.** It can be seen that regular but non-daily travelers contribute the maximum trip frequency across both locations for passenger vehicles along with significantly high percentage of daily travelers.

Table 4-5: Average Passenger Trip Frequency Distribution (%)

Location	2,3 Times a Day	Daily	2,3 Times a week	Weekly	Occasionally	Total
Garh Km 090+661						
Passenger Car	0.7	13.6	50.2	20.6	14.9	**100**
Taxi	1.0	12.0	41.6	20.8	24.6	**100**
Joya Km 123+875						
Passenger Car	3.6	21.6	30.5	27.4	17.0	**100**
Taxi	9.9	15.9	41.7	21.1	11.4	**100**

4.6.2 Purpose of Trips

The purpose of trips carried out by passenger vehicles and passengers at location is presented in Table 4-6. Maximum trips were observed for work/ business followed by education, social and other purpose trips.

Table 4-6: Distribution of Trips by Purpose (%)

Location	Work/ Business	Education	Social/ Recreation	Shopping	Health	Return	Others	Total
Garh Km 090+661								
Vehicles	47.6	31.1	11.8	3.0	0.2	0.3	6.0	**100**
Passengers	45.9	31.5	13.2	3.2	0.3	0.3	5.6	**100**
Joya Km 123+875								
Vehicles	40.2	14.6	11.1	6.2	2.7	6.2	19.1	**100**
Passengers	42.7	16.1	10.0	5.2	2.4	5.3	18.3	**100**

4.6.3 Occupancy Analysis

The occupancy of passenger vehicles was analyzed. The average occupancy by vehicle mode at said location has been presented in Table 4-7.

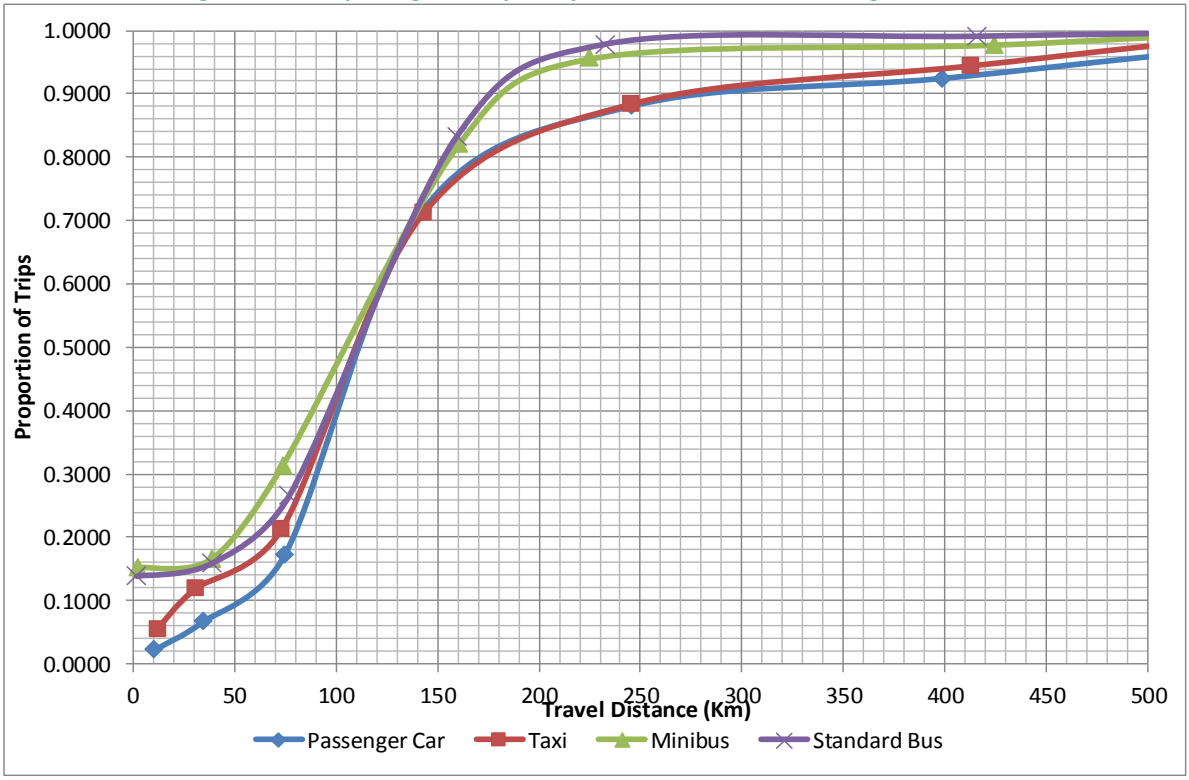
Table 4-7: Average Occupancy

Mode	Passenger Car	Taxi	Minibus	Standard Bus
Garh Km 090+661	3.6	3.9	28.9	35.2
Joya Km 123+875	3.7	5.0	24.9	38.9

4.6.4 Lead Analysis

The lead distribution for passenger vehicles was analyzed and the trip length frequency distribution is shown in Figure 4-1. A majority of trips is greater than 100Km in length. Over 25% of car and taxi trips are longer than 150Km and a significant proportion of buses having a range of over 150Km.

Figure 4-1: Trip Length Frequency Distribution for Passenger Vehicles



4.7 FREIGHT TRIP CHARACTERISTICS

The trip characteristics of goods vehicles are discussed below.

4.7.1 Trip Frequency

The average trip frequency distribution of each mode of goods vehicles plying on the corridor is presented in Table 4-8**.** It can be clearly seen maximum trip frequency is weekly and occasional journeys.

Table 4-8; Average Freight Trip Frequency Distribution (%)

Location	2,3 Times a Day	Daily	2,3 Times a week	Weekly	Occasionally	Total
Garh Km 090+661						
Tempo/ LCV	0.7	21.9	33.5	34.0	10.0	**100**
2-Axle Truck	0.0	24.5	37.7	30.3	7.6	**100**
3-Axle Truck	1.6	11.7	38.2	30.7	17.7	**100**
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	1.8	15.2	27.4	35.4	20.2	**100**
Joya Km 123+875						
Tempo/ LCV	4.2	41.6	32.0	9.2	13.0	**100**
2-Axle Truck	0.3	42.2	29.3	15.3	12.8	**100**
3-Axle Truck	0.0	22.2	36.8	19.2	21.9	**100**
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	0.6	16.9	19.6	27.8	35.1	**100**

4.7.2 Commodity Analysis

During the O-D surveys, information of goods pertaining to commodity and tonnage were recorded along with the origin and destination details. The information was analyzed to assess the kind of goods movement on the project corridor. The commodity wise goods movement pattern at all locations across different vehicle categories in terms of percent share has been presented in Table 4-9.

Table 4-9: Commodity Wise Goods Movement Pattern (%)

Commodity Tyoe	Food Item/ Fruit/ Vegetable/ Dairy/ Meat (Raw/ Processed)	Cotton or Synthetic Yarn/ Fibre/ Textile/ Garment/ Handicraft/ Leather	Petroleum Product/ HSD/ Petrol	Iron & Steel (Aluminum or Metal) Rod/ Bar/ Sheet	Mineral and Ore	Coke/ Coal	Automobile/ Machine & Auto Spare Part	Rubber/ Plastic/ Tyre	Chemical/ Fertilizer/ Pharmaceutical Product	Building Material/ Cement/ Timber	Electronic/ Computer/ Electrical Appliance	Empty	Others
Garh Km 090+661													
Tempo/ LCV	21.17	2.04	4.20	4.99	0.11	0.00	1.70	0.57	1.81	3.97	0.00	37.42	22.02
2-Axle Truck	19.62	2.83	3.87	3.89	0.00	0.00	3.59	1.08	0.73	6.48	0.00	43.88	14.04
3-Axle Truck	26.34	3.76	3.48	7.08	0.00	0.56	2.46	0.56	1.35	5.08	0.00	28.62	20.74
Multi Axle Vehicle/ HCM (4 to 6 Axles)	26.05	1.15	6.89	6.40	0.32	0.51	2.56	0.51	4.95	4.79	0.00	35.71	10.16
Joya Km 123+875													
Tempo/ LCV	20.47	3.00	1.74	6.15	0.00	0.37	4.68	1.60	1.38	1.75	1.38	12.26	45.22
2-Axle Truck	28.62	4.95	0.58	6.54	0.00	0.58	5.24	0.58	1.78	3.13	0.58	17.95	29.47
3-Axle Truck	30.10	4.04	1.90	6.81	0.00	0.00	7.68	1.19	2.54	4.52	0.48	22.20	18.54
Multi Axle Vehicle/ HCM (4 to 6 Axles)	22.28	2.44	4.27	9.16	0.00	0.23	8.70	0.92	1.60	7.55	0.00	18.79	24.06

The major commodities plying on the project corridor were observed to be food items, petroleum products and building material. The other main commodities transported are mineral ores and textiles. The share of empty vehicles has been observed to be significantly high.

4.7.3 Load Analysis

The distribution of load among various goods vehicles observed at each location is presented in the Table 4-10.

Table 4-10: Load Distribution Pattern (%)

Load Range (Tonnes) / Location	Empty	Less than 2	2 - 4	4 - 6	6 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 45	Greater than 45	Total
Garh Km 090+661												
Tempo/ LCV	37.4	12.1	22.3	16.5	11.7	0.0	0.0	0.0	0.0	0.0	0.0	100.0
2-Axle Truck	43.9	0.0	0.0	7.5	16.7	17.1	13.5	1.4	0.0	0.0	0.0	100.0
3-Axle Truck	28.6	0.0	0.0	0.0	11.6	25.9	24.4	4.7	4.7	0.0	0.0	100.0
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	35.7	0.0	0.0	0.0	2.6	14.8	25.5	10.7	6.1	4.0	0.6	100.0
Joya Km 123+875												
Tempo/ LCV	12.3	23.8	26.3	22.1	15.5	0.0	0.0	0.0	0.0	0.0	0.0	100.0
2-Axle Truck	17.9	0.0	0.0	15.1	22.1	29.9	11.6	3.4	0.0	0.0	0.0	100.0
3-Axle Truck	22.2	0.0	0.0	0.0	12.4	32.8	23.5	6.6	2.5	0.0	0.0	100.0
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	18.8	0.0	0.0	1.9	5.6	13.1	16.9	15.2	6.7	20.0	2.0	100.0

The analysis of reported loading pattern indicates that the load range of LCV is up to about 10 tonnes, 2-Axle trucks carries load ranges up to 25 tonnes and 3-Axle truck carries load ranges upto 30 tonnes. It has been also observed that MAV has varying load distribution ranging upto 45 tonnes. The percentage of overloading reported is relatively insignificant.

The average load carried by freight vehicles on the project corridor is presented in Table 4-11. The average load for freight vehicles vary for all loaded vehicles and for loaded including empty vehicles as the share of share of empty vehicles is significant.

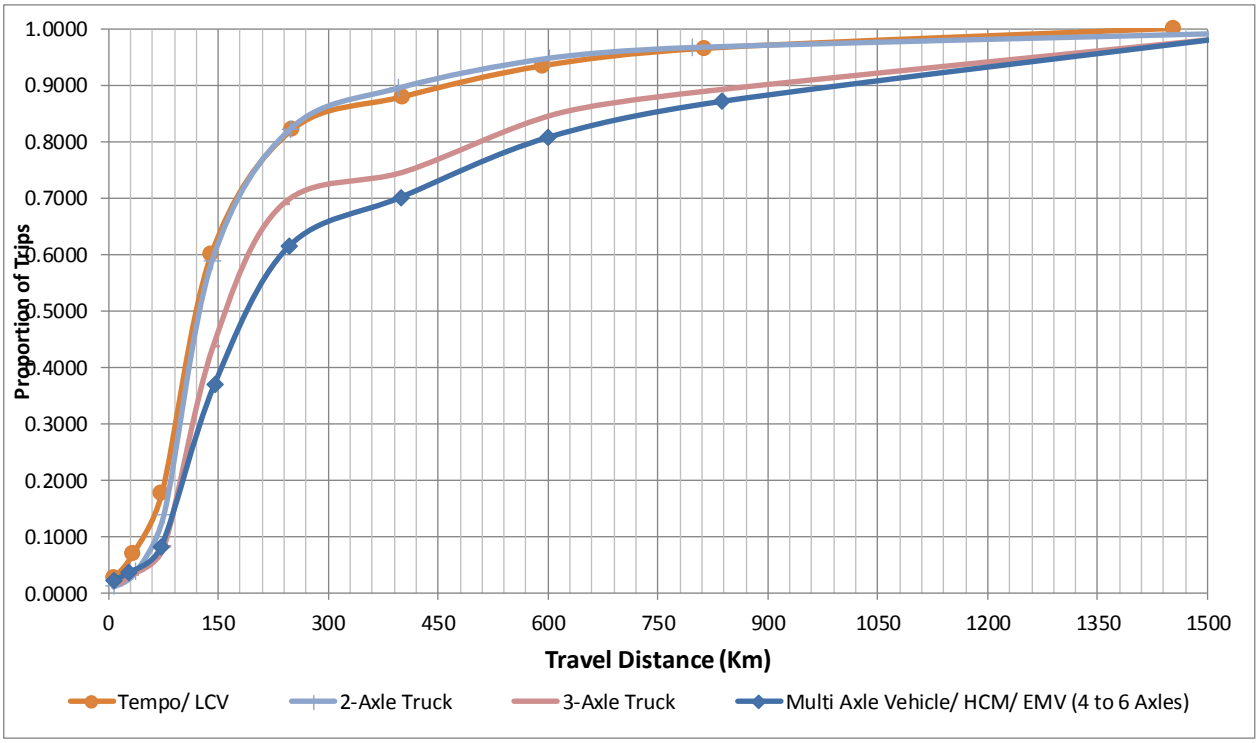
Table 4-11: Average Loading

Mode	Garh Km 090+661		Joya Km 123+875	
	including Empty Vehicles	excluding Empty Vehicles	including Empty Vehicles	excluding Empty Vehicles
Tempo/ LCV	3.0	4.7	3.9	4.4
2-Axle Truck	7.0	12.5	9.9	12.0
3-Axle Truck	11.7	16.4	12.4	15.9
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	13.6	21.1	19.8	24.4

4.7.4 Lead Analysis

The lead distribution for goods vehicles at each location in percentage terms has been analyzed and the trip length frequency distribution for goods vehicles is given in Figure 4-2. A significant majority of trips is long distance with median trip lengths being approximately 120Km for LCV and 2Axle, while that of MAVs and 3 Axle trucks being about 165 and 190 Km respectively.

Figure 4-2: Trip Length Frequency distribution for Goods Vehicles



5 SURROUNDING ROAD NETWORK & DEVELOPMENT POTENTIAL

5.1 NETWORK APPRECIATION

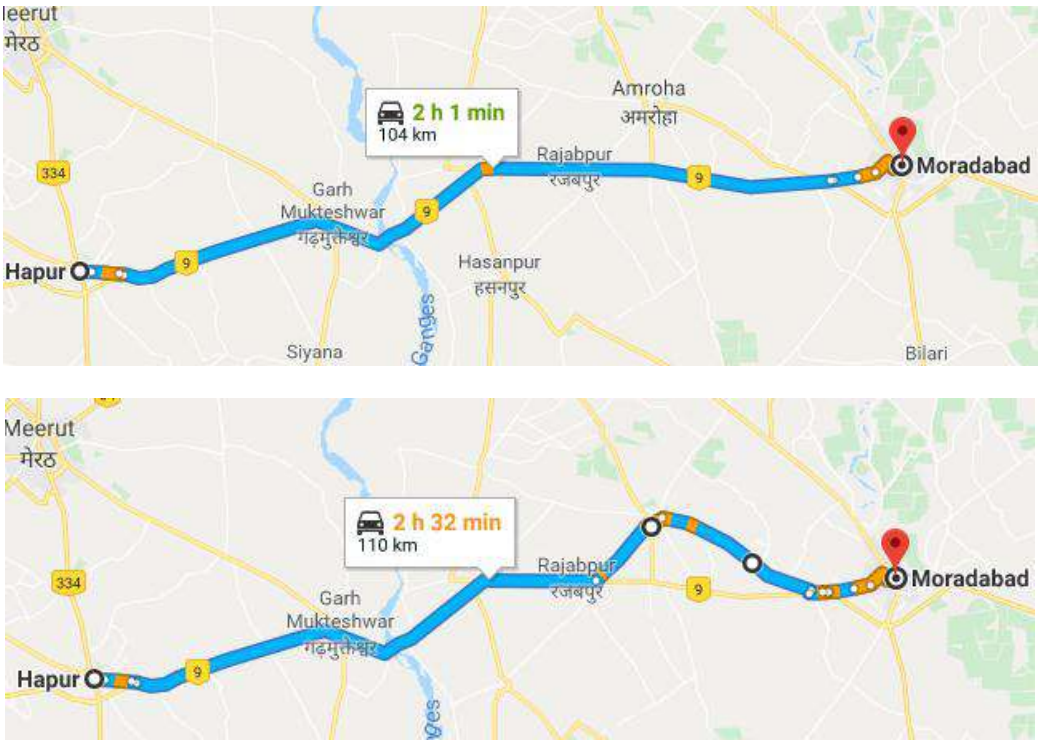
The network study is undertaken to assess the potential for traffic diversion. Typically traffic diversions are expected when toll are newly introduced on a section or if a significant change is created in the network due to the project under consideration. Since the project is an existing toll road, diversions if any would have already taken place and as such there is little possibility of further diversions.

The connecting link of the project highway section to the national capital is presently under development. Delhi-Hapur section is being developed to 8 lane expressway. Beyond Moradabad the highway is 4 laned.

5.1.1 Local Alternative Routes

The local network in the project influence area is shown in Figure 5-1. There is a 6 Km longer route from Hapur to Moradabad via Amroha following the Hasanpur - Amroha Road and SH78. However, considering that the alternative route passes through heavily built-up settlements and has little scope for improvement, it is not considered a practical alternate route now and much less after the project road is upgraded.

Figure 5-1: Local Network in Project Influence Area

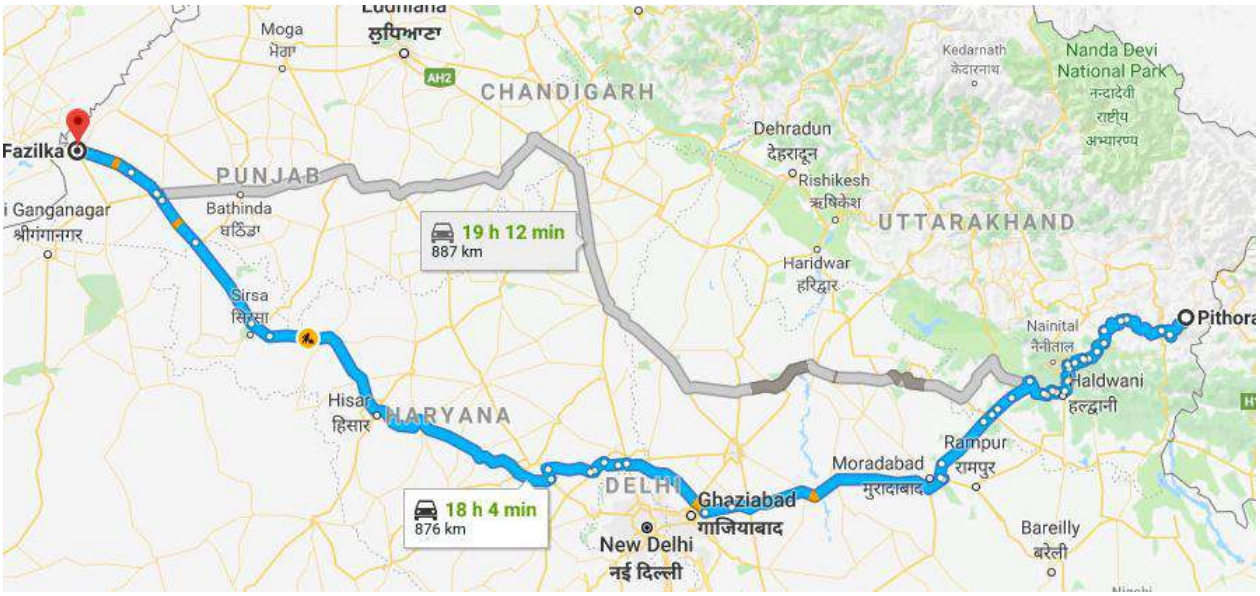


5.1.2 Regional Alternative Routes

The project road is the section of NH-24 (new NH-9) which connects the Fazilka in Punjab to the Pithoragarh in Uttarakhand, as well as connects several important cities in five states in North India (from west towards

east): Malout, Sirsa, Hisar, Rohtak, Bahadurgarh, Delhi, Ghaziabad, Hapur, Moradabad, Rampur, Rudrapur, Sitarganj, Khatima, Pithoragarh, Ogla, Askot. A combination of NH-7 till Rajpura (Punjab), NH-709A till Shamli, NH-34 till Bijnor, NH-734 till Kashipur and NH-309 till Kaladungi serves as an alternative. However, due to increasing congestion and development on this route, and further capacity augmentation on NH-9, the future traffic growth on the project road section is expected to remain high. Also, with operationalizing of Eastern Peripheral Expressway the project corridor is likely to be a better alternative even for the regional traffic. Figure 5-2 shows the Regional Network and Alternative Routes for the project corridor.

Figure 5-2: Regional Network and Alternative Routes



5.1.3 Diverted/ Induced Traffic

The diversion traffic potential from the project corridor is almost negligible as the existing traffic on the project corridor will tend to continue use of the improved facility. On the contrary growth spill, over from competing corridors may result in somewhat higher growth on the project corridor although it is not possible to assign a quantum of diversion in any specific year.

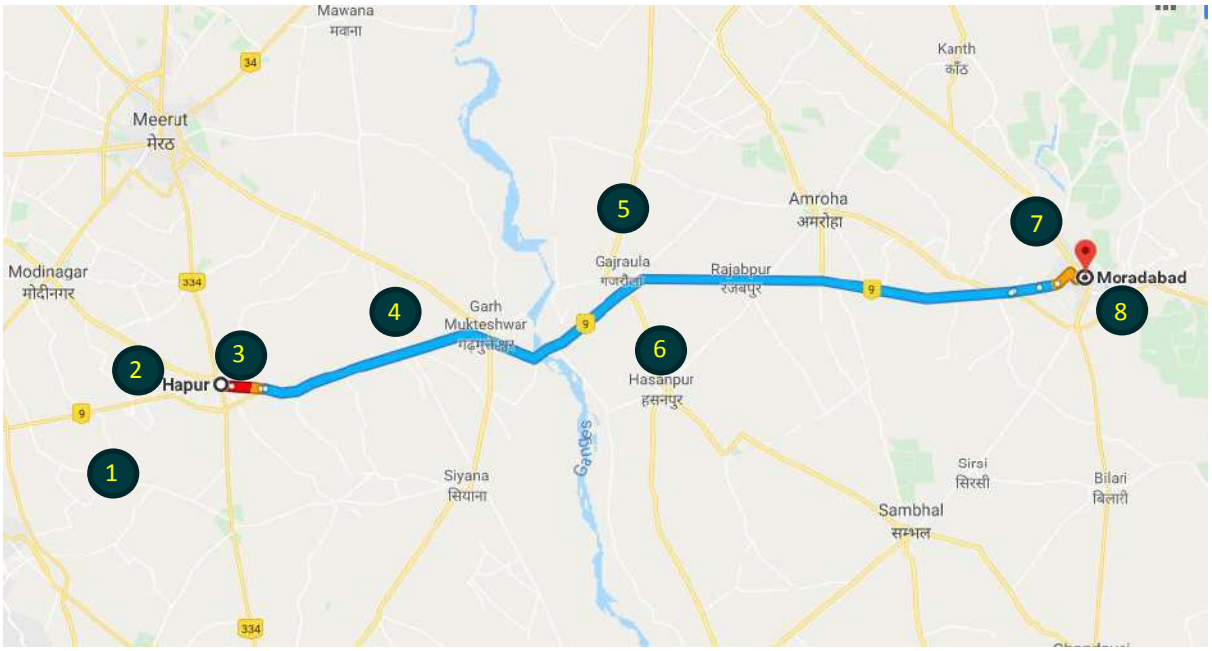
The corridor passes through heavily cultivated Gangetic plains and also connects the fertile Doaba regions of the Uttarakhand plains. Simbaoli, one of the largest and modern sugar refinery complexes falls right on the project corridor. Sugar refineries like this link agriculture, distillery, clean fuel technologies, green energy generation including cogeneration etc. which is a positive influence on this agriculturally righ region. Other parts of the capital region of Delhi are also experiencing rapid urbanization fueled by industrialization and growth. Thus induced traffic from these developments around the project corridor and due to the improved facility will be a positive contributing factor to the traffic growth on the project corridor.

5.1.4 Traffic Growth Outlook

This project section of the NH-24 (new NH-9) crosses three districts of Uttar Pradesh (Hapur, Amroha and Moradabad). There are about 1000 significant industrial units in these districts out of which there are 40 large Scale and 11 Medium Scale industries. Figure 5-3 shows the location of major industrial areas along

the project corridor followed by a list of the same. The major industrial base is dependent on agriculture and timber in the surrounding region. Being a sugarcane growing region, there are a number of sugar mills in the project catchment. Simbhawli Sugar mill is one of the largest integrated refinery producing sugar, ethanol and other related products.

Figure 5-3: Location of Major Industries in Project Influence Area



1. **Dhaolana** (Chetak enterprises, Spooner Industries Pvt. Ltd., Astech build product India Pvt. ltd.,
2. **Jindal Nagar, Hapur** (Marino Industries Jindal Nagar Hapur) – Large Scale Industry of Laminated Furnitures.
3. Medium Scale Industries in **Shakti Nagar, Hapur**
4. Sugar Mills (**Simbhawali** Sugar mills)
5. **Gajraula Industrial Area 1 & 2** (Paper & Sugar Mills, Food Products, Organic food Products)
6. Trivani Engineering & Industries Ltd., **Hasanpur** (Engineering Goods)
7. **Agwanpur** (Industries of Milk Powder, Ghee, Acrylic Fibre, Crystal Sugar, Craft Paper)
8. **Dalpatpur** (Moradabad Dugdh Utpadan Sahakari Sangh – Milk & Milk Products)

(Source: MSME – Hapur, Amroha, Moradabad)

Growth of Uttar Pradesh has been consistently below the national average economic growth, but it is the largest state in terms of population and consumption driven demand for goods and services will remain significantly high. The rate of growth of NSDP also seems to be catching up with the national average over the years. Other regions in the influence area states namely Delhi, Haryana and Uttarakhand are all growing significantly faster than the national average. Considering the scenario, it may be assumed that the traffic growth on the project highway would remain high and the growth risks would also be negligible.

Table 5-1: GDP of India and NSDP of Uttar Pradesh and other Influence Region States

Year	India (GDP)	Bihar	Haryana	Madhya Pradesh	Maharashtra	Punjab	Rajasthan	Uttar Pradesh	Uttarakhand	West Bengal	Chandigarh	Delhi
1980-81	12336	514	357	623	1464	504	560	1631	138	830	0	269
1981-82	13030	543	371	639	1498	551	607	1670	141	808	0	291
1982-83	13411	548	394	668	1556	568	620	1800	152	840	0	328
1983-84	14464	601	402	702	1654	578	761	1871	158	939	0	320
1984-85	15037	658	418	668	1675	623	706	1900	161	964	0	333
1985-86	15663	672	493	726	1807	670	704	1975	167	1005	0	386
1986-87	16339	725	493	694	1832	694	771	2060	174	1045	0	411
1987-88	16917	685	484	789	1955	730	718	2154	182	1101	0	447
1988-89	18635	772	602	847	2159	769	1014	2434	206	1148	0	486
1989-90	19778	759	610	865	2515	834	993	2502	212	1188	0	531
1990-91	20824	831	674	987	2629	849	1149	2651	224	1251	0	553
1991-92	21122	784	688	916	2620	888	1061	2662	225	1349	0	638
1992-93	22254	737	688	983	3017	930	1220	2690	228	1389	0	660
1993-94	23519	755	719	1088	3349	970	1121	2757	233	1490	37	705
1994-95	25023	842	771	1107	3414	995	1325	2901	254	1594	41	790
1995-96	26846	712	787	1174	3791	1032	1374	2995	251	1713	45	804
1996-97	28987	893	879	1252	3941	1107	1535	3327	267	1832	52	915
1997-98	30234	850	887	1318	4158	1137	1721	3292	270	1985	55	1063
1998-99	32255	904	934	1405	4324	1203	1797	3316	274	2112	60	1116
1999-00	34837	950	1002	1552	4735	1267	1801	3440	274	2264	64	1170
2000-01	36282	1106	1081	1426	4589	1309	1743	3511	308	2343	72	1215
2001-02	38236	1043	1165	1528	4751	1326	1941	3575	323	2512	78	1262
2002-03	39719	1175	1236	1449	5079	1348	1708	3690	353	2600	88	1359
2003-04	42883	1099	1358	1611	5471	1433	2251	3885	381	2753	98	1433
2004-05	45906	1238	1475	1664	5948	1504	2196	4079	431	2936	108	1588
2005-06	50257	1207	1608	1748	6810	1577	2344	4317	492	3121	120	1752
2006-07	55066	1416	1791	1907	7748	1748	2620	4660	551	3366	137	1969
2007-08	60199	1489	1931	1997	8650	1899	2739	4959	648	3627	147	2191
2008-09	64248	1716	2080	2250	8786	2004	2969	5336	716	3774	158	2464
2009-10	69769	1798	2340	2463	9634	2132	3142	5668	839	4067	167	2667
2010-11	75987	2073	2498	2592	10732	2270	3614	6120	927	4313	167	2888
2011-12	81069	2285	2712	2824	11222	2392	3953	6451	1020	4471	169	3147
2012-13	85463	2369	2894	3069	11842	2518	4098	6736	1095	4838	183	3342
2013-14	90636	2469	3142	3226	12671	2675	4343	7075	1178	5247	198	3565
2014-15	97121	2557	3314	3394	13322	2777	4656	7297	1257	5633	204	3882
2015-16	105033	2749	3612	3597	14417	2926	4981	7894	1355	-	218	4291
2016-17	112476	3033	3927	4129	15744	3095	5352	8457	1448	-	236	4658
2017-18	119762	-	-	4432	-	-	5736	9011	1547	-	-	5035
Growth 1981-2018	6.34	5.05	6.88	5.44	6.82	5.17	6.49	4.73	6.75	5.79	0.00	8.24
Growth 1994-2018	7.02	6.23	7.66	6.03	6.96	5.17	7.04	5.06	8.20	6.54	8.34	8.53
Growth 2000-2018	7.10	7.07	8.37	6.00	7.32	5.40	6.65	5.50	10.10	6.27	8.00	8.45

6 TRAFFIC AND TOLL PROJECTIONS

6.1 GENERAL

The traffic growth on a road facility is generally estimated on the basis of historical trends. Demand changes are usually because of shifts in the pattern of economic activities in the surrounding regions. Hence, future traffic estimation necessitates a preview, however imprecise, of the probable pattern of future growth of the economy.

The traffic growth rates established for this study are based on the elasticity procedure outlined in IRC: 108-1996 "Guidelines for Traffic Prediction on Rural Highways". In the elasticity approach, a relationship is established between traffic and socio-economic indicators of influence area. The methodology thus adopted incorporates the perspective growth envisaged in the economic indicators of these project influence area and the changes in transport demand elasticity over a period. Traffic growth rates by vehicle type, for the project road sections, have been forecasted considering the concession period of 22 years.

The National Highway 9 (Old NH24) starts from Fazilka in Punjab and ends at Pithoragarh. The project road is a section between Hapur and Moradabad passing through the districts of Hapur (Ghaziabad), Jyotiba Phule Nagar (Amroha) and Moradabad. The project road is a national highway runs entirely in Uttar Pradesh.

6.2 METHODOLOGY

The following methodology has been adopted for estimating traffic growth rates. The methodology uses the basic principle of elasticity of traffic growth with respect to economic growth.

- Step 1: Analysis of past vehicle registration data with economic growth parameters of PIA to derive elasticity of traffic in relation to NSDP.
- Step 2: Development of future GDP growth scenario.
- Step 3: Correlation of NSDP of PIA with GDP.
- Step 4: Estimation of future NSDP and Derivation of traffic growth rates.

6.3 ELASTICITY OF TRAFFIC GROWTH IN RELATION TO ECONOMIC GROWTH

The following section describes the methodology in detail.

6.3.1 Traffic Projection – Trip Ends Method

The trip ends method relates the growth in transportation demand with the growth and development of the PIA at the zonal level. This method incorporates regional disparities in terms of its economic activities and contribution towards traffic.

The model used to estimate future traffic can be expressed as follows:

$$T_{ym} = T_{(y-1)m} \times \left[1 + \left(\frac{\sum_{z=1}^{n} (E_z \times TE_{mz})}{\sum_{z=1}^{n} TE_{mz}} \times e_{ym} \right) \right]$$

Where

T_{ym}	=	Trips by Mode and Year
$T_{(y-1)\,m}$	=	Trips by Mode in Previous Year
E_z	=	Zonal Economic Growth Rates
e_{ym}	=	Year and Mode Elasticity values
TE_{mz}	=	Trip end by Mode and Zone
n	=	Number of zones

The results of O-D analysis on the project road section indicate that the districts of Moradabad, Delhi, Ghaziabad (including Hapur), Amroha, Bareily and Meerut have the highest influence on traffic moving on the project road section. The shares of traffic for other major zones as per the O-D pattern have been presented in Table 6-1.

Table 6-1: Mode Wise PIA Percentage Share

Zone Name	Cars	Buses	Trucks	Total
Delhi	21.4	32.9	17.9	21.48
Uttar Pradesh-Moradabad	22.8	17.3	20.2	21.42
Uttar Pradesh-Ghaziabad	13.1	9.6	11.7	12.30
Bihar	9.2	7.8	6.8	8.31
Uttar Pradesh-Jyotiba Phule Nagar (J.P. Nagar)	8.8	3.9	8.2	8.12
Uttar Pradesh-Bareilly	5.8	8.9	4.9	5.83
Uttar Pradesh-Meerut	2.8	0.7	7.0	3.85
Uttarakhand	2.3	4.5	1.9	2.41
Haryana	1.5	1.1	4.0	2.21
Madhya Pradesh	2.4	2.2	0.0	1.64
Rajasthan	1.4	1.1	1.4	1.37
Uttar Pradesh-Deoria	0.8	1.5	2.1	1.30
Punjab	1.2	0.2	1.8	1.29
Odisha	0.5	1.2	1.6	0.95
Uttar Pradesh-Bulandshahr	0.9	0.7	0.7	0.85
Chhattisgarh	0.6	0.8	1.0	0.76
Uttar Pradesh-Gautam Buddha Nagar	0.6	0.3	1.1	0.75
Uttar Pradesh-Pilibhit	0.5	1.4	0.7	0.66
Uttar Pradesh-Bijnor	0.6	0.5	0.5	0.55
Uttar Pradesh-Ghazipur	0.3	0.1	0.5	0.35
West Bengal	0.1	0.2	0.6	0.29
Total (21 Highest Traffic Zones)	**76.2**	**64.1**	**76.9**	**75.2**

6.3.2 Transport Demand Elasticities

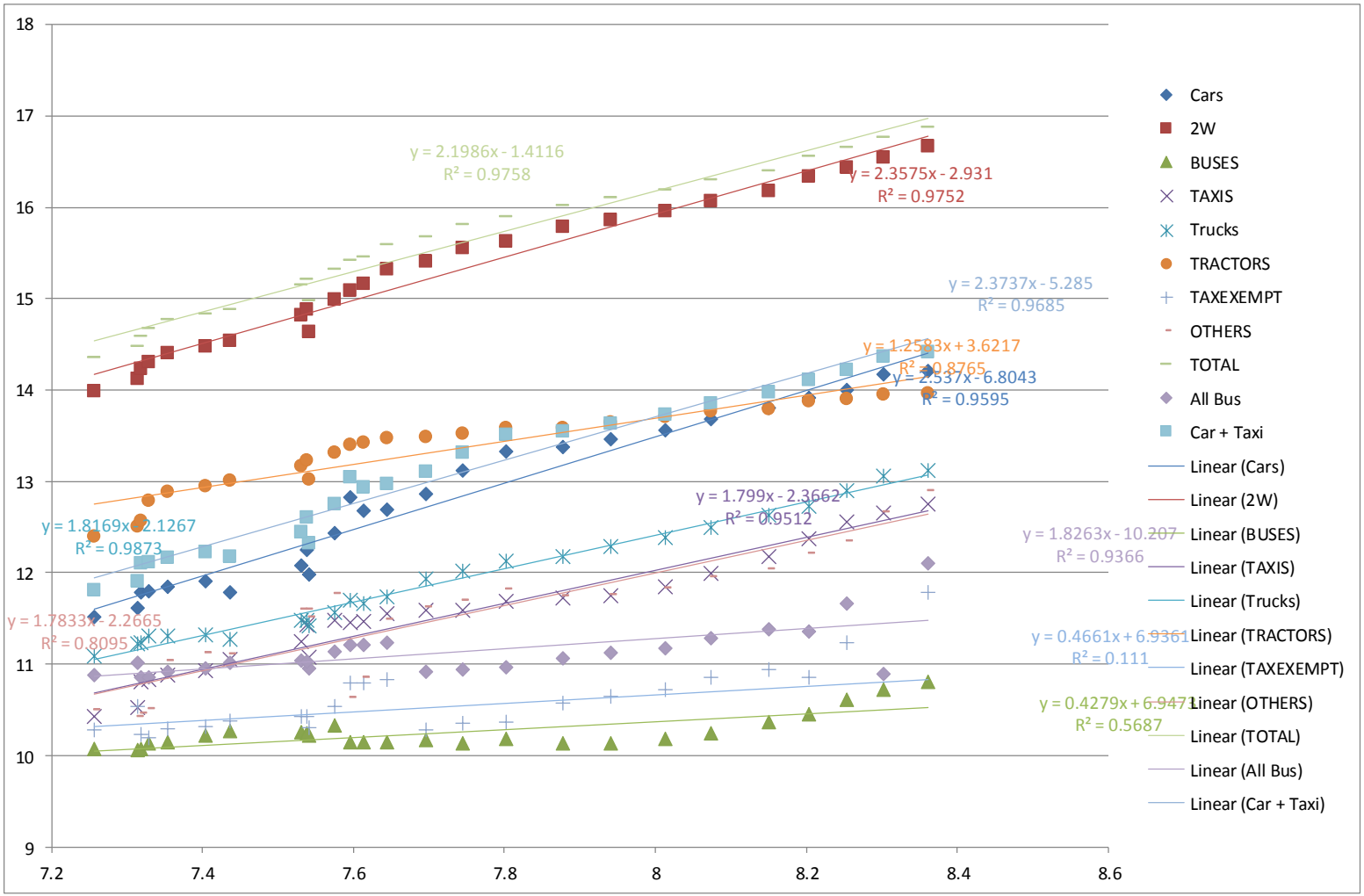
The Consultant has used elasticity approach for determining the growth rates of future traffic. This involved establishing a quantitative relationship between traffic growth as the dependent variable and growth in NSDP/ GDP as the independent variable. The methodology involved fitting log-log regression equations to the time series data.

As the time series traffic data on project road is not available, elasticity values are established by using registered vehicles as dependent variable and the states NSDP as independent variable. The vehicle registration data for Uttar Pradesh is presented in Table 6-2. The regression equations for traffic elasticities for Uttar Pradesh are shown in Figure 6-1. Further, for states that have a minor share of trip-ends or for which the vehicle registration data was not available, it was deemed suitable to use national level elasticity. The arrived elasticity values of each project influence region/ states have been weighted by the trip end factor as revealed from the O-D survey results.

Table 6-2: Vehicle Registration Data for Uttar Pradesh

Year	Car	2 Wheeler	Bus	Taxi	Truck	Tractor	Tax Exempt	Other	Total	NSDP (₹ Crore)
1989-90	1,00,065	11,82,344	23,824	33,791	65,541	2,42,743	29,123	36,378	17,13,809	1,417.07
1990-91	1,11,383	13,51,877	23,304	37,345	74,930	2,71,672	37,574	33,602	19,41,687	1,501.35
1991-92	1,31,583	15,18,840	23,816	49,416	75,995	2,89,100	27,764	34,973	21,51,487	1,507.49
1992-93	1,33,134	16,42,127	25,170	50,440	81,319	3,59,132	26,772	36,790	23,54,884	1,523.72
1993-94	1,39,423	18,02,523	25,559	53,245	81,544	3,93,012	29,651	62,382	25,87,339	1,561.50
1994-95	1,47,939	19,41,356	27,295	56,091	82,401	4,19,096	30,189	67,964	27,72,331	1,642.95
1995-96	1,31,848	20,57,408	28,740	62,861	78,770	4,47,546	32,205	66,845	29,06,223	1,696.03
1996-97	1,60,123	22,64,232	27,367	64,284	91,216	4,50,088	30,067	1,00,965	31,88,342	1,884.26
1997-98	1,76,689	27,31,484	28,489	76,909	96,745	5,22,333	33,722	1,08,721	37,75,092	1,864.22
1998-99	2,08,106	29,04,555	27,972	91,604	97,268	5,53,954	33,928	1,09,991	40,27,378	1,877.95
1999-00	2,50,572	32,36,415	30,472	96,700	1,05,268	6,05,240	37,843	1,29,601	44,92,111	1,948.55
2000-01	3,70,570	35,83,551	25,389	94,784	1,21,203	6,63,384	48,778	41,403	49,49,062	1,988.39
2001-02	3,21,747	38,34,680	25,397	95,082	1,16,268	6,77,366	48,771	51,631	51,70,942	2,024.56
2002-03	3,26,604	44,88,426	25,357	1,04,214	1,25,010	7,09,797	50,689	98,298	59,28,395	2,090.07
2003-04	3,86,202	48,93,070	26,162	1,07,516	1,51,711	7,17,675	29,201	1,11,934	64,23,471	2,200.12
2004-05	4,99,148	56,52,044	25,081	1,07,847	1,65,123	7,42,717	31,557	1,20,969	73,44,486	2,310.29
2005-06	6,15,739	60,83,655	26,549	1,19,789	1,84,428	7,91,411	31,616	1,35,947	79,89,134	2,445.14
2006-07	6,41,939	71,38,789	25,134	1,23,458	1,93,465	7,97,990	39,038	1,25,886	90,85,699	2,639.35
2007-08	7,03,071	77,37,237	25,339	1,26,753	2,15,825	8,47,329	42,220	1,28,287	98,26,061	2,808.51
2008-09	7,75,569	85,21,189	26,331	1,39,203	2,40,433	8,93,683	45,164	1,37,231	1,07,78,803	3,021.92
2009-10	8,73,251	94,93,677	28,124	1,62,335	2,68,617	9,53,959	51,600	1,56,786	1,19,88,349	3,209.89
2010-11	9,84,937	1,05,63,850	31,922	1,93,715	3,07,058	9,78,627	56,240	1,70,883	1,32,87,232	3,466.21
2011-12	11,08,100	1,24,10,064	34,428	2,35,028	3,38,977	10,64,284	51,600	2,02,793	1,54,45,274	3,653.75
2012-13	12,05,374	1,37,24,495	40,501	2,84,587	4,00,061	10,88,058	75,550	2,29,558	1,70,48,184	3,844.58
2013-14	14,23,020	1,53,95,363	45,473	3,12,423	4,67,786	11,47,190	7,998	3,15,305	1,91,14,558	4,035.09
2014-15	14,86,669	1,72,74,293	49,368	3,44,365	4,99,207	11,54,649	1,32,124	4,01,461	2,13,42,136	4,277.59
1990 - 2015	11.4%	11.3%	3.0%	9.7%	8.5%	6.4%	6.2%	10.1%	10.6%	4.5%
2000 - 2015	12.6%	11.8%	3.3%	8.8%	10.9%	4.4%	8.7%	7.8%	10.9%	5.4%

Figure 6-1: Regression for Traffic Elasticities for Uttar Pradesh



The transport demand elasticity arrived by regression analysis between vehicle registration and state NSDP for each mode for the immediate project influence area as depicted by the O-D survey result is presented in Table 6-3.

It may be noted that the state of Uttar Pradesh shows high demand elasticities for most categories of vehicles compared to national average. With most of the traffic on the project road coming in from within the state, it may be expected to experience significantly high growth in traffic.

Table 6-3: Zonal Transport Demand Elasticity using Vehicle Registration Data

Zone Name	Passenger Car	Taxi	Minibus	Standard Bus	Tempo/ LCV	2-Axle Truck	3-Axle Truck	Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	Oversized Vehicle (>6 Axles)
Delhi	1.0	0.9	0.1	0.1	0.2	0.1	0.3	0.2	0.2
Uttar Pradesh	2.1	1.6	0.7	0.7	1.1	0.9	1.9	1.7	1.3
Bihar	1.6	1.7	0.6	1.2	0.8	0.7	1.4	1.3	1.0
Uttarakhand	2.2	0.6	2.1	2.1	3.2	1.1	2.2	2.2	1.5
Haryana	2.0	2.2	1.2	1.2	1.5	1.2	2.4	2.2	1.7
Madhya Pradesh	1.9	1.6	1.8	1.8	0.7	0.6	1.1	1.0	0.8
Rajasthan	1.1	1.5	1.0	0.3	1.2	0.3	0.5	0.5	0.4
Odisha	1.6	1.7	0.6	1.2	0.8	0.7	1.4	1.3	1.0
Chhattisgarh	1.9	1.6	1.8	1.8	0.7	0.6	1.1	1.0	0.8
West Bengal	1.6	1.7	0.6	1.2	0.8	0.7	1.4	1.3	1.0
Jharkhand	2.1	1.5	1.4	1.4	1.2	0.8	1.6	1.6	1.1
India	**1.6**	**1.7**	**0.6**	**1.2**	**0.8**	**0.7**	**1.4**	**1.3**	**1.0**

The projected elasticity values are based on the premise that transport demand elasticity for both freight and passenger traffic tend to decline over time as regional imbalances are corrected and regions become self-sufficient. Moreover, irrational traffic flows are being gradually cut down, with an increase in road network and improved accessibility. The project elasticity values have been rationalized for freight vehicles as per the trend in the growth of these vehicles. The past trend in the growth of vehicles has seen more growth in 3-axle trucks, slow growth in 2-axle trucks and re-categorization of LCV and 2-axle trucks. The elasticity value for LCV has been considered as per the past trend of growth of vehicles. The projected elasticity values adopted in the study for 5 yearly intervals are presented in Table 6-4.

Table 6-4: Projected Transport Demand Elasticity

Modes	2019-23	2024-28	2029-33	2034-38	2039-43	2044-48
Passenger Car	1.8	1.7	1.4	1.4	1.2	1.1
Taxi	1.5	1.4	1.2	1.1	1.0	0.9
Minibus	0.7	0.6	0.5	0.5	0.5	0.4
Standard Bus	0.7	0.6	0.5	0.5	0.5	0.4
Tempo/ LCV	1.0	0.9	0.8	0.8	0.7	0.6
2-Axle Truck	0.8	0.7	0.6	0.6	0.5	0.5
3-Axle Truck	1.5	1.4	1.2	1.2	1.0	0.9
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	1.4	1.4	1.2	1.1	1.0	0.9
Oversized Vehicle (>6 Axles)	1.1	1.1	0.9	0.9	0.8	0.7

6.3.3 Economic Perspective

The rate of change in NSDP at constant prices is the main economic indicator for measuring the real growth in the economy. The time series of state income at constant prices for the NSDP of for all states have been studied to assess the past performance of the state economy with respect to the growth of India's GDP for a period of almost forty years starting from 1980-81 to 2017-18. The average annual growth rates for Uttar Pradesh and other influence area are presented in Table 6-5.

Table 6-5: Economic Growth Rate

State	2020-24	2025-29	2030-34	2035-39	2040-44	2045-49
India	7.00	6.50	6.00	5.50	5.00	4.50
Uttar Pradesh	4.86	4.51	4.23	3.88	3.62	3.25
Delhi	8.41	7.81	7.21	6.61	5.86	5.27
Rajasthan	6.48	6.01	5.91	5.41	5.05	4.54
Haryana	7.56	7.02	6.45	5.91	5.24	4.72
West Bengal	6.43	5.97	5.68	5.21	4.86	4.37
Bihar	5.93	5.51	5.09	4.66	4.35	3.91
Madhya Pradesh	5.80	5.38	4.98	4.56	4.25	3.83

Regression analysis was conducted with NSDP being the dependent variable and GDP as the independent variable for different periods to estimate likely future NSDP growth pattern based on GDP growth forecasts. The GDP forecasts have been made based on the recent trends for the short term and long term trends for the long term. Based on the current trends and outlook the average GDP growth has been assumed to be 7.0% per annum for the next 5-year period after which it has been assumed to slow down to 6.5% per annum during 2025-29 period and finally taper off to 5% by 2040.

6.3.4 Projected Traffic Growth Rates

The traffic growth rates by each mode, over the next 30 years are given in Table 6-6. These growth rates are based on transport demand elasticity as presented in Table 6-4 and economic perspective for different influence areas in Table 6-5.

Table 6-6: Projected Likely Traffic Growth Rates using Econometric Model (%)

Modes	2020-24	2025-29	2030-34	2035-39	2040-44	2045-49	2020-41
Passenger Car	10.2	8.8	7.1	6.2	5.0	4.3	7.8
Taxi	8.3	7.2	5.8	5.0	4.1	3.5	6.3
Minibus	3.9	3.4	2.7	2.3	1.9	1.6	3.0
Standard Bus	4.1	3.5	2.8	2.5	2.0	1.7	3.1
Tempo/ LCV	5.6	4.8	3.9	3.4	2.8	2.3	4.3
2-Axle Truck	4.3	3.7	3.0	2.6	2.1	1.8	3.3
3-Axle Truck	8.6	7.4	6.0	5.2	4.2	3.6	6.6
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	7.9	6.8	5.5	4.8	3.9	3.3	6.0
Oversized Vehicle (>6 Axles)	6.1	5.3	4.3	3.7	3.0	2.6	4.7

The cumulative likely annual growth rate for the next 22 years which is the concession period for the project is also given in Table 6-6.

The likely growth rates are estimated on the assumption of a modest economic growth scenario which has been prevailing over a medium to long term in India. However, there are many structural and policy changes happening that may significantly alter this trend. Considering the domestic and global economic scenario and emerging growth outlook a higher than 7% average growth rate is very likely. So as a relatively more optimistic scenario a 7.5% average GDP growth was considered for the next five years. The traffic growth rates of the optimistic scenario are presented in Table 6-7.

Table 6-7: Projected Optimistic Traffic Growth Rates using Econometric Model (%)

Modes	2020-24	2025-29	2030-34	2035-39	2040-44	2045-49	2020-41
Passenger Car	11.0	9.6	7.7	6.7	5.5	4.7	8.5
Taxi	9.0	7.8	6.3	5.5	4.5	3.9	6.9
Minibus	3.9	3.4	2.7	2.4	1.9	1.7	3.0
Standard Bus	4.1	3.6	2.9	2.5	2.1	1.8	3.2
Tempo/ LCV	5.9	5.1	4.1	3.6	3.0	2.5	4.5
2-Axle Truck	4.7	4.1	3.3	2.9	2.4	2.0	3.6
3-Axle Truck	9.3	8.1	6.5	5.7	4.7	4.0	7.1
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	8.5	7.4	6.0	5.2	4.2	3.6	6.5
Oversized Vehicle (>6 Axles)	6.6	5.7	4.6	4.0	3.3	2.8	5.1

For scenario building a pessimistic scenario too was developed considering an average GDP growth of 6.5% per annum for the initial 5-year period. There are some short-term issues that may affect the GDP and consequently traffic growth in the immediate term but this scenario is unlikely to pan out over a longer period. The growth traffic rates under the pessimistic scenario are presented in Table 6-8.

Table 6-8: Projected Pessimistic Traffic Growth Rates using Econometric Model (%)

Modes	2020-24	2025-29	2030-34	2035-39	2040-44	2045-49	2020-41
Passenger Car	9.5	8.2	6.5	5.6	4.5	3.8	7.2
Taxi	7.7	6.6	5.3	4.6	3.7	3.1	5.9
Minibus	3.6	3.1	2.5	2.1	1.7	1.4	2.7
Standard Bus	3.8	3.3	2.6	2.2	1.8	1.5	2.9
Tempo/ LCV	5.2	4.5	3.5	3.1	2.5	2.1	3.9
2-Axle Truck	4.0	3.5	2.8	2.4	1.9	1.6	3.0
3-Axle Truck	8.0	6.9	5.5	4.7	3.8	3.2	6.0
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	7.4	6.3	5.1	4.3	3.5	2.9	5.6
Oversized Vehicle (>6 Axles)	5.7	4.9	3.9	3.4	2.7	2.3	4.3

6.4 TRAFFIC FORECAST

Long term forecasting of traffic on project road for next 20-25 years is required to assess the project revenues as per the concession agreement. The traffic has been forecasted as per the projected traffic growth rate in Table 6-6. The traffic forecast has been carried out as per the base traffic numbers derived from the classified volume count and likely growth scenario. The mode-wise forecasted traffic for the concession period is presented in Table 6-9

Table 6-9: Mode Wise Forecasted (Likely Scenario) Traffic at Garh Km 090+661

Year	Passenger Car	Taxi	Minibus	Standard Bus	Tempo/ LCV	2-Axle Truck	3-Axle Truck	Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	Oversized Vehicle (>6 Axles)	Total Vehicles	Total PCUs
Garh Km 090+661											
2019	15502	488	156	2389	4777	557	1405	1782	0	27057	44464
2020	17124	530	162	2489	5050	582	1528	1926	0	29391	47937
2021	18915	575	169	2593	5338	608	1662	2082	0	31942	51708
2022	20894	623	175	2702	5642	635	1808	2251	0	34730	55804
2023	23080	676	182	2815	5964	663	1966	2433	0	37779	60255
2024	25213	727	189	2919	6263	688	2118	2607	0	40724	64525
2025	27542	781	195	3027	6577	715	2282	2793	0	43914	69126
2026	30086	839	202	3139	6907	743	2459	2993	0	47370	74083
2027	32866	902	209	3256	7254	772	2650	3207	0	51115	79426
2028	35902	970	217	3376	7618	802	2855	3436	0	55175	85186
2029	38520	1027	223	3475	7919	827	3030	3630	0	58650	90089
2030	41330	1088	229	3576	8232	852	3215	3835	0	62357	95296
2031	44344	1153	235	3681	8558	879	3412	4051	0	66312	100829
2032	47578	1221	242	3788	8896	906	3621	4279	0	70531	106707
2033	51048	1293	249	3899	9248	933	3843	4520	0	75033	112954
2034	54294	1360	255	3998	9568	958	4048	4742	0	79224	118741
2035	57747	1431	261	4100	9899	984	4264	4974	0	83660	124846
2036	61451	1505	267	4204	10244	1010	4494	5221	0	88397	131342
2037	65393	1584	274	4311	10602	1038	4736	5479	0	93416	138200
2038	69587	1666	280	4421	10972	1066	4991	5751	0	98733	145441
2039	73236	1738	286	4513	11287	1089	5211	5983	0	103341	151694
2040	77075	1812	292	4606	11611	1113	5440	6225	0	108175	158234
2041	81116	1889	297	4702	11944	1138	5680	6477	0	113245	165075
2042	85369	1970	303	4800	12287	1163	5931	6739	0	118563	172231
2043	89845	2054	309	4900	12640	1188	6192	7011	0	124141	179717
2044	93665	2126	314	4982	12934	1210	6413	7241	0	128886	186065
2045	97648	2199	320	5066	13234	1231	6642	7479	0	133819	192651
2046	101799	2276	325	5151	13541	1253	6879	7724	0	138949	199485
2047	106127	2355	330	5238	13855	1276	7125	7978	0	144283	206576
2048	110640	2436	335	5326	14176	1299	7379	8240	0	149831	213934

Table 6-10: Mode Wise Forecasted (Likely Scenario) Traffic at Joya Km 123+875

Year	Passenger Car	Taxi	Minibus	Standard Bus	Tempo/ LCV	2-Axle Truck	3-Axle Truck	Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	Oversized Vehicle (>6 Axles)	Total Vehicles	Total PCUs
Joya Km 123+875											
2019	11021	687	108	2011	3235	403	1023	1254	0	19741	32674
2020	12174	746	112	2095	3419	420	1113	1356	0	21435	35200
2021	13448	809	117	2182	3614	439	1210	1465	0	23284	37941
2022	14855	878	121	2273	3820	458	1316	1584	0	25306	40917
2023	16409	952	126	2369	4038	479	1432	1712	0	27516	44149
2024	17925	1023	130	2456	4241	497	1543	1834	0	29650	47249
2025	19581	1100	135	2547	4453	517	1662	1966	0	31961	50587
2026	21390	1182	140	2642	4677	537	1791	2106	0	34464	54182
2027	23366	1270	145	2739	4911	558	1929	2257	0	37176	58056
2028	25525	1365	150	2841	5158	580	2079	2418	0	40115	62231
2029	27387	1446	154	2924	5362	597	2206	2555	0	42630	65784
2030	29384	1532	158	3009	5574	616	2341	2699	0	45312	69556
2031	31527	1622	163	3097	5794	635	2485	2851	0	48173	73562
2032	33826	1719	167	3188	6023	654	2637	3011	0	51225	77818
2033	36293	1821	172	3281	6262	674	2798	3181	0	54482	82340
2034	38601	1915	176	3364	6478	692	2948	3337	0	57512	86527
2035	41056	2014	180	3450	6702	711	3105	3501	0	60719	90944
2036	43689	2119	185	3537	6936	730	3272	3674	0	64143	95642
2037	46492	2229	189	3627	7178	750	3449	3856	0	67770	100601
2038	49474	2346	194	3720	7428	770	3634	4047	0	71613	105836
2039	52068	2446	198	3797	7642	787	3794	4211	0	74942	110356
2040	54798	2551	202	3876	7861	804	3962	4381	0	78434	115083
2041	57671	2660	206	3957	8087	822	4136	4558	0	82096	120026
2042	60694	2774	210	4039	8319	840	4319	4742	0	85937	125195
2043	63877	2892	214	4123	8558	859	4509	4934	0	89966	130603
2044	66592	2992	217	4192	8757	874	4670	5096	0	93391	135187
2045	69424	3096	221	4263	8960	890	4837	5263	0	96953	139944
2046	72375	3204	225	4334	9168	906	5010	5436	0	100657	144878
2047	75453	3315	228	4407	9380	922	5188	5614	0	104508	149997
2048	78661	3430	232	4481	9598	938	5374	5799	0	108512	155309

7 TOLL REVENUE ESTIMATION

7.1 TOLL POLICY

The tolling on the project highway is governed by the National Highway Fee (Determination of Rates and Collection) Rules 2008 (also known as the toll policy) and their subsequent amendments. The rules define the method of determining toll rates and collection of the same for different vehicle categories being used by the road users. The toll revenue for the project road has been estimated in compliance with the toll policy and the project parameters as defined in the Concession Agreement and its schedules:

a. Tollable, exempted and non-tollable vehicle categories.

b. Differential toll rates for different categories of vehicles.

c. Discounted tolling for frequent and local road users

d. Project length and toll plaza locations

e. Provisions for additional fees for structures and bypasses on project road.

f. Escalation of toll rates in relation to inflation.

g. Penal Tolling provisions for over loaded vehicles

h. Toll rates during construction period

7.2 TOLL RATES AND VEHICLE CATEGORIES

The toll policy defines six categories of vehicles and provides for differential toll rates for each category. Sub rule 2 of rule 4 provides the following base rates of fee on a per kilometer basis considering 2007-08 as the base year.

Table 7-1: Base Rate of Toll for Different Categories of Traffic

S No	Vehicle Category	Toll Rate (`/Km)
1	Car, Jeep, Van or Light Motor Vehicle	0.65
2	Light Commercial Vehicle, Light Goods Vehicle or Mini Bus	1.05
3	Bus or Truck (Two Axles)	2.20
4	Three Axle Commercial Vehicles	2,40
5	Heavy Construction Machinery (HCM) or Earth Moving Equipment (EME) or Multi Axle Vehicle (MAV) (4 to 6 axles)	3.45
6	Oversized Vehicles (7 or more Axles)	4.20

7.2.1 Non Tollable Vehicles

Apart from the above mentioned vehicle categories the other such as two-wheelers, three wheelers, tractors and non-motorized vehicles are not to be subject to toll. However, wherever there is a provision of service roads these vehicles shall compulsorily use the service road.

7.2.2 Exempted Vehicles

There is a long descriptive list of categories of users who by law are exempted from paying toll. These primarily cover

i. top level officials from legislative, executive and judicial arms of the government,
ii. military, para military and police vehicles on duty,
iii. emergency services (Fire, Ambulance, Funeral Vans)

7.3 REVISION IN TOLL RATES

The toll policy provides for annual revision of toll rates in response to inflation and has been partially pegged to the WPI, which is a standard measure of inflation in India.

The formula for determining the applicable rate of fee is as follows

$$Applicable\ Rate\ of\ Fee = \text{Base Rate} + \text{Base Rate X} \left\{\frac{\text{WPI A} - \text{WPI B}}{\text{WPI B}}\right\} \text{X } 0.4$$

Where;

(a) applicable rate of fee shall be the rate payable by the user;
(b) base rate is the rate as shown in Table 7-1 above inflated by a simple interest of 3% per annum;
(c) WPI A means the wholesale price index of the week ending on or subsequent to 1st January immediately preceding the date of revision under these rules: and
(d) WPI B means the wholesale price index of the week ending on 6' January, 2007 i.e. 208.7. While the WPI was being estimated with 1993-94 as the base year, however, recently the estimation of WPI has been reset with the base year as 2004-05. The future WPI values shall be available with the 2004-05 base only, the WPI B would then translate to about 112.1 under the 2004-05.

7.3.1 Inflation Rate

The rate of inflation of WPI has been assumed to be 5% per annum for the purpose of calculation of toll rates as per the above formula.

7.4 TOLL RATES DURING CONSTRUCTION PERIOD

During the construction period i.e. till the completion of six laning is achieved the toll rates applicable shall be 75% of the toll rates determined to be applicable at the beginning of the concession period and free from escalation. It is assumed that the six laning shall be complete by the year 2021 after which full toll rates would become applicable.

7.5 TOLL RATES FOR OVERLOADED VEHICLES

As per the policy provisions (National Highways Fee Amendment Rules 2013) the overloaded vehicles are to be charged 10 times the toll applicable in their respective categories. Considering the low reported prevalence of overloading, it is unlikely to have a major impact on toll collections. Also, if effectively administered this would significantly reduce the prevalence of overloading as the financial incentive of

overloading will be negated by the high toll disincentive. The additional toll revenue on overloaded vehicles is therefore conservatively ignored for the purpose of estimation of toll revenue.

7.6 SEGMENTATION OF TOLLABLE TRAFFIC

Based on the earlier discussion the toll is to be collected according to the following categories:

7.6.1 One Way Traffic

The commuters who use the project facility only once in a day are covered under this category. These commuters are required to pay the complete notified one way fee.

7.6.2 Return Trip

The commuters who complete one round trip within 24 hours are covered under this category. These commuters are required to pay 1.5 times the normal one-way fee.

- During the OD surveys the respondents were asked whether they would be returning the same day.
- Further, it was assumed that local traffic and monthly pass holders will also most likely return the same day. Therefore, this component was deleted from the return traffic share to avoid double counting of concessional traffic.

7.6.3 Monthly Pass

The commuters who want to use the project facility on a regular basis can opt for monthly pass by paying 33.3 times of normal one way fee for performing 50 one way trips.

7.6.4 Local Traffic

Local Traffic means and includes a **personal vehicle** (car/passenger van/jeep) which is registered with the Concessionaire by any person who normally resides or works at a place that can normally be approached only by using a part of the project road and such person is, therefore, required to use such vehicles for commuting on a part of the said section in the course of normal travel to and from his place of work or residence. Only persons residing or working within 20Km of any one toll plaza can be categorized as Local.

The trips with a travel distance within 20Km of the toll plaza and showing a regular frequency, as revealed during the OD survey, were considered as local traffic. Since for commercial traffic there is the condition of the vehicle being registered in the same district as the toll plaza, the data was also analyzed to extract the proportion of locally registered vehicles. Such traffic is supposed to register with the concessionaire and will be issued a local pass costing Rs.150 per month for cars and pay 50% of the toll rate for rest of the categories.

Table 7-2 shows the adopted segmentation of traffic in categories described above.

Table 7-2: Segmentation (Percentage) of Tollable Traffic

Garh Km 090+661		RTO Code: UP37 District Hapur				
S No	Mode	One Way	Return	Monthly	Local	Total
1	Passenger Car	63.2	32.0	3.7	1.1	100
2	Taxi	61.5	33.6	3.1	1.8	100
3	Minibus	60.1	28.2	6.4	5.3	100
4	Standard Bus	61.9	25.9	7.4	4.8	100
5	Tempo/ LCV	83.4	7.5	7.9	1.1	100
6	2-Axle Truck	85.7	5.6	7.9	0.7	100
7	3-Axle Truck	91.7	3.2	3.5	1.6	100
8	Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	91.3	1.5	5.8	1.5	100
Joya Km 123+875		**RTO Code: UP23 District Jyotiba Phule (Amroha)**				
S No	Mode	One Way	Return	Monthly	Local	Total
1	Passenger Car	45.8	41.9	4.9	7.4	100
2	Taxi	41.1	41.5	5.3	12.0	100
3	Minibus	47.4	37.6	10.5	4.6	100
4	Standard Bus	58.6	32.6	5.9	2.9	100
5	Tempo/ LCV	80.7	0.0	15.1	4.2	100
6	2-Axle Truck	86.7	0.3	11.7	1.3	100
7	3-Axle Truck	92.2	1.1	5.9	0.8	100
8	Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	93.0	1.4	4.7	1.0	100

7.7 ESTIMATION OF TOLL FEE

The toll fees were estimated taking into consideration the base rates, inflation, discounting rules and the length chargeable at each of the toll plazas. Further, it is stipulated that the toll fees so derived shall be rounded off to the nearest multiple of 5 rupees to ensure ease of transaction. Table 7-3 shows the estimated toll rates during different years for different modes.

Table 7-3: Estimated Toll Rates Mode Wise at Garh Km 090+661

Garh Km 090+661	2020	2025	2030	2035	2040
Passenger Car	55.00	120.00	150.00	195.00	255.00
Taxi	55.00	120.00	150.00	195.00	255.00
Minibus	90.00	190.00	245.00	315.00	410.00
Standard Bus	185.00	400.00	515.00	660.00	860.00
Tempo/ LCV	90.00	190.00	245.00	315.00	410.00
2-Axle Truck	185.00	400.00	515.00	660.00	860.00
3-Axle Truck	205.00	435.00	560.00	720.00	935.00
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	290.00	630.00	805.00	1040.00	1345.00
Oversized Vehicle (>6 Axles)	355.00	765.00	980.00	1265.00	1640.00

Table 7-4: Estimated Toll Rates Mode Wise at Joya Km 123+875

Joya Km 123+875	2020	2025	2030	2035	2040
Passenger Car	35.00	70.00	90.00	115.00	150.00
Taxi	35.00	70.00	90.00	115.00	150.00
Minibus	60.00	115.00	145.00	190.00	245.00
Standard Bus	125.00	240.00	305.00	395.00	515.00
Tempo/ LCV	60.00	115.00	145.00	190.00	245.00
2-Axle Truck	125.00	240.00	305.00	395.00	515.00
3-Axle Truck	140.00	260.00	335.00	430.00	560.00
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	200.00	375.00	480.00	620.00	805.00
Oversized Vehicle (>6 Axles)	240.00	455.00	585.00	755.00	980.00

7.8 ESTIMATION OF REVENUE

Toll revenue has been estimated and a summary of average daily toll collection estimates, for different years during the concession period, taking into account the traffic projections, toll rates and discounts as discussed in earlier sections. The summary of toll revenue is presented in Table 7-5.

Table 7-5: Mode wise Average Daily and Annual Toll Collection (Rs in Thousands) in Likely Scenario at Garh Km 090+661

Year	Passenger Car	Taxi	Minibus	Standard Bus	Tempo/ LCV	2-Axle Truck	3-Axle Truck	Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	Oversized Vehicle (>6 Axles)	Total Daily (Rs in Lakhs)	Total Annual (Rs in Crores)
Garh Km 090+661											
2019	759.3	23.9	12.4	393.1	407.8	98.6	279.8	501.2	0.0	24.8	90.37
2020	838.7	25.9	12.9	409.6	431.0	103.0	304.3	541.7	0.0	26.7	97.35
2021	926.5	28.1	13.4	426.7	455.6	107.5	331.0	585.6	0.0	28.7	104.91
2022	1893.0	56.5	25.4	827.8	882.9	209.3	659.3	1178.7	0.0	57.3	209.25
2023	2185.6	64.0	28.0	909.5	989.3	231.1	755.3	1344.5	0.0	65.1	237.51
2024	2590.5	74.6	30.1	983.7	1071.8	250.1	855.0	1504.3	0.0	73.6	268.65
2025	2942.9	83.4	32.7	1073.7	1186.5	273.5	965.6	1705.9	0.0	82.6	301.65
2026	3362.6	93.7	35.6	1169.2	1311.5	298.4	1099.8	1915.3	0.0	92.9	338.94
2027	3835.0	105.2	38.7	1272.5	1446.2	325.0	1236.9	2160.7	0.0	104.2	380.34
2028	4366.4	117.9	42.0	1390.4	1591.4	356.5	1402.1	2432.0	0.0	117.0	427.00
2029	4996.8	133.1	46.0	1507.2	1764.5	387.2	1575.5	2692.9	0.0	131.0	478.27
2030	5598.8	147.3	49.5	1631.2	1915.3	419.5	1750.6	2993.4	0.0	145.1	529.46
2031	6367.1	165.4	53.7	1762.4	2109.3	453.5	1957.2	3319.5	0.0	161.9	590.86
2032	7218.4	185.1	57.6	1911.9	2280.4	493.3	2182.7	3692.9	0.0	180.2	657.81
2033	8040.0	203.6	62.6	2059.3	2503.0	531.2	2428.9	4098.9	0.0	199.3	727.35
2034	9037.5	226.3	67.3	2233.2	2724.5	577.2	2696.4	4529.5	0.0	220.9	806.36
2035	10130.4	250.9	72.5	2402.3	2961.3	621.1	2985.7	5015.7	0.0	244.4	892.05
2036	11332.0	277.5	78.7	2593.0	3254.8	671.6	3320.6	5542.4	0.0	270.7	988.07
2037	12647.4	306.2	84.4	2807.4	3522.1	729.0	3683.5	6110.2	0.0	298.9	1090.99
2038	14305.6	342.3	91.4	3035.4	3852.5	789.3	4099.4	6747.9	0.0	332.6	1214.13
2039	15775.9	374.0	98.3	3258.8	4177.2	848.4	4508.2	7397.9	0.0	364.4	1330.01
2040	17605.7	413.5	105.4	3509.2	4518.1	914.9	4946.2	8119.3	0.0	401.3	1464.82
2041	19329.3	450.0	112.8	3771.0	4875.9	984.1	5440.5	8917.3	0.0	438.8	1601.65
2042	21456.5	494.8	121.5	4061.9	5304.9	1061.4	5996.8	9768.3	0.0	482.7	1761.71
2043	23827.7	544.6	130.9	4364.0	5758.6	1141.7	6593.1	10708.2	0.0	530.7	1937.01
2044	26437.9	599.4	140.1	4682.5	6201.4	1225.8	7202.6	11656.2	0.0	581.5	2122.33
2045	28920.9	650.9	150.5	5011.2	6717.2	1312.9	7878.7	12692.0	0.0	633.3	2311.70
2046	31891.1	712.3	161.5	5389.1	7258.1	1413.9	8595.6	13855.7	0.0	692.8	2528.63
2047	34814.6	772.0	172.8	5779.3	7821.6	1518.4	9387.5	15084.8	0.0	753.5	2750.31
2048	38631.4	850.0	184.9	6190.2	8412.3	1626.9	10260.1	16457.6	0.0	826.1	3015.39

Table 7-6: Mode wise Average Daily and Annual Toll Collection (Rs in Thousands) in Likely Scenario at Joya Km 123+875

Year	Passenger Car	Taxi	Minibus	Standard Bus	Tempo/ LCV	2-Axle Truck	3-Axle Truck	Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	Oversized Vehicle (>6 Axles)	Total Daily (Rs in Lakhs)	Total Annual (Rs in Crores)
Joya Km 123+875											
2019	321.2	20.3	5.5	223.3	180.3	48.0	139.3	244.7	0.0	11.8	43.16
2020	354.8	22.0	5.7	232.6	190.6	50.2	151.5	264.5	0.0	12.7	46.42
2021	391.9	23.9	5.9	242.3	201.4	52.4	164.8	285.9	0.0	13.7	49.95
2022	724.2	43.1	10.3	413.3	354.2	89.7	288.4	502.3	0.0	24.3	88.53
2023	856.7	49.8	11.1	451.6	392.7	98.2	327.7	568.2	0.0	27.6	100.60
2024	956.9	55.4	12.2	497.3	432.6	109.0	375.3	644.4	0.0	30.8	112.53
2025	1113.4	63.0	13.1	540.5	474.7	118.3	420.8	719.6	0.0	34.6	126.41
2026	1290.6	71.5	14.2	586.2	521.1	128.1	479.3	811.9	0.0	39.0	142.46
2027	1491.4	81.8	15.4	640.5	571.1	140.9	544.6	914.0	0.0	44.0	160.59
2028	1686.8	90.9	17.0	700.7	644.7	154.7	617.0	1026.9	0.0	49.4	180.26
2029	1905.7	101.8	18.3	752.3	696.6	165.3	687.1	1146.7	0.0	54.7	199.80
2030	2147.8	112.9	19.6	813.2	751.9	179.2	763.6	1264.5	0.0	60.5	220.92
2031	2448.3	127.5	21.3	888.3	832.8	196.6	846.9	1405.4	0.0	67.7	247.00
2032	2746.4	140.7	22.9	958.3	896.1	212.1	949.8	1572.2	0.0	75.0	273.69
2033	3113.4	158.0	24.8	1041.3	988.8	231.4	1062.3	1738.9	0.0	83.6	305.10
2034	3448.9	172.5	26.9	1117.3	1082.3	247.7	1176.6	1921.7	0.0	91.9	335.57
2035	3857.6	191.3	29.1	1206.6	1181.6	267.9	1300.2	2118.5	0.0	101.5	370.58
2036	4407.2	214.9	31.3	1300.0	1287.3	289.1	1449.3	2348.6	0.0	113.3	413.46
2037	4906.2	237.2	33.7	1411.1	1399.2	314.5	1611.2	2596.8	0.0	125.1	456.61
2038	5451.1	261.2	36.2	1527.2	1517.9	341.2	1786.3	2864.0	0.0	137.9	503.16
2039	6099.4	288.2	39.3	1630.4	1664.6	364.1	1957.9	3143.7	0.0	151.9	554.35
2040	6733.8	315.9	42.0	1762.8	1789.1	394.8	2159.7	3442.4	0.0	166.4	607.38
2041	7490.6	348.3	45.2	1889.3	1950.8	423.3	2375.7	3781.3	0.0	183.0	668.11
2042	8372.4	385.7	48.3	2035.5	2087.4	456.7	2607.0	4142.5	0.0	201.4	734.95
2043	9260.9	422.8	51.9	2187.4	2267.2	491.4	2875.4	4550.5	0.0	221.1	806.93
2044	10042.0	455.8	56.1	2351.5	2476.6	529.2	3137.3	4948.8	0.0	240.0	875.90
2045	11192.0	503.3	60.0	2524.9	2661.3	568.3	3437.1	5393.8	0.0	263.4	961.44
2046	12333.9	550.4	64.0	2703.9	2853.9	608.9	3754.9	5863.3	0.0	287.3	1048.76
2047	13475.3	596.8	68.9	2900.8	3093.0	654.8	4091.6	6384.7	0.0	312.7	1141.21
2048	14776.1	649.4	73.6	3112.6	3340.6	702.5	4473.0	6961.7	0.0	340.9	1244.27

Table 7-7: Project Corridor Total Average Daily and Annual Toll Collection (Rs in Thousands) in Likely Scenario

Year	Passenger Car	Taxi	Minibus	Standard Bus	Tempo/ LCV	2-Axle Truck	3-Axle Truck	Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	Oversized Vehicle (>6 Axles)	Total Daily (Rs in Lakhs)	Total Annual (Rs in Crores)	Cumulative Revenue (Rs in Crores)
2019	1080.5	44.2	17.9	616.4	588.1	146.6	419.1	745.8	0.0	37	133.54	134
2020	1193.5	47.9	18.6	642.2	621.6	153.1	455.9	806.2	0.0	39	143.77	277
2021	1318.4	52.0	19.3	669.0	657.1	159.9	495.8	871.5	0.0	42	154.87	432
2022	2617.2	99.6	35.7	1241.1	1237.1	299.0	947.7	1681.0	0.0	82	297.78	730
2023	3042.3	113.9	39.2	1361.0	1382.0	329.3	1082.9	1912.6	0.0	93	338.11	1068
2024	3547.4	129.9	42.2	1481.0	1504.5	359.2	1230.3	2148.7	0.0	104	381.18	1449
2025	4056.3	146.4	45.8	1614.2	1661.2	391.8	1386.4	2425.5	0.0	117	428.06	1877
2026	4653.2	165.2	49.9	1755.4	1832.6	426.5	1579.1	2727.2	0.0	132	481.40	2359
2027	5326.4	186.9	54.2	1913.0	2017.3	465.9	1781.5	3074.8	0.0	148	540.93	2900
2028	6053.2	208.8	59.1	2091.1	2236.0	511.2	2019.1	3458.9	0.0	166	607.26	3507
2029	6902.5	234.9	64.3	2259.5	2461.2	552.5	2262.7	3839.6	0.0	186	678.07	4185
2030	7746.6	260.2	69.1	2444.4	2667.3	598.7	2514.2	4257.9	0.0	206	750.38	4935
2031	8815.4	292.9	75.0	2650.7	2942.0	650.2	2804.0	4724.9	0.0	230	837.86	5773
2032	9964.9	325.7	80.4	2870.1	3176.5	705.4	3132.5	5265.1	0.0	255	931.50	6705
2033	11153.5	361.6	87.4	3100.6	3491.7	762.6	3491.3	5837.7	0.0	283	1032.45	7737
2034	12486.4	398.8	94.2	3350.5	3806.9	824.9	3873.0	6451.2	0.0	313	1141.93	8879
2035	13988.0	442.2	101.6	3608.9	4142.8	889.0	4285.9	7134.2	0.0	346	1262.63	10142
2036	15739.2	492.4	110.1	3893.0	4542.0	960.6	4769.9	7891.0	0.0	384	1401.53	11543
2037	17553.5	543.4	118.1	4218.5	4921.3	1043.5	5294.8	8706.9	0.0	424	1547.60	13091
2038	19756.7	603.5	127.6	4562.6	5370.4	1130.5	5885.8	9612.0	0.0	470	1717.29	14808
2039	21875.3	662.2	137.6	4889.3	5841.8	1212.5	6466.1	10541.7	0.0	516	1884.36	16692
2040	24339.5	729.4	147.4	5272.0	6307.2	1309.7	7105.9	11561.6	0.0	568	2072.21	18765
2041	26819.9	798.3	157.9	5660.2	6826.7	1407.5	7816.2	12698.7	0.0	622	2269.77	21034
2042	29828.9	880.5	169.8	6097.4	7392.3	1518.0	8603.9	13910.7	0.0	684	2496.66	23531
2043	33088.6	967.4	182.8	6551.4	8025.8	1633.1	9468.5	15258.7	0.0	752	2743.93	26275
2044	36479.9	1055.2	196.2	7034.0	8678.1	1755.0	10339.9	16605.0	0.0	821	2998.23	29273
2045	40112.9	1154.3	210.5	7536.2	9378.5	1881.2	11315.8	18085.8	0.0	897	3273.14	32546
2046	44225.0	1262.7	225.5	8093.1	10112.0	2022.8	12350.5	19719.1	0.0	980	3577.39	36124
2047	48289.9	1368.8	241.7	8680.1	10914.6	2173.3	13479.1	21469.5	0.0	1066	3891.52	40015
2048	53407.5	1499.4	258.5	9302.8	11752.9	2329.4	14733.2	23419.4	0.0	1167	4259.66	44275



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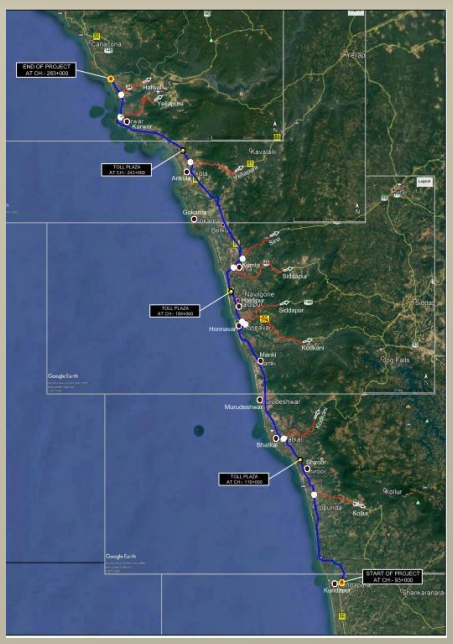
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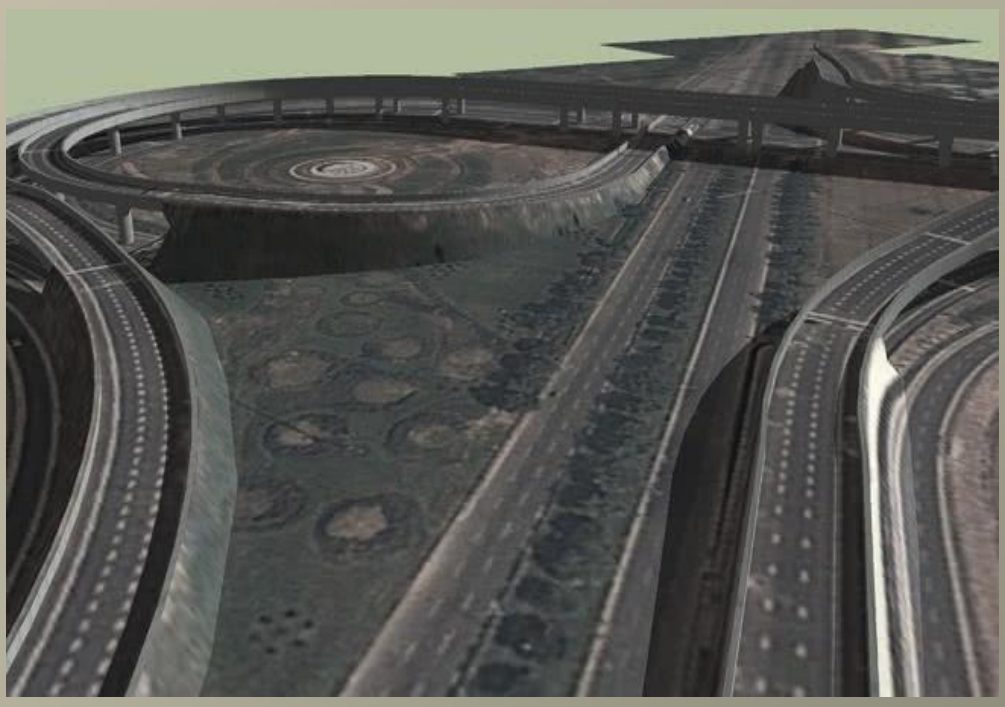
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Four- Laning of Goa / Karnataka Border to Kundapur –Section of NH-17 from Km 93.700 to Km 283.300

TRAFFIC STUDY REPORT

JUNE 2018





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CHAPTER 1

INTRODUCTION

1.1 General

Project road from Goa/ Karnataka Border (Near Karwar) to Kundapur is about 190 km section of Mumbai - Goa highway (NH-17) fromKm 93.700 to Km 283.300.NH-17 most important transportation corridor along west cost of India. It starts at Panvel, at the junction of National Highway 4 (NH 4), and ends at Kanyakumari. NH-17 mainly traverses through the west coast of India, sometimes touching the shores of the Arabian Sea. The NH66 touches the Arabian Sea at Maravanthe in Karnataka, Thalassery, Alappuzha and Kollam in Kerala. It passes through the Indian states of Maharashtra, Goa, Karnataka, Kerala and Tamil Nadu

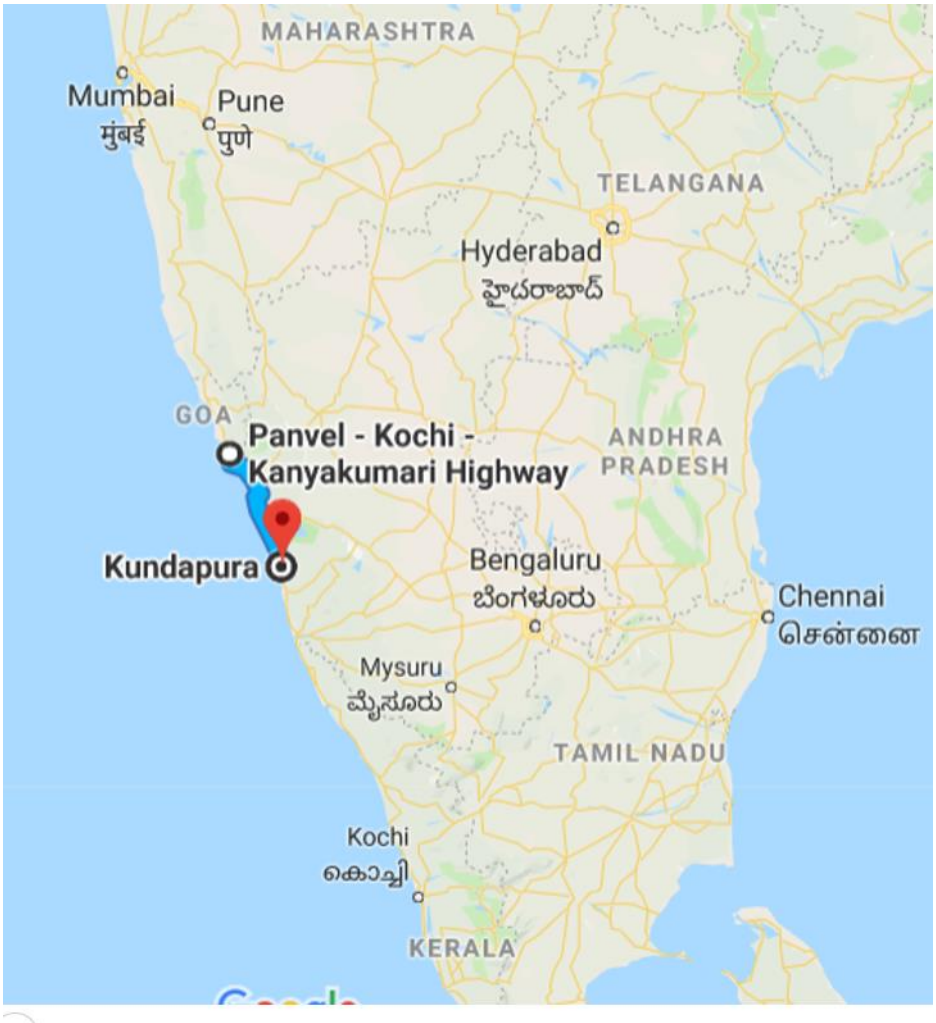


Figure 1-1: Location Plan in Regional Context

The project is undertaken by IRB Infrastructure Developers Limited as Concessionaire under NHDP Phase-IV through Public Private Partnership (PPP) on DBFOT model. Concessionaire was appointed on 3rd March 2014 with a concession period of 28 years including construction period of 910 days.

IRB Infrastructure Developers Limited have appointed GMD Consultants to conduct a traffic study on project road to bring out the important parameters of project traffic and its forecast during concession period.

For making the proper assessment of traffic volume, base year traffic and its projection, GMD Consultants, have carried out the necessary traffic surveys and investigations. This report, which contains analysis of traffic patterns, traffic and revenue projections up to horizon year, fulfills part of scope of this assignment.

The project is under construction and more than 50% of the project is completed.Consultants have carried out traffic surveys at proposed toll plaza locations. Year 2018-19 has been taken as the base year in which traffic surveys are carried out.

1.2 The Project

Project of Four Laning of Goa / Karnataka Border – Kundapur section of NH-17 from Km 93.700 to Km 283.300 is Phase-IV project of NHAI on PPP basis under DBFOT pattern.Ankola, Bhatkal, Kumta and Karwar are the main urban centers on project Corridor. For most of the length project road runs parallel to western cost. Following figure depict alignment of project highway in local context.

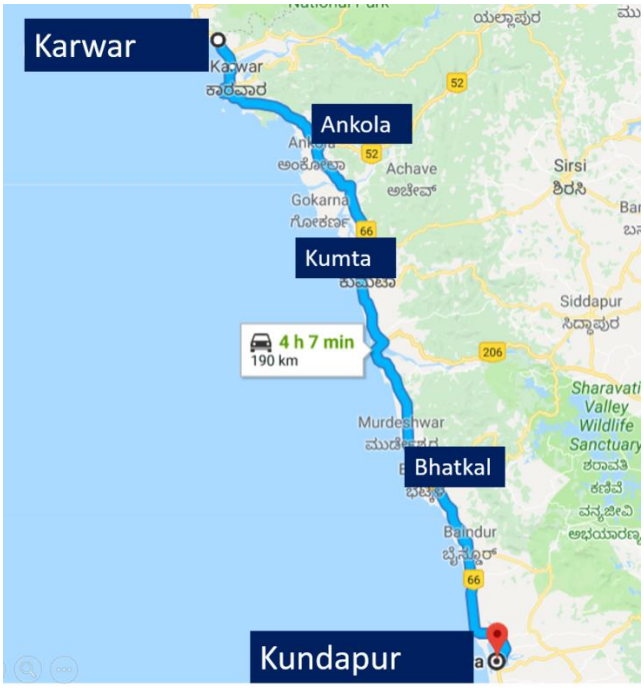


Figure 1-2: Location Plan in Local Context

It can be observed that project road forms a main connectivity between Mumbai and southern parts on west coast like Goa, Kanoor, Kocchi, Thiruanantpuram and finally Kanyakumai. Thus transportation requirement in terms of passenger and goods are largely dependent on this spinal road.

1.3 Brief Description of the Project Influence Area (PIA)

The project road section of NH-17 (now NH-66) passes through the important places like Karwar, Bhatkal, Ankola. This is the main connectivity between Mumbai and- Goa and Kerala. The Project Road passes through the districts of Karnatakaand Goa.

National Highway 66, commonly referred to as NH 66 (Erstwhile NH-17 and a part of NH-47),is a busy National Highway that runs roughly north–south along the western coast of India, parallel to the Western Ghats. It connects Panvel (a city south of Mumbai) to Kanyakumari, passing through the states of Maharashtra, Goa, Karnataka, Kerala and Tamil Nadu

Following are the major centers of areas which have impact on project road in terms of traffic.

Goa:is a state in India within the coastal region known as the Konkan, in Western India. It is bounded by Maharashtra to the north and Karnataka to the east and south, with the Arabian Sea forming its Western coast. It is India's

smallest state by area and the fourth smallest by population. Goa has the highest GDP per capita among all Indian states,[3] that is two and a half times that of the country. It was ranked the 'best placed State' by the "Eleventh Finance Commission" for its infrastructure and ranked on top for the 'best quality of life' in India by the National Commission on Population based on the 12 Indicators

Kumta: is a town and a taluk in the Uttara Kannada district of Karnataka, India.[1] Kumta is about 142 km south of Margao and 58 km north of Bhatkal. It is situated 72.7 km from Karwar, the district headquarters. It is one of the important stations along the Konkan Railway line running between Mumbai and Mangalore.

Bhatkal: is a port town in the Uttara Kannada District of the South Indian state of Karnataka. The town of Bhatkal lies on National Highway 66, which runs between Mumbai and Kochi, and has one of the major railway stationsalong the Konkan Railway line, which runs between Mumbai and Mangaluru

As project highway runs along the west coast for most parts of its alignment, there are only radial roads connecting to project highway which work as feeder network to project road.

Four laning of project highway is higher priority of both central & concerned state governments. Currently highway has bottlenecks at many places which are being improved on priority. Due to poor condition of NH-17 and higher number of accidents some part of traffic uses Mumbai -Pune Expressway and then take Bangalore Highway (NH-48) to go to Goa and parts of Karnataka and Kerala. This traffic is expected to come back on project highway.

1.4 Organization of Report

The traffic study report covers the traffic study along the project corridor. The entire analysis, modeling and traffic and toll forecast have been covered in following three sections:

i. Traffic Surveys and Analysis
ii. Traffic Forecasting
iii. Toll Revenue Forecasting

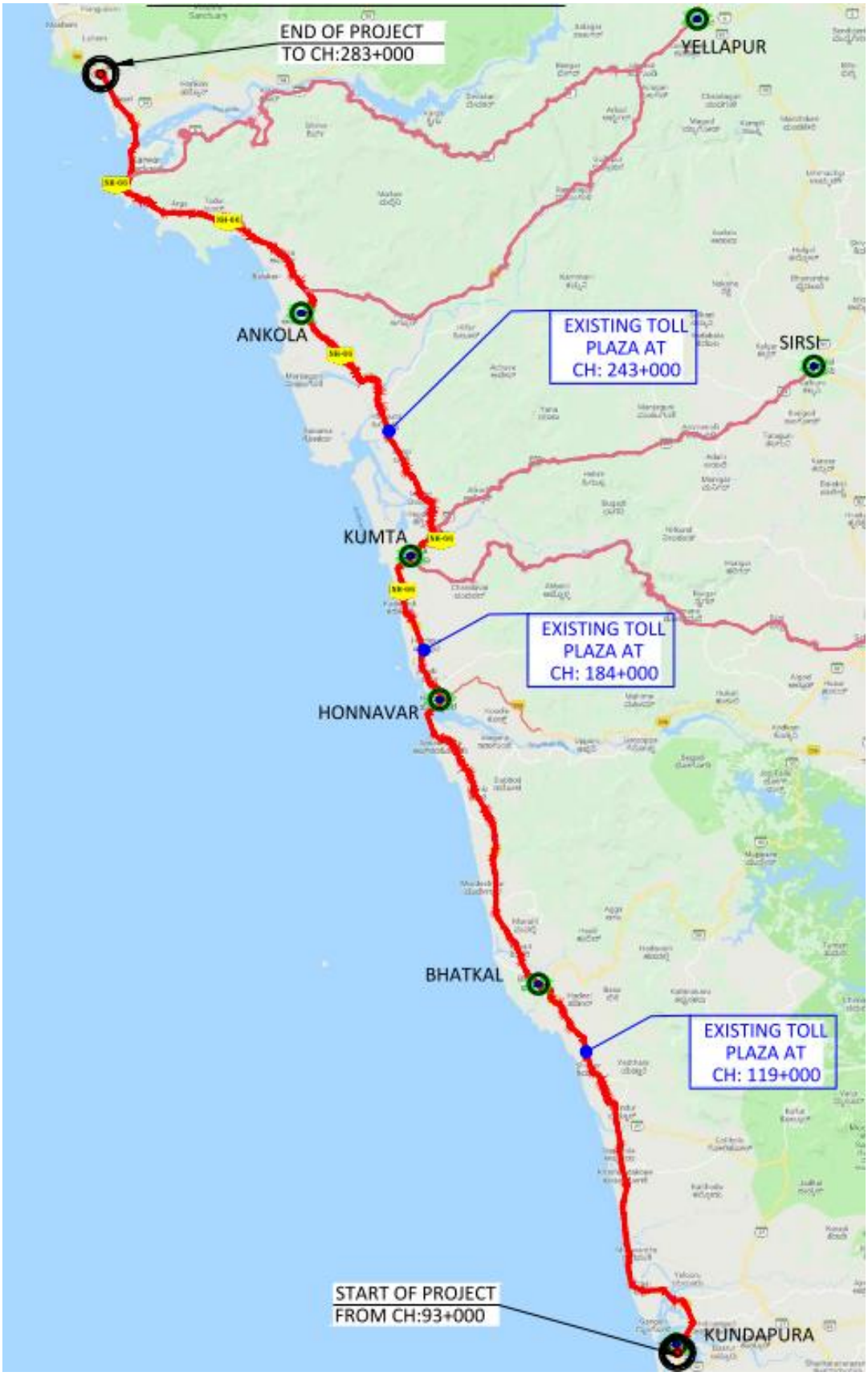


Figure 1-3: Location Plan

CHAPTER 2

TRAFFIC SURVEYS AND ANALYSIS

2.1 Traffic Surveys

The Consultants have carried out a reconnaissance survey of the project corridor to understand the general traffic and travel characteristics on the corridor.

Traffic data forecast is one of the important inputs required for a BOT/DBFO highway/roadway project. In order to arrive at a fair estimate of traffic forecast it is necessary to collect data, analyze, model, validate and then forecast. The Consultants have carried out a reconnaissance survey of the project corridor to understand the general traffic and travel characteristics on the corridor.

The following traffic studies have been carried out for the project.

- Classified traffic volume counts at the proposed Three toll plaza locations on Goa / Karnataka Border – Kundapaur section of NH-17
- Origin - Destination studies at the proposed Three toll plaza locations on Goa / Karnataka Border – Kundapaur section of NH-17
- Registration Number Plate survey for one day at all three-proposed toll plaza location

The main objective of the surveys is to:

- Determine the existing traffic movement characteristics of project
- Establish Base year traffic demand
- Identification of travel patterns and influence area of project
- Deriving growth factor for traffic demand forecasting
- Estimation of corridor traffic including traffic diversion if any
- Preparation of revenue model and projection of revenue as per toll policy for various scenarios

Table 2-1below lists the details of traffic survey locations and dates of surveys.

Table 2-1 : Traffic Survey Locations

SR. NO	LOCATION	CTV	OD	NUMBER PLATE
1	117.900	30.05.2018 – 06.06.2018	01.06.2018	01.06.2018
2	179.800	30.05.2018 – 06.06.2018	02.06.2018	02.06.2018
3	239.640	30.05.2018 – 06.06.2018	04.06.2018	02.06.2018

The snaps showing the project road & various traffic surveys in progress are presented below.



CTV Survey in Progress at TP 1 (Km 117.900)



O-D Survey in Progress at TP 1 (KM 117.900)



CTV Survey in Progress atTP 2 (KM179.800)



O-D Survey in Progress at TP 2 (KM 179.800)

	
CTV Survey in Progress at TP 3 (KM 239.640)	O-D Survey in Progress at TP 3 (KM 239.640)

A brief description of each of the survey undertaken for the project corridor is presented in subsequent sections.

The locations of each of the traffic survey are shown in map below



Figure 2-1: Survey Location Plan

2.2 Classified Traffic Volume Count

The objective of conducting Classified Traffic Volume Count is to understand the traffic flow pattern on a roadway. The Classified Traffic Volume Count survey has been conducted at three locations for the entire 24 hours a day, 7 day period as recommended in IRC: SP: 19-2001 “Manual for Survey, Investigation and Preparation of Road Projects” at the proposed three toll plaza locations on NH-211. These locations were indicated in ***Figure 2-1*** and listed in

Table 2-1.

The vehicles can broadly be classified into fast moving / motorized and slow moving / non-motorized vehicles, which can be further classified into specific categories of vehicles. The groupings of vehicles were further segregated to capture the tollable vehicle categories specifically and toll exempted vehicles were counted separately. The detailed vehicle classification system considered for this study is presented in ***Table 2-2*****.** Traffic surveys were conducted for both directional traffic using manual counting methods. Videography was also done for all 7 days and as used for validation of manual count data.A day was divided into two shifts of 12 hours each and different groups of enumerators with a supervisor were assigned for each shift. The count data was recorded at 15-minute intervals for each vehicle group for each direction of travel separately. Trained enumerators were deployed for counting and recording by making tally marks in the five-dash system. Hourly totals were made at the end of the shift.

Table 2-2 : Vehicle Classification System

Vehicle Type	
Auto Rickshaw	
Passenger Car	Car, Jeep, Taxi & Van
Bus	Mini Bus
	Standard Bus
Truck	Light Goods Vehicle (LCV)
	2 – Axle Truck

	3 Axle Truck (HCV)
	Multi Axle Truck (4-6 Axle)
	Oversized Vehicles (7 or more axles)
Other Vehicles	Agriculture Tractor, Tractor & Trailer

Source - IRC: 64 – 1990

2.3 Origin Destination Survey

In order to understand the travel pattern in the influence area of the project, Origin and Destination (O-D) Surveys was carried out for one day (24 hours) at five locations. ReferFigure 2-1 for location details.

The O-D survey was carried out based on the roadside interview method as described in IRC: 102-1988. Police assistance was arranged at the survey locations for successfully carrying out these surveys. Both passenger and commercial vehicles plying on the project road were stopped on a random sampling basis and interviewed.

Trained enumerators under the supervision of transport planners collected the trip characteristics using the survey forms designed for this purpose. The O-D survey elicited characteristics like origin, destination, frequency, length of trip, etc., both for passenger and goods vehicles. The information collected during roadside interviews was analyzed to obtain the trip distribution based on a zoning system suitably designed in the study. Police assistance was arranged for stopping vehicles and ensuring safety during survey.

2.3.1 Sample Size

The following table presents sample size considered for O-D surveys. The sample sizes are more than 10% of the ADT values at all toll plaza locations. Hence the samples are good enough to estimate the travel pattern reliably on the project road.

Table 2-3 : Sample size for O-D Surveys at the Toll Plaza Locations

Road	OD Sample Size	ADT	Sample Size as % of ADT
TP1 @117.900	3089	7094	43
TP2 @179.800	3716	7820	47

TP3 @239.640	2370	4618	51
Total	**9175**	**19532**	**47**

2.4 Data Analysis

2.4.1 Analysis of Traffic Volume Count

Data collected from the site were punched into the computer and analyzed using spread sheet in MS Excel. The various vehicle types having different sizes and characteristics were converted into a single unit called Passenger Car Unit (PCU). Passenger Car equivalents for various vehicles are adopted based on recommendations of Indian Road Congress prescribed in "IRC-64-1990: Guidelines for Capacity of Roads in Rural areas". The adopted passenger car unit values (PCU) are presented in ***Table 2-4*.**

Table 2-4 : PCU Factors Adopted for Study

Vehicle Type	PCUs
Car	1.0
Mini Bus	1.5
Standard Bus	3.0
LCV/LGV	1.5
s2/3 Axle Truck	3.0
4 – 6 Axle Truck	4.5
MAV	4.5
Auto Rickshaw	1.0
Van/Tempo	1.0
Agriculture Tractor with Trailer	4.5
Agriculture Tractor without Trailer	1.5

Source: IRC: 64-1990

2.4.2 Average Daily Traffic (ADT)

Traffic volume count data collected for 7 days at each of the Toll Plaza locations on NH-211were averaged to determine the Average Daily Traffic (ADT). The location wise current ADT by vehicle type is presented in the Table 2-5.

Table 2-5 : Average Daily Tollable Traffic

Location	Car/Jeep/Van	Bus	MiniBus	LCV	2- Axle	3 Axle	4 - 6 Axle	7 & above Axle	Total	PCU
TP1 @117.900	3258	564	367	481	1004	448	971	0	7093	17567
TP2 @179.800	3546	647	408	772	985	508	952	0	7819	18827

Location	Car/Jeep/Van	Bus	MiniBus	LCV	2- Axle	3 Axle	4 - 6 Axle	7 & above Axle	Total	PCU
TP3 @239.640	2353	365	222	665	501	317	197	0	4620	9504

2.4.3 Annual Average Daily Traffic (AADT)

Seasonal variation factors are required to account for variations in the pattern of traffic volume on the sections of project road over different months or seasons of the year. There are various methods of determining the seasonality factor. The most direct method is using the past traffic counts, if traffic surveys are carried out round the year. But in India, round the year counts are seldom carried out or available for any road. Therefore, the seasonal factors are mostly calculated based on traffic related secondary data like fuel sales or toll collections etc. Petrol and diesel sale data obtained from fuel stations is most representative for the project road having variation from month to month. Data regarding historic fuel sales has been collected from fuel outlets on project corridor in Project Influence Area (PIA). The trend in the fuel sales data across all locations was analyzed. There were few entries which were out of place and wayward. Such entries were discarded in analysis.

Traffic surveys have been carried out in the month of May (2018). Therefore, the seasonal variation factors for the month of May will be applicable to derive the Annual Average Daily Traffic (AADT) from Average Daily Traffic (ADT) values.

Fuel stations from which details of sales were taken are scattered all around project length. Following table provides list of fuel stations.

Table 2-6 : Fuel Stations

Sr.No.	Fuel station	Location
1	Greeshma Fuels & Services	Shirur
2	Shivani Service Station	Ankola
3	Manjunath fuels Service	KumtaMirjan
4	S.G. Enterprises	NH-66,Yadthare
5	Shri Devi Auto Services	Bhatkal
6	Akshay fuel station	Kamath
7	Kamaksh auto service station	Nnh-17, Bhatkal

Sr.No.	Fuel station	Location
8	S.L. filling station	Chandia,Karwar
9	V.M. Mirajanker	Kumta (North Kanara)

Seasonal variations and correction factors derived based on the above fuel sales in the PIA are given in the following tables. The factors for month of May are highlighted in the table below.Finally, average of yearly factor was taken as seasonal factor for variation of traffic.

Table 2-7 : Seasonal Variation for NH-17

Month / Year	YEAR - 2013		YEAR - 2014		YEAR - 2015		YEAR - 2016		YEAR - 2017		Average SCF	
	Petrol	Diesel	Petrol	Diesel	Petrol	Diesel	Petrol	Diesel	Petrol	Diesel	Petrol	Diesel
April	0.991	1.128	1.045	1.143	1.020	1.024	1.071	1.132	1.099	1.136	1.045	1.113
May	1.155	1.167	1.137	1.081	1.094	1.057	1.135	1.245	1.243	1.231	1.153	1.156
June	0.958	0.831	0.958	0.863	0.936	0.784	0.892	0.835	0.944	0.899	0.938	0.842
July	0.912	0.813	0.946	0.754	0.905	0.745	0.981	0.742	0.964	0.811	0.942	0.773
August	0.939	0.865	0.857	0.770	0.928	0.744	0.974	0.830	0.954	0.854	0.931	0.812
September	0.878	0.908	0.915	0.915	0.988	0.935	0.932	0.750	0.922	0.890	0.927	0.880
October	1.002	1.030	1.030	1.053	1.054	1.559	0.991	0.997	0.995	1.018	1.015	1.131
November	1.107	1.032	0.988	1.090	1.011	1.004	0.944	1.036	0.954	0.994	1.001	1.031
December	1.089	1.239	1.106	1.266	1.103	1.198	0.995	1.126	1.030	1.163	1.064	1.198
January	1.017	1.272	1.029	1.096	1.043	1.082	1.025	1.166	0.989	1.047	1.022	1.098
February	1.017	0.795	0.940	0.989	0.956	0.910	1.017	1.083	0.935	0.976	0.962	0.989
March	0.814	0.874	1.054	0.997	0.955	0.920	1.053	1.095	0.971	0.981	1.009	0.998

Note: Surveys conducted in June 2018

Table 2-8: Seasonal Variation Factors for NH-17

Toll Plaza	Seasonal Variation Factors*	
	Petrol	Diesel
TP1, TP2, TP3	**0.938**	**0.842**

Seasonal correction factor which is reciprocal of variation factor is given as under.

Table 2-9 : Seasonal Correction Factors for NH-17

Toll Plaza	Seasonal Correction Factors*	
	Petrol	Diesel
TP1, TP2, TP3	**1.066**	**1.187**

**Note: The ADT values will be multiplied by the Seasonal Variation Factor to obtain the AADT values.*

Details of fuel sales of various filling stations are placed as Annexure –I

2.4.4 Traffic Analysis

Various parameters and characteristics of traffic on Goa/ Karnataka Border to Kundapur section of NH-17 are discussed briefly as under

2.4.4.1 Daily Variation of Traffic

Daily variation of tollable traffic during different days of week at thetoll plaza locations on NH-17 in terms of passenger vehicles and commercial vehicles for each direction has been illustrated in the following bar diagrams below. These tollable traffic volumes reveal that the percentage difference between passenger and commercial traffic movement is more or less constant on weekdays.

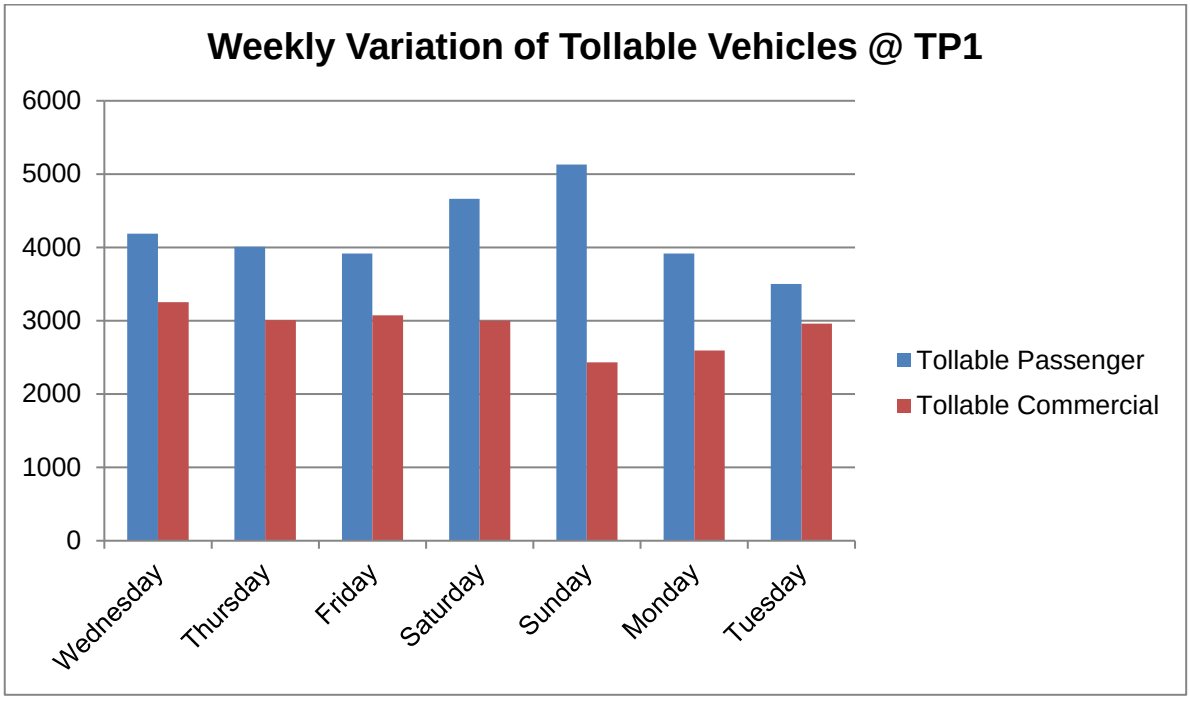


Figure 2-2: Variation of Total TollableTraffic at TP1

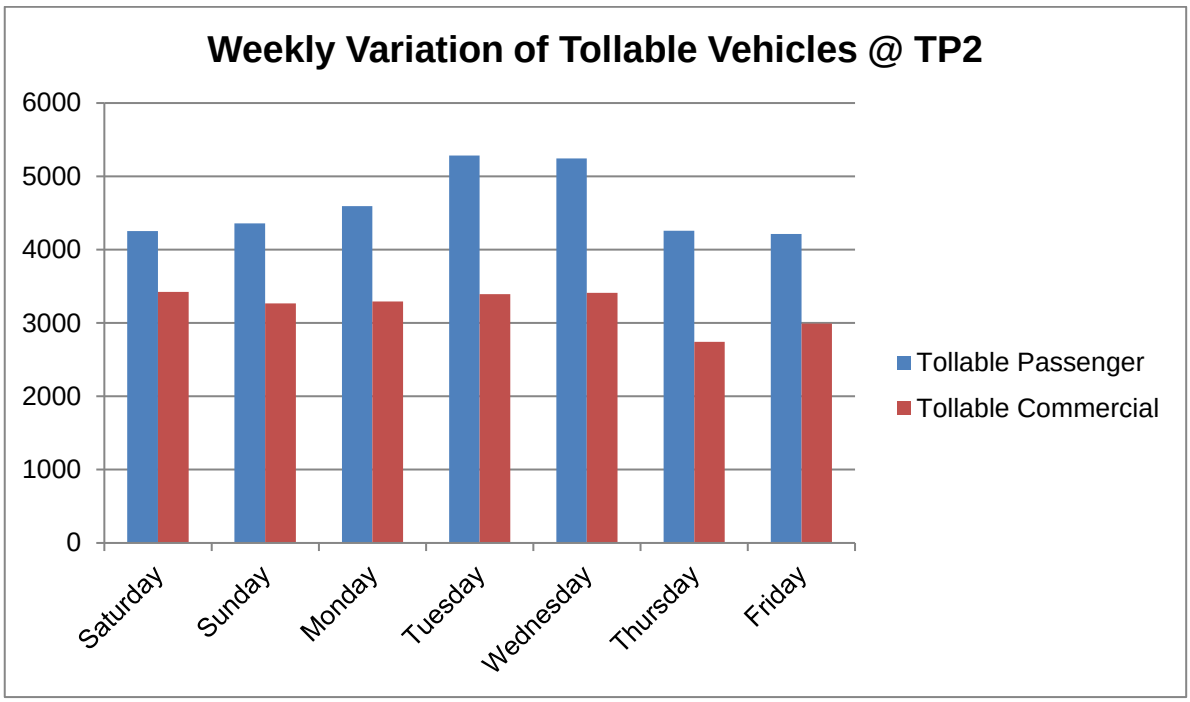


Figure 2-3: Variation of Total TollableTraffic at TP2

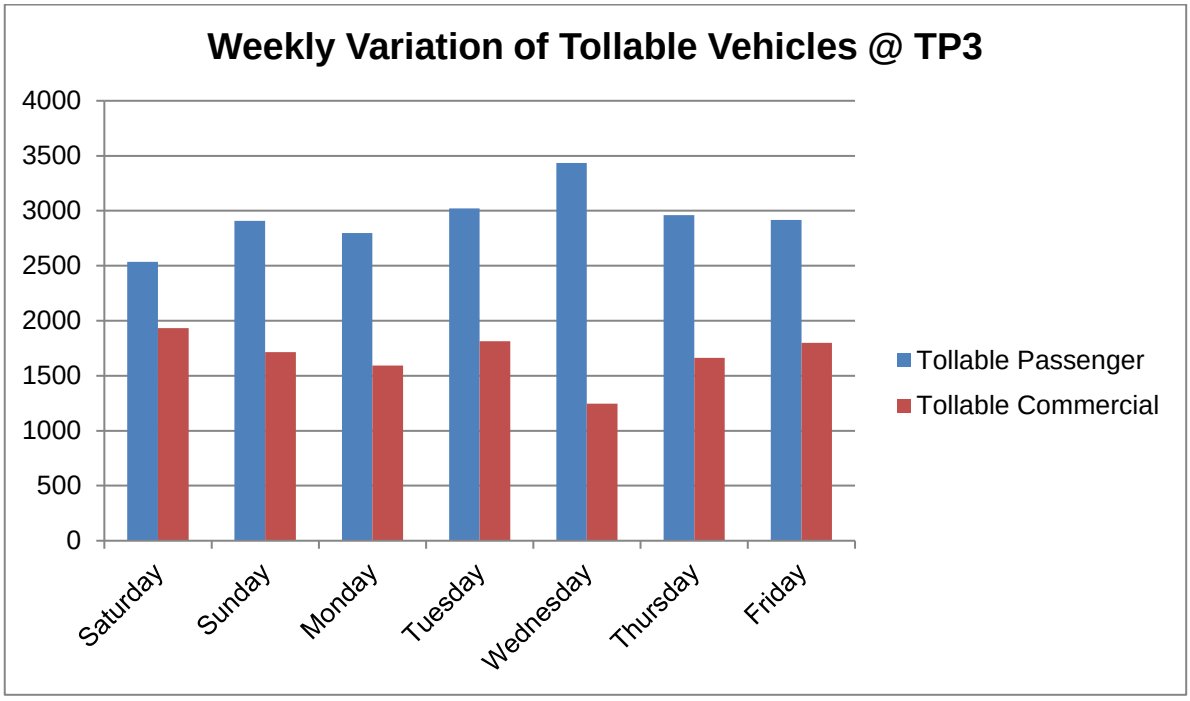


Figure 2-4: Variation of Total TollableTraffic at TP3

Hourly variation of traffic at all three locations is given as under.

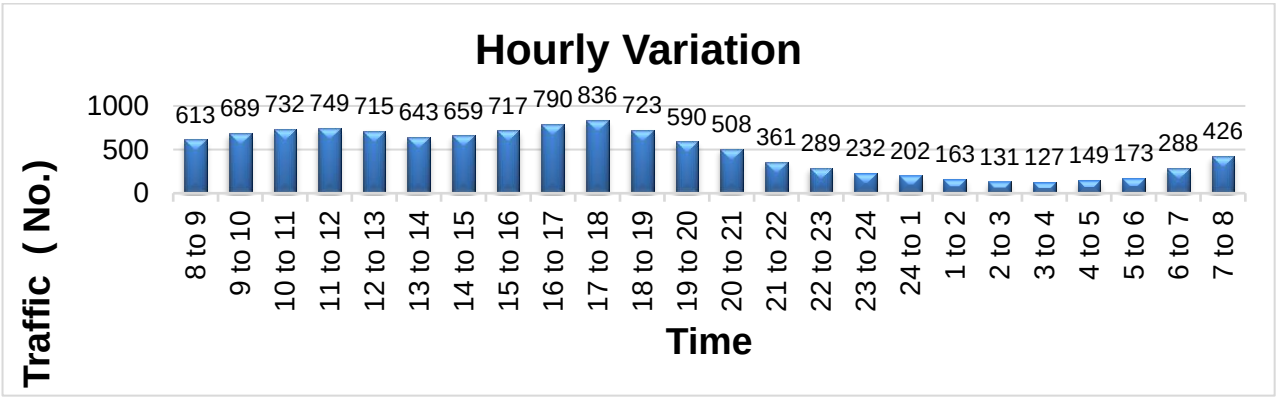


Figure 2-5: Hourly Variation of Total Traffic at TP1

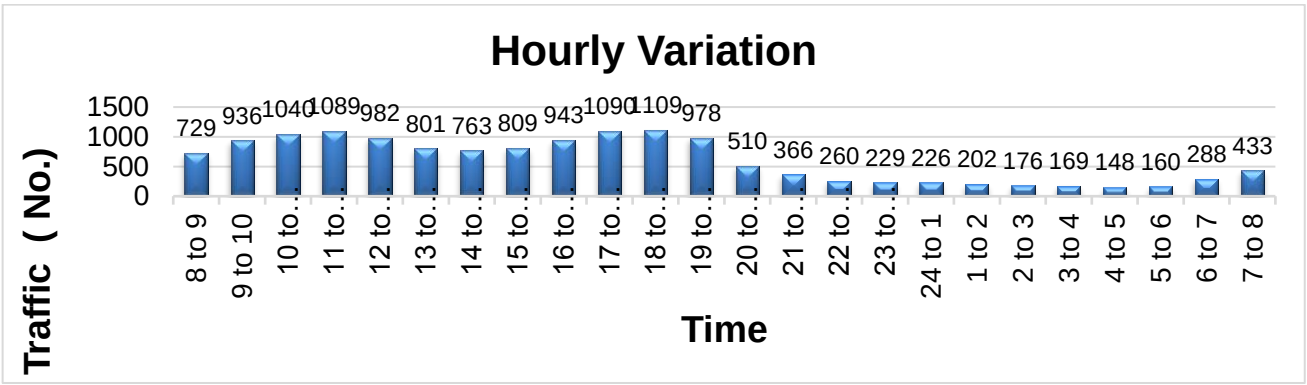


Figure 2-6: Hourly Variation of Total Traffic at TP2

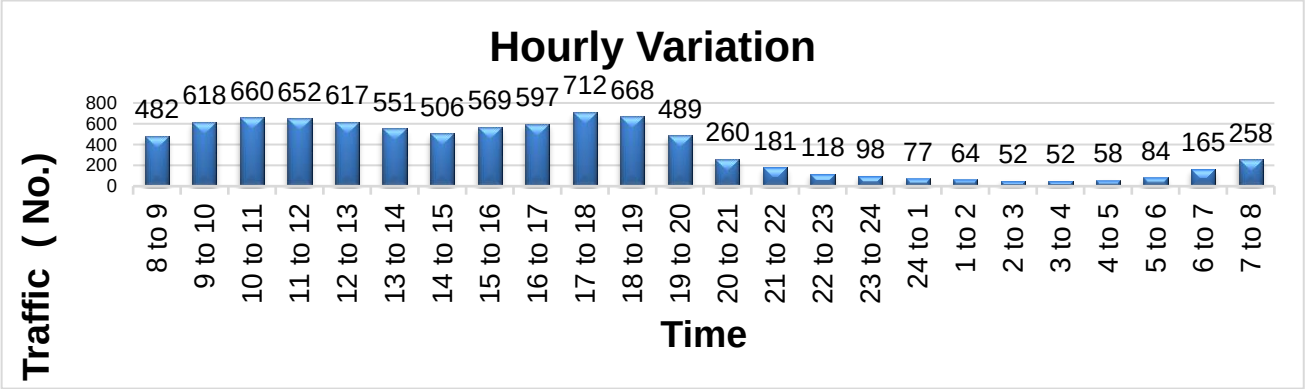


Figure 2-7: Hourly Variation of Total Traffic at TP3

Hourly variation shows the typical phenomenon of rural highway without any significant peak hour. Traffic dips down only in late night.

2.4.4.2 Modal Split

Modal split of traffic at provides a good insight in to mix and combination of traffic which can be helpful in understanding traffic forecast. Mode-wise distribution of traffic is illustrated in pie charts below.

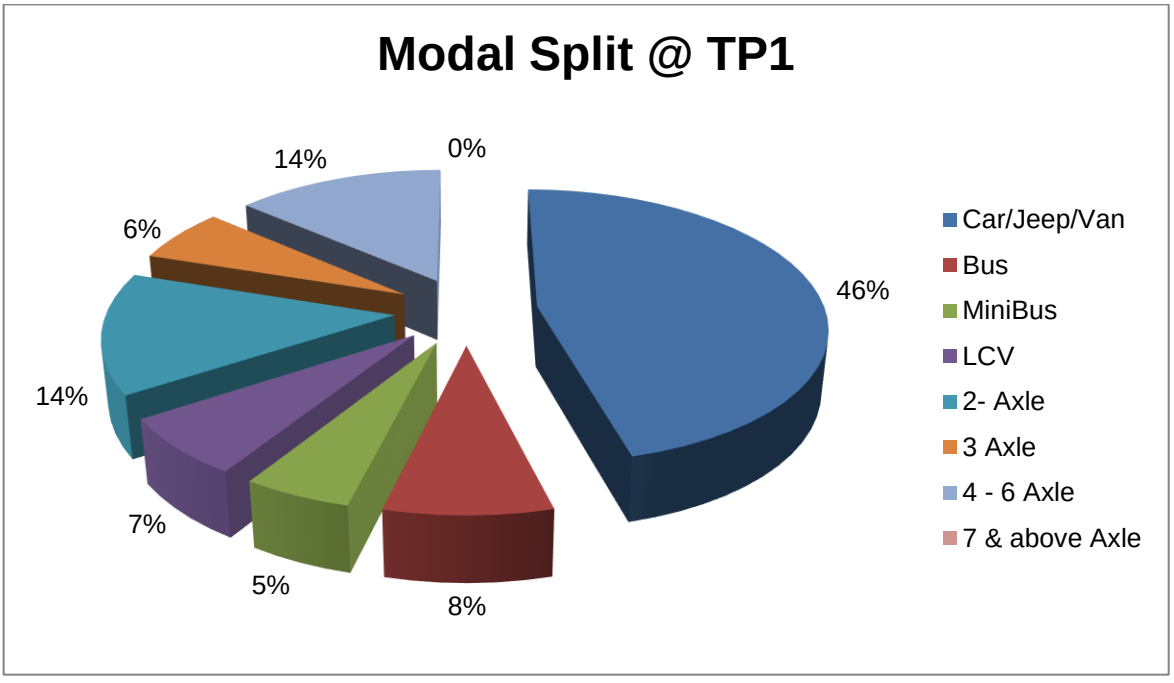


Figure 2-8: Mode wise Composition of Traffic at TP1

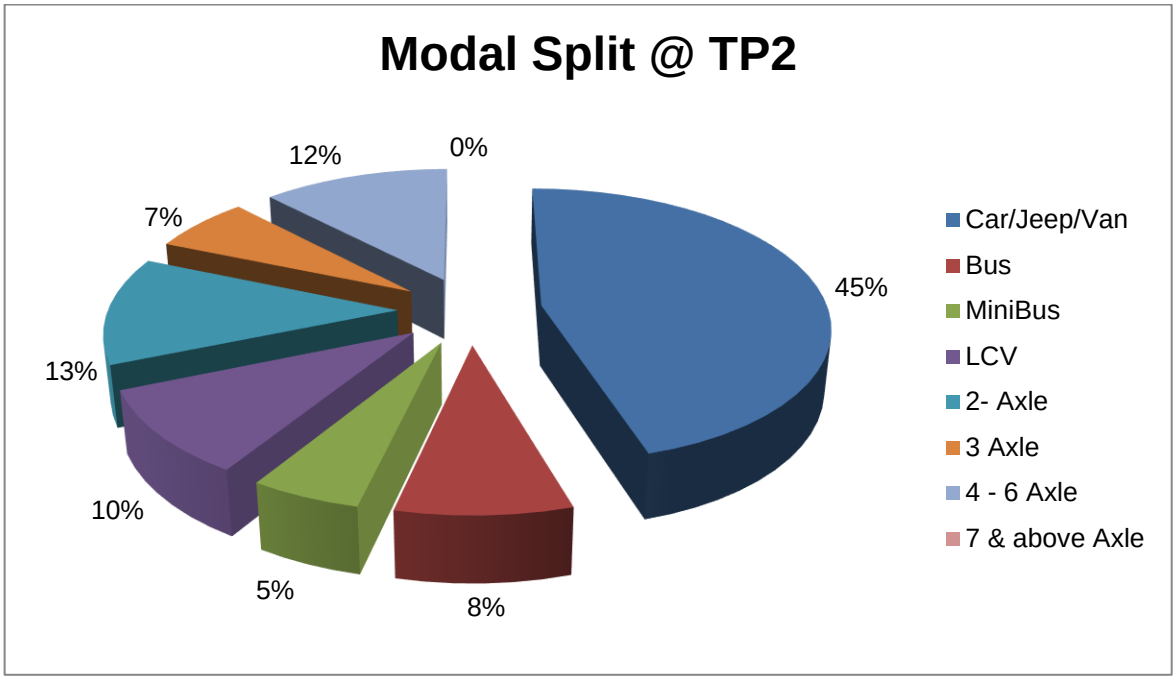


Figure 2-9: Mode wise Composition of Traffic at TP2

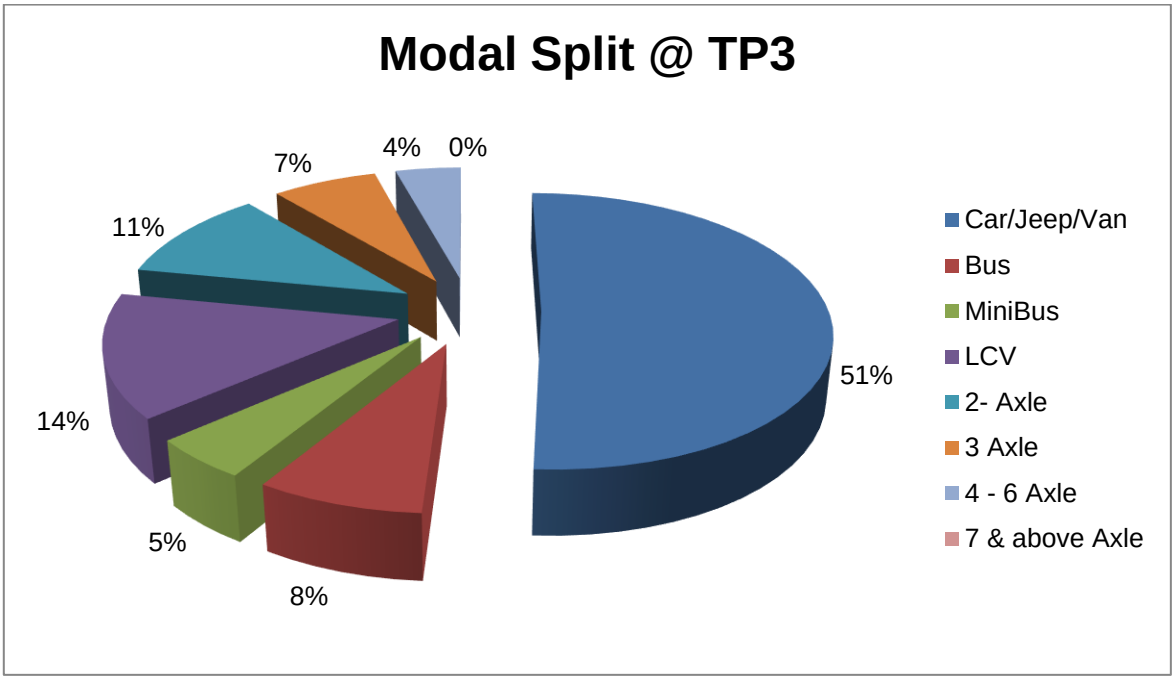


Figure 2-10: Mode wise Composition of Traffic at TP3

2.4.4.3 Directional Distribution

The directional tollable traffic data was analyzed to establish the directional distribution of traffic. The results observed that at all the toll plaza survey locations, has been listed below:

Table 2-8 : Directional Distribution of the Tollable Traffic

Location / Vehicle	Direction	Nos	%
TP1 @119.87	To Karwar	3511	49
	To Kundapur	3583	51
TP2 @181.69	To Karwar	4019	51
	To Kundapur	3801	49
TP3 @243.80	To Karwar	2399	52
	To Kundapur	2219	48

2.4.5 Origin - Destination Survey

2.4.5.1 Data Validation

The collected data were entered into the computer and checked manually. Incorrect entries were corrected by cross-checking it with original field data sheets. The data was also checked for inconsistencies.

2.4.5.2 Zoning System

For understanding the spatial dimensions of the trip characteristics of the vehicles interviewed during the O-D survey, a scientifically derived zoning system was adopted.

While defining zone boundaries, the following were considered:

- Important towns and industrial centers along the project corridor.
- Administrative boundaries of district and state boundaries.
- Configuration of the project roads in the regional road network with respect to other National Highways.

The following figure below shows the Zoning System considered in this study. on map.

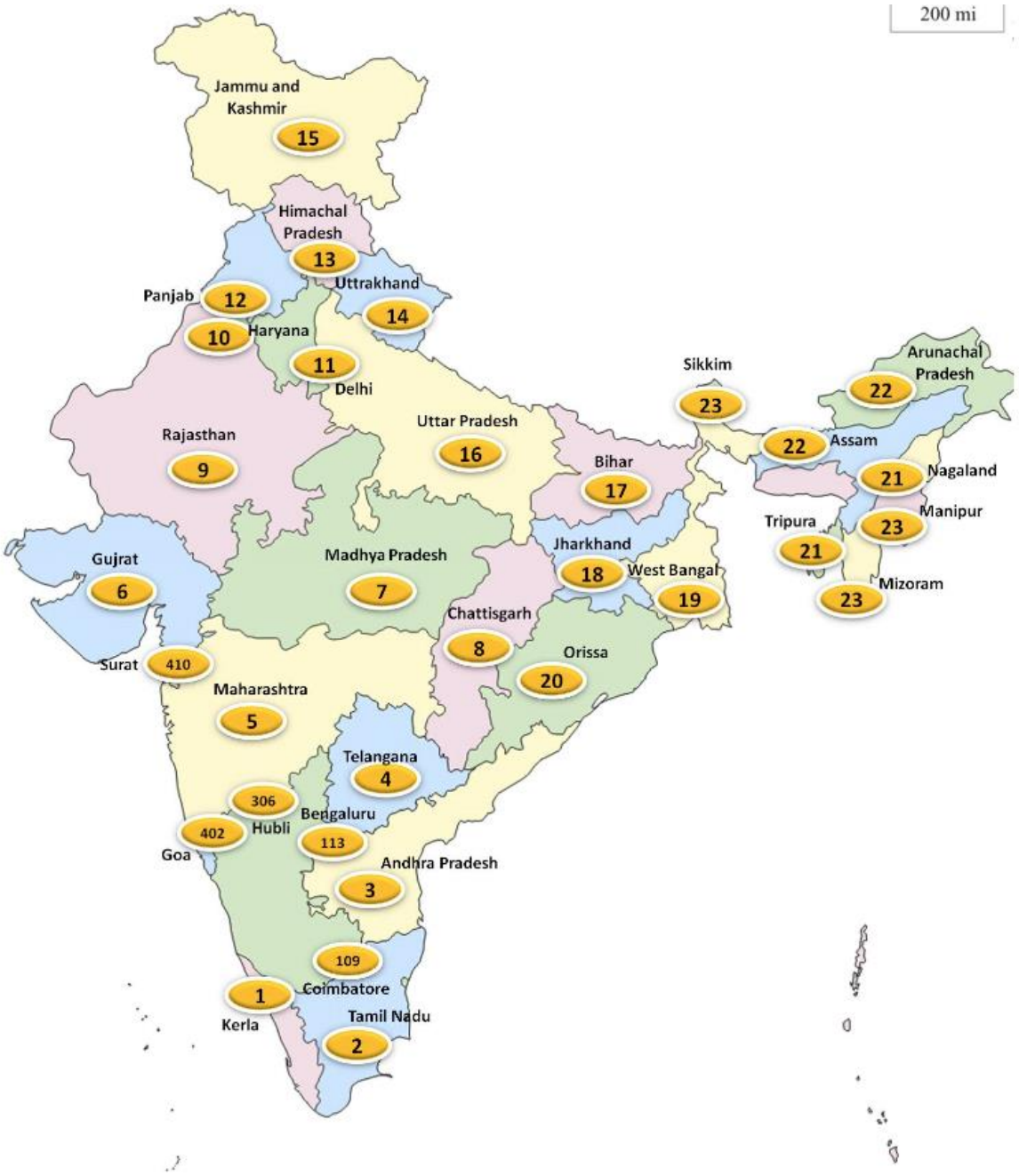


Figure 2-11: Country Zoning



Figure 2-12: Karnataka State Zoning

The following table presents the Zoning System considered in this study.

Table 2-9 : Zoning System considered for the study

Code	City Before TP-1
101	Shiroor
102	Bijoor
103	Kundapura
104	Udupi
105	Manglore
106	Moodbidri
107	Karkala
108	Kochi
109	Coimbatore
110	Salem
111	Chennai
112	Mysore
113	Bengaluru

Code	City Between TP-1 and TP-2
201	Bhatkal
202	Murudeshwar
203	Munki
204	Honnavar
205	Gundabala
206	Siddapaur
207	Davangiri

Code	City Between TP-2 and TP-3
301	Kumta
302	Gokarna
303	Madangeri
304	Ankola
305	Sirsi
306	Hubali/Dharwad
307	Haveri

Code	City after TP-3
401	Karwar
402	Goa
403	Ratnagiri
404	Kolhapur
405	Mumbai
406	Pune
407	Nashik
408	Aurangabad
409	Ahmedabad
410	Surat

Table 2-10 : Zoning System considered for the study

Code	State
1	Kerala
2	Tamil Nadu
3	Andra Pradesh
4	Telangana
5	Maharashtra
6	Gujarat
7	Madya Pradesh
8	Chhattisgarh
9	Rajasthan
10	Haryana
11	Delhi
12	Punjab
13	Himachal Pradesh
14	Uttarakhand
15	Jammu and Kashmir
16	Uttar Pradesh
17	Bihar
18	Jharkhand
19	West Bengal
20	Orissa
21	Nagaland/Tripura
22	Assam/Arunachal
23	Sikkim/Manipur/Mizoram

2.4.5.3 Development of O-D Matrices

Origin-Destination (O-D)matrices are developed to assess the traffic movement pattern. These matrices actually provide distribution of trips for each zone as various inter-zonal movements. The origins and destinations of various types of vehicles observed at the O-D survey locations have been analyzed for O-D Matrices as per the Zoning System presented above. In OD surveys questions regarding origin, destination, trip purpose, frequency etc were asked to analyses traffic data for various parameters. Following tables present important aspect of OD survey analysis.

State-wise distribution of traffic is given in table below.

Table 2-11 : State wise distribution of traffic at Toll KM 117.900

State	LCV	2 Axle	3 Axle	4-6 Axle (Trucks/HCM/EME/MAV)	Total Commercial vehicle
KA	76.23%	61.11%	44.33%	52.27%	59.26%
MH	8.20%	17.28%	19.59%	14.39%	14.81%
TN	0.82%	2.47%	10.31%	12.12%	6.04%
KL	2.46%	7.41%	7.22%	6.82%	6.04%
HR	2.46%	3.70%	5.15%	1.52%	3.12%
GA	4.10%	2.47%	3.09%	0.76%	2.53%
GJ	1.64%	1.23%	2.06%	0.76%	1.36%
RJ	0.00%	1.23%	2.06%	1.52%	1.17%
MP	0.00%	0.00%	1.03%	3.03%	0.97%
NL	0.82%	0.62%	1.03%	0.76%	0.78%
NL	0.00%	1.23%	0.00%	1.52%	0.78%
AP	1.64%	0.00%	1.03%	0.76%	0.78%
TS	0.00%	0.00%	0.00%	1.52%	0.39%
NN	0.00%	0.00%	1.03%	0.00%	0.19%
PB	0.82%	0.00%	0.00%	0.00%	0.19%
TN	0.00%	0.00%	0.00%	0.76%	0.19%
KA	0.00%	0.00%	1.03%	0.00%	0.19%
DL	0.00%	0.62%	0.00%	0.00%	0.19%
CG	0.00%	0.00%	1.03%	0.00%	0.19%
KA	0.00%	0.00%	0.00%	0.76%	0.19%
UP	0.00%	0.00%	0.00%	0.76%	0.19%
KL	0.00%	0.62%	0.00%	0.00%	0.19%
KS	0.82%	0.00%	0.00%	0.00%	0.19%
Grand Total	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**

Table 2-12 : State wise distribution of traffic at Toll KM 179.800

State	LCV	2 Axle	3 Axle	4-6 Axle (Trucks/HCM/EME/MAV)	Total Commercial vehicle
KA	96.23%	59.06%	46.36%	65.90%	59.71%
MH	1.89%	18.90%	17.88%	10.40%	13.91%
TN	0.00%	4.72%	11.92%	8.09%	8.40%
KL	0.00%	4.72%	7.95%	4.05%	5.23%
NL	0.00%	3.94%	3.97%	4.05%	3.86%
HR	0.00%	3.15%	4.64%	1.16%	2.55%
MP	0.00%	0.79%	1.99%	1.73%	1.58%
TS	1.89%	0.00%	1.99%	1.16%	1.24%
RJ	0.00%	3.15%	1.99%	0.00%	1.17%
GJ	0.00%	0.00%	0.66%	1.16%	0.76%
AP	0.00%	0.00%	0.00%	1.16%	0.55%
GA	0.00%	1.57%	0.00%	0.58%	0.55%
UP	0.00%	0.00%	0.00%	0.58%	0.28%
DN	0.00%	0.00%	0.66%	0.00%	0.21%
Grand Total	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**

Table 2-13 : State wise distribution of traffic at Toll KM 239.640

State	LCV	2 Axle	3 Axle	4-6 Axle (Trucks/HCM/EME/MAV)	Total Commercial vehicle
KA	91.22%	82.51%	70.90%	81.36%	83.85%
GA	4.39%	11.66%	2.99%	5.08%	6.46%
MH	1.69%	3.59%	16.42%	5.08%	5.34%
KL	0.68%	0.90%	3.73%	0.00%	1.26%
TN	0.68%	0.90%	2.24%	0.00%	0.98%
TS	0.00%	0.00%	1.49%	3.39%	0.56%
AP	0.34%	0.00%	0.75%	1.69%	0.42%
HR	0.34%	0.00%	0.75%	1.69%	0.42%
UP	0.34%	0.45%	0.00%	0.00%	0.28%
RJ	0.34%	0.00%	0.00%	1.69%	0.28%
BR	0.00%	0.00%	0.75%	0.00%	0.14%
Grand Total	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**

Above table shows Karnataka has dominant traffic apart from it Goa and Maharashtra also contributes significantly.

2.4.5.4 Trip Frequency

Following table gives details of trip frequency as captured in OD survey

Table 2-14 : Trip Frequency at Toll Plaza1

Trip Frequency/Vehicle	Car	Bus	Mini Bus	LCV	2-axle	3 axle	4-6 Axle	>7 axle
Monthly Pass (50 trips/month)	11%	13%	6%	12%	7%	5%	11%	0%
Daily Pass/Return Pass	22%	23%	29%	23%	27%	29%	22%	0%
Single/Others	67%	65%	65%	65%	67%	66%	68%	0%
GRAND TOTAL	100%	100%	100%	100%	100%	100%	100%	0%

Table 2-15 : Trip Frequency at Toll Plaza 2

Trip Frequency/Vehicle	Car	Bus	Mini Bus	LCV	2-axle	3 axle	4-6 Axle	>7 axle
Monthly Pass (50 trips/month)	18%	20%	22.1%	10%	6%	2%	2%	0%
Daily Pass/Return Pass	17%	14%	11.7%	33%	45%	50%	48%	0%
Single/Others	65%	66%	66.2%	57%	50%	48%	51%	0%
GRAND TOTAL	100%	100%	100%	100%	100%	100%	100%	0%

Table 2-16 : Trip Frequency at Toll Plaza 3

Trip Frequency/Vehicle	Car	Bus	Mini Bus	LCV	2-axle	3 axle	4-6 Axle	>7 axle
Monthly Pass (50 trips/month)	19%	26%	23%	19%	12%	15%	13%	0%
Daily Pass/Return Pass	19%	10%	14%	20%	34%	23%	24%	0%
Single/Others	63%	64%	63%	61%	54%	62%	63%	0%
GRAND TOTAL	100%	100%	100%	100%	100%	100%	100%	0%

2.4.6 Number Plate Registration Survey

Number plate survey was done on all 3 toll plaza locations for 12 hours.

As per schedule R (Toll Rate) vehicle registration of local district of the location of toll plaza would be charged a discounted rate which is 50% of single journey fees. Following are local RTO numbers for three proposed toll plazas under study

TP1 –KA-47
TP2 – KA-47
TP3 – KA-30

Following tables show summary of local traffic analysis based on number plate survey. For

Table 2-17 : Proportion of Local Traffic at Toll Plaza 1- @ Chainage 119.87 KM

Toll 1	Car/Jeep/Van	Bus	MiniBus	LCV	2-Axle	3 Axle	4 - 6 Axle	7 & above Axle
To Goa	12.83%	3.00%	15.79%	12.09%	14.89%	4.00%	2.67%	0
To Kundapura	19.50%	7.69	11.67	17.74%	13.27%	0.00%	4.17%	0

Table 2-18 : Proportion of Local Traffic at Toll Plaza 2- Chainage 181.69 KM

Toll 2	Car/Jeep/Van	Bus	MiniBus	LCV	2-Axle	3 Axle	4 - 6 Axle	7 & above Axle
To Goa	25.96%	8.70%	5.88%	70.83%	12.66%	9.91%	34.43%	0.00%
To Kundapura	16.12%	10.29%	28.00%	58.62%	16.67%	0.00%	0.00%	0.00%

Table 2-19 : Proportion of Local Traffic at Toll Plaza 3- Chainage 243.800 KM

Toll 3	Car/Jeep/Van	Bus	MiniBus	LCV	2-Axle	3 Axle	4 - 6 Axle	7 & above Axle
To Goa	20.62%	12.12%	85.81%	47.37%	50.26%	20.25%	8.30%	
To Kundapura	25.75%	8.33%	71.05%	50.92%	45.07%	29.09%	34.04%	

Local traffic count was appropriately used in revenue model.

2.5 Secondary Data Collection

In addition to the above-mentioned traffic surveys, secondary data was also collected from the sources where ever the data available. The secondary data includes the following:

1. Fuel data collection from the fuel stations that are located along the project corridor to estimate the seasonal variations as well as traffic growth over the past years
2. Vehicle registration data of Maharashtra and surrounding states.
3. Data of Indian national GDP (Gross Domestic Product), NSDP (Net State Domestic Product) of Maharashtra and PCI (Per Capita Income) of Maharashtra.
4. Estimated population data of Maharashtra state from Census.

This data is utilized in the study to estimate the growth factors along the project corridor. Some of this data is included in the Annexure.

2.6 Competing Roads Study

In BOT projects there is always a risk factor of traffic shifting on competing roads after imposition of toll. Shifting of traffic depends on factors such as road length, type, geometry, riding quality ad capacity. Competing road network was identified around section and a speed delay analysis was conducted. In this detail of competing roads are provided and a comparison with project road is made. Following figures provide alignment of competing road network and results of speed delay study

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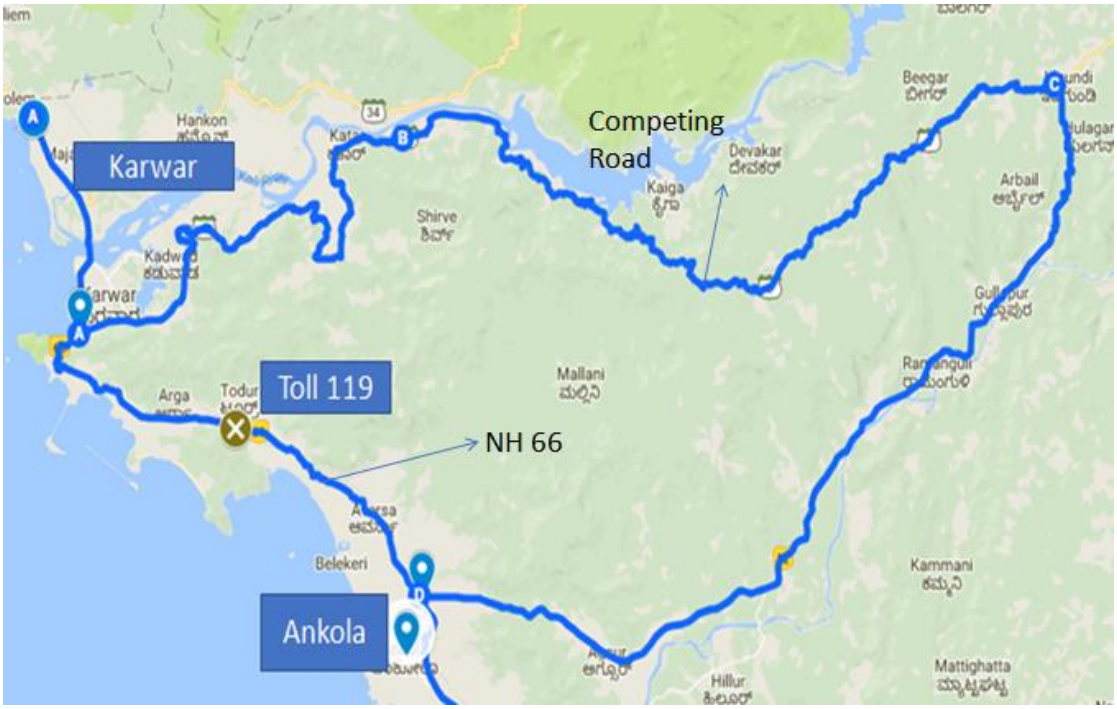


Figure 2-13: Competing Roads Package –I

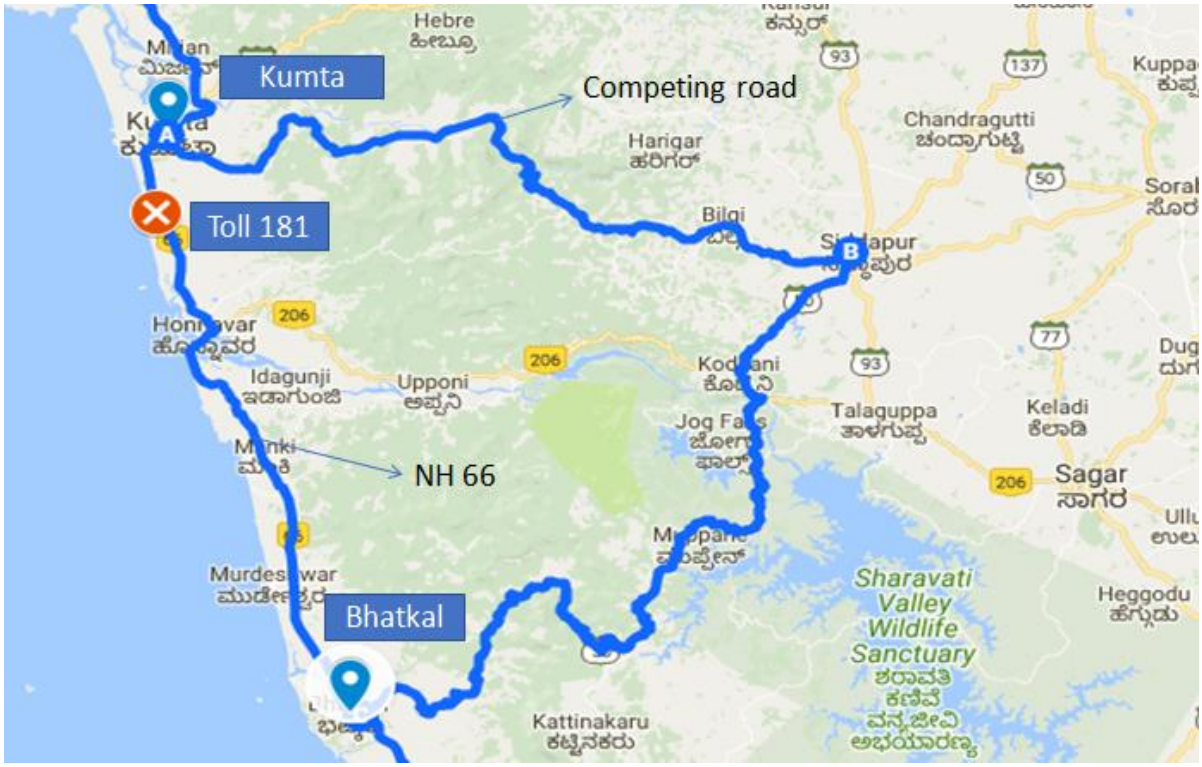


Figure 2-14: Competing Roads Package –I

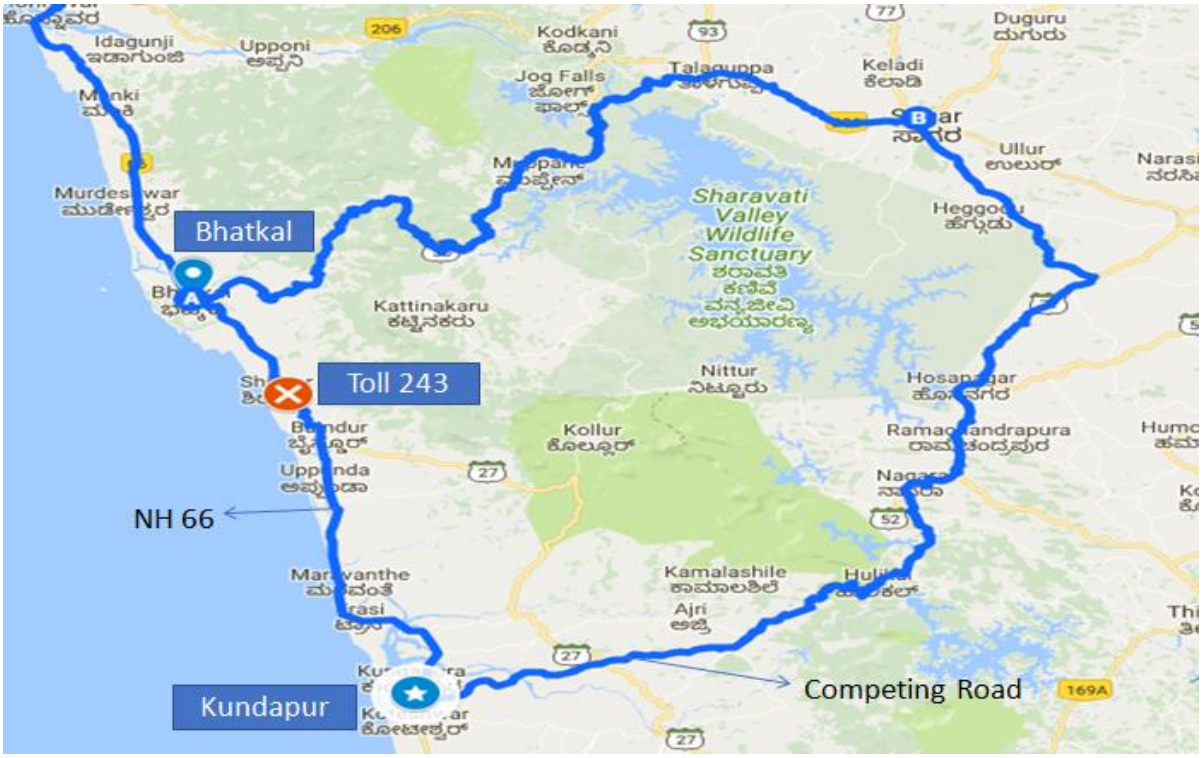


Figure 2-15: Competing Roads Package –I

Table 2-20 : Competing Roads Details

Sr. No	Route Details	Designation	Length (Km)	Time Taken (Min)
1	Karwar to Ankola Via competing road (SH6, Idgundi, NH52) on East Side	Competing Road	153	112.8
	Karwar to Ankola via NH66(formerly NH17)	**Project Road**	**44.1**	**34.2**
2	No competing Road	Competing Road		
	Ankola to Kumta via NH66	**Project Road**	**37.8**	**29.4**
3	Ankola to Kumta via competing road (Ankola-Siddapur road, SH50, NH206, SH50) on East side	Competing Road	174	**144**
	Kumta to Bhatkal via NH66	**Project Road**	**56.8**	**42.6**
4	Bhatkal To Kundapura via competing road (SH50, NH206, SH77, SH52)	Competing Road	229	**193.8**
	Bhatkal To Kundapura via NH66	**Project Road**	**53.7**	**43.2**

As can be observed from table above that there is considerable time saving on project alignment. This is due to fact that project road runs parallel to west coast and due to major streams crossing and hilly terrain in between, it is difficult to construct a parallel.

Once project road is widened to four lane time fuels saving would considerably increase. Under these circumstances it is expected that both commercial and passenger traffic would not switch to competing roads after widening and imposition of toll on project road.

CHAPTER 3

TRAFFIC FORECAST

3.1 Introduction

Traffic grows as a result of the interplay of a number of contributory factors such as National economy, Government policy, socio-economic conditions of the people, and changes in land uses along the project corridor precincts etc. Further these factors have uncertainties associated with them. Forecasts of traffic have, therefore, to be dependent on the forecasts of factors such as population, gross domestic product (GDP), vehicle ownership, per capita income (PCI), agricultural output, fuel consumption etc. Future pattern of change in these factors can be estimated with only a limited degree of accuracy and hence the forecasting of future traffic levels cannot be precise. The success of any road project with private sector participation hinges on the accuracy and robustness with which the future traffic and revenues are estimated.

Further, future traffic forms the basis of the design of the transportation infrastructure facility and also determines the viability of the project. The following section deals with methods, techniques, and considerations used in traffic forecast for the project under study.

3.3.1 Trend Analysis

Time series data of vehicle Registered in state of Maharashtra is given in Table 3.1 and the same is used as the base data for analysis of growth.and also compared with the growth rate achieved in terms of vehicle registered on all India basis.

Growth of vehicle traffic depends on type of vehicle. Traffic growth on any highway typically depends on number of economic parameters like

- Per Capita Income
- Net State Domestic Product (NSDP)
- Population

Elasticity model of growth projection is one of the most widely acceptable methods for traffic forecast. Same is recommended in **IRC: 108-2015-Guidelines for Traffic Prediction on Rural Highways**.

Following can be pair of vehicle type and independent variable for elasticity modeling of growth.

- Car / Jeep – Par Capita Income
- Bus / Minibus – Population
- Goods Vehicle – NSDP

Same is used in analysis below.

3.3.2 Estimation of Traffic Demand Elasticity

Elasticity of traffic demand is defined as the rate at which traffic intensity varies due to change in the corresponding indicator selected. Hence, In order to estimate the elasticity of traffic demand, it is necessary to establish the relationship between the growth in number of given category of vehicle with one of the economic variables considered, such as NSDP, per capita income and population growth.

As per IRC: 108-2015 the model for estimating elasticity index for the project corridor is of the following form and is as given below:

$$Log(P) = k \times Log(EI) + A$$

Where,

P = *Number of Vehicles (Mode wise)*

EI = *Economic Indicator*

A = *Regression constant*

k = *Elasticity coefficient (Regression coefficient)*

The elasticity for car and bus (passenger vehicles) is calculated based on the Population and Per Capita Domestic Product (PCDP) and the elasticity for trucks is calculated based on the Net State Domestic Product (NSDP).

Following tables and graphs depict regression and elasticity of growth model for Goa and Karnataka.

Table 3-1 : Per Capita Income Vs Car- For GOA

Year	PCI	Car	Log PCI	Log Car	PCI Growth	Average Growth
2008	90409	109215	4.96	5.04		
2009	95320	133717	4.98	5.13	5%	
2010	110306	149869	5.04	5.18	16%	
2011	129397	167544	5.11	5.22	17%	
2012	132220	184631	5.12	5.27	2%	
2013	137401	199647	5.14	5.30	4%	8.9%

Regression analysis of same is given in figure below

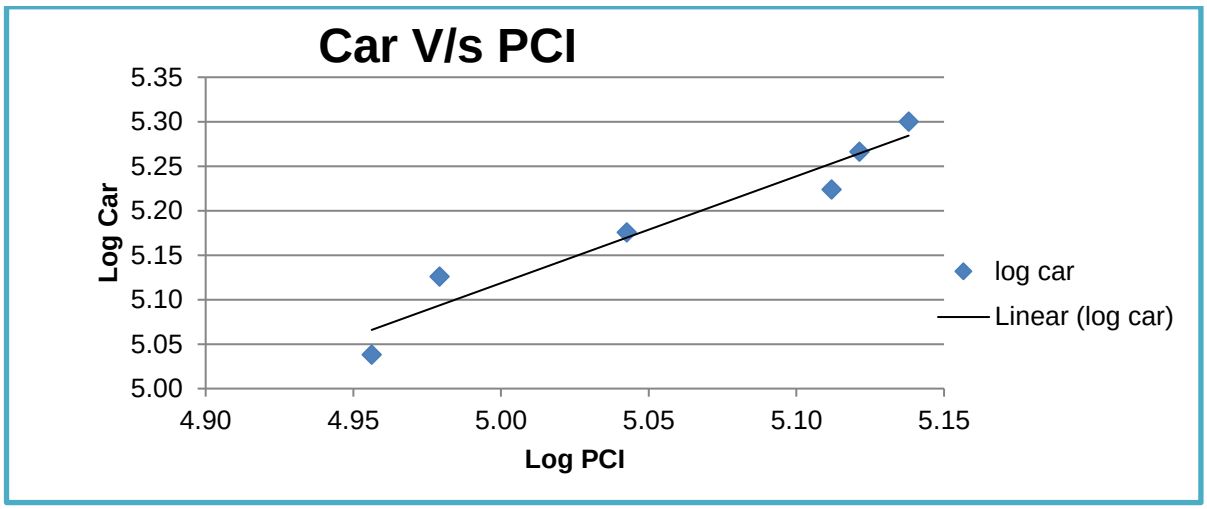


Figure 3-1: Regression and Elasticity PCI Vs. Car – extrapolation

Table 3-2 : Population Vs Bus- For GOA

Year	Population	Buses	Log Pop	Log Bus	Pop Growth	Average Growth
2008	1417106	6770	6.15	3.83		
2009	1433208	8332	6.16	3.92	1%	
2010	1447997	8907	6.16	3.95	1%	
2011	1458545	9513	6.16	3.98	1%	
2012	1466020	9956	6.17	4.00	1%	
2013	1473384	10925	6.17	4.04	1%	1%

Regression analysis of same is given in figure below

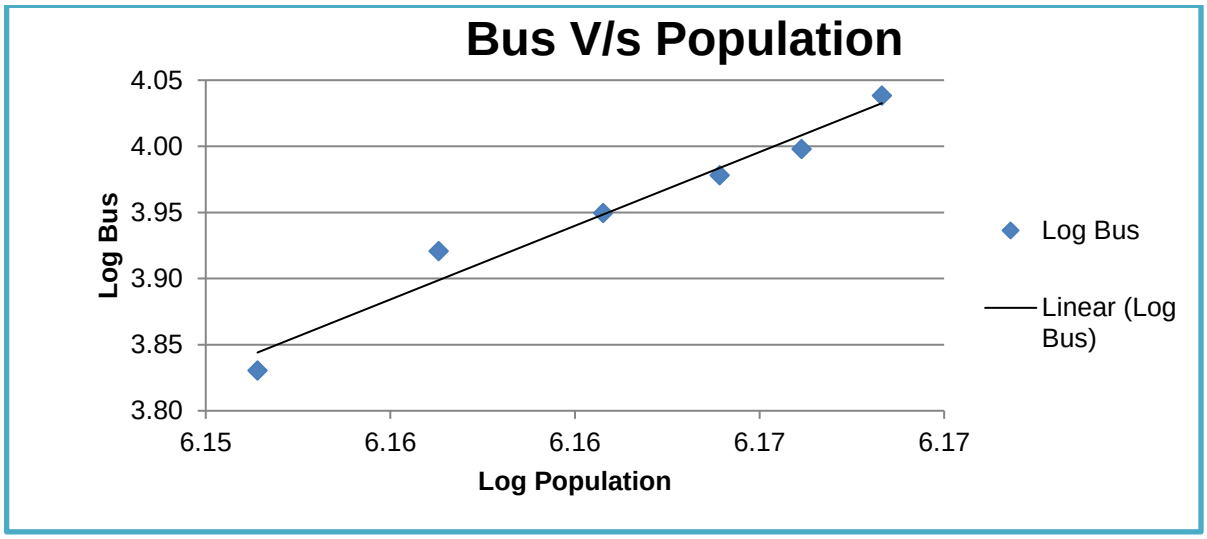


Figure 3-2: Regression and Elasticity Population Vs. Bus – extrapolation

Table 3-3 : Goods Traffic Vs NSDP- For GOA

Year	NSDP	Trucks	Log NDSP	Log Truck	NSDP Growth	Average Growth (5 Year)
2008	1472765	33596	6.17	4.53		
2009	1611867	37040	6.21	4.57	9%	
2010	1929251	39422	6.29	4.60	20%	
2011	2327852	42395	6.37	4.63	21%	
2012	2442104	42759	6.39	4.63	5%	
2013	2609241	43034	6.42	4.63	7%	12%

Following figure depict regression analysis and extrapolation.

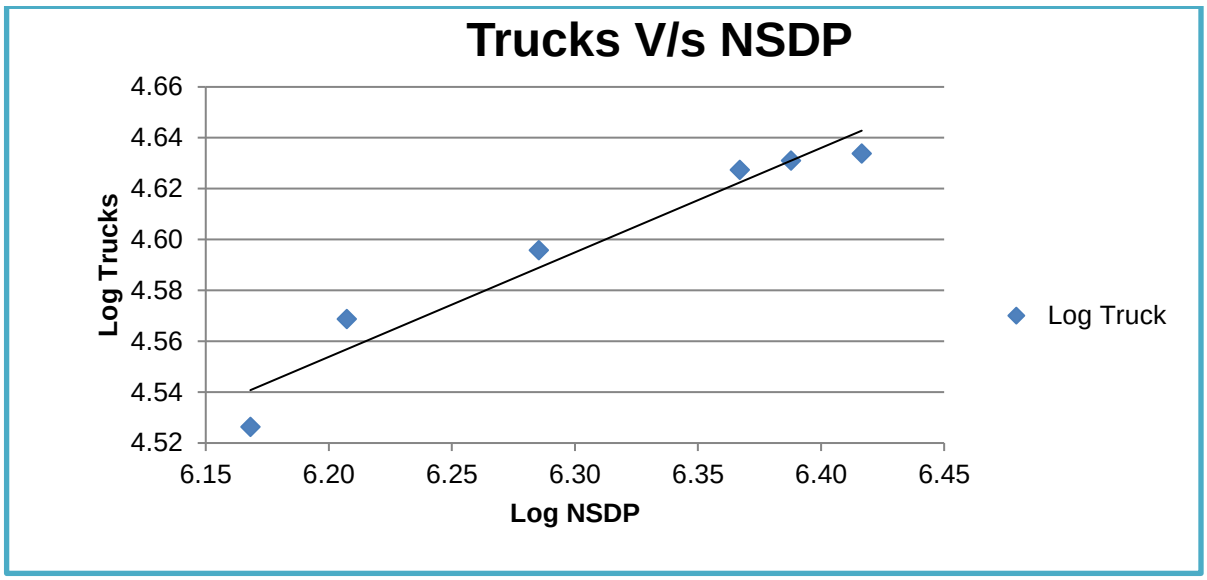


Figure 3-3: Regression and Elasticity NSDP Vs. Goods Traffic – extrapolation

Table 3-4 : Per Capita Income Vs Car- For KARNATAKA

Year	PCI	Car	Log PCI	Log Car	PCI Growth	Average Growth
2008	37687	966397	4.58	5.99		
2009	37294	1079318	4.57	6.03	-1%	
2010	40699	1160926	4.61	6.06	9%	
2011	41492	1301702	4.62	6.11	2%	
2012	43266	1454309	4.64	6.16	4%	
2013	46012	1626924	4.66	6.21	6%	4.1%

Regression analysis of same is given in figure below

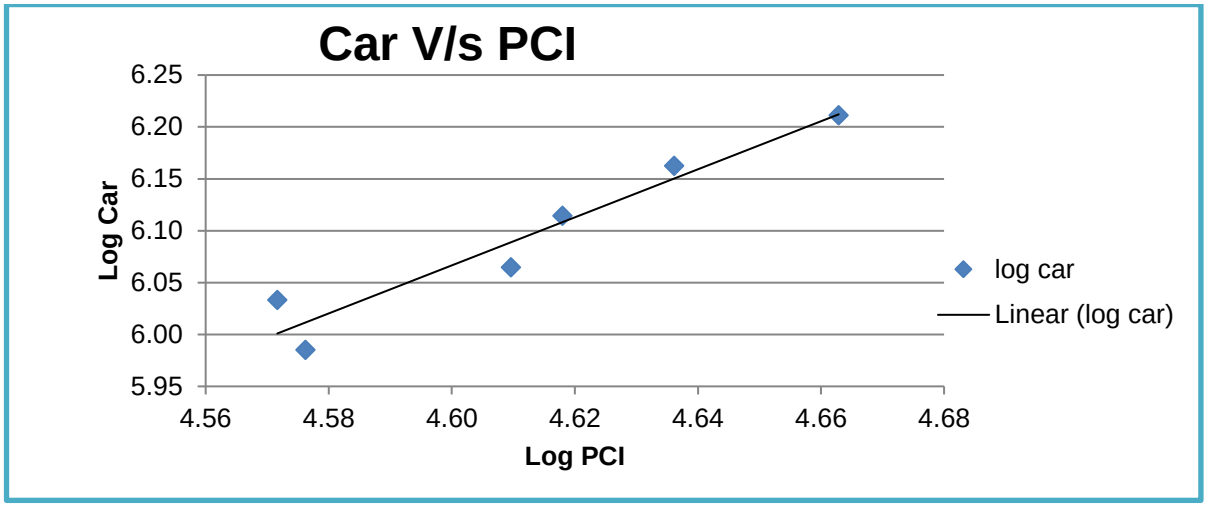


Figure 3-4: Regression and Elasticity PCI Vs. Car – extrapolation

Table 3-5 : Population Vs Bus- For KARNATAKA

Year	Population	Buses	Log Pop	Log Bus	Pop Growth	Average Growth
2008	57550000	110558	7.76	5.04		
2009	58181000	115016	7.76	5.06	1%	
2010	58804000	159377	7.77	5.20	1%	
2011	61095297	167087	7.79	5.22	4%	
2012	61095904	175705	7.79	5.24	0%	
2013	61096502	186705	7.79	5.27	0%	1%

Regression analysis of same is given in figure below

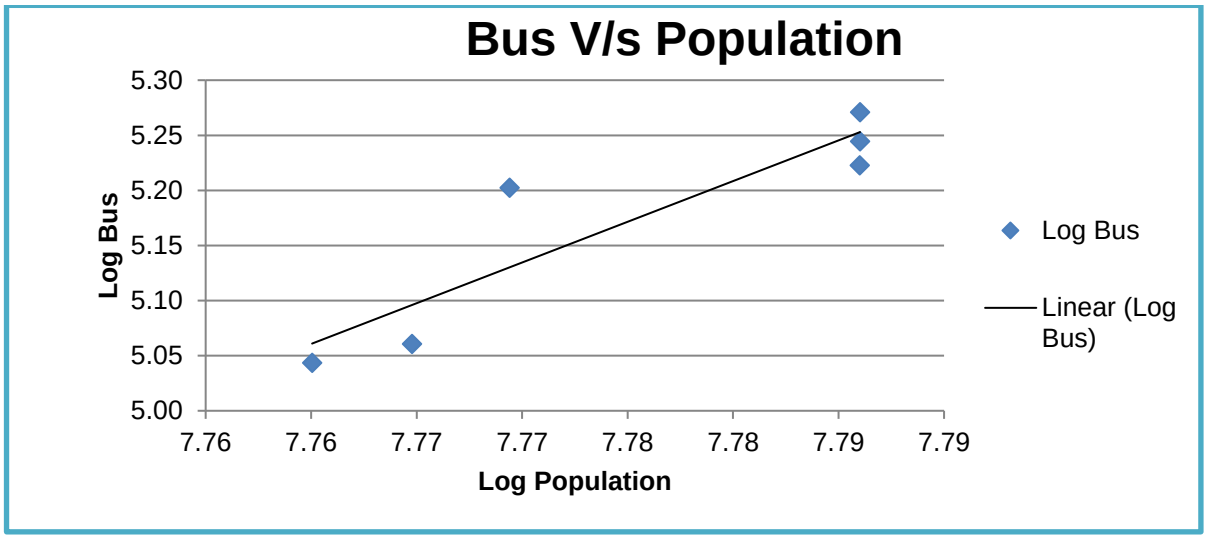


Figure 3-5: Regression and Elasticity Population Vs. Bus – extrapolation

Elasticity of goods traffic has been worked out by regression analysis with NSDP. Following table represents the data and details.

Table 3-6 : Goods Traffic Vs NSDP- For KARNATAKA

Year	NSDP	Trucks	Log NDSP	Log Truck	NSDP Growth	Average Growth (5 Year)
2008	21830924	344764	7.34	5.54		
2009	21836349	366597	7.34	5.56	0%	
2010	24081677	377495	7.38	5.58	10%	
2011	24804028	415491	7.39	5.62	3%	
2012	26125013	454582	7.42	5.66	5%	
2013	28056052	660959	7.45	5.82	7%	5%

Following figure depict regression analysis and extrapolation.

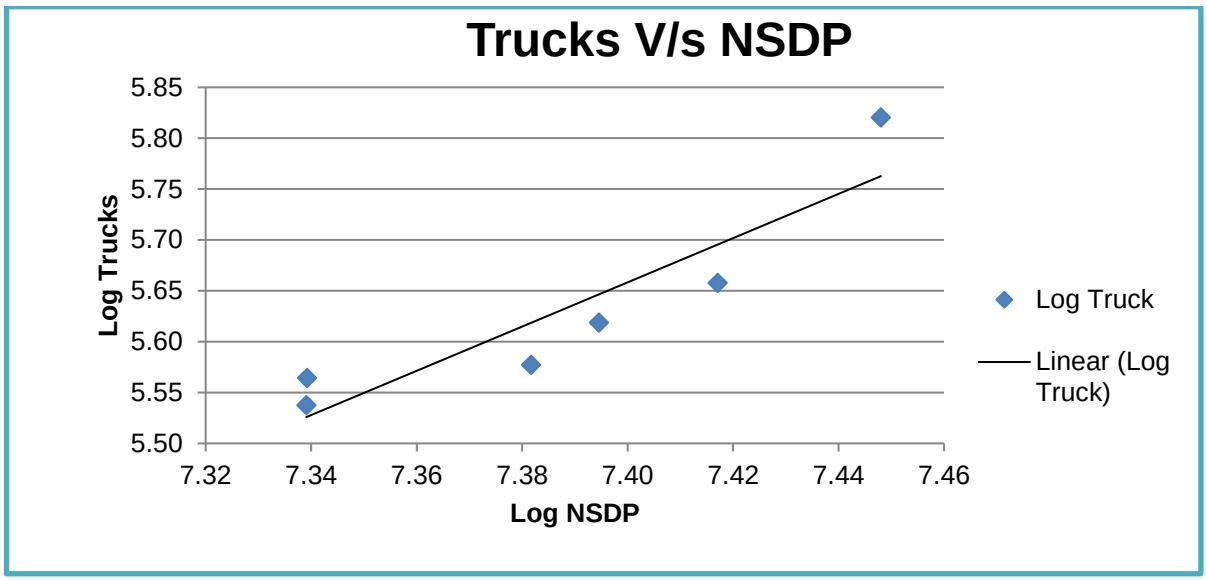


Figure 3-6: Regression and Elasticity NSDP Vs. Goods Traffic – extrapolation

It shall be noted that the growth rates for various modes are not same as they are influenced by different parameters. In other words, whilst the growth of the passenger vehicles (cars, Jeeps, two wheelers and even buses) could be attributed to the growth in the per capita income, population growth and vehicle registration growth, the growth of the LCV, Trucks, Multi Axle Trucks are found to be influenced with factors including the industrial production and growth of the National or state Domestic products.

The results of these analyses for the good fit as reflected by R^2 values are presented in the Table below

Table 3-7 : Summary Regression Analysis – For Goa & Karnataka

State	Vehicle Category	Independent Variable	Regression Equation	R Square	Elasticity Coefficient (y)	Average IV Growth (5yrs)	Growth Elastic Model	Remarks
GOA	Car/Jeep	PCI	y = 1.2012x - -0.8877	R^2 = 0.9363	1.2012	8.91%	10.71%	Good Regression
	Bus	Population	y = 11.1486x - - 64.7357	R^2 = 0.9679	11.1486	0.78%	8.72%	Good Regression
	Truck	NSDP	y = 0.4108x - 2.0072	R^2 = 0.9459	0.4108	12.31%	5.06%	Good Regression

State	Vehicle Category	Independent Variable	Regression Equation	R Square	Elasticity Coefficient (y)	Average IV Growth (5yrs)	Growth Elastic Model	Remarks
KARNATAKA	Car/Jeep	PCI	y = 2.3147x - - 4.5808	R^2 = 0.9292	2.3147	4.13%	9.56%	Good Regression
	Bus	Population	y = 7.3881x - - 52.2711	R^2 = 0.8303	7.3881	1.21%	8.96%	Good Regression
	Truck	NSDP	y = 2.1741x - - 10.4301	R^2 = 0.8328	2.1741	5.20%	11.32%	Good Regression

However, considering factors such as proposed developments and other influencing economic factors moderated growth factors as listed below are considered.

3.3.3 Growth of Economy and Projection of GDP in India

After witnessing a slowdown during 2008-09, the economy recovered in 2009-10, and a very high growth rate of GDP was recorded in 2010. Thereafter economy has stabilized and growth were moderated. Following figure depicts growth of GDP in India during the period.

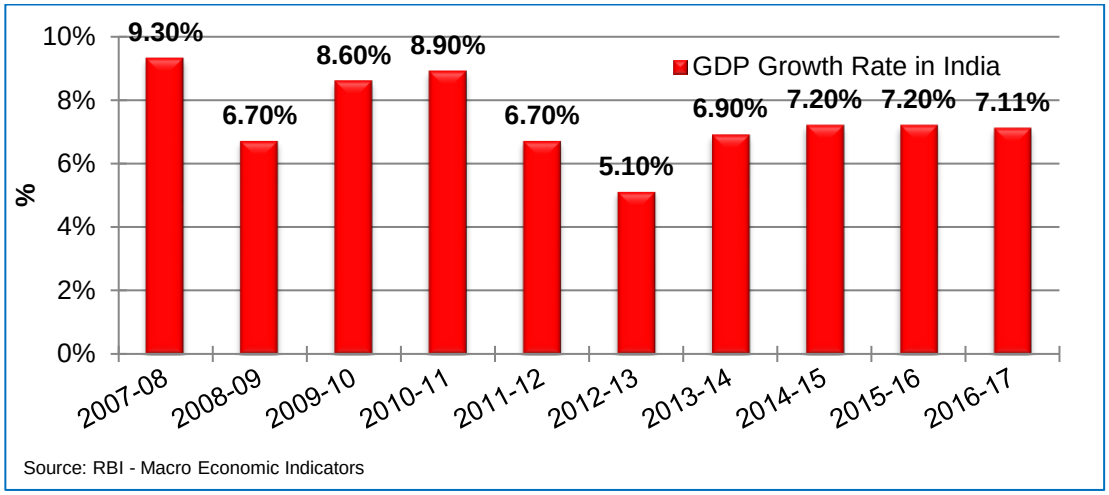


Figure 3-7: Growth of GDP in India

After recording an all impressive growth of 8.9% in 2011, GDP declined between FY11 and FY14. GDP growth in 2014-15, 2015-16 and 2016-17 was pegged around 7.2% and is expected to be in the range of 7-8% going forward.

Project road from Goa/ Karnataka Border to Kundapur is part of NH-17 which connects Mumbai to Kanyakumari. NH-17 is a National Highway which falls in State of Maharashtra, Karnataka and Kerala mainly. In such case development indices of Maharashtra, Karnataka and Kerala to some extent would impact the traffic growth project highway.

3.3.4 Other Developments Impacting growth

The economy of India is a developing economy. It is the world's seventh-largest economy by nominal GDP and the third-largest by purchasing power parity (PPP). The country ranks 139th in per capita GDP (nominal) with $2,134 and 122nd in per capita GDP (PPP) with $7,783 as of 2018.[34][35] After 1991 economic liberalisation, India achieved 6-7% average GDP growth annually. In FY 2015 and 2018 India's economy became the world's fastest growing major economy, surpassing China. The long-term growth prospective of the Indian economy is positive due to its young population, corresponding low dependency ratio, healthy savings and investment rates, and increasing integration into the global economy.

As per the second advance estimates of national income released by the Central Statistics Office in February 2018, real Gross Domestic Product (GDP) at constant prices is estimated to grow at 6.6% for 2017-18. The Indian economy achieved an impressive growth rate of 7.2%, a five-quarter high during the third quarter (Oct-Dec) of FY18 as opposed to 6.5% in the second

quarter. India also regained its tag of the fastest growing major economy in the third quarter. The strong growth registered in the third quarter was primarily on account of the good performance of the manufacturing and construction sectors. The manufacturing sector registered a growth rate of 8.1% as compared to 6.9% in the previous quarter while the construction sector recorded a growth rate of 6.8% in contrast to 2.8% during the previous quarter

In the coming financial years, thus a stablished growth is expected. As global economic activity continues to strengthen, global growth is forecast to grow by 3.9% during 2018 as per the International Monetary Fund's (IMF) January 2018 World Economic Outlook. The IMF expects India to grow at 7.4% during 2018 which could increase further to 7.8% during 2019 in contrast to 6.7% during 2017. This would provide impetus to overall growth of PIA and sustainable growth in traffic can be expected on project corridor.

West Coast Ports - West coast is coast of submergence (except Malabar Coast) while east coast is an emergent coast. These imply that sea is deeper in west coast than sea on east coast. So, west coast has favourable conditions for natural harbours. This is the reason that ports on west coast of India contribute more in terms of commercial cargo traffic. Expansion of JNPT port may further boost cargo traffic from Kerala, Karnataka and Parts of Tamilnaduon project corridor.

Mangalore - The coastal city of Mangalore is one of the upcoming and fastest developing metropolises of Karnataka. While Mangalore embeds itself in the conventional city affairs, what sets it apart from others is the amalgamation of its heritage, history, culture, food and scenic coastal lines.

Known for its architectural marvels, temples, churches and pristine beaches, the city attracts tourists throughout the year. Some of the popular tourist spots include Mangaladevi temple, St. Aloysius church, PilikulaNisargaDhama (a biological park and a picnic spot), Panambur beach and Surathkal beach. Its proximity to Agumbe, Coorg, Kaup beach and temple town Udupi also makes for a quick getaway for city folks.

Mangalore is the largest exporter of coffee in India. One of the flourishing industries in the city is the automobile leaf spring business. Petrochemicals, iron-ore, fertilisers and agricultural processing are some other thriving industries.

In addition, three special economic zones (SEZs) are being set up in the city with IT companies such as TCS, Wipro and Lotus estimated to invest up to Rs.30 billion, creating 67,000 jobs over the next three years. Mangalore is also one of the top five emerging cities of India for outsourcing, according to Alsbridge.

The city is witnessing aggressive industrial development, aiding in its economic growth. Growth of Mangalore as tourism and Industrial hub would have positive impact on growth of traffic on project road.

3.3.5 Recommended Growth Rates of Traffic

Due technological advances in logistic industry greater preference in given to multi-axle vehicles over 2-3 axle vehicles. To accommodate this trend growth of Multi-Axle is kept higher as growth of LCVs and 2-3 axle vehicles is scaled down.

It is also expected that as the economy moves from developing to developed, rate of growth diminishes. Same growth rate is not sustainable for long. It is established practice to stepdown future growth rates at interval of 5 years.

Growth rates are recommended for three scenarios for sensitivity analysis namely Optimistic, Pessimistic and Most Likely with a positive and negative variation 0.5% from Most Likely case.

Based on the above analysis and after giving due consideration to the entire listed factors, the following overall growth rates are recommended for each category of vehicle as under

Table 3-8 : Recommended Growth Rates for Most Likely Scenario

Category / Year	2018-2023	2023-2028	2028-33	2033-38	2038-2043	2043-2048	2048-2053
Car/Jeep/Van	9.76%	9.01%	8.26%	7.51%	6.76%	6.01%	5.26%
Bus	4.48%	3.73%	2.98%	2.23%	1.48%	0.73%	-0.02%
MiniBus	4.48%	3.73%	2.98%	2.23%	1.48%	0.73%	-0.02%
LCV	4.06%	3.31%	2.56%	2.31%	2.06%	1.81%	1.56%
2- Axle	4.06%	3.31%	2.56%	2.31%	2.06%	1.81%	1.56%
3 - Axle	4.06%	3.31%	2.56%	2.31%	2.06%	1.81%	1.56%
4 to6 Axle	8.12%	7.37%	6.62%	5.87%	5.12%	4.87%	4.62%
7 and Above Axle	8.12%	7.37%	6.62%	5.87%	5.12%	4.87%	4.62%

Table 3-9 : Recommended Growth Rates for Pessimistic Scenario

Category / Year	2018-2023	2023-2028	2028-33	2033-38	2038-2043	2043-2048	2048-2053
Car/Jeep/Van	9.26%	8.51%	7.76%	7.01%	6.26%	5.51%	4.76%
Bus	3.98%	3.23%	2.48%	1.73%	0.98%	0.23%	-0.52%
MiniBus	3.98%	3.23%	2.48%	1.73%	0.98%	0.23%	-0.52%
LCV	3.56%	2.81%	2.06%	1.81%	1.56%	1.31%	1.06%
2- Axle	3.56%	2.81%	2.06%	1.81%	1.56%	1.31%	1.06%
3 - Axle	3.56%	2.81%	2.06%	1.81%	1.56%	1.31%	1.06%
4 to6 Axle	7.62%	6.87%	6.12%	5.37%	4.62%	4.37%	4.12%
7 and Above Axle	7.62%	6.87%	6.12%	5.37%	4.62%	4.37%	4.12%

Table 3-10 : Recommended Growth Rates for Optimistic Scenario

Category / Year	2018-2023	2023-2028	2028-33	2033-38	2038-2043	2043-2048	2048-2053
Car/Jeep/Van	10.26%	9.51%	8.76%	8.01%	7.26%	6.51%	5.76%
Bus	4.98%	4.23%	3.48%	2.73%	1.98%	1.23%	0.48%
MiniBus	4.98%	4.23%	3.48%	2.73%	1.98%	1.23%	0.48%
LCV	4.56%	3.81%	3.06%	2.81%	2.56%	2.31%	2.06%
2- Axle	4.56%	3.81%	3.06%	2.81%	2.56%	2.31%	2.06%
3 - Axle	4.56%	3.81%	3.06%	2.81%	2.56%	2.31%	2.06%
4 to6 Axle	8.62%	7.87%	7.12%	6.37%	5.62%	5.37%	5.12%
7 and Above Axle	8.62%	7.87%	7.12%	6.37%	5.62%	5.37%	5.12%

3.3.6 Traffic Forecast

The following tables present estimates of total tollable traffic (AADT) at each of the toll plaza under all threescenarios.

Target traffic for concession period modification for both packages is given as under

Target Date – 1st April 2022

Target Traffic –21307

Traffic forecast would be compared with above target for requirement of modification in concession period, if any.

Table 3-11 : Total Tollable Traffic @ Toll Plaza 1- Chainage 117.900 KM

(Most Likely Growth Scenario)

Category / Year	Car/Jeep/Van	Bus	Mini Bus	LCV	2-Axle	3 - Axle	4 to 6 Axle	TOTAL	PCU (Including Exempted)
2018-2019	3673	672	437	572	1193	531	1154	8232	17568
2019-2020	4032	702	457	595	1242	552	1247	8827	18710
2020-2021	4426	734	478	620	1292	574	1348	9472	19939
2021-2022	4858	767	499	645	1344	597	1458	10168	21259
2022-2023	5333	801	521	671	1399	621	1576	10922	22676
2023-2024	5814	831	541	693	1446	641	1692	11658	24033
2024-2025	6338	862	561	715	1494	662	1816	12448	25478
2025-2026	6909	894	582	739	1543	684	1950	13301	27029
2026-2027	7532	927	604	764	1594	706	2094	14221	28688
2027-2028	8211	962	626	789	1646	729	2248	15211	30461
2028-2029	8890	991	645	809	1688	747	2397	16167	32136
2029-2030	9625	1021	665	830	1731	766	2555	17193	33919
2030-2031	10421	1052	685	851	1775	785	2724	18293	35819
2031-2032	11282	1084	706	872	1820	805	2904	19473	37844
2032-2033	12214	1116	727	894	1867	825	3097	20740	40006
2033-2034	13132	1140	743	915	1910	844	3278	21962	42052
2034-2035	14119	1165	759	936	1954	863	3471	23267	44227
2035-2036	15180	1190	776	957	1999	883	3675	24660	46533
2036-2037	16321	1216	793	979	2045	903	3890	26147	48976
2037-2038	17548	1244	810	1001	2093	924	4118	27738	51579
2038-2039	18735	1262	822	1022	2136	943	4329	29249	54005
2039-2040	20002	1281	834	1043	2180	962	4551	30853	56566
2040-2041	21355	1300	847	1064	2225	982	4784	32557	59271
2041-2042	22799	1319	860	1086	2270	1002	5028	34364	62117
2042-2043	24341	1338	873	1108	2317	1022	5286	36285	65131
2043-2044	25805	1348	879	1128	2359	1040	5543	38102	68000
2044-2045	27356	1358	885	1148	2402	1059	5813	40021	71021
2045-2046	29000	1368	892	1169	2445	1078	6096	42048	74197
2046-2047	30743	1378	899	1190	2489	1097	6393	44189	77537

Table 3-12 : Total Tollable Traffic @ Toll Plaza 2- Chainage 179.800 KM (Most Likely Growth Scenario)

Category / Year	Car/Jeep/Van	Bus	MiniBus	LCV	2-Axle	3 - Axle	4 to6 Axle	TOTAL	PCU (Including Exempted)
2018-2019	3997	769	487	919	1171	604	1131	5346	18828
2019-2020	4388	803	509	956	1219	628	1223	5728	20039
2020-2021	4817	839	532	995	1268	653	1322	6140	21337
2021-2022	5288	877	556	1035	1320	679	1429	6588	22733
2022-2023	5804	917	581	1077	1374	706	1545	7070	24235
2023-2024	6327	951	603	1112	1420	729	1659	7541	25665
2024-2025	6897	986	626	1149	1467	753	1781	8047	27192
2025-2026	7519	1022	649	1187	1515	778	1913	8595	28827
2026-2027	8197	1061	673	1227	1565	804	2054	9183	30580
2027-2028	8936	1101	698	1267	1617	830	2206	9820	32455
2028-2029	9675	1134	719	1299	1658	851	2352	10433	34215
2029-2030	10475	1168	741	1333	1700	873	2508	11090	36095
2030-2031	11341	1202	763	1367	1743	895	2674	11796	38089
2031-2032	12278	1237	786	1402	1788	918	2851	12555	40219
2032-2033	13292	1273	809	1438	1834	941	3040	13370	42487
2033-2034	14291	1302	827	1472	1876	963	3218	14159	44644
2034-2035	15365	1331	845	1506	1919	985	3407	15002	46928
2035-2036	16519	1361	864	1541	1964	1008	3607	15905	49357
2036-2037	17760	1391	883	1576	2010	1031	3819	16868	51930
2037-2038	19094	1422	902	1613	2057	1055	4043	17897	54662
2038-2039	20385	1443	915	1647	2099	1077	4250	18880	57210
2039-2040	21763	1464	928	1681	2142	1099	4468	19922	59898
2040-2041	23235	1486	941	1716	2187	1122	4697	21033	62742
2041-2042	24806	1508	955	1751	2232	1145	4937	22213	65737
2042-2043	26484	1530	969	1787	2278	1168	5190	23468	68901
2043-2044	28077	1541	976	1819	2319	1189	5443	24651	71910
2044-2045	29765	1552	983	1851	2361	1211	5708	25898	75074
2045-2046	31555	1563	990	1885	2403	1233	5986	27217	78402
2046-2047	33452	1574	997	1919	2446	1255	6277	28612	81898

Table 3-13 : Total Tollable Traffic @ Toll Plaza 3- Chainage 239.640 KM (Most Likely Growth Scenario)

Category / Year	Car/Jeep/Van	Bus	MiniBus	LCV	2-Axle	3 - Axle	4 to6 Axle	TOTAL	PCU (Including Exempted)
2018-2019	2652	433	264	791	594	377	235	5346	9504
2019-2020	2911	452	276	823	619	393	254	5728	10095
2020-2021	3196	472	289	856	644	409	274	6140	10722
2021-2022	3508	493	302	891	671	426	297	6588	11404
2022-2023	3850	515	316	927	698	443	321	7070	12127
2023-2024	4197	534	328	958	721	458	345	7541	12818
2024-2025	4575	554	341	990	744	473	370	8047	13550
2025-2026	4987	575	354	1023	769	489	398	8595	14343
2026-2027	5437	596	367	1057	794	505	427	9183	15180
2027-2028	5927	618	381	1092	821	522	459	9820	16085
2028-2029	6417	637	393	1120	842	535	489	10433	16929
2029-2030	6947	656	405	1149	863	548	522	11090	17828
2030-2031	7521	676	417	1178	886	562	556	11796	18788
2031-2032	8142	696	430	1208	909	577	593	12555	19814
2032-2033	8815	717	443	1239	932	592	632	13370	20905
2033-2034	9478	733	453	1268	953	605	669	14159	21943
2034-2035	10190	750	463	1297	975	619	708	15002	23048
2035-2036	10956	767	473	1327	998	634	750	15905	24228
2036-2037	11779	784	483	1358	1021	649	794	16868	25476
2037-2038	12664	802	493	1389	1044	664	841	17897	26802
2038-2039	13521	814	501	1418	1065	677	884	18880	28046
2039-2040	14435	826	509	1447	1086	690	929	19922	29356
2040-2041	15411	838	517	1477	1109	704	977	21033	30752
2041-2042	16453	850	525	1507	1132	719	1027	22213	32226
2042-2043	17566	862	533	1538	1155	734	1080	23468	33786
2043-2044	18623	869	537	1566	1176	747	1133	24651	35252
2044-2045	19742	876	541	1594	1197	760	1188	25898	36790
2045-2046	20929	883	545	1623	1218	773	1246	27217	38410
2046-2047	22187	890	549	1652	1240	787	1307	28612	40121

Table 3-14 : Total Tollable Traffic @ Toll Plaza 1- Chainage 117.900 KM (Pessimistic Growth Scenario)

Category Year	Car/Jeep/Van	Bus	Mini Bus	LCV	2-Axle	3 - Axle	4 to6 Axle	TOTAL	PCU (Including Exempted)
2018-2019	3673	672	437	572	1193	531	1154	8232	17568
2019-2020	4013	698	454	592	1235	550	1242	8784	18620
2020-2021	4385	725	472	613	1279	569	1336	9379	19744
2021-2022	4792	754	491	635	1324	589	1438	10023	20953
2022-2023	5236	784	511	657	1371	610	1548	10717	22249
2023-2024	5682	809	527	676	1409	627	1655	11385	23469
2024-2025	6165	835	544	695	1449	644	1769	12101	24768
2025-2026	6690	862	561	715	1490	662	1890	12870	26151
2026-2027	7259	889	579	735	1532	680	2020	13694	27623
2027-2028	7877	917	598	756	1575	699	2159	14581	29197
2028-2029	8489	940	613	771	1608	713	2291	15425	30658
2029-2030	9148	963	628	787	1641	727	2431	16325	32203
2030-2031	9858	987	643	803	1675	742	2579	17287	33845
2031-2032	10623	1011	659	819	1710	757	2737	18316	35591
2032-2033	11447	1036	675	835	1745	772	2905	19415	37444
2033-2034	12250	1054	687	850	1776	786	3061	20464	39178
2034-2035	13109	1072	699	865	1809	800	3225	21579	41011
2035-2036	14029	1091	711	880	1842	814	3398	22765	42948
2036-2037	15013	1110	724	896	1876	829	3580	24028	44998
2037-2038	16065	1129	737	912	1910	844	3772	25369	47162
2038-2039	17071	1140	744	926	1940	857	3946	26624	49144
2039-2040	18140	1152	751	940	1970	870	4128	27951	51229
2040-2041	19276	1164	758	955	2000	883	4319	29355	53422
2041-2042	20483	1176	765	970	2031	897	4518	30840	55729
2042-2043	21766	1188	772	985	2062	911	4726	32410	58152
2043-2044	22966	1191	774	998	2089	923	4932	33873	60427
2044-2045	24232	1194	776	1011	2116	935	5148	35412	62814
2045-2046	25568	1197	778	1024	2144	947	5373	37031	65314
2046-2047	26977	1200	780	1037	2172	959	5607	38732	67927

Table 3-15 : Total Tollable Traffic @ Toll Plaza 2- Chainage 179.800 KM (Pessimistic Growth Scenario)

Category Year	Car/Jeep/Van	Bus	Mini Bus	LCV	2-Axle	3 - Axle	4 to6 Axle	TOTAL	PCU (Including Exempted)
2018-2019	3997	769	487	919	1171	604	1131	9078	18828
2019-2020	4367	800	506	951	1213	625	1217	9679	19943
2020-2021	4772	832	526	985	1256	647	1310	10328	21139
2021-2022	5214	865	547	1020	1301	670	1410	11027	22418
2022-2023	5697	899	569	1057	1347	694	1517	11780	23783
2023-2024	6182	928	587	1086	1385	714	1621	12503	25067
2024-2025	6709	958	606	1117	1424	734	1733	13281	26440
2025-2026	7280	989	625	1148	1464	755	1852	14113	27898
2026-2027	7899	1021	645	1180	1505	776	1979	15005	29448
2027-2028	8572	1054	666	1214	1547	798	2115	15966	31107
2028-2029	9237	1080	683	1239	1579	815	2244	16877	32640
2029-2030	9954	1107	700	1265	1612	832	2381	17851	34269
2030-2031	10727	1135	717	1291	1645	849	2527	18891	35998
2031-2032	11560	1163	735	1317	1679	867	2681	20002	37830
2032-2033	12457	1192	753	1344	1713	885	2845	21189	39775
2033-2034	13330	1213	766	1368	1744	901	2998	22320	41596
2034-2035	14265	1234	779	1393	1776	917	3159	23523	43520
2035-2036	15265	1255	792	1418	1808	934	3328	24800	45547
2036-2037	16336	1277	805	1444	1841	951	3507	26161	47698
2037-2038	17482	1299	819	1470	1874	968	3695	27607	49966
2038-2039	18577	1311	827	1493	1903	983	3865	28959	52041
2039-2040	19741	1324	835	1516	1932	999	4044	30391	54231
2040-2041	20977	1337	843	1539	1962	1015	4231	31904	56532
2041-2042	22291	1350	851	1563	1993	1031	4426	33505	58951
2042-2043	23687	1363	859	1587	2024	1047	4630	35197	61493
2043-2044	24993	1366	861	1608	2051	1061	4833	36773	63879
2044-2045	26371	1369	863	1629	2078	1075	5044	38429	66373
2045-2046	27825	1372	865	1650	2105	1089	5264	40170	68984
2046-2047	29359	1375	867	1671	2132	1104	5494	42002	71722

Table 3-16 : Total Tollable Traffic @ Toll Plaza 3- Chainage 239.640 KM (Pessimistic Growth Scenario)

Category / Year	Car/Jeep/Van	Bus	MiniBus	LCV	2-Axle	3 - Axle	4 to6 Axle	TOTAL	PCU (Including Exempted)
2018-2019	2652	433	264	791	594	377	235	5346	9504
2019-2020	2898	450	274	819	615	390	253	5699	10041
2020-2021	3166	468	285	848	636	403	272	6078	10611
2021-2022	3460	487	296	878	659	418	292	6490	11227
2022-2023	3780	506	308	909	682	433	315	6933	11886
2023-2024	4101	523	318	935	701	445	337	7360	12504
2024-2025	4450	540	328	961	720	457	360	7816	13155
2025-2026	4829	558	338	988	741	470	385	8309	13858
2026-2027	5240	576	349	1016	762	483	412	8838	14605
2027-2028	5686	595	360	1044	783	496	440	9404	15394
2028-2029	6127	610	369	1066	799	507	467	9945	16129
2029-2030	6603	626	378	1088	816	518	496	10525	16914
2030-2031	7115	642	387	1110	833	529	526	11142	17740
2031-2032	7668	658	397	1133	850	540	558	11804	18618
2032-2033	8264	675	407	1156	867	551	592	12512	19552
2033-2034	8844	686	414	1177	882	560	624	13187	20423
2034-2035	9464	698	422	1198	898	571	657	13908	21352
2035-2036	10127	710	430	1220	914	582	692	14675	22334
2036-2037	10837	722	438	1242	931	593	729	15492	23376
2037-2038	11597	734	446	1264	948	604	768	16361	24476
2038-2039	12323	741	450	1284	963	613	803	17177	25489
2039-2040	13094	748	454	1304	978	622	840	18040	26555
2040-2041	13915	756	458	1324	993	631	879	18956	27684
2041-2042	14786	764	463	1344	1008	640	920	19925	28873
2042-2043	15712	772	468	1365	1023	649	963	20952	30127
2043-2044	16578	774	469	1383	1036	657	1005	21902	31280
2044-2045	17492	776	470	1401	1049	665	1049	22902	32489
2045-2046	18456	778	471	1419	1063	674	1095	23956	33764
2046-2047	19473	780	472	1437	1077	683	1143	25065	35100

Table 3-17 : Total Tollable Traffic @ Toll Plaza 1- Chainage 117.900 KM (Optimistic Growth Scenario)

Category / Year	Car/Jeep/Van	Bus	Mini Bus	LCV	2-Axle	3 - Axle	4 to6 Axle	TOTAL	PCU (Including Exempted)
2018-2019	3673	672	437	572	1193	531	1154	8232	17568
2019-2020	4050	706	459	598	1248	556	1253	8870	18804
2020-2021	4465	741	482	625	1305	582	1361	9561	20134
2021-2022	4923	778	506	653	1364	609	1478	10311	21566
2022-2023	5429	817	531	682	1426	637	1605	11127	23111
2023-2024	5946	852	553	708	1481	662	1731	11933	24612
2024-2025	6512	888	576	735	1537	688	1868	12804	26224
2025-2026	7131	926	600	763	1595	715	2015	13745	27951
2026-2027	7810	965	625	792	1656	743	2173	14764	29806
2027-2028	8553	1006	652	822	1719	772	2344	15868	31803
2028-2029	9302	1041	675	847	1771	796	2511	16943	33709
2029-2030	10117	1077	698	873	1826	821	2690	18102	35751
2030-2031	11003	1114	722	900	1882	846	2882	19349	37931
2031-2032	11967	1153	747	927	1939	872	3087	20692	40262
2032-2033	13016	1193	772	955	1998	899	3307	22140	42758
2033-2034	14059	1226	793	982	2054	925	3517	23556	45163
2034-2035	15185	1260	815	1009	2112	951	3741	25073	47725
2035-2036	16402	1295	837	1037	2171	978	3979	26699	50451
2036-2037	17717	1330	860	1066	2232	1006	4233	28444	53359
2037-2038	19137	1366	883	1096	2295	1034	4502	30313	56450
2038-2039	20527	1393	900	1124	2353	1061	4755	32113	59382
2039-2040	22018	1420	917	1153	2413	1088	5022	34031	62485
2040-2041	23617	1449	935	1182	2475	1116	5304	36078	65781
2041-2042	25333	1478	953	1212	2538	1145	5602	38261	69273
2042-2043	27173	1508	971	1243	2603	1174	5917	40589	72976
2043-2044	28942	1526	983	1271	2663	1201	6235	42821	76551
2044-2045	30827	1545	995	1300	2725	1229	6570	45191	80332
2045-2046	32835	1564	1008	1330	2788	1258	6922	47705	84321
2046-2047	34973	1583	1021	1361	2852	1287	7294	50371	88535

Table 3-18 : Total Tollable Traffic @ Toll Plaza 2- Chainage 179.800 KM (Optimistic Growth Scenario)

Category Year	Car/Jeep/Van	Bus	Mini Bus	LCV	2-Axle	3 - Axle	4 to6 Axle	TOTAL	PCU (Including Exempted)
2018-2019	3997	769	487	919	1171	604	1131	9078	18828
2019-2020	4407	808	511	961	1224	631	1228	9770	20130
2020-2021	4859	848	536	1005	1280	659	1334	10521	21535
2021-2022	5358	890	563	1051	1339	689	1448	11338	23049
2022-2023	5908	934	591	1099	1400	721	1572	12225	24682
2023-2024	6470	974	616	1141	1453	748	1696	13098	26263
2024-2025	7086	1015	643	1184	1508	776	1829	14041	27954
2025-2026	7760	1058	670	1229	1565	805	1973	15060	29771
2026-2027	8499	1102	698	1275	1625	835	2128	16162	31721
2027-2028	9308	1148	727	1324	1687	866	2296	17356	33820
2028-2029	10124	1188	752	1364	1739	892	2460	18519	35825
2029-2030	11011	1229	779	1406	1792	919	2635	19771	37966
2030-2031	11976	1272	806	1449	1847	947	2823	21120	40260
2031-2032	13026	1316	834	1493	1903	976	3024	22572	42710
2032-2033	14167	1361	863	1539	1962	1006	3239	24137	45333
2033-2034	15302	1399	886	1582	2017	1034	3445	25665	47857
2034-2035	16528	1438	910	1627	2073	1063	3665	27304	50548
2035-2036	17852	1477	934	1673	2132	1093	3899	29060	53414
2036-2037	19283	1517	959	1720	2192	1123	4147	30941	56459
2037-2038	20828	1558	986	1768	2253	1154	4412	32959	59708
2038-2039	22341	1589	1005	1813	2311	1183	4659	34901	62783
2039-2040	23963	1620	1024	1859	2370	1213	4921	36970	66041
2040-2041	25703	1652	1045	1907	2431	1244	5198	39180	69503
2041-2042	27570	1685	1066	1956	2493	1275	5490	41535	73167
2042-2043	29572	1718	1087	2006	2556	1307	5798	44044	77046
2043-2044	31498	1739	1100	2052	2615	1337	6109	46450	80790
2044-2045	33549	1760	1113	2100	2675	1368	6437	49002	84744
2045-2046	35734	1782	1126	2149	2737	1399	6782	51709	88920
2046-2047	38061	1804	1139	2198	2800	1431	7146	54579	93329

Table 3-19 : Total Tollable Traffic @ Toll Plaza 3- Chainage 239.640 KM (Optimistic Growth Scenario)

Category Year	Car/Jeep/Van	Bus	Mini Bus	LCV	2-Axle	3 - Axle	4 to6 Axle	TOTAL	PCU (Including Exempted)
2018-2019	2652	433	264	791	594	377	235	5346	9504
2019-2020	2924	454	277	827	621	394	255	5752	10135
2020-2021	3224	476	291	865	650	412	277	6195	10819
2021-2022	3555	499	305	904	679	431	301	6674	11550
2022-2023	3920	523	320	945	710	451	327	7196	12341
2023-2024	4293	545	334	981	737	468	352	7710	13100
2024-2025	4701	568	348	1018	765	485	380	8265	13914
2025-2026	5148	592	363	1057	794	504	410	8868	14793
2026-2027	5638	617	378	1097	824	523	443	9520	15736
2027-2028	6175	644	394	1139	855	543	478	10228	16752
2028-2029	6716	666	408	1174	882	560	512	10918	17717
2029-2030	7305	689	422	1210	909	577	549	11661	18749
2030-2031	7945	713	437	1247	936	594	588	12460	19846
2031-2032	8642	737	452	1285	965	612	630	13323	21025
2032-2033	9400	762	467	1324	994	631	675	14253	22285
2033-2034	10153	783	480	1361	1022	648	718	15165	23505
2034-2035	10967	804	493	1399	1051	666	763	16143	24802
2035-2036	11846	826	507	1438	1080	685	812	17194	26191
2036-2037	12795	848	521	1479	1111	705	864	18323	27675
2037-2038	13821	871	535	1520	1142	725	919	19533	29253
2038-2039	14825	889	545	1559	1171	744	971	20704	30763
2039-2040	15902	907	555	1599	1201	763	1025	21952	32359
2040-2041	17057	925	566	1640	1232	783	1083	23286	34060
2041-2042	18296	944	577	1682	1263	803	1144	24709	35863
2042-2043	19625	963	588	1725	1295	823	1208	26227	37774
2043-2044	20903	975	596	1765	1325	842	1272	27678	39595
2044-2045	22264	987	604	1806	1356	862	1340	29219	41524
2045-2046	23714	999	612	1848	1387	882	1412	30854	43562
2046-2047	25259	1011	620	1891	1419	902	1488	32590	45718

3.3.1 Modification in Concession Period

As per Article 29 of the concession agreement, if actual traffic on the project falls short or exceeds Target Traffic on project highway on defined date, concession period shall be modified subject to calculation stipulated therein. For Kaithal – Raj Border project, the Target Date and Target Traffic are defined as under:

Target Date – 1st April 2022

Target Traffic – 21307 PCU

Same will be compared with traffic forecast

It was observed that as per traffic projections, traffic volume falls short of target traffic in all scenarios. Extension of concession period is worked out as per provisions of concession agreement which is summarized as under -

Scenario	Projected Traffic in PCUs (average of traffic on target date, one year before target date and one year after target date)	Expected increase in Concession Period
Optimistic	18754	4.62 years
Pessimistic	18223	5.60 years
Most Likely	18492	5.46 years

Accordingly, traffic and revenue projections have been worked out

CHAPTER 4

FORECAST OF TOLL REVENUE

4.1 General

This chapter presents the estimates of traffic forecast, tolling categories, tolling rate calculations and toll revenue of the project.

4.2 Discount Categories

As per the Toll Notification (Schedule R) the following discounts have been considered:

1. Monthly Pass: For frequent users monthly pass would have more than 50trips per month. The discount factor works out to about 66.67%
2. Daily Pass (for Return Trip): A 75% discount will be offered on the return trip.
3. Single Journey: Full single journey toll would be charged to this category of vehicles who are infrequent travelers or whose frequency does not yield any discount from the above categories.
4. Local Car / Jeep / Van to be charged at Rs 150 per month (2007)
5. Local Traffic other than Car/ Jeep/ Van to be charged at 50% rate

4.3 Segmentation of traffic

Based on the O-D data the following (

Table 4-1 through ***Table 4-3***) segmentation has been derived for each toll plaza location onGoa/ Karnataka Border- Kundapur section of NH -17.

Table 4-1 : Segmentation of Tollable Traffic @ Toll Plaza 1 Chainage 117.900 KM

Toll Category	Car	Bus	Mini Bus	LCV	2-axle	3 axle	4-6 Axle	>7 axle
Monthly (50 trips)	11%	13%	6%	12%	7%	5%	11%	0%
Return Trips	22%	23%	29%	23%	27%	29%	22%	0%
Others (Single Journey)	67%	65%	65%	65%	67%	66%	68%	0%
Totals	100%	100%	100%	100%	100%	100%	100%	0%

Table 4-2 : Segmentation of Tollable Traffic @ Toll Plaza 2 Chainage 179.800 KM

Toll Category	Car	Bus	Mini Bus	LCV	2-axle	3 axle	4-6 Axle	>7 axle
Monthly (50trips)	18%	20%	22.1%	10%	6%	2%	2%	18%
Return Trips	17%	14%	11.7%	33%	45%	50%	48%	17%
Others (Single Journey)	65%	66%	66.2%	57%	50%	48%	51%	65%
Totals	100%	100%	100%	100%	100%	100%	100%	0%

Table 4-3 : Segmentation of Tollable Traffic @ Toll Plaza 3 Chainage 239.640KM

Toll Category	Car	Bus	Mini Bus	LCV	2-axle	3 axle	4-6 Axle	>7 axle
Monthly (50 trips)	19%	26%	23%	19%	12%	15%	13%	0%
Return Trips	19%	10%	14%	20%	34%	23%	24%	0%
Others (Single Journey)	63%	64%	63%	61%	54%	62%	63%	0%
Totals	100%	100%	100%	100%	100%	100%	100%	0%

The above percentages have been used in the subsequent sections for segmenting the toll traffic for various discounts to be offered to frequent and local traffic per Schedule 'R'.

4.4 Estimation of Tollable Traffic

The equivalent single journey tollable through traffic for the toll plaza locations on NH 17 is presented in ***Table 4-4***through ***Table 4-8***below:

Table 4-4 : Equivalent Single Journey Tollable Traffic at Toll Plaza 1 Chainage 117.900

Equivalent Single Tollable Trips (Traffic for Each Category * Multiplication Factor)							
Car	Bus	Mini Bus	LCV	2-axle	3 axle	4-6 Axle	>7 axle
194	45	12	32	39	13	67	0
459	91	69	70	172	96	153	0
1822	346	205	268	574	290	634	0
2476	483	287	370	786	400	854	0
0.9083	0.9028	0.9082	0.9046	0.9108	0.9112	0.9104	0.0000

Table 4-5 : Equivalent Single Journey Tollable Traffic at Toll Plaza 2 Chainage 179.800 km

Equivalent Single Tollable Trips (Traffic for Each Category * Multiplication Factor)							
Car	**Bus**	**Mini Bus**	**LCV**	**2-axle**	**3 axle**	**4-6 Axle**	**>7 axle**
335	79	50	18	32	5	10	0
357	59	30	67	281	181	273	0
1817	388	224	153	417	233	390	0
2509	527	304	238	731	420	673	0
0.8974	0.8993	0.8994	0.8848	0.8702	0.8696	0.8752	0.0000

Table 4-6 : Equivalent Single Journey Tollable Traffic at Toll Plaza 3 Chainage 239.640 km

Equivalent Single Tollable Trips (Traffic for Each Category * Multiplication Factor)							
Car	**Bus**	**Mini Bus**	**LCV**	**2-axle**	**3 axle**	**4-6 Axle**	**>7 axle**
224	56	7	42	22	23	14	0
256	25	5	52	67	41	28	0
1133	210	30	206	140	149	98	0
1613	291	43	300	228	214	140	0
0.8912	0.8899	0.8958	0.8876	0.8736	0.8917	0.8974	0.0000

4.5 Estimation of Toll Rates

As per the recent MORTH notification dated January 12, 2011, the following Base rate of fee for the categories mentioned in the table stands true in the National Highways Fee Rules, 2008.

Table 4-7 : Base Toll Rates 2007 - 08

Type of Vehicle	Base Rate of Fee / Km (in Rs.)
Car, Jeep, Van or Light Motor Vehicle	0.65
Light Commercial Vehicle, Light Goods Vehicle or Mini Bus	1.05

Bus or Truck (2 Axle)	2.2
Three Axle commercial vehicles	2.4
Heavy Construction Machinery (HCM) or Earth Moving Equipment (EME) or Multi Axle Vehicle (MAV) (4-6 axles)	3.45
Oversized Vehicle (seven or more axles)	4.2

Factor of inflation / growth has been incorporated as per Schedule R. WPI are available up to 2017. A moderate growth in Wholesale Price Index (WPI)has been assumed after that.

There are number of bypasses and structures in each package. Additional fee for structures is added in rate of respective Toll Plaza as per the toll notification. Bypasses are to be charged 1.5 times the normal fee. This has been incorporated in rates. Following table provides details of tollable lengths at each toll plaza

Table 4-8 : Tollable Length

Toll Plaza Chainage	Length (km)	Bypass length (km)	Structure Length (km) /Cost	Tollable highway+ structure length (km)
117.900	54.480	0.000	0.666 km/Rs 86.16 Cr	54.480
179.900	59.850	0.000	1.02 km/Rs 57.18 Cr	59.850
239.640	71.260	0.000		71.260

Toll rates (rounded to nearest Rs. five) for the concession period are worked out and same are depicted below for each toll plaza.

The adopted Toll Rates for all categories of vehicles is given tables below.

Table 4-9 : Year wise Toll Rates @TP1 (Rs. Rupees)

Category Year	Car/Jeep/Van	Bus	Mini Bus	LCV	2-Axle	3 - Axle	4 to6 Axle	7 and Above Axle
2018-2019	95	305	150	150	305	335	475	595
2019-2020	100	325	155	155	325	355	500	625
2020-2021	105	340	165	165	340	370	525	660
2021-2022	110	360	175	175	360	390	550	695
2022-2023	115	375	185	185	375	410	580	730
2023-2024	120	395	190	190	395	435	610	770
2024-2025	130	420	205	205	420	455	645	810
2025-2026	135	440	215	215	440	480	680	855
2026-2027	145	465	225	225	465	510	715	900
2027-2028	150	490	240	240	490	535	755	950
2028-2029	160	515	250	250	515	565	800	1005
2029-2030	170	545	265	265	545	595	840	1060
2030-2031	180	575	280	280	575	630	890	1120
2031-2032	185	610	295	295	610	665	940	1180
2032-2033	200	645	310	310	645	705	990	1245
2033-2034	210	680	330	330	680	745	1050	1315
2034-2035	220	720	350	350	720	785	1105	1390
2035-2036	235	760	370	370	760	830	1170	1470
2036-2037	245	805	390	390	805	880	1240	1555
2037-2038	260	850	410	410	850	930	1310	1645
2038-2039	275	900	435	435	900	985	1385	1745
2039-2040	295	950	460	460	950	1040	1465	1845
2040-2041	310	1005	490	490	1005	1100	1555	1955
2041-2042	330	1065	515	515	1065	1165	1645	2070
2042-2043	350	1130	550	550	1130	1235	1745	2190
2043-2044	370	1195	580	580	1195	1310	1845	2320
2044-2045	390	1270	615	615	1270	1385	1955	2460
2045-2046	415	1345	650	650	1345	1470	2075	2605
2046-2047	440	1425	690	690	1425	1560	2200	2765

Table 4-10 : Year wise Toll Rates @ TP2 (Rs. Rupees)

Category Year	Car/Jeep/Van	Bus	Mini Bus	LCV	2-Axle	3 - Axle	4 to6 Axle	7 and Above Axle
2018-2019	90	295	145	145	295	325	460	570
2019-2020	95	310	150	150	310	340	485	600
2020-2021	100	330	160	160	330	360	510	635
2021-2022	105	345	165	165	345	375	535	665
2022-2023	110	365	175	175	365	400	565	700
2023-2024	115	385	185	185	385	420	595	740
2024-2025	125	405	195	195	405	440	625	780
2025-2026	130	425	205	205	425	465	660	820
2026-2027	135	450	215	215	450	490	695	865
2027-2028	145	475	230	230	475	515	735	915
2028-2029	150	500	240	240	500	545	775	965
2029-2030	160	525	255	255	525	575	815	1020
2030-2031	170	555	270	270	555	610	860	1075

2031-2032	180	590	285	285	590	640	910	1135
2032-2033	190	620	300	300	620	680	960	1200
2033-2034	200	655	315	315	655	715	1015	1265
2034-2035	210	695	335	335	695	760	1075	1340
2035-2036	225	735	355	355	735	800	1135	1415
2036-2037	235	775	375	375	775	845	1200	1495
2037-2038	250	820	395	395	820	895	1270	1585
2038-2039	265	870	420	420	870	950	1345	1675
2039-2040	280	920	445	445	920	1005	1420	1775
2040-2041	295	970	470	470	970	1065	1505	1880
2041-2042	315	1030	495	495	1030	1125	1595	1990
2042-2043	330	1090	525	525	1090	1190	1690	2105
2043-2044	350	1155	560	560	1155	1265	1790	2230
2044-2045	375	1225	590	590	1225	1340	1895	2365
2045-2046	395	1300	625	625	1300	1420	2010	2505
2046-2047	420	1375	665	665	1375	1505	2130	2660

Table 4-11 : Year wise Toll Rates @ TP3 (Rs. Rupees)

Category Year	Car/Jeep/Van	Bus	Mini Bus	LCV	2-Axle	3 - Axle	4 to6 Axle	7 and Above Axle
2018-2019	80	265	130	130	265	290	420	510
2019-2020	85	280	135	135	280	305	440	535
2020-2021	85	295	140	140	295	325	465	565
2021-2022	90	310	150	150	310	340	490	595
2022-2023	95	330	155	155	330	360	515	625
2023-2024	100	345	165	165	345	375	540	660
2024-2025	110	365	175	175	365	400	570	695
2025-2026	115	385	185	185	385	420	605	735
2026-2027	120	405	195	195	405	440	635	775
2027-2028	125	425	205	205	425	465	670	815
2028-2029	135	450	215	215	450	490	705	860
2029-2030	140	475	225	225	475	520	745	910
2030-2031	150	500	240	240	500	550	790	960
2031-2032	155	530	255	255	530	580	830	1015
2032-2033	165	560	265	265	560	610	880	1070
2033-2034	175	590	285	285	590	645	930	1130
2034-2035	185	625	300	300	625	685	980	1195
2035-2036	195	660	315	315	660	720	1040	1265
2036-2037	205	700	335	335	700	765	1095	1335
2037-2038	220	740	355	355	740	805	1160	1415
2038-2039	230	785	375	375	785	855	1230	1495
2039-2040	245	830	395	395	830	905	1300	1585
2040-2041	260	880	420	420	880	960	1375	1675
2041-2042	275	930	445	445	930	1015	1460	1775
2042-2043	290	985	470	470	985	1075	1545	1880
2043-2044	310	1045	500	500	1045	1140	1635	1990
2044-2045	325	1105	530	530	1105	1205	1735	2110
2045-2046	345	1170	560	560	1170	1280	1840	2235
2046-2047	365	1240	595	595	1240	1355	1950	2370

4.6 Toll Revenue

As indicated earlier, toll revenue on the Project Road has been calculated under in all scenarios. The estimates of toll revenue under growth scenarios are presented in the following section.

4.7 Toll Revenue at all toll plazas under Scenarios

Toll Revenue estimates under most likely scenario at each of the toll plaza up to 2042 (End of Concession Periodexcluding decrease in concession period) starting from the year of probable COD 2019 are shown in tables below.

Table 4-12 : Toll Revenue Most Likely Scenario

(Rs. Crores)

Location / Year	TP 1	TP 2	TP 3	Total
2018	56.3	53.5	22.5	132.3
2019	63.4	59.9	25.2	148.5
2020	70.6	67.3	27.8	165.6
2021	79.2	74.9	31.1	185.2
2022	88.5	84.2	34.9	207.6
2023	98.6	93.8	38.8	231.2
2024	110.8	104.8	43.5	259.2
2025	123.2	116.7	48.5	288.4
2026	138.2	130.0	53.8	322.0
2027	154.5	146.4	59.9	360.7
2028	171.7	161.2	66.8	399.7
2029	191.1	179.3	73.8	444.2
2030	213.3	200.0	82.3	495.6
2031	237.0	223.7	91.1	551.8
2032	264.8	248.3	101.4	614.5
2033	293.7	275.0	112.4	681.1
2034	324.9	304.9	124.7	754.6
2035	363.1	340.7	138.5	842.3
2036	401.4	375.8	153.0	930.2
2037	446.4	418.8	170.9	1036.1
2038	494.0	463.8	188.2	1145.9
2039	550.1	513.7	209.3	1273.2
2040	607.2	566.5	231.5	1405.1
2041	673.7	629.4	256.2	1559.4
2042	748.5	695.3	283.5	1727.3
2043	827.8	770.5	315.3	1913.6
2044	911.5	851.8	345.5	2108.8
2045	1009.9	940.1	382.0	2332.0
2046	1117.9	1040.3	421.9	2580.1

Table 4-13 : Toll Revenue Pessimistic Scenario

(Rs. Crores)

Location / Year	TP 1	TP 2	TP 3	Total
2018	56.3	53.5	22.5	132.3
2019	63.1	59.6	25.0	147.7
2020	69.9	66.6	27.5	164.0
2021	78.0	73.9	30.6	182.5
2022	86.8	82.6	34.2	203.6
2023	96.3	91.6	37.9	225.7
2024	107.8	101.9	42.2	251.9
2025	119.2	113.0	46.8	279.0
2026	133.1	125.2	51.8	310.0
2027	148.1	140.3	57.3	345.7
2028	163.8	153.8	63.6	381.2
2029	181.4	170.2	69.9	421.6
2030	201.5	189.0	77.7	468.2
2031	222.9	210.4	85.5	518.8
2032	247.9	232.4	94.7	575.0
2033	273.7	256.2	104.5	634.4
2034	301.3	282.7	115.4	699.5
2035	335.1	314.3	127.6	777.0
2036	368.8	345.2	140.2	854.2
2037	408.2	382.7	156.0	946.9
2038	449.5	421.8	170.9	1042.2
2039	498.1	465.1	189.2	1152.4
2040	547.2	510.3	208.2	1265.7
2041	604.4	564.4	229.4	1398.1
2042	668.2	620.5	252.5	1541.2
2043	735.6	684.4	279.5	1699.4
2044	806.1	753.0	304.8	1863.9
2045	888.9	827.1	335.4	2051.4
2046	979.2	911.0	368.7	2258.9

Table 4-14 : Toll Revenue Optimistic Scenario

(Rs. Crores)

Location / Year	TP 1	TP 2	TP 3	Total
2018	56.3	53.5	22.5	132.3
2019	63.7	60.2	25.3	149.2
2020	71.3	67.9	28.0	167.2
2021	80.3	75.9	31.5	187.7
2022	90.2	85.7	35.5	211.5
2023	101.0	96.0	39.7	236.6
2024	114.1	107.7	44.7	266.5
2025	127.4	120.6	50.0	297.9
2026	143.6	134.8	55.8	334.3

Location / Year	TP 1	TP 2	TP 3	Total
2027	161.3	152.5	62.4	376.2
2028	180.1	168.8	70.0	418.8
2029	201.4	188.6	77.6	467.7
2030	225.9	211.4	87.0	524.3
2031	252.1	237.6	96.7	586.4
2032	283.0	265.0	108.1	656.1
2033	315.5	294.9	120.4	730.7
2034	350.6	328.5	134.2	813.4
2035	393.6	368.8	149.8	912.2
2036	437.3	408.7	166.2	1012.2
2037	488.6	457.5	186.6	1132.8
2038	543.1	509.1	206.5	1258.7
2039	607.6	566.6	230.8	1405.1
2040	673.8	627.7	256.5	1558.0
2041	751.3	700.8	285.2	1737.3
2042	838.7	777.8	316.9	1933.4
2043	931.9	866.0	354.2	2152.1
2044	1031.0	961.8	390.0	2382.9
2045	1147.7	1066.7	433.2	2647.6
2046	1276.5	1186.0	480.8	2943.2

ANNEXURES

Fuel Sales Data

Project Name - Gao - Karnataka												
Fuel Sales Data from -							**Pump Location- Greeshma Fuels & Services Shirur**					
Month / Year	**YEAR - 2013**		**YEAR - 2014**		**YEAR - 2015**		**YEAR - 2016**		**YEAR - 2017**		**YEAR - 2018**	
	Petrol Sold	**Diesel Sold**	**Petrol Sold**	**Diesel Sold**	**Petrol Sold**	**Diesel Sold**	**Petrol Sold**	**Diesel Sold**	**Petrol Sold**	**Diesel Sold**	**Petrol Sold**	**Diesel Sold**
January	20000	64000	20000	64000	28000	116000	35000	157000	36000	168000	37000	139000
February	20000	40000	24000	48000	28000	92000	40000	116000	40000	140000	32000	112000
March	16000	44000	20000	44000	28000	104000	40000	128000	40000	140000	40000	128000
April	16000	44000	24000	60000	28000	104000	40000	138000	36000	156000		
May	24000	60000	32000	76000	36000	120000	46000	138000	52000	152000		
June	20000	40000	24000	52000	28000	68000	28000	80000	36000	144000		
July	20000	40000	24000	60000	28000	56000	32000	52000	40000	104000		
August	20000	40000	24000	72000	32000	76000	32000	76000	45000	131000		
September	12000	48000	24000	60000	32000	100000	32000	76000	37000	139000		
October	24000	60000	36000	84000	32000	124000	32000	100000	42000	154000		
November	24000	60000	20000	64000	33000	143000	36000	120000	36000	112000		
December	20000	64000	28000	102000	43000	161000	40000	164000	43000	149000		

Project Name - Gao - Karnataka												
Fuel Sales Data from -							Pump Location- Shivani Service Station					
Month / Year	YEAR - 2013		YEAR - 2014		YEAR - 2015		YEAR - 2016		YEAR - 2017		YEAR - 2018	
	Petrol Sold	Diesel Sold	Petrol Sold	Diesel Sold	Petrol Sold	Diesel Sold	Petrol Sold	Diesel Sold	Petrol Sold	Diesel Sold	Petrol Sold	Diesel Sold
January			65132	260135	52261	244989	57103	195925	48129	196575	50025	262791
February			62104	251304	49481	210853	52034	199318	44633	199392	48904	260073
March			66795	200524	53508	207825	62038	205352	44047	205613	56280	290778
April	54702	272125	56512	261753	56715	213358	54255	231929	52863	232550		
May	69165	295662	70915	296668	64952	235565	66708	210378	63506	211182		
June	51025	187562	48224	193080	50058	168264	49746	168534	46378	170820		
July	48139	170235	49206	175064	48105	163027	48597	156741	47491	171052		
August	49612	192412	50818	218877	44305	181255	47255	181868	48486	196031		
September	56154	235402	55955	226036	49803	186179	47994	186719	42945	203246		
October	53204	226407	56678	232051	55402	217710	51143	218073	52056	225462		
November	62016	237105	60200	204155	49803	271403	49398	271862	50667	218172		
December	68136	270105	69265	274026	59205	242356	52536	243589	57018	260533		

Project Name - Gao - Karnataka										
Fuel Sales Data from -					Pump Location- Manjunath fuels Service					
Month / Year	YEAR - 2014		YEAR - 2015		YEAR - 2016		YEAR - 2017		YEAR - 2018	
	Petrol Sold	Diesel Sold	Petrol Sold	Diesel Sold	Petrol Sold	Diesel Sold	Petrol Sold	Diesel Sold	Petrol Sold	Diesel Sold
January			28340	110324	23925	142552	31959	130990	33137	156756
February			27530	112324	25012	153746	27624	139447	29612	132230
March			28506	111055	27806	161272	29716	111206	32562	128045
April	30840	120080	24130	77676	30585	165050	34308	146054		
May	29055	60050	25931	124075	35146	167331	41620	149455		
June	28040	70420	21312	62556	25310	66223	30587	85629		
July	25330	59440	18964	41225	26381	49604	29594	58791		
August	24440	68540	18898	33073	24134	48779	27954	62810		
September	26040	80024	21105	75512	26339	52510	26787	88407		
October	30420	112320	22322	700381	29266	110715	31052	111771		
November	29130	128120	23395	92314	28657	127768	30505	127005		
December	30120	130520	24149	164564	32470	132122	33768	161797		

Project Name - Gao - Karnataka								
Fuel Sales Data from -			**Pump Location- S.G. Enterprises**					
Month / Year	**YEAR - 2015**		**YEAR - 2016**		**YEAR - 2017**		**YEAR - 2018**	
	Petrol Sold	**Diesel Sold**	**Petrol Sold**	**Diesel Sold**	**Petrol Sold**	**Diesel Sold**	**Petrol Sold**	**Diesel Sold**
January			75000	225000	47000	205000	68000	232000
February			70000	235000	58000	198000	68000	220000
March			81000	227000	48000	206000	76000	236000
April			72000	224000	66000	222000		
May			81000	215000	77000	271000		
June			48000	132000	40000	172000		
July	53000	147000	64000	124000	55000	181000		
August	64000	160000	69000	171000	59000	205000		
September	68000	280000	69000	143000	56000	172000		
October	72000	212000	79000	197000	60000	204000		
November	64000	178000	66000	178000	60000	204000		
December	67000	233000	66000	222000	64000	248000		

Project Name - Gao - Karnataka												
Fuel Sales Data from -							**Pump Location- Shri Devi Auto Services**					
Month / Year	**YEAR - 2013**		**YEAR - 2014**		**YEAR - 2015**		**YEAR - 2016**		**YEAR - 2017**		**YEAR - 2018**	
	Petrol Sold	**Diesel Sold**	**Petrol Sold**	**Diesel Sold**	**Petrol Sold**	**Diesel Sold**	**Petrol Sold**	**Diesel Sold**	**Petrol Sold**	**Diesel Sold**	**Petrol Sold**	**Diesel Sold**
January			42343	117761	53399	133019	59675	151342	66578	146902	736689	143520
February			37512	106850	44291	106657	62885	135372	59660	110200	62270	122762
March			42230	118152	50040	120962	65397	128095	65879	123184	68293	134107
April	36603	106349	40671	112631	54108	144648	74318	147348	73205	144715		
May	34682	98913	43810	116846	61136	140079	77965	189037	80814	184843		
June	34273	90755	40139	97034	51226	105060	59714	129220	68111	120677		
July	32403	85240	47613	91335	57146	100339	65759	127143	65562	117269		
August	35865	95435	38407	88351	51693	115103	62304	128907	64470	129533		
September	33777	90871	39860	99881	55018	127359	61259	105573	61131	120682		
October	36247	105866	43545	106427	57683	140007	65081	125115	66847	134592		
November	39138	104772	40461	101346	57130	124915	62588	131502	65832	124396		
December	37599	124583	44825	124484	63688	165787	65180	153919	72651	149809		

Project Name - Gao - Karnataka												
Fuel Sales Data from -							**Pump Location- Akshay fuel station**					
Month / Year	**YEAR - 2013**		**YEAR - 2014**		**YEAR - 2015**		**YEAR - 2016**		**YEAR - 2017**		**YEAR - 2018**	
	Petrol Sold	**Diesel Sold**	**Petrol Sold**	**Diesel Sold**	**Petrol Sold**	**Diesel Sold**	**Petrol Sold**	**Diesel Sold**	**Petrol Sold**	**Diesel Sold**	**Petrol Sold**	**Diesel Sold**
January			33325	77206	41331	83774			42084	67985	43707	91243
February			27020	59608	33878	54277			35262	55509	30441	63264
March			32674	61005	35237	52469			38185	58419	35378	60185
April	30875	80980	36195	78916			46112	70952	42141	72992		
May	36035	73694	38979	90405			47744	89613	46894	87885		
June	27027	44199	32463	59883			36923	54357	37747	58363		
July	24675	39322	30825	50959			38605	42647	37931	41089		
August	24969	44011	21862	49083			36727	47501	35659	40311		
September	24667	40604	27229	71042			33737	38945	34077	47663		
October	28293	55275	35862	81097			39740	67029	38508	65458		
November	29689	56906	34541	90774			34576	49808	37756	64862		
December	29823	78219	40660	108367			37516	76329	41829	103677		

Project Name - Gao - Karnataka

Fuel Sales Data from -	Pump Location- Kamaksh auto service station							
Month / Year	YEAR - 2015		YEAR - 2016		YEAR - 2017		YEAR - 2018	
	Petrol Sold	Diesel Sold	Petrol Sold	Diesel Sold	Petrol Sold	Diesel Sold	Petrol Sold	Diesel Sold
January			118507	150732	116416	130320	120964	120602
February			105077	118560	103441	112017	113554	105868
March			111939	114823	107921	120105	136596	115716
April	89969	161357	117104	113963	115846	118269		
May	99202	143178	77338	132776	118608	130219		
June	94901	133092	106530	114262	106585	106075		
July	103958	131542	113995	101816	104473	106825		
August	94387	128590	110977	114075	101258	111937		
September	100821	128144	103578	98403	108122	103291		
October	105273	144208	107328	116987	114387	110206		
November	108369	132069	109029	114186	114509	112413		
December	107196	148922	112545	131869	121410	120564		

Project Name - Gao - Karnataka								
Fuel Sales Data from -			**Pump Location- S.L. filling station**					
Month / Year	**YEAR - 2015**		**YEAR - 2016**		**YEAR - 2017**		**YEAR - 2018**	
	Petrol Sold	**Diesel Sold**	**Petrol Sold**	**Diesel Sold**	**Petrol Sold**	**Diesel Sold**	**Petrol Sold**	**Diesel Sold**
January			25000	31000	24000	24000	23000	24000
February			23000	33000	20000	28000	21000	27000
March			19000	30000	28000	32000	29000	32000
April	23000	34000	17000	29000	30000	32000		
May	17000	28000	18000	32000	28000	34000		
June	21000	31000	20000	33000	26000	30000		
July	16000	32000	22000	35000	22000	33000		
August	18000	27000	23000	34000	20000	28000		
September	21000	29000	18000	30000	23000	29000		
October	24000	34000	16000	32000	18000	32000		
November	20000	31000	16000	32000	16000	30000		
December	21000	33000	16000	20000	16000	22000		

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IRB INFRASTRUCTURE DEVELOPERS LIMITED.

TRAFFIC REPORT (FINAL)



Six Laning of Kishangarh to Gulabpura Section of NH-79A and NH-79 (New NH-48) on DBFOT basis

LEA Associates South Asia Pvt. Ltd.
New Delhi, India

A subsidiary of IRB INFRASTRUCTURE DEVELOPERS LTD

December, 2018

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1 INTRODUCTION

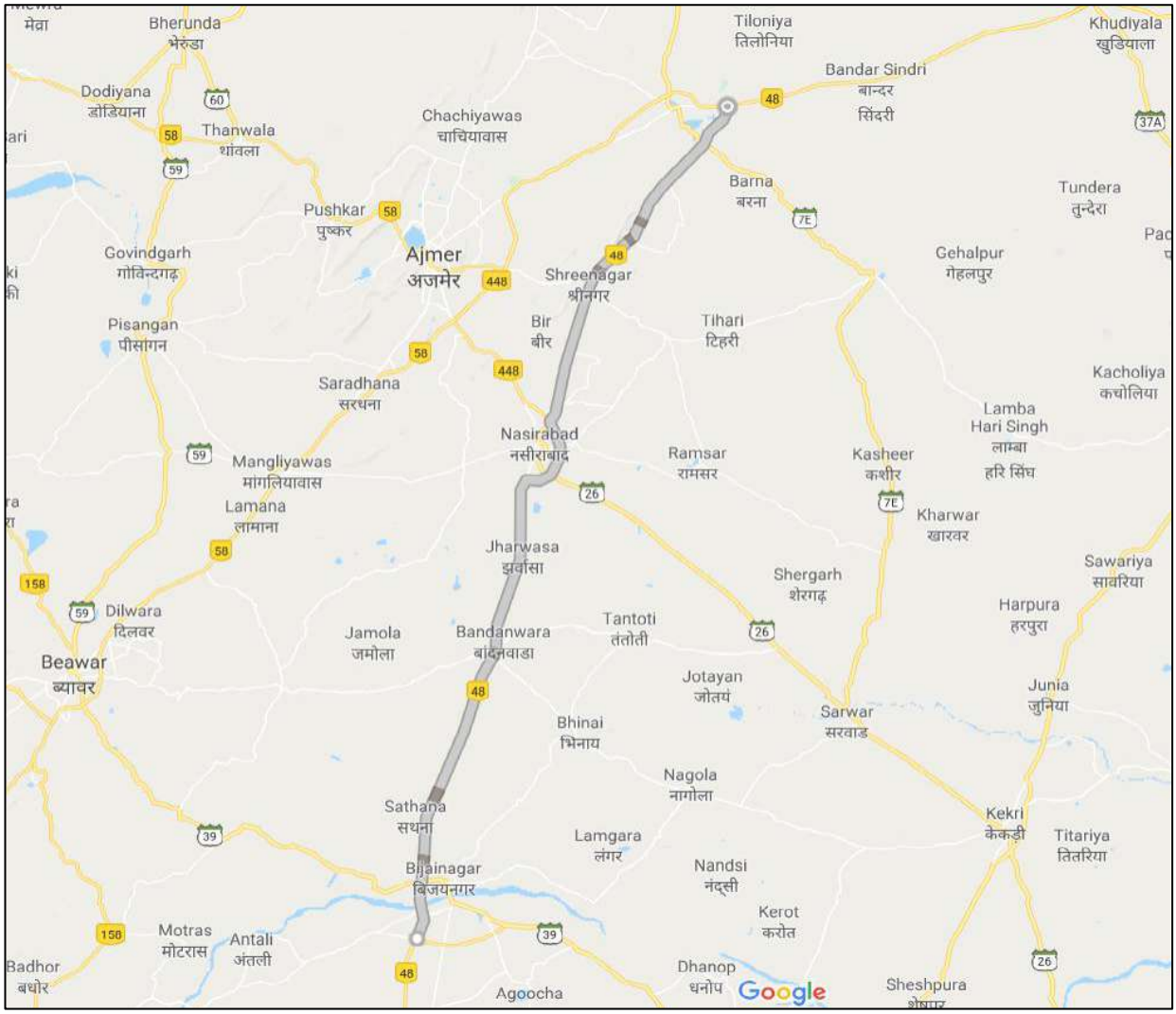
1.1 PROJECT CORRIDOR

The project road is the section of the former NH-79A&NH-79 which has now been re-designated as NH-48. The project road section takes off at Kishangarh and ends at Gulabpura, both in the state of Rajasthan. The NH-79A was the section from Kishangarh to Nasirabad and part of NH-79 (Ajmer to Ghata Billod) was the remaining section from Nasirabad to Gulabpura.

After renumbering of all national highways by National Highway Authority of India in 2010, the current NH 48 was formed by merging the old NH 8 (Delhi-Mumbai section) and NH 4 (Mumbai-Chennai). National Highway 48 starts at Delhi and terminates at Chennai and goes through Jaipur, Udaipur, Vadodara, Mumbai, Pune and Bengaluru, traversing through six states of India. It has a total length of 2807 km (1744 miles).

Project road alignment passes through the small towns of Shreenagar, Nasirabad, Jharwasa, Bandanwara and Bijainagar (Vijay Nagar). The project location has been shown in Figure 1-1 below.

Figure 1-1: Project Location



1.2 PROJECT INFLUENCE AREA

The main project influence area of the project road consists of the two districts through which the project road passes namely of Ajmer and Bhilwara. In addition, the project influence area includes the districts of Udaipur, Chittorgarh and Jaipur in the state of Rajasthan. While the project road section carries long distance traffic from many far off places in India, the main influence region remain the state of Rajasthan.

1.3 SCOPE OF STUDY

The scope of the study includes

- To assess the traffic volumes and traffic characteristics by conducting Classified Traffic Volume Counts.
- To assess the travel characteristics and travel patterns by conducting Origin & Destination Surveys
- To assess the traffic growth and diversion potentials to make projections for future traffic on the project road.
- To estimate toll revenue based on projected traffic and toll policy applicable for the project highway.

1.4 REPORT STRUCTURE

The report has been presented in seven chapters. The contents of each chapter have been briefly described below.

1. Introduction: This gives the project back ground and the scope of study.
2. Traffic Surveys and Methodology: This presents the traffic surveys conducted and the survey methodology adopted along with basic traffic characteristics.
3. Traffic Survey Analysis: This presents the analysis of existing pattern and characteristics of traffic on the project road section based on traffic surveys.
4. Travel Characteristics: This presents the travel pattern and trip characteristics of passenger and freight vehicles based on Origin Destination studies
5. Surrounding Road Network & Development Potential: This chapter presents the analysis of network conditions and explores possibility of alternative routes or diversions. It also identifies the development potential of the surrounding areas to understand its traffic generation and growth potential.
6. Traffic Projections: This chapter elaborates on the growth potential of the influence area and presents the estimated traffic growth rates, future traffic projections.
7. Toll Estimation and Projections: The chapter elaborates on the toll rates determination and escalation rules and presents the estimate and projections of likely toll collections on the project corridor.

2 TRAFFIC SURVEYS & METHODOLOGY

2.1 OBJECTIVES OF TRAFFIC SURVEYS

Traffic surveys are an essential task to assess the likely quantum and composition of traffic over the design period on the project corridor. The details of various traffic surveys conducted, methodologies adopted, collection of data in understandable formats and analysis, including traffic forecast and revenue estimation has been discussed in detail in subsequent paragraphs and chapters.

The main objectives of the traffic surveys are:

- To assess the volumes of traffic flows on existing / proposed toll plaza locations.
- To assess the traffic and travel characteristics.
- Project design traffic for the concession period of 20 years.
- Traffic estimates for assessment of highway capacity and lanes

2.2 TRAFFIC SURVEYS AND SURVEY METHODOLOGY

To understand the characteristics and the volume of traffic using the project corridor, data on road network and traffic & travel pattern of vehicles plying on the project corridor were collected through primary surveys. Traffic Volume count and Origin-Destination surveys were conducted at the proposed toll plaza locations. Reconnaissance survey was also carried out to identify any possible alternate routes where the traffic could divert to / from the project corridor after the project road is improved and tolled.

The project corridor consists of NH-79A&NH-79 (New NH-48) of Kishangarh to Gulabpura Section and the entire sections of road is having four lane facilities with regular traffic flow.

As per the requirements, the following surveys were undertaken at the toll plaza location at Bandanwara Km 61+020 .

- Classified Traffic Volume for 7 days.
- Origin and Destination Survey for 24 hours.
- Registration Plate Survey for 24 hours.

2.2.1 Classified Traffic Volume Count

Classified traffic volume counts for seven days was carried out at existing toll plaza Bandanwara Km 61+020 from 09 September 2018 to 16 September 2018 using video graphic analysis. The vehicles were broadly classified into fast moving / motorized and slow moving / non-motorized vehicles, which were further classified into specific categories of vehicles as per the Toll Categories defined in the Concession Agreement. The groupings of commercial vehicles have also been duly considered for design purpose. The detailed vehicle classification system is presented in Table 2-1. A camera was installed for each direction of traffic flow separately, with elaborate arrangements for power backup and monitoring to ensure full coverage. The videos were processed and data was recorded at 15-minute intervals for each vehicle group for each direction of travel separately. Hourly totals were summarized at the end of each shift.

Table 2-1: Vehicle Classification System

Motorized / Fast Vehicles		Non-Motorized / Slow Vehicles
Passenger Car		Bicycle
Taxi		Cycle Rickshaw
Ambulance/ Police/ Military/ VIP Cars (Exempted)		Hand/ Animal Cart
2-Wheeler		
3-Wheeler		
Other Passenger Vehicle		
Bus	Minibus	
	Standard Bus	
	Police/ Military Bus (Exempted)	
Truck	Tempo/ LCV	
	2-Axle Truck	
	3-Axle Truck	
	Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	
	Oversized Vehicle (>6 Axles)	
	Police/ Military Truck (Exempted)	
Tractor		

2.2.2 Origin Destination Surveys

Origin & Destination survey has been carried out continuously for 24 hours at the toll plaza location, viz on 10 September 2018 at Bandanwara Km 61+020.

The origin-destination survey was carried out with the primary objective of studying the travel pattern of goods and passenger traffic along the study corridor. The results have also been used for identifying the Influence area of the project corridor and estimating the growth rates of traffic on the project corridor.

The O-D survey was carried out along with the classified traffic volume counts. Roadside interview method as described in IRC: 102-1988 was adopted for the survey. The survey was carried out for both passenger and goods vehicles in both directions. The vehicles were stopped on random sample basis with the help of police, and the drivers were interviewed by trained enumerators to obtain the required data. During the surveys the information pertaining to origin, destination, district registration number plate, national permit, trip frequency, trip-length, commodity types, loading pattern, trip purpose and occupancy as applicable for various vehicle types were recorded. The survey was carried out for both passenger and goods vehicles in both directions. Trained enumerators under the supervision of Traffic Engineers collected the trip characteristics using the survey forms designed for this purpose.

2.2.3 Registration Plate Survey

Registration Plate Number survey was conducted to identify local traffic for the purpose of estimation of toll discounts. The survey was conducted for 24 hours with the help of trained enumerators. The registration number of each category of vehicle was recorded and analysed. The registration numbers starting with RJ01 belong to the Ajmer RTO and shall be considered local for toll plaza at Bandanwara Km 61+020.

3 TRAFFIC SURVEYS ANALYSIS

3.1 TRAFFIC CHARACTERISTICS

The survey data collected from the Classified Volume Count were coded and processed in order to analyze the results with respect to existing traffic intensity, flow pattern, hourly variation and composition of traffic on the study road network. The various vehicle types having different sizes and characteristics were converted into a single unit called Passenger Car Unit (PCU). Passenger Car Unit for various vehicles are adopted based on recommendations of Indian Road Congress prescribed in IRC: 64-1990, "Gudelines for Capacity of Roads in Rural areas". The adopted passenger car unit values (PCU) are presented in Table 3-1.

Table 3-1: Recommended PCU's as per IRC: 64-1990

Fast Vehicles	PCU	Slow Vehicles	PCU
Passenger Car/ Taxi	1.0	Cycle	0.5
Two-Wheeler	0.5	Cycle Rickshaw	2.0
Three-Wheeler/ Other Passenger Vehicle	1.0	Hand/ Animal Cart	6.0
Minibus	1.5		
Standard Bus	3.0		
Tempo/ LCV	1.5		
2 Axle Truck	3.0		
3 Axle Truck	3.0		
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	4.5		
Oversized Vehicle (>6 Axles)	4.5		
Tractor	4.5		

The various traffic characteristics have been presented in the following:

- Average Daily Traffic (ADT)
- Annual Average Daily Traffic (AADT)
- Daily Variation
- Hourly variation and Peak Hour Factor (PHF)
- Directional distribution
- Traffic composition

3.1.1 Average Daily and Annual Average Daily Traffic

The traffic volume count data collected over seven days was averaged to determine the Average Daily Traffic (ADT).

The traffic plying on any road generally varies over the different periods of the year depending on the cycle of different socio-economic activities in the regions through which it passes. Therefore, in order to have more realistic picture of the traffic on the project corridor, it is required to assess seasonal variation in traffic

to estimate Annual Average Daily Traffic (AADT). Therefore, the ADT observed during the survey duration is multiplied by a Seasonal Correction Factor (SCF) to derive AADT. The seasonal correction factor is generally derived from secondary data.

Secondary data for sales of fuel at the Fuel Pump Stations located on the project road were collected to arrive at the Seasonal Correction Factor.

The SCF is calculated separately for petrol driven and diesel driven vehicles on the project corridor and is presented in Table 3-2.

Table 3-2: Seasonal Variations in Fuel Sales

Month	Average Daily Sales (KL)		Correction Factor	
	HSD	MS	HSD	MS
April	**121.5**	**29.7**	**0.901**	**0.941**
May	120.8	29.5	0.906	0.948
June	134.1	30.0	0.816	0.930
July	110.3	28.2	0.992	0.991
August	98.8	29.1	1.107	0.960
September	**101.3**	**26.7**	**1.080**	**1.048**
October	102.1	26.3	1.072	1.063
November	104.1	25.3	1.052	1.106
December	101.4	26.6	1.079	1.050
January	104.4	24.0	1.048	1.164
February	110.6	30.2	0.989	0.925
March	104.7	30.0	1.045	0.932
Annual Average	**109.4**	**27.9**	**1.000**	**1.000**

The collected ADT is converted into Annual Average Daily Traffic (AADT) by multiplying with the seasonal correction factors. Since the traffic surveys were carried out in the month of September 2018, the correction factors for the corresponding month would be used. The seasonal correction factor for goods traffic and diesel driven passenger traffic is 1.080 and for petrol driven passenger traffic is 1.048 respectively. As petrol and diesel sales are a proxy parameter and may be subject to some local issues at the local service stations, it was considered appropriate to also evaluate the national pattern of fuel sales.

National level fuel sales statistics were collated and analyzed for the last 18 years. The national level trends appear consistent over the years with very few exceptions. Based on the national trends the SCF for diesel and petrol vehicles comes out to be 1.124 and 1.033 respectively. Table 3-3 and Table 3-4 show the year wise and month wise factors of diesel and petrol sales nationally.

The national seasonal correction factors were adopted for diesel and petrol respectively, considering the higher consistency of data as well as the national character of the road traffic, which is coming from other states too.

Table 3-3: Seasonal Variation Factors on Diesel Sales (National)

Month	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	Average
JAN	1.03	1.04	1.03	1.02	1.00	0.98	0.94	0.99	1.01	1.02	1.02	1.01	1.03	1.01	1.01	1.11	1.04	1.019
FEB	1.03	0.99	0.94	0.99	0.90	0.95	0.92	0.92	0.93	0.94	0.93	0.98	0.97	0.92	0.92	0.95	0.95	0.946
MAR	0.96	1.01	0.89	0.92	0.95	0.91	0.92	0.91	0.93	0.93	0.91	0.95	0.95	1.00	0.93	0.95	0.94	0.939
APR	0.94	0.92	1.09	0.93	0.98	0.96	0.98	0.94	0.97	0.92	0.97	0.96	0.91	0.96	0.94	0.92	0.96	0.953
MAY	0.92	0.91	1.01	0.95	0.96	0.89	0.98	0.91	1.00	0.96	0.94	0.92	0.91	0.91	0.98	0.93	0.91	0.938
JUN	0.94	0.98	0.92	0.99	0.97	1.08	0.99	1.05	0.95	0.95	0.99	0.94	0.95	0.93	0.97	0.98	0.98	0.971
JUL	1.10	1.01	1.04	0.99	1.10	1.13	1.09	1.08	1.06	1.05	1.08	1.02	1.08	1.03	1.11	1.11	1.09	1.069
AUG	1.15	1.13	1.14	1.31	1.08	1.16	1.22	1.21	1.14	1.18	1.20	1.16	1.15	1.15	1.17	1.05	1.16	1.158
SEP	**1.02**	**1.12**	**1.16**	**1.04**	**1.17**	**1.09**	**1.17**	**1.08**	**1.12**	**1.17**	**1.15**	**1.15**	**1.14**	**1.16**	**1.04**	**1.20**	**1.10**	**1.124**
OCT	1.03	1.02	1.02	0.96	1.03	1.07	1.01	1.04	1.00	1.03	1.03	1.03	1.03	1.08	1.00	0.97	1.05	1.023
NOV	0.96	0.99	0.92	1.07	0.98	0.95	0.95	0.95	0.98	1.00	0.93	0.98	0.96	0.95	1.00	0.93	0.92	0.962
DEC	0.97	0.93	0.91	0.94	0.93	0.92	0.92	0.99	0.95	0.92	0.93	0.96	0.97	0.96	0.97	0.98	0.97	0.953
Total	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**

Table 3-4: Seasonal Variation Factors on Petrol Sales (National)

Month	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	Average
JAN	1.03	1.05	1.07	1.02	1.03	1.02	0.99	0.99	1.04	1.06	1.09	1.03	1.05	0.99	1.02	1.12	1.06	1.042
FEB	0.99	0.96	0.97	0.95	0.92	0.95	1.00	0.91	0.93	0.96	0.97	0.95	0.95	0.90	0.94	0.96	0.96	0.949
MAR	0.93	1.01	0.92	0.92	0.96	0.90	0.93	0.90	0.94	0.95	0.90	0.93	0.98	0.96	0.90	0.96	0.92	0.935
APR	1.04	1.00	1.07	1.00	1.06	1.04	1.03	0.98	1.04	1.04	1.02	1.04	1.11	1.04	1.00	0.98	1.03	1.028
MAY	0.96	0.91	1.00	0.96	0.92	0.88	0.96	0.91	0.98	0.96	0.94	1.03	0.86	0.96	1.01	0.97	0.92	0.949
JUN	0.98	1.02	0.94	0.99	0.98	1.08	0.99	1.15	0.96	0.94	0.98	0.96	0.99	0.97	1.01	1.06	1.04	1.004
JUL	1.06	1.01	1.00	1.00	1.05	1.08	1.02	1.05	1.08	1.04	1.05	1.02	1.03	1.09	1.11	1.05	1.04	1.050
AUG	1.02	1.01	1.01	1.11	0.97	1.04	1.06	1.07	1.04	1.03	1.04	1.02	0.98	1.01	1.05	0.92	1.01	1.015
SEP	**1.02**	**1.02**	**1.04**	**1.00**	**1.07**	**1.02**	**1.04**	**1.03**	**1.02**	**1.03**	**1.03**	**1.05**	**1.14**	**1.05**	**0.95**	**1.08**	**1.00**	**1.033**
OCT	1.02	1.04	1.01	1.01	1.03	1.03	1.03	1.02	0.98	1.01	1.01	1.01	1.00	1.00	1.00	0.96	1.00	1.004
NOV	0.98	1.03	1.00	1.07	1.02	1.04	0.98	1.01	1.04	0.98	1.06	0.98	0.96	1.04	1.01	0.96	1.01	1.005
DEC	0.99	0.97	1.00	1.00	1.00	0.98	0.99	1.03	0.98	1.00	0.95	0.99	1.00	0.99	1.02	1.03	1.02	1.000
Total	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**	**1.00**

The ADT and AADT by vehicle types on the project corridor are presented in Table 3-5.

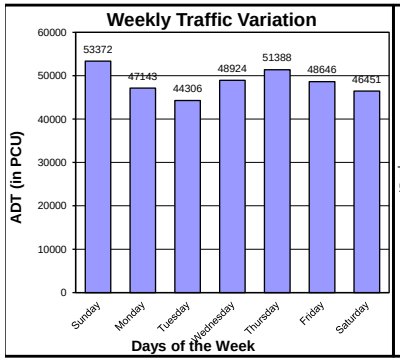
Table 3-5: Traffic (ADT and AADT) at Bandanwara Km 61+020

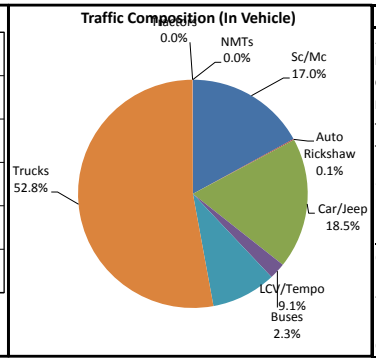
Vehicle Type		NH-79 / 79A (Kishangarh Bandanwara Km 61+020		Adopted PCU Factors
		ADT	AADT	
Tollable	Passenger Car	3,400	3,512	1.0
	Taxi	198	222	1.0
Non Tollable	Two Wheeler	3,319	3,429	0.5
	Three Wheeler	19	20	1.0
	Other Passenger Vehicle	8	9	1.0
Tollable	Minibus	22	24	1.5
	Standard Bus	424	477	3.0
	Tempo/ LCV	1,781	2,001	1.5
	2-Axle Truck	1,675	1,883	3.0
	3-Axle Truck	3,035	3,410	3.0
	Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	5,520	6,203	4.5
Non Tollable	Tractors	67	75	4.5
Tollable	Oversized Vehicle (>6 Axles)	1	2	4.5
Non Tollable	Bycycle	6	6	0.5
	Cycle Rickshaw	0	0	2.0
	Hand/ Animal Cart	1	1	6.0
Toll Exempted	Ambulance/ Police/ Military/ VIP Car	15	15	1.0
	Police/ Military/ Cemetry Bus	7	7	3.0
	Police/ Military Truck	6	6	3.0
Vehicle	Motorised Traffic	19,498	21,296	
	Non Motorised Traffic	7	7	
	Total	**19,505**	**21,303**	
PCU	Motorised Traffic	48,597	54,141	
	Non Motorised Traffic	7	7	
	Total	**48,604**	**54,148**	
Tollable Traffic	**Vehicles**	**16,056**	**17,734**	
	PCUs	**46,553**	**52,003**	
Non Tollable Traffic	**Vehicles**	**3,449**	**3,569**	
	PCUs	**2,052**	**2,145**	

At Bandanwara Km 61+020 the average daily tollable traffic observed is 16,056 vehicles and 46,553 PCUs. The AADT 17,734 vehicles and 52,003 PCUs based on the national level SCF of 1.124 for commercial and 1.033 for passenger vehicles respectively.

Table 3-6: Summary of Classified Traffic Volume Count at Bandanwara Km 61+020

Time Period (Hours)	Motorized Vehicles													Non Motorized Vehicle			Toll Exempted			Total Number (Both Direction)		Hourly (%age) (Both Direction)		Gulabpura To Kishangarh (UP)		Kishangarh To Gulabpura (DN)		Time Period (Hours)
	Passenger Vehicle							Goods Vehicle																				
	Passenger Car	Taxi	Two Wheeler	Three Wheeler	Other Passenger Vehicle	Minibus	Standard Bus	Tempo/ LCV	2-Axle Truck	3-Axle Truck	Multi Axle Vehicle/ HCM/ EMV (4 to 6	Tractors	Oversized Vehicle (>6 Axles)	Bycycle	Cycle Rickshaw	Hand/ Animal Cart	Ambulance/ Police/ Military/ VIP Car	Police/ Military Bus	Police/ Military Truck	Vehicle	PCU	Vehicle	PCU	Vehicle	PCU	Vehicle	PCU	
00:00-01:00	74	1	9	1	0	0	25	75	71	117	210	1	0	0	0	0	1	1	0	585	1783	3.00	3.67	314	957	271	825	00:00-01:00
01:00-02:00	47	1	4	0	0	1	21	62	64	121	192	0	0	0	0	0	0	0	0	514	1627	2.63	3.35	275	877	239	750	01:00-02:00
02:00-03:00	42	1	2	0	0	1	28	49	53	114	184	0	0	0	0	0	1	0	0	475	1530	2.43	3.15	244	790	231	740	02:00-03:00
03:00-04:00	35	3	4	1	0	1	22	47	50	109	178	0	0	0	0	0	0	0	0	450	1457	2.30	3.00	216	701	234	755	03:00-04:00
04:00-05:00	34	2	10	0	0	0	22	46	56	111	162	0	0	0	0	0	1	0	0	445	1407	2.28	2.90	211	673	233	735	04:00-05:00
05:00-06:00	50	3	33	1	0	0	14	49	54	105	178	0	0	0	0	0	0	0	0	488	1467	2.50	3.02	237	702	251	765	05:00-06:00
06:00-07:00	76	6	78	1	0	0	13	55	61	105	200	2	0	0	0	0	1	0	0	597	1649	3.06	3.39	297	839	300	810	06:00-07:00
07:00-08:00	99	9	119	1	0	1	16	64	76	124	231	2	0	1	0	0	0	0	0	743	1966	3.81	4.04	350	973	394	992	07:00-08:00
08:00-09:00	138	16	151	1	1	2	17	69	77	127	262	2	0	1	0	0	1	1	0	865	2195	4.43	4.52	449	1147	416	1048	08:00-09:00
09:00-10:00	160	10	228	0	1	0	16	81	81	129	287	6	0	0	0	0	1	1	0	1002	2408	5.14	4.95	521	1261	481	1147	09:00-10:00
10:00-11:00	189	10	252	1	1	1	13	90	78	135	257	4	0	0	0	0	1	0	1	1032	2319	5.29	4.77	537	1203	496	1116	10:00-11:00
11:00-12:00	204	15	248	1	1	1	13	89	76	132	264	4	0	0	0	0	0	0	2	1052	2362	5.40	4.86	516	1160	537	1202	11:00-12:00
12:00-13:00	202	14	242	3	0	1	14	84	71	121	249	5	0	1	0	0	0	1	2	1010	2241	5.18	4.61	469	1031	541	1210	12:00-13:00
13:00-14:00	199	11	245	1	0	2	16	81	69	122	236	4	0	1	0	0	1	1	1	987	2161	5.06	4.45	466	1038	521	1123	13:00-14:00
14:00-15:00	207	15	243	1	0	1	17	86	67	130	229	4	0	0	0	0	0	1	0	1002	2173	5.14	4.47	492	1086	510	1087	14:00-15:00
15:00-16:00	208	16	273	0	1	1	20	87	69	126	228	4	0	0	0	0	1	0	0	1037	2192	5.32	4.51	517	1133	520	1060	15:00-16:00
16:00-17:00	216	17	261	1	1	2	17	88	73	136	248	7	0	0	0	0	1	0	1	1069	2329	5.48	4.79	523	1167	546	1163	16:00-17:00
17:00-18:00	241	20	232	1	0	1	18	87	77	139	251	6	0	1	0	0	1	1	0	1075	2374	5.51	4.88	524	1203	551	1171	17:00-18:00
18:00-19:00	227	10	258	0	1	1	14	83	74	150	268	4	0	1	0	0	1	0	0	1092	2431	5.60	5.00	540	1235	552	1197	18:00-19:00
19:00-20:00	211	4	211	1	0	1	16	88	80	147	242	4	0	0	0	0	0	0	0	1004	2288	5.15	4.71	503	1197	501	1091	19:00-20:00
20:00-21:00	182	5	106	0	0	2	13	89	83	148	242	3	0	0	0	0	1	0	0	874	2213	4.48	4.55	446	1150	428	1063	20:00-21:00
21:00-22:00	140	6	60	0	1	1	15	82	72	134	245	2	0	0	0	0	1	0	0	756	2071	3.88	4.26	389	1069	367	1002	21:00-22:00
22:00-23:00	123	3	32	0	0	1	21	74	74	130	245	1	0	0	0	0	0	0	0	705	2037	3.61	4.19	363	1069	342	968	22:00-23:00
23:00-24:00	98	1	19	0	0	1	24	75	71	123	233	0	0	0	0	0	0	1	0	645	1925	3.31	3.96	348	1056	297	869	23:00-24:00
Grand Total	**3400**	**198**	**3319**	**19**	**8**	**22**	**424**	**1781**	**1675**	**3035**	**5520**	**67**	**1**	**6**	**0**	**1**	**15**	**7**	**6**	**19505**	**48604**	**100**	**100**	**9747**	**24717**	**9758**	**23887**	**Grand Total**
% Share	17.43	1.01	17.01	0.10	0.04	0.11	2.18	9.13	8.59	15.56	28.30	0.34	0.01	0.03	0.00	0.00	0.07	0.04	0.03	100		Directional Split:		50.0	50.9	50.0	49.1	**% Share**
PEAK CHARACTERISTICS																												
09:00-10:00	160	10	228	0	1	0	16	81	81	129	287	6	0	0	0	0	1	1	0	**1002**	**2408**	5.1	5.0	521	1261	481	1147	09:00-10:00
18:00-19:00	227	10	258	0	1	1	14	83	74	150	268	4	0	1	0	0	1	0	0	**1092**	**2431**	5.6	5.0	540	1235	552	1197	18:00-19:00





SALIENT FEATURES

Average Daily Traffic

Passenger Motor: 7,411 Vehs 38.%

Goods Motorized: 12,087 Vehs 62.%

Non Motorized: 7 Vehs .%

Total ADT 19,505 Vehs 48,604 PCU

Total AADT 21,303 Vehs 54,148 PCU

Significant Peak Hour: 18:00-19:00

Peak Hour Traffic: 2,431 PCU 5.%

Tollable Vehicles

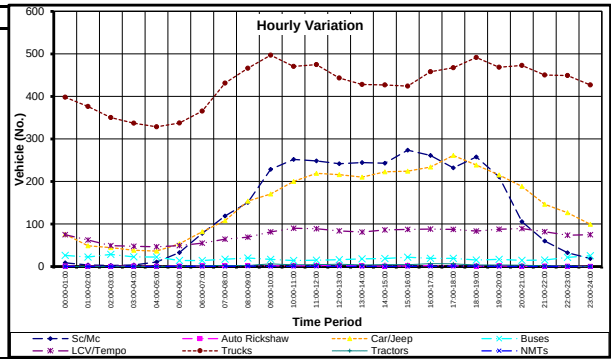
Car/Jeeps 3,597

LCV/Mini Buses 1,802

Truck/Buses 5,134

Multi-Axle Trucks 5,520

Oversized Vehicles 1



3.1.2 Tollable / Commercial Traffic

For the purpose of toll estimation and capacity assessment as per the concession agreement, only tollable traffic is considered. Table 3-7 show the ADT and AADT of tollable traffic on the toll plaza locations.

Table 3-7: ADT Tollable / Commercial Traffic

Vehicle Type		NH-79 / 79A (Kishangarh Gulabpura) Bandanwara Km 61+020	
		ADT	AADT
Passenger Car		3400	3512
Taxi		198	222
Minibus		22	24
Standard Bus		424	477
Tempo/ LCV		1781	2001
2-Axle Truck		1675	1883
3-Axle Truck		3035	3410
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)		5520	6203
Oversized Vehicle (>6 Axles)		1	2
Toll Exempted	Ambulance/ Police/ Military/ VIP Car	15	15
	Police/ Military/ Cemetry Bus	7	7
	Police/ Military Truck	6	6
Total	**Vehicle**	16084	17762
	PCU	46609	52059
Tolled Traffic	**Vehicle**	**16056**	**17734**
	PCU	**46553**	**52003**
Toll Exempted	**Vehicle**	**28**	**28**
	PCU	**56**	**56**

3.1.2.1 Special Event

There was a call for Bharat Bandh on the 10th of September by the opposition parties. The ADT was analyzed and compared for the total 7 day survey duration and 5 day period excluding the period of Bharat Bandh and time just before and after that. Table 3-8 shows the variation between the 7 day and 5 day average traffic.

Table 3-8: Comparison of 7 day and 5 day Average Daily Traffic

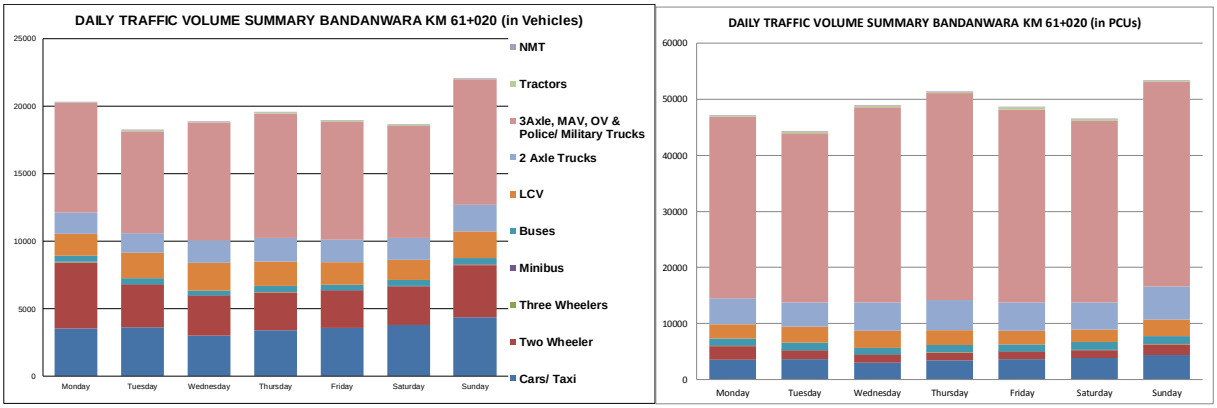
Vehicle Type		Bandanwara Km 61+020					
		ADT			AADT		
		7 Day	5 Day	Var %	7 Day	5 Day	Var %
Passenger Car		3400	3354	-1.3%	3512	3465	-1.3%
Taxi		198	161	-18.4%	222	181	-18.4%
Minibus		22	19	-11.0%	24	22	-11.0%
Standard Bus		424	419	-1.2%	477	471	-1.2%
Tempo/ LCV		1781	1773	-0.4%	2001	1992	-0.4%
2-Axle Truck		1675	1663	-0.8%	1883	1868	-0.8%
3-Axle Truck		3035	3077	1.4%	3410	3458	1.4%
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)		5520	5479	-0.8%	6203	6156	-0.8%
Oversized Vehicle (>6 Axles)		1	1	-2.0%	2	2	-2.0%
Toll Exempted	Ambulance/ Police/ Military/ VIP Car	15	14	-5.3%	15	14	-5.3%
	Police/ Military/ Cemetry Bus	7	7	-0.4%	7	7	-0.4%
	Police/ Military Truck	6	7	15.1%	6	7	15.1%
Total	**Vehicle**	16084	15975	-0.7%	17762	17643	-0.7%
	PCU	46609	46398	-0.5%	52059	51826	-0.4%
Tolled Traffic	**Vehicle**	**16056**	**15946**	**-0.7%**	**17734**	**17615**	**-0.7%**
	PCU	**46553**	**46340**	**-0.5%**	**52003**	**51768**	**-0.5%**
Toll Exempted	**Vehicle**	**28**	**29**	**0.6%**	**28**	**29**	**0.6%**
	PCU	**56**	**58**	**3.7%**	**56**	**58**	**3.7%**

In order to exclude the impact of the Bharat Bandh, the AADT based on the 5 day average has been projected and used for toll revenue estimation.

3.1.3 Daily Variation

The daily variation of traffic over the survey duration has been studied. Daily variation of traffic during different days of week in terms of Vehicles and PCUs has been illustrated in Figure 3-1. Sunday is the day of highest traffic followed by Thursday.

Figure 3-1: Daily Variation at Bandanwara Km 61+020 (Vehicles and PCU's)



3.1.4 Hourly Variation and Peak Hour Factor (PHF)

The hourly variation of traffic illustrates the distribution of traffic over the day with respect to time and the peak hour factor is the maximum percentage of the total traffic that uses the project highway in one single hour of the day. It is of significance as highway capacities and design calculations are based on peak hour factor. The peak hour factor observed is summarized in Table 3-9 and has been illustrated pictorially in Figure 3-2.

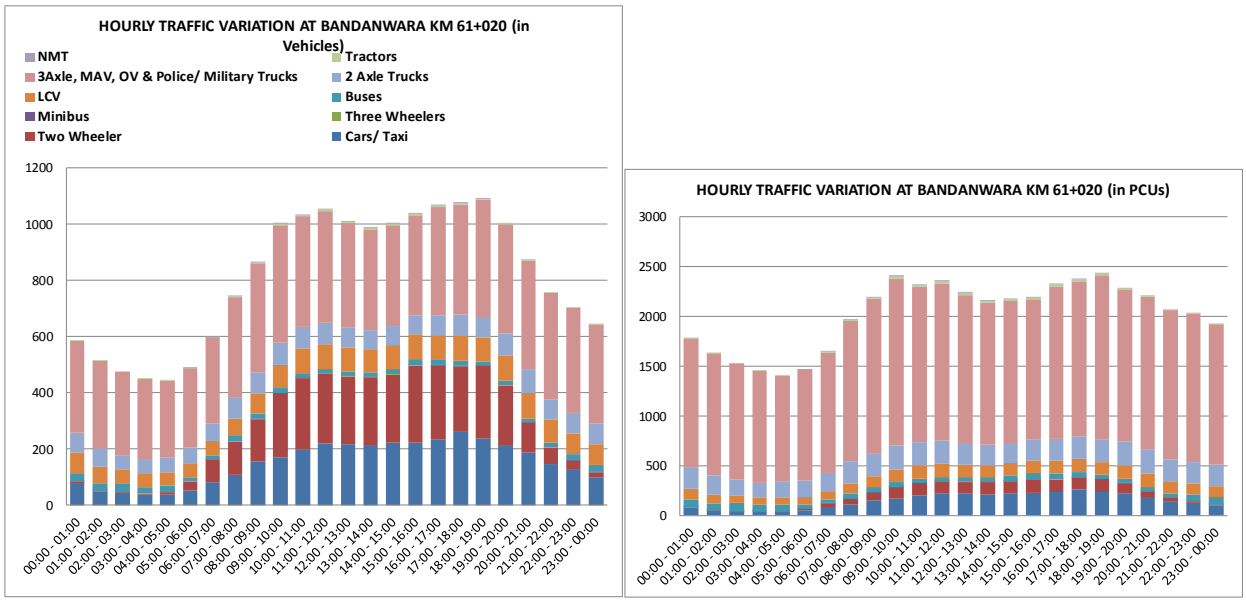
Table 3-9: Peak Hour Traffic at Toll Plaza Location

Survey Location	Morning Peak duration	Peak Hour Flow		Evening Peak duration	Peak Hour Flow	
		PCUs	Peak hour share (%)		PCUs	Peak hour share (%)
Bandanwara Km 61+020	09:00-10:00	2408	5.0	18:00-19:00	2431	5.0

It is observed that the morning peak hour at Bandanwara Km 61+020 is between 09:00-10:00 hours. The evening peak occurs during 18:00-19:00 hours at same location. While there isn't much variation between the morning and evening peaks the evening peak is slightly more prominent.

Figure 3-2 show the intraday variation of traffic at the survey locations. It is apparent that the traffic flow persists at more or less similar intensity (PCU terms) throughout the day with a major dip only during wee hours of the morning.

Figure 3-2: Hourly Variation of Traffic at Bandanwara Km 61+020 (Vehicles and PCUs)



3.1.5 Directional Distribution

The directional traffic data was analyzed to establish the directional distribution of traffic. The observed variation of directional traffic in terms of percentage is presented in the Table 3-10.

Table 3-10: Directional Distribution Share

S No.	Location	Directional Distribution (%) in PCU	
		Gulabpura To Kishangarh (UP)	Kishangarh To Gulabpura (DN)
1	Bandanwara Km 61+020	50.9%	49.1%

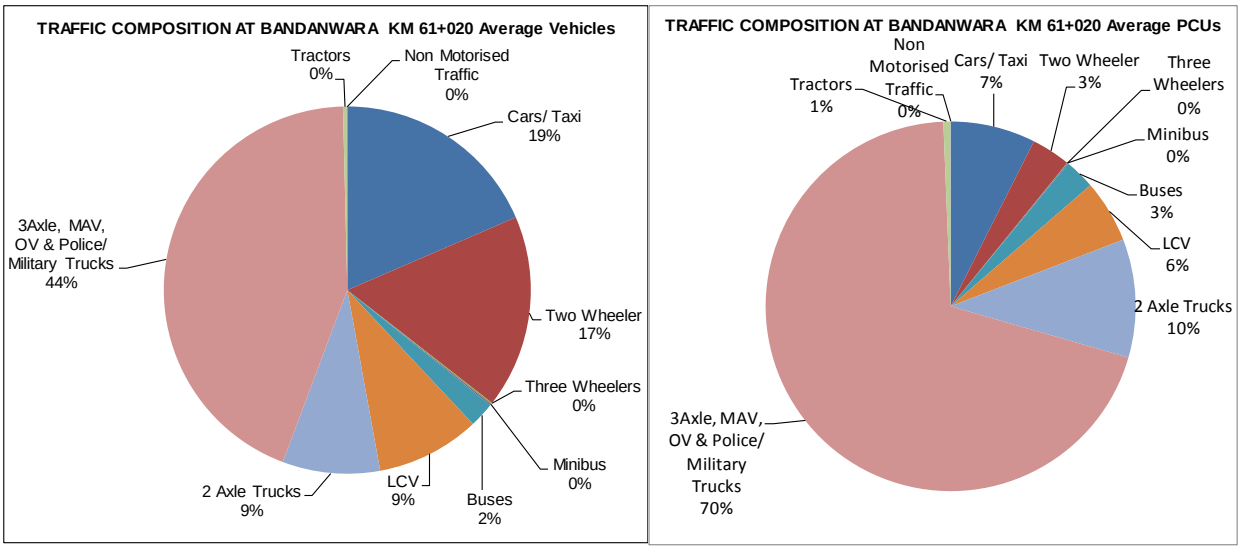
The directional traffic distribution is almost equal.

3.1.6 Traffic Composition

The traffic composition on the project corridor has been analyzed to derive the vehicle mode which travels on the project corridor and the travel pattern. The composition of traffic as observed at survey location on the project corridor is presented in Figure 3-3.

The share of freight traffic at the Bandanwara Km 61+020 survey location is over 62% in vehicles and over 87% in PCU terms, showing it to be a predominantly freight corridor.

Figure 3-3: Composition of Traffic at Bandanwara Km 61+020



4 TRAVEL CHARACTERISTICS

To estimate travel characteristics in the region and the tollable traffic streams, Origin & Destination (O-D) survey at two locations on the project corridor was carried out for 24 hours respectively. Both passenger and commercial vehicles plying on the project corridor were stopped on a random sampling basis and interviewed. Along with the OD survey, volume count survey has been carried out at both locations to observe the sample size.

The travel characteristics obtained by O-D survey facilitate the identification of:

- Travel Characteristics and Commodity Movement Pattern
- Growth Potential of traffic along the project corridor
- Local and through traffic on the project corridor.
- The tollable traffic on the project corridor.

Travel characteristics like origin, destination and frequency of trip collected for passenger vehicles. For goods vehicles, the survey elicited characteristics like origin, destination, frequency and commodity being transported. The collected data was analyzed to obtain the trip distribution based on a zoning system suitably designed for the present study. Additional information regarding the district registration number and national permit was also collected for determining the toll concessions.

4.1 SAMPLE SIZE

The vehicles during the OD surveys were interviewed on a random sample basis. The traffic volume count and the sample size (both in absolute numbers and in percentage terms) captured at the survey locations on the project corridor is given in Table 4-1

Table 4-1: O-D Survey Sample Size

Location		Passenger Car	Taxi	Minibus	Standard Bus	Tempo/ LCV	2-Axle Truck	3-Axle Truck	Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)
Bandanwara Km 61+020	Average Traffic	3400	198	22	424	1781	1675	3035	5520
	Average Sample	960	88	7	136	69	90	244	446
	Sample %	28.2	44.5	32.5	31.9	3.8	5.4	8.0	8.1

4.2 ZONING SYSTEM

The zoning system has been defined by district level at the first stage and states at the second level. The project corridor lies within the districts of Ajmer and Bhilwara in Rajasthan. With a view to understand the distribution of trips, all the districts in Rajasthan have been assigned separate zone codes. The remaining states excluding Rajasthan have been taken as zones and assigned separate codes. In all, total 43 traffic zones were considered for the analysis of travel pattern on the project corridor.

The traffic zones considered for travel analysis is listed in Table 4-2.

Table 4-2: Traffic Zones for O-D Analysis

Zone No	Zone Name	Zone No	Zone Name
102000	Andhra Pradesh	129478	Rajasthan-Ajmer
104000	Assam	129479	Rajasthan-Alwar
105000	Bihar	129480	Rajasthan-Banswara
107000	Chhattisgarh	129483	Rajasthan-Bharatpur
110000	Delhi	129484	Rajasthan-Bhilwara
111000	Goa	129487	Rajasthan-Chittorgarh
112000	Gujarat	129488	Rajasthan-Churu
113000	Haryana	129491	Rajasthan-Dungarpur
114000	Himachal Pradesh	129493	Rajasthan-Jaipur
115000	Jammu and Kashmir	129494	Rajasthan-Jaisalmer
116000	Jharkhand	129495	Rajasthan-Jalore
117000	Karnataka	129496	Rajasthan-Jhalawar
118000	Kerala	129498	Rajasthan-Jodhpur
120000	Madhya Pradesh	129500	Rajasthan-Kota
121000	Maharashtra	129501	Rajasthan-Nagaur
125000	Nagaland	129503	Rajasthan-Pratapgarh
126000	Odisha	129506	Rajasthan-Sikar
128000	Punjab	129507	Rajasthan-Sirohi
130000	Sikkim	129510	Rajasthan-Udaipur
131000	Tamil Nadu		
132000	Telangana		
134000	Uttar Pradesh		
135000	Uttarakhand		
136000	West Bengal		

4.3 COMMODITY CLASSIFICATION

The commodities being transported were classified into 13 categories and used during the O-D survey for recording the type of commodity. The commodity has been classified with emphasis to include all possible commodities and categorize them into homogeneous groups. The list of classified commodities is given in Table 4-3

Table 4-3: Classification of Commodities

Code	Commodity Type
1	Food Item/ Fruit/ Vegetable/ Dairy/ Meat (Raw/ Processed)
2	Cotton or Synthetic Yarn/ Fibre/ Textile/ Garment/ Handicraft/ Leather
3	Petroleum Product/ HSD/ Petrol
4	Iron & Steel (Aluminum or Metal) Rod/ Bar/ Sheet
5	Mineral and Ore
6	Coke/ Coal
7	Automobile/ Machine & Auto Spare Part
8	Rubber/ Plastic/ Tyre
9	Chemical/ Fertilizer/ Pharmaceutical Product
10	Building Material/ Cement/ Timber
11	Electronic/ Computer/ Electrical Appliance
12	Empty
13	Others

4.4 EXPANSION FACTORS

The origin-destination details were collected from the trip makers during the O-D survey on sample basis by stopping and interviewing the fast-moving vehicles. The sample size varied for different survey locations depending upon the quantum of traffic volume moving on the road. Sampling rate varied with the changes in traffic flow during different parts of the day at the same location as well. Care has been taken to eliminate any element of bias in the sampling method. Since the data was collected on the sample basis, expansion factors are required to replicate the pattern as reflected in the sample to the total number of vehicular trips made during the day. These expansion factors are calculated separately for each class of vehicle. For Example if "xc " is the number of cars interviewed and "Xc" is the total number of cars counted during the day, then "Xc/xc" would be the expansion factor for Cars.

OD Matrices are developed to assess the traffic movement pattern. These matrices actually provide distribution of trips for each zone as various inter-zonal movements. The vehicle wise O-D matrices for each survey locations are developed by multiplying the sample O-D matrix obtained from the survey data with the expansion factor. On the basis of O-D matrices, travel pattern of the vehicles moving on the project corridor is discussed below.

4.5 TRAVEL DESIRE PATTERN

The origins and destinations of various types of vehicles observed at the O-D survey locations have been analyzed for O-D matrices as per the zoning system presented above.

The following tables present Zone Influence Factors (ZIF) for understanding of trip generation in the PIA. ZIF has been defined as:

$$ZIFi = \frac{Oi + Di}{2\sum_{k=1}^{n}(Ok + Dk)}$$

Where,

ZIF_i is the Zone Influence Factor of Zone i

O_i is the number of trip productions at Zone i

D_i is the number of trip attractions at Zone i

N is set of zones

A detailed analysis of the travel characteristics reveals that the most significant traffic generating location for the corridor are Chittorgarh, Ajmer and Bhilwara districts of Rajasthan in immediate vicinity along with the states of Haryana, Gujarat and Maharashtra in the surrounding region. The project influence area is presented in Table 4-4.

Table 4-4: Project Influence Area (%)

Zone Name	Cars	Buses	Trucks	Total
Rajasthan-Chittorgarh	7.9	12.1	16.6	14.62
Rajasthan-Ajmer	25.3	22.2	10.5	13.97
Rajasthan-Bhilwara	25.0	20.5	7.5	11.52
Maharashtra	5.0	2.4	13.1	11.11
Rajasthan-Jaipur	5.2	11.2	8.3	7.73
Haryana	0.3	0.2	9.0	6.89
Gujarat	1.5	2.4	5.9	4.85
Himachal Pradesh	2.5	5.0	4.2	3.83
Madhya Pradesh	4.9	4.3	3.4	3.71
Punjab	0.1	0.0	4.3	3.33
Delhi	1.3	3.9	3.7	3.17
Tamil Nadu	0.1	0.5	2.3	1.79
Uttarakhand	0.1	0.5	2.0	1.58
Karnataka	0.0	0.0	1.7	1.31
Uttar Pradesh	0.9	0.4	1.1	1.05
Bihar	2.4	2.2	0.6	1.03
Rajasthan-Jaisalmer	3.8	3.9	0.1	0.98
Telangana	0.0	0.0	1.1	0.85
Rajasthan-Udaipur	2.6	2.0	0.2	0.79
Rajasthan-Nagaur	2.7	1.4	0.1	0.64
Rajasthan-Sirohi	1.4	0.7	0.3	0.57
Total (21 Highest Traffic Zones)	**85.3**	**83.7**	**79.3**	**80.7**

4.6 PASSENGER TRIP CHARACTERISTICS

The trip characteristics of passenger vehicles is discussed below

4.6.1 Trip Frequency

The trip frequency distribution of different mode of passenger vehicles plying on the project corridor has been analyzed and the average trip frequency distribution of each mode of passenger vehicle plying on the corridor is presented in Table 4-5**.** It can be seen that regular trips are few in number, while the majority is occasional or weekly trips.

Table 4-5: Average Passenger Trip Frequency Distribution (%)

Location	2,3 Times a Day	Daily	2,3 Times a week	Weekly	Occasionally	Total
Bandanwara Km 61+020						
Passenger Car	0.7	8.5	13.5	33.5	43.8	**100**
Taxi	0.0	10.0	13.9	21.1	55.1	**100**

4.6.2 Purpose of Trips

The purpose of trips carried out by passenger vehicles and passengers at location is presented in Table 4-6. From the analysis the corridor shows a regional character with fewer work, business or educational trips which are more regular and local in nature. A higher proportion of health, shopping and social trips is observed which are more regional and less regular kind of trips.

Table 4-6: Distribution of Trips by Purpose (%)

Location	Work/ Business	Education	Social/ Recreation	Shopping	Health	Return	Others	Total
Bandanwara Km 61+020								
Vehicles	9.5	10.8	11.5	16.5	17.7	19.7	14.4	**100**
Passengers	9.6	10.7	11.6	17.7	19.3	17.4	13.8	**100**

4.6.3 Occupancy Analysis

The occupancy of passenger vehicles was analyzed. The average occupancy by vehicle mode at said location has been presented in Table 4-7.

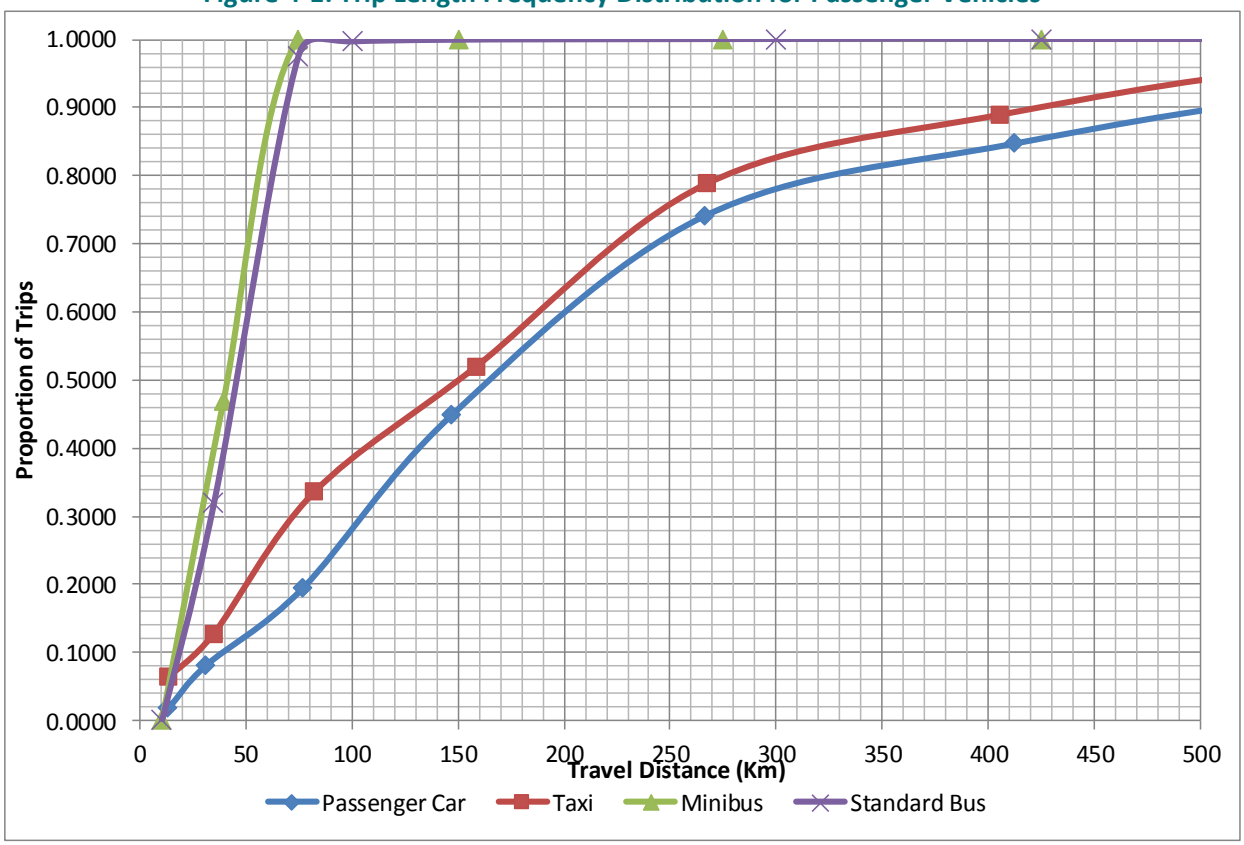
Table 4-7: Average Occupancy

Mode	Passenger Car	Taxi	Minibus	Standard Bus
Bandanwara Km 61+020	5.4	5.0	15.6	24.9

4.6.4 Lead Analysis

The lead distribution for passenger vehicles was analyzed and the trip length frequency distribution is shown in Figure 4-1. A majority of car and taxi trips is greater than 150Km in length. The travel range of busses is much shorter with a majority of buses having a range of under 80Km, showing mostly local busses.

Figure 4-1: Trip Length Frequency Distribution for Passenger Vehicles



4.7 FREIGHT TRIP CHARACTERISTICS

The trip characteristics of goods vehicles are discussed below.

4.7.1 Trip Frequency

The average trip frequency distribution of each mode of goods vehicles plying on the corridor is presented in Table 4-8**.** It can be clearly seen maximum trip frequency is weekly and occasional journeys.

Table 4-8; Average Freight Trip Frequency Distribution (%)

Location	2,3 Times a Day	Daily	2,3 Times a week	Weekly	Occasionally	Total
Bandanwara Km 61+020						
Tempo/ LCV	0.6	15.4	8.1	15.1	60.9	**100**
2-Axle Truck	1.7	11.6	9.9	25.7	51.1	**100**
3-Axle Truck	2.1	9.9	8.3	27.8	51.9	**100**
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	1.2	7.6	7.9	26.2	57.0	**100**

4.7.2 Commodity Analysis

During the O-D surveys, information of goods pertaining to commodity and tonnage were recorded along with the origin and destination details. The information was analyzed to assess the kind of goods movement on the project corridor. The commodity wise goods movement pattern at all locations across different vehicle categories in terms of percent share has been presented in Table 4-9.

Table 4-9: Commodity Wise Goods Movement Pattern (%)

Commodity Tyoe	Food Item/ Fruit/ Vegetable/ Dairy/ Meat (Raw/ Processed)	Cotton or Synthetic Yarn/ Fibre/ Textile/ Garment/ Handicraft/ Leather	Petroleum Product/ HSD/ Petrol	Iron & Steel (Aluminum or Metal) Rod/ Bar/ Sheet	Mineral and Ore	Coke/ Coal	Automobile/ Machine & Auto Spare Part	Rubber/ Plastic/ Tyre	Chemical/ Fertilizer/ Pharmaceutical Product	Building Material/ Cement/ Timber	Electronic/ Computer/ Electrical Appliance	Empty	Others
Bandanwara Km 61+020													
Tempo/ LCV	30.42	2.71	3.01	2.41	0.00	0.00	11.46	0.60	1.20	10.25	5.13	9.93	22.88
2-Axle Truck	26.15	5.39	2.49	4.15	0.41	0.41	12.86	0.83	1.66	5.40	5.00	10.34	24.91
3-Axle Truck	30.75	3.81	2.57	1.96	2.01	0.45	5.93	3.12	3.67	10.54	0.61	9.54	25.04
Multi Axle Vehicle/ HCM (4 to 6 Axles)	27.14	2.85	2.22	5.69	1.30	0.10	9.84	1.38	4.21	18.25	0.29	11.30	15.43

The major commodities plying on the project corridor were observed to be food items, automobiles / machinery and building material. The share of empty vehicles has been observed to be significantly low of about 10%.

4.7.3 Load Analysis

The distribution of load among various goods vehicles observed at each location is presented in the Table 4-10.

Table 4-10: Load Distribution Pattern (%)

Load Range (Tonnes) Location	Empty	Less than 2	2 - 4	4 - 6	6 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 45	Greater than 45	Total
Bandanwara Km 61+020												
Tempo/ LCV	9.9	29.5	33.1	17.5	9.9	0.0	0.0	0.0	0.0	0.0	0.0	100.0
2-Axle Truck	10.3	0.0	5.0	0.8	10.4	30.7	33.2	9.6	0.0	0.0	0.0	100.0
3-Axle Truck	9.5	0.0	0.0	0.0	8.5	24.4	27.3	17.7	12.6	0.0	0.0	100.0
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	11.3	0.0	0.2	1.1	3.9	8.9	17.6	20.8	14.8	21.3	0.0	100.0

The analysis of reported loading pattern indicates that the load range of LCV is up to about 10 tonnes, 2-Axle trucks carries load ranges up to 25 tonnes and 3-Axle truck carries load ranges upto 30 tonnes. It has been also observed that MAV has varying load distribution ranging upto 45 tonnes. The percentage of overloading reported is relatively low.

The average load carried by freight vehicles on the project corridor is presented in Table 4-11. The average load for freight vehicles for all loaded vehicles and for those including empty vehicles is not significantly different as the share of empty vehicles is significant.

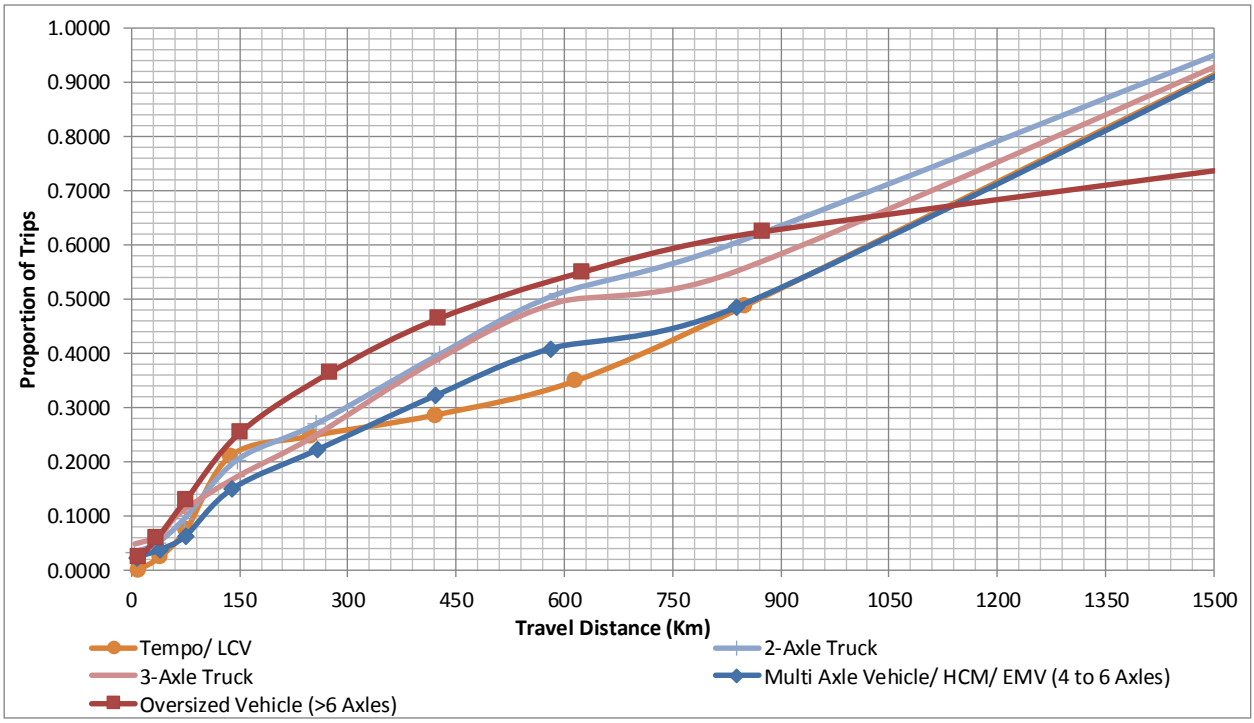
Table 4-11: Average Loading

Mode	Bandanwara Km 61+020	
	including Empty Vehicles	excluding Empty Vehicles
Tempo/ LCV	3.5	3.9
2-Axle Truck	13.5	15.0
3-Axle Truck	17.4	19.2
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	22.3	25.2

4.7.4 Lead Analysis

The lead distribution for goods vehicles at each location in percentage terms has been analyzed and the trip length frequency distribution for goods vehicles is given in Figure 4-2. A significant majority of trips is long distance with median trip lengths being approximately 850Km for LCV and MAV, while that of 2 and 3 Axle trucks being about 600Km.

Figure 4-2: Trip Length Frequency distribution for Goods Vehicles



5 SURROUNDING ROAD NETWORK & DEVELOPMENT POTENTIAL

5.1 NETWORK APPRECIATION

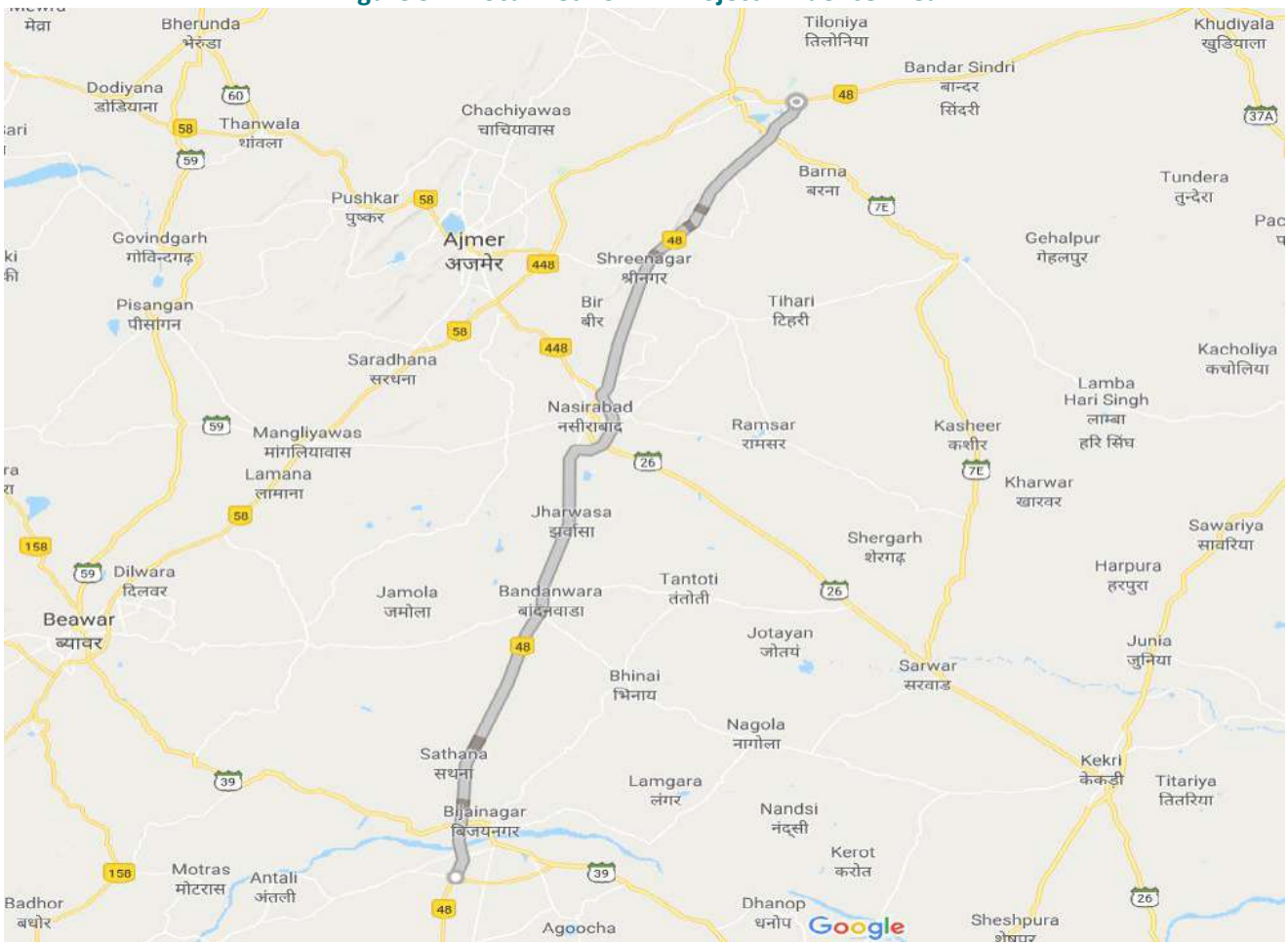
The network study is undertaken to assess the potential for traffic diversion. Typically traffic diversions are expected when toll are newly introduced on a section or if a significant change is created in the network due to the project under consideration. Since the project is an existing toll road, diversions if any would have already taken place and as such there is little possibility of further diversions.

The project road is part of one of the most important road corridors of the country connecting the national capital Delhi with the financial capital Mumbai. The preceding section to the project corridor is Jaipur – Kishangarh which was one of the earliest six lane highways in the country, completed in year 2005. The next section from Gulabpura to Chittorgarh has also been awarded for six laning.

5.1.1 Local Alternative Routes

The local network in the project influence area is shown in Figure 5-1. There are no reasonable toll avoiding alternatives to the project road in the local context.

Figure 5-1: Local Network in Project Influence Area



5.1.2 Regional Alternative Routes

The project corridor is part of some major regional routes. Figure 5-2 shows the Regional Network and Alternative Routes for the project corridor and

Table 5-1 shows the comparison of the alternatives in terms of distance, travel time and tolls. Considering the present configuration of these alternative, the project road will be the highest capacity and the fastest of the route. Since there is a lower toll route available, the traffic choosing the project road has already considered the same in their route choice. It is therefore unlikely that there would be any diversion from the project road post six-laning.

Figure 5-2: Regional Network and Alternative Routes

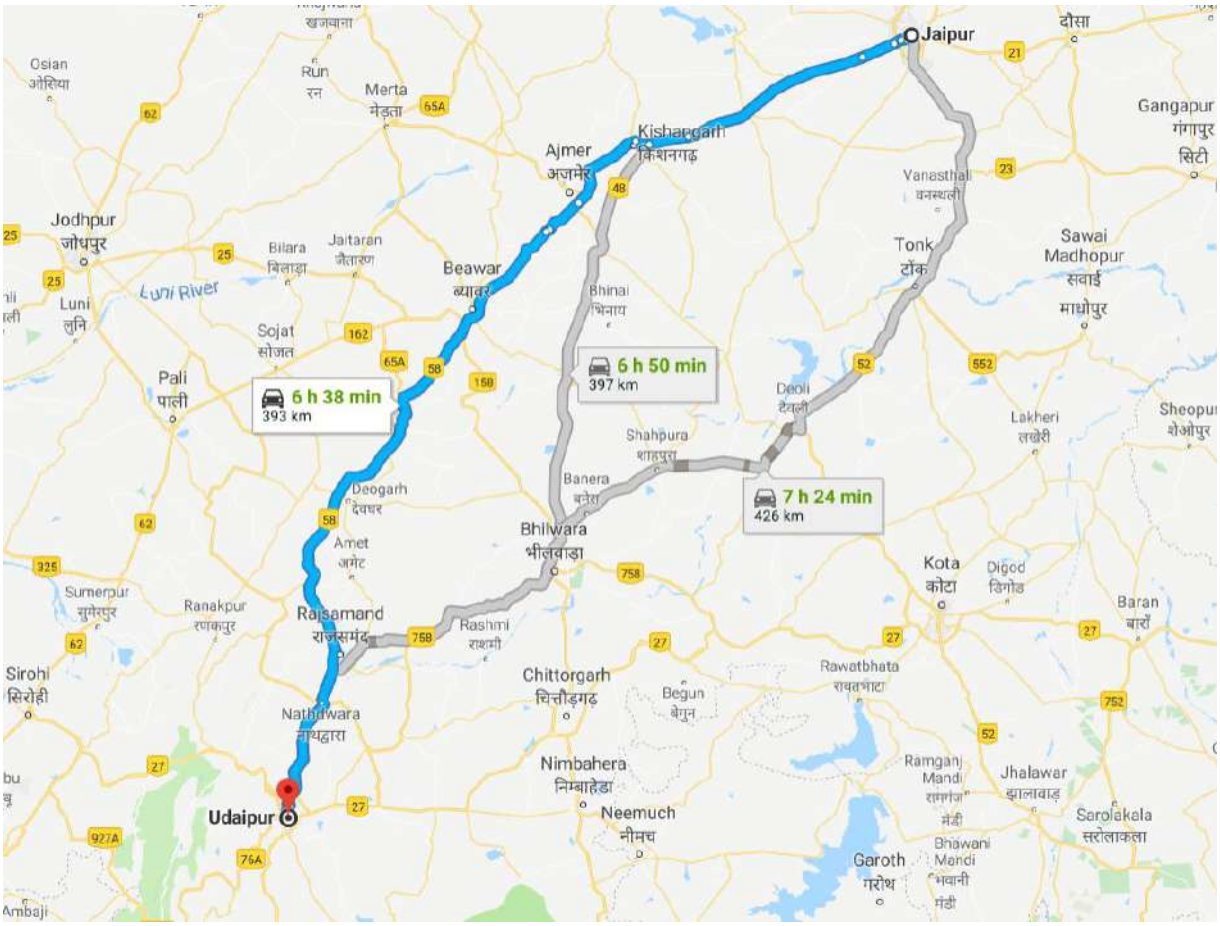


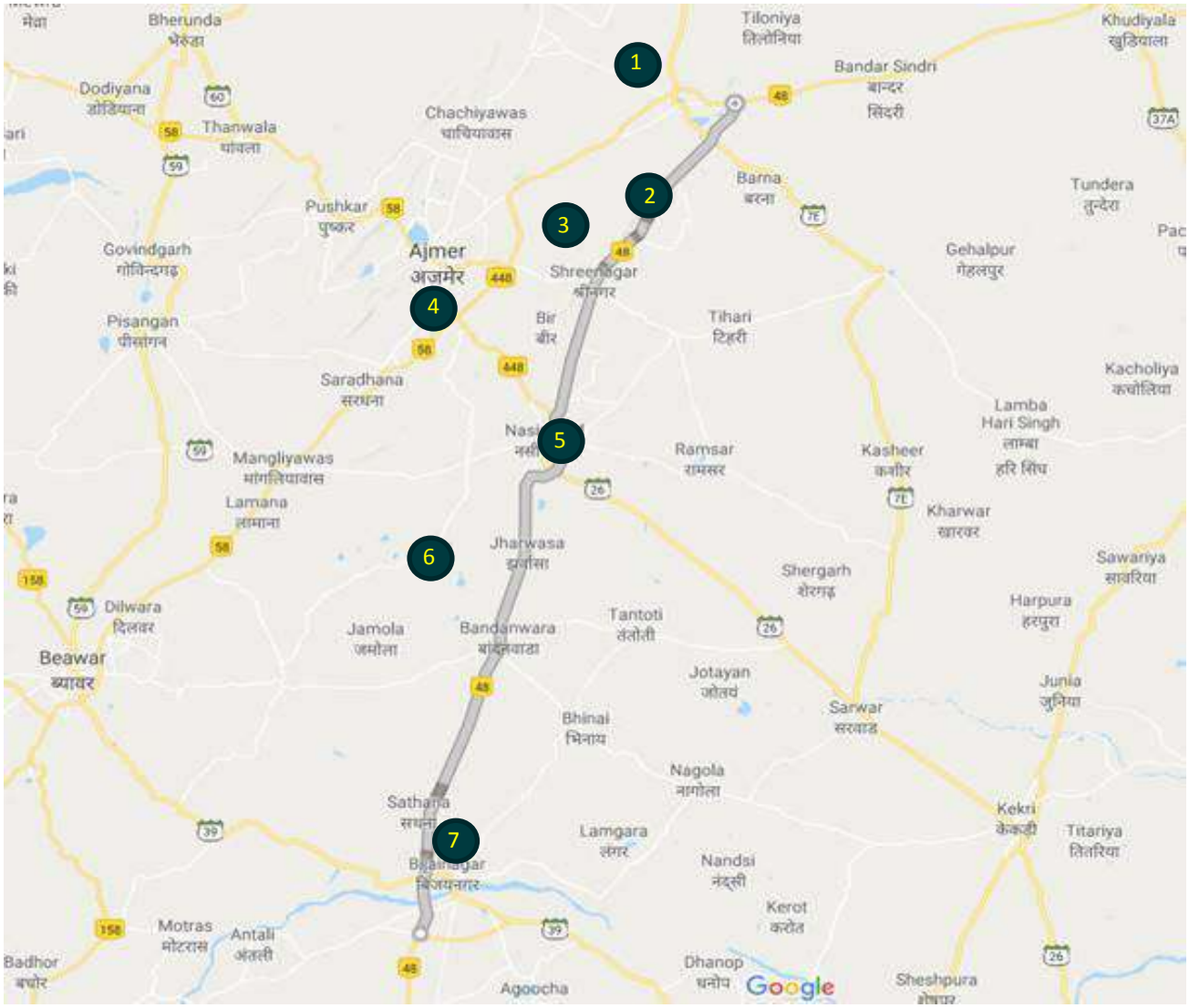
Table 5-1: Comparison of Alternative Routes

	Jaipur to Udaipur Alternative Route		
	Ajmer-Beawar	Kishangarh-Bhilwara	Tonk-Bhilwara
	NH-8	NH-79A	NH-52
Distance	393	401	428
Time	6.5	6.8	7.5
Toll (Car)	415	390	280

5.1.3 Traffic Growth Outlook

This Highway passes through Ajmer district of Rajasthan, having Industrial Areas of RIICO Kishangarh and Silora. There are Large Scale Industries of Cement, Marble & Granite and Medium Scale Industries of engineering and instrumentation in this area. Figure 5-3 shows the locations of significant industrial areas around the project corridor followed by a list of the same.

Figure 5-3: Industrial Areas along the Project Corridor



1. RIICO Industrial Area **Kishangarh** (Marbel & Cement Manufacturing Industries)
2. RIICO **Silora** (Wire Product, Ice Factory)
3. Welding Wire & Plastic Manufacturing Industries
4. Industrial Process Measurement & Control Instruments
5. FMCG & Quartz Manufacturers
6. Brick Manufacturers
7. **Bijainnagar** (Cattle Feed Products Manufacturer – Kapila)

(Source: MSME – Ajmer)

Growth of Rajasthan remains close to the national average economic growth with intermittent fluctuations. However, being a large state and a large commodity driven economy the transport demand is likely to stay high. Furthermore, the project corridor is part of the Delhi-Mumbai connectivity which has traditionally been one of the busiest corridors of the country. The other influence area states namely Delhi, Haryana, Gujarat and Maharashtra are all growing significantly fast. Considering the scenario, it may be assumed that the traffic growth on the project highway would remain high and the growth risks would also be negligible.

Table 5-2: GDP of India and NSDP of Rajasthan and other Influence Region States

Year	India (GDP)	Gujarat	Haryana	Himachal Pradesh	Karnataka	Madhya Pradesh	Maharashtra	Odisha	Punjab	Rajasthan	Uttar Pradesh	Uttarakhand	Delhi
1980-81	12,336	674	357	102	-	623	1,464	529	504	560	1,631	138	269
1981-82	13,030	741	371	108	-	639	1,498	528	551	607	1,670	141	291
1982-83	13,411	730	394	104	-	668	1,556	497	568	620	1,800	152	328
1983-84	14,464	870	402	109	-	702	1,654	597	578	761	1,871	158	320
1984-85	15,037	869	418	103	-	668	1,675	569	623	706	1,900	161	333
1985-86	15,663	845	493	117	-	726	1,807	635	670	704	1,975	167	386
1986-87	16,339	897	493	126	-	694	1,832	643	694	771	2,060	174	411
1987-88	16,917	797	484	126	-	789	1,955	623	730	718	2,154	182	447
1988-89	18,635	1,119	602	142	-	847	2,159	754	769	1,014	2,434	206	486
1989-90	19,778	1,099	610	158	-	865	2,515	805	834	993	2,502	212	531
1990-91	20,824	1,115	674	162	-	987	2,629	668	849	1,149	2,651	224	553
1991-92	21,122	1,023	688	163	-	916	2,620	753	888	1,061	2,662	225	638
1992-93	22,254	1,353	688	170	-	983	3,017	740	930	1,220	2,690	228	660
1993-94	23,519	1,311	719	177	1,795	1,088	3,349	788	970	1,121	2,757	233	705
1994-95	25,023	1,574	771	194	1,889	1,107	3,414	826	995	1,325	2,901	254	790
1995-96	26,846	1,621	787	205	1,989	1,174	3,791	864	1,032	1,374	2,995	251	804
1996-97	28,987	1,868	879	217	2,171	1,252	3,941	804	1,107	1,535	3,327	267	915
1997-98	30,234	1,868	887	232	2,306	1,318	4,158	920	1,137	1,721	3,292	270	1,063
1998-99	32,255	2,000	934	249	2,619	1,405	4,324	948	1,203	1,797	3,316	274	1,116
1999-00	34,837	2,007	1,002	276	2,744	1,552	4,735	1,008	1,267	1,801	3,440	274	1,170
2000-01	36,282	1,875	1,081	293	2,763	1,426	4,589	982	1,309	1,743	3,511	308	1,215
2001-02	38,236	2,027	1,165	308	2,813	1,528	4,751	1,042	1,326	1,941	3,575	323	1,262
2002-03	39,719	2,204	1,236	323	2,964	1,449	5,079	1,034	1,348	1,708	3,690	353	1,359
2003-04	42,883	2,571	1,358	345	3,021	1,611	5,471	1,185	1,433	2,251	3,885	381	1,433
2004-05	45,906	2,724	1,475	378	3,328	1,664	5,948	1,340	1,504	2,196	4,079	431	1,588
2005-06	50,257	3,120	1,608	410	3,670	1,748	6,810	1,399	1,577	2,344	4,317	492	1,752
2006-07	55,066	3,384	1,791	442	4,052	1,907	7,748	1,574	1,748	2,620	4,660	551	1,969
2007-08	60,199	3,784	1,931	470	4,560	1,997	8,650	1,708	1,899	2,739	4,959	648	2,191
2008-09	64,248	3,946	2,080	493	4,884	2,250	8,786	1,837	2,004	2,969	5,336	716	2,464
2009-10	69,769	4,503	2,340	520	4,886	2,463	9,634	1,852	2,132	3,142	5,668	839	2,667
2010-11	75,987	4,996	2,498	563	5,388	2,592	10,732	1,968	2,270	3,614	6,120	927	2,888
2011-12	81,069	5,328	2,712	605	5,550	2,824	11,222	2,042	2,392	3,953	6,451	1,020	3,147
2012-13	85,463	5,967	2,894	645	5,868	3,069	11,842	2,163	2,518	4,098	6,736	1,095	3,342
2013-14	90,636	6,415	3,142	695	6,403	3,226	12,671	2,331	2,675	4,343	7,075	1,178	3,565
2014-15	97,121	7,056	3,314	745	6,748	3,394	13,322	2,359	2,777	4,656	7,297	1,257	3,882
2015-16	1,05,033	7,842	3,612	818	7,274	3,597	14,417	2,557	2,926	4,981	7,894	1,355	4,291
2016-17	1,12,476	8,637	3,927	880	7,820	4,129	15,744	2,828	3,095	5,352	8,457	1,448	4,658
2017-18	1,19,762	-	-	-	8,487	4,432	-	3,029	-	5,736	9,011	1,547	5,035
Growth 1981-2018	6.34	7.34	6.88	6.17	0.00	5.44	6.82	4.83	5.17	6.49	4.73	6.75	8.24
Growth 1994-2018	7.02	8.54	7.66	7.22	6.69	6.03	6.96	5.77	5.17	7.04	5.06	8.20	8.53
Growth 2000-2018	7.10	8.96	8.37	7.06	6.47	6.00	7.32	6.30	5.40	6.65	5.50	10.10	8.45

6 TRAFFIC AND TOLL PROJECTIONS

6.1 GENERAL

The traffic growth on a road facility is generally estimated on the basis of historical trends. Demand changes are usually because of shifts in the pattern of economic activities in the surrounding regions. Hence, future traffic estimation necessitates a preview, however imprecise, of the probable pattern of future growth of the economy.

The traffic growth rates established for this study are based on the elasticity procedure outlined in IRC: 108-1996 "Guidelines for Traffic Prediction on Rural Highways". In the elasticity approach, a relationship is established between traffic and socio-economic indicators of influence area. The methodology thus adopted incorporates the perspective growth envisaged in the economic indicators of these project influence area and the changes in transport demand elasticity over a period. Traffic growth rates by vehicle type, for the project road sections, have been forecasted considering the concession period of 20 years.

6.2 METHODOLOGY

The following methodology has been adopted for estimating traffic growth rates. The methodology uses the basic principle of elasticity of traffic growth with respect to economic growth.

- Step 1: Analysis of past vehicle registration data with economic growth parameters of PIA to derive elasticity of traffic in relation to NSDP.
- Step 2: Development of future GDP growth scenario.
- Step 3: Correlation of NSDP of PIA with GDP.
- Step 4: Estimation of future NSDP and Derivation of traffic growth rates.

6.3 ELASTICITY OF TRAFFIC GROWTH IN RELATION TO ECONOMIC GROWTH

The following section describes the methodology in detail.

6.3.1 Traffic Projection – Trip Ends Method

The trip ends method relates the growth in transportation demand with the growth and development of the PIA at the zonal level. This method incorporates regional disparities in terms of its economic activities and contribution towards traffic.

The model used to estimate future traffic can be expressed as follows:

$$T_{ym} = T_{(y-1)m} \times \left[1 + \left(\frac{\sum_{z=1}^{n} (E_z \times TE_{mz})}{\sum_{z=1}^{n} TE_{mz}} \times e_{ym} \right) \right]$$

Where

T_{ym}	=	Trips by Mode and Year
$T_{(y-1)\,m}$	=	Trips by Mode in Previous Year
E_z	=	Zonal Economic Growth Rates
e_{ym}	=	Year and Mode Elasticity values
TE_{mz}	=	Trip end by Mode and Zone
n	=	Number of zones

The results of O-D analysis on the project road section indicate that the districts of Chittorgarh, Ajmer and Bhilwara and Jaipur have the highest influence on traffic moving on the project road section. The states of Maharashtra, Gujarat and Haryana also contribute to the traffic significantly. The shares of traffic for other major zones as per the O-D pattern have been presented in Table 6-1.

Table 6-1: Mode Wise PIA Percentage Share

Zone Name	Cars	Buses	Trucks	Total
Rajasthan-Chittorgarh	7.9	12.1	16.6	14.62
Rajasthan-Ajmer	25.3	22.2	10.5	13.97
Rajasthan-Bhilwara	25.0	20.5	7.5	11.52
Maharashtra	5.0	2.4	13.1	11.11
Rajasthan-Jaipur	5.2	11.2	8.3	7.73
Haryana	0.3	0.2	9.0	6.89
Gujarat	1.5	2.4	5.9	4.85
Himachal Pradesh	2.5	5.0	4.2	3.83
Madhya Pradesh	4.9	4.3	3.4	3.71
Punjab	0.1	0.0	4.3	3.33
Delhi	1.3	3.9	3.7	3.17
Tamil Nadu	0.1	0.5	2.3	1.79
Uttarakhand	0.1	0.5	2.0	1.58
Karnataka	0.0	0.0	1.7	1.31
Uttar Pradesh	0.9	0.4	1.1	1.05
Bihar	2.4	2.2	0.6	1.03
Rajasthan-Jaisalmer	3.8	3.9	0.1	0.98
Telangana	0.0	0.0	1.1	0.85
Rajasthan-Udaipur	2.6	2.0	0.2	0.79
Rajasthan-Nagaur	2.7	1.4	0.1	0.64
Rajasthan-Sirohi	1.4	0.7	0.3	0.57
Total (21 Highest Traffic Zones)	**85.3**	**83.7**	**79.3**	**80.7**

6.3.2 Transport Demand Elasticities

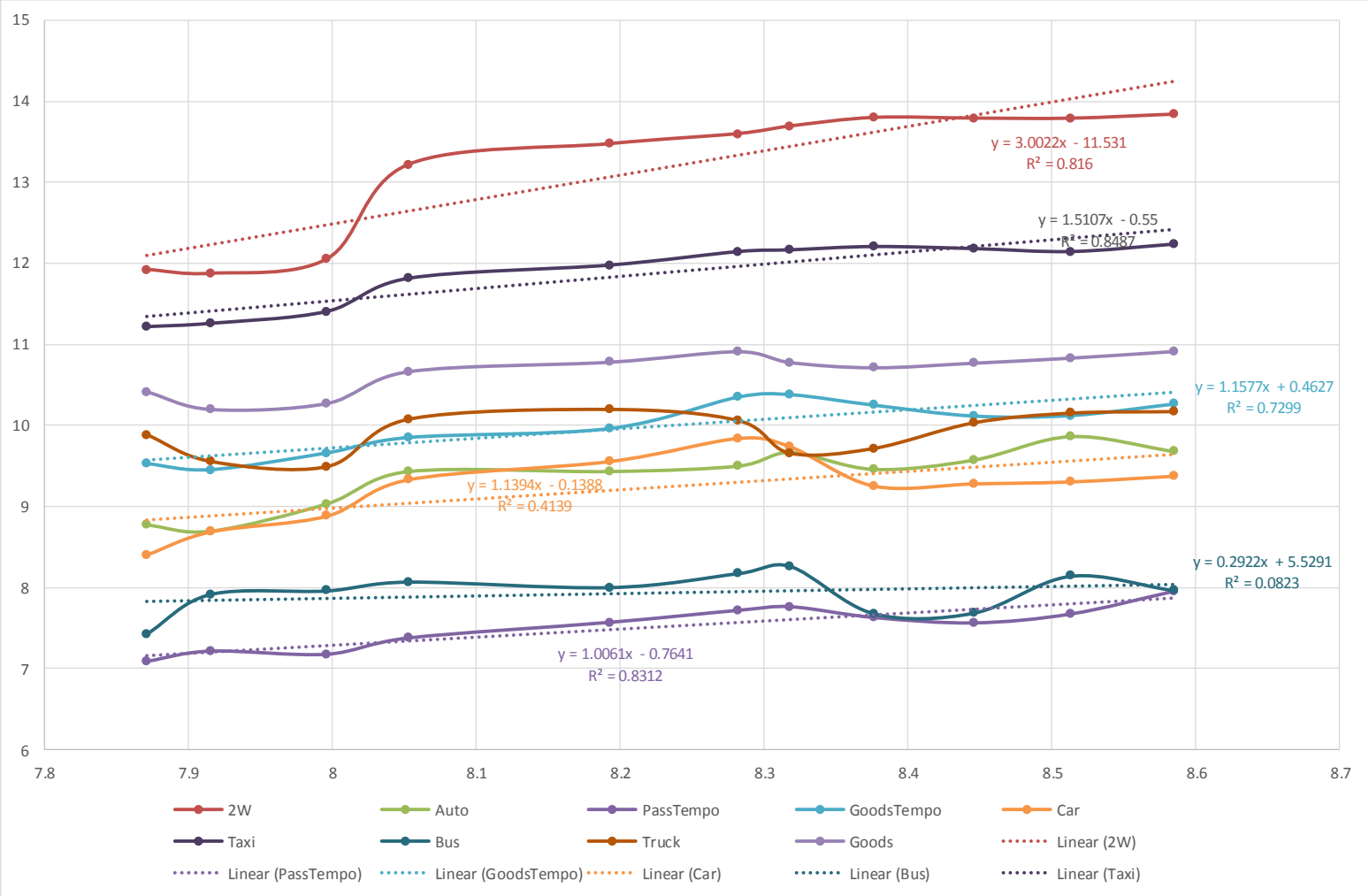
The Consultant has used elasticity approach for determining the growth rates of future traffic. This involved establishing a quantitative relationship between traffic growth as the dependent variable and growth in NSDP/ GDP as the independent variable. The methodology involved fitting log-log regression equations to the time series data.

As the time series traffic data on project road is not available, elasticity values are established by using registered vehicles as dependent variable and the states NSDP as independent variable. The vehicle registration data for Rajasthan is presented in Table 6-2. The regression equations for traffic elasticities for Rajasthan are shown in Figure 6-1. Further, for states that have a minor share of trip-ends or for which the vehicle registration data was not available, it was deemed suitable to use national level elasticity. The arrived elasticity values of each project influence region/ states have been weighted by the trip end factor as revealed from the O-D survey results.

Table 6-2: Vehicle Registration Data for Rajasthan

Year	NSDP	2W	Auto	PassTempo	GoodsTempo	Car	Taxi	Bus	Truck	Total
2006-07	2619.6	150005	6453	1199	13669	4450	74230	1675	19620	271301
2007-08	2739.0	143018	5972	1359	12688	5920	77400	2742	14050	263149
2008-09	2969.3	171029	8374	1308	15619	7192	89680	2863	13170	309235
2009-10	3142.4	548056	12488	1596	18915	11282	135000	3196	23750	754283
2010-11	3614.4	708089	12497	1932	21144	14130	159000	2984	26860	946636
2011-12	3953.3	802139	13377	2239	31307	18811	188000	3551	23350	1082774
2012-13	4098.0	880201	15825	2340	32234	16960	192000	3881	15560	1159001
2013-14	4342.9	978206	12835	2050	28290	10440	200000	2160	16510	1250491
2014-15	4656.0	970223	14396	1919	24699	10721	195000	2173	22730	1241861
2015-16	4981.4	969207	19262	2141	24851	10991	188000	3434	25650	1243536
2016-17	5352.1	1018740	16013	2827	28681	11792	206000	2871	26130	1313054
2017-18	5736.3	716842	10415	3517	18843	8384	149000	1152	22350	930503
CAGR	4.5%	9.1%	2.7%	6.2%	1.8%	3.6%	3.9%	-2.1%	0.7%	7.1%

Figure 6-1: Regression for Traffic Elasticities for Rajasthan



The transport demand elasticity arrived by regression analysis between vehicle registration and state NSDP for each mode for the immediate project influence area as depicted by the O-D survey result is presented in Table 6-3.

It may be noted that the state of Rajasthan shows moderately high demand elasticities for most categories of vehicles compared to national average. With most of the traffic on the project road coming in from within the state, it may be expected to experience significantly high growth in traffic.

Table 6-3: Zonal Transport Demand Elasticity using Vehicle Registration Data

Zone Name	Passenger Car	Taxi	Minibus	Standard Bus	Tempo/ LCV	2-Axle Truck	3-Axle Truck	Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	Oversized Vehicle (>6 Axles)
Rajasthan	1.1	1.5	1.0	0.3	1.2	0.5	0.9	0.9	0.4
Maharashtra	1.5	1.6	0.4	0.8	0.8	0.7	1.3	1.2	0.9
Haryana	2.0	2.2	1.2	1.2	1.5	1.2	2.4	2.2	1.7
Gujarat	1.2	0.5	2.1	0.5	1.2	0.3	0.6	0.6	0.4
Himachal Pradesh	1.6	1.7	0.6	1.2	0.8	0.7	1.4	1.3	1.0
Madhya Pradesh	1.9	1.6	1.8	1.8	0.7	0.6	1.1	1.0	0.8
Punjab	1.9	2.1	0.8	0.8	1.2	1.0	1.9	1.7	1.4
Delhi	1.9	1.6	1.8	1.8	0.7	0.6	1.1	1.0	0.8
Tamil Nadu	1.8	2.0	0.6	0.6	1.4	1.2	2.3	2.1	1.6
Uttarakhand	2.2	0.6	2.1	2.1	3.2	1.1	2.2	2.2	1.5
Karnataka	2.1	2.3	1.0	2.1	1.0	0.8	1.6	1.4	1.1
Uttar Pradesh	2.5	1.8	0.4	0.4	1.1	0.9	1.8	1.6	1.3
Andhra Pradesh	2.1	3.6	0.1	0.1	1.6	1.4	2.7	2.4	1.9
India	**1.6**	**1.7**	**0.6**	**1.2**	**0.8**	**0.7**	**1.4**	**1.3**	**1.0**

The projected elasticity values are based on the premise that transport demand elasticity for both freight and passenger traffic tend to decline over time as regional imbalances are corrected and regions become self-sufficient. Moreover, irrational traffic flows are being gradually cut down, with an increase in road network and improved accessibility. The project elasticity values have been rationalized for freight vehicles as per the trend in the growth of these vehicles. The past trend in the growth of vehicles has seen more growth in 3-axle trucks, slow growth in 2-axle trucks and re-categorization of LCV and 2-axle trucks. The elasticity value for LCV has been considered as per the past trend of growth of vehicles. The projected elasticity values adopted in the study for 5 yearly intervals are presented in Table 6-4.

Table 6-4: Projected Transport Demand Elasticity

Modes	2019-23	2024-28	2029-33	2034-38	2039-43
Passenger Car	1.3	1.2	1.0	1.0	0.9
Taxi	1.5	1.5	1.2	1.2	1.1
Minibus	1.0	1.0	0.8	0.8	0.7
Standard Bus	0.5	0.5	0.4	0.4	0.4
Tempo/ LCV	1.2	1.1	1.0	0.9	0.8
2-Axle Truck	0.7	0.7	0.6	0.5	0.5
3-Axle Truck	1.3	1.2	1.0	1.0	0.9
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	1.3	1.2	1.0	1.0	0.9
Oversized Vehicle (>6 Axles)	0.8	0.8	0.7	0.6	0.6

6.3.3 Economic Perspective

The rate of change in NSDP at constant prices is the main economic indicator for measuring the real growth in the economy. The time series of state income at constant prices for the NSDP of for all states have been studied to assess the past performance of the state economy with respect to the growth of India's GDP for a period of almost forty years starting from 1980-81 to 2017-18. The average annual growth rates for Rajasthan and other influence area are presented in Table 6-5.

Table 6-5: Economic Growth Rate

State	2020-24	2025-29	2030-34	2035-39	2040-44	2045-49
India	7.00	6.50	6.00	5.50	5.00	4.50
Uttar Pradesh	4.86	4.51	4.23	3.88	3.62	3.25
Delhi	8.41	7.81	7.21	6.61	5.86	5.27
Rajasthan	6.48	6.01	5.91	5.41	5.05	4.54
Haryana	7.56	7.02	6.45	5.91	5.24	4.72
West Bengal	6.43	5.97	5.68	5.21	4.86	4.37
Bihar	5.93	5.51	5.09	4.66	4.35	3.91
Madhya Pradesh	5.80	5.38	4.98	4.56	4.25	3.83

Regression analysis was conducted with NSDP being the dependent variable and GDP as the independent variable for different periods to estimate likely future NSDP growth pattern based on GDP growth forecasts. The GDP forecasts have been made based on the recent trends for the short term and long-term trends for the long term. Based on the current trends and outlook the average GDP growth has been assumed to be 7.0% per annum for the next 5-year period after which it has been assumed to slow down to 6.5% per annum during 2025-29 period and finally taper off to 5% by 2040.

6.3.4 Projected Traffic Growth Rates

The traffic growth rates by each mode, over the next 20 years are given in Table 6-6. These growth rates are based on transport demand elasticity as presented in Table 6-4 and economic perspective for different influence areas in Table 6-5.

Table 6-6: Projected Likely Traffic Growth Rates using Econometric Model (%)

Modes	2020-24	2025-29	2030-34	2035-39	2020-39
Passenger Car	8.0	7.0	5.8	5.1	6.5
Taxi	9.7	8.4	7.1	6.2	7.8
Minibus	6.5	5.7	4.7	4.1	5.3
Standard Bus	3.4	2.9	2.5	2.2	2.7
Tempo/ LCV	7.9	6.8	5.6	4.9	6.3
2-Axle Truck	4.7	4.1	3.3	2.9	3.7
3-Axle Truck	8.4	7.3	6.0	5.3	6.8
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	8.3	7.3	5.9	5.1	6.7
Oversized Vehicle (>6 Axles)	5.5	4.7	3.9	3.4	4.4

The cumulative likely annual growth rate for the next 20 years which is the concession period for the project is also given in Table 6-6.

The likely growth rates are estimated on the assumption of a modest economic growth scenario which has been prevailing over a medium to long term in India. However, there are many structural and policy changes happening that may significantly alter this trend. Considering the domestic and global economic scenario and emerging growth outlook a higher than 7% average growth rate is very likely. So as a relatively more optimistic scenario a 7.5% average GDP growth was considered for the next five years. The traffic growth rates of the optimistic scenario are presented in Table 6-7.

Table 6-7: Projected Optimistic Traffic Growth Rates using Econometric Model (%)

Modes	2020-24	2025-29	2030-34	2035-39	2020-39
Passenger Car	9.0	7.8	6.4	5.6	7.2
Taxi	10.9	9.5	7.8	6.8	8.8
Minibus	6.6	5.8	4.7	4.1	5.3
Standard Bus	3.7	3.3	2.7	2.3	3.0
Tempo/ LCV	8.0	7.0	5.7	4.9	6.4
2-Axle Truck	4.8	4.2	3.4	3.0	3.8
3-Axle Truck	8.9	7.8	6.3	5.5	7.1
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	8.6	7.5	6.1	5.3	6.9
Oversized Vehicle (>6 Axles)	5.7	5.0	4.0	3.5	4.6

For scenario building a pessimistic scenario too was developed considering an average GDP growth of 6.5% per annum for the initial 5-year period. There are some short-term issues that may affect the GDP and consequently traffic growth in the immediate term but this scenario is unlikely to pan out over a longer period. The growth traffic rates under the pessimistic scenario are presented in Table 6-8.

Table 6-8: Projected Pessimistic Traffic Growth Rates using Econometric Model (%)

Modes	2020-24	2025-29	2030-34	2035-39	2020-39
Passenger Car	7.7	6.7	5.4	4.6	6.1
Taxi	9.3	8.1	6.5	5.6	7.4
Minibus	6.2	5.4	4.4	3.8	4.9
Standard Bus	3.2	2.8	2.3	2.0	2.6
Tempo/ LCV	7.5	6.5	5.2	4.5	5.9
2-Axle Truck	4.4	3.8	3.1	2.6	3.5
3-Axle Truck	8.0	7.0	5.6	4.8	6.3
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	7.9	6.8	5.5	4.7	6.2
Oversized Vehicle (>6 Axles)	5.2	4.5	3.6	3.1	4.1

6.4 TRAFFIC FORECAST

Long term forecasting of traffic on project road for next 20-25 years is required to assess the project revenues as per the concession agreement. The traffic has been forecasted as per the projected traffic growth rate in Table 6-6. The traffic forecast has been carried out as per the base traffic numbers derived from the classified volume count and likely growth scenario. The mode-wise forecasted traffic for the concession period is presented in Table 6-9

Table 6-9: Mode Wise Forecasted (Likely Scenario) Traffic at Bandanwara Km 61+020

Year	Passenger Car	Taxi	Minibus	Standard Bus	Tempo/ LCV	2-Axle Truck	3-Axle Truck	Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	Oversized Vehicle (>6 Axles)	Total Vehicles	Total PCUs
Bandanwara Km 61+020											
2019	3465	181	22	471	1992	1868	3458	6156	2	17615	51768
2020	3750	199	23	487	2153	1958	3756	6683	2	19011	55898
2021	4059	219	25	504	2326	2053	4081	7254	2	20522	60367
2022	4392	241	26	521	2514	2152	4433	7874	2	22155	65204
2023	4754	265	28	539	2716	2256	4816	8547	2	23923	70439
2024	5098	288	30	556	2909	2352	5184	9192	2	25610	75443
2025	5468	313	31	573	3115	2452	5580	9886	2	27420	80811
2026	5864	340	33	590	3337	2556	6006	10632	2	29360	86570
2027	6288	370	35	608	3573	2664	6464	11435	2	31442	92751
2028	6744	402	37	627	3827	2778	6958	12298	2	33674	99384
2029	7147	432	39	643	4049	2872	7389	13048	3	35622	105151
2030	7574	463	41	659	4284	2970	7847	13843	3	37684	111261
2031	8027	497	43	676	4532	3071	8334	14687	3	39869	117734
2032	8507	533	45	693	4795	3176	8851	15583	3	42184	124592
2033	9015	571	47	710	5073	3284	9399	16532	3	44636	131858
2034	9483	607	49	726	5329	3382	9908	17412	3	46899	138572
2035	9975	646	51	742	5597	3483	10445	18338	3	49279	145636
2036	10502	687	53	758	5882	3587	11015	19320	3	51809	153128
2037	11058	731	56	776	6182	3694	11617	20354	3	54471	161013
2038	11642	779	58	793	6498	3804	12252	21443	4	57273	169312
2039	12145	820	60	808	6768	3898	12798	22380	4	59680	176444
2040	12670	863	62	822	7051	3993	13368	23358	4	62191	183881
2041	13217	908	64	838	7345	4091	13964	24378	4	64809	191637
2042	13788	956	67	853	7651	4192	14587	25443	4	67540	199726
2043	14383	1006	69	869	7970	4295	15237	26554	4	70387	208162
2044	14886	1049	71	882	8239	4380	15787	27494	4	72792	215287
2045	15405	1094	73	895	8517	4467	16357	28466	4	75280	222660

7 TOLL REVENUE ESTIMATION

7.1 TOLL POLICY

The tolling on the project highway is governed by the National Highway Fee (Determination of Rates and Collection) Rules 2008 (also known as the toll policy) and their subsequent amendments. The rules define the method of determining toll rates and collection of the same for different vehicle categories being used by the road users. The toll revenue for the project road has been estimated in compliance with the toll policy and the project parameters as defined in the Concession Agreement and its schedules:

a. Tollable, exempted and non-tollable vehicle categories.
b. Differential toll rates for different categories of vehicles.
c. Discounted tolling for frequent and local road users
d. Project length and toll plaza locations
e. Provisions for additional fees for structures and bypasses on project road.
f. Escalation of toll rates in relation to inflation.
g. Penal Tolling provisions for over loaded vehicles
h. Toll rates during construction period

7.2 TOLL RATES AND VEHICLE CATEGORIES

The toll policy defines six categories of vehicles and provides for differential toll rates for each category. Sub rule 2 of rule 4 provides the following base rates of fee on a per kilometer basis considering 2007-08 as the base year.

Table 7-1: Base Rate of Toll for Different Categories of Traffic

S No	Vehicle Category	Toll Rate (`/Km)
1	Car, Jeep, Van or Light Motor Vehicle	0.65
2	Light Commercial Vehicle, Light Goods Vehicle or Mini Bus	1.05
3	Bus or Truck (Two Axles)	2.20
4	Three Axle Commercial Vehicles	2,40
5	Heavy Construction Machinery (HCM) or Earth Moving Equipment (EME) or Multi Axle Vehicle (MAV) (4 to 6 axles)	3.45
6	Oversized Vehicles (7 or more Axles)	4.20

7.2.1 Non Tollable Vehicles

Apart from the above mentioned vehicle categories the other such as two-wheelers, three wheelers, tractors and non-motorized vehicles are not to be subject to toll. However, wherever there is a provision of service roads these vehicles shall compulsorily use the service road.

7.2.2 Exempted Vehicles

There is a long descriptive list of categories of users who by law are exempted from paying toll. These primarily cover

i. top level officials from legislative, executive and judicial arms of the government,
ii. military, para military and police vehicles on duty,
iii. emergency services (Fire, Ambulance, Funeral Vans)

7.3 REVISION IN TOLL RATES

The toll policy provides for annual revision of toll rates in response to inflation and has been partially pegged to the WPI, which is a standard measure of inflation in India.

The formula for determining the applicable rate of fee is as follows

$$Applicable\ Rate\ of\ Fee = \text{Base Rate} + \text{Base Rate X} \left\{\frac{\text{WPI A} - \text{WPI B}}{\text{WPI B}}\right\} \text{X } 0.4$$

Where;

(a) applicable rate of fee shall be the rate payable by the user;
(b) base rate is the rate as shown in Table 7-1 above inflated by a simple interest of 3% per annum;
(c) WPI A means the wholesale price index of the week ending on or subsequent to 1st January immediately preceding the date of revision under these rules: and
(d) WPI B means the wholesale price index of the week ending on 6' January, 2007 i.e. 208.7. While the WPI was being estimated with 1993-94 as the base year, however, recently the estimation of WPI has been reset with the base year as 2004-05. The future WPI values shall be available with the 2004-05 base only, the WPI B would then translate to about 112.1 under the 2004-05.

7.3.1 Inflation Rate

The rate of inflation of WPI has been assumed to be 5% per annum for the purpose of calculation of toll rates as per the above formula.

7.4 TOLL RATES DURING CONSTRUCTION PERIOD

During the construction period i.e. till the completion of six laning is achieved the toll rates applicable shall be 75% of the toll rates determined to be applicable at the beginning of the concession period and free from escalation. It is assumed that the six laning shall be complete by the year 2021 after which full toll rates would become applicable.

7.5 TOLL RATES FOR OVERLOADED VEHICLES

As per the policy provisions (National Highways Fee Amendment Rules 2013) the overloaded vehicles are to be charged 10 times the toll applicable in their respective categories. Considering the low reported prevalence of overloading, it is unlikely to have a major impact on toll collections. Also, if effectively administered this would significantly reduce the prevalence of overloading as the financial incentive of overloading will be negated by the high toll disincentive. The additional toll revenue on overloaded vehicles is therefore conservatively ignored for the purpose of estimation of toll revenue.

7.6 SEGMENTATION OF TOLLABLE TRAFFIC

Based on the earlier discussion the toll is to be collected according to the following categories:

7.6.1 One Way Traffic

The commuters who use the project facility only once in a day are covered under this category. These commuters are required to pay the complete notified one way fee.

7.6.2 Return Trip

The commuters who complete one round trip within 24 hours are covered under this category. These commuters are required to pay 1.5 times the normal one-way fee.

- During the OD surveys the respondents were asked whether they would be returning the same day.
- Further, it was assumed that local traffic and monthly pass holders will also most likely return the same day. Therefore, this component was deleted from the return traffic share to avoid double counting of concessional traffic.

7.6.3 Monthly Pass

The commuters who want to use the project facility on a regular basis can opt for monthly pass by paying 33.3 times of normal one way fee for performing 50 one way trips.

7.6.4 Local Traffic

Local Traffic means and includes a **personal vehicle** (car/passenger van/jeep) which is registered with the Concessionaire by any person who normally resides or works at a place that can normally be approached only by using a part of the project road and such person is, therefore, required to use such vehicles for commuting on a part of the said section in the course of normal travel to and from his place of work or residence. Only persons residing or working within 20Km of any one toll plaza can be categorized as Local.

The trips with a travel distance within 20Km of the toll plaza and showing a regular frequency, as revealed during the OD survey, were considered as local traffic. Since for commercial traffic there is the condition of the vehicle being registered in the same district as the toll plaza, the data was also analyzed to extract the proportion of locally registered vehicles. Such traffic is supposed to register with the concessionaire and will be issued a local pass costing Rs.150 per month for cars and pay 50% of the toll rate for rest of the categories.

Table 7-2 shows the adopted segmentation of traffic in categories described above.

Table 7-2: Segmentation (Percentage) of Tollable Traffic

Bandanwara Km 61+020		RTO Code: RJ01 District Ajmer				
S No	Mode	One Way	Return	Monthly	Local	Total
1	Passenger Car	75.8	18.3	3.5	2.4	100
2	Taxi	65.9	27.5	3.8	2.8	100
3	Minibus	0.0	69.2	25.8	5.1	100
4	Standard Bus	5.9	61.7	28.2	4.3	100
5	Tempo/ LCV	92.5	0.0	7.5	0.0	100
6	2-Axle Truck	90.5	0.4	6.2	2.9	100
7	3-Axle Truck	89.4	1.5	4.8	4.3	100
8	Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	93.8	1.6	2.8	1.8	100

7.7 ESTIMATION OF TOLL FEE

The toll fees were estimated taking into consideration the base rates, inflation, discounting rules and the length chargeable at each of the toll plazas. Further, it is stipulated that the toll fees so derived shall be rounded off to the nearest multiple of 5 rupees to ensure ease of transaction. Table 7-3 shows the estimated toll rates during different years for different modes.

Table 7-3: Estimated Toll Rates Mode Wise at Bandanwara Km 61+020

Bandanwara Km 61+020	2020	2025	2030	2035	2040
Passenger Car	80.00	145.00	185.00	240.00	310.00
Taxi	80.00	145.00	185.00	240.00	310.00
Minibus	125.00	235.00	300.00	390.00	505.00
Standard Bus	265.00	490.00	630.00	815.00	1055.00
Tempo/ LCV	125.00	235.00	300.00	390.00	505.00
2-Axle Truck	265.00	490.00	630.00	815.00	1055.00
3-Axle Truck	285.00	535.00	690.00	890.00	1150.00
Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	410.00	770.00	990.00	1275.00	1655.00
Oversized Vehicle (>6 Axles)	500.00	940.00	1205.00	1555.00	2015.00

7.8 ESTIMATION OF REVENUE

Toll revenue has been estimated and a summary of average daily toll collection estimates, for different years during the concession period, taking into account the traffic projections, toll rates and discounts as discussed in earlier sections. The summary of toll revenue is presented in Table 7-4.

Table 7-4: Mode wise Average Daily and Annual Toll Collection (Rs in Thousands) in Likely Scenario at Bandanwara Km 61+020

Year	Passenger Car	Taxi	Minibus	Standard Bus	Tempo/ LCV	2-Axle Truck	3-Axle Truck	Multi Axle Vehicle/ HCM/ EMV (4 to 6 Axles)	Oversized Vehicle (>6 Axles)	Total Daily (Rs in Lakhs)	Total Annual (Rs in Crores)	Cumulative Revenue (Rs in Crores)
2019	253.3	13.0	2.0	90.5	242.8	476.8	945.4	2468.6	0.8	45	164.00	164
2020	274.1	14.3	2.1	93.7	262.4	499.8	1027.1	2679.6	0.8	49	177.16	341
2021	296.7	15.7	2.2	96.9	283.5	523.9	1115.8	2908.7	0.9	52	191.41	533
2022	506.0	27.3	3.8	162.3	502.1	881.6	1975.8	5120.8	1.5	92	335.12	868
2023	570.8	31.3	4.3	175.9	569.0	967.8	2240.6	5850.3	1.7	104	380.02	1248
2024	656.2	36.4	4.7	190.7	637.9	1065.1	2535.1	6607.1	1.8	117	428.33	1676
2025	730.5	41.2	5.3	206.1	713.8	1158.0	2863.2	7444.4	2.0	132	480.51	2157
2026	834.3	47.5	5.9	222.8	797.3	1269.0	3252.5	8421.7	2.2	149	542.14	2699
2027	925.5	53.6	6.5	241.5	905.7	1399.1	3686.4	9559.1	2.5	168	612.47	3311
2028	1054.3	61.9	7.3	261.2	1025.6	1526.0	4168.0	10764.2	2.7	189	688.80	4000
2029	1152.4	68.5	8.0	281.8	1125.4	1661.0	4641.3	11994.4	3.0	209	764.15	4764
2030	1290.8	77.7	8.8	303.4	1253.2	1803.6	5191.1	13401.4	3.2	233	851.66	5616
2031	1441.6	87.8	9.7	327.5	1392.3	1968.1	5791.8	14937.4	3.6	260	947.53	6563
2032	1606.1	99.0	10.7	354.0	1565.7	2142.5	6450.1	16686.0	3.9	289	1055.51	7619
2033	1785.1	111.3	11.8	381.9	1731.3	2326.8	7210.4	18670.1	4.3	322	1176.51	8795
2034	2005.6	126.3	13.0	410.0	1922.0	2525.7	8025.7	20684.9	4.6	357	1303.70	10099
2035	2201.9	140.1	14.3	440.8	2127.8	2735.1	8911.9	22864.6	5.0	394	1439.62	11539
2036	2460.2	158.1	15.7	474.6	2351.1	2956.1	9876.1	25407.6	5.5	437	1595.23	13134
2037	2698.0	175.6	17.1	511.6	2592.0	3221.2	10969.4	28163.9	6.0	484	1764.96	14899
2038	2998.5	197.2	18.9	550.3	2881.8	3483.3	12160.0	31243.0	6.5	535	1954.19	16853
2039	3298.3	219.0	20.5	591.3	3166.7	3756.8	13433.2	34358.3	7.1	589	2148.07	19001
2040	3618.7	242.5	22.4	634.6	3470.8	4060.7	14740.2	37801.7	7.7	646	2357.87	21359
2041	4011.1	271.0	24.5	680.8	3795.3	4377.3	16264.5	41594.8	8.3	710	2592.50	23951
2042	4378.6	298.6	26.8	730.8	4176.8	4727.2	17900.7	45776.6	9.0	780	2847.91	26799
2043	4831.9	332.5	29.2	784.8	4584.2	5112.3	19721.1	50372.6	9.8	858	3130.91	29930
2044	5274.3	365.7	31.7	839.6	4980.8	5507.9	21494.9	54976.3	10.5	935	3412.09	33342
2045	5742.3	401.2	34.4	898.2	5439.3	5918.7	23523.7	59988.0	11.4	1020	3721.43	37064


HYUNDAI

4 LANING OF KAITHAL-RAJASTHAN BORDER SECTION OF NH-152/65 FROM KM 33+250 TO 241+580 IN THE STATE OF HARYANA ON DBFOT BASIS









TRAFFIC STUDY REPORT

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JUNE 2018

4 LANING OF KAITHAL-RAJASTHAN BORDER SECTION OF NH-152/65 FROM KM 33+250 TO 241+580 IN THE STATE OF HARYANA ON DBFOT

BASIS

TRAFFIC STUDY REPORT (DRAFT)

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CHAPTER 1
INTRODUCTION

1.1 General

Project road form Kaithal (km 33.250) to Rajasthan Border (km 241.580) is part of NH-152/ 65. Length of project road is 166.259 km.

Project road section from Kaithal to Rajasthan border is part of important corridor which connects part of Haryana, Punjab, Himachal Pradesh, J&K and certain part of Uttarakhand to Rajasthan, Gujarat and Costal parts of Maharashtra and then to down to south.

Project road section form Kaithal to Rajasthan border passes through three districts of Haryana namely Kaithal, Hisar and Bhiwani. Project road also passes through important towns and development areas of Narwana, Hisar and Siwani in addition to Kaithal.

The project is undertaken by IRB Infrastructure Developers Limited as Concessionaire under NHDP Phase-IV through Public Private Partnership (PPP) on DBFOT model. Concessionaire was appointed on15-07-2015 with a concession period of 27 years including construction period of 910 days.

Alignment of project corridor in regional context is given in following figure.

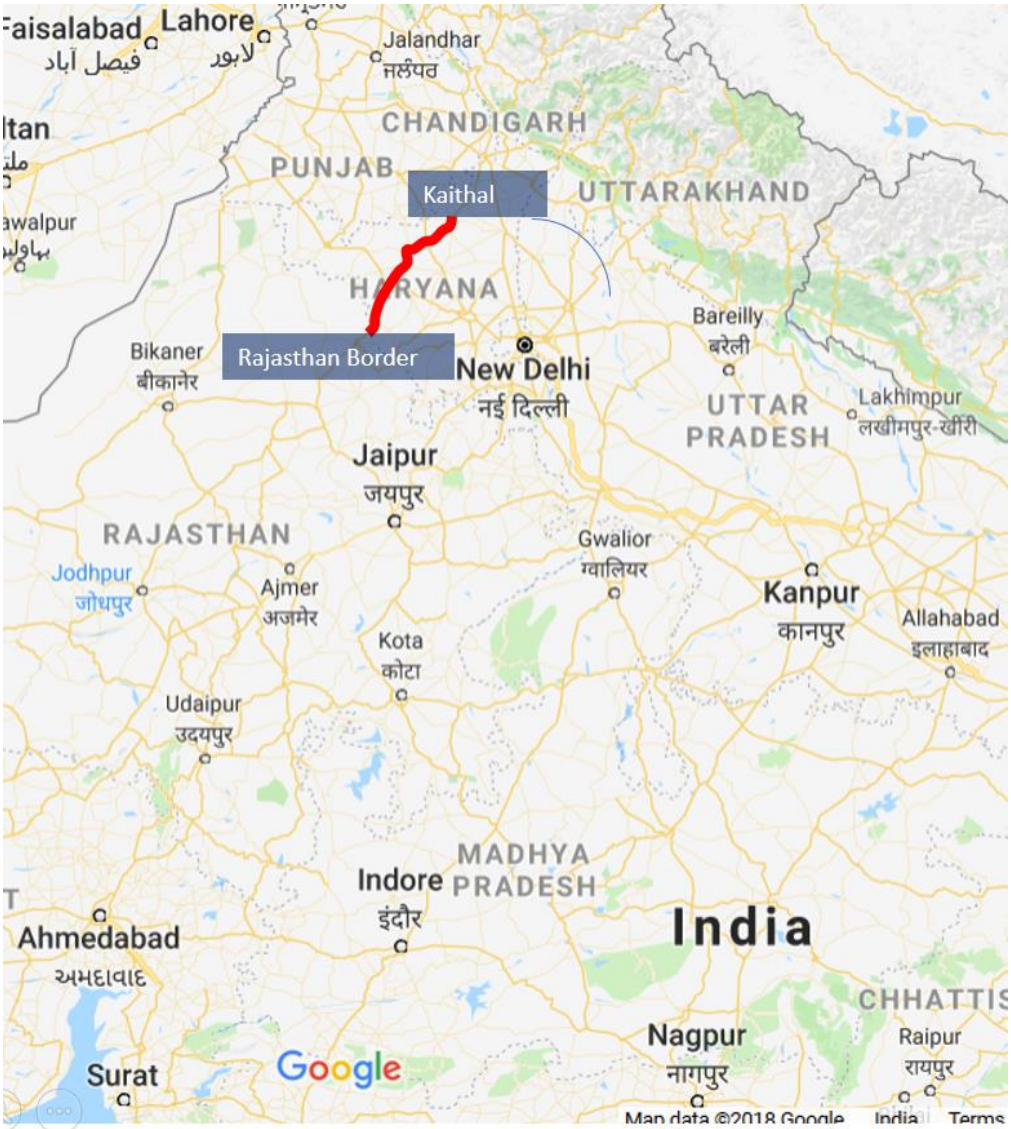


Figure 1-1 : Location Map of the Project Road in Regional Context

IRB Infrastructure Developers Limited have appointed GMD Consultants to conduct a traffic study on project road to bring out the important parameters of project traffic and its forecast during concession period.

For making the proper assessment of traffic volume, base year traffic and its projection, GMD Consultants, have carried out the necessary traffic surveys and investigations. This report, which contains analysis of traffic patterns, traffic and revenue projections up to horizon year, fulfills part of scope of this assignment.

The project has received partial COD and toll operation is running from September 2017. Base year traffic has been provided by Concessionaire from the report (Schedule-M) which have been submitted to NHAI. Additional traffic surveys like turning movement & Origin-Destination (O-D) survey were conducted on site in order to analysis traffic on project road for

projections on horizon year. For the purpose of traffic estimation and projections the year 2017-18 has been taken as the base year.

1.2 The Project

Project highway from Kaithal to Rajasthan border from Km 33.250 to km 241.580 has been widened to four lanes as per schedules. The project has following bypasses which are part of project road.

Table 1-1 : Bypass Details on Project

Sr. No	Bypass Name	Length	Toll Plaza
1	Kalyat	3.450	125.790
2	Dhanaudha	3.800	
3	Narwana	1.900	
4	Barwala	7.850	171.580
5	Hisar+Talwandi Rana	25.900	
6	Barwa	3.300	212.400
7	Siwani	6.150	

At present about 144 km of project length out of total 166.259 is complete and partial COD is granted for the same. It is expected that by month of July 2018 another 18 km of project road would completed and then by the end of year entire project road would be completed and toll operation would start for full length.

Project road forms part of very important transportation corridor which connects Northern states like Haryana, Punjab, J&K, Himachal etc to Southern states and development centers especially on west coast line of India. In previous years project road from Ambala to onwards was in bad shape. There were large number of congestion points along the route in form of narrow roads inside towns, level crossings and bad riding quality. Project road from Kaithal to Rajasthan Border is almost complete which has taken up bypasses and ROBs. Also the road from Ambala to Kaithal is under four laning construction as of now. The project is awarded to M/s Sadbhav Engineering Limited and is expected to complete in current year. This would improve the flow of traffic on project corridor to great extent.

Project road at Toll Plaza is shown in snap below.



Figure 1-2 : Project Road at Toll Plaza

1.3 Brief Description of the Project Influence Area (PIA)

The project road forms part of important connectivity between Northern states like Haryana,Punjab,Himachal Pradesh,J&K and states like Maharashtra,Gujarat (Kandla and Mundra),and parts of Rajasthan. It is the shortest route between Punjab / J&K , Gujarat, Rajasthan, Maharashtra, Goa, Kerala and becomes good alternate route to NH-1 and NH-8 for Gujarat, Rajasthan, Maharashtra Goa and Kerala bound traffic from Haryana, Punjab, J&K Himachal Pradesh.

Project road also caters to local intrastate traffic between districts of Ambala, Chandigarh, Kaithal, Jind, Hisar, Bhiwani in Haryana and Churu, Sikar, Nagaur and Jodhpur in Rajasthan.

Project road alignment is also a very good option for the traffic between Ludhiana and Ajmer and down south. The traffic from Ludhiana joins the project road at Hisar and then proceed towards Ajmer.

Following maps show project corridor in regional context.

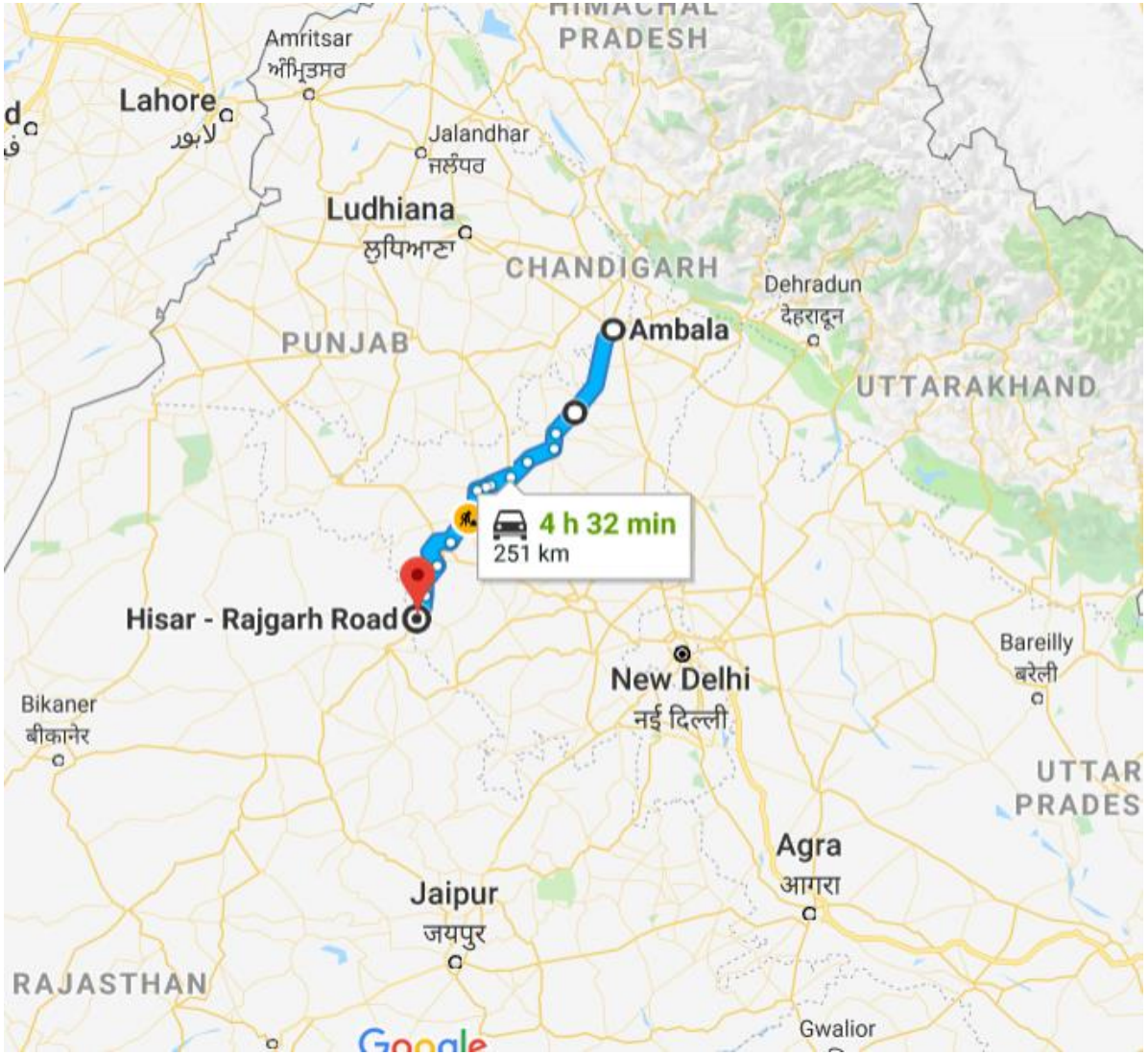


Figure 1-3 : Project Route in Regional Context

As mentioned, project road passes through 3 districts of Haryana.

Ambala, Kaithal, Hisar, Chandigarh are nearby cities which have impact on local traffic.

Location plan of the road in local context is shown in figure below

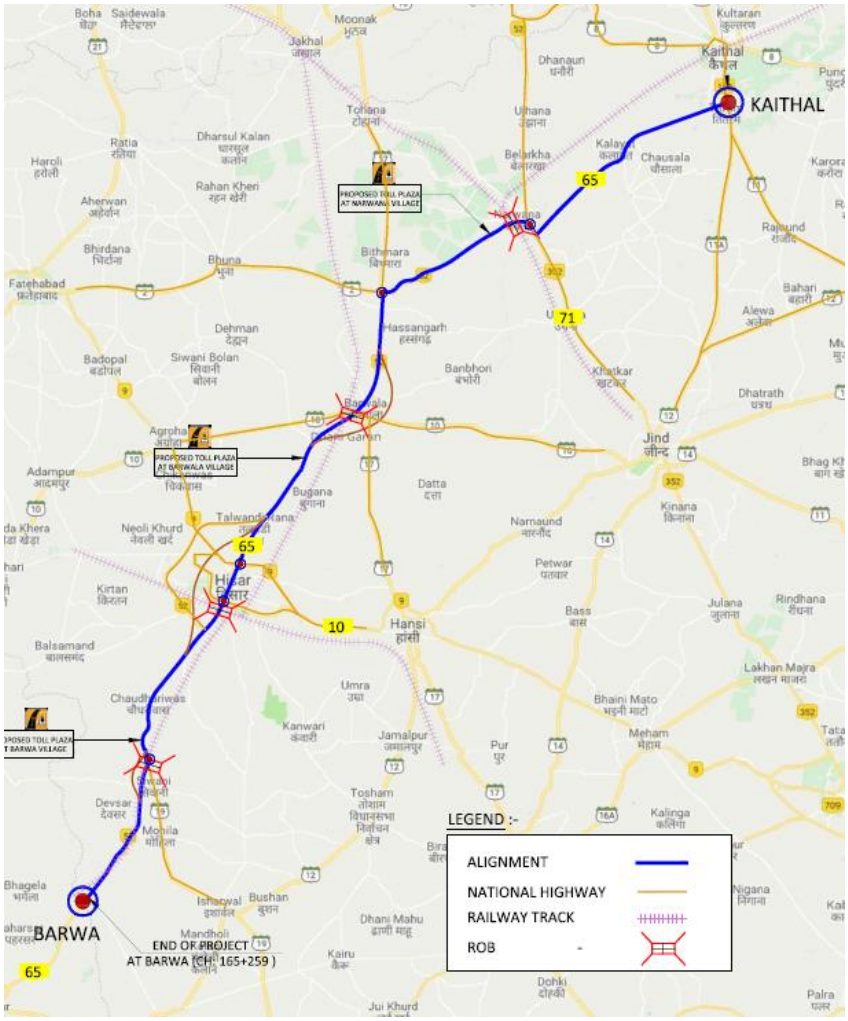


Figure 1-4 : Project Road in Local Context

1.4 Organization of Report

The traffic study report covers the traffic study along the project corridor. The entire analysis, modeling and traffic and toll forecast have been covered in following three sections:

i. Traffic Surveys and Analysis
ii. Traffic Forecasting
iii. Toll Revenue Forecasting

CHAPTER 2

TRAFFIC SURVEY ANALYSIS

2.1 Traffic Surveys

The Consultants have carried out preliminary surveys of the project corridor to understand the general traffic and travel characteristics on the corridor. The same is used for analysis and projections of traffic and revenue for concession period.

Traffic data forecast is one of the important inputs required for a BOT/DBFO highway/roadway project. In order to arrive at a fair estimate of traffic forecast it is necessary to collect data, analyze, model, validate and then forecast. The Consultants have carried out a reconnaissance survey of the project corridor to understand the general traffic and travel characteristics on the corridor. After due diligence traffic locations were finalized.

It was observed during reconnaissance survey part of traffic between Ambala and Rajasthan is using combination of NH-1 up to Panipat and then Rohtak road to go to Rajasthan, Gujarat and southern part of country. It was felt that traffic survey at Rohtak road is also required in addition to traffic surveys at project road Toll plazas.

Accordingly following traffic studies have been carried out for the project.

- Classified traffic volume counts at Rohtak Panipat Road (NH709)
- Origin - Destination studies at the toll plaza locations at project road
    - Km 125.790 of NH-65- Toll Plaza
    - Km 171.580 of NH-65- Toll Plaza
    - Km 212.400 of NH-65 – Toll Plaza

  As discussed, OD survey was done on Rohtak road also to assess patterns and catchments of traffic using Rohtak Road. OD survey was done at following location.

    - Km 46.00 Of Rohtak Panipat Road-NH-709

The main objective of the surveys is to:

- Determine the existing traffic movement characteristics of project
- Establish Base year traffic demand
- Identification of travel patterns and influence area of project
- Deriving growth factor for traffic demand forecasting
- Estimation of corridor traffic including traffic diversion if any
- Preparation of revenue model and projection of revenue as per toll policy for various scenarios

Table 2-1 below lists the details of traffic survey locations and dates of surveys.

Table 2-1 : Traffic Survey Locations

SR. NO	LOCATION	CTV	OD
1	Project Toll Plaza at Km 125.79	As per Toll Traffic Data	25-05-2018
2	Project Toll Plaza at Km 171.580	As per Toll Traffic Data	26-05-2018
3	Project Toll Plaza at Km 212.400	As per Toll Traffic Data	28-05-2018
4	Toll Plaza AT KM 46 on Panipat – Rohtak Road at Gohana	From 29 May to 05 June 2018	04-06-2018

Following some photographs depict various traffic surveys in progress on project road and alternate route of Rohtak road.





OD Survey in Progress at Narwana Toll (Km 125)





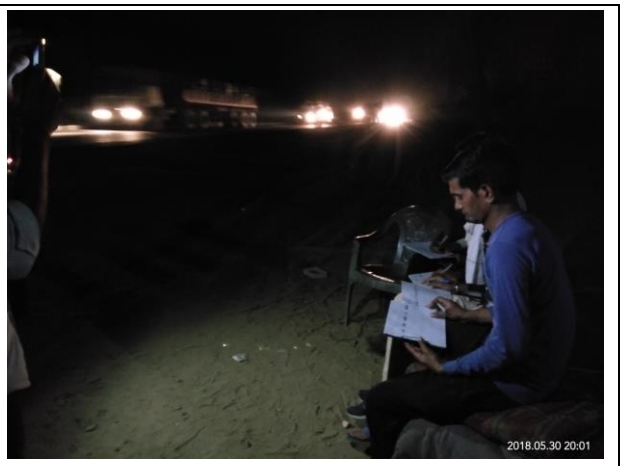
O-D Survey in Progress at

Badopati Toll (KM 171) and Chaudriwas toll (212)









CVC at km 32 at Rohtak Panipat Road

Figure 2-1 : Traffic Survey Photographs

A brief description of each of the survey undertaken for the project corridor is presented in subsequent sections. The locations of each of the traffic survey are illustrated below

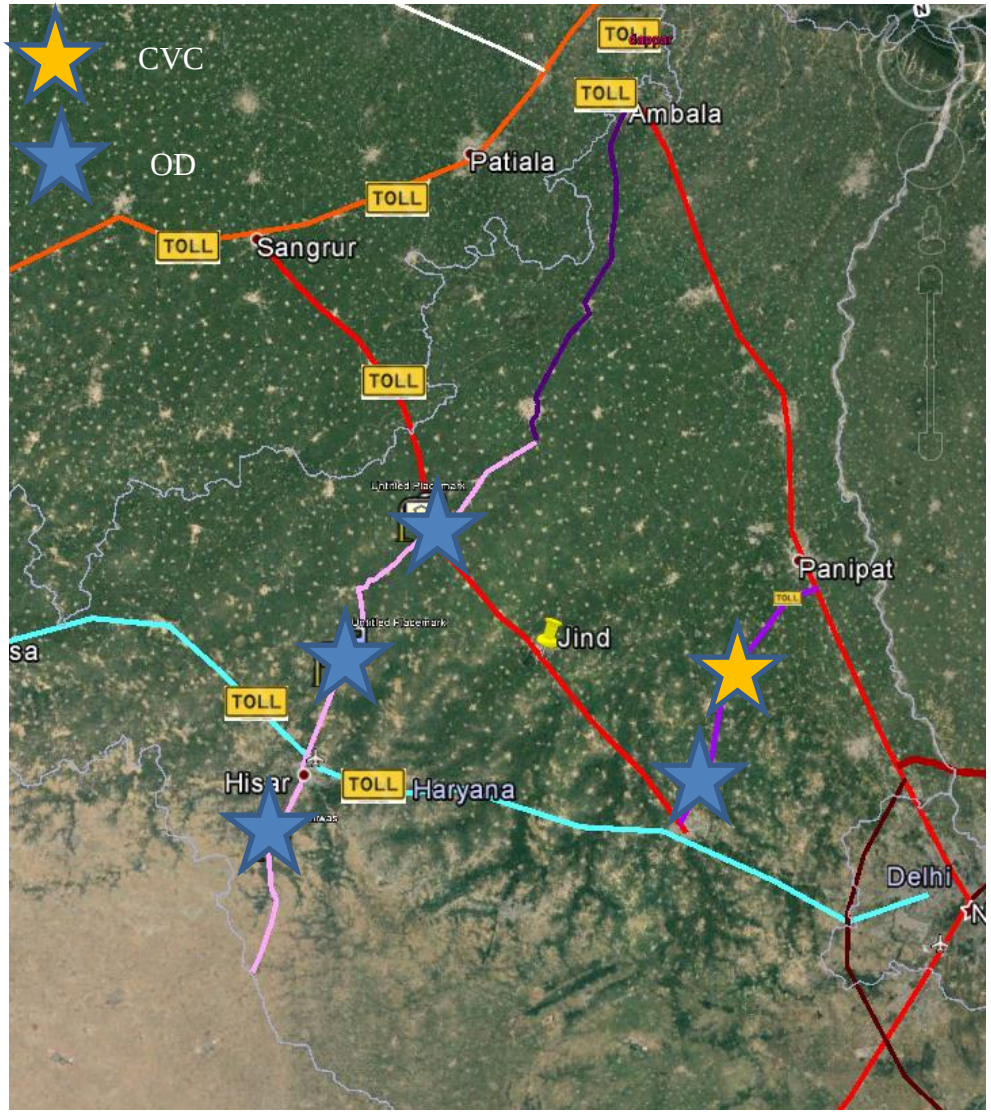


Figure 2-2 : Traffic Survey Locations

2.2 Classified Traffic Volume Count

The objective of conducting Classified Traffic Volume Count is to understand the traffic flow pattern on a roadway. The Classified Traffic Volume Count has been taken from the toll data provided by the Concessionaire which has been submitted to NHAI.

The vehicles can broadly be classified into fast moving / motorized and slow moving / non-motorized vehicles, which can be further classified into specific categories of vehicles.

Table 2-2 : Vehicle Classification System

Vehicle Type	
Auto Rickshaw	
Passenger Car	Car, Jeep, Taxi & Van (Old / new technology)
Bus	Mini Bus
	Standard Bus
Truck	Light Goods Vehicle (LCV)
	2 – Axle Truck
	3 Axle Truck (HCV)
	Multi Axle Truck (4-6 Axle)
	Oversized Vehicles (7 or more axles)
Other Vehicles	Agriculture Tractor, Tractor & Trailer

Source - IRC: 64 – 1990

2.3 Origin Destination Survey

In order to understand the travel pattern in the influence area of the project, Origin and Destination (O-D) Surveys was carried out for one day (24 hours) at a location. Refer Figure 2-1 for location details.

The O-D survey was carried out based on the roadside interview method as described in IRC: 102-1988. Police assistance was arranged at the survey locations for successfully carrying out these surveys. Both passenger and commercial vehicles plying on the project road were stopped on a random sampling basis and interviewed.

Trained enumerators under the supervision of transport planners collected the trip characteristics using the survey forms designed for this purpose. The O-D survey elicited characteristics like origin, destination, frequency, length of trip, etc., both for passenger and goods vehicles. The information collected during roadside interviews was analyzed to obtain the trip distribution based on a zoning system suitably designed in the study. Police assistance was arranged for stopping vehicles and ensuring safety during survey.

2.3.1 Sample Size

The following table presents sample size considered for O-D surveys. Sample sizes more than 10%-15% of the ADT values are considered as good representative of total traffic. O D Survey was done with proper arrangement of safety and interview. Support of local police was taken and police personnel were deployed for entire period of OD survey. Following table represent sample size of O D survey separately for goods and passengers.

Table 2-3 : Sample size for O-D Surveys

Sr.	Type of Vehicle	Narwana Toll			Badopatti Toll			Chaudhriwas Toll			Rohtak Toll		
		ADT	OD Sample	OD %	ADT	OD Sample	OD %	ADT	OD Sample	OD %	ADT	OD Sample	OD %
1	Goods	1056	980	93%	1340	800	60%	1634	952	58%	7026	1596	23%
2	Passenger	2898	1960	68%	5062	2523	50%	3374	1595	47%	8091	1677	21%
	Total	3954	2940	74%	6402	3323	52%	5008	2547	51%	15117	3273	22%

From above in can be observed that a good sample data is collected from O D survey. Same would analyzed and used appropriately in report.

2.4 Data Analysis

2.4.1 Analysis of Traffic Volume Count

Data collected from the site were punched into the computer and analyzed using spread sheet in MS Excel. The various vehicle types having different sizes and

characteristics were converted into a single unit called Passenger Car Unit (PCU). Passenger Car equivalents for various vehicles are adopted based on recommendations of Indian Road Congress prescribed in "IRC-64-1990: Guidelines for Capacity of Roads in Rural areas". The adopted passenger car unit values (PCU) are presented in ***Table 2-4***.

Table 2-4 : PCU Factors Adopted for Study

Vehicle Type	PCUs
Car	1.0
Mini Bus	1.5
Standard Bus	3.0
LCV/LGV	1.5
2/3 Axle Truck	3.0
4 – 6 Axle Truck	4.5
MAV	4.5
Auto Rickshaw	1.0
Van/Tempo	1.0
Agriculture Tractor with Trailer	4.5
Agriculture Tractor without Trailer	1.5

Source: IRC: 64-1990

2.4.2 Annual Average Daily Traffic (AADT)

The toll plaza traffic provided by concessionaire from September 2017 to May 2018 represent a considerable period of year. It can be assumed that monthly variations of traffic due to seasonality are covered in this data. Hence the average traffic of toll plaza for the period can be taken as the Annual Average Daily Traffic Data.

Average Annual Daily Traffic (AADT) volume count data collected from Toll Plazas is given in table below.

Table 2-5 : Annual Average Daily Tollable Traffic

Type of Vehicle	Narwana at km 125	Badopati at km 171	Chaudhriwas at km 212
CAR	2324	3991	3032
Minibus /LCV	714	754	723
Bus	306	450	168
Truck	184	204	257
3-Axle Commercial vehicle	365	406	510
Multi axle (4-6 Axle)	658	768	1135
Oversized Vehicles (>7 Axle)	4	5	3

2.5 Traffic Analysis

Various parameters and characteristics of traffic on Kaithal to Rajasthan border of NH-65 are discussed briefly as under.

2.5.1 Modal Split

Modal split of traffic at provides a good insight in to mix and combination of traffic which can be helpful in understanding traffic forecast. Mode-wise distribution of tollable traffic is illustrated in pie charts below for various toll plaza locations.

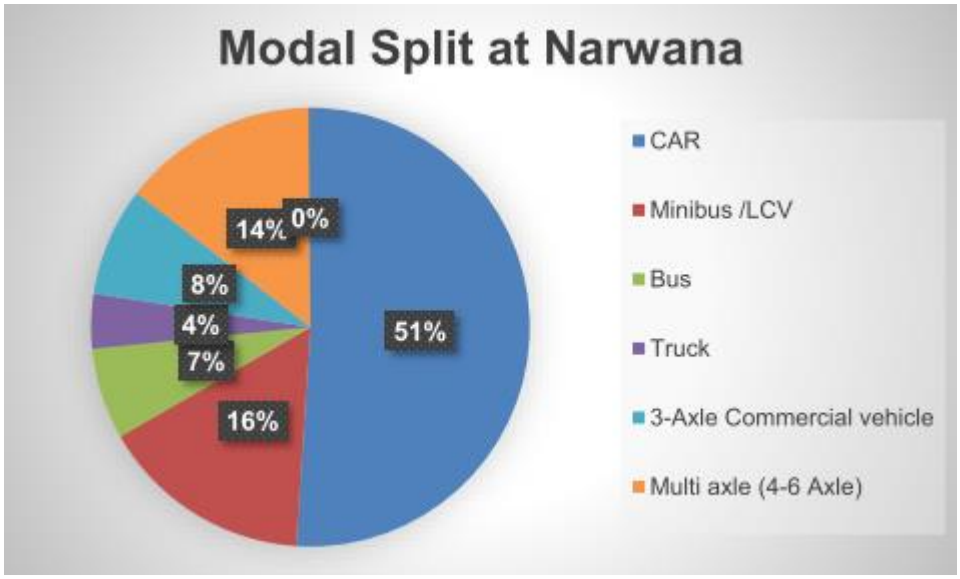


Figure 2-3 : Mode wise Composition of Tollable Traffic at Narwana

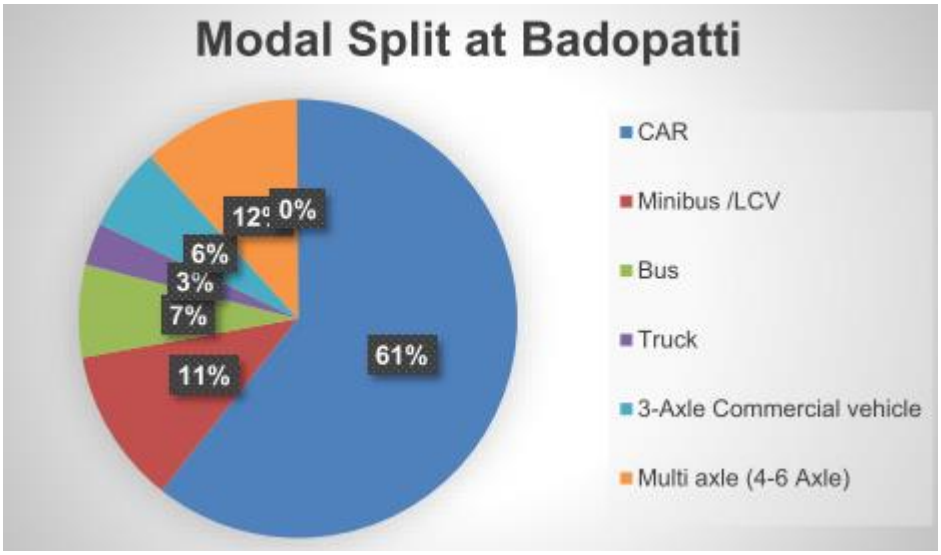


Figure 2-4 : Mode wise Composition of Tollable Traffic at Badopati

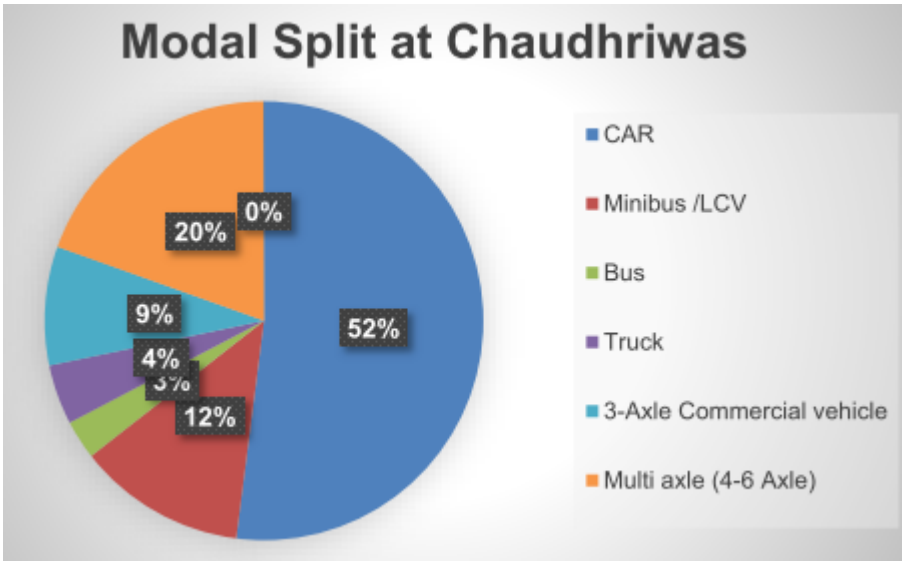


Figure 2-5 : Mode wise Composition of Tollable Traffic at Chaudhriwas

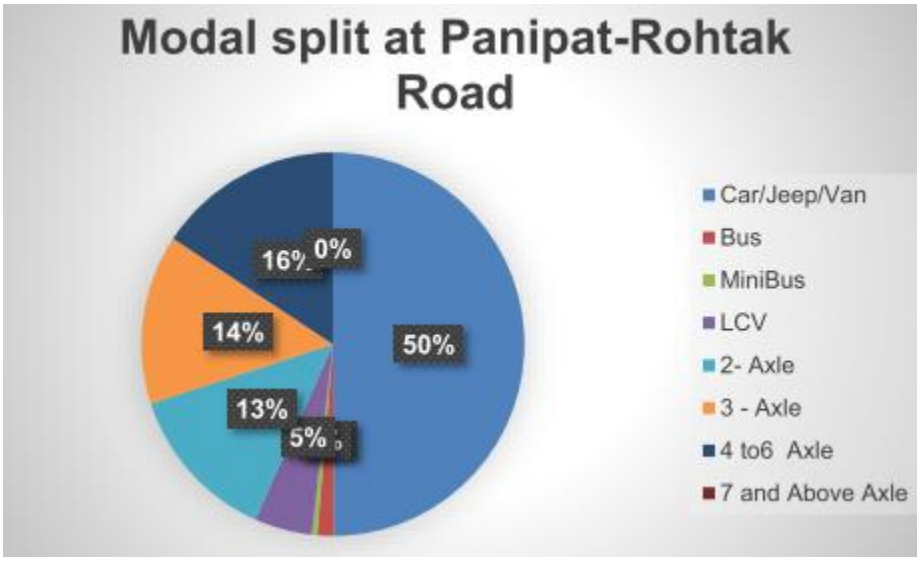


Figure 2-6 : Mode wise Composition of Tollable Traffic at Panipat Rohtak Road

It can be observed from above the commercial component of traffic is at present about 30% to 35%. Car traffic dominates the stretch and has component of about 55% to 60%. This is due the fact that project road is still not a preferred route for long distance commercial traffic due to congestion and poor riding quality in parts of project corridor whereas on Panipat-Rohtak road commercial and passenger vehicles have equal percentage showing it as most preferred road for long traffic at current situation

The traffic presently on project road is dominated by local traffic.

This is further displayed in following column chart wherein total passenger and commercial traffic is compared.

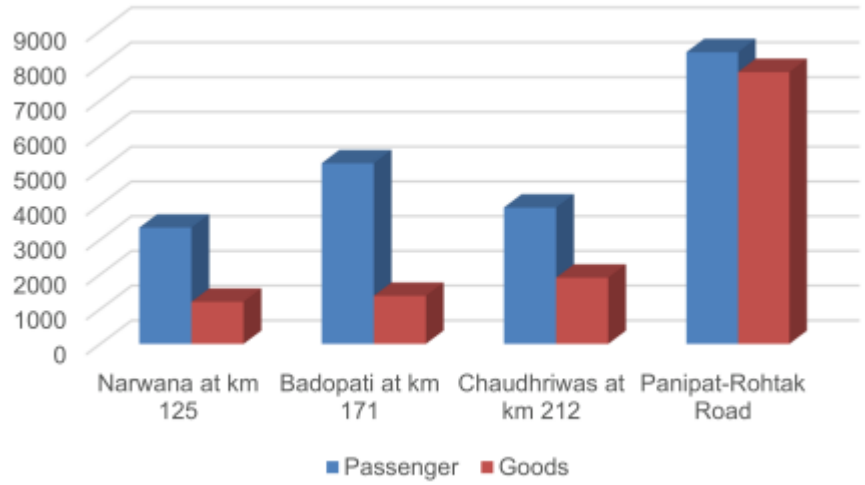


Figure 2-7 : Comparison of total Commercial and Passenger traffic at all Toll Plaza Locations

2.5.2 Journey Type Split

Since toll plazas are in operation for about 9 months the pattern of journey type is already established. Following graphics show the existing pattern of journey type

on project corridor.

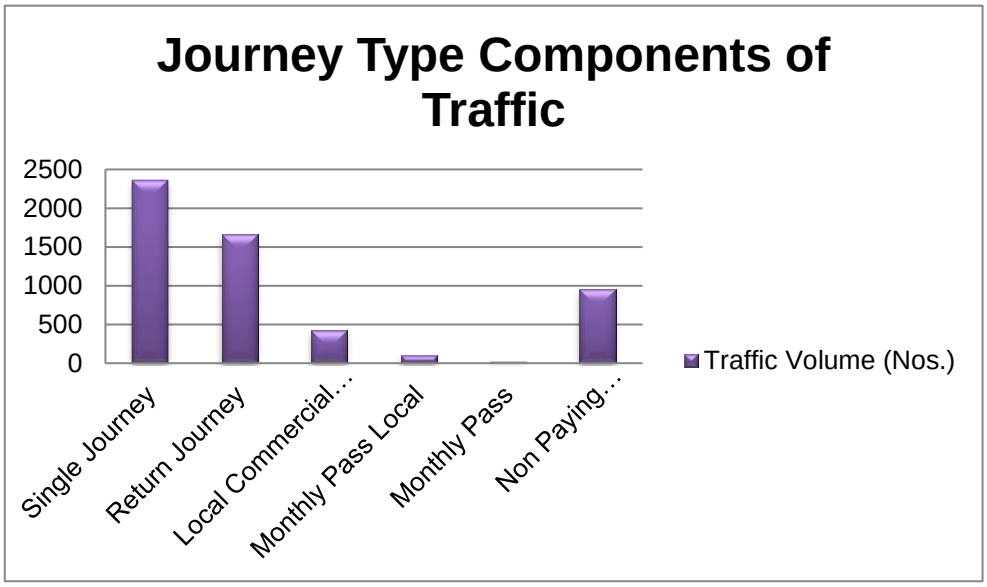


Figure 2-8 : Journey Type Components at Narwana Toll

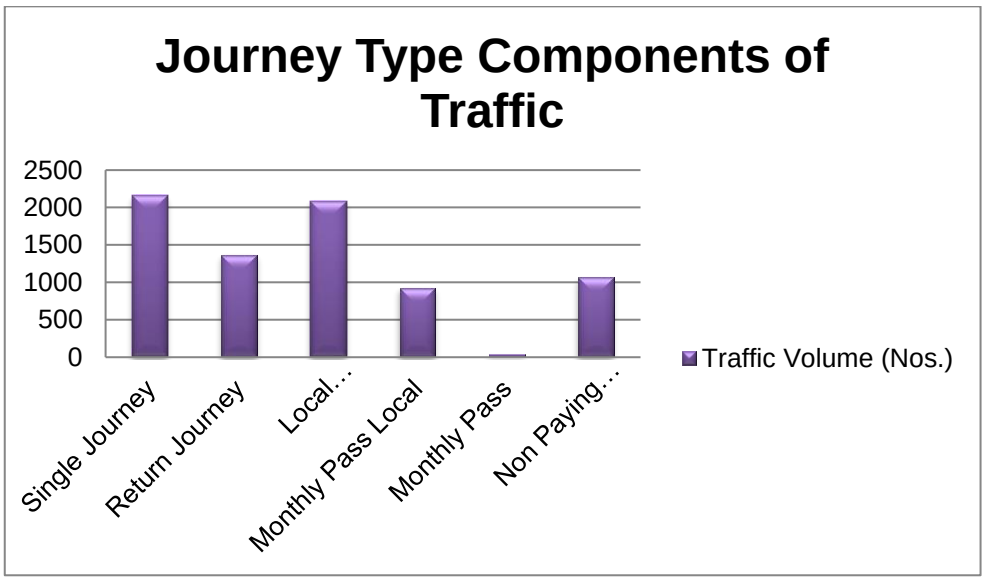


Figure 2-9 : Journey Type Components at Badopatti Toll

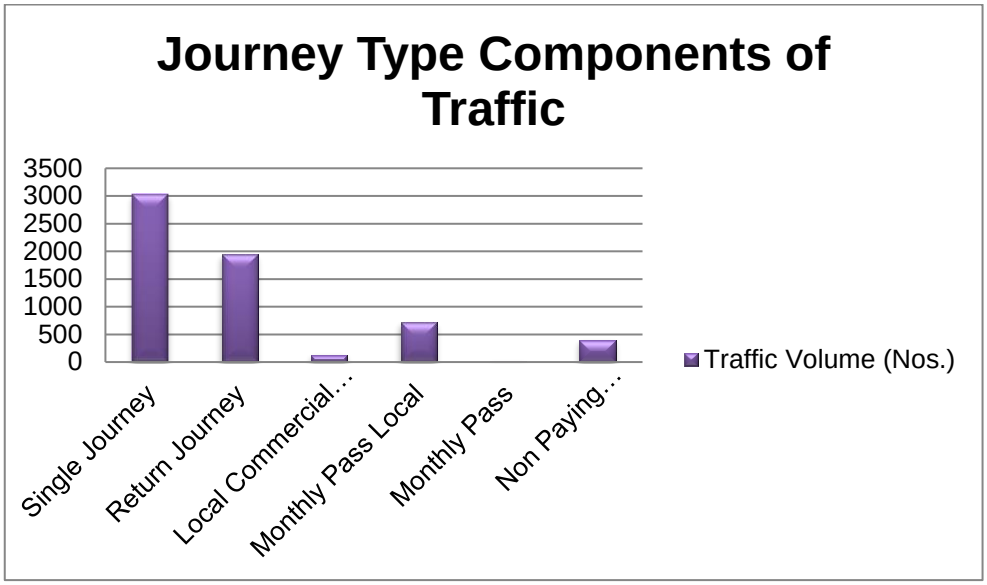


Figure 2-10 : Journey Type Components at Chaudhriwas Toll

2.5.3 PCU Index

PCU Index (PI) is one the important index which represent the ration of total PCU and total number of vehicles. Higher PCU index represent the presence of higher commercial traffic on project road. Following table shows PCU Index on all toll plaza locations on project road

Table 2-6 : PCU and PCU Index

	Narwana at km 125	Badopati at km 171	Chaudhriwas at km 212
AADT	5512	7644	6227
PCU	9895	12845	12440
PCU INDEX	1.80	1.68	2.00

It can be observed from above that the PCU index is ranges from 1.68 to 2.1 which shows presence of commercial larger vehicles on project road at present, but not in dominating volume.

2.6 Origin - Destination Survey

Origin Destination (OD) survey is one of the most important survey on a national highway which provides regional connectivity across states like project

road. It establishes the transportation relations of various regions in influence area of project. OD survey are done at all toll plaza locations of project road to understand the existing traffic pattern on project road in terms of origin and destination pairs. Condition of road from Ambala to Kaithal, which is adjacent stretch to project road and extends to Ambala and then to Chandigarh, was in very bad condition till recently. It is now under widening for four laning. The work is expected to be completed in a few months, within this year. Some of the traffic connecting Himachal, J&K and Punjab to Gujarat, Rajasthan and Maharashtra currently gets diverted from the project road due the bad condition of Ambala – Kaithal stretch (which is presently undergoing 4 laning). This traffic takes NH-1 from Chandigarh to Panipat and then diverts towards Rohtak and then join either project road (NH-65) or NH-8 to go to Gujarat / Rajasthan / Maharashtra / South. In order to capture details of this pattern, additional OD survey is done on Panipat Rohtak road. Consultants have recent details of traffic on NH-1 near Karnal which also have been used to analyze the traffic network pattern on project route.

Additionally, Rajasthan bound traffic from Ludhiana/ Amritsar also uses part of project road from Hisar to Rajasthan border but due to ongoing construction and bottlenecks at ROB / bypass location, certain part of this traffic is using Ambala-Panipat- Rohtak route to go to Rajasthan. This traffic is also captured in traffic surveys at Rohtak Road.

2.6.1 Data Validation

The collected data were entered into the predefined Excel sheets and checked for errors. Incorrect entries were corrected by cross-checking it with original field data sheets. The data was also checked for inconsistencies. This validated traffic data was then used for further analysis.

2.6.2 Zoning System

Zoning of OD data helps in segmenting various Origin – Destination trips for useful analysis of diversion potential with in network. This diversion is mainly based on cost of travel ratio between alternate routes.

For understanding the spatial dimensions of the trip characteristics of the vehicles interviewed during the O-D survey, a scientifically derived zoning system was adopted.

While defining zone boundaries, the following were considered:

- Important towns and industrial centers along the project corridor.
- Administrative boundaries of district and state boundaries.
- Configuration of the project roads in the regional road network with respect to other National Highways.

The following table presents the Zoning System considered in this study.

Table 2-7 : Zoning System considered for the study

Code	State	Code	City Before TP-1	Code	City Between TP-1 and TP-2
3	Uttarakhand	101	Ambala	201	Jind
4	Jammu and Kashmir	102	Chandigarh	202	Barwala
2	Himachal Pradesh	103	Shimla	203	Tohana
1	Punjab	104	Ludhiyana	204	Panipat
5	Haryana	105	Amritsar	Code	City Between TP-2 and TP-3
6	Delhi	106	Patiala	301	Hisar
7	Uttar Pradesh	107	Sangrur	302	Sirsa
8	Bihar	108	Kaithal	303	Rohtak
14	Sikkim/Manipur/Mizoram	109	Kurukshetra	304	Fathebad
15	Assam/Arunachal	110	Karnal	305	Hansi
16	Nagaland/Tripura	111	Narwana	Code	City after TP-3
10	West Bengal			401	Chaudriwas
9	Jharkhand			402	Rajgarh
13	Chhattisgarh			403	Kairu
11	Orissa			404	Churu
12	Madya Pradesh			405	Jaipur
17	Rajasthan			406	Jodhpur
19	Maharashtra/Goa			407	Udaipur
18	Gujarat			408	Bikaner
20	Karnataka				
21	Andra Pradesh				
22	Tamil Nadu				
23	Kerala				

2.6.3 Development of O-D Matrices

Origin-Destination (O-D) matrices are developed to assess the traffic movement pattern. These matrices actually provide distribution of trips for each zone as various inter-zonal movements. The origins and destinations of various types of vehicles observed at the O-D survey locations have been analyzed for O-D Matrices as per the Zoning System presented above. In OD surveys questions regarding origin, destination, trip purpose, frequency etc. were asked to analyses traffic data for various parameters. Following tables present important aspect of OD survey analysis.

Car traffic is predominantly from Haryana and to some extent from Punjab.

State-wise distribution of commercial traffic is given in table below.

Table 2-8 : State wise Distribution of Traffic – Goods at Narwana Toll

State	LCV	2 Axle Trucks	3 Axle Trucks	4-6 Axles Truck	>7 Axles	% of Goods Vehicles
HR	90.00%	75.89%	65.38%	46.02%	36.00%	61.64%
RJ	10.00%	6.55%	12.18%	16.22%	36.00%	12.21%
PB	0.00%	7.14%	7.05%	16.81%	20.00%	11.07%
GJ	0.00%	2.08%	5.13%	8.26%	8.00%	5.14%
HP	0.00%	2.08%	2.56%	4.13%	0.00%	2.85%
MH	0.00%	1.19%	1.28%	1.47%	0.00%	1.26%
CH	0.00%	2.08%	0.00%	0.29%	0.00%	0.91%
UK	0.00%	0.30%	1.28%	1.47%	0.00%	0.91%
MP	0.00%	0.60%	1.92%	0.59%	0.00%	0.80%
TN	0.00%	0.00%	1.28%	1.18%	0.00%	0.68%
UP	0.00%	0.60%	0.64%	0.88%	0.00%	0.68%
DL	0.00%	0.60%	0.00%	0.59%	0.00%	0.46%
JK	0.00%	0.00%	0.00%	1.18%	0.00%	0.46%
NL	0.00%	0.00%	0.00%	0.59%	0.00%	0.23%
GP	0.00%	0.30%	0.00%	0.00%	0.00%	0.11%
JH	0.00%	0.30%	0.00%	0.00%	0.00%	0.11%
KA	0.00%	0.00%	0.64%	0.00%	0.00%	0.11%
RH	0.00%	0.30%	0.00%	0.00%	0.00%	0.11%
CG	0.00%	0.00%	0.00%	0.29%	0.00%	0.11%
JR	0.00%	0.00%	0.64%	0.00%	0.00%	0.11%
Grand Total	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**

Following states form majority of vehicle share

- Haryana
- Rajasthan
- Punjab
- Gujarat

It can be seen that 17 percent of multi axle is from Rajasthan which is a good sign showing interstate commercial vehicles have preference to the project road which might increase once the road gets fully completed

Table 2-9 : State wise Distribution of Traffic – Goods at Badopati Toll

State	LCV	2 Axle Trucks	3 Axle Trucks	4-6 Axles Truck	>7 Axles	% of Goods Vehicles
HR	82.76%	71.09%	55.22%	41.39%	25.53%	57.92%
PB	10.34%	14.84%	20.52%	22.85%	14.89%	18.11%
RJ	1.72%	3.71%	11.19%	14.98%	25.53%	9.38%
GJ	0.57%	3.32%	6.34%	8.24%	19.15%	5.73%
MH	1.15%	1.37%	1.49%	4.31%	2.13%	2.41%
HP	0.57%	1.56%	1.12%	1.31%	2.13%	1.30%
TN	0.00%	0.39%	0.75%	2.43%	4.26%	1.24%
JK	0.57%	0.59%	2.61%	0.94%	2.13%	1.11%
DL	0.00%	0.98%	0.37%	0.75%	0.00%	0.65%
UK	0.57%	0.59%	0.00%	1.12%	0.00%	0.65%
CH	0.57%	1.37%	0.37%	0.00%	0.00%	0.59%
NL	0.00%	0.00%	0.00%	0.94%	2.13%	0.39%
UP	1.15%	0.00%	0.00%	0.00%	2.13%	0.20%
MP	0.00%	0.20%	0.00%	0.19%	0.00%	0.13%
GR	0.00%	0.00%	0.00%	0.19%	0.00%	0.07%
RP	0.00%	0.00%	0.00%	0.19%	0.00%	0.07%
AP	0.00%	0.00%	0.00%	0.19%	0.00%	0.07%
Grand Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

It can be seen that 15 percent of multi axle is from Rajasthan which is again a good sign showing interstate commercial vehicles have preference to the project road which might increase once the road gets fully completed

Table 2-10 : State wise Distribution of Traffic – Goods at Chaudhriwas Toll

Satae	LCV	2 Axle Trucks	3 Axle Trucks	4-6 Axles Truck	>7 Axles	%of Goods Traffic
HR	65.98%	60.14%	30.65%	26.30%	52.94%	42.11%
RJ	24.74%	15.22%	24.73%	33.94%	11.76%	26.45%
PB	4.64%	7.25%	18.28%	18.35%	23.53%	13.57%
GJ	2.06%	2.90%	5.91%	11.93%	5.88%	6.84%
HP	1.03%	5.80%	8.60%	1.83%	0.00%	3.71%
TN	0.00%	0.72%	2.69%	3.67%	5.88%	2.20%
MH	0.00%	1.45%	3.23%	1.22%	0.00%	1.39%
UP	1.03%	3.62%	1.61%	0.00%	0.00%	1.16%
KA	0.00%	0.00%	1.08%	1.83%	0.00%	0.93%
JK	0.00%	0.00%	2.15%	0.00%	0.00%	0.46%
NL	0.00%	0.72%	0.54%	0.61%	0.00%	0.46%
DL	0.52%	0.72%	0.00%	0.00%	0.00%	0.23%
MP	0.00%	0.72%	0.00%	0.31%	0.00%	0.23%
GA	0.00%	0.72%	0.00%	0.00%	0.00%	0.12%
JH	0.00%	0.00%	0.54%	0.00%	0.00%	0.12%
Grand Total	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**

It can be observed that apart from Haryana, which is the local state, commercial vehicles from Rajasthan, Punjab and Gujarat also ply on project road with considerable volume. This fact has ben taken into consideration while working on growth projections of traffic volume on project road. Similarly state wise distribution of traffic for Rohtak Panipat was also carried out to understand the basic potential traffic for project road.

Table 2-11 : State wise Distribution of Traffic – Goods at Rohtak-Panipat

Satae	LCV	2 Axle Trucks	3 Axle Trucks	4-6 Axles Truck	>7 Axles	% of Commercial Vehicles
HR	57.69%	68.89%	46.22%	38.42%	24.66%	46.27%
RJ	11.54%	7.78%	19.56%	29.66%	24.66%	21.45%
PB	0.00%	7.22%	7.11%	3.11%	0.00%	4.66%
HP	15.38%	1.11%	8.89%	1.98%	9.59%	4.66%
NL	0.00%	0.56%	4.44%	5.37%	8.22%	4.20%
DL	3.85%	4.44%	3.11%	4.24%	4.11%	3.96%
UP	3.85%	2.22%	3.11%	3.95%	10.96%	3.96%
MH	3.85%	3.33%	1.78%	3.95%	8.22%	3.61%

Satae	LCV	2 Axle Trucks	3 Axle Trucks	4-6 Axles Truck	>7 Axles	% of Commercial Vehicles
GJ	3.85%	1.11%	2.22%	4.24%	2.74%	2.91%
UK	0.00%	1.11%	1.33%	2.26%	4.11%	1.86%
CH	0.00%	1.11%	0.44%	0.85%	0.00%	0.70%
AP	0.00%	0.56%	0.44%	0.85%	0.00%	0.58%
MP	0.00%	0.56%	0.44%	0.56%	0.00%	0.47%
KA	0.00%	0.00%	0.44%	0.28%	2.74%	0.47%
TN	0.00%	0.00%	0.44%	0.28%	0.00%	0.23%
Grand Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

It can be observed 30 percent of multi axle vehicle is from Rajasthan which can be potentially diverted to project road once all developments are done

Similar analysis of passenger data reveals that more than 80% passenger traffic belongs to Haryana. Which is on expected lines. Third Plaza has some passenger traffic from Rajasthan as it is near to it.

Table 2-12 : State wise distribution of traffic -Passengers @Narwana Toll

State	Car/Jeep	Bus	Mini Bus
HR	82.62%	93.60%	72.73%
PB	6.28%	0.00%	0.00%
RJ	3.88%	5.23%	18.18%
HP	0.18%	0.00%	0.00%
CH	2.77%	1.16%	9.09%
GJ	0.25%	0.00%	0.00%
MH	0.31%	0.00%	0.00%
MP	0.18%	0.00%	0.00%
DL	2.16%	0.00%	0.00%
UP	0.31%	0.00%	0.00%
RH	0.00%	0.00%	0.00%
JH	0.12%	0.00%	0.00%
UK	0.68%	0.00%	0.00%
TN	0.00%	0.00%	0.00%
RK	0.06%	0.00%	0.00%
DD	0.06%	0.00%	0.00%
NL	0.00%	0.00%	0.00%
KA	0.00%	0.00%	0.00%
JK	0.06%	0.00%	0.00%

CG	0.00%	0.00%	0.00%
JR	0.00%	0.00%	0.00%
Grand Total	**100.00%**	**100.00%**	**100.00%**

Table 2-13 : State wise distribution of traffic -Passengers @Badopati Toll

State	Car/Jeep	Bus	Mini Bus
HR	86.14%	90.43%	95.45%
PB	6.29%	4.78%	4.55%
DL	2.05%	0.00%	0.00%
CH	1.86%	0.43%	0.00%
RJ	1.67%	4.35%	0.00%
GJ	0.43%	0.00%	0.00%
MH	0.38%	0.00%	0.00%
HP	0.29%	0.00%	0.00%
UP	0.29%	0.00%	0.00%
MP	0.14%	0.00%	0.00%
UK	0.14%	0.00%	0.00%
JK	0.10%	0.00%	0.00%
TN	0.05%	0.00%	0.00%
CH	0.05%	0.00%	0.00%
KA	0.05%	0.00%	0.00%
RP	0.00%	0.00%	0.00%
AP	0.00%	0.00%	0.00%
NL	0.00%	0.00%	0.00%
GR	0.00%	0.00%	0.00%
Grand Total	**100.00%**	**100.00%**	**100.00%**

Table 2-14 : State wise distribution of traffic -Passengers @Chaudhriwas Toll

State	Car/Jeep	Bus	Mini Bus
HR	76.07%	63.83%	50.00%
RJ	13.91%	34.04%	35.71%
DL	4.66%	2.13%	7.14%
PB	3.34%	0.00%	7.14%
CH	0.78%	0.00%	0.00%
GJ	0.62%	0.00%	0.00%
UP	0.47%	0.00%	0.00%
HP	0.08%	0.00%	0.00%
MH	0.08%	0.00%	0.00%
TN	0.00%	0.00%	0.00%
JK	0.00%	0.00%	0.00%
NL	0.00%	0.00%	0.00%

GA	0.00%	0.00%	0.00%
JH	0.00%	0.00%	0.00%
MP	0.00%	0.00%	0.00%
KA	0.00%	0.00%	0.00%
NJ	0.00%	0.00%	0.00%
JR	0.00%	0.00%	0.00%
Grand Total	**100.00%**	**100.00%**	**100.00%**

Table 2-15 : State wise distribution of traffic -Passengers @Panipat-Rohtak Toll

State	Car/Jeep	Bus	Mini Bus
HR	65.19%	97.89%	87.50%
RJ	14.37%	0.00%	12.50%
DL	7.69%	0.00%	0.00%
PB	3.89%	1.05%	0.00%
UP	2.49%	1.05%	0.00%
CH	1.48%	0.00%	0.00%
UK	1.40%	0.00%	0.00%
GJ	1.09%	0.00%	0.00%
MH	0.85%	0.00%	0.00%
NL	0.62%	0.00%	0.00%
HP	0.39%	0.00%	0.00%
AP	0.16%	0.00%	0.00%
MP	0.16%	0.00%	0.00%
KA	0.16%	0.00%	0.00%
WB	0.08%	0.00%	0.00%
Grand Total	**100.00%**	**100.00%**	**100.00%**

2.6.4 Commodity Type of commercial vehicles

Following table provides commodity type distribution of commercial vehicles

Table 2-16 : Commodity wise distribution of commercial vehicle spectrum @ Narwana Toll

Commodity Type	%Share
Empty	27.16%
Vegetables/ Fruits/ Milk/ Fish	7.51%
Leather	3.51%
Textile Materials/Cotton	1.28%
Drums/Tubes/Cables/Wire/Tiles	3.67%
Food Grains (Rice/ Wheat/ etc.)	2.56%
Sand/Cement/Aggregate/Steel/ Brick	3.51%
Rubber/Wood/Tyre	2.08%
Paint/Dyes	0.96%
Fibre	3.99%

Iron Coils	7.03%
Petrol/ Diesel/Gas/LPG/Sulphur	11.34%
Machines	2.88%
Container	3.83%
Pipe/Plastic	2.24%
Chemicals & Fertilisers	2.24%
Finished Consumer Goods	0.48%
Industrial Goods (Alloy/Steel)	3.35%
Others	10.38%

It shows that traffic on project road carries mix of commodities and no particular commodity is dominating. Presence of good amount of Petrol / diesel carriers is due to presence of Panipat Oil Refinery in State.

Table 2-17 : Commodity wise distribution of commercial vehicle spectrum @ Badopati Toll

Commodity Type	%Share
Empty	32.28%
Vegetables/ Fruits/ Milk/ Fish	5.93%
Leather	0.97%
Textile Materials/Cotton	1.17%
Drums/Tubes/Cables/Wire/Tiles	2.21%
Food Grains (Rice/ Wheat/ etc.)	2.90%
Sand/Cement/Aggregate/Steel/ Brick	4.14%
Rubber/Wood/Tyre	2.07%
Paint/Dyes	2.34%
Fibre	4.14%
Iron Coils	4.48%
Petrol/ Diesel/Gas/LPG/Sulphur	10.07%
Machines	5.38%
Container	4.21%
Pipe/Plastic	1.66%

Chemicals & Fertilisers	2.62%
Finished Consumer Goods	0.62%
Industrial Goods (Alloy/Steel)	1.66%
Others	11.10%

Table 2-18 : Commodity wise distribution of commercial vehicle spectrum @ Chaudhriwas Toll

Commodity Type	%Share
Empty	22.48%
Vegetables/ Fruits/ Milk/ Fish	11.93%
Leather	5.39%
Textile Materials/Cotton	3.56%
Drums/Tubes/Cables/Wire/Tiles	2.41%
Food Grains (Rice/ Wheat/ etc.)	16.97%
Sand/Cement/Aggregate/Steel/ Brick	5.73%
Rubber/Wood/Tyre	2.06%
Paint/Dyes	1.49%
Fibre	1.49%
Iron Coils	2.87%
Petrol/ Diesel/Gas/LPG/Sulphur	4.36%
Machines	1.49%
Container	5.39%
Pipe/Plastic	0.92%
Chemicals & Fertilisers	0.46%
Finished Consumer Goods	0.23%
Industrial Goods (Alloy/Steel)	10.78%
Others	22.48%

Table 2-19 : Commodity wise distribution of commercial vehicle spectrum @Rohtak-Panipat

Commodity Type	%Share
Empty	8.69%
Vegetables/ Fruits/ Milk/ Fish	5.65%
Leather	2.72%
Textile Materials/Cotton	7.85%
Drums/Tubes/Cables/Wire/Tiles	3.87%
Food Grains (Rice/ Wheat/ etc.)	1.47%
Sand/Cement/Aggregate/Steel/ Brick	3.56%
Rubber/Wood/Tyre	3.14%
Paint/Dyes	1.78%
Fibre	3.46%
Iron Coils	3.77%
Petrol/ Diesel/Gas/LPG/Sulphur	6.91%
Machines	8.17%
Container	9.32%
Pipe/Plastic	5.34%
Chemicals & Fertilisers	1.05%
Finished Consumer Goods	1.88%
Industrial Goods (Alloy/Steel)	7.64%
Others	13.72%
Grand Total	100.00%

2.6.5 Purpose of Trip

It was observed that in case of passenger trips nearly 20% of the trips are related to business and 32% for work.

Table 2-20 : Purpose of Trip Passenger @ Narwana Toll

Purpose of Trips	
Work	33.02%
Education	8.28%
Business	20.01%
Social/ Recreation/ Health	9.67%
Shopping	3.61%
Others	25.40%

Table 2-21 : Purpose of Trip Passenger @ Badopati Toll

Purpose of Trips	
Work	35.59%
Education	6.12%
Business	13.86%
Social/ Recreation/ Health	13.69%
Shopping	7.44%
Others	23.31%

Table 2-22 : Purpose of Trip Passenger @ Chaudhriwas Toll

Purpose of Trips	
Work	31.54%
Education	10.51%
Business	15.21%
Social/ Recreation/ Health	14.09%
Shopping	2.91%
Others	25.73%

Table 2-23 : Purpose of Trip Passenger @ Rohtak-Panipat Toll

Purpose of Trips	
Work	18.04%
Education	12.77%
Business	9.46%
Social/ Recreation/ Health	10.00%
Shopping	22.32%
Others	27.41%

2.7 Secondary Data Collection

In addition to the above mentioned traffic surveys, secondary data was also collected from the sources where ever the data available. The secondary data includes the following:

1. Vehicle registration data of Haryana, Rajasthan and surrounding states.
2. Data of Indian national GDP (Gross Domestic Product), NSDP (Net State Domestic Product) of Maharashtra and PCI (Per Capita Income) of Maharashtra.
3. Estimated population data of Maharashtra state from Census.
4. Development around project road area

This data is utilized in the study to estimate the growth factors along the project corridor. Some of this data is included in the Annexure.

2.8 Competing Roads Study and Diversion Analysis

National Highways in India constitute the major mode of transport for road traffic and are the main source of regional connectivity. India has one of the largest network of national highways in the world and the users may use different routes to reach their destination. Shifting of traffic depends on factors such as road length, type, geometry, riding quality and capacity. Competing road analysis was done at two levels. First at regional level and second at local level.

A. Regional Level Analysis

At regional level OD data was analyzed to establish major OD pairs. As discussed previously project road forms an optimal route for the traffic between following zones.

Zone-1- J&K, Punjab (Ludhiana, Amritsar parts), Haryana, Himachal, Part of Uttarakhand

Zone-2 – Rajasthan, Gujarat (Kandla, Mundra), Maharashtra (Coastal), Southern States (Coastal).

As alternate routes converge at Ajmer, the Project Influence Area (PIA) is considered between Ambala and Ajmer only.

Following figures show the layout of competing routes between both these Zones.

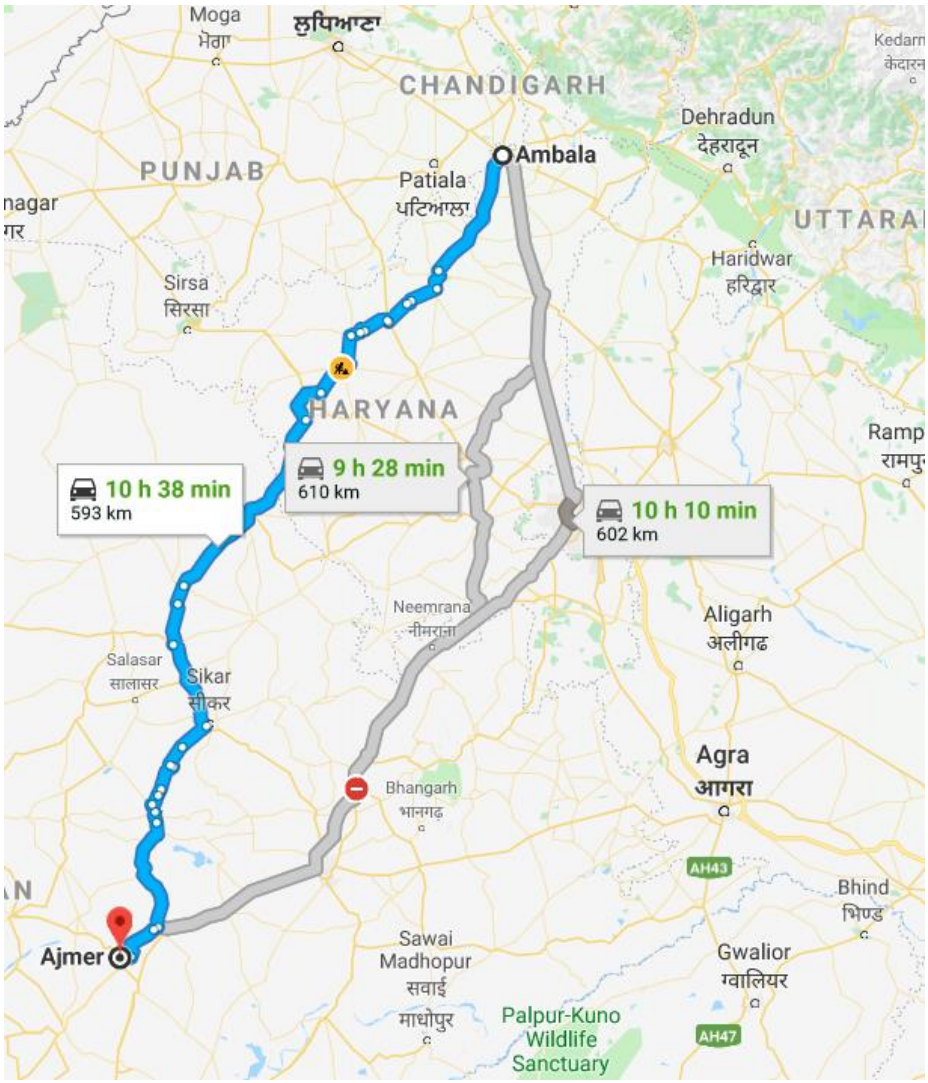


Figure 2-11 : Competing Routes Between Zones

Above figure depicts alternate route between Ambala and Ajmer i. Following figure shows alternate routes between Ludhiyana and Ajmer

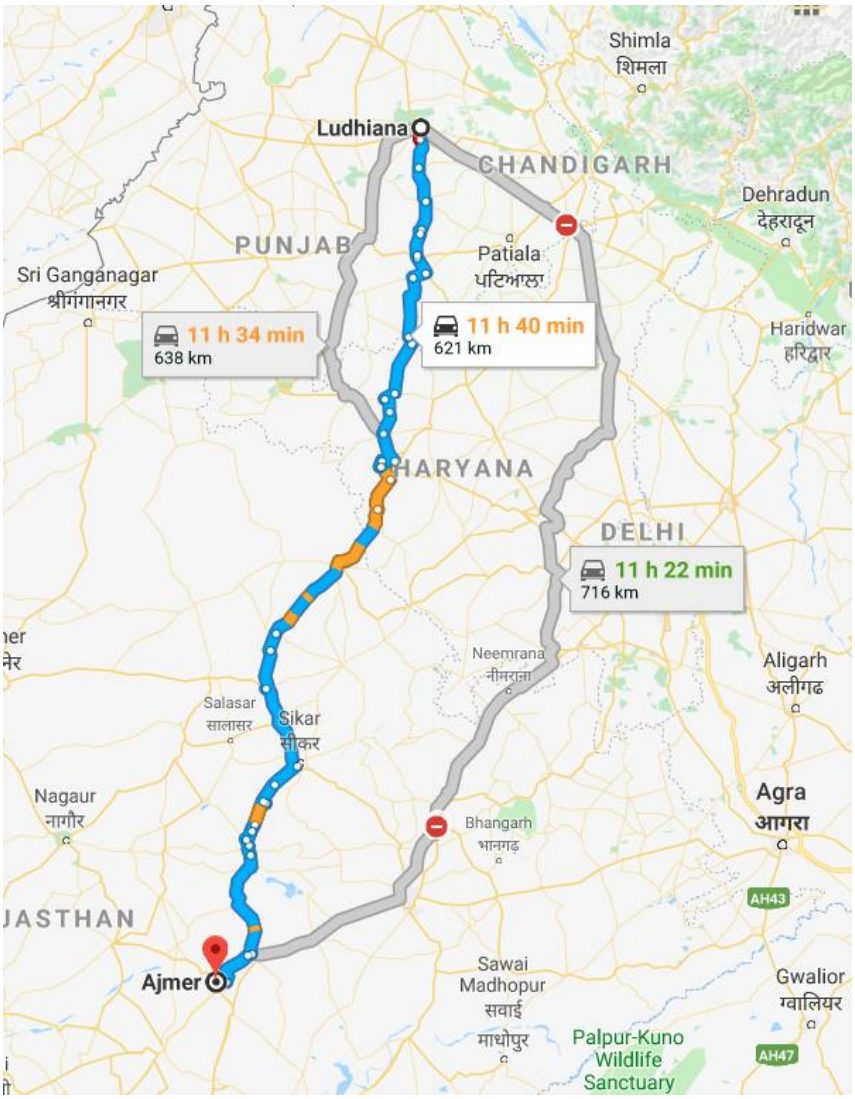


Figure 2-12 : Competing Routes Between Zones

From above figures it can be seen that the route containing project alignment has least distance between these origin and destination zones.

Following facts would improve probability of target traffic getting attracted to project road.

- Project corridor between Ambala to Rajasthan Border is expected to complete four laning with all bypasses and ROBs in this year, 2018-19.
- Road from Ludhiana to Hisar is part of Bharatmala project and will be converted to four lane. Currently road from Hisar to Fatehabad only in four lane.

- Project Corridor is part of ambitious project of Bharatmala which will improve entire length of corridor in terms of capacity and traffic flow. The Government of India has identified the Ludhiana – Ajmer corridor as an optimal route which shall provide time and cost savings to traffic moving from western India to northern India. This will also allow traffic to avoid heavy traffic jams around New Delhi which it is facing on the present route.
- NH-1 and NH-8 which are currently major corridor for traffic between Zone1 and Zone2 will face capacity constraints in coming years. NH-1 for example is four lane road between Ambala and Panipat and runs about 80,000 PCU which is already above its capacity.

Details of traffic pertaining to Zone 1 and Zone 2 were abstracted from OD analysis. Following table shows volume of long distance traffic between Zone1 and Zone2.

Following table shows volume of traffic on project road pertaining to Zone 1 and Zone 2

Table 2-24 : Traffic volume between Zone1 and Zone2 on project road

Category of traffic	% of Vehicle on Project Road of Target of Origin and Destination	CVC on Project Road	No of Vehicle on Project Road of Target Origin and Destination (Z1 and Z2)
Passenger	11.13%	2839	316
Commercial	18.27%	1341	245

Most of the traffic between zone1 and zone2 moves either on project road or on NH-1+Rohtak Road (NH-709) + NH-8

Similarly, traffic between zone1 and zone 2 on Rohtak road is given in table below.

Table 2-25 : Traffic volume between Zone1 and Zone2 on Rohtak Road

Category of traffic	% of Vehicle on NH-709 of Target Origin and Destination (Z1 and Z2)	CVC ON NH-709	No of Vehicle on NH-709 of Target Origin and Destination (Z1 and Z2)
Passenger	14.42%	8091	1167
Commercial	8.92%	7026	626

Thus the sum of traffic between Zone1 and Zone2 on both project road and Rohtak road is the target traffic which will be divided between project road and alternate route (Rohtak Road).

Road network is analogues to fluid flow network following principals of hydraulic pressure and friction. Traffic volume, road condition, road lengths, congestions and toll are main parameters which have major bearing on route selection process of any driver. Traffic tend to flow to the route having minimum operating cost. Fuel, toll, travel time, wear-tear of vehicle, safety, congestion etc. are main factor which affect operating cost for certain route. It may be noted that all these parameters are not directly translatable in to monetary form. Also, value and weightage of various parameters, large extent, are dependent on perception of decision maker, who is driver in most of the cases. This perception of value of time and vehicle may vary to large extent in case of private car traffic where travel comfort and other emotional parameters have great bearing on decision of selection of route.

IRC recommends following diversion curve for amount of expected diversion for certain value if cost ration of alternate routes.

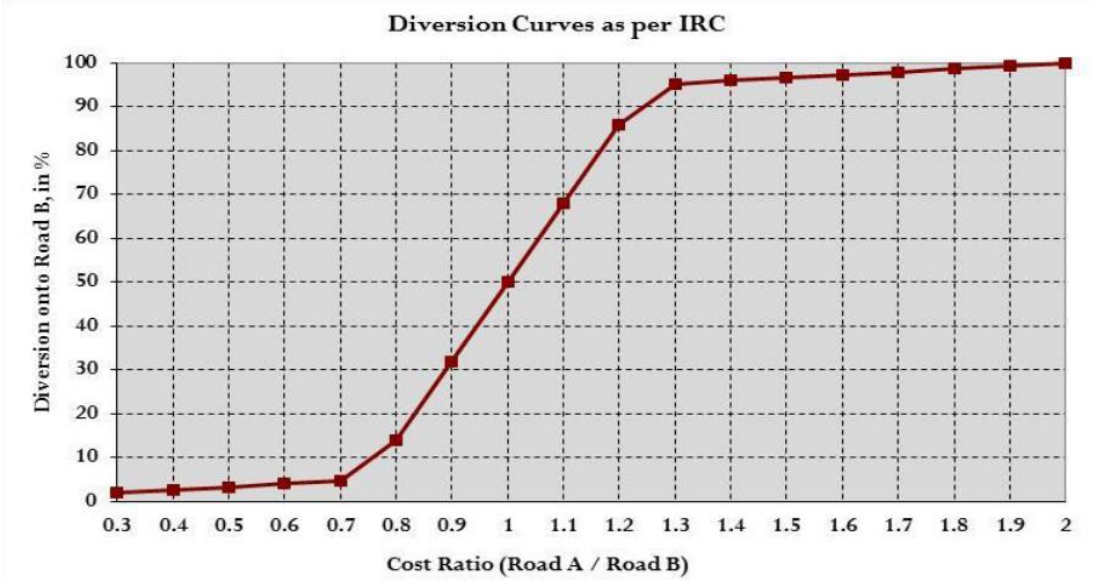


Figure 2-13 : Diversion Curve

Since we are analyzing the diversion from futuristic point of view, it is assumed that both the alternate routes would have similar capacity and riding quality. Both these routes are under toll operation hence cost can be taken in the ratio length of route. The cost ratio between project road and alternate route via Rohtak road, between Ambala and Ajmer works out to be 0.95.

From the graph it can be observed that for cost ratio 0.95, project road would share 60% of the target traffic while 40% of the traffic would still use Rohtak road.

Following table shows additional growth due to probable diversion of traffic when project road also gets complete.

Table 2-26 : Traffic Diversion Potential on to project road

Category of traffic	Total traffic between Zone1 and Zone2)	% Diversion	No of Vehicle after Diversion on project road	% additional Growth
Passenger	1483	60%	890	20.22%
Commercial	871	60%	523	20.73%

As per the analysis above, additional 20% growth of traffic is taken due to potential traffic diversion. Schedule of this induced growth is given below

10% (50% of additional growth) – Year 2019-20 (on Completion of Project Road and Ambala – Kaithal Road)

10% (50% of additional growth) – Year 2021-22 (On improvement of Ludhiana- Ajmer section of Bharatmala)

B. Local Level Analysis

At local level it was observed that there is no formidable local alternate route to bypass toll plaza. There can a combination of village roads to form alternate loop around toll plazas, but these are too long as compared to project road between said nodes. Thus no local diversion of traffic from project road is anticipated.

CHAPTER 3

TRAFFIC FORECAST

3.1 Introduction

Traffic growth is a function of the interplay of a number of contributory factors such as National economy, Government policy, socio-economic conditions of the people, and changes in land uses along the project corridor precincts etc. As these factors have a number of uncertainties associated with them, forecasts of traffic are dependent on the projections of other factors such as population, gross domestic product (GDP), vehicle ownership, per capita income (PCI), agricultural output, fuel consumption etc. Future pattern of change in these factors can be estimated with only a reasonable degree of accuracy and hence the resultant traffic forecast levels may not be precise.

Traffic growth forecast for project corridor Kaithal - Rajasthan Border section of NH-152 has been done taking above factors in to consideration. "**IRC: 108-2015-Guidelines for Traffic Prediction on Rural Highways**" is established best practice and has been used for traffic growth forecast.

3.3.1 Trend Analysis

One of the methods of estimation of future rate of traffic growth is to assume the same rate of growth as experienced in the past. However, it may be noted that major influencing factors which reflect Economic conditions such as GDP, agricultural output, industrial output, national policies etc. are susceptible to change over a longer period of time and necessary adjustments need to be made to past trends to account for these changes.

Thus, we have considered the Elasticity model of growth projection which is one of the most widely acceptable methods for traffic forecast and is recommended in **IRC: 108-2015-Guidelines for Traffic Prediction on Rural Highways**.

In this method past trends of any vehicular data are paired with an economic indicator and a regression analysis is done to yield the economic model of growth. Growth of vehicle traffic varies for different type of vehicle. It is a proven fact that growth patterns for passenger and goods vehicles are different. Traffic growth on any highway typically depends on a number of economic parameters. The most important and direct parameters are given as under

- Per Capita Income
- Net State Domestic Product (NSDP)
- Population

It is observed that the ownership of a car is more closely related to affordability hence per capita is the index which closely fits with growth of car traffic among other criteria. In similar fashion, following pairs of vehicle type and independent variable can be established for elasticity modeling of growth.

- Car / Jeep – Par Capita Income
- Bus / Minibus – Population
- Trucks / Heavy / Goods Vehicle – NSDP

From OD survey it is established that majority of traffic on project road comes from the state of Haryana, Punjab and Rajasthan.

Time series data of vehicle (both passenger and goods) Registered in state of Haryana, Punjab and Rajasthan is used as the base data for analysis of growth

3.3.2 Estimation of Traffic Demand Elasticity

Elasticity of traffic demand is defined as the rate at which traffic intensity varies due to change in the corresponding indicator selected. Hence, in order to estimate the elasticity of traffic demand, it is necessary to establish the relationship between the growth in number of given category of vehicle with one of the economic variables considered, such as NSDP, per capita income and population growth.

As per IRC: 108-2015 the model for estimating elasticity index for the project corridor is of the following form and is as given below:

$$Log(P) = k \times Log(EI) + A$$

Where,

P = *Number of Vehicles (Mode wise)*

EI = *Economic Indicator*

A = *Regression constant*

k = *Elasticity coefficient (Regression coefficient)*

The elasticity for car and bus (passenger vehicles) is calculated based on the Population and Per Capita Domestic Product (PCDP) and the elasticity for trucks is calculated based on the Net State Domestic Product (NSDP).

Following tables and graphs depict regression and elasticity of growth model.

Table 3-1 : Per Capita Income Vs Car Haryana

Year	PCI	Car	Log PCI	Log Car	PCI Growth	Average Growth
2011	107343	1110721	5.03	6.05		
2012	112088	1265119	5.05	6.10	4%	
2013	116543	1420200	5.07	6.15	4%	
2014	124092	1569100	5.09	6.20	6%	
2015	135351	1794444	5.13	6.25	9%	
2016	145274	2027837	5.16	6.31	7%	6%

Regression analysis of same is given in figure below

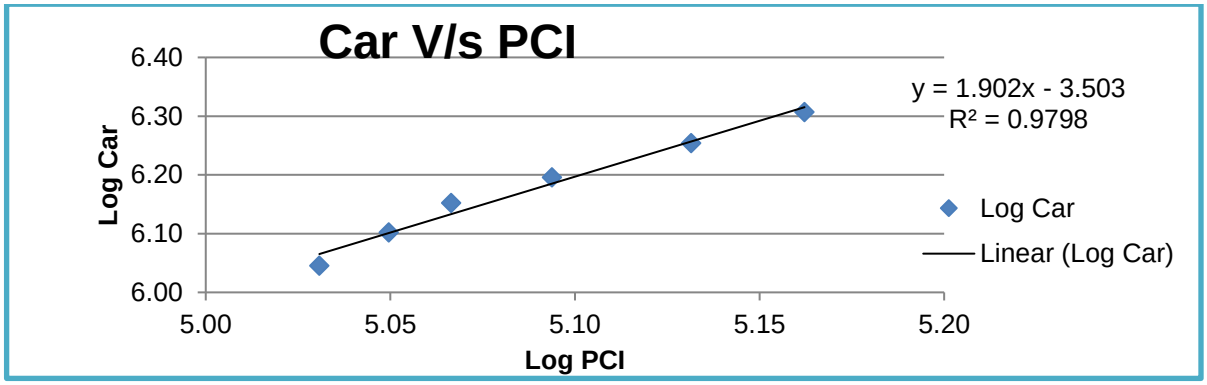


Figure 3-1 : Regression and Elasticity PCI Vs. Car Haryana – extrapolation

Table 3-2 : Population Vs Bus Haryana

Year	Population	Buses	Log Pop	Log Bus	Pop Growth	Average Growth
2011	25351	39153	4.40	4.59		
2012	25678.95	42800	4.41	4.63	1%	
2013	26011.1425	45893	4.42	4.66	1%	
2014	26347.6323	50207	4.42	4.70	1%	
2015	26688.4751	53289	4.43	4.73	1%	
2016	27033.7272	59254	4.43	4.77	1%	1%

Regression analysis of same is given in figure below

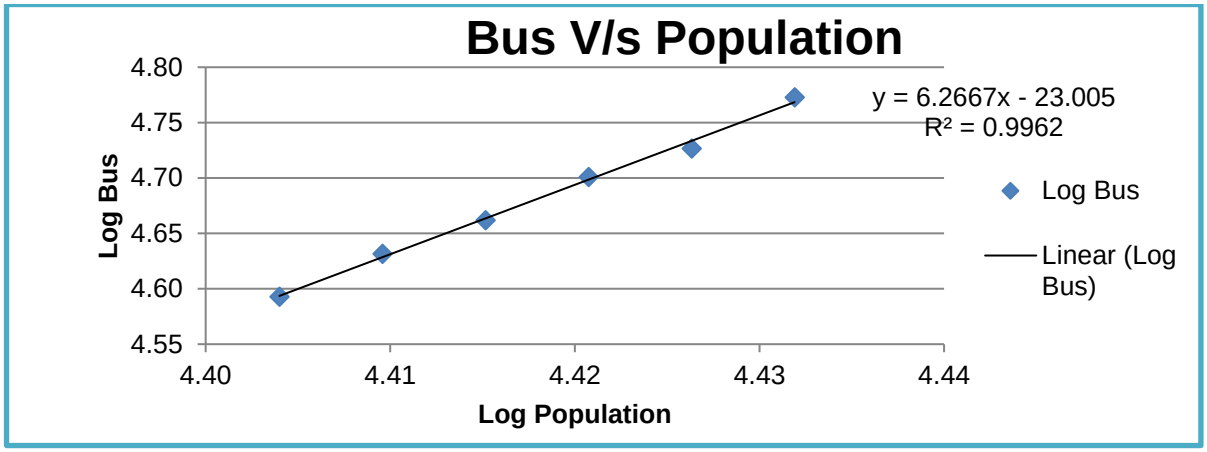


Figure 3-2 : Regression and Elasticity Population Vs. Bus Haryana– extrapolation

Elasticity of goods traffic has been worked out by regression analysis with NSDP. Following table represents the data and details.

Table 3-3 : Goods Traffic Vs NSDP Haryana

Year	NSDP	Trucks	Log NDSP	Log Truck	NSDP Growth	Average Growth (5 Year)
2011	27115248	292735	7.43	5.47		
2012	28941383	307509	7.46	5.49	7%	
2013	31422391	327882	7.50	5.52	9%	
2014	33141283	348732	7.52	5.54	5%	
2015	36123136	369856	7.56	5.57	9%	
2016	39272871	388767	7.59	5.59	9%	8%

Following figure depict regression analysis and extrapolation.

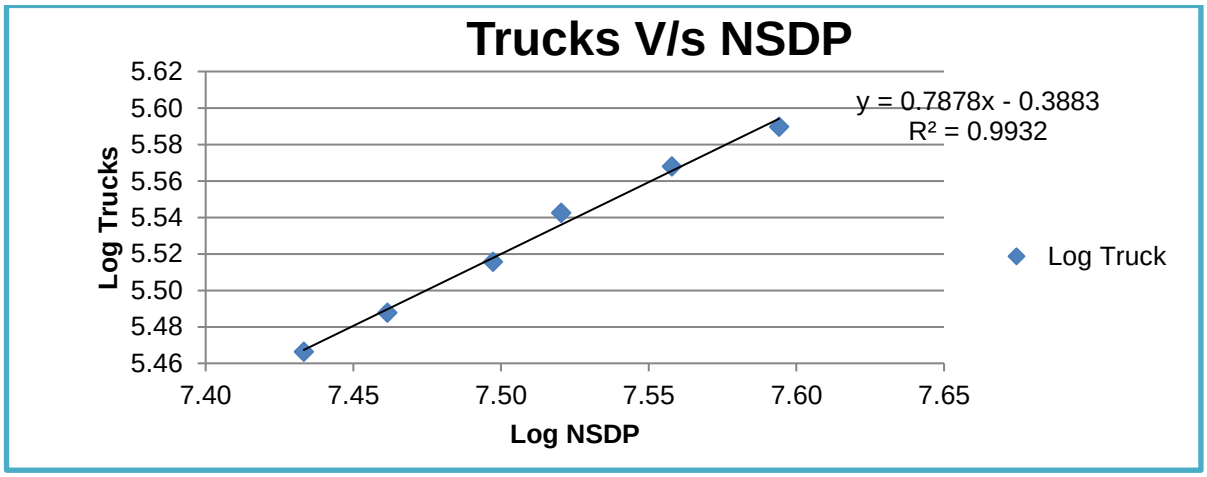


Figure 3-3 : Regression and Elasticity NSDP Vs. Goods Traffic Haryana– extrapolation

Table 3-4 : Per Capita Income Vs Car Rajasthan

Year	PCI	Car	Log PCI	Log Car	PCI Growth	Average Growth
2011	29612	845909	4.47	5.93		
2012	30839	947598	4.49	5.98	4%	
2013	31386	1053406	4.50	6.02	2%	
2014	33186	1171267	4.52	6.07	6%	4%

Regression analysis of same is given in figure below

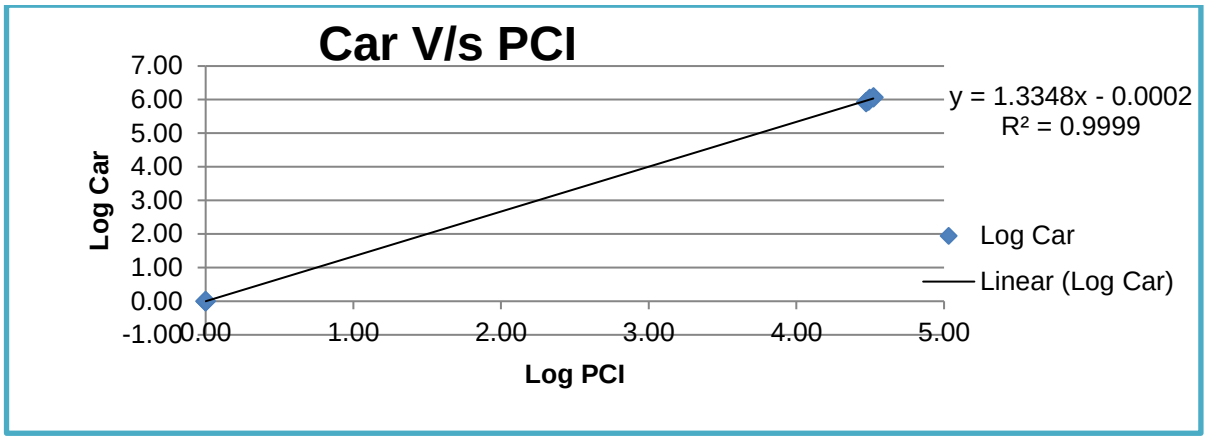


Figure 3-4 : Regression and Elasticity PCI Vs. Car Rajasthan – extrapolation

Table 3-5 : Population Vs Bus Rajasthan

Year	Population	Buses	Log Pop	Log Bus	Pop Growth	Average Growth
2011	6.85	83345	0.84	4.92		
2012	6.98	88616	0.84	4.95	2%	
2013	7.1	93892	0.85	4.97	2%	
2014	7.22	97650	0.86	4.99	2%	2%

Regression analysis of same is given in figure below

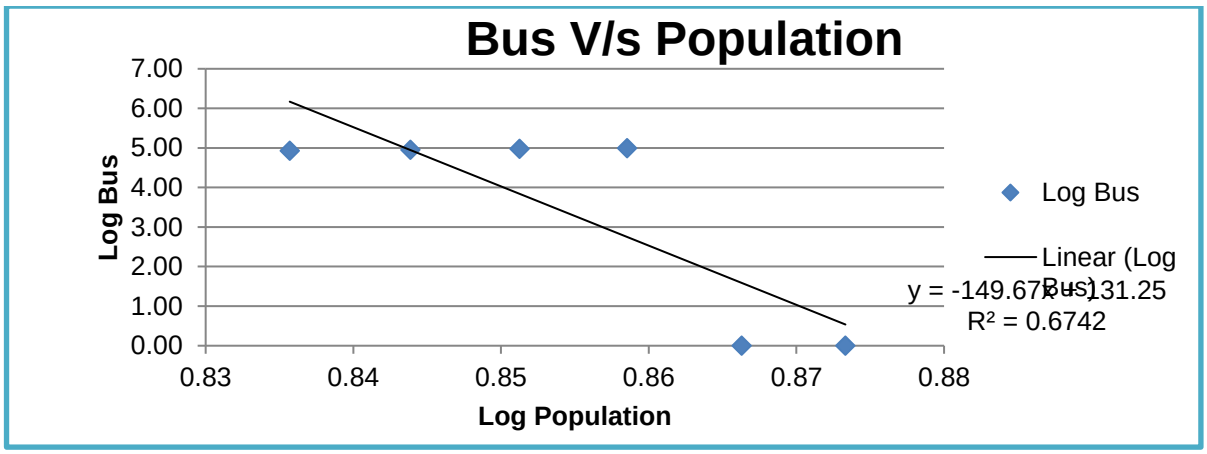


Figure 3-5 : Regression and Elasticity Population Vs. Bus Rajasthan– extrapolation

Elasticity of goods traffic has been worked out by regression analysis with NSDP. Following table represents the data and details.

Year	NSDP	Trucks	Log NDSP	Log Truck	NSDP Growth	Average Growth (5 Year)
2011	20274900	362028	7.31	5.56		
2012	21439100	401983	7.33	5.60	6%	
2013	22463200	434379	7.35	5.64	5%	
2014	23753000	472365	7.38	5.67	6%	5%

Table 3-6 : Goods Traffic Vs NSDP Rajasthan

Following figure depict regression analysis and extrapolation.

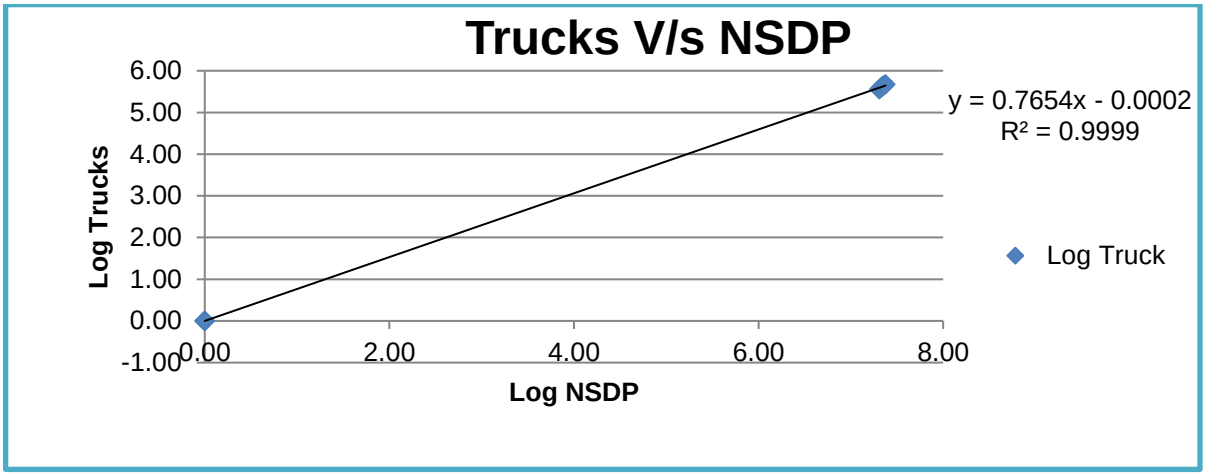


Figure 3-6 : Regression and Elasticity NSDP Vs. Goods Traffic Rajasthan– extrapolation

Table 3-7 : Per Capita Income Vs Car Punjab

Year	PCI	Car	Log PCI	Log Car	PCI Growth	Average Growth
2011	85577	680076	4.93	5.83		
2012	88915	714080	4.95	5.85	4%	
2013	93238	749784	4.97	5.87	5%	
2014	95546	787273	4.98	5.90	2%	
2015	99372	826637	5.00	5.92	4%	
2016	103726	867968	5.02	5.94	4%	4%

Regression analysis of same is given in figure below

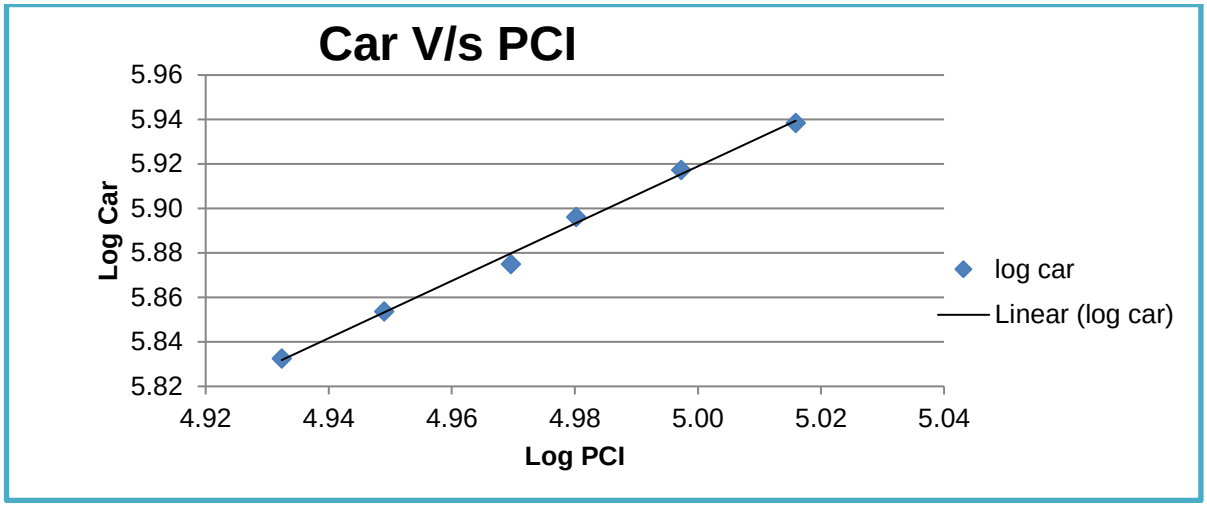


Figure 3-7 : Regression and Elasticity PCI Vs. Car Punjab – extrapolation

Table 3-8 : Population Vs Bus Punjab

Year	Population	Buses	Log Pop	Log Bus	Pop Growth	Average Growth
2011	27743	30160	4.44	4.48		
2012	28053	31668	4.45	4.50	1%	
2013	28366	33251	4.45	4.52	1%	
2014	28683	34914	4.46	4.54	1%	
2015	29003	36660	4.46	4.56	1%	
2016	29326	38493	4.47	4.59	1%	1%

Regression analysis of same is given in figure below

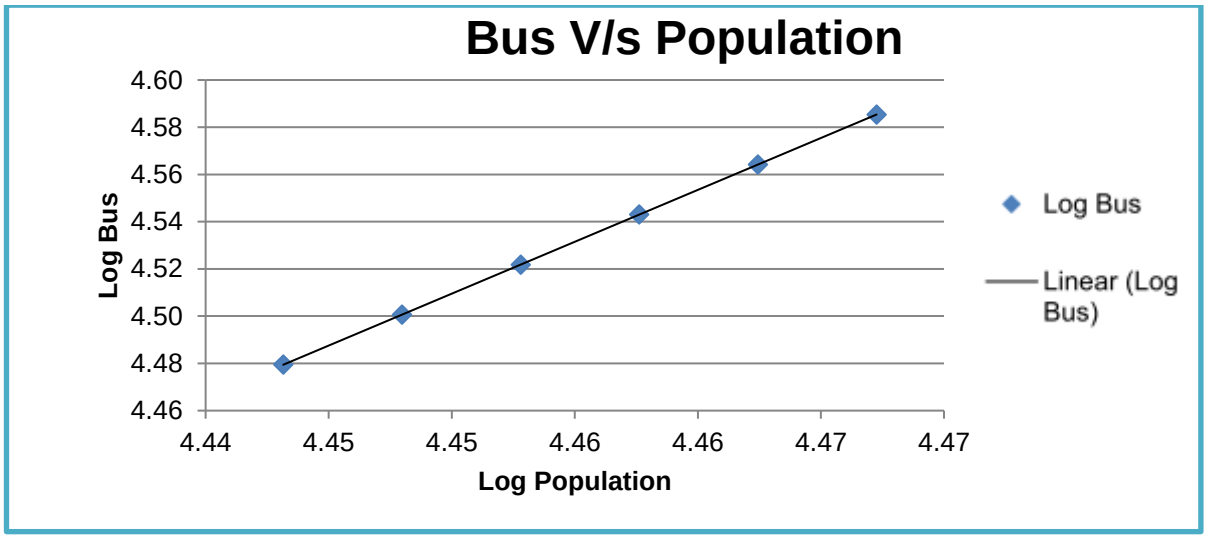


Figure 3-8 : Regression and Elasticity Population Vs. Bus Punjab– extrapolation

Elasticity of goods traffic has been worked out by regression analysis with NSDP. Following table represents the data and details.

Table 3-9 : Goods Traffic Vs NSDP Haryana

Year	NSDP	Trucks	Log NDSP	Log Truck	NSDP Growth	Average Growth (5 Year)
2011	23922695	125898	7.38	5.10		
2012	25181259	132193	7.40	5.12	5%	
2013	26842288	138803	7.43	5.14	7%	
2014	28090175	145743	7.45	5.16	5%	
2015	28820561	153030	7.46	5.18	3%	
2016	30419164	160681	7.48	5.21	6%	5%

Following figure depict regression analysis and extrapolation.

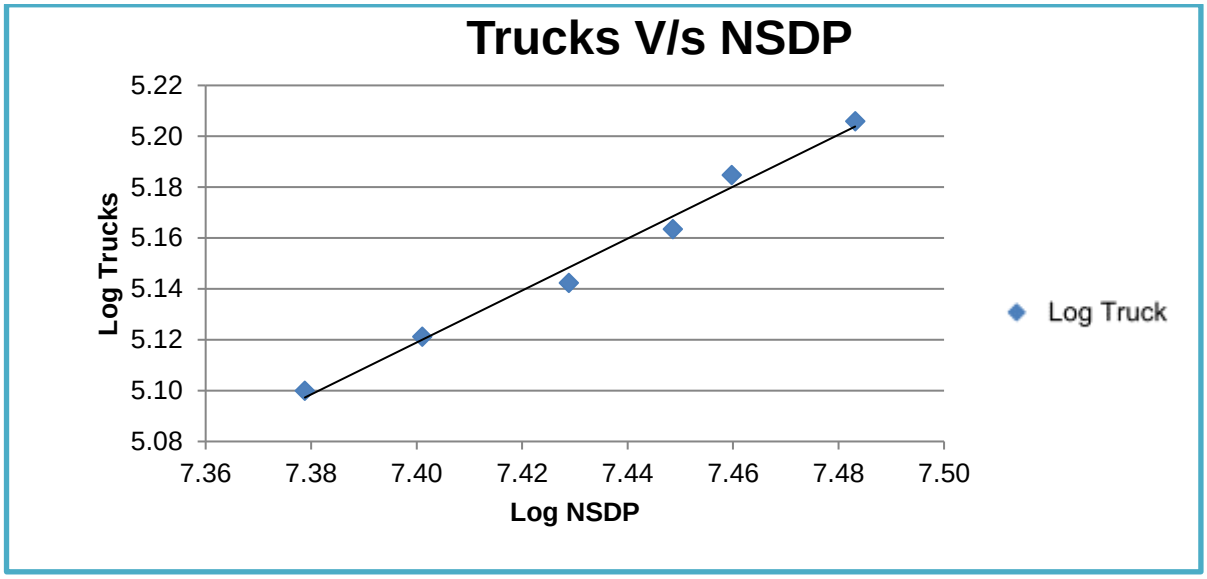


Figure 3-9 : Regression and Elasticity NSDP Vs. Goods Traffic Haryana– extrapolation

It shall be noted that the growth rates for various modes are not same as they are influenced by different parameters. In other words, whilst the growth of the passenger vehicles (cars, Jeeps, two wheelers and even buses) could be attributed to the growth in the per capita income, population growth and vehicle registration growth, the growth of the LCV, Trucks, Multi Axle Trucks are found to be influenced with factors including the industrial production and growth of the National or state Domestic products.

The results of these analyses for the good fit as reflected by R^2 values are presented in the Table below

Table 3-10 : Summary Regression Analysis of Punjab

State	Vehicle Category	Independent Variable	Regression Equation	R Square	Elasticity Coefficient (y)	Average IV Growth (5yrs)	Growth Elastic Model	Remarks
PUNJAB	Car/Jeep	PCI	y = 1.2881x - -0.5214	R^2 = 0.9954	1.2881	3.92%	5.06%	Good Regression
	Bus	Population	y = 4.395x - -15.0482	R^2 = 1	4.3950	1.12%	4.91%	Good Regression
	Truck	NSDP	y = 1.0212x - -2.4376	R^2 = 0.9877	1.0212	4.93%	5.04%	Good Regression

Table 3-11 : Summary Regression Analysis of Rajasthan

State	Vehicle Category	Independent Variable	Regression Equation	R Square	Elasticity Coefficient (y)	Average IV Growth (5yrs)	Growth Elastic Model	Remarks
Rajasthan	Car/Jeep	PCI	y = 2.9002x - -7.0363	R^2 = 0.9628	2.9002	3.88%	11.26%	Good Regression
	Bus	Population	y = 3.0526x - 2.3711	R^2 = 0.9943	3.0526	1.75%	5.34%	Good Regression
	Truck	NSDP	y = 1.6787x - -6.7054	R^2 = 0.9972	1.6787	5.42%	9.10%	Good Regression

Table 3-12 : Summary Regression Analysis of Haryana

State	Vehicle Category	Independent Variable	Regression Equation	R Square	Elasticity Coefficient (y)	Average IV Growth (5yrs)	Growth Elastic Model	Remarks
HARYANA	Car/Jeep	PCI	y = 1.902x - -3.503	R^2 = 0.9798	1.9020	6.26%	11.90%	Good Regression
	Bus	Population	y = 6.2667x - -23.005	R^2 = 0.9962	6.2667	1.29%	8.11%	Good Regression
	Truck	NSDP	y = 0.7878x - -0.3883	R^2 = 0.9932	0.7878	7.70%	6.07%	Good Regression

Projected growth of traffic from economic model of above states is then assigned weightage in ratio of traffic present on road. Following table provides thus weighted average of growth of various categories of vehicles.

Following table provides for weighted growth of traffic on project road from economic model.

Table 3-13 : Weighted Growth

Vehicle Category	Car/Jeep	Bus	Truck
TP-1	11.26%	7.91%	6.42%
TP-2	11.31%	7.86%	6.06%
TP-3	11.41%	7.04%	6.85%
Average	11.33%	7.60%	6.44%

Oher factors impacting growth are discussed as under.

3.3.3 Growth of Economy and Projection of GDP in India

After witnessing a slowdown during 2008-09, the economy recovered in 2009-10, and a very high growth rate of GDP was recorded in 2010. Thereafter economy has stabilized and growth were moderated. Following figure depicts growth of GDP in India during the period.

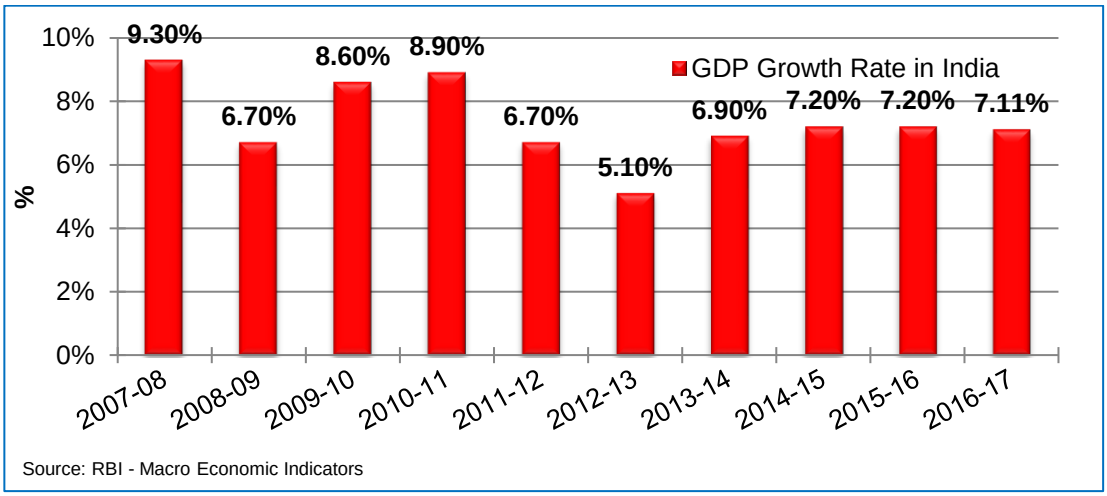


Figure 3-10 : Growth of GDP in India

After recording an all impressive growth of 8.9% in 2011, GDP declined between FY11 and FY14. GDP growth in 2014-15, 2015-16 and 2016-17 was pegged around 7.2% and is expected to be in the range of 7-8% going forward

3.3.4 Development along the Project Corridor

Project falls in region of good development potential. The same is discussed as under.

Haryana is the largest recipient of investment per capita since 2000 in India, and among one of the wealthiest and most economically developed regions in South Asia. Haryana has the sixth highest per capita income among Indian states and union territories. Haryana is also boosted by 30 SEZs (mainly along DMIC, ADKIC and DWPE in NCR), 7% national agricultural exports, 60% of national Basmati rice export, 67% cars, 60% motorbikes, 50% tractors and 50% refrigerators produced in India. In services. Since Haryana surrounds the country's capital Delhi on three sides (north, west and south), consequently a large area of Haryana is included in the economically-important National Capital Region for the purposes of planning and development.

Major Cities of Haryana state & their characteristics are as below.

Faridabad is one of the biggest industrial city of Haryana as well as North India. Faridabad has been described as eighth fastest growing city in the world and third most in India by City Mayors Foundation survey. Faridabad is home to large-scale companies like Escorts Limited, India Yamaha Motor Pvt. Ltd., Havells India Limited, JCB India Limited, Indian Oil (R&D), Larsen & Toubro (L&T), Whirlpool India Ltd., ABB Group, Goodyear India Ltd., Bata India Ltd and Eicher Tractor Ltd. and Beebay Kidswear. Eyewear e-tailer Lenskart and healthcare startup Lybrate have their headquarters in Faridabad. More than 5,000 units of auto parts producers are based in Faridabad.

Many directorates of different union government ministries are headquartered in Faridabad including Central Ground Water Board, Department of Plant Quarantine and Central Insecticide Lab and Union Government Offices from Haryana including the Commissioner of Central Excise within Department of Revenue, Government of India, Department of Explosives, and Department of Labour. The Apex Central Training Institute of the Department of Revenue, Government of India, National Academy of Customs Excise & Narcotics is located at Sector 29. The National Power Training Institute, an autonomous body under Ministry of Power, Government of India has a corporate office in Faridabad. The city also hosts the National Institute of Financial Management, which serves as training academy for accounting and financial services. Also

headquartered here is NHPC Limited which is a Central PSU under Ministry of Power, Government of India and the largest Hydro-power Company in India.

Hisar, city has been identified as a counter-magnet city for the National Capital Region to attract migrants and develop as an alternative center of growth to Delhi. With upcoming integrated industrial aerocity and aero MRO hub at Hisar Airport, it is a fast-developing city.

The city has a large steel industry and is known as the 'city of steel'. Hisar is India's largest manufacturer of galvanized iron. The Jindal Group is based in Hisar. Jindal Stainless Steel is also the world's largest producer of Stainless Steel strips for razor blades and India's largest producer of coin blanks. Textile and automobile industry is also a major contributor to the economy of the city. It also has a large number of livestock farms with the Central Livestock Farm, established in 1809 being one of the Asia's largest cattle farms.

Panipat city is famous in India by the name of "City of Weavers" and "Textile City". It is also known as the "cast-off capital" due to being "the global centre for recycling textiles. It is known for its woven modhas or round stools. Panipat has heavy industry, including a refinery operated by the Indian Oil Corporation, a urea manufacturing plant operated by National Fertilizers Limited and a National Thermal Power Corporation power plant. The IOCL refinery in Panipat is one of the major Industry in area which contributes to growth.

Gurugram : Witnessing rapid urbanisation, Gurgaon has become a leading financial and industrial hub with the third-highest per capita income in India. Gurgaon ranks number 1 in India in IT growth rate and existing technology infrastructure, and number 2 in startup ecosystem, innovation and livability.

The city's economic growth story started when the leading Indian automobile manufacturer Maruti Suzuki India Limited established a manufacturing plant in Gurgaon in the 1970s. Today, Gurgaon has local offices for more than 250 Fortune 500 companies. Various international companies, including Coca-Cola, Pepsi, BMW, Agilent Technologies, Hyundai have chosen Gurugram to be their Indian corporate headquarters.

IMT Minesar, Dundahera and Sohna are industrial and logistics hub, that also has National Security Guards, Indian Institute of Corporate Affairs, National

Brain Research Centre and National Bomb Data Centre. Retail is an important industry in Gurgaon, with the presence of 26 shopping malls

Ambala is connected to all the other major cities of north India including Delhi, Panipat, Chandigarh, Ludhiana, Amritsar and Shimla. It is a big interchange for various commuters for all neighboring states. The Ambala Cantt bus stand witnesses roughly 50,000 commuters daily.

National highway NH 1 popularly known as GT road passes through Ambala and connects it to National capital Delhi, Panipat, Ludhiana and Amritsar. NH 22 connects it to state capital Chandigarh and Shimla. National Highway 52 (new NH-165) connects it to Kaithal, Narwana and Hisar.

Being located in the Indo-Gangetic Plain, the land is generally fertile and conducive to agriculture.

Small scale industries form the bulk of the industrial landscape in the district. It is one of the largest producers of scientific and surgical instruments in the country and home to a large number of scientific instrument manufacturers. It produces microscopes and other instruments used in chemistry laboratories. Manufacture of submersible pumps and mixers and grinders is another industry that has traditionally flourished.

Ambala is also an important textile trading centre, besides Delhi and Ludhiana and has a well-known cloth market, which is famous in the region especially for those seeking bridal wear. It also produces rugs, known locally as Durries, and houses many suppliers to Indian defence forces

Punjab state is one of the most fertile regions in India. The region is ideal for wheat-growing. Rice, sugar cane, fruits and vegetables are also grown. Punjab is called the "Granary of India" or "India's bread-basket". It produces 10.26% of India's cotton, 19.5% of India's wheat, and 11% of India's rice. The Firozpur and Fazilka Districts are the largest producers of wheat and rice in the state. In worldwide terms, Indian Punjab produces 2% of the world's cotton, 2% of its wheat and 1% of its rice. The largest cultivated crop is wheat. Other important crops are rice, cotton, sugarcane, pearl millet, maize, barley and fruit.

Ludhiana is one of the City in India with best business environment. The riches are brought mostly by small-scale industrial units, which produce industrial goods, machine parts, auto parts, household appliances, hosiery, apparel, and garments. Ludhiana is Asia's largest hub for bicycle manufacturing and produces more than 50% of India's bicycle consumption of more than 10 million each year. Ludhiana produces 60% of India's tractor parts and a large portion of auto

and two-wheeler parts. Many parts used in German cars are Mercedes and BMW exclusively produced in Ludhiana to satisfy the world requirement. It is one of the largest manufacturer of domestic sewing machines. Hand tools and industrial equipment are other specialties. The apparel industry of Ludhiana is famous all over India for its woollen sweaters and cotton T-shirts; most of the top Indian woollen apparel brands are based in Ludhiana. Ludhiana also has a growing IT sector with multiple software services and product companies having development centers in the city

Chandigarh has been rated as one of the "Wealthiest Towns" of India. The Reserve Bank of India ranked Chandigarh as the Third largest deposit centre and seventh largest credit centre nationwide.

Chandigarh is ranked 4th in the top 50 cities identified globally as "emerging outsourcing and IT services destinations" ahead of cities like Beijing. Chandigarh IT Park (also known as Rajiv Gandhi Chandigarh Technology Park) is the city's attempt to break into the information technology world. Major Indian firms and multinational corporations like Quark, Infosys, EVRY, Dell, IBM, TechMahindra, Airtel, Amadeus IT Group, DLF have set up base in the city and its suburbs.

Additionally, the government is a major employer in Chandigarh with three governments having their base here i.e. Chandigarh Administration, Punjab government and Haryana government.

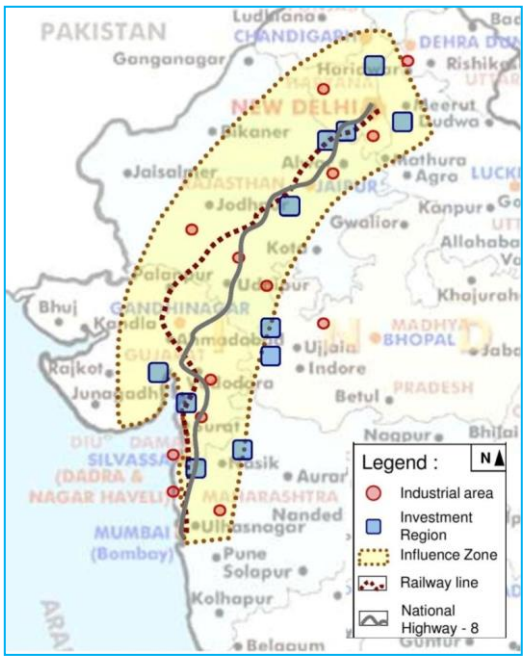
Ordnance Cable Factory of the Ordnance Factories Board has been set up by the Government of India. There are about 15 medium to large industries including two in the Public sector. In addition Chandigarh has over 2500 units registered under small-scale sector. The important industries are paper manufacturing, basic metals and alloys and machinery. Other industries are relating to food products, sanitary ware, auto parts, machine tools, pharmaceuticals and electrical appliances.

Rajasthan state is a fast developing state. Last year Rajasthan was the leading investment destination in India after Maharashtra and Gujarat because of peaceful environment, relatively better law and order situation, excellent infrastructure, and investment friendly climate. Rajasthan is pre-eminent in quarrying and mining in India. The state is the second largest source of cement. It has rich salt deposits at Sambhar, copper mines at Khetri and zinc mines at Dariba and Zawar. Jaipur is the capital and largest city of Rajasthan. It is also known as Pink City of India and a famous travel destination.

There is large amount of information available on open platform including internet regarding this. Relevant information is compiled as under.

Delhi Mumbai Industrial Corridor (DMIC)

Rajasthan is strategically located along the Delhi-Mumbai section of the Golden Quadrilateral highway project, the proposed Dedicated Freight Corridor (DFC) and the Delhi Mumbai Industrial Corridor (DMIC).



Rajasthan has access to 46% of DMIC. It falls within major districts of Jaipur, Alwar, Kota and Bhilwara. Over 58% area of the state falls within the influence area of DMIC. The DMIC will provide high quality environment with state of the art infrastructure for new investors.

The state of Rajasthan has a rich agricultural and mineral base. Key industrial sectors in the state include Cement, Building Stones, Gypsum, Gems & Jewellery, Chemical, Food processing and Textiles. The emerging sectors include IT/ITES, Auto Component and Knowledge Hubs. Based on the strengths of specific regions across the state, five development nodes are identified in the influence area of DMIC. It includes two investment regions and three industrial areas.

Project road would act as feeder road for traffic destined for DMIC logistic hubs from northern states.

On the basis of above it can be assumed that sustainable growth of traffic can be expected on project road.

3.3.5 Recommended Growth Rates of Traffic

Based on the above analysis and after giving due consideration to the entire listed factors, the following overall growth rates are recommended for each

category of vehicle as under. It is also expected that as the economy moves from developing to developed, rate of growth diminishes. Same growth rate is not sustainable for long. It is established practice to stepdown future growth rates at interval of 5 years.

Growth rates are recommended for three scenarios for sensitivity analysis namely **Optimistic**, **Pessimistic** and **Most Likely** with a positive and negative variation 0.5% from Most Likely case.

Table 3-14 : Recommended Growth Rates Most Likely

Category / Year	2018-2023	2023-2028	2028-33	2033-38	2038-2043	2043-2048	2048-2053
Car/Jeep/Van	11.33%	10.58%	9.83%	9.08%	8.33%	7.58%	6.83%
Bus	7.60%	6.85%	6.35%	5.85%	5.35%	4.85%	4.35%
MiniBus	6.44%	5.69%	5.44%	5.19%	4.94%	4.69%	4.44%
LCV	6.44%	5.69%	5.44%	5.19%	4.94%	4.69%	4.44%
2- Axle	6.44%	5.69%	5.19%	4.69%	4.19%	3.69%	3.19%
3 - Axle	6.44%	5.69%	5.19%	4.69%	4.19%	3.69%	3.19%
4 to6 Axle	6.44%	5.69%	4.94%	4.19%	3.44%	2.69%	1.94%
7 and Above Axle	6.44%	5.69%	6.44%	7.19%	7.94%	8.69%	9.44%

Table 3-15 : Recommended Growth Rates Optimistic

Category / Year	2018-2023	2023-2028	2028-33	2033-38	2038-2043	2043-2048	2048-2053
Car/Jeep/Van	11.83%	11.08%	10.33%	9.58%	8.83%	8.08%	7.33%
Bus	8.10%	7.35%	6.85%	6.35%	5.85%	5.35%	4.85%
MiniBus	6.94%	6.19%	5.94%	5.69%	5.44%	5.19%	4.94%
LCV	6.94%	6.19%	5.94%	5.69%	5.44%	5.19%	4.94%
2- Axle	6.94%	6.19%	5.69%	5.19%	4.69%	4.19%	3.69%
3 - Axle	6.94%	6.19%	5.69%	5.19%	4.69%	4.19%	3.69%
4 to6 Axle	6.94%	6.19%	5.44%	4.69%	3.94%	3.19%	2.44%
7 and Above Axle	6.94%	6.19%	6.94%	7.69%	8.44%	9.19%	9.94%

Table 3-16 : Recommended Growth Rates Pessimistic

Category / Year	2018-2023	2023-2028	2028-33	2033-38	2038-2043	2043-2048	2048-2053
Car/Jeep/Van	10.83%	10.08%	9.33%	8.58%	7.83%	7.08%	6.33%
Bus	7.10%	6.35%	5.85%	5.35%	4.85%	4.35%	3.85%
MiniBus	5.94%	5.19%	4.94%	4.69%	4.44%	4.19%	3.94%
LCV	5.94%	5.19%	4.94%	4.69%	4.44%	4.19%	3.94%
2- Axle	5.94%	5.19%	4.69%	4.19%	3.69%	3.19%	2.69%
3 - Axle	5.94%	5.19%	4.69%	4.19%	3.69%	3.19%	2.69%
4 to6 Axle	5.94%	5.19%	4.44%	3.69%	2.94%	2.19%	1.44%
7 and Above Axle	5.94%	5.19%	5.94%	6.69%	7.44%	8.19%	8.94%

3.3.6 Diversion of Traffic

As discussed in competing road study section following routes work as competing route with project road for same origin and destination pair.

1. NH-1 Between Ambala- Panipat

2. Rohtak - Panipat Road (NH-09)

As of now the road quality between Ambala and Kaithal is not good. Road is under construction. In project road also there are part of road where construction is still not complete. ROB at Narwana and at Barwala are such locations where heavy congestion takes place during peak hour. Thus, some amount of traffic diverts to competing roads as mentioned above.

It can be assumed that once the road between Ambala and Kaithal and project road between Kaithal to Rajasthan border is fully complete some part of traffic which diverted on to NH-1 and Panipat Rohtak road would transfer back to project road.

The same is analyzed in previous section and additional growth of passenger and commercial traffic is taken in year 2019-20 and 2021-22 on account of expected traffic diversion/ attraction.

3.3.7 Bharatmala

Ministry of Road Transport and Govt. of India has taken up Bharatmala project to improve corridor connectivity between important development hubs. Bharatmala project has following components

a) National Corridors Efficiency Improvement

b) Economic Corridors Development

c) Inter-Corridor and Feeder Roads Development

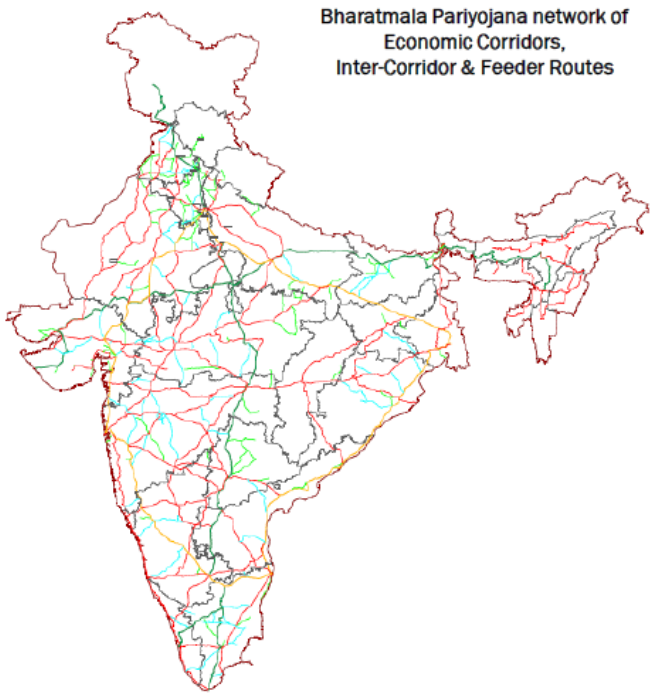
d) Coastal and Port Connectivity Roads

e) Border and International Connectivity Roads

f) Expressways

Project stretch forms part of Bharatmala corridor. Hence it is expected that quality and capacity of this corridor will increase in after completion of Bharatmala project.

In the state of Punjab, the economic corridor of 'Ajmer-Ludhiana', passing through Malerkotala-Sangrur-Sunam-Moonak, has been approved. This road joins project road at Hisar. Bharatmala projects are scheduled to complete by 2021-22.



It is expected that with completion of Bharatmala project, the primary and secondary network of road in project influence area would improve due to wholistic corridor driven approach of Bharatmala. This would result in sustainable growth and flow of traffic on project road alignment as well.

3.3.8 Traffic Forecast

Considering all the factors as discussed above an induced growth of 20% of passenger traffic and commercial traffic is taken. 50% of this induced growth is taken in year 2019-20 with immediate improvement of project road while as balance 50% is taken in year 2021-22 with completion of Bharatmala corridor.

Above growth rates are applied to base project traffic and traffic forecast.

It may be noted that target traffic for concession period modification for project is given as under

Target Date – 1st April 2023

Target Traffic – 21919 PCU

Same will be compared with traffic forecast

Table 3-17 : Total Tollable Traffic (Most Likely Growth Scenario) at Narwana Toll

Year	CAR	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU (Including Exempted)
2018-2019	2586	759	329	196	389	700	4	4963	10619
2019-2020	3137	808	354	228	454	815	4	5800	12155
2020-2021	3493	859	380	242	483	868	4	6329	13062
2021-2022	4238	915	408	282	563	1010	4	7420	15003
2022-2023	4718	974	439	300	598	1075	4	8108	16146
2023-2024	5217	1030	468	317	631	1136	4	8803	17272
2024-2025	5768	1089	499	335	666	1201	4	9562	18490
2025-2026	6378	1150	534	354	704	1269	4	10393	19808
2026-2027	7052	1216	570	374	743	1341	4	11300	21225
2027-2028	7797	1285	609	395	784	1417	4	12291	22754
2028-2029	8563	1354	647	415	824	1487	4	13294	24270
2029-2030	9405	1428	688	436	866	1560	4	14387	25902
2030-2031	10330	1505	732	459	911	1637	4	15578	27664
2031-2032	11346	1587	779	483	958	1718	4	16875	29562
2032-2033	12461	1673	828	508	1007	1803	4	18284	31598
2033-2034	13592	1759	876	532	1054	1878	4	19695	33596
2034-2035	14826	1851	927	557	1103	1957	4	21225	35742
2035-2036	16171	1947	981	583	1154	2039	4	22879	38038
2036-2037	17640	2048	1039	610	1208	2124	4	24673	40504
2037-2038	19242	2155	1100	639	1264	2213	4	26617	43105
2038-2039	20845	2262	1159	665	1317	2289	4	28541	45625
2039-2040	22581	2374	1221	692	1372	2368	4	30612	48316
2040-2041	24462	2491	1286	721	1429	2450	4	32843	51195
2041-2042	26499	2614	1354	751	1488	2534	4	35244	54265
2042-2043	28507	2737	1419	778	1543	2602	4	37590	57205
2043-2044	30667	2865	1487	807	1599	2672	4	40101	60331
2044-2045	32992	3000	1559	837	1657	2744	4	42793	63662
2045-2046	35491	3141	1635	868	1718	2818	4	45675	67210
2046-2047	38181	3289	1715	900	1781	2893	4	48763	70984

Table 3-18 : Total Tollable Traffic (Most Likely Growth Scenario) at Badopati Toll

Year	CAR	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU (Including Exempted)
2018-2019	4442	803	485	217	432	817	5	7201	13845
2019-2020	5389	854	522	253	503	951	5	8477	15935
2020-2021	6000	909	561	269	536	1012	5	9292	17200
2021-2022	7279	968	604	313	624	1179	5	10972	19878
2022-2023	8103	1031	650	333	664	1255	5	12041	21492
2023-2024	8960	1090	695	352	702	1326	5	13130	23099
2024-2025	9907	1152	743	372	742	1402	5	14323	24842
2025-2026	10955	1217	794	393	784	1482	5	15630	26727
2026-2027	12115	1286	848	415	829	1566	5	17064	28771
2027-2028	13397	1359	906	438	876	1655	5	18636	30987
2028-2029	14714	1432	964	461	922	1737	5	20235	33204
2029-2030	16160	1509	1026	485	970	1823	5	21978	35598
2030-2031	17747	1591	1091	510	1020	1913	5	23877	38177
2031-2032	19492	1677	1160	536	1072	2007	5	25949	40961
2032-2033	21408	1768	1234	563	1129	2106	5	28213	43981
2033-2034	23352	1860	1306	589	1181	2194	5	30487	46958
2034-2035	25472	1956	1382	616	1237	2285	5	32953	50158
2035-2036	27784	2057	1463	644	1296	2380	5	35629	53604
2036-2037	30307	2163	1549	674	1357	2480	5	38535	57320
2037-2038	33058	2275	1639	705	1420	2584	5	41686	61259
2038-2039	35812	2387	1727	735	1480	2673	5	44819	65116
2039-2040	38794	2505	1819	766	1542	2765	5	48196	69244
2040-2041	42025	2628	1915	798	1606	2860	5	51837	73663
2041-2042	45526	2758	2018	831	1673	2959	5	55770	78413
2042-2043	48976	2887	2115	862	1735	3039	5	59619	82987
2043-2044	52687	3023	2218	894	1799	3121	5	63747	87868
2044-2045	56680	3164	2326	927	1865	3205	5	68172	93071
2045-2046	60975	3312	2439	961	1934	3291	5	72917	98623
2046-2047	65597	3467	2557	996	2005	3379	5	78006	104546

Table 3-19 : Total Tollable Traffic (Most Likely Growth Scenario) at Chaudhriwas Toll

Year	CAR	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU (Including Exempted)
2018-2019	3377	771	181	273	543	1208	3	6356	13384
2019-2020	4097	820	195	318	632	1406	3	7471	15525
2020-2021	4562	872	210	339	672	1496	3	8154	16713
2021-2022	5535	928	227	394	782	1742	3	9611	19435
2022-2023	6161	987	244	419	832	1854	3	10500	20942
2023-2024	6813	1043	261	443	879	1960	3	11402	22432
2024-2025	7533	1102	279	468	929	2071	3	12385	24032
2025-2026	8329	1165	298	494	981	2189	3	13459	25759
2026-2027	9209	1231	319	522	1036	2314	3	14634	27626
2027-2028	10184	1301	341	552	1094	2445	3	15920	29640
2028-2029	11186	1372	362	581	1150	2566	3	17220	31626
2029-2030	12286	1446	385	611	1209	2693	3	18633	33759
2030-2031	13493	1524	409	643	1272	2826	3	20170	36054
2031-2032	14818	1606	434	676	1338	2966	3	21841	38520
2032-2033	16274	1693	461	711	1407	3113	3	23662	41177
2033-2034	17752	1780	488	744	1473	3243	3	25483	43765
2034-2035	19365	1872	517	778	1542	3379	3	27456	46541
2035-2036	21123	1968	547	815	1614	3521	3	29591	49517
2036-2037	23041	2070	578	853	1689	3669	3	31903	52704
2037-2038	25131	2177	611	893	1768	3823	3	34406	56104
2038-2039	27224	2285	643	931	1842	3954	3	36882	59380
2039-2040	29492	2398	676	970	1918	4090	3	39547	62874
2040-2041	31947	2516	712	1010	1998	4231	3	42417	66608
2041-2042	34607	2641	751	1052	2082	4377	3	45513	70608

Year	CAR	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU (Including Exempted)
2042-2043	37230	2766	788	1091	2158	4495	3	48531	74405
2043-2044	40052	2895	827	1131	2238	4616	3	51762	78442
2044-2045	43088	3031	867	1172	2321	4740	3	55222	82732
2045-2046	46353	3172	909	1215	2406	4868	3	58926	87295
2046-2047	49867	3321	954	1260	2494	4999	3	62898	92156

Table 3-20 : Total Tollable Traffic (Pessimistic Growth Scenario) at Narwana Toll

Year	CAR	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Vehicle	PCU (Including Exempted Vehicle)
2018-2019	2575	757	328	195	388	697	4	4944	10582
2019-2020	3112	802	351	226	450	808	4	5753	12062
2020-2021	3449	850	376	239	476	856	4	6250	12908
2021-2022	4168	901	402	277	552	993	4	7297	14769
2022-2023	4620	954	430	293	584	1052	4	7937	15824
2023-2024	5086	1003	457	307	614	1107	4	8578	16856
2024-2025	5600	1054	485	323	645	1164	4	9275	17962
2025-2026	6165	1108	516	340	678	1224	4	10035	19155
2026-2027	6787	1166	548	357	712	1287	4	10861	20432
2027-2028	7471	1227	583	375	748	1354	4	11762	21812
2028-2029	8169	1288	618	392	782	1414	4	12667	23166
2029-2030	8931	1351	654	410	818	1476	4	13644	24611
2030-2031	9764	1418	692	429	856	1542	4	14705	26165
2031-2032	10674	1488	732	449	896	1611	4	15854	27831
2032-2033	11669	1562	775	469	937	1682	4	17098	29609
2033-2034	12670	1636	816	488	976	1744	4	18334	31340
2034-2035	13757	1712	860	508	1016	1809	4	19666	33190
2035-2036	14936	1792	906	529	1058	1876	4	21101	35162
2036-2037	16217	1876	954	551	1101	1945	4	22648	37265
2037-2038	17608	1964	1005	574	1147	2017	4	24319	39472
2038-2039	18987	2051	1053	595	1189	2076	4	25955	41580
2039-2040	20474	2143	1104	617	1232	2137	4	27711	43827
2040-2041	22077	2238	1157	640	1278	2199	4	29593	46218
2041-2042	23806	2338	1214	664	1325	2264	4	31615	48773
2042-2043	25492	2436	1267	685	1367	2313	4	33564	51175
2043-2044	27296	2538	1321	707	1410	2364	4	35640	53718
2044-2045	29229	2644	1379	730	1454	2416	4	37856	56419
2045-2046	31298	2755	1439	753	1500	2469	4	40218	59280
2046-2047	33514	2870	1502	777	1548	2523	4	42738	62317

Table 3-21 : Total Tollable Traffic (Pessimistic Growth Scenario) at Badopati Toll

Year	CAR	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Vehicle	PCU (Including Exempted Vehicle)
2018-2019	4422	799	481	216	430	813	5	7166	13780
2019-2020	5342	846	515	251	499	943	5	8401	15801
2020-2021	5920	895	552	266	528	999	5	9165	16981
2021-2022	7153	948	591	309	612	1158	5	10776	19541
2022-2023	7928	1004	632	328	649	1226	5	11772	21032
2023-2024	8726	1055	673	346	683	1289	5	12777	22505
2024-2025	9605	1110	716	364	719	1356	5	13875	24096
2025-2026	10572	1167	761	383	756	1426	5	15070	25804
2026-2027	11639	1227	810	403	795	1499	5	16378	27653
2027-2028	12813	1290	861	424	836	1577	5	17806	29651
2028-2029	14009	1353	912	444	875	1647	5	19245	31628
2029-2030	15316	1420	965	465	916	1720	5	20807	33752
2030-2031	16744	1490	1022	487	958	1797	5	22503	36038
2031-2032	18305	1563	1082	510	1003	1877	5	24345	38499
2032-2033	20013	1640	1146	534	1050	1960	5	26348	41149
2033-2034	21730	1717	1208	556	1094	2032	5	28342	43738
2034-2035	23595	1798	1272	579	1140	2106	5	30495	46507
2035-2036	25619	1883	1340	603	1188	2184	5	32822	49480
2036-2037	27816	1971	1411	628	1237	2265	5	35333	52662
2037-2038	30203	2063	1486	654	1288	2349	5	38048	56021
2038-2039	32568	2155	1557	678	1335	2418	5	40716	59260
2039-2040	35118	2251	1632	703	1384	2489	5	43582	62721
2040-2041	37866	2351	1712	728	1435	2562	5	46659	66415
2041-2042	40831	2455	1796	754	1487	2637	5	49965	70360
2042-2043	43721	2558	1874	778	1534	2695	5	53165	74112
2043-2044	46816	2666	1957	802	1583	2754	5	56583	78103
2044-2045	50129	2778	2043	827	1633	2814	5	60229	82337
2045-2046	53676	2894	2132	853	1684	2876	5	64120	86835
2046-2047	57476	3016	2224	880	1737	2939	5	68277	91617

Table 3-22 : Total Tollable Traffic (Pessimistic Growth Scenario) at ChaudhriwasToll

Year	CAR	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Vehicle	PCU (Including Exempted Vehicle)
2018-2019	3360	767	180	272	540	1202	3	6324	13319
2019-2020	4059	812	193	315	626	1393	3	7401	15383
2020-2021	4499	859	206	333	663	1476	3	8039	16483

Year	CAR	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Vehicle	PCU (Including Exempted Vehicle)
2021-2022	5435	910	220	386	768	1711	3	9433	19081
2022-2023	6023	964	235	409	813	1813	3	10260	20471
2023-2024	6631	1013	249	430	854	1907	3	11087	21817
2024-2025	7299	1065	264	452	898	2006	3	11987	23264
2025-2026	8034	1120	280	475	944	2110	3	12966	24819
2026-2027	8843	1178	297	499	993	2219	3	14032	26489
2027-2028	9735	1239	316	525	1044	2334	3	15196	28292
2028-2029	10643	1300	335	549	1093	2438	3	16361	30051
2029-2030	11636	1363	354	574	1144	2546	3	17620	31924
2030-2031	12722	1431	374	600	1197	2659	3	18986	33933
2031-2032	13909	1502	395	629	1252	2778	3	20468	36093
2032-2033	15206	1576	418	659	1310	2902	3	22074	38408
2033-2034	16510	1649	440	686	1364	3009	3	23661	40629
2034-2035	17927	1727	463	715	1420	3120	3	25375	43003
2035-2036	19465	1808	487	745	1479	3235	3	27222	45537
2036-2037	21135	1892	513	776	1541	3355	3	29215	48248
2037-2038	22947	1981	540	808	1606	3479	3	31364	51124
2038-2039	24743	2068	566	838	1665	3582	3	33465	53859
2039-2040	26680	2160	593	869	1727	3687	3	35719	56766
2040-2041	28770	2256	622	901	1791	3795	3	38138	59861
2041-2042	31023	2356	652	934	1857	3906	3	40731	63151
2042-2043	33219	2454	681	964	1916	3992	3	43229	66235
2043-2044	35569	2557	710	995	1977	4079	3	45890	69494
2044-2045	38086	2664	740	1027	2040	4168	3	48728	72947

Year	CAR	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Vehicle	PCU (Including Exempted Vehicle)
2045-2046	40783	2776	771	1060	2105	4259	3	51757	76608
2046-2047	43670	2893	804	1094	2172	4352	3	54988	80491

Similarly, traffic projections for Optimistic scenario are given as under

Table 3-23 : Total Tollable Traffic (Optimistic Growth Scenario) at Narwana Toll

Year	CAR	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Vehicle	PCU
2018-2019	2598	763	331	196	391	703	4	4986	10662
2019-2020	3165	816	357	229	458	821	4	5850	12246
2020-2021	3539	873	385	245	489	878	4	6413	13216
2021-2022	4312	934	416	287	572	1026	4	7551	15243
2022-2023	4822	999	450	306	611	1097	4	8289	16476
2023-2024	5356	1060	483	324	649	1165	4	9041	17707
2024-2025	5949	1126	518	343	689	1237	4	9866	19039
2025-2026	6608	1195	556	363	731	1313	4	10770	20477
2026-2027	7340	1269	597	385	776	1395	4	11766	22048
2027-2028	8153	1347	641	409	823	1481	4	12858	23746
2028-2029	8995	1426	685	432	869	1562	4	13973	25447
2029-2030	9925	1510	732	456	918	1647	4	15192	27285
2030-2031	10950	1600	782	481	969	1736	4	16522	29262
2031-2032	12081	1694	836	508	1024	1831	4	17978	31410
2032-2033	13329	1794	893	537	1081	1931	4	19569	33728
2033-2034	14606	1896	950	565	1137	2021	4	21179	36029
2034-2035	16005	2004	1010	594	1195	2116	4	22928	38502
2035-2036	17538	2118	1073	624	1257	2215	4	24829	41162

Year	CAR	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Vehicle	PCU
2036-2037	19219	2238	1140	656	1322	2319	4	26898	44029
2037-2038	21060	2365	1213	690	1390	2428	4	29150	47076
2038-2039	22920	2493	1284	722	1455	2524	4	31402	50064
2039-2040	24943	2628	1360	756	1522	2623	4	33836	53266
2040-2041	27146	2771	1440	791	1593	2726	4	36471	56705
2041-2042	29542	2922	1525	828	1667	2834	4	39322	60401
2042-2043	31929	3073	1607	863	1737	2924	4	42137	63981
2043-2044	34508	3233	1693	899	1809	3018	4	45164	67805
2044-2045	37296	3401	1783	936	1884	3115	4	48419	71887
2045-2046	40309	3577	1878	974	1963	3214	4	51919	76246
2046-2047	43566	3763	1979	1015	2045	3316	4	55688	80913

Table 3-24 : Total Tollable Traffic (Optimistic Growth Scenario) at Badopati Toll

Year	CAR	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Vehicle	PCU
2018-2019	4463	806	487	218	434	821	5	7234	13903
2019-2020	5438	861	526	255	508	960	5	8553	16068
2020-2021	6081	920	569	273	544	1026	5	9418	17421
2021-2022	7408	983	615	319	636	1200	5	11166	20211
2022-2023	8283	1051	665	341	680	1283	5	12308	21945
2023-2024	9200	1115	714	362	722	1362	5	13480	23685
2024-2025	10220	1184	766	384	767	1446	5	14772	25581
2025-2026	11353	1257	822	407	814	1535	5	16193	27640
2026-2027	12610	1334	882	432	864	1629	5	17756	29879
2027-2028	14007	1416	946	458	918	1730	5	19480	32326
2028-2029	15454	1501	1010	484	970	1823	5	21247	34786

Year	CAR	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Vehicle	PCU
2029-2030	17049	1590	1079	511	1025	1922	5	23181	37456
2030-2031	18811	1684	1153	540	1084	2026	5	25303	40357
2031-2032	20755	1784	1231	571	1146	2136	5	27628	43505
2032-2033	22898	1890	1316	603	1211	2252	5	30175	46923
2033-2034	25091	1998	1400	634	1274	2358	5	32760	50338
2034-2035	27495	2112	1489	667	1340	2468	5	35576	54022
2035-2036	30129	2232	1583	702	1410	2583	5	38644	58001
2036-2037	33015	2358	1683	739	1484	2704	5	41988	62307
2037-2038	36178	2492	1791	777	1561	2831	5	45635	66911
2038-2039	39372	2628	1897	814	1635	2942	5	49293	71460
2039-2040	42848	2772	2008	852	1712	3057	5	53254	76347
2040-2041	46632	2923	2125	892	1792	3178	5	57547	81613
2041-2042	50749	3082	2249	934	1876	3303	5	62198	87281
2042-2043	54849	3241	2368	973	1954	3408	5	66798	92800
2043-2044	59281	3408	2494	1014	2036	3517	5	71755	98720
2044-2045	64069	3585	2628	1057	2121	3629	5	77094	105064
2045-2046	69244	3771	2768	1101	2209	3744	5	82842	111851
2046-2047	74838	3966	2917	1147	2302	3864	5	89039	119142

Table 3-25 : Total Tollable Traffic (Optimistic Growth Scenario) at Chaudriwas Toll

Year	CAR	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Vehicle	PCU
2018-2019	3391	773	181	274	545	1214	3	6381	13437
2019-2020	4131	827	196	320	637	1420	3	7534	15656
2020-2021	4620	884	213	342	681	1519	3	8262	16937
2021-2022	5629	945	231	399	796	1776	3	9779	19776
2022-2023	6295	1011	249	426	850	1899	3	10733	21405
2023-2024	6993	1073	267	452	902	2017	3	11707	23028
2024-2025	7767	1139	286	479	957	2142	3	12773	24779
2025-2026	8628	1209	307	509	1015	2274	3	13945	26680
2026-2027	9584	1283	330	540	1078	2415	3	15233	28747
2027-2028	10647	1363	354	573	1144	2564	3	16648	30983
2028-2029	11747	1443	378	605	1209	2704	3	18089	33211
2029-2030	12960	1528	403	639	1277	2851	3	19661	35609
2030-2031	14298	1619	429	675	1349	3006	3	21379	38198
2031-2032	15774	1715	459	714	1425	3170	3	23260	41007
2032-2033	17403	1817	490	755	1506	3342	3	25316	44038
2033-2034	19070	1920	521	794	1584	3499	3	27391	47027
2034-2035	20896	2029	553	835	1666	3663	3	29645	50237
2035-2036	22897	2144	588	878	1752	3835	3	32097	53694
2036-2037	25090	2265	626	924	1842	4015	3	34765	57419
2037-2038	27493	2394	666	972	1938	4203	3	37669	61413
2038-2039	29920	2524	705	1018	2028	4369	3	40567	65307
2039-2040	32561	2662	747	1066	2123	4541	3	43703	69484
2040-2041	35436	2807	791	1116	2222	4720	3	47095	73961

Year	CAR	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Vehicle	PCU
2041-2042	38564	2959	837	1168	2326	4906	3	50763	78760
2042-2043	41680	3113	882	1217	2423	5063	3	54381	83387
2043-2044	45047	3275	930	1268	2524	5225	3	58272	88326
2044-2045	48686	3445	979	1322	2629	5392	3	62456	93595
2045-2046	52620	3623	1031	1378	2738	5564	3	66957	99221
2046-2047	56871	3811	1086	1436	2853	5742	3	71802	105239

3.3.9 Modification in Concession Period

As per Article 29 of the concession agreement, if actual traffic on the project falls short or exceeds Target Traffic on project highway on defined date, concession period shall be modified subject to calculation stipulated therein. For Kaithal – Raj Border project, the Target Date and Target Traffic are defined as under:

Target Date – 1st April 2023

Target Traffic – 21919 PCU

Same will be compared with traffic forecast

It was observed that as per traffic projections, traffic volume falls short of target traffic in all scenarios. Extension of concession period is worked out as per provisions of concession agreement which is summarized as under -

Scenario	**Projected Traffic in PCUs (average of traffic on target date, one year before target date and one year after target date)**	**Expected extension in Concession Period**
Optimistic	19942	3.65 Years
Pessimistic	19099	4.86 Years
Most Likely	19522	4.05 Years

Accordingly, traffic and revenue projections have been worked out up to year 2046-47.

CHAPTER 4

FORECAST OF TOLL REVENUE

4.1 General

This chapter presents the estimates of traffic forecast, tolling categories, tolling rate calculations and toll revenue of the project.

4.2 Discount Categories

As per the Toll Notification (Schedule R) the following discounts have been considered:

1. Monthly Pass: For frequent users monthly pass would have be issued at fee equal to 2/3rd fee of 50 passes.
2. Daily Pass (for Return Trip): A 75% discount will be offered on the return trip.
3. Single Journey: Full single journey toll would be charged to this category of vehicles.
4. Local Car / Jeep / Van to be charged at Rs 150 per month (2007)
5. Local commercial Traffic other than Car/ Jeep/ Van to be charged at 50% rate

4.3 Segmentation of traffic

Segmented traffic data is available from Toll Plaza. The same is used to filter traffic volume into various categories of discount and classification.

4.4 Estimation of Toll Rates

As per the recent MORTH notification dated January 12, 2011, the following Base rate of fee for the categories mentioned in the table stands true in the National Highways Fee Rules, 2008.

Table 4-1 : Base Toll Rates 2007 - 08

Type of Vehicle	Base Rate of Fee / Km (in Rs.)
Car, Jeep, Van or Light Motor Vehicle	0.65
Light Commercial Vehicle, Light Goods Vehicle or Mini Bus	1.05
Bus or Truck (2 Axle)	2.2
Three Axle commercial vehicles	2.4
Heavy Construction Machinery (HCM) or Earth Moving Equipment (EME) or Multi Axle Vehicle (MAV) (4-6 axles)	3.45
Oversized Vehicle (seven or more axles)	4.2

Factor of inflation / growth has been incorporated as per Schedule R. WPI are available up to 2017. A moderate growth in Wholesale Price Index (WPI) has been assumed after that.

There are number of bypasses and structures in each package. Equivalent length for structures is added to tollable length at each toll plaza. Bypasses are to be charged 1.5 times the normal fee. This has been incorporated in rates. Following table provides details of tollable lengths at each toll plaza

Partial COD was achieved in project on 7th September 2017. It is expected that in July 2018, almost 97% of the work will be completed and tollable length would be increased to total 187.215 Km against 192.434. Project is expected to achieve complete COD in current year 218-19. Thus for revenue projection full tollable length is taken from year 2018-19. Following table provides tollable length. The toll rates are revised accordingly.

Table 4-2 : Tollable Length Current

Toll Plaza Chainage	Length (Km)	Bypass length (Km)	Tollable Highway Length a
Narwana	47.65	9.15	56.155
Badopati	32.35	33.75	82.975
Chaudhriwas	33.909	9.45	48.085

Toll rates (rounded to nearest Rs. five) for the concession period are worked out and same are depicted below for each toll plaza.

The adopted Toll Rates for all categories of vehicles is given tables below.

Table 4-3 : Year wise Toll Rates Single Journey at Narwana Toll (Rs. Rupees)

Year	Car	Mini Bus /LCV	Bus	Truck	3-Axle Commercial Vehicle	Multi Axle	Oversized Vehicle
2018	65	105	220	220	240	345	420
2019	70	110	230	230	255	365	445
2020	70	115	245	245	265	380	465
2021	75	120	255	255	280	400	490
2022	80	130	270	270	295	420	515
2023	85	135	285	285	310	445	540
2024	90	140	295	295	325	465	565
2025	90	150	310	310	340	490	595
2026	95	155	330	330	355	515	625
2027	100	165	345	345	375	540	660
2028	105	175	360	360	395	570	690
2029	110	180	380	380	415	595	725
2030	120	190	400	400	435	630	765
2031	125	200	420	420	460	660	805
2032	130	210	445	445	485	695	845
2033	140	225	465	465	510	730	890
2034	145	235	490	490	535	770	935
2035	155	245	515	515	565	810	985
2036	160	260	545	545	595	855	1040
2037	170	275	575	575	625	900	1095
2038	180	290	605	605	660	945	1150
2039	190	305	635	635	695	995	1215
2040	200	320	670	670	730	1050	1280
2041	210	335	705	705	770	1110	1350
2042	220	355	745	745	810	1170	1420
2043	230	375	785	785	855	1230	1500
2044	245	395	830	830	905	1300	1580
2045	260	415	875	875	955	1370	1670
2046	270	440	920	920	1005	1445	1760
2047	285	465	970	970	1060	1525	1855

Table 4-4 : Year wise Toll Rates Return Journey at Narwana Toll (Rs. Rupees)

Year	Car	Mini Bus /LCV	Bus	Truck	3-Axle Commercial Vehicle	Multi Axle	Oversized Vehicle
2018	100	160	330	330	360	520	635
2019	105	165	350	350	380	545	665
2020	110	175	365	365	400	575	700
2021	115	185	385	385	420	600	735
2022	120	195	405	405	440	635	770
2023	125	200	425	425	460	665	810
2024	130	210	445	445	485	700	850
2025	140	225	470	470	510	735	895
2026	145	235	490	490	535	770	940
2027	155	245	515	515	565	810	985
2028	160	260	545	545	590	850	1035
2029	170	275	570	570	625	895	1090
2030	175	285	600	600	655	940	1145
2031	185	300	630	630	690	990	1205
2032	195	315	665	665	725	1040	1270
2033	205	335	700	700	765	1095	1335
2034	215	350	735	735	805	1155	1405
2035	230	370	775	775	845	1215	1480
2036	240	390	815	815	890	1280	1560
2037	255	410	860	860	940	1350	1640
2038	265	430	905	905	990	1420	1730
2039	280	455	955	955	1040	1495	1820
2040	295	480	1005	1005	1095	1575	1920
2041	315	505	1060	1060	1155	1660	2025
2042	330	535	1115	1115	1220	1750	2135
2043	350	560	1180	1180	1285	1845	2250
2044	365	595	1240	1240	1355	1950	2370
2045	385	625	1310	1310	1430	2055	2500
2046	410	660	1380	1380	1510	2170	2640
2047	430	695	1460	1460	1590	2285	2785

Table 4-5 : Year wise Toll Rates Monthly Pass at Narwana Toll (Rs. Rupees)

Year	Car	Mini Bus /LCV	Bus	Truck	3-Axle Commercial Vehicle	Multi Axle	Oversized Vehicle
2018	2180	3520	7375	7375	8045	11565	14080
2019	2290	3695	7745	7745	8445	12145	14785
2020	2400	3880	8130	8130	8870	12750	15520
2021	2520	4075	8535	8535	9315	13390	16300
2022	2650	4280	8965	8965	9780	14060	17115
2023	2780	4495	9415	9415	10275	14770	17980
2024	2925	4720	9895	9895	10790	15515	18885
2025	3070	4960	10395	10395	11340	16300	19845
2026	3225	5215	10925	10925	11915	17130	20855
2027	3390	5480	11480	11480	12525	18005	21920
2028	3565	5760	12070	12070	13165	18925	23040
2029	3750	6055	12690	12690	13845	19900	24225
2030	3945	6370	13345	13345	14560	20930	25480
2031	4150	6700	14040	14040	15315	22015	26800
2032	4365	7050	14770	14770	16110	23160	28195
2033	4590	7420	15540	15540	16955	24370	29670
2034	4835	7805	16360	16360	17845	25655	31230
2035	5090	8220	17220	17220	18785	27005	32875
2036	5360	8655	18135	18135	19780	28435	34620
2037	5645	9115	19100	19100	20835	29950	36460
2038	5945	9600	20120	20120	21945	31550	38410
2039	6265	10115	21195	21195	23125	33240	40465
2040	6600	10660	22340	22340	24370	35030	42645
2041	6955	11240	23545	23545	25685	36925	44950
2042	7335	11845	24825	24825	27080	38925	47390
2043	7735	12490	26175	26175	28555	41045	49970
2044	8155	13175	27605	27605	30115	43290	52700
2045	8605	13895	29120	29120	31765	45660	55590
2046	9075	14660	30720	30720	33510	48175	58645
2047	9575	15470	32415	32415	35360	50830	61880

Table 4-6 : Year wise Toll Rates Single Journey at Badopati Toll (Rs. Rupees)

Year	Car	Mini Bus /LCV	Bus	Truck	3-Axle Commercial Vehicle	Multi Axle	Oversized Vehicle
2018	90	145	300	300	325	470	570
2019	95	150	315	315	345	490	600
2020	95	155	330	330	360	515	630
2021	100	165	345	345	380	545	660
2022	105	175	365	365	395	570	695
2023	115	180	380	380	415	600	730
2024	120	190	400	400	440	630	765
2025	125	200	420	420	460	660	805
2026	130	210	445	445	485	695	845
2027	140	220	465	465	510	730	890
2028	145	235	490	490	535	770	935
2029	150	245	515	515	560	805	985
2030	160	260	540	540	590	850	1035
2031	170	270	570	570	620	895	1085
2032	175	285	600	600	655	940	1145
2033	185	300	630	630	690	990	1205
2034	195	315	665	665	725	1040	1265
2035	205	335	700	700	760	1095	1335
2036	215	350	735	735	800	1155	1405
2037	230	370	775	775	845	1215	1480
2038	240	390	815	815	890	1280	1560
2039	255	410	860	860	940	1350	1640
2040	270	430	905	905	990	1420	1730
2041	280	455	955	955	1040	1500	1825
2042	295	480	1005	1005	1100	1580	1920
2043	315	505	1060	1060	1160	1665	2025
2044	330	535	1120	1120	1220	1755	2135
2045	350	565	1180	1180	1290	1850	2255
2046	370	595	1245	1245	1360	1955	2380
2047	390	625	1315	1315	1435	2060	2510

Table 4-7 : Year wise Toll Rates Return Journey at Badopati Toll (Rs. Rupees)

Year	Car	Mini Bus /LCV	Bus	Truck	3-Axle Commercial Vehicle	Multi Axle	Oversized Vehicle
2018	135	215	450	450	490	705	855
2019	140	225	470	470	515	740	900
2020	145	235	495	495	540	775	945
2021	155	250	520	520	565	815	990
2022	160	260	545	545	595	855	1040
2023	170	275	575	575	625	900	1095
2024	180	285	600	600	655	945	1150
2025	185	300	630	630	690	990	1205
2026	195	315	665	665	725	1040	1270
2027	205	335	700	700	760	1095	1335
2028	215	350	735	735	800	1150	1400

Year	Car	Mini Bus /LCV	Bus	Truck	3-Axle Commercial Vehicle	Multi Axle	Oversized Vehicle
2029	230	370	770	770	840	1210	1475
2030	240	385	810	810	885	1275	1550
2031	250	410	855	855	930	1340	1630
2032	265	430	900	900	980	1410	1715
2033	280	450	945	945	1030	1485	1805
2034	295	475	995	995	1085	1560	1900
2035	310	500	1050	1050	1145	1645	2000
2036	325	525	1105	1105	1205	1730	2105
2037	345	555	1160	1160	1270	1820	2220
2038	360	585	1225	1225	1335	1920	2335
2039	380	615	1290	1290	1405	2020	2460
2040	400	650	1360	1360	1485	2130	2595
2041	425	685	1430	1430	1565	2245	2735
2042	445	720	1510	1510	1645	2370	2885
2043	470	760	1590	1590	1735	2495	3040
2044	495	800	1680	1680	1830	2635	3205
2045	525	845	1770	1770	1930	2780	3380
2046	550	890	1870	1870	2040	2930	3570
2047	585	940	1970	1970	2150	3090	3765

Table 4-8 : Year wise Toll Rates Monthly Pass at Badopati Toll (Rs. Rupees)

Year	Car	Mini Bus /LCV	Bus	Truck	3-Axle Commercial Vehicle	Multi Axle	Oversized Vehicle
2018	2945	4760	9970	9970	10880	15635	19035
2019	3095	4995	10470	10470	11420	16415	19985
2020	3250	5245	10990	10990	11990	17235	20985
2021	3410	5510	11540	11540	12590	18100	22035
2022	3580	5785	12120	12120	13225	19010	23140
2023	3760	6075	12730	12730	13890	19965	24305
2024	3950	6385	13375	13375	14590	20975	25535
2025	4150	6705	14055	14055	15330	22035	26830
2026	4365	7050	14765	14765	16110	23160	28190
2027	4585	7410	15520	15520	16930	24340	29630
2028	4820	7785	16315	16315	17800	25585	31150
2029	5070	8190	17155	17155	18715	26905	32750
2030	5330	8610	18040	18040	19680	28295	34445
2031	5605	9060	18980	18980	20705	29760	36230
2032	5900	9530	19965	19965	21780	31310	38120
2033	6210	10030	21010	21010	22920	32950	40115
2034	6535	10555	22115	22115	24125	34680	42220
2035	6880	11110	23280	23280	25400	36510	44450
2036	7245	11700	24515	24515	26745	38445	46800
2037	7630	12325	25820	25820	28165	40490	49290
2038	8035	12980	27200	27200	29670	42650	51925
2039	8465	13675	28655	28655	31260	44940	54710
2040	8925	14415	30200	30200	32945	47360	57655
2041	9405	15195	31830	31830	34725	49920	60770

Year	Car	Mini Bus /LCV	Bus	Truck	3-Axle Commercial Vehicle	Multi Axle	Oversized Vehicle
2042	9915	16015	33560	33560	36610	52625	64065
2043	10455	16890	35385	35385	38605	55490	67555
2044	11025	17810	37320	37320	40710	58525	71245
2045	11630	18790	39365	39365	42945	61730	75150
2046	12270	19820	41530	41530	45305	65125	79285
2047	12945	20915	43820	43820	47805	68720	83660

Table 4-9 : Year wise Toll Rates Single Journey at Chaudhriwas Toll (Rs. Rupees)

Year	Car	Mini Bus /LCV	Bus	Truck	3-Axle Commercial Vehicle	Multi Axle	Oversized Vehicle
2018	50	85	175	175	190	270	330
2019	55	85	180	180	200	285	345
2020	55	90	190	190	210	300	365
2021	60	95	200	200	220	315	385
2022	60	100	210	210	230	330	400
2023	65	105	220	220	240	345	425
2024	70	110	235	235	255	365	445
2025	70	115	245	245	265	385	465
2026	75	125	255	255	280	405	490
2027	80	130	270	270	295	425	515
2028	85	135	285	285	310	445	540
2029	90	140	300	300	325	470	570
2030	95	150	315	315	340	490	600
2031	95	155	330	330	360	515	630
2032	105	165	345	345	380	545	665
2033	110	175	365	365	400	575	695
2034	115	185	385	385	420	605	735
2035	120	195	405	405	440	635	775
2036	125	205	425	425	465	670	815
2037	135	215	450	450	490	705	855
2038	140	225	475	475	515	740	905
2039	145	240	500	500	545	780	950
2040	155	250	525	525	575	825	1000
2041	165	265	555	555	605	870	1055
2042	170	280	585	585	635	915	1115
2043	180	295	615	615	670	965	1175
2044	190	310	650	650	710	1015	1240
2045	200	325	685	685	745	1075	1305
2046	215	345	720	720	790	1130	1380
2047	225	365	760	760	830	1195	1455

Table 4-10 : Year wise Toll Rates Return Pass at Chaudhriwas Toll (Rs. Rupees)

Year	Car	Mini Bus /LCV	Bus	Truck	3-Axle Commercial Vehicle	Multi Axle	Oversized Vehicle
2018	75	125	260	260	285	410	495
2019	80	130	275	275	300	430	520
2020	85	135	285	285	315	450	545
2021	90	145	300	300	330	470	575
2022	95	150	315	315	345	495	605
2023	100	160	330	330	360	520	635
2024	105	165	350	350	380	545	665
2025	110	175	365	365	400	575	700
2026	115	185	385	385	420	605	735
2027	120	195	405	405	440	635	775
2028	125	205	425	425	465	665	810
2029	130	215	445	445	490	700	855
2030	140	225	470	470	515	740	900
2031	145	235	495	495	540	775	945
2032	155	250	520	520	570	815	995
2033	160	260	550	550	600	860	1045
2034	170	275	575	575	630	905	1100
2035	180	290	605	605	660	950	1160
2036	190	305	640	640	695	1005	1220
2037	200	320	675	675	735	1055	1285
2038	210	340	710	710	775	1110	1355
2039	220	355	745	745	815	1170	1425
2040	235	375	790	790	860	1235	1505
2041	245	395	830	830	905	1300	1585
2042	260	420	875	875	955	1370	1670
2043	275	440	925	925	1005	1445	1760
2044	290	465	975	975	1060	1525	1860
2045	305	490	1025	1025	1120	1610	1960
2046	320	515	1085	1085	1180	1700	2070
2047	340	545	1145	1145	1245	1790	2180

Table 4-11 : Year wise Toll Rates Monthly Pass at Chaudhriwas Toll (Rs. Rupees)

Year	Car	Mini Bus /LCV	Bus	Truck	3-Axle Commercial Vehicle	Multi Axle	Oversized Vehicle
2018	1705	2760	5780	5780	6305	9060	11030
2019	1790	2895	6065	6065	6620	9515	11580
2020	1880	3040	6370	6370	6950	9990	12160
2021	1975	3190	6690	6690	7295	10490	12770
2022	2075	3355	7025	7025	7665	11015	13410
2023	2180	3520	7380	7380	8050	11570	14085
2024	2290	3700	7750	7750	8455	12155	14795
2025	2405	3885	8145	8145	8885	12770	15545
2026	2530	4085	8560	8560	9335	13420	16335
2027	2655	4295	8995	8995	9810	14105	17170
2028	2795	4515	9455	9455	10315	14830	18050
2029	2935	4745	9940	9940	10845	15590	18980
2030	3090	4990	10455	10455	11405	16395	19960

Year	Car	Mini Bus /LCV	Bus	Truck	3-Axle Commercial Vehicle	Multi Axle	Oversized Vehicle
2031	3250	5250	11000	11000	12000	17245	20995
2032	3420	5520	11570	11570	12625	18145	22090
2033	3600	5810	12175	12175	13285	19095	23245
2034	3785	6115	12815	12815	13980	20100	24465
2035	3985	6440	13490	13490	14720	21160	25755
2036	4195	6780	14205	14205	15500	22280	27120
2037	4420	7140	14960	14960	16325	23465	28565
2038	4655	7525	15760	15760	17195	24715	30090
2039	4905	7925	16605	16605	18115	26045	31705
2040	5170	8355	17500	17500	19090	27445	33410
2041	5450	8805	18445	18445	20125	28930	35215
2042	5745	9280	19445	19445	21215	30495	37125
2043	6060	9785	20505	20505	22370	32155	39150
2044	6390	10320	21625	21625	23595	33915	41285
2045	6740	10890	22810	22810	24885	35775	43550
2046	7110	11485	24065	24065	26255	37740	45945
2047	7505	12120	25395	25395	27705	39825	48480

4.5 Toll Revenue

As indicated earlier, toll revenue on the Project Road has been calculated under in all scenarios. The estimates of toll revenue under growth scenarios are presented in the following section.

4.6 Toll Revenue at all toll plazas under Scenarios

Toll Revenue estimates under most likely scenario up to 2047 (End of Concession Period with extension) starting from the year 2018-19 are shown in tables below.

Table 4-12 : Toll Revenue Most Likely Scenario (Rs. Crores) at Narwana

Year	Revenue
2017-2018	21.08
2018-2019	23.92
2019-2020	28.87
2020-2021	32.69
2021-2022	39.93
2022-2023	45.20
2023-2024	50.83
2024-2025	56.83
2025-2026	63.86
2026-2027	71.92
2027-2028	81.34

Year	Revenue
2028-2029	90.60
2029-2030	102.17
2030-2031	114.35
2031-2032	128.69
2032-2033	144.87
2033-2034	161.07
2034-2035	181.15
2035-2036	202.41
2036-2037	226.70
2037-2038	253.53
2038-2039	282.64
2039-2040	315.78
2040-2041	351.96
2041-2042	391.72
2042-2043	433.92
2043-2044	483.62
2044-2045	536.80
2045-2046	595.15
2046-2047	661.67

Table 4-13 : Toll Revenue Most Likely Scenario (Rs. Crores) at Badopati

Year	Revenue
2017-2018	32.68
2018-2019	36.69
2019-2020	44.73
2020-2021	50.54
2021-2022	61.46
2022-2023	69.60
2023-2024	78.85
2024-2025	87.69
2025-2026	99.10
2026-2027	112.17
2027-2028	126.01
2028-2029	140.85
2029-2030	158.53
2030-2031	178.18
2031-2032	200.54
2032-2033	224.98
2033-2034	251.37
2034-2035	280.84
2035-2036	314.67
2036-2037	351.94
2037-2038	392.93
2038-2039	437.78
2039-2040	490.92
2040-2041	544.40
2041-2042	608.43

Year	Revenue
2042-2043	674.44
2043-2044	750.92
2044-2045	834.27
2045-2046	927.66
2046-2047	1032.52

Table 4-14 : Toll Revenue Most Likely Scenario (Rs. Crores) at Chaudhriwas

Year	Revenue
2017-2018	22.46
2018-2019	25.42
2019-2020	31.04
2020-2021	35.05
2021-2022	42.54
2022-2023	48.03
2023-2024	54.41
2024-2025	60.54
2025-2026	68.15
2026-2027	76.55
2027-2028	86.02
2028-2029	95.90
2029-2030	107.14
2030-2031	118.83
2031-2032	134.81
2032-2033	150.31
2033-2034	167.33
2034-2035	186.06
2035-2036	208.00
2036-2037	232.12
2037-2038	257.98
2038-2039	285.47
2039-2040	319.69
2040-2041	354.05
2041-2042	392.30
2042-2043	434.17
2043-2044	481.49
2044-2045	531.21
2045-2046	589.26
2046-2047	653.31

Table 4-15 : Toll Revenue Pessimistic Scenario (Rs. Crores) at Narwana

Year	Revenue
2017-2018	21.08
2018-2019	23.82
2019-2020	28.61
2020-2021	32.27
2021-2022	39.25

Year	Revenue
2022-2023	44.24
2023-2024	49.52
2024-2025	55.09
2025-2026	61.61
2026-2027	69.04
2027-2028	77.68
2028-2029	86.10
2029-2030	96.60
2030-2031	107.55
2031-2032	120.47
2032-2033	134.97
2033-2034	149.35
2034-2035	167.16
2035-2036	185.92
2036-2037	207.24
2037-2038	230.67
2038-2039	255.97
2039-2040	284.69
2040-2041	315.79
2041-2042	349.85
2042-2043	385.83
2043-2044	428.12
2044-2045	473.06
2045-2046	521.96
2046-2047	577.59

Table 4-16 : Toll Revenue Pessimistic Scenario (Rs. Crores) at Badopati

Year	Revenue
2017-2018	32.68
2018-2019	36.52
2019-2020	44.34
2020-2021	49.88
2021-2022	60.41
2022-2023	68.10
2023-2024	76.77
2024-2025	84.99
2025-2026	95.58
2026-2027	107.69
2027-2028	120.43
2028-2029	133.97
2029-2030	150.12
2030-2031	167.92
2031-2032	188.12
2032-2033	210.10
2033-2034	233.62
2034-2035	259.80
2035-2036	289.78
2036-2037	322.61

2037-2038	358.55
2038-2039	397.63
2039-2040	443.85
2040-2041	489.97
2041-2042	545.08
2042-2043	601.35
2043-2044	666.35
2044-2045	736.85
2045-2046	815.42
2046-2047	903.34

Table 4-17 : Toll Revenue Pessimistic Scenario (Rs. Crores) at Chaudhriwas

Year	Revenue
2017-2018	22.46
2018-2019	25.30
2019-2020	30.75
2020-2021	34.57
2021-2022	41.78
2022-2023	46.91
2023-2024	52.87
2024-2025	58.50
2025-2026	65.53
2026-2027	73.26
2027-2028	81.97
2028-2029	90.92
2029-2030	101.11
2030-2031	111.61
2031-2032	126.07
2032-2033	139.93
2033-2034	155.09
2034-2035	171.64
2035-2036	191.01
2036-2037	212.18
2037-2038	234.74
2038-2039	258.59
2039-2040	288.26
2040-2041	317.82
2041-2042	350.45
2042-2043	386.07
2043-2044	426.13
2044-2045	467.95
2045-2046	516.62
2046-2047	570.07

Table 4-18 : Toll Revenue Optimistic Scenario (Rs. Crores) at Narwana Toll

Year	Revenue
2017-2018	21.08
2018-2019	24.05
2019-2020	29.12
2020-2021	33.12
2021-2022	40.62
2022-2023	46.21
2023-2024	52.22
2024-2025	58.66
2025-2026	66.25
2026-2027	74.99
2027-2028	85.16
2028-2029	95.31
2029-2030	107.96
2030-2031	121.33
2031-2032	137.16
2032-2033	155.12
2033-2034	173.22
2034-2035	195.69
2035-2036	219.67
2036-2037	247.24
2037-2038	277.79
2038-2039	311.14
2039-2040	349.22
2040-2041	391.07
2041-2042	437.37
2042-2043	486.81
2043-2044	545.23
2044-2045	608.07
2045-2046	677.21
2046-2047	756.40

Table 4-19 : Toll Revenue Optimistic Scenario (Rs. Crores) at Badopatti Toll

Year	Revenue
2017-2018	32.68
2018-2019	36.87
2019-2020	45.15
2020-2021	51.27
2021-2022	62.60
2022-2023	71.21
2023-2024	81.00
2024-2025	90.49
2025-2026	102.69
2026-2027	116.73
2027-2028	131.73
2028-2029	147.86
2029-2030	167.16
2030-2031	188.72
2031-2032	213.45
2032-2033	240.59
2033-2034	270.04

2034-2035	303.12
2035-2036	341.29
2036-2037	383.58
2037-2038	430.45
2038-2039	482.01
2039-2040	543.18
2040-2041	605.38
2041-2042	679.83
2042-2043	757.10
2043-2044	847.03
2044-2045	945.57
2045-2046	1056.36
2046-2047	1181.40

Table 4-20 : Toll Revenue Optimistic Scenario (Rs. Crores) at Chaudhriwas Toll

Year	Revenue
2017-2018	22.46
2018-2019	25.53
2019-2020	31.30
2020-2021	35.50
2021-2022	43.28
2022-2023	49.08
2023-2024	55.86
2024-2025	62.44
2025-2026	70.62
2026-2027	79.69
2027-2028	89.98
2028-2029	100.77
2029-2030	113.07
2030-2031	125.99
2031-2032	143.62
2032-2033	160.88
2033-2034	179.95
2034-2035	201.00
2035-2036	225.80
2036-2037	253.16
2037-2038	282.69
2038-2039	314.33
2039-2040	353.70
2040-2041	393.61
2041-2042	438.11
2042-2043	487.16
2043-2044	542.86
2044-2045	601.78
2045-2046	670.65
2046-2047	747.10

****

ANNEXURES

(Soft Copies of Revenue Sheets)

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REPORT

RESTRICTED

Client: **IRB Infrastructure Developers Private Limited**

Project: **Traffic Study for Sholapur Yedishi Section of National Highway-211**

Subject: **Traffic Report**

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CHAPTER 1: INTRODUCTION

1.1. General

National Highway Authority of India (NHAI) intended to develop the Sholapur – Yedashi highway on BOT basis, which is a part of National Highway-211 (NH-211). The total length of stretch is 98.7 KM and is commissioned in March-2018. The road has been developed as 4 lane highway. The project road location is highlighted in the map below:

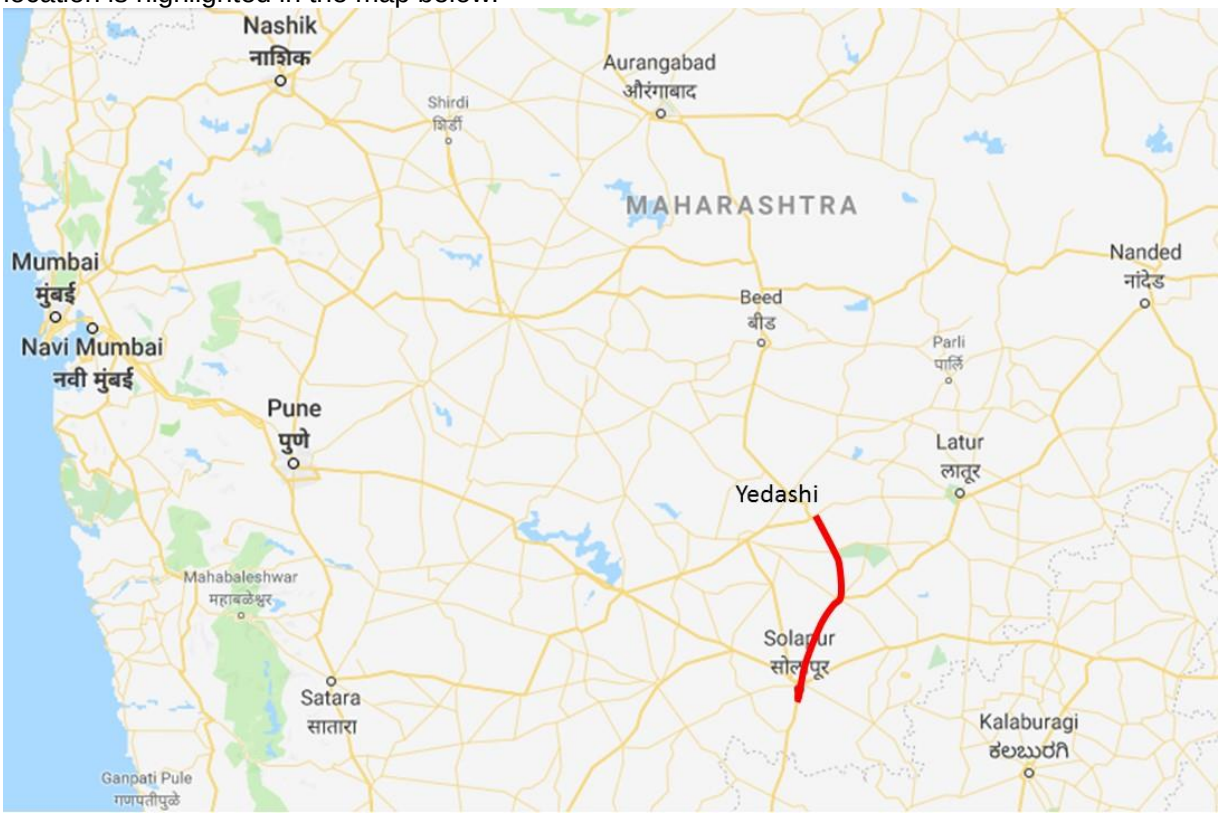


FIGURE 1-1 PROJECT CORRIDOR AND SURROUNDING NETWORK

As a part of this study, a systematic methodology has been followed to assess the characteristics of the traffic on the project road. The details pertaining to data collection, primary as well as secondary and results from its analysis are presented in subsequent sections.

1.2. Objective and Scope of Work

The objective of the study is to establish the existing and future (over entire concession period) toll able traffic on the project corridor. The scope of work is to assess the toll revenue at the toll plazas on the project road during concession period through:

- Assessment of base traffic figures and travel characteristics by conducting primary surveys
- Estimation of traffic growth rates and traffic projection
- Diverted and developmental traffic if any
- Estimation of tollable traffic and toll revenue

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CHAPTER 2: TRAFFIC STUDIES

2.1. Project Corridor Overview

National Highway-211(NH-211) starts at Solapur and ends at Dhule. The highway is 460 km long and fall within Maharashtra State. The project section under consideration for study is from Sholapur to Yedshi at Km 00.00 to Km 98.7 is being operated on BOT basis by IRB infrastructure developers limited. The salient features of project corridor are presented below:

TABLE 2-1: SALIENT FEATURES OF PROJECT CORRIDOR

Salient Features	**Remark**
Project Start Point	KM 00.00
Project End Point	KM 98.717
Length of Project Road	98.717 KM
Districts En-route	Sholapur, Osmanabad
Important Settlements	Sholapur, Tuljapur, Osmanabad, Yedashi
Lane Configuration	4 Lane Divided
Terrain	Plain
Toll Plazas Location	KM 19.300 & KM 77.400

The alignment of toll road is presented in the map below:

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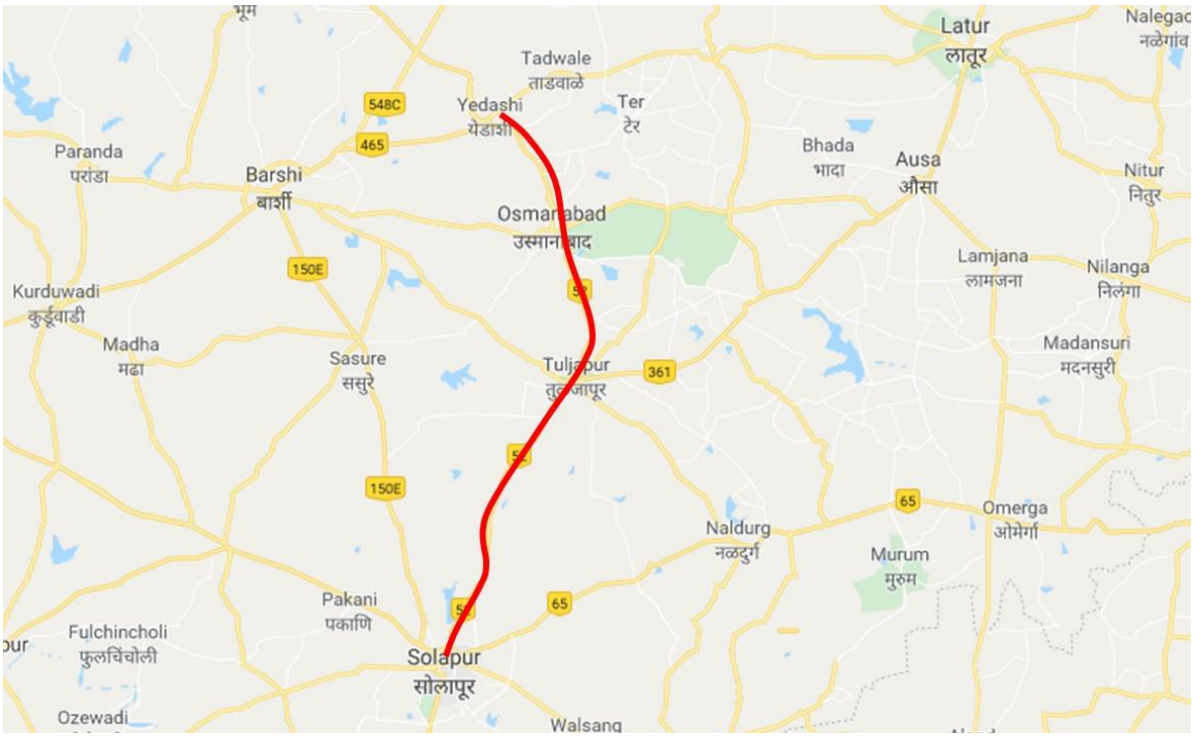


FIGURE 2-1 PROJECT ROAD ALIGNMENT

2.1.1. Traffic Data Collection

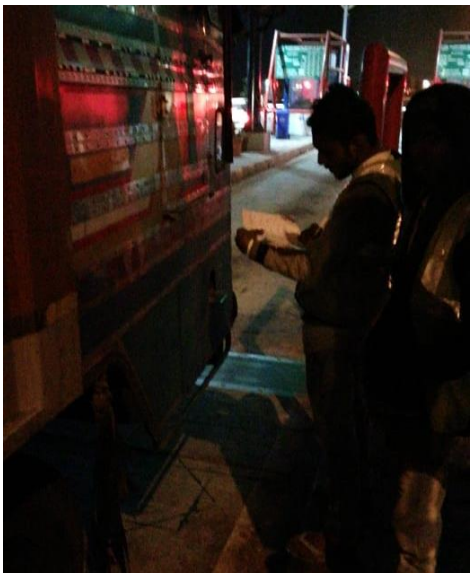
Traffic data has been collected through primary and secondary through various methods. A data gap identification exercise has been carried out by comparing secondary data collected from the data which is required for knowing the existing travel characteristics and future demand. Data gaps are then filled with primary data collection method. The toll road is under operation and therefore the volume count is made available by the operator.

2.1.1.1. ORIGIN DESTINATION SURVEYS

As a part of traffic surveys, origin destination surveys have been conducted for entire 24 hours at each toll plaza location in order to capture the travel pattern for both day-time as well as night-time traffic. The surveys by trained enumerators under close supervision of professional surveyors are carried out on weekdays.

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The schedule of survey conducted is presented in the table below

TABLE 2-2: TRAFFIC SURVEY SCHEDULE

Survey Location	Date & Time of Survey
Toll Plaza-1 (Tamalwadi Toll Plaza) KM19.3	08:00 AM of 05/12/2018 to 08:00 AM of 06/12/2018
Toll Plaza-2 (Yedishi Toll Plaza) KM77.4	08:00 AM of 07/12/208 to 08:00 AM of 08/12/2018

2.1.2. Project Influence Area and Growth Drivers

Upon studying the project road and regional network settings of the area, the project influence area is identified. This is dependent on the usage of toll road in terms of registration district state of traffic using the toll road, commodity being carried on the project road and major industries along the corridor. The influence area can be broadly classified into following:

- Immediate Influence Area: Immediate Influence area includes the cities/ towns/ villages and districts along the project road and adjacent to it which generates / attracts trips to the project road.
- *Broad Influence Area (BIA):* Broad Influence Area consists of zones which include the other states of India like Madhya Pradesh, Gujarat, Karnataka, Tamil Nadu, Andhra Pradesh etc.

A study of the socio-economic profiles of the regions comprising the project influence area (PIA) provides an overview of the factors likely to influence the pattern of economic development and hence the flows and volumes of traffic on the highway. The details include population, per- capita Income, NSDP, GDP (India) and targeted growth rates of the economy. The profiles help to generate basic inputs for the

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estimation of future growth in transport demand on the basis of past scenarios, perspective changes in transport demand elasticity and economic growth rates.

The travel pattern observed at the toll plazas locations appears to be similar; therefore, OD shares have been combined for both toll plaza locations for the traffic growth rate estimation.

The analysis of traffic pattern observed on the project road indicates that the vast majority of passenger traffic is originating from/destined to Maharashtra. Hence, Maharashtra has been considered as PIA states for passenger vehicles.

In case of freight traffic, more than 50 percent of all trucks are from Maharashtra, and other from Karnataka, Gujarat, Andhra Pradesh. So, all four states mentioned above form the PIA states for freight vehicles. GDP (India) have been taken into account to include all India shares of Goods vehicles in the forecasting calculations. Weighted share of the PIA states is taken to calculate the growth factor for Freight vehicles.

2.2. Traffic Characteristics

Traffic data collected through primary and secondary sources are analysed to obtain the following characteristics

- Annual Average Daily Traffic
- Directional Distribution

These characteristics are detailed out in subsequent sections.

2.2.1. Annual Average Daily Traffic

The traffic plying on any road generally varies over different periods of the year depending on the cycle of different socio-economic activities in the regions through which it passes. Therefore, in order to have more realistic picture of the traffic on the project road, it is required to assess seasonal variation in traffic to estimate Annual Average Daily Traffic (AADT). Therefore, the ADT observed during the survey duration is multiplied by a Seasonal Correction Factor (SCF) to derive an AADT. The seasonal correction factor is generally derived from secondary data sources such as past month-wise traffic data on the project road, monthly toll revenues/monthly toll vehicles from existing tolled highways in the immediate influence area, sales of fuel at different filling stations along the project highway, etc.

To arrive at the SCF, fuel sale data for 3 years was collected form various fuel stations along the project corridor:

Month	SCF	
	Petrol	Diesel
April	1.25	0.78
May	1.25	0.74
June	0.89	0.92
July	1.32	1.46
August	1.21	1.30
September	1.12	1.42
October	0.89	1.01

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November	0.84	1.30
December	0.70	0.96
January	1.11	1.04
February	1.14	1.05
March	1.18	1.07
Average	**1.00**	**1.00**

SCF for diesel was adopted as 1.01 and for petrol as 0.89 which is used for two- wheelers. For private cars/ jeeps average SCF for diesel and petrol combined is considered to be 0.95 and for buses, SCF adopted is 1.0 as they operate on fixed routes and are less prone to seasonal variations.

The AADT estimated for the project road is presented in table below

TABLE 2-3: AVERAGE ANNUAL DAILY TOLLABLE TRAFFIC AT TOLL PLAZA LOCATIONS

Vehicle Type		TP I	TP II
Passenger	Cars/Vans/ Jeeps	3535	1889
	Bus	324	120
Goods	LCV	741	527
	2-Axle	806	729
	3-Axle	967	1057
	4-6 Axle	986	1257
	Oversized	1	1
Total	**Vehicles**	**7360**	**5582**
	PCU	**15377**	**14063**

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2.2.2. Directional Distribution

The direction wise traffic is required to be studied in order to check any major variation in traffic due to any external factor like diversions, special events in the project influence area, leakages on any of the directions etc. The directional distribution of traffic should complement each other. Directional traffic for the duration during which traffic surveys are conducted. The directional distribution of traffic is shown in the table below:

TABLE 2-4: DIRECTIONAL DISTRIBUTION OF TRAFFIC ON PROJECT ROAD

Location	Sholapur to Yedishi	Yedishi to Sholapur
Tamalwadi Toll Plaza – 1	51%	49%
Yedishi Toll Plaza - 2	51%	49%

At Tamalwadi toll plaza-1, a total of 4258 vehicles are recorded moving from Yedhisi to Sholapur while 4264 vehicles are recorded moving from Sholapur to Yedishi. At Yedishi toll plaza-2, a total of 6399 vehicles are recorded for the period during which traffic surveys are conducted on the project road.

2.1. Travel Characteristics

2.1.1. Survey Methodology

In order to understand the travel demand pattern in the region and tollable traffic streams, Origin and Destination (O-D) survey was carried out at the Toll plaza locations. The O-D survey was carried out for 24 hours, by roadside interview method on random sampling basis and as described in IRC: 102-1988. Both passenger and commercial vehicles plying on the project road stopping at toll plaza booth are interviewed on random sampling method.

The travel characteristics obtained by O-D survey facilitate the identification of:

i. Local and through traffic on the project road.

ii. Potential divertible traffic to/from project road to various alternative routes.

Trained enumerators under the supervision of traffic engineers collected the trip characteristics using the survey forms designed for this purpose.

The O-D survey elicited characteristics like origin, destination, frequency, purpose of trip for passenger vehicles and commodity being transported for goods vehicles. The information pertaining to origin and destination of trips collected during roadside interviews was analysed to obtain the trip distribution based on a zoning system suitably designed for the present study.

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2.1.2. Sample Size

The vehicles during the OD surveys were interviewed on a random sample basis. Table below shows the ADT and the sample size (both in absolute numbers and in percentage terms) captured at the survey locations on the project road.

TABLE 2-5: SIZE OF SAMPLE COLLECTED IN ORIGIN DESTINATION SURVEY

Location	Parameter	Passenger Vehicles	Goods Vehicles
Tamalwadi Toll Plaza – 1	Sample Collected	3255	2968
	ADT	4036	3466
	% Sample	80%	85%
Yedishi Toll Plaza - 2	Sample Collected	1248	2340
	ADT	2104	3537
	% Sample	59%	66%

2.1.3. Traffic Zoning System

To understand the spatial dimensions of the trip characteristics of the vehicles interviewed during the O-D survey, a detailed zoning system was developed giving due consideration to the following factors:

- The road network catering to the traffic on the project road and its generating points.
- Important towns, villages, factories and industrial centres around the project road area.
- Administrative boundaries of districts and states.
- Configuration of the project road in the regional road network with respect to other roads

Two major types of areas were identified for analysis purposes;

Immediate Influence Area (IIA): Immediate Influence Area includes the cities/towns/villages and districts along the project road and adjacent to its which generates/attracts trips to the project road.

Broad Influence Area (BIA): Broad Influence Area consists of zones which include the other states of India like Madhya Pradesh, Gujarat, Karnataka, Tamil Nadu, Andhra Pradesh etc.

The zoning system adopted for data collection was based on 142 zones and are listed in Table below and shown in the figure below:

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TABLE 2-6: ZONE LIST

S.No.	Name	Important Places	District (D) / State (S)
1	Dhule	Dhule (HQ)	Dhule (D)
2	Borvihir		
3	Vinchur		
4	Philkhod	Kajgaon	Jalgaon (D)
5	Mehunbare		
6	Chalisgaon		
7	Rohini	Gigardari	
8	Vaghli		
9	Kannad	Bhamarvadi, Mundwadi	Aurangabad (D)
10	Hatnur	Palasgaon	
11	Sangvi	Mhaismal	
12	Khuldabad	Ellora	
13	Harsul	Chouka	
14	Daultabad	Divshi	
15	Aurangabad	Aurangabad (HQ)	
16	Chikalthan		
17	Waluj Buzurg	Wadgaon	
18	Satara		
19	Chitegaon		
20	Adul		
21	Davarwari		
22	Pachud		Jalna (D)
23	Wari Godri		
24	Gevrai		

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S.No.	Name	Important Places	District (D) / State (S)
25	Khopat	Pimpala	Beed (D)
26	Nandalgaon	Jategaon	
27	Nandur		
28	Beed	Beed (HQ)	
29	Pali		
30	Limba Ganesh		
31	Yelamb		
32	Chausala		
33	Balsepargaon		Osmanabad (D)
34	Wasi		
35	Terkhed	Yermala	
36	Yedishi		Solapur (D)
37	Sindkhera	Shirpur, Vindel, Vadi, Budki, Boradi, Hadakhed, Dahivad, Hisala, Thalner, Nardana, Songir, Chimthana, Dondaicha, Lambkani	Dhule (D)

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S.No.	Name	Important Places	District (D) / State (S)
38	Sakri	Nizampur, Bhamer, Shirdhane, Laling, Vinchur, Nandre, Shelbari, Varse, Pimpalner, Kasare, Dahivel, Kondaibari	
39	Kusumbe		
40	Arvi	Laling	
41	Phagne	Mukti	
42	Amalner	Shirsata, Mandal, Janwe, Kondvale, Phatonda, Jalod	
43	Parola	Talwada, Shindi, Pilkhod, Mhasva	
44	Bhadgaon	Kajgaon, Nhava	
45	Chopda	Amalwadi, Wirvada, Devnal, Satrasen, Chahardi, Nandur, Bhokar, Adavad, Chahardi	
46	Erandol	Dharangaon, Kasoda	

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S.No.	Name	Important Places	District (D) / State (S)
47	Pachora	Pimpalgaon, Shendurni, Lohara, Kasoda, Maheji, Vitner, Neri, Paldhi	Jalgaon (D)
48	Jalgaon	Jalgaon (HQ)	
49	Bhusawal	Yaval, Bodvad, Jamner, Edalabad, Raver, Muktainagar	
50	Chapner	Takli, Talvad	
51	Pitalkhora Caves	Nagad, Umarkheda, Pesavar, Kanhegaon	
52	Devgaon	Divshi, Lasur, Silegaon	
53	Sangvi	Varegaon, Phulambri, Chouka	
54	Gangapur	Dahegaon, Vaigaon, Kaygaon, Wadgaon	
55	Harsul		
56	Bidkingaon	Dhorkingaon	
57	Esarvadi	Narayangaon	
58	Paithan	Anegaon	

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S.No.	Name	Important Places	District (D) / State (S)
59	Valjapur	Nadhgaon, Chinchangaon, Nadurthik, Khandala	Aurangabad (D)
60	Gangapur	Chandegaon, Kaygaon	
61	Dhanora	Naygaon, Seygaon, Ajanta, Pimpri, Dhosala, Ghantnandra, Doiphada, Bahradi, Sillod	
62	Badnapur	Rashangaon, Karjat	Jalna (D)
63	Ambad		
64	Ghansawangi	Tirthpuri, Kothal, Pimpali, Ashti	
65	Jaffrabad	Naini, Longaon, Tembhurni, Bhakarkhadi, Hasnabad	
66	Jalna	Jalna (HQ)	
67	Savangi	Sarvadi, Revgaon, Pipalgaon	
68	Rani Unchegaon	Partur, Satuna, Edoli, Devthana	
69	Bhokardan	Assaye, Koda, Valsavangi, Dhavda	
70	Tapovan	Pir Kalyan, Ner	

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S.No.	Name	Important Places	District (D) / State (S)
71	Mantha	Sheoli, Usvad, Tahri, Kokrasa	
72	Patharwata	Umapur	Beed (D)
73	Rajegaon	Rampuri, Talkher	
74	Shirur	Amba, Balam Yelim, Padli, Lon, Manur	
75	Wangi	Ghatsavali, Pimparkher, Mohi	
76	Rajuri	Pithi	
77	Patoda		
78	Ashti	Pargaon, Kada, Dadegaon, Dehithan, Patsara, Amalner, Belgaon	
79	Kaij	Lahovi, Bargaon, Bhatamba, Chinchur, Dharur	
80	Manjlegaon	Patrur, Mogra, Dindrur, Takli, Sirsala, Wadwani	
81	Ambajogai	Pangaon, Ujni, Burdapur, Patoda	
82	Pathrud		
83	Bhum	Arsuli, Sirsav	
84	Para	Itkur	

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S.No.	Name	Important Places	District (D) / State (S)
85	Kallam	Moha, Mandva	Osmanabad (D)
86	Parenda	Donia, Sonari, Asu, Sirala, Vavchi, Khasapuri	
87	Padili	Hasegaon, Sheradhon	
88	Upla	Alani, Dhoki	
89	Osmanabad	Osmanabad (HQ)	
90	Badgaon	Bavi	
91	Bemli	Dharur, Mardi	
92	Tuljapur	Chincholi, Savalgaon, Anadur	
93	Umarga	Naldurg, Moram, Alur, Jaoli, Horti, Yenugur, Ganjoti	
94	Barsi	Agalgaon, Pangri, Kari, Shelgaon, Kuslamb	
95	Vairag	Jamgaon, Gaudgaon, Ambegaon, Vairag, Sendri	
96	Solapur	Solapur (HQ)	

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S.No.	Name	Important Places	District (D) / State (S)
97	Karmala	Pande, Kumbhoj, Rajuri, Pophlaj, Pomalwadi	Solapur (D)
98	Madha	Mohol, Penur, Ashti, Khandali, Varawadi, Pulunj, Begampur	
99	Akalkot	Walsang, Karajgi, Maindargi, Baroti, Dudhani, Salgar	
100	Sangole	Akhatpur, Andhalgaon, Shirshi, Pare, Junom, Kole, Katphal, Garwad, Nimgaon, Malsiras, Dharmpuri	
101	Nandurbar District		Nandurbar (D)
102	Nashik District		Nashik (D)
103	Shevgaon	Pathardi, Badhegaon, Ghatan, Gawhane	Ahmednagar (D)
104	Jamkhed	Karjat, Jowla, Nanaj, Kharda, Rajuri, Dighol	
105	Rest of Ahmednagar District		
106	Maharashtra (West)	Thane, Pune, Raighar Districts	

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S.No.	Name	Important Places	District (D) / State (S)
107	Mumbai		Maharashtra (S)
108	Maharashtra (South)	Satara, Sangli, Ratnagiri, Kolhapur, Sindhudurg Districts	
109	Maharashtra (North - East)	Amravati, Akola, Washim, Buldhana, Wardha, Yavatmal Districts	
110	Maharashtra (South - East)	Nanded, Hingoli, Parbhani, Latur Districts	
111	Maharashtra (East)	Nagpur, Chandrapur, Bhandara, Gondiya, Gadchiroli Districts	
112	Gujarat		
113	Bhopal, Sagar, Vidishia, Harda, Betul, Raisen, Hosangabad		

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S.No.	Name	Important Places	District (D) / State (S)
114	Indore, Ujjain, West Nimar, Dhar, Barwani, Mandsaur, Neemuch, Ratlam, Jabua	Madhya Pradesh	
115	Bhind, Morena, Shivpuri, Sheopur, Datia, Gwalior, Guna, Rajgarh, Shajapur, Dewas, East Nimar, Sehore		
116	East Madhya Pradesh (Rest of MP)		
117	Orissa, Chattisgarh		
118	Adilabad, Nizambad, Karimnagar	Andhra Pradesh	
119	Medak, Rangareddy, Warangal, Nalgonda, Mehbubnagar, Khammam		
120	Hyderabad,		

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S.No.	Name	Important Places	District (D) / State (S)
	Secunderabad		
121	Kurnool, Ananthapur, Cuddapah, Chittoor		
122	Nellore, Prakasam, Guntur, Krishna		
123	West Godavari, East Godavari, Vishakapatnam, Vizianagaram, Srikakulam		
124	Bidar, Gulbarga, Raichur		
125	Bijapur, Bagalkot, Koppal, Bellary, Chittardurg, Tumkur, Kolar		
126	Gadag, Dharwad, Hubli, Belgam, Haveri, Shivmoga		
127	Uttar Kannad (Karwar), Udpi, Dakshin Kannad (Mangalore)	Karnataka	
128	Bangalore		

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S.No.	Name	Important Places	District (D) / State (S)
129	Chikmangalore, Hassan, Kodagu (Madikeri), Mysore, Mandya, Chamrajnagar		
130	Goa		
131	Tamil Nadu		
132	Kerala		
133	Rajasthan		
134	Punjab		
135	Haryana		
136	Delhi		
137	North India	Jammu & Kashmir, Himachal Pradesh, Uttarakhand	
138	Uttar Pradesh		
139	East India	Bihar, Jharkhand, West Bengal	
140	North East India	Meghalaya, Manipur, Sikkim, Arunachal Pradesh, Nagaland	
141	Shirdi		Maharashtra
142	Shahgarh		

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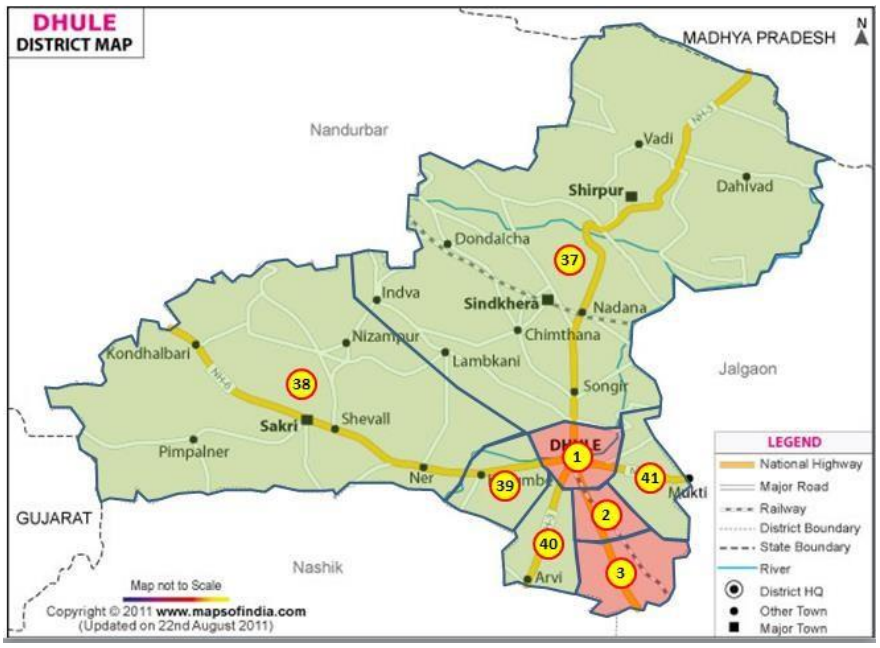


FIGURE 2-2 TRAFFIC ANALYSIS ZONE (TAZ) WITHIN DHULE DISTRICT

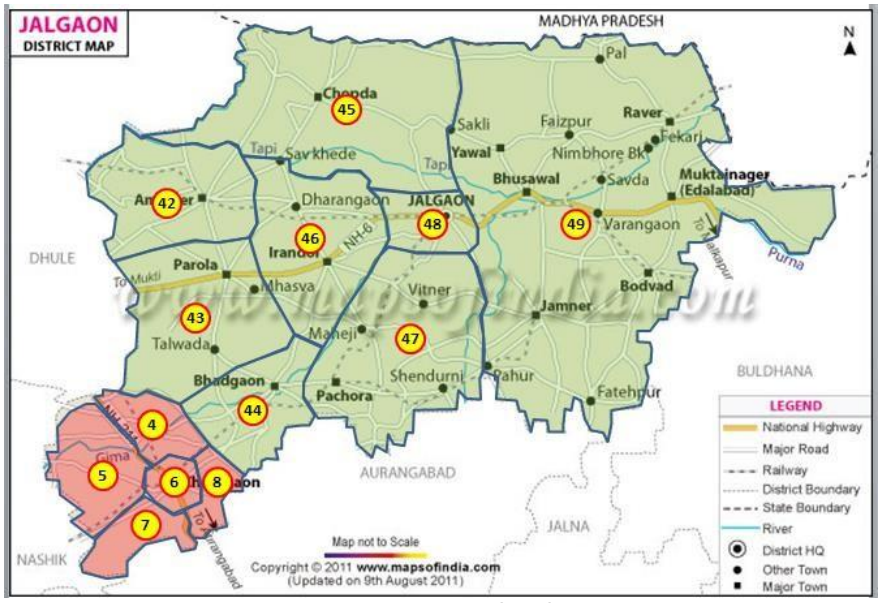


FIGURE 2-3 TRAFFIC ANALYSIS ZONE (TAZ) WITHIN JALGAON DISTRICT

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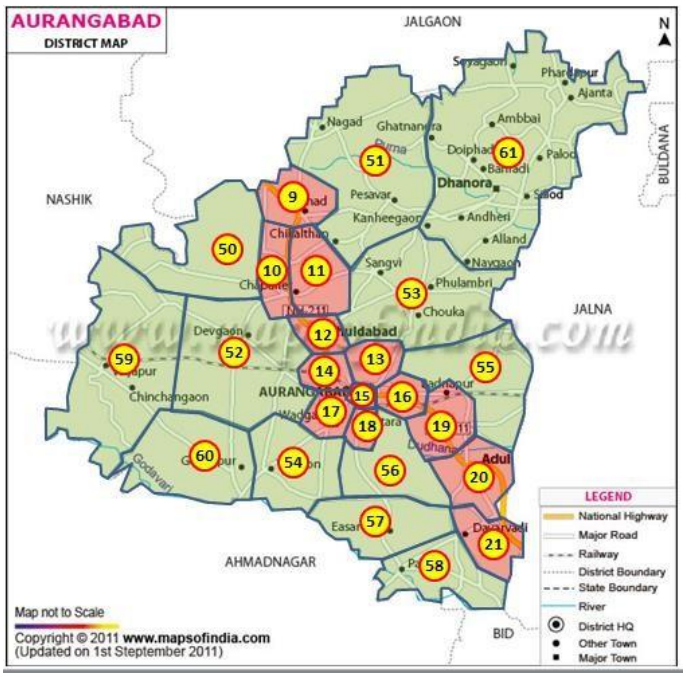


FIGURE 2-4 TRAFFIC ANALYSIS ZONE (TAZ) WITHIN AURANGABAD DISTRICT



FIGURE 2-5 TRAFFIC ANALYSIS ZONE (TAZ) WITHIN JALNA DISTRICT

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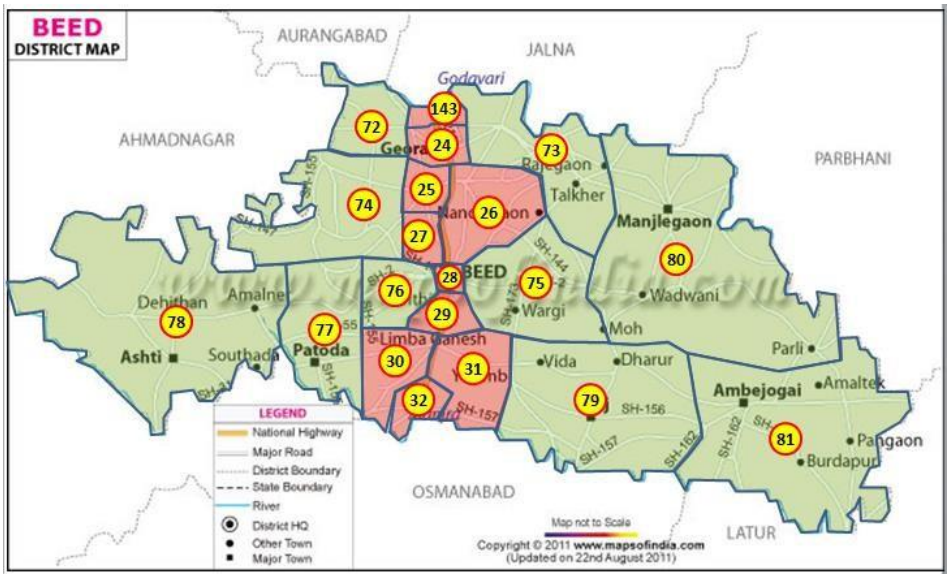


FIGURE 2-6 TRAFFIC ANALYSIS ZONE (TAZ) WITHIN BEED DISTRICT

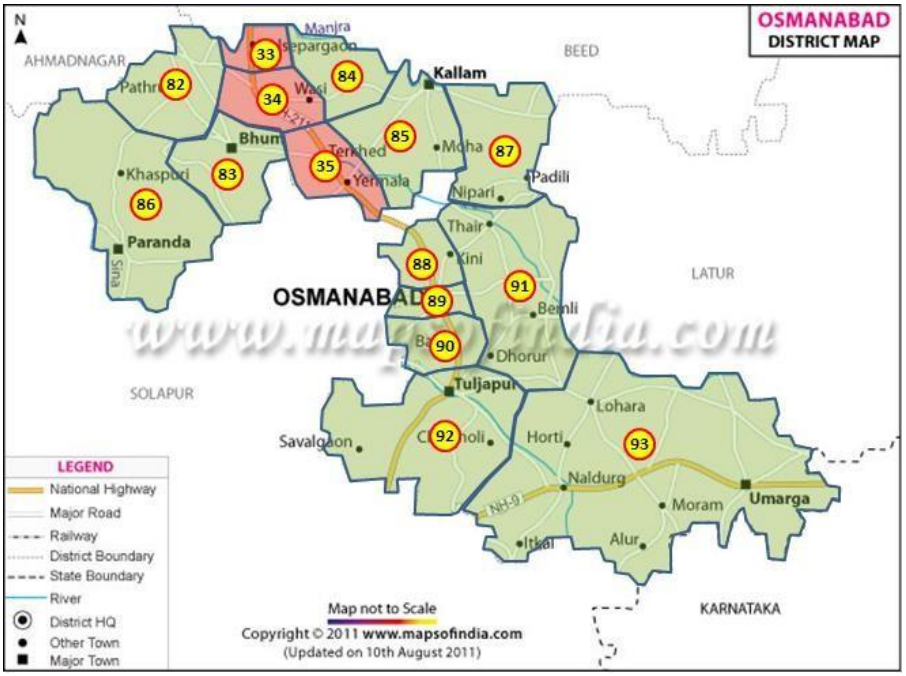


FIGURE 2-7 TRAFFIC ANALYSIS ZONE (TAZ) WITHIN OSMANABAD DISTRICT

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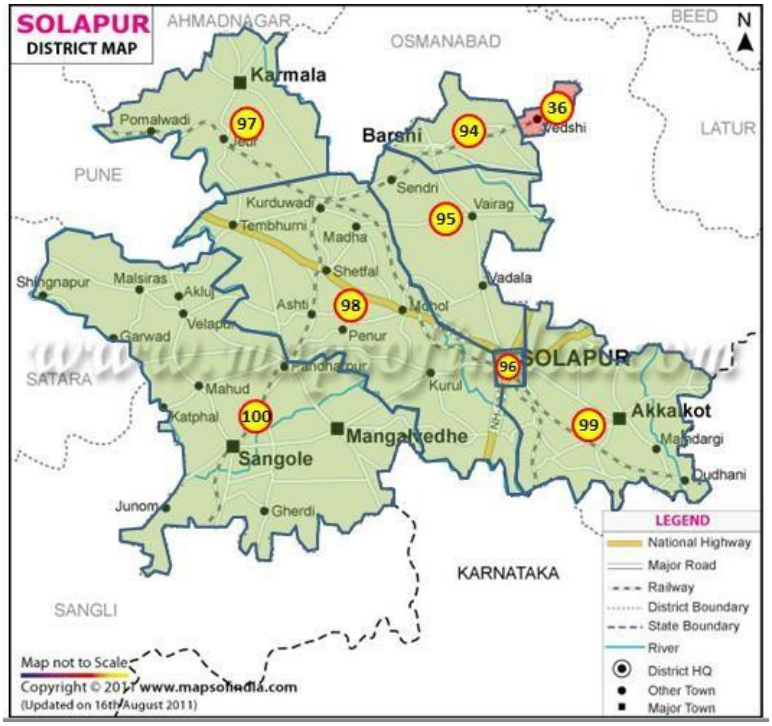


FIGURE 2-8 TRAFFIC ANALYSIS ZONE (TAZ) WITHIN SHOLAPUR DISTRICT

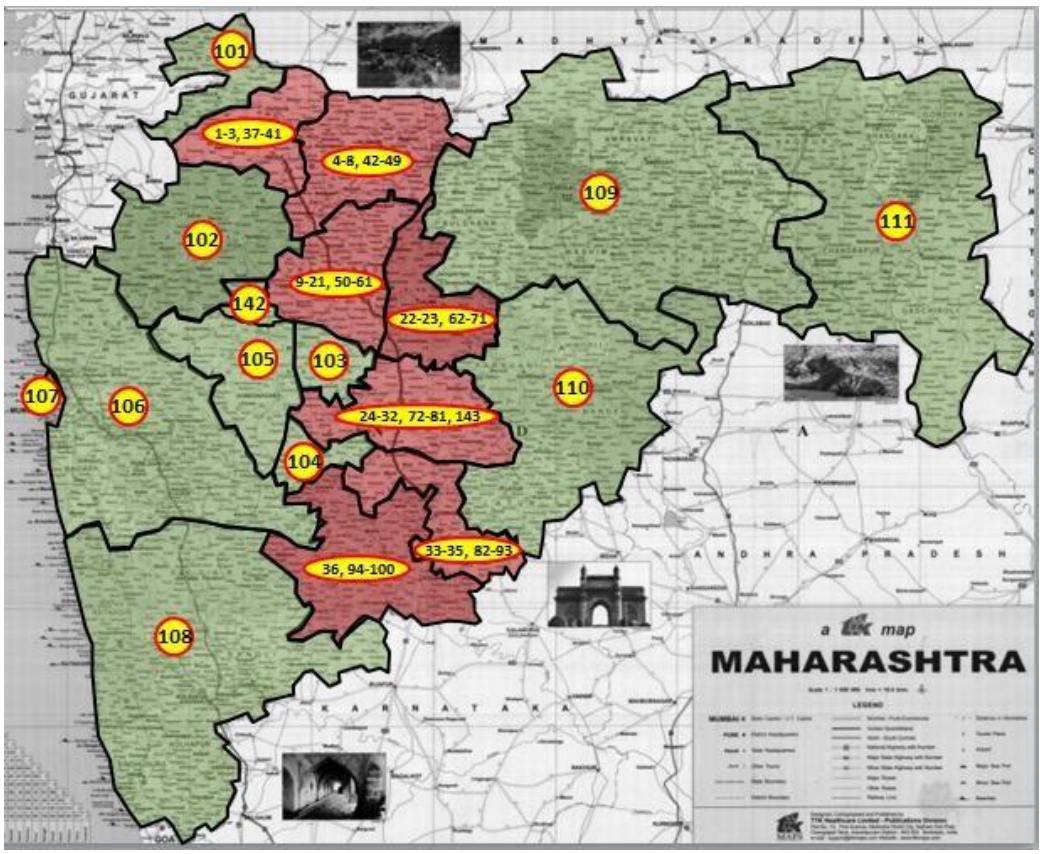


FIGURE 2-9 TRAFFIC ANALYSIS ZONE (TAZ) REST OF MAHARASHTRA

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FIGURE 2-10 TRAFFIC ANALYSIS ZONE (TAZ) REST OF INDIA

2.1.4. Regional Distribution

Based on the zoning system devised for this study, the sample data has been expanded using factors based on the total AADT. The table below shows the regional distribution of trips indicating the major areas of influence on the project corridor for passenger and goods vehicles respectively.

TABLE 2-7: REGIONAL DISTRIBUTION OF TRAFFIC (%) FOR PASSENGER VEHICLES AT TP-1

State	Passenger Vehicle	Goods Vehicle
Maharashtra	98.6%	55.5%
Gujarat	0.1%	2.9%
Karnataka	0.8%	16.7%
Andhra Pradesh	0.1%	1.0%
North India	0.2%	13.7%
MP & CG	0%	3.2%
RoI	0.3%	7%
Total	**100%**	**100%**

TABLE 2-8: REGIONAL DISTRIBUTION OF TRAFFIC (%) FOR PASSENGER VEHICLES AT TP-2

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State	Passenger Vehicle	Goods Vehicle
Maharashtra	93.1%	34.8%%
Gujarat	0.2%	12.3%%
Karnataka	3.1%	16.2%
Andhra Pradesh	3.3%	11.7%
North India	0.1%	13.7%
MP & CG	0.1%	2.7%
RoI	0.1%	8.6%
Total	**100%**	**100%**

Table below show the travel pattern of passenger and goods vehicles as observed from OD survey. These tables show top three Zones which are attracting and generating maximum trips on the project corridor.

TABLE 2-9: TRAVEL PATTERN OF PASSENGER VEHICLES AT TP-1

S.No.	OD Pair	% Trips
1	Sholapur – Tujalpur	20.6%
2	Tujalpur – Sholapur	13.2%
3	Sholapur – Osmanabad	9.7%

TABLE 2-10: TRAVEL PATTERN OF PASSEGNER VEHICLES AT TP-2

S.No.	OD Pair	% Trips
1	Tuljapur - Terkhed	12%
2	Terkhed - Osmanabad	8%
3	Bengaluru-Osmanabad and Osmanabad to Bengaluru	4% Each

The table above shows that maximum interaction between Tijalpur, Terkhed, Sholapur and Osmanabad for passenger vehicles.

TABLE 2-11: TRAVEL PATTERN OF GOODS VEHICLES AT TP-1

S.No.	OD Pair	Percentage Share
1	Sholapur – South East Maharashtra	7.7%
2	Bengaluru – Delhi	3.6%
3	Delhi-Bengaluru	3.6%

TABLE 2-12: TRAVEL PATTERN OF GOODS VEHICLES AT TP-2

S.No.	OD Pair	Percentage Share
1	Andhra Pradesh – Gujarat	7%
2	Gujarat- Andhra Pradesh	6.7%
3	Bangalore – Delhi	3%

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Higher interaction between state of Andhra Pradesh Gujarat is through the project road located in Maharashtra

2.1.5. Commodity Distribution

An analysis was also carried out to understand the different commercial vehicles being used to transport different commodities. Table below presents the commodity-wise share wise for both, up and down directions of the total commercial traffic on the project road.

TABLE 2-13: COMODITY WISE GOODS VEHICLE TRIPS IN PROJECT ROAD AT TP-1

Commodity	Vehicle Type					
	Mini LCV	LCV	2 Axle	3 Axle	4-6 Axle	All (%)
Empty	48.1	36.7	20.9	15.0	9.6	19.6
Perishable Products	21.7	14.4	10.3	11.5	13.3	12.4
Food Crops	0.0	3.5	2.8	6.1	7.8	5.1
Cash Crops	2.4	1.3	3.4	4.4	3.3	3.6
Manufacturing Products	2.2	3.3	8.0	4.9	5.2	5.3
Consumer Products	2.4	9.4	7.0	8.4	5.2	7.4
Chemical Products	2.0	1.2	2.3	4.3	10.7	4.4
Petroleum Product	0.7	3.0	13.4	7.6	4.5	7.5
Textile Product	0.0	0.7	0.7	1.4	0.7	1.0
Building Materials	2.6	2.1	0.8	1.9	2.0	1.7
Marble	0.0	0.0	0.2	0.3	0.3	0.2
Cement	0.0	1.8	2.1	3.9	7.5	3.6
Parcel & Paper Products	4.2	5.0	11.0	13.1	9.6	10.8
Wood and Forest Products	4.1	2.7	2.4	1.6	3.3	2.3
Machine and Machine Parts	2.2	3.3	6.3	4.8	3.3	4.5
Metal Parts	3.4	3.4	5.0	5.6	8.9	5.7
Mineral Ores	0.0	0.0	0.0	0.0	0.0	0.0
Rubber and Plastic Products	1.5	4.2	0.9	1.4	1.1	1.5
Others (Coal, Flyash)	0.0	0.3	0.2	0.9	1.0	0.7
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

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TABLE 2-14: COMODITY WISE GOODS VEHICLE TRIPS IN PROJECT ROAD AT TP-2 (IN PERCENTAGE %)

Commodity	Vehicle Type					
	Mini LCV	LCV	2 Axle	3 Axle	4-6 Axle	All (%)
Empty	49.2	11.2	9.1	5.2	4.6	8.7
Perishable Products	9.2	15.5	9.1	9.6	11.9	11.2
Food Crops	2.1	1.9	2.2	4.9	6.1	5.0
Cash Crops	0.0	1.9	4.5	4.1	4.3	3.9
Manufacturing Products	10.2	12.8	13.7	6.6	4.1	6.5
Consumer Products	10.1	9.9	8.1	10.4	7.8	8.6
Chemical Products	2.1	2.3	5.4	6.0	11.6	8.7
Petroleum Product	1.0	1.9	3.0	3.8	2.5	2.7
Textile Product	0.0	3.6	3.4	4.7	1.6	2.4
Building Materials	5.1	5.9	1.9	6.6	13.1	9.7
Marble	0.0	0.0	1.1	0.5	2.5	1.7
Cement	1.0	0.9	1.5	4.4	7.9	5.7
Parcel & Paper Products	4.0	13.4	15.3	15.6	8.6	10.6
Wood and Forest Products	1.0	1.3	3.9	3.0	0.8	1.6
Machine and Machine Parts	0.0	5.6	10.7	5.2	2.1	3.6
Metal Parts	3.0	9.1	3.4	3.8	4.8	4.6
Mineral Ores	0.0	0.0	0.0	0.0	0.3	0.1
Rubber and Plastic Products	2.1	2.8	2.7	4.7	1.8	2.5
Others (Coal, Flyash)	0.0	0.0	0.7	0.8	3.6	2.3
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

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It was observed that:

- Highest percentage of perishable products and paper parcels can be seen at toll plaza 2.
- Mini LCV are mostly plying empty as recorded but carry manufacturing products at large

2.1.6. Trip Purpose Distribution

An analysis was also carried out to assess the purpose of passenger trips on the project road. Figure below shows the composition of various trip purposes made through passenger vehicles at the O-D survey location.

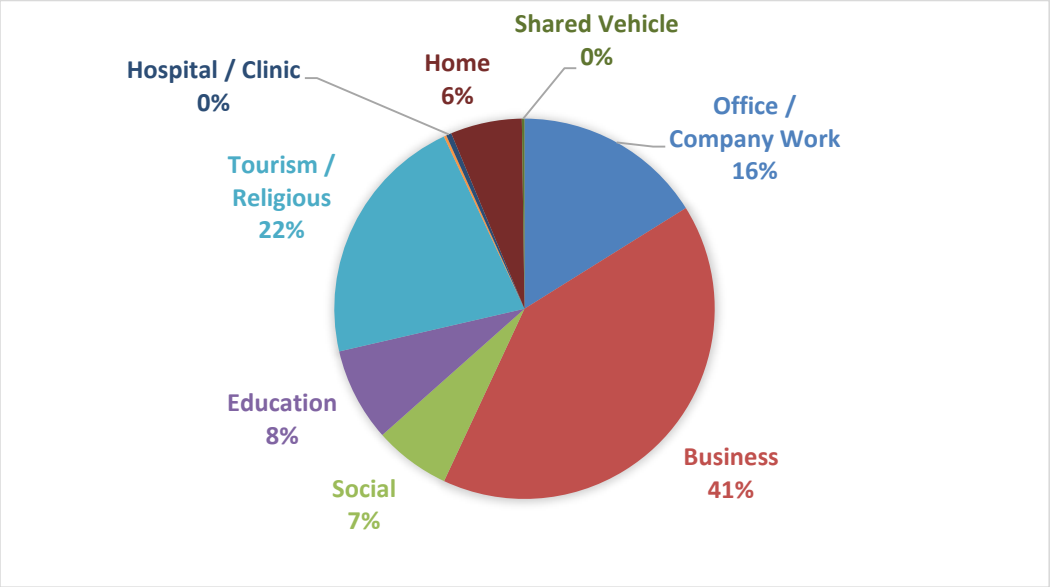


FIGURE 2-11 TRIP PURPOSE DISTRIBUTION AT TOLL PLAZA -1

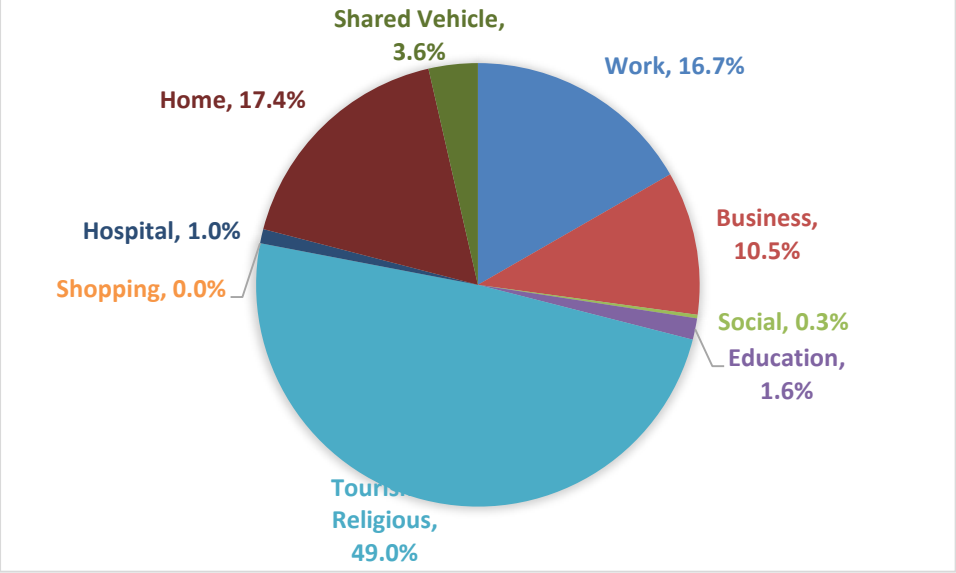


FIGURE 2-12 TRIP PURPOSE DISTRIBUTION AT TOLL PLAZA -2

Higher tourism / religious destined trips are recorded at both the toll plaza locations. These are possibly due to close proximity to Shirdi and Shani Singapur to the toll road.

2.1.7. Average Load and Lead Frequency Distribution

Location- wise average lead frequency distribution for passenger and goods vehicles is presented in figure at toll plaza locations.

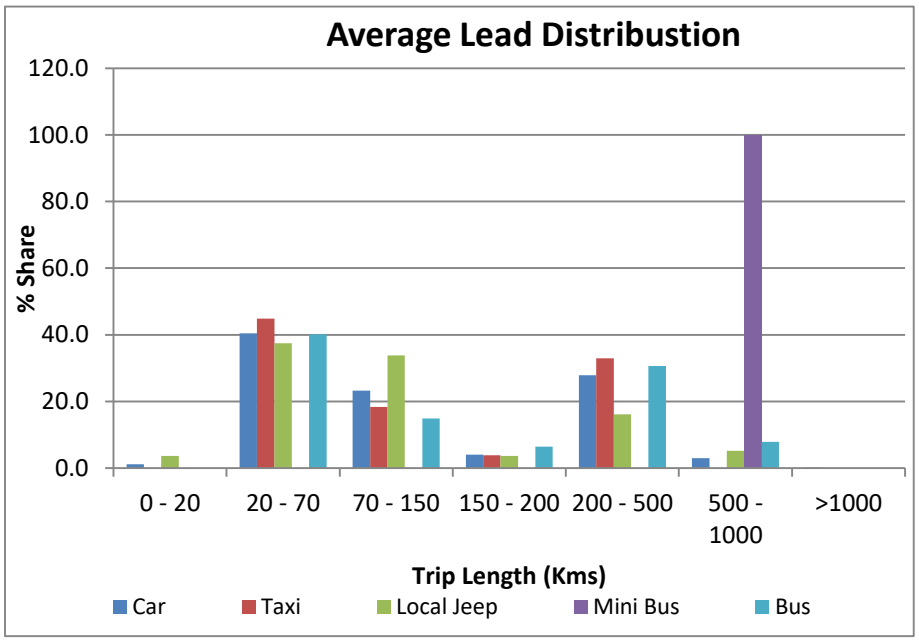


FIGURE 2-13 AVERAGE LEAD DISTRIBUTION AT TOLL PLAZA-1 FOR PASSENGER VEHICLES

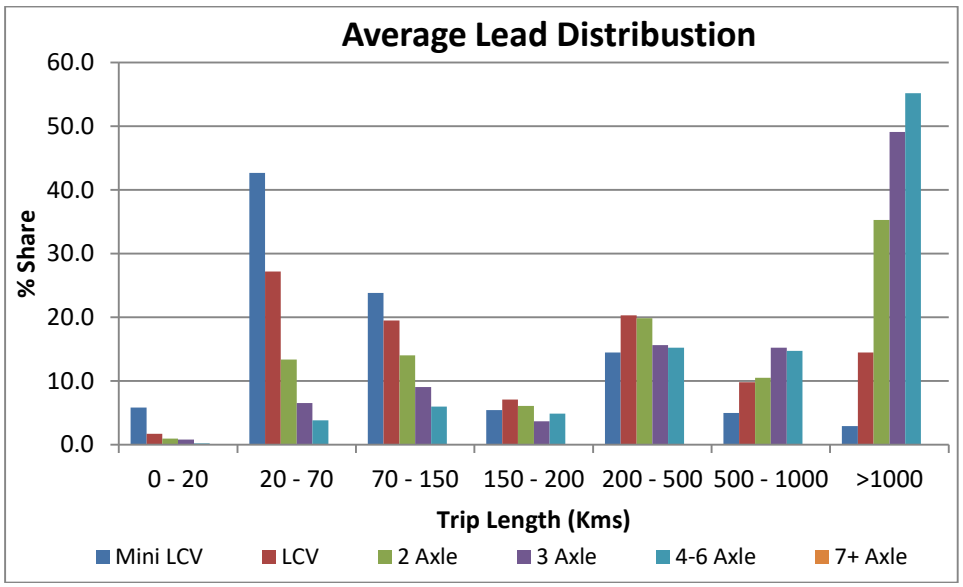


FIGURE 2-14 AVERAGE LEAD DISTRIBUTION AT TOLL PLAZA-1 FOR GOODS VEHICLE

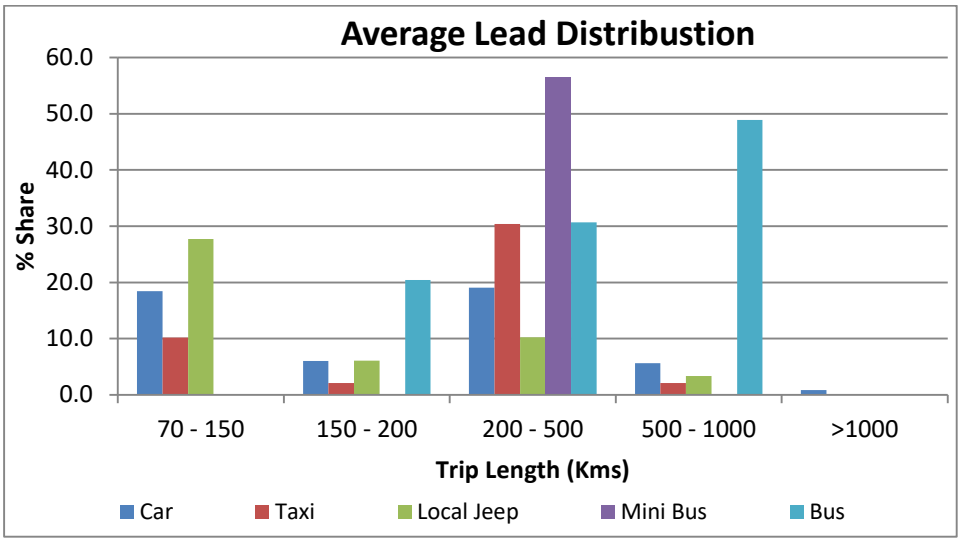


FIGURE 2-15 AVERAGE LEAD DISTRIBUTION AT TOLL PLAZA-2 FOR PASSENGER VEHICLES

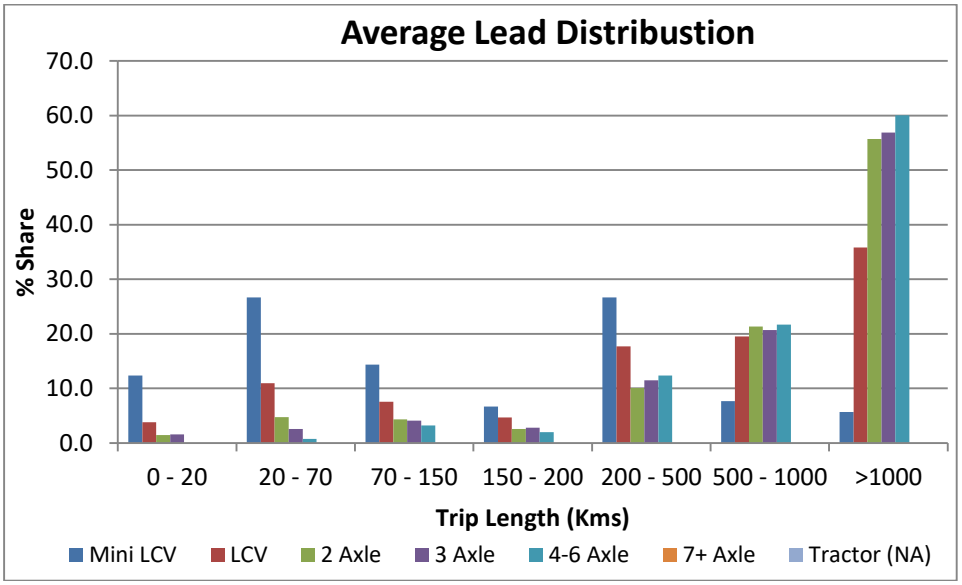


FIGURE 2-16 AVERAGE LEAD DISTRIBUTION AT TOLL PLAZA-2 FOR GOODS VEHICLES

It is evident that intercity buses plying on the project road resulting in higher lead distance by buses. However, goods traffic including LCV to MAV all type of vehicles are plying for longer distances of more than 500KMs.

2.2. Project Influence Area

By conducting origin destination survey, the travel characteristics of trips on project corridor are identified. One of the important component of these is identification of project influence area. As mentioned in above sections, regional distribution of traffic shows that highest percentage of traffic is within Maharashtra. However, the project road is having an influence on traffic destined / originating from Gujarat, Karnataka, Andhra Pradesh. The influence percentage of these states is already presented in table above (2.9 & 2.10)

2.3. Alternative Route Analysis

The traffic on project road is majorly of local and regional level. The possibility of opting for any alternate route for the set of origin destination is unlikely. The highest traffic is at TP-1 is between Sholapur and Tujalpur while at TP-2 it is Tujalpur nad Terkhed. Any alternate route option for this OD pair is presently unviable for tollable traffic on project road.

CHAPTER 3: TRAFFIC GROWTH FORECAST

3.1. Background

The investment priorities are governed by the traffic demand, assessed benefits and cost of the project. Demand plays an important role, which governs the type of facility / infrastructure to be created. This in turn determines likely benefits and costs to develop the same. A highway project of this nature calls for significant investment. Prediction of traffic demand becomes an important task and has to be carried out near accurately. Recognizing this, efforts are to be made to carefully assess all the parameters that help in predicting the traffic demand in future which necessitates realistic estimation of traffic growth rates. Traffic growth on a road facility is generally estimated on the basis of historical trends, Elasticity method as per IRC-108-1996. Demand changes are usually because of shifts in the pattern of economic activities in the surrounding regions. Hence, future traffic estimation necessitates a preview, however imprecise, of the probable pattern of future growth of the economy.

3.2. METHODOLOGY FOR TRAFFIC GROWTH RATE ESTIMATION

The exercise of traffic growth rate estimation has been carried out by us using the elasticity approach. The elasticity method relates traffic growth to changes in the related economic parameters. According to IRC-108, 1996, elasticity based econometric model for highway projects could be derived in the following form:

$$\text{Log e (P)} = A0 + A1 \text{ Log e (EI)}$$

Where:

P = Traffic volume (of any vehicle type)
EI = Economic Indicator (GDP/NSDP/Population/PCI)
A0 = Regression constant;
A1 = Regression co-efficient (Elasticity Index)

The main steps followed are as follows.

- Defining the Project Influence Area from OD analysis of travel pattern
- Estimating the past elasticity of traffic growth from time series of registered vehicles of influencing state.
- Assessment of future elasticity values for major vehicle groups, namely, car, bus and truck.

- Study of past performance and assessment of perspective growth rates of state economies of influence area.

The growth rates are found using the formulae Equations (a) & (b).

For Passenger vehicles,

$$G = \sum (R_i * E * I) MH \quad \text{.....Eqn. (a)}$$

Where RI = Growth in Per Capita Income (PCI) and Population

E=Elasticity value

I=Influence factor

For commercial vehicles,

$$G = \sum [(R * E * I) MH] \quad \text{.....Eqn. (b)}$$

$$G = \sum [(R * E * I) GJ] \quad \text{.....Eqn. (b)}$$

$$G = \sum [(R * E * I) ROI] \quad \text{.....Eqn. (b)}$$

Where,

R = Economic index (Net State Domestic Product or NSDP)

G = Economic index (Gross Domestic Product or GDP)

E=Elasticity value

I= Influence factor

3.3. PROJECT INFLUENCE AREA

A study of the socio-economic profiles of the regions comprising the Project Influence Area (PIA) provides an overview of the factors likely to influence the pattern of economic development and hence the flows and volumes of traffic on the highway. The details include population, per-capita Income, NSDP, GDP and targeted growth rates of the economy. The profiles help to generate basic inputs for the estimation of future growth in transport demand on the basis of past scenarios, perspective changes in transport demand elasticity's and economic growth rates. Therefore, share of Maharashtra and Gujarat is considered for estimating the traffic growth rates.

3.3.1. GROWTH IN REGISTERED VEHICLES

Maharashtra

To analyse the vehicular growth in the state, the vehicle registration data of Maharashtra has been collected. The annual growth rates and Compound Average Growth Rate (CAGR in %) of different vehicle types are shown in table below

TABLE 3-1: GROWTH OF VEHICLE REGISTRATION IN MAHARASTHRA

Year	Car/ Jeep/ Taxi	2-Wheeler	Buses	LCV (Goods)	LCV (Passenger) Auto/ Tempo	Trucks & Lorries (2-axle/3axle)	MAV/ Articulated	Tractor
2004-2005	1436196	6926576	63405	293843	515249	258716	7288	409635
2005-2006	1587777	7691856	66754	334741	534535	276133	8921	434095
2006-2007	1763450	8573679	71187	383854	555118	303924	9924	471234
2007-2008	1953826	9394869	77042	436725	574625	329922	11451	514518
2008-2009	2118630	10212360	79073	478975	598013	347942	13138	554658
2009-2010	2332524	11181762	83816	521692	626332	355928	14641	601772
2010-2011	2590223	12429011	89861	583847	640700	368657	16681	664651
2011-2012	2906943	13921763	100097	656407	640040	382139	19376	744115
2012-2013	3230011	15457123	110121	739725	655229	365167	23058	799809
2013-2014	3514630	16910395	120886	824680	658977	407105	25705	873937
2014-2015	3822770	18603835	120750	881002	695619	434909	27280	944449

CAGR %	**10.29%**	**10.39%**	**6.71%**	**11.63%**	**3.06%**	**5.42%**	**14.19%**	**8.72%**

Source: Govt. of India, Road Transport Year Book

Gujarat

To analyse the vehicular growth in the state, the vehicle registration data of Gujarat has been collected. The annual growth rates and Compound Average Growth Rate (CAGR in %) of different vehicle types are shown in table below.

TABLE 3-2: GROWTH OF VEHICLE REGISTRATION IN GUJARAT

Year	Car/ Jeep/ Taxi	2-Wheeler	Buses	LCV (Goods)	LCV (Passenger) Auto/ Tempo	Trucks & Lorries (2-axle/3axle)	MAV/ Articulated	Tractor
2004-2005	793677	5744353	52286	227652	296758	171026	20133	290219
2005-2006	874746	6352109	54446	253340	336695	183185	21177	311385
2006-2007	966170	7003860	54214	285858	371792	200705	22317	336986
2007-2008	1063234	7579457	56214	314388	396828	215457	23947	362799
2008-2009	1156880	8087416	58253	338826	426616	222808	24964	386951
2009-2010	1278108	8716981	60023	367113	464862	232689	26542	410516
2010-2011	1453342	9507556	62386	402514	511270	248423	27867	442737
2011-2012	1662927	10512304	67546	448958	561740	272375	29158	495136
2012-2013	1867957	11500292	70615	499277	605194	288955	30252	525567
2013-2014	2047621	12502698	72998	542918	637896	301162	31023	556907

2014-2015	2297572	13704879	76435	589984	678364	320277	31948	610077
CAGR %	11.23%	9.09%	3.89%	10.00%	8.64%	6.49%	4.73%	7.73%

3.3.2. PAST GROWTH IN ECONOMY

The past performance of the economic indicators for the PIA are collected for the same time period, with the objective of establishing the elasticity of travel demand with respect to different economic indicators. The economic indicators considered for the analysis include the following parameters.

- Net State Domestic Product (NSDP) of PIA states
- GDP of India
- Per Capita Income (PCI) of PIA states
- Population of PIA states

Maharashtra

Table below gives the growth of the economic indicators for Maharashtra. NSDP data has been used to calculate the growth of goods vehicles and to calculate the growth of passenger vehicles population and PCI data has been used.

TABLE 3-3: GROWTH IN ECONOMIC INDICES OF MAHARASTHRA STATE (2004 – 05 CONSTANT PRICES)

Year	NSDP (in Rs. Crores)	PCI (in Rupees)	GDP (in Rs. Crores)	Population (IN CRORES)
2004-2005	370023	15442	415480	102802490
2005-2006	423632	15927	470929	104339212
2006-2007	481983	17073	534654	105898904
2007-2008	538081	17572	594832	107481911
2008-2009	546533	19462	610191	109088582
2009-2010	599338	20959	666944	110719270
2010-2011	667625	21706	742042	112374333

2011-2012	695904	23272	775610	114054137
2012-2013	749137	24867	835929	115759051
2013-2014	805593	26853	896767	117489450
2014-2015	852451	29218	947550	119245717
Average	**8.78%**	**6.61%**	**8.65%**	**1.49%**

Source: Central Statistical Organization

Gujarat

Table below the growth of the economic indicators for Gujarat. NSDP data has been used to calculate the growth of goods vehicles and to calculate the growth of passenger vehicles population and PCI data has been used.

TABLE 3-4: GROWTH IN ECONOMIC INDICES OF GUJARAT STATE (2004 – 05 CONSTANT PRICES)

Year	NSDP (in Rs. Crores)	PCI (in Rupees)	GDP (in Rs. Crores)	Population (IN CRORES)
2004-2005	172265	32021	203373	54373172
2005-2006	197270	36102	233776	55340226
2006-2007	213954	38568	253393	56324480
2007-2008	239253	42498	281273	57326240
2008-2009	249480	43685	300341	58345816
2009-2010	284732	49168	334127	59383526
2010-2011	315892	53813	367581	60439692
2011-2012	336886	56634	392058	61514643
2012-2013	356477	59157	416163	62608712
2013-2014	385472	63168	452625	63722239
2014-2015	417896	67514	490456	64855572
Average	**9.32%**	**7.79%**	**9.23%**	**1.78%**

3.3.3. TRANSPORT DEMAND ELASTICITY

Description on Regression Analysis

The Regression analysis tool performs linear regression analysis by using the "least squares" method to fit a line through a set of observations. We can analyze how a single dependent variable is affected by the values of one or more independent variables. In the present case registered vehicles by type are dependent variables whereas the economic parameters are independent variables. Once the relation is established by regression there are the following measures to accept or reject the relation as explained below.

T-statistic

The t-statistic is a measure of how strongly a particular independent variable explains variations in the dependent variable. The larger the t-statistic the better the independent variable's explanatory power. Next to each t-stat is a P-value. The P-value is used to interpret the t-stat. In short, the P-value is the probability that the independent variable in question has nothing to do with the dependent variable. Generally, we look for a P-value of less than .05, which means there is a 5% chance that the dependent variable is unrelated to the dependent variable. If the P-value is higher 0.1, a strong argument can be made for eliminating this particular independent variable from a model because it "isn't statistically significant."

R Square

R Square is another measure of the explanatory power of the model. In theory, R square compares the amount of the error explained by the model as compared to the amount of error explained by averages. The higher the R-Square the better is the regression.

Regression analysis is carried out by creating econometric models which are suggested in IRC: 108 - 1996 using past vehicle registration data of individual states and economic indicators, like, Population and PCI for passenger vehicles and NSDP for freight vehicles. All India registered trucks are also regressed with GDP to estimate national level elasticity value for trucks and its growth rate. The elasticity values obtained for each class of vehicle are given below.

TABLE 3-5: ELASTICITY VALUES DERIVED BASED ON REGRESSION ANALYSIS FOR MAHARASHTRA

Modes	Variables	R Square	Coefficient
Car	PCI	0.989	1.525
2-W	PCI	0.990	1.520
Buses	PCI	0.976	1.060
Buses	Population	0.984	4.630
LCV Pass	PCI	0.947	0.436
LCV Pass	Population	0.961	1.912
LCV	GDP	0.992	1.363
Trucks	GDP	0.952	0.580
MAV	GDP	0.986	1.650
Tractor	GDP	0.975	1.061
Others	GDP	0.540	0.794
LCV	NSDP	0.990	1.357
Trucks	NSDP	0.953	0.578
MAV	NSDP	0.984	1.643
Tractor	NSDP	0.971	1.055
Others	NSDP	0.532	0.785

TABLE 3-6: ELASTICITY VALUES DERIVED BASED ON REGRESSION ANALYSIS FOR GUJARAT

Modes	Variables	R Square	Coefficient
Car	PCI	0.981	1.451
2-W	PCI	0.986	1.152
Buses	PCI	0.940	0.524
Buses	Population	0.971	2.217
LCV Pass	PCI	0.994	1.118
LCV Pass	Population	0.994	4.655
LCV	GDP	0.993	1.097
Trucks	GDP	0.990	0.719
MAV	GDP	0.994	1.332
Tractor	GDP	0.989	0.858
Others	GDP	0.976	1.611
LCV	NSDP	0.991	1.076
Trucks	NSDP	0.988	0.706
MAV	NSDP	0.994	0.549
Tractor	NSDP	0.987	0.842
Others	NSDP	0.974	1.580

Over the years there is a change in passenger movement with more and more people shifting towards personalized modes of travel. Moreover, the buses usually ply on fixed routes. Therefore, elasticity values for buses are considered accordingly.

3.3.4. Recommended Elasticity values

Considering the PIA and the economic indicators of Maharashtra & Gujarat, the projected elasticity values for various vehicle types are presented in Table 2.7 & Table 2.8, which are used to estimate the growth rates of each vehicle type. The transport demand elasticity by vehicle type, over a period, tends to decline and approach unity or even less. As the economy and its various sectors grow, every region tends to become self-sufficient. Moreover, much of the past growth has been associated with the country's transition from a largely rural, subsistence economy to cash based urban economy, dominated by regional and national linkages. As the transition proceeds, its impact on transport pattern can be expected to become less dominant. Therefore, the demand for different type of vehicles falls, over time, despite greater economic development. The same is also clear from the relationships of the economy and transport demand elasticity over time nationally and internationally.

TABLE 3-7: ELASTICITY VALUES ADOPTED FOR MAHARASHTRA

Mode	Up to 2020	2021-2025	2026-2030	2031-2035	2036-2040	Beyond 2040
Car	1.37	1.24	1.11	1.00	0.90	0.81
2-W	1.37	1.23	1.11	1.00	0.90	0.81
Buses	0.95	0.86	0.77	0.70	0.63	0.56
LCV Passenger	0.39	0.35	0.32	0.29	0.26	0.23
Goods Vehicles vs GDP						
LCV	1.23	1.10	0.99	0.89	0.81	0.72
2-Axle/ 3-Axle	0.52	0.47	0.42	0.38	0.34	0.31
MAV	1.49	1.34	1.20	1.08	0.97	0.88
Tractor	0.95	0.86	0.77	0.70	0.63	0.56
Others	0.71	0.64	0.58	0.52	0.47	0.42
Goods Vehicles vs NSDP						
LCV	1.22	1.10	0.99	0.89	0.80	0.72
2-Axle/ 3-Axle	0.52	0.47	0.42	0.38	0.34	0.31
MAV	1.48	1.33	1.20	1.08	0.97	0.87
Tractor	0.95	0.85	0.77	0.69	0.62	0.56
Others	0.71	0.64	0.57	0.52	0.46	0.42

TABLE 3-8: ELASTICITY VALUES ADOPTED FOR GUJARAT

Mode	Up to 2020	2021-2025	2026-2030	2031-2035	2036-2040	Beyond 2040
Car	1.31	1.18	1.06	0.95	0.86	0.77
2-W	1.04	0.93	0.84	0.76	0.68	0.61
Buses	0.47	0.42	0.38	0.34	0.31	0.28
LCV Passenger	1.01	0.91	0.81	0.73	0.66	0.59
Goods Vehicles vs GDP						
LCV	0.99	0.89	0.80	0.72	0.65	0.58
2-Axle/ 3-Axle	0.65	0.58	0.52	0.47	0.42	0.38
MAV	1.20	1.08	0.97	0.87	0.79	0.71
Tractor	0.77	0.70	0.63	0.56	0.51	0.46
Others	1.45	1.30	1.17	1.06	0.95	0.86
Goods Vehicles vs NSDP						
LCV	0.97	0.87	0.78	0.71	0.64	0.57
2-Axle/ 3-Axle	0.64	0.57	0.51	0.46	0.42	0.38
MAV	0.49	0.44	0.40	0.36	0.32	0.29
Tractor	0.76	0.68	0.61	0.55	0.50	0.45
Others	1.42	1.28	1.15	1.04	0.93	0.84

3.4.

3.5. TRAFFIC GROWTH RATES

Following equations ‘a’ and ‘b’ presented belowand using the future CAGRs and transport demand elasticity values, traffic growth rates for the future years are calculated. The vehicle category-wise growth rates are presented as-

TABLE 3-9: CALCULATED TRAFFIC GROWTH RATES OF MAHARASHTRA

Mode	Up to 2016	Up to 2020	2021-2025	2026-2030	2031-2035	2036-2040	Beyond 2040
Car	10.19	9.17	8.25	7.43	6.68	6.02	5.41
2-W	10.22	9.20	8.28	7.45	6.71	6.03	5.43
Buses	6.86	6.17	5.55	5.00	4.50	4.05	3.64
LCV Passenger	2.97	2.68	2.41	2.17	1.95	1.76	1.58
Goods Vehicles vs GDP							
LCV Goods	11.71	10.54	9.49	8.54	7.68	6.92	6.22
2-Axle/ 3-Axle	5.22	4.70	4.23	3.80	3.42	3.08	2.77
MAV	14.23	12.81	11.53	10.38	9.34	8.40	7.56
Tractor	8.95	8.05	7.25	6.52	5.87	5.28	4.76
Others	7.30	6.57	5.91	5.32	4.79	4.31	3.88
Goods Vehicles vs NSDP							
LCV Goods	11.77	10.59	9.54	8.58	7.72	6.95	6.26
2-Axle/ 3-Axle	5.25	4.72	4.25	3.83	3.44	3.10	2.79
MAV	14.30	12.87	11.59	10.43	9.38	8.45	7.60
Tractor	8.99	8.09	7.28	6.56	5.90	5.31	4.78
Others	7.31	6.58	5.92	5.33	4.80	4.32	3.89

TABLE 3-10: CALCULATED TRAFFIC GROWTH RATES OF GUJARAT

Mode	Up to 2016	Up to 2020	2021-2025	2026-2030	2031-2035	2036-2040	Beyond 2040
Car	11.27	10.14	9.13	8.21	7.39	6.65	5.99
2-W	9.03	8.13	7.32	6.58	5.93	5.33	4.80
Buses	3.99	3.59	3.23	2.91	2.62	2.35	2.12
LCV Passenger	8.68	7.81	7.03	6.32	5.69	5.12	4.61
Goods Vehicles vs GDP							
LCV Goods	10.06	9.06	8.15	7.34	6.60	5.94	5.35
2-Axle/ 3-Axle	6.57	5.91	5.32	4.79	4.31	3.88	3.49
MAV	8.52	7.66	6.90	6.21	5.59	5.03	4.53
Tractor	7.82	7.04	6.34	5.70	5.13	4.62	4.16
Others	14.86	13.37	12.04	10.83	9.75	8.77	7.90
Goods Vehicles vs NSDP							
LCV Goods	10.01	9.01	8.11	7.30	6.57	5.91	5.32
2-Axle/ 3-Axle	6.53	5.88	5.29	4.76	4.29	3.86	3.47
MAV	4.93	4.43	3.99	3.59	3.23	2.91	2.62
Tractor	7.79	7.01	6.31	5.68	5.11	4.60	4.14
Others	14.79	13.31	11.98	10.78	9.70	8.73	7.86

3.5.1. RECOMMENDED GROWTH RATES

The calculated traffic growth rates need to be rationalized to account for factors such as the available vehicle types broadly based on the market behaviour, government policy, vehicle technology, vehicle production, etc. New technology cars, LCVs and MAVs are expected to grow faster. LCVs will be preferred for short distance travel and 3-axles and MAVs will be preferred for long hauls. Old technology cars and 2-axle trucks are expected to have reduced growth rate in the future.

The production and sales data of commercial obtained from the official website of Society of Indian Automobile Manufactures (SIAM) shows that the production and sales of MAVs have increased and 2-axle trucks have decreased in the recent years. This trend is observed on major national highways, including this project corridor. Comparison of truck traffic volumes presented in the Feasibility Report and that counted for this detailed design phase shows that the 2-axle trucks are following a decreasing trend; whereas, 3-axle and MAVs are following increasing trend.

Based on the present composition of commercial vehicles, overall growth of commercial vehicles and average load carried by each vehicle type, tonnage has been calculated for five-year periods for present and future compositions of traffic. The difference in the present and the future tonnage gives the additional traffic due to change in modal share which has been converted into vehicles.

So far, the truck traffic growth rate calculation is for all types of trucks combined (LCV, 2-axle, 3-axle and MAVs). The elasticity values, as well as resultant growth rates for all types of trucks combined together will not provide a reasonable estimate of future commercial traffic distribution on the project corridor.

Since 2-axle trucks are following a decreasing trend and 3-axle trucks and MAVs are following an increasing trend all over the country, it is more reasonable to assume that the transport demand elasticity of 2-axle trucks will be lower than that of 3-axle trucks and MAVs.

LCVs are following a very high growth rate compared to other commercial vehicle categories. It is assumed that the transport demand elasticity for LCV category is greater than that for other commercial vehicles. The calculated elasticity for generic ‘truck’ category is redistributed among various categories of commercial vehicles based on the above discussion.

Final recommended growth rates are presented in Table below

TABLE 3-11: RECOMMENDED TRAFFIC GROWTH RATES

Mode	Up to 2020	2021-2025	2026-2030	2031-2035	2036-2040	Beyond 2040
Car	10.14	9.13	8.21	7.39	6.65	5.99
2-W	8.13	7.32	6.58	5.93	5.33	5.00
Buses	5.00	5.00	5.00	5.00	5.00	5.00
LCV Passenger	7.81	7.03	6.32	5.69	5.12	5.00
LCV Goods	9.54	8.13	7.32	6.59	5.93	5.33
2-Axle	5.00	5.00	5.00	5.00	5.00	5.00
3-Axle	6.24	5.32	5.00	5.00	5.00	5.00
MAV	8.09	6.90	6.21	5.59	5.03	5.00
Tractor	7.04	6.34	5.70	5.13	5.00	5.00
Others	13.37	12.04	10.83	9.75	8.77	7.90

3.6. Estimation of Inflation by WPI

3.6.1. Perception of Inflation of Rates

Inflation is generally defined as the increase of prices of goods and services over a certain period of time. Inflation is one of the macroeconomic parameter of the developing world which includes India as well. Since the last 2 years, with the newly formed government pursuing the monetary policy to contain inflation with strong macroeconomic fundamentals of our country, the inflation has come down. The WPI index and the inflation rate as per the calendar year and the financial year are as given in Table 7-11 below:

TABLE 3-12: PAST WPI AND INFLATION RATES

Month/Year	WPI	Inflation
Dec 1991	86.04	
Dec 1992	93.38	8.53%
Dec 1993	101.57	8.77%
Dec 1994	114.50	12.73%
Dec 1995	122.10	6.64%
Dec 1996	128.50	5.24%
Dec 1997	133.70	4.05%
Dec 1998	142.10	6.28%
Dec 1999	146.10	2.81%
Dec 2000	158.50	8.49%

Dec 2001	161.80	2.08%
Dec 2002	167.20	3.34%
Dec 2003	176.80	5.74%
Dec 2004	188.80	6.79%
Dec 2005	197.20	4.45%
Dec 2006	208.40	5.68%
Dec 2007	216.40	3.84%
Dec 2008	229.70	6.15%
Dec 2009	248.30	8.10%
Dec 2010	273.46	10.13%
Dec 2011	294.62	7.74%
Dec 2012	316.16	7.31%
Dec 2013	336.39	6.40%
Dec 2014	334.71	-0.50%
Dec 2015	331.15	-1.06%
Dec 2016	342.38	3.39%
Average		5.72%

The average inflation rate based on calendar and financial year indicates a growth of 5.72 % per annum. Considering the trend of inflation in the past, 5.72% WPI growth factor is adopted in the study for the entire concession period.

3.7. Traffic Forecasting of Commercial Vehicles

Present year commercial traffic is projected for 30 years using above traffic growth rates.

TABLE 3-13: PROJECTED COMMERCIAL VEHICLES TRAFFIC

TIME	Fast Passenger Vehicles				Fast Goods Vehicles								Total	
	Car		Bus		2 Axle Truck		3 Axle Truck		MAV		LCV'S			
Direction	UP	DN	UP	DN	UP	DN	UP	DN	UP	DN	UP	DN	UP	DN
2018	1844	1770	303	296	507	567	570	632	580	613	454	386	8522	
2019	2031	1949	318	311	532	595	606	671	627	663	497	423	9223	
2020	2237	2147	334	326	559	625	643	713	678	716	545	463	9986	
2021	2441	2343	351	343	587	656	678	751	724	766	589	501	10730	
2022	2664	2557	368	360	616	689	714	791	774	818	637	542	11530	
2023	2907	2791	387	378	647	724	752	833	828	875	689	586	12397	
2024	3173	3045	406	397	679	760	792	878	885	935	745	633	13328	
2025	3462	3323	426	417	713	798	834	924	946	1000	805	685	14333	
2026	3747	3596	448	437	749	838	875	971	1005	1062	864	735	15327	
2027	4054	3892	470	459	787	880	919	1019	1067	1128	927	789	16391	
2028	4387	4211	494	482	826	924	965	1070	1133	1198	995	846	17531	
2029	4747	4557	518	506	867	970	1013	1124	1204	1272	1068	908	18754	
2030	5137	4931	544	532	910	1018	1064	1180	1279	1351	1146	975	20067	

2031	5517	5295	571	558	956	1069	1117	1239	1350	1427	1222	1039	21360
2032	5924	5687	600	586	1004	1123	1173	1301	1425	1507	1302	1107	22739
2033	6362	6107	630	615	1054	1179	1232	1366	1505	1591	1388	1180	24209
2034	6832	6558	661	646	1107	1238	1293	1434	1589	1680	1480	1258	25776
2035	7337	7043	694	678	1162	1300	1358	1506	1678	1774	1577	1341	27448
2036	7825	7511	729	712	1220	1365	1426	1581	1763	1863	1671	1421	29087
2037	8345	8011	766	748	1281	1433	1497	1660	1851	1957	1770	1505	30824
2038	8900	8543	804	785	1345	1504	1572	1743	1944	2055	1875	1594	32664
2039	9492	9111	844	825	1412	1580	1651	1830	2042	2158	1986	1689	34620
2040	10124	9717	886	866	1483	1659	1733	1922	2145	2267	2104	1789	36695
2041	10730	10299	931	909	1557	1742	1820	2018	2252	2380	2216	1884	38738
2042	11373	10916	977	955	1635	1829	1911	2119	2365	2499	2334	1984	40897
2043	12054	11570	1026	1002	1717	1920	2006	2225	2483	2624	2458	2090	43175
2044	12776	12263	1077	1052	1803	2016	2107	2336	2607	2755	2590	2202	45584
2045	13541	12998	1131	1105	1893	2117	2212	2453	2737	2893	2728	2319	48127
2046	14352	13776	1188	1160	1988	2223	2323	2575	2874	3038	2873	2443	50813
2047	15212	14602	1247	1218	2087	2334	2439	2704	3018	3190	3026	2573	53650

TIME	Fast Passenger Vehicles				Fast Goods Vehicles								Total	
	Car		Bus		2 Axle Truck		3 Axle Truck		MAV		LCV'S			
Direction	UP	DN	UP	DN	UP	DN	UP	DN	UP	DN	UP	DN	UP	DN
2018	1179	1069	120	115	404	420	557	586	656	696	289	308	6399	
2019	1299	1177	126	121	424	441	592	623	709	752	317	337	6918	
2020	1430	1297	132	127	445	463	629	661	766	813	347	370	7480	
2021	1561	1415	139	133	468	486	662	697	819	869	375	400	8024	
2022	1703	1544	146	140	491	511	697	734	876	929	405	432	8608	
2023	1859	1685	153	147	516	536	734	773	936	993	438	467	9237	
2024	2029	1839	161	154	541	563	774	814	1001	1062	474	505	9917	
2025	2214	2007	169	162	568	591	815	857	1070	1135	513	546	10647	
2026	2395	2172	177	170	597	621	855	900	1136	1206	550	586	11365	
2027	2592	2350	186	178	627	652	898	945	1207	1281	590	629	12135	
2028	2805	2543	195	187	658	684	943	992	1282	1360	634	675	12958	
2029	3035	2752	205	197	691	718	990	1042	1362	1445	680	725	13842	
2030	3284	2978	216	207	726	754	1040	1094	1446	1534	730	778	14787	
2031	3527	3198	226	217	762	792	1092	1149	1527	1620	778	829	15717	

2032	3788	3434	238	228	800	832	1146	1206	1612	1711	829	884	16708
2033	4068	3688	249	239	840	873	1204	1266	1702	1806	884	942	17761
2034	4368	3961	262	251	882	917	1264	1330	1798	1907	942	1004	18886
2035	4691	4253	275	264	926	963	1327	1396	1898	2014	1004	1070	20081
2036	5003	4536	289	277	972	1011	1393	1466	1994	2115	1064	1134	21254
2037	5336	4838	303	291	1021	1061	1463	1539	2094	2221	1127	1201	22495
2038	5691	5160	318	305	1072	1114	1536	1616	2199	2333	1193	1272	23809
2039	6069	5503	334	320	1126	1170	1613	1697	2310	2451	1264	1347	25204
2040	6473	5869	351	336	1182	1229	1694	1782	2426	2574	1339	1427	26682
2041	6860	6220	369	353	1241	1290	1778	1871	2547	2703	1411	1503	28146
2042	7271	6593	387	371	1303	1355	1867	1964	2675	2838	1486	1583	29693
2043	7707	6988	406	389	1368	1422	1961	2063	2808	2980	1565	1668	31325
2044	8169	7406	427	409	1436	1493	2059	2166	2949	3128	1648	1757	33047
2045	8658	7850	448	429	1508	1568	2162	2274	3096	3285	1736	1850	34864
2046	9176	8320	470	451	1584	1646	2270	2388	3251	3449	1829	1949	36783
2047	9726	8819	494	473	1663	1729	2383	2507	3413	3622	1926	2053	38808

The growth rates shows a progressive trend resulting in increase of vehicles during concession period. The increase is higher for first 10 years of concession period but grows gradually after 10 years up to 30 years.

Report
January 2019

Udaipur-Shamlaji: Traffic and Revenue Forecasts



IRB Infrastructure Developers limited
Our ref: 23287902
Client ref:

steer

Report
January 2019

Udaipur-Shamlaji: Traffic and Revenue Forecasts

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B Forecasting assumptions

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D Traffic and Revenue forecasts

Disclaimer

This report has been produced for the sole benefit of IRB Infrastructure Developers limited. The report may only be relied upon by Approved Addressees in accordance with the terms of our engagement letter.

The projections of traffic contained within this document represent Steer's best estimates. While they are not precise forecasts, they do represent, in our view, a reasonable expectation for the future, based on the most credible information available as of the date of this report.

The estimates contained within this document rely on numerous assumptions and professional judgements that are influenced by external circumstances. These can change quickly and that can affect the outcome of our forecasts. In addition, it has been necessary to base most of this analysis on data collected by third parties. This has been independently checked whenever possible. However, Steer does not guarantee the accuracy of this data.

Finally, it is important to note that the traffic forecasts presented represent long term growth profiles. In reality, there will be a degree of year-on-year oscillation of actual traffic levels around these growth rates in line with macroeconomic cycles. We do not believe it is feasible to include such oscillations within our concession life forecast, and would recommend that such uncertainties are addressed through "stress tests" within the financial model.

Glossary Items

Acronym	Meaning
AADT	Annual Average Daily Traffic
CJV	Cars / Jeeps / Vans
COD	Commercial Operations Date
DFC	Dedicated Freight Corridor
DMIC	Delhi Mumbai Industrial Corridor
EMV	Electric Motor Vehicles
FY	Financial Year
GSDP	Gross State Domestic Production
HCM	Heavy Commercial Vehicles
IRB	IRB Infrastructure Developers Ltd.
LCV	Light Commercial Vehicles
MAV	Multi Axle Vehicle
NH	National Highway
NHAI	National Highways Authority of India
NSDP	National State Domestic Production
PCI	Per Capita Income
SCF	Seasonality Correction Factors
SH	State Highway
TP	Toll Plaza
WPI	Whole sale price index

1 Introduction

The assignment

1.1 IRB Infrastructure Developers Ltd. (the "Client") has commissioned Steer to act as the traffic and revenue advisor, in the evaluation of Udaipur-Gujarat Border (NH-8/NH-48) (the "Asset") which forms part of the portfolio of infrastructure concessions currently being operated by the Client, in India.

1.2 We understand that the Client is looking to obtain a Fair Market Valuation of the Asset through this evaluation, consisting of a robust assessment of the current condition and potential of the Asset from a traffic and revenue perspective. The aim of this study is therefore to identify the traffic and revenue potential of the Asset.

1.3 The following table summarises the Asset and its operating history. As can be seen, it is currently comprised of 4 lanes, with expansion being carried out from 4 to 6 lanes. The remaining concession period for the Asset is 19 years.

Table 1.1: Description of Asset

Asset Name	State	Length	Toll plazas	Code	Tolling History	Improvements	Remaining Concession Period
Udaipur-Gujarat Border (NH-8/NH-48)	Rajasthan	124km	km 348+450 Khandi Obri	TP1	September 2017	4-lane to 6-lane expansion ongoing	19 years

Source: Steer analysis based on NHAI data

1.4 This report constitutes our draft final deliverable under this study and includes the traffic and revenue forecasts for the Asset.

Our approach

1.5 The approach employed by Steer in the preparation of the traffic and revenue forecasts was developed to take advantage of the existing knowledge of the Asset and of the available data. It follows normal practices well established in addressing the issue of forecasting on-going traffic growth on a brownfield project.

1.6 The analysis focused on two sets of issues:

- understanding and verifying the traffic which is at present using the Asset; and
- identifying how and why that traffic will change in the future.

1.7 Regarding the former (i.e. current traffic on the Asset), independent primary data collection was commissioned as part of this study and then compared against the Client's traffic and revenue datasets.

1.8 The estimation of future traffic demand on the Asset is driven by:

- **Growth of 'background' traffic**: this depends to a certain extent on the on-going socio-economic and demographic development of the area served by the Asset;
- **Change in the local and international industry**: which drives heavy goods traffic on the Asset; and
- **Change in the competitive position of the Asset**: this reflects changes in highway capacity of competing roads and the relative changes in service levels (time, congestion, price, etc.) for the Asset, and their competitors.

Contents of this report

1.9 This report is divided into 7 chapters, including this introduction:

- Chapter 2 describes the key features of the Asset based on site visits;
- Chapter 3 summarizes the traffic volumes and user/commodity profile, on the Asset;
- Chapter 4 discusses the socio-economic context in the corridors containing the Asset;
- Chapter 5 reports the approach developed to forecast future traffic demand on the Asset;
- Chapter 6 presents our base year traffic estimates and forecasting assumptions; and
- Chapter 7 presents the traffic and revenue forecasts for each of the Asset.

2 The Asset

Introduction

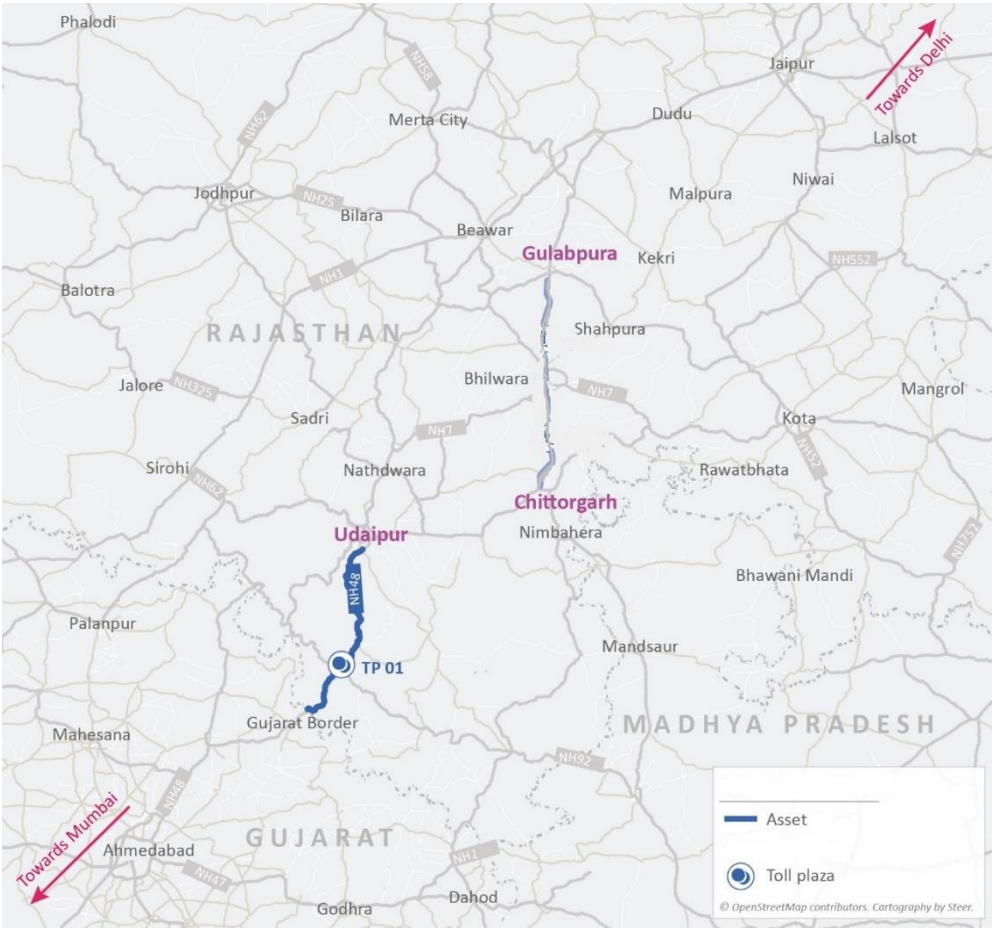
2.1 This chapter provides a description of the Asset, prepared using available information, and our own analysis based on site visits and understanding of the local areas around the Asset.

2.2 We also describe the key alternative routes to each Asset (if any), the relative competitive advantage between the Asset and the alternatives, and places of interest which could be attractors/generators of travel demand along the corridor.

Asset description

2.3 The 114-km four-lane toll road (NH-48) that comprises this Asset is located in Rajasthan and forms part of the Delhi-Mumbai arm of the Golden Quadrilateral. It is also part of the direct link between Ahmedabad and Udaipur.

Figure 2.1: Location of Asset: Udaipur – Gujarat Border and corresponding toll plaza



Source: Steer cartography using OpenStreetMap data

2.4 The Asset is currently being six-laned, with construction ongoing along several stretches of the road. There is one toll plaza with 6 entry lanes per direction. Tolling operations have been taking place on the Asset for over a decade now, however, the Client has only recently taken over the Asset.

2.5 According to information provided by the Client, toll collection commenced on September 3, 2017 at 75% toll rates, and the full COD is expected to be in FY20. Appendix A details the toll rates for FY19, being charged at the toll plaza.

Economic activities in the region

2.6 Situated amidst *ghats* (hills/valleys), the Asset had a few rural and semi-urban settlements along its alignment. However, there was noticeable passenger movement due to the presence of a few religious centres in the area. The images below show the toll plaza on the Asset and typical cross-sections.

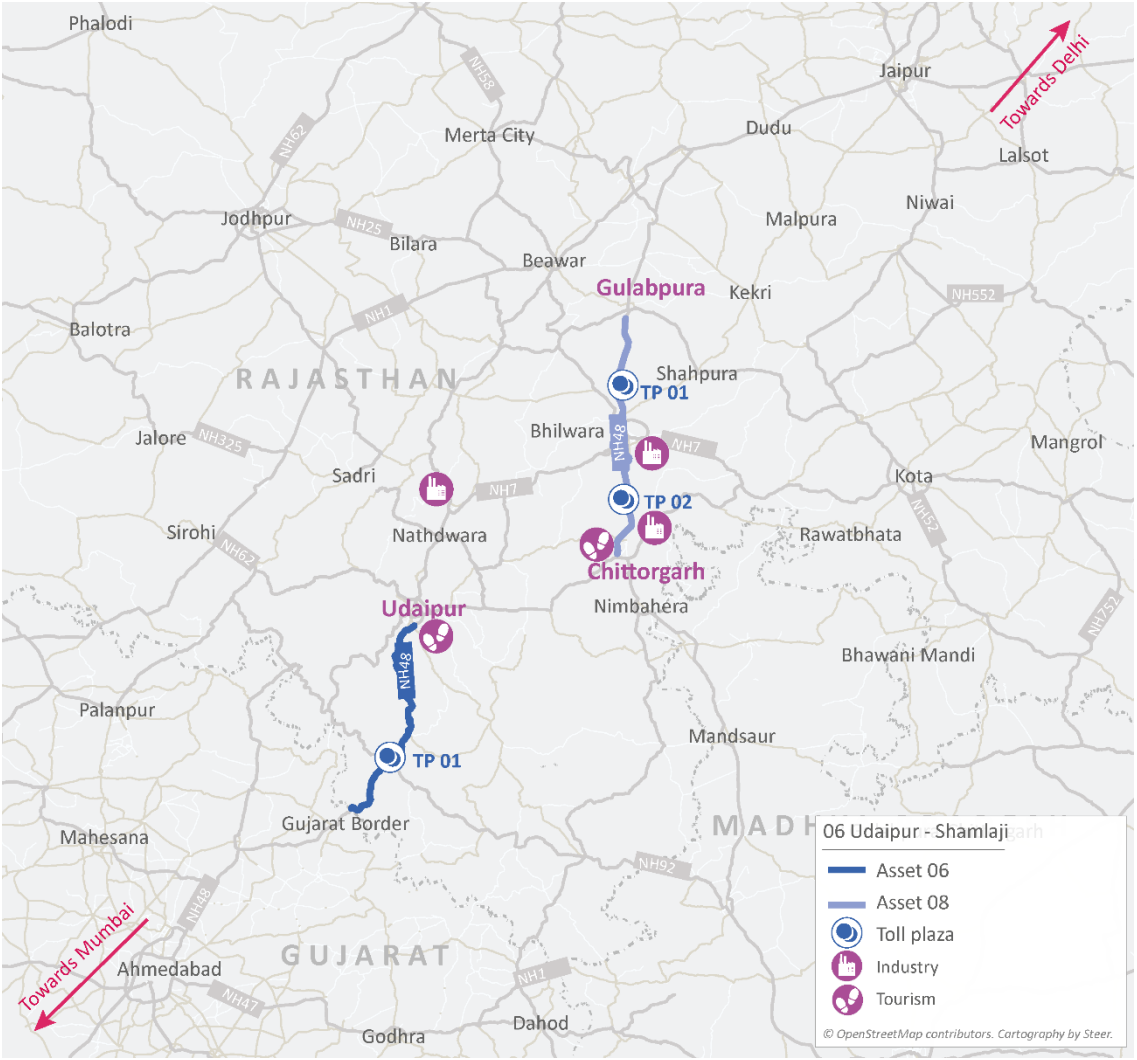
Figure 2.2: Asset: Udaipur-Gujarat, typical cross-section



Source: Steer site visit

2.7 The economic centres close to the asset are depicted in the map below:

Figure 2.3: Map detailing economic centres of activity in close vicinity of the asset



Source: Steer site visit

2.8 Tourism, agriculture, and mineral industries contribute to Udaipur's diverse economic base. Udaipur sees major tourist footfall throughout the year owing to its picturesque landscape, lakes, and historic palaces and architecture. Shamlaji is a major Hindu pilgrimage dedicated to God Vishnu. Each year an annual fair is held October which attracts huge crowds from surrounding region. Udaipur district is rich in lead, zinc, silver, phosphate, calcite, copper and limestone minerals. Udaipur is known for its marble which is mined, processed, and is exported across the world. Nathdwara in north of asset is one of biggest extractors of marble and limestone minerals. Hindustran Zinc, which is world's second largest zinc producer, is based out of Udaipur

Potential network impacts and competition

2.9 Serving as the primary link between Delhi, Jaipur and Udaipur in the north and Himmatnagar, Ahmedabad and Mumbai in the south, the Asset is a key strategic corridor connecting Rajasthan and Udaipur. Hence, there is minimal competition to this Asset.

3 Data Analysis

Introduction

3.1 This chapter outlines the current traffic and revenues on the Asset, as well as our analysis of Origin Destination (OD) data, as provided by the Client/based on Vendor's reports.

3.2 Traffic demand data is used to understand the volume and vehicle composition of demand using the Asset, and OD data is used to obtain a better understanding of trip purposes/areas of influence in the vicinity of the Asset, as well as, the commodities being moved by goods vehicles. This analysis, combined with our understanding of the Asset (based on our site visit), enables us to identify the key drivers of demand.

Current traffic and revenue

Overview

3.3 On existing (brownfield) assets, actual toll plaza data is usually used as the basis on which the current/base year demand is established. As we were provided with partial FY19 toll plaza data for this Asset, we have synthesised the rest of FY19 using toll plaza data from FY18 and seasonality data from regional reference assets. We have then used the independent traffic volume counts (TVC) counts to validate the AADT and estimate shares of violations and exemptions for tolling on this Asset.

3.4 The following table indicates the dates for the TVC counts conducted at the toll plaza on the Asset.

Table 3.1: Dates for TVC Counts

Asset Name	TVC counts (7 days)
Udaipur-Gujarat Border	18/09/2018 - 24/09/2018

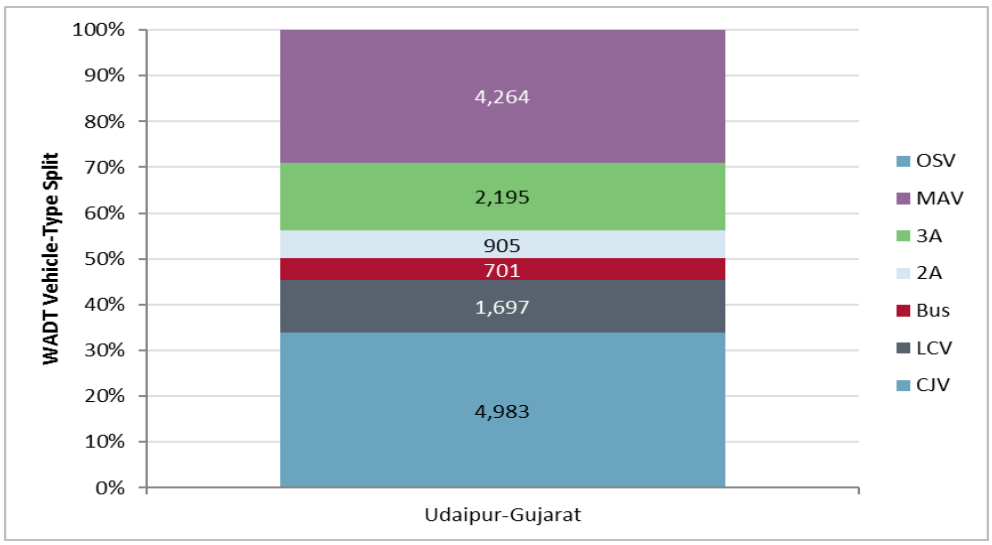
Source: Steer analysis

3.5 Traffic along the national highways shows variation across the week due to the nature of industrial and port activity, and economic activities surrounding the Assets. To derive a representative TVC count considering daily variation, three-day to seven-day traffic counts are generally recommended, and hence, in order to fully understand this weekly fluctuation, we collected seven-day counts for each toll plaza of the Asset.

Traffic

3.6 Taking a simple average of the seven-day TVC counts, we have arrived at the following weekly average daily traffic (WADT). This WADT includes non-tollable, exempt and toll-violating vehicles, which we remove while estimating AADT.

Figure 3.1: WADT for the Asset



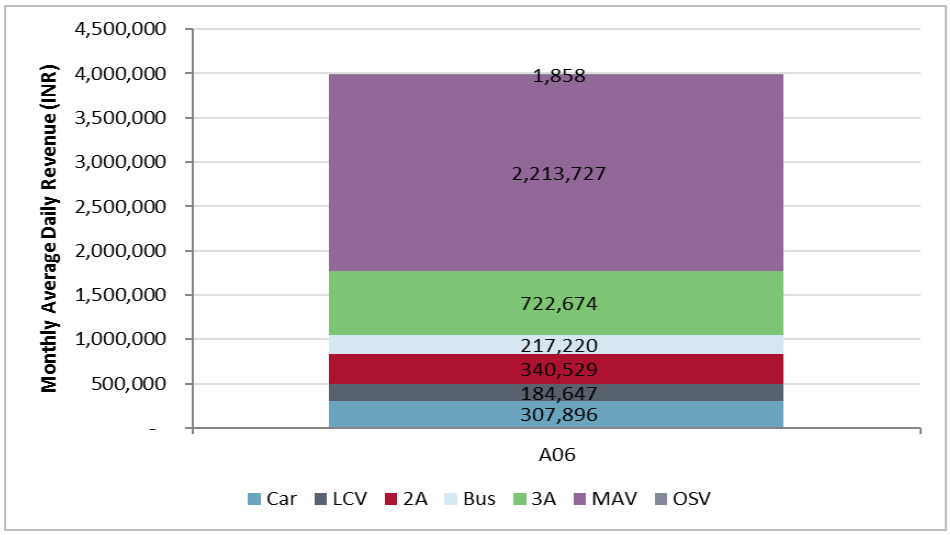
Source: Steer analysis of independent data collection

Revenues

3.7 The concessionaire submits toll plaza data to NHAI in the form of Schedule-M and Schedule-N documents. While Schedule M presents the number of tickets sold for each vehicle type and ticket type (at a monthly level), Schedule N presents the number of trips made by different vehicles by ticket type (at a weekly level). We were provided with Schedule M (toll plaza data) by the Client, for this Asset.

3.8 The data provided in Schedule M was from April to August 2018, on the basis of which we calculated the monthly average daily revenue (MADR), as presented in the figure below. It should be noted that the actual annual average daily revenue could be higher or lower than the presented MADR, as this would depend on the seasonality of traffic between April and August.

Figure 3.2: Monthly Average Daily Revenue (MADR) for the Asset (April to August)



Source: Steer analysis of Schedule M Data

Origin-Destination analysis

Overview

3.9 Origin-destination (OD) analysis enables the understanding of the nature of traffic movement on the Assets. While zoning analysis helps to understand 'where' people and goods travel, commodity distribution and trip purpose throw light on 'why' people travel or 'what' goods get transported.

3.10 This analysis is generally used to estimate the key drivers of traffic and aid the making of informed forecasting assumptions around traffic demand elasticities, growth drivers and exogenous impacts. As part of this assignment, we have analysed the regional drivers of demand based on a zoning of OD data, commodity distribution and trip purpose for each Asset.

Data source and categories

3.11 The following table presents the sources of data used to perform this analysis. While data provided by the Client was available in raw format, the Vendor reports were at a more aggregate level. For this Asset where two sources of data were available, we have used the Client's data in our analysis for zoning influence.

Table 3.2: Sources of data for OD Analysis

Zoning Analysis	Commodity Distribution	Trip Purpose
Client Data; Vendor Report	Vendor Report	Vendor Report

3.12 We have grouped various commodities into fewer aggregate categories for ease of interpretation, as shown in the table below. Empty vehicles have been excluded from the proportions presented in this Chapter for better understanding.

Table 3.3: Aggregate commodity categories

Aggregate Commodity Category	Commodity Description
Agricultural/Food	Agricultural, Food, Groceries, Fruit, Vegetables, Fish, Meat, etc.
Construction	Cement, tar, tiles, stones, JCB, fly ash, etc.
Petroleum Products	Petrol, Diesel, Gas, LPG, Sulphur, Oil, CNG, etc.
Industrial/Manufacturing	Container; Machinery, Equipment, Industrial goods; Car/bike manufacturing; Chemicals, Fertilizers; Leather, Textile; Mining Minerals (coal, zinc, etc.)
Miscellaneous	Couriers / Parcels; Others

Source: Steer analysis

3.13 To facilitate better interpretation of key regional drivers of traffic as determined by their OD zones, and influenced by various towns, cities, states and regions in the vicinity of the Asset, we have aggregated zonal data as described in the following table.

Table 3.4: Zone aggregation

Aggregate Zone	Description
Local	Towns or cities lying on or very close to the asset
Immediate area of influence (IAOI)	Towns, cities and zones up to about 100 km from the asset

Aggregate Zone	Description
Rest of the State	Towns, cities or districts in the state that do not fall in the Local and IAOI categories
North India	The national region comprising the states of Chandigarh, Delhi, Haryana, Punjab, Himachal Pradesh, Jammu & Kashmir, Rajasthan, Uttaranchal and Uttar Pradesh.
East & Northeast India	The national region comprising Bihar, Odisha, West Bengal, Jharkhand, Assam, Sikkim, Arunachal Pradesh, Nagaland, Manipur, Mizoram, Tripura and Meghalaya.
Central India	The national region comprising the states of Chhattisgarh and Madhya Pradesh
West India	The national region comprising the states of Gujarat, Maharashtra, Daman & Diu, and Dadra & Nagar Haveli
South India	The national region comprising the states of Telangana, Tamil Nadu, Karnataka, Kerala, Goa, Lakshadweep, Puducherry, and Andaman & Nicobar Islands

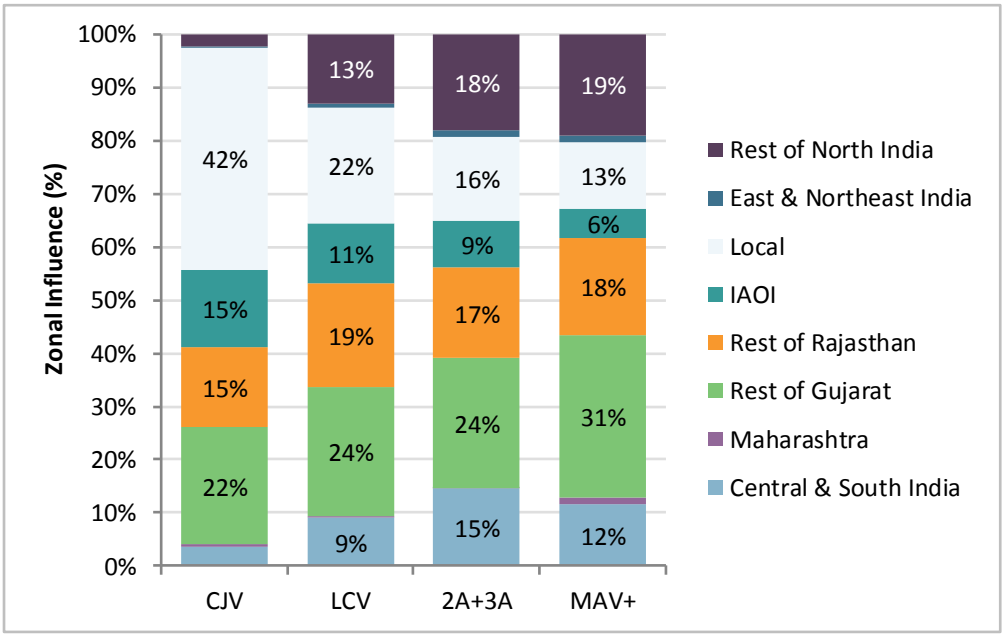
Source: Steer analysis

Zonal influence

3.14 The following figure indicates the zonal influence on light vehicles on this Asset. For CJVs, we see that more than half of the demand is either local (all from Udaipur at 42%) or IAOI (15%). In the rest of Gujarat, Ahmedabad contributes to 13%.

3.15 Trucks (2A and larger) have only 20-25% combined influence from local and IAOI zones, given the strategic nature of the Asset connecting Rajasthan to Ahmedabad and Gujarat. There is more than 30% combined influence from the rest of the country with Maharashtra contributing to 13%.

Figure 3.3: Zonal Influence on light vehicles



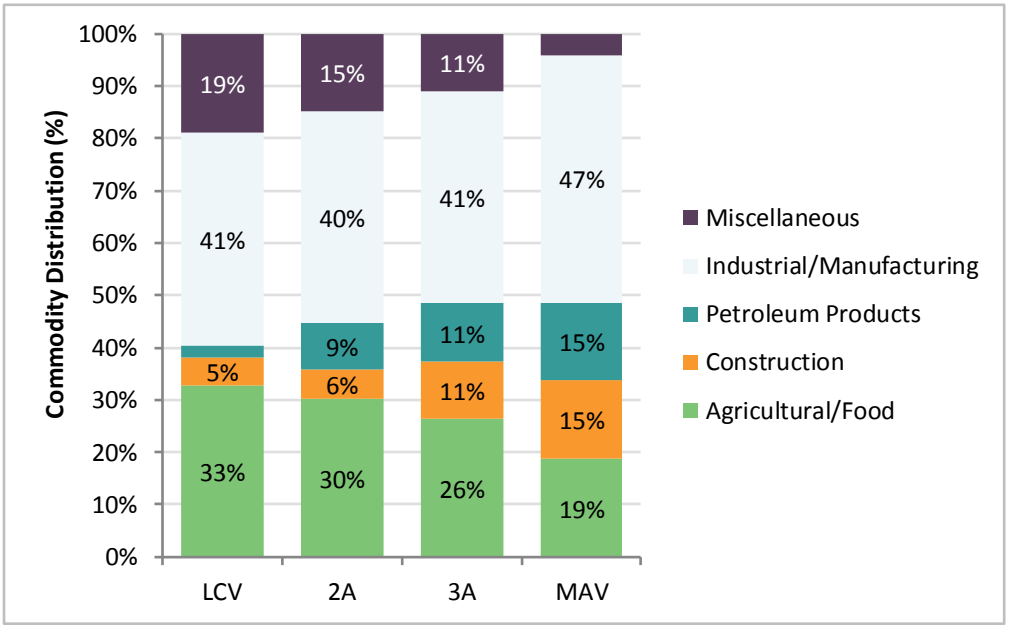
Source: Client OD Data and Steer analysis

Commodity distribution

3.16 The figure below presents the commodity distribution for goods vehicles on this Asset. 'Industrial/Manufacturing' is the largest aggregate commodity category. Across all vehicle types, agricultural products constitute about a 20-30% share, with the contribution decreasing

with increasing vehicle size. On the other hand, petroleum products and construction-related commodities show greater presence – up to 15% each – in larger vehicles.

Figure 3.4: Commodity distribution for goods vehicles

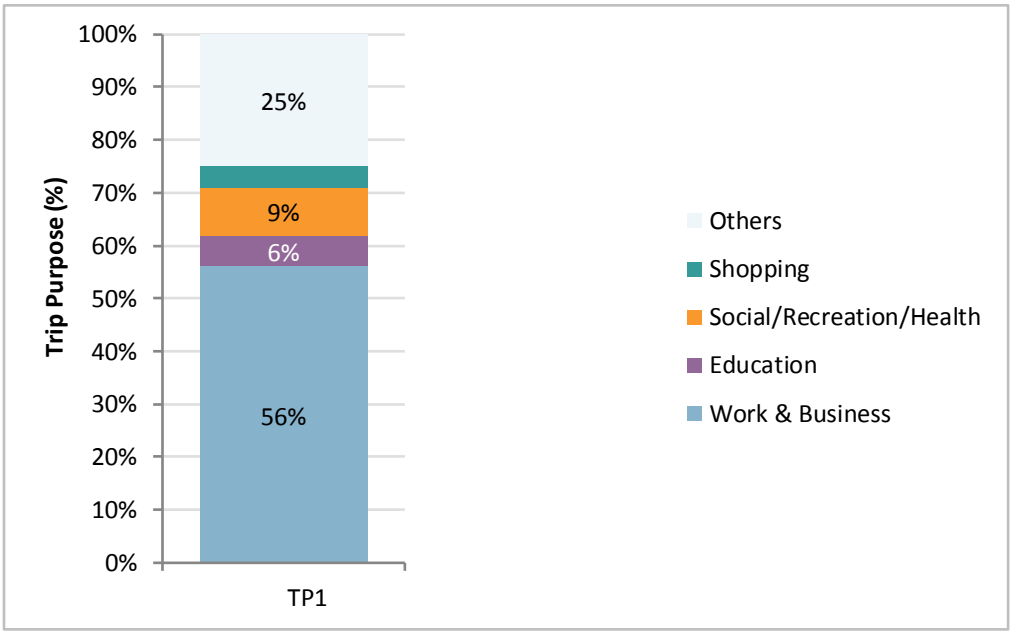


Source: Vendor Report and Steer analysis

Trip purpose

3.17 The following figure presents the trip purpose for car passenger trips on this Asset. As can be seen, more than 50% of trips are related to work or business.

Figure 3.5: Trip purpose for car passenger trips



Source: Vendor Report and Steer analysis

Summary of OD analysis

3.18 The following table summarises the OD analysis and highlights the key influences/drivers of traffic by vehicle type.

Table 3.5: Summary of OD analysis

Vehicle type	Zonal influence	Commodities	Trip purposes
CJV	Over 40% local, coming from Udaipur	N/A	More than 50% related to work/business, with limited leisure trips.
LCV	% of local traffic decreases with increasing size of goods vehicle, and contribution of rest of Gujarat, Rajasthan and the north increases, indicating strategic nature of Asset	Share of agriculture decreases and industry/manufacturing increases by increasing goods vehicle size - latter is dominated by petroleum and construction related goods	N/A
2A			
3A			
MAV			

Source: Steer analysis based on Vendor's reports and Client data

4 Socio-Economic Context

Introduction

4.1 The growth of traffic on existing (brownfield) roads depends on, firstly, how fast the background travel demand grows (background growth); and secondly, how successful the roads are in attracting that traffic (traffic capture). Background travel demand is driven by the socio-economic conditions in the regions where the Assets are located and the country as a whole. These include:

- Changes in factors such as population, economic growth (regional and national) and industrial production; and
- Other local factors such as strategic port growth, and growth in local industries near the Assets.

4.2 In turn, the change in the relative competitive position of the Asset (and thus of the traffic capture it can achieve) derives from how the relative offer for the road changes, i.e. the service offered and the tolls charged on the Asset, in comparison to that on competing roads; and whether any competing road facilities are planned.

4.3 In this Chapter, we have assessed the trends of the above growth drivers, as indicators of the socio-economic conditions in the regions surrounding the Asset.

Population growth

4.4 To capture state and regional disparities, we have analysed the key socioeconomic drivers of the background traffic demand by state. The Asset lies in the state of Rajasthan, which has been used as a basis of the analysis.

National level

4.5 Total population in India has grown at a CAGR of 1.5% from 2000, decreasing over the decades from 2.3% in 1970 – 1985 and 2.0% from 1985 – 2000. The World Bank forecasts this growth to decrease even further, till it reaches 0.6% CAGR (2030 – 45).

4.6 The growth rate of urban populations has been consistently higher than that of total population, indicating a trend towards urban agglomerations. The urbanisation trend is forecasted to continue, with an expected shrinking of the rural population over the next 30 years.

State level

4.7 The following table shows the evolution of population in the state containing the Asset, compared to that of the country. Overall, as can be seen, the trend observed at the country level is also noticeable at the state level, namely, a move towards urban agglomeration with the growth in rural population being slower than that of urban population.

Table 4.1: Population Growth in India (2001 – 2011)

State	2001 Population (m)			2011 Population (m)			CAGR (2001 – 2011)		
	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
Rajasthan	56	43	13	69	52	17	2.1%	1.9%	2.7%
India	1,028	742	286	1,210	833	377	1.6%	1.2%	2.8%

Source: National Institution for Transforming India (NITI Aayog) – Census Data

4.8 Due to the complexities of the patterns in which urbanisation takes place, and the very dynamic nature of local population migration (which are very difficult to forecast with accuracy), we do not propose to use population growth as a proxy for understanding future travel demand growth on the Assets. It has been included in this section simply to provide a socio-economic context of the state/trends in the regions in which the Asset is located.

GDP Growth

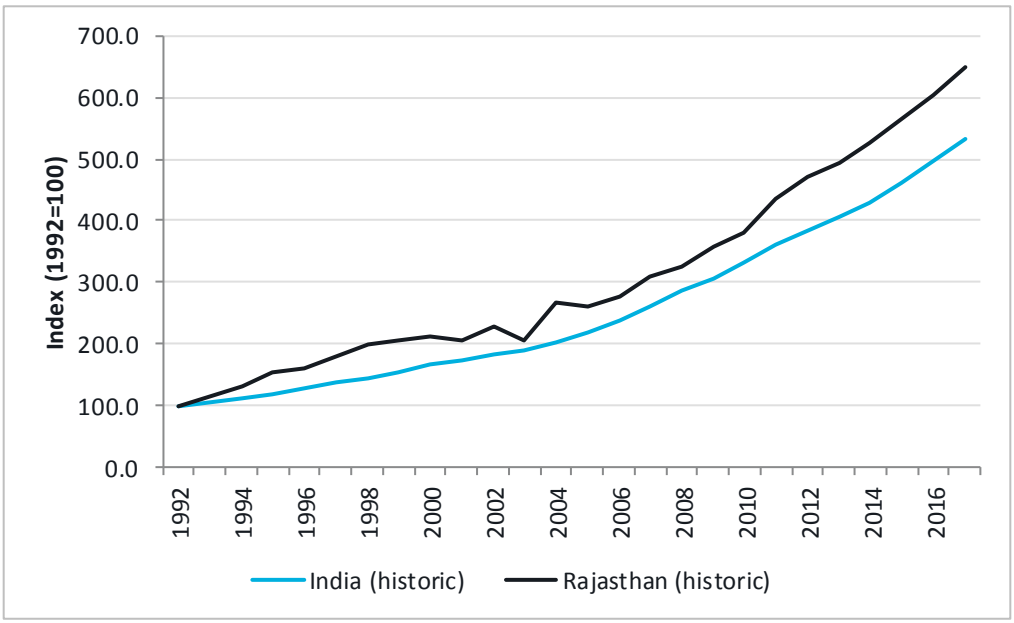
4.9 The Indian economy has grown at a CAGR of 7.5% over the past decade, aided by a strong growth in the services/tertiary sector (9.4% CAGR, 2005 – 2013), which includes the infrastructure and construction sector. The economic performance of each state however, is different, and various drivers contribute to the disparities in performance observed, at the state level.

4.10 Figure 4.1 shows Rajasthan's historical GDP growth compared to the national growth. Since 1992, the state of Rajasthan had a stronger economic performance than the national average with a CAGR of 8.2% between 2011 and 2016.

4.11 Rajasthan is rich in natural resources and benefits from its strategic geographic location in India. The state is pre-eminent in quarrying, mining in India and has been a leader in crude oil extraction over the past the few years. Moreover, Rajasthan is also a relevant tourism attractor in India, having received around 36.6 million tourists during 2015-2016.[1]

[1] IBF. (2017). *Rajasthan: Royal Heritage.* India Brand Foundation.

Figure 4.1: Comparison of Evolution of Rajasthan's state GDP and national GDP

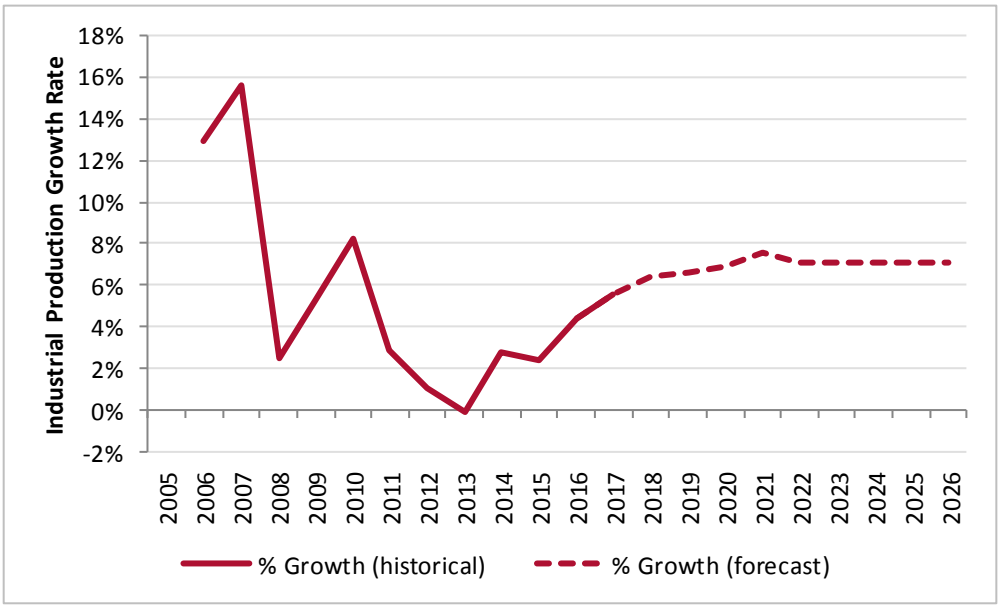


Source: Open Government Data (OGD) Platform (State GDPs) and IMF (National GDP)

Industrial Production

4.12 Industrial production (IP) is often a key driver of heavy goods traffic along road networks. As can be seen in the following figure, industrial production has grown at a steady pace in recent years, recovering from a slowdown between 2010 and 2013.

Figure 4.2: Historical and forecast growth rates of Industrial Production



Source: Consensus Global Outlook 2016 – 2026

4.13 National IP forecasts are encouraging for the coming decades, indicating growth in line with national GDP, but at a slightly slower rate. No information is available at the state level.

5 Traffic Growth

Introduction

5.1 For brownfield assets, it is common practice to use the relationship between historic traffic and key socioeconomic drivers (e.g. GDP, population, employment etc.), in order to forecast future traffic growth. In such cases, a regression based approach to estimate the elasticity[2] of traffic demand to key macroeconomic variables is employed, where, a time series covering a few years' worth of data is required, to estimate statistical models.

5.2 However, in the case of the Asset under consideration, there is very limited time series data available (ranging between no data to a few months/1 year of data), as the Asset has only recently been taken over by the Client. We have therefore conducted a benchmarking analysis based on our experience of having studied trends on other roads in the states in which the Asset is located, to develop forecasting assumptions for the elasticity of traffic demand to key macroeconomic variables.

Elasticity selection

Overview of our approach

5.3 We have applied the approach described in this section to the Asset, as limited time-series data of historic traffic was available, as mentioned above. To benchmark traffic demand growth elasticities, we selected a series of relevant benchmark projects, which complied with the following characteristics:

- Roads that were relevant to the corresponding Asset in terms of geographical proximity, traffic and commodity composition, and similar drivers of growth;
- Quality of historical data series available; and
- Consistency in concession agreement conditions across the time series (e.g. no transfer from public funded (PF) to build, operate, transfer (BOT) during the selected period), wherever possible.

5.4 Additionally, in cases where the benchmarking assets did not entirely match the previous characteristics, we carried out an analysis of data sourced from the NHAI. This set of data covers plaza wide toll revenue collection on sections of National Highways (NHs) across India, covering the period since the inception of Public Funded tolling, between FY2002 until 2016, inclusive. This dataset was only recently made publicly available and proved useful in providing another reference point, against which to benchmark our assumptions.

[2] An elasticity in this context implies the % change in traffic as a result of % change in key drivers. For example, an elasticity of 0.5 of traffic to GDP, implies that a 10% increase in GDP will result in a 5% increase in traffic.

5.5 To develop our views on the most suitable set of drivers for traffic for each vehicle type across the Assets studied, we considered the following sources of information:

- Client Data/third-party reports
  - Asset characterisation;
  - OD surveys;
- Geographic location of the Asset;
- Socio-economic profile of the state;
- Site visits
  - Interviews with toll plaza managers;
  - Visual observation of traffic composition and industries along the project road; and
- Behaviour of benchmarked assets.

Summary of assumptions

5.6 Based on the assessment described above, we have established a general socio-economic relationship for each vehicle type and each toll plaza, which is detailed in the table below and in the following sections. Elasticities and long-term assumptions around the same, are described later in this Chapter.

Table 5.1: Socio-economic indicator used in growth forecasting, by vehicle type

Vehicle Type	Socio-Economic Indicator Used
CJV	Gross State Domestic Production (GSDP)
Bus	Gross State Domestic Production (GSDP)
LCV	Gross State Domestic Production (GSDP)
2-Axle Trucks	Gross Domestic Production (GDP)
3-Axle Trucks/MAV/OSV	Gross Domestic Production (GDP)

Source: Steer analysis

5.7 **CJV traffic growth**: State GDP (GSDP) is assumed to be the key driver for CJV traffic, with a relationship of either 1 to 1 or above – as observed from our elasticity estimation on other relevant Assets. This is in line with the observation that in fast-growing economies such as India with relatively low car ownership levels, car traffic growth rates are often in line with/slightly higher than growth in GDP.

5.8 **Bus traffic growth**: Bus traffic is assumed to grow at very low rates during the concession period. Based on our experience with Assets of a similar nature, bus volumes are generally small and traffic history shows volatile growth patterns. As the economy grows, passenger numbers on public transport are expected to increase too, but at rates below car growth rates as an increase in car ownership levels will also lead to a reduction of potential passengers. The Asset is predominantly a long-distance corridor and does not support substantial local movements, hence we have used an elasticity of 0.25.

5.9 **LCV traffic growth**: Again, for LCVs, GSDP is assumed to be the key driver of traffic growth, as these vehicles tend to serve more local movements, which is confirmed by our observations and the analysis of data from OD surveys. For the Asset which has predominantly long-distance traffic, we have assumed a relationship with GSDP that is below 1.00. This is in line with trends on similar Assets where we have observed that for long-distance movements small commercial vehicles such as LCVs and 2A trucks are increasingly being replaced by larger vehicle types.

5.10 **2A Truck growth:** Historically, the share of 2A trucks has been decreasing across the country. The lower unit costs offered by higher productivity trucks (3A and MAV) for freight transport make them a better alternative for long-distance trips where the road network capacity and configuration allow it. With significant improvements in road infrastructure and a continuing shift towards larger vehicles, we expect 2A truck growth to be below that of larger commercial vehicles.

5.11 **3A and MAV growth:** Based on the OD analysis and our observations/experience, we believe that heavy vehicles generally cater to long distance movements beyond the state level, and have therefore linked 3A and MAV traffic growth to growth in the economy at a national (GDP) and not a state-level.

5.12 Given the strategic location of this Asset around the Delhi – Mumbai arm of the Golden Quadrilateral, as well as the influence of the economic activity that characterises Rajasthan, this Asset is expected to maintain its existing behaviour in future years. This understanding is reflected in the set of elasticities presented in the tables below, where the Asset is foreseen to maintain relatively similar growth patterns, especially for heavy vehicles.

Table 5.2: Elasticity assumptions

Toll Plaza	CJV	LCV	Bus	2A	3A	MAV
TP01 Khandi Obri	1.13	0.77	0.25	0.50	0.90	0.90
Long term dampening	No dampening				Reduce by 0.1 after two years to reach 0.80, then constant	No dampening

Source: Steer analysis

Growth driver forecasts

5.13 In the following sections we describe the assumptions in relation to forecasts of the key socio-economic drivers of traffic.

National GDP

5.14 India's GDP is the core variable that drives our socio-economic forecasts. We have reviewed several independent sources providing national GDP forecasts, as detailed in the table below.

Table 5.3: Summary of Independent Economic Forecasts of India's GDP

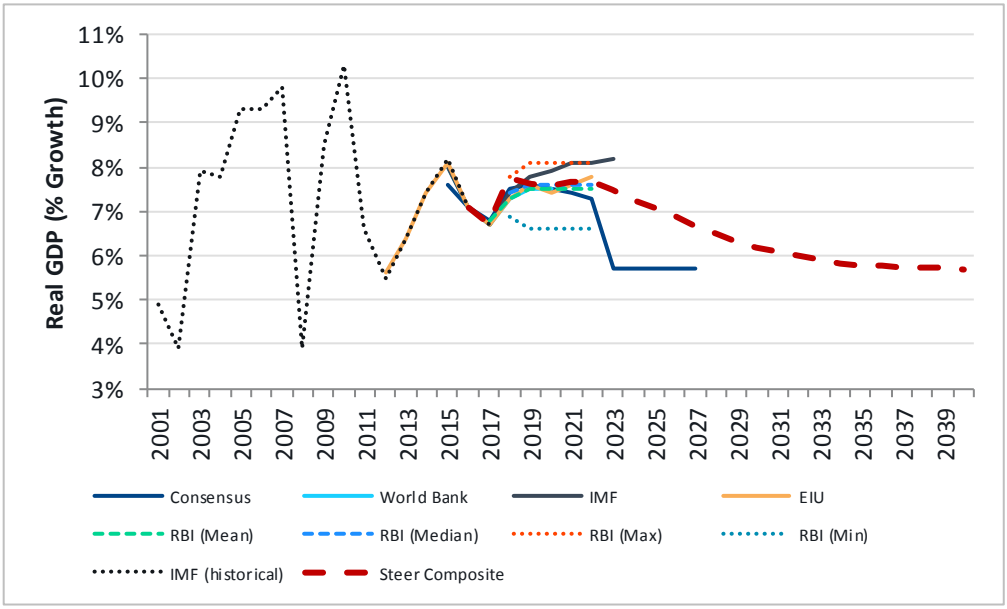
Source	Month/year of data	Forecasted Period
Consensus Forecasts	October 2017	2015 – 2027
World Bank (WB)	June 2018	2015 – 2020
Economist Intelligence Unit (EIU)	August 2018	2012 – 2022
Reserve Bank of India (RBI)	August 2018	2017 – 2022
International Monetary Fund (IMF)	April 2018	2015 – 2023

Source: Steer analysis based on third party forecasts

5.15 Based on the information detailed above and after discussion with the client, we created a composite GDP forecast for India that considers the following assumptions, and is illustrated in the following figure.

- For the years 2019 – 2023, we used an average of the growth rates from all the sources listed in the table above, smoothed to avoid minor variations across sources. This resulted in a 7.6% growth rate per annum for the period;
- Subsequently, we reduced the annual growth rate gradually to reach 6.3% in 2029. This is the value forecast by the using the long-term sources available; and
- Until FY40 years, we assumed a linear reduction, till it stabilises at 5.7% and remains constant thereafter.

Figure 5.1: Historic and forecast GDP growth



Source: Steer analysis with information using publicly available data from Consensus, WB, EIU, RBI and IMF and as agreed with the client

State GDP (GSDP)

5.16 As discussed in Chapter 4, some states have historically been growing at a faster pace than others. For forecasting, we have assumed that as the Indian economy grows, the states which have historically grown at a faster pace than the national average will (over 10 years) see a slowdown in GSDP growth (tending to GDP) as other states, such as Jharkhand, Sikkim, Assam start growing faster than the national average/GDP.

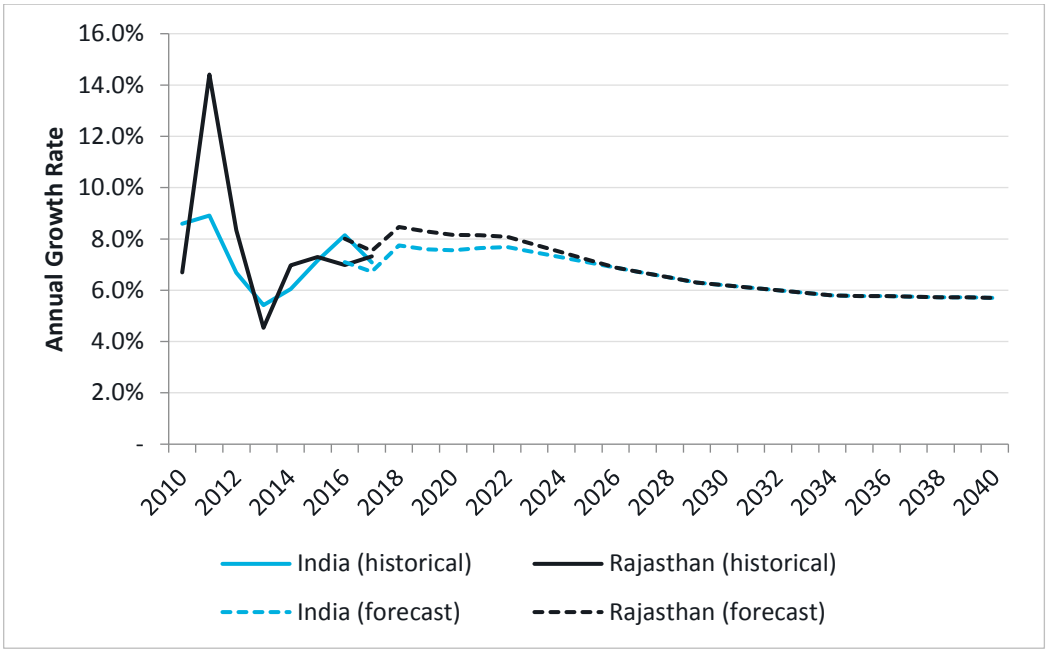
5.17 The following table summarises the historic differentials between GSDPs and GDP, and the assumptions employed to forecast GSDP going forwards. The resulting forecasts have been illustrated in Figure 5.2.

Table 5.4: GSDP/GDP differentials and forecasting assumptions

GSDP/GDP	Average growth			GSDP minus GDP			Assumptions for forecasting
	1992-05	2001-10	2011-17	1992-05	2001-10	2011-17	
Rajasthan	7.1%	(6.5%)	8.0%	1.2%	(0.7%)	0.9%	0.9%
India	5.8%	7.2%	7.1%	-	-	-	-

Source: Steer analysis based on data from the Central Statistics Office, Ministry of Statistics and Programme Implementation, Government of India

Figure 5.2: Historic and forecast GSDP growth



Source: Steer analysis and as agreed with the client

6 Forecasting assumptions

Introduction

6.1 In this chapter, we present the forecasting inputs and assumptions used within our modelling framework to develop forecasts for the Asset. We cover:

- Base year traffic estimation (including seasonality assumptions);
- Exogenous impacts which are expected to influence traffic demand on the Asset, covering:
  - Capacity/quality augmentation;
  - Introduction of tolling;
  - Wider network changes;
  - Reductions in construction vehicles (currently part of ongoing construction on the Asset); and
  - Overloading.

6.2 We further detail the assumptions around ticket types, trip factors and whole sale price index (WPI), in order to determine the evolution of toll rates and revenues.

6.3 It should be noted that the base year for all traffic presented in this chapter is FY19[3]. Further, we only report tollable traffic, and as such, exemptions/violations have not been included in this Chapter, or in our forecasts.

Base traffic

6.4 As discussed in previous chapters, our independent traffic count surveys (TVCs) were conducted in September 2018. The average of the seven-day TVC counts provided the weekly average daily traffic (WADT) which pertains to the specific month of the year when the surveys were conducted. Further, we have received toll transaction data from the start of tolling until August 2018.

Table 6.1: Tolling history (Schedule M)

Asset Name	Tolling start date (Schedule M)
Udaipur – Gujarat border	Sept 2017

Source: Steer analysis based on tolling data (Schedule M)

[3] FY19 runs from April 2018 until March 2019

Seasonality correction factors (SCF)

6.5 SCFs specify how much traffic in a specific period within the financial year (FY) varies from the annual average, e.g. monthly variation in traffic due to local events/festivals, weather patterns, production cycles, etc. They are defined as the ratio between AADT for the full FY and ADT of the specific period within the FY.

6.6 To be able to establish SCFs, it is essential to have information on the seasonality of a full FY. Further, SCFs should be established for each vehicle category individually, as different factors affect different vehicle types in unique manners, e.g. agricultural/industrial production cycles have little impact on car traffic.

6.7 We have considered 2 alternative approaches to establish SCFs:

- Calculation of SCFs from monthly toll transaction data of the Asset itself; and
- Calculation of SCFs from monthly toll transaction data of Assets in similar geographies and with comparable characteristics (regional references). These are Assets for which long time series of data is available.

6.8 The preferred approach would be the former, i.e. to use data of the respective Asset itself. However, for the Asset, the data is not sufficient to cover one full FY, but covers a 12 months period between September in FY2018 and August in FY2019. When using this data without further adjustments (e.g. for growth) this can lead to a misrepresentation of the ratio between traffic in the first half and the second half of the FY, especially on corridors with substantial year-on-year growth.

6.9 For this Asset, as at least 12 months of data was available we have established the ratio between ADT in period April to August 2018 (within FY19) and ADT in the period September 2017 to March 2018 (within FY18). We have then compared this ratio with the ratio between both periods within the same FY (e.g. April to August 2017 (within FY18) and September 2017 to March 2018 (within FY18)) obtained from toll transaction data on Assets with similar characteristics, Regional References (RR).

6.10 The analysis of RRs showed that generally ADT in the period September to March is higher than ADT in the period April to August in the same FY. However, when 12 months toll transaction data across FY18 and FY19 was analysed, this relationship was inverted. The analysis therefore suggests that part of seasonality in the toll transaction data is a result of underlying growth. We have thus concluded it to be most reasonable to use RRs instead of cross-FY toll transaction data to obtain SCFs. The SCF's are presented in the Appendix A.

Base year traffic (tollable, FY19)

6.11 As mentioned earlier, the independent traffic count surveys were conducted in September 2018. Using the traffic counts and the seasonality factors described above, the base traffic for year FY19 was synthesised.

6.12 This Asset lies in the state of Rajasthan. It is part of the ambitious golden quadrilateral project, formalised in early 2000's by the NDA government, and form the main arm of Delhi-Mumbai corridor. As shown in the following table, the toll plaza carries a significant number of 3A and MAVs.

Table 6.2: Base year traffic (tollable) on the Asset (FY19)

Vehicle Category	A06 TP01 – Khandi Obri
CJV	3,667
LCV	1,334
Bus	660
2A	1,141
3A	2,098
MAV (4-6A)	4,430
MAV (>6A)	3
Total	13,332
PCU	37,310

Source: Steer analysis

6.13 During our interaction with the toll plaza manager and on observing drivers crossing the toll plaza, we were informed that most of the traffic is using this route for long distance movement. This was confirmed through the OD analysis, which indicates that a majority of origins and destinations of trips on this Asset lie in the states of Maharashtra, Gujarat, Punjab, New Delhi, and Rajasthan. The Asset is under expansion from 4 to 6 lanes and is currently tolling at 75% of the actual toll rates.

Exogenous Impacts

Overview

6.14 The sections below detail on the various impacts which we believe would affect traffic on the Asset during their concession periods. As mentioned previously, there are five main impacts which we have considered – these are summarised below and their individual impact on the Asset is detailed in following sections:

- Capacity and quality augmentation post completion of construction on the Asset;
- Traffic responsiveness to the introduction of tolling on Asset on which tolling has recently commenced/is scheduled to commence;
- Network changes due to completion of strategic corridors;
- Reduction in construction vehicles on the Asset (which are currently part of ongoing construction works); and
- Overloading vehicles which are charged a higher toll on the Asset.

Capacity and quality augmentation

6.15 This Asset is currently undergoing an upgrade process, from 4 to 6 lanes. Once construction on the Asset is complete, it is expected that an improved level of service – with higher capacity and better quality of road surface, will offer an improved drive quality for all users.

6.16 In our experience of working on assets in similar conditions across the country where construction has recently been completed, we have observed an increase in the levels of traffic, over and above the background growth driven by socio-economic drivers, which can be attributed to users' responsiveness to improvements in capacity and road quality on these assets. The scale of this impact is typically seen to be larger for local users who travel part of

the length of the asset. The timing of this impact is typically seen in the period immediately after the construction activity has been completed.

6.17 Therefore, for the Asset under consideration where construction activities are expected to be completed in the near future, we have estimated that it is likely that there would be an increased level of travel of local/relatively short distance traffic that would start using the Asset due to savings in journey time and improved ride quality. This could in turn lead to an increase in traffic on the asset.

Introduction of tolling

6.18 On Udaipur-Gujarat Border tolling is currently 75% of the FY18 toll rates due to road expansion. In our experience of working on greenfield and brownfield assets in India and across the world, where tolling has been introduced or increased significantly, a drop-in traffic levels is typically observed, depending on the levels of tolls imposed/change in toll levels and alternative route options available to existing users, amongst other factors.

6.19 We believe that there would be a short term negative impact on vehicles, especially light vehicles (CJV's and LCV's) which generally try to find local alternate routes to avoid paying tolls or change their travel patterns by making fewer trips to save on travel costs. The quantification of such an event is presented in Appendix B. However, the level of service improvement, as discussed in paragraph 6.15, would result in an increase in the number of vehicles. Hence the net impact of both toll increase and level of service is expected to be negligible.

Reduction in construction vehicles

6.20 As discussed in Chapter 2, the Asset is currently under construction. During our site visit it was observed that several construction vehicles are used specifically for ongoing construction works on the Asset. We believe that once the construction is complete these vehicles would no longer be using the Asset.

6.21 We have assumed that only LCV, 2A, 3A and MAV will carry construction material – no other vehicle types have been considered in this analysis. The table in Appendix B presents the number of construction vehicles that would be reduced from the traffic volumes per Asset, as they are currently non-toll paying and will not use the Asset once construction is complete.

Impacts of overloading

6.22 Overloaded vehicles damage road surfaces and this damage is almost exponentially related to the amount that the vehicle is overloaded. The concession agreements allow the concessionaire to charge up to 9 times penalty (10 times the toll rate) in case a vehicle is carrying load more than its legal permissible limit.

6.23 The Schedule N and Schedule M data shared by the client, details the number of vehicles that are overloaded. The proportion of such vehicles is presented in Appendix B.

6.24 Based on Steer's experience of other similar road sections in India, we believe the reported proportion of overloading is within expectations/benchmarks. For the purposes of forecasting, we have assumed that the proportions of overloading will continue for the length of the concession.

3A/MAV share shift

6.25 In our analysis of the trends on different toll roads across the country, we have observed a consistent shift between the shares of 3A/MAV on most roads, i.e. a move from 3A to MAVs. This shift is primarily caused by the increasing preference for MAV vehicles for long-distance movements due to their higher load capacity that generate economies of scale.

6.26 We believe that transition trend to MAVs will continue till a certain cap is reached, as it is unlikely that all 3A trucks will disappear from the market – there are likely to always be certain transporters for whom 3A's will be preferable. Forecasting assumptions regarding the expected share of 3A/MAV are presented in the table in Appendix B.

6.27 In calculating growth for 3A and MAV during the transition period, we have used the elasticities described in Chapter 5. The share adjustment is then applied to obtain the final implied elasticity. Post this expected transition period, both 3A and MAVs are assumed to continue growing using the estimated elasticity relationship.

Revenue forecasting assumptions

Toll level changes

6.28 To forecast the revenues, traffic forecast for each vehicle type was multiplied by the relevant toll level for each year. The assumption was that toll levels will continue to increase at normal inflation-linked rates as specified in the concession agreement.

6.29 As per the concession agreements (refer Schedule R), the effective toll-able lengths will change from the current toll notifications as issued by NHAI, once construction is complete. This is primarily because new structures and bypasses are currently being built on the Asset. The old and the new lengths are given for each of the toll plazas, in Appendix B.

Inflation Linked Changes

6.30 The concession agreements and the toll notification specify the toll calculation process for the Asset. This allows changes in toll levels at the plaza to be directly linked to inflation (WPI) changes. The concession agreement based toll escalation formula also includes a rounding of the toll levels to the nearest INR 5. The exact formula as prescribed in the latest toll notification notices issued by the government for the concession has been implemented in our forecasting model.

6.31 WPI forecasts are calculated using the forecasts provided by the Reserve bank of India (RBI), these have also been agreed with the client, and are used as an input to the toll level calculation.

6.32 The upward trend in inflation is expected to continue in the medium term, before diminishing back to current levels in the long term. Note that the toll level is set in this formula is in nominal terms, hence the total revenue calculated in our forecast model is also the nominal revenue. The table below shows the assumed WPI rates:

Table 6.3: WPI forecast assumptions

Financial year	Growth rates
FY19	5.0%
FY20	5.5%
FY21	5.4%

Financial year	Growth rates
FY22	5.3%
FY23	5.2%
FY24	5.2%
FY25	5.1%
FY26	5.0%
FY27	5.0%
FY28	5.0%
FY29	5.0%
FY30	5.0%
FY31	5.0%
FY32	5.0%
FY33	5.0%
FY34	5.0%
FY35	5.0%
FY36	5.0%
FY37	5.0%
FY38	5.0%
FY39	5.0%
FY40	5.0%
FY41	5.0%
FY42	5.0%

Source: Steer analysis and as agreed with the client

Ticket type shares (trip frequencies)

6.33 To forecast ticket types (Single, Return, Local, Monthly, Local commercial), we have used Schedule N and Schedule M data. Schedule N[4], provided by the client lists weekly data by number of vehicles using the toll plaza. The data presented is segregated by the type of the ticket used by the vehicle. It also includes vehicles which are overloaded – these trips are all single trips but pay a higher toll as for the overloading penalty.

6.34 As we believe the toll plaza data to be the most reliable to calculate trip frequencies, data from schedule M has been used to calculate these.

6.35 We have assumed that the split between ticket types will remain the same in the future for all plazas. This assumes that further changes in toll categories, unless specific discounts are offered, are unlikely. The proportions are presented in Appendix B.

6.36 Assumptions pertaining to the number of trips made using non-single journey ticket types, are as follows:

- Return ticket for each vehicle type is presented below:

[4] Schedule N only provides data for exempt vehicles, violations are not reported.

Table 6.4: Trip factors for return trips for TP1

Return Trip Factor	TP1
CJV	1.81
LCV	1.91
Bus	1.94
2A	1.92
3A	1.95
MAV/OSV	1.93

Source: Steer analysis of the toll revenue data shared by client

- Monthly ticket = 1.67 trips per day (based on an assumed 50 trips in a 30-day month)
- Local ticket = a monthly ticket applicable only for CJV's residing within 20 km from the toll plaza.

7 Traffic and Revenue Forecasts

Introduction

7.1 In this chapter, we present our traffic and revenue forecasts (including the base year, FY19) forecasts for all the toll plazas. Assumptions around the expected future values of various parameters (such as changes in GDP, IP and the road network) have been benchmarked against independent data where possible.

7.2 All traffic is presented as tollable traffic (tollable AADT at each plaza or total traffic summed across all plazas). All revenue is presented in INR (nominal terms).

7.3 Details of traffic and revenue forecasts at vehicle type level have already been provided as separate Excel files which should be read in read in conjunction with this report.

7.4 The volumes for the base year (FY19) are largely based on observed numbers during the surveys conducted and the data shared by the Client in the schedule N and schedule M, adjusted for seasonality, as described in previous Chapters.

7.5 The reduction in growth rates across all vehicle types is largely related to the slowing growth rates assumed for national GDP and state GSDP, as derived from publicly available data, as these are the primary drivers in our forecasts.

Traffic and Revenue forecasts

7.6 The table below presents a summary of the tollable AADT and CAGRs for each of the toll plazas, for key years.

Table 7.1: Tollable AADT and CAGR for the toll plaza, for the length of the concession

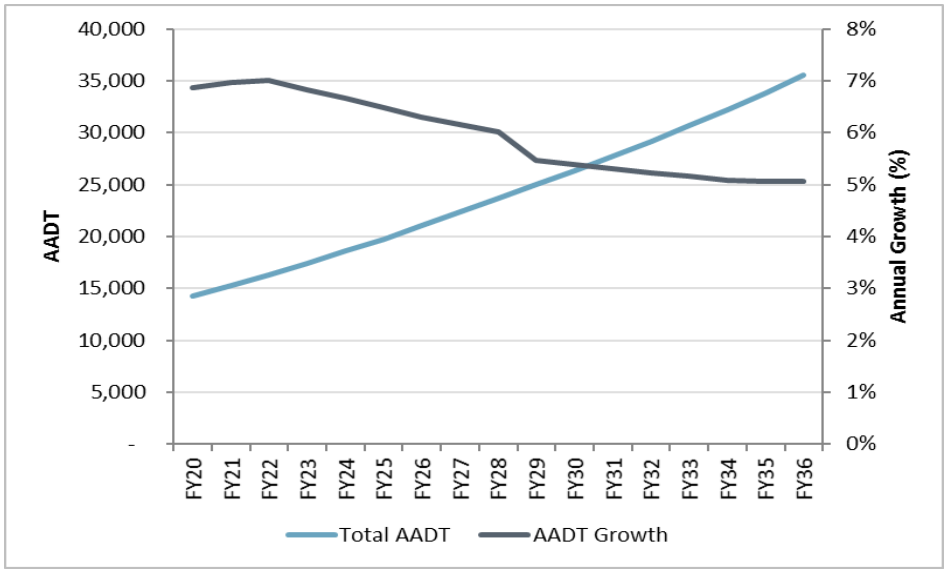
		AADT					CAGR		
Toll Plaza	Vehicle Type	FY19	FY20	FY25	FY30	FY36	FY 19 - 25	FY 25-30	FY 30 - 36
Khandi Obri	CJV	3,667	3,975	5,831	8,069	11,490	8.04%	6.71%	6.07%
	LCV	1,334	1,418	1,894	2,419	3,157	6.01%	5.02%	4.54%
	Bus	660	673	741	803	877	1.95%	1.63%	1.47%
	2A	1,141	1,184	1,421	1,668	1,986	3.73%	3.26%	2.95%
	3A	2,098	2,177	2,613	3,180	4,192	3.73%	4.00%	4.71%
	MAV (4-6A)	4,430	4,818	7,287	10,174	13,871	8.65%	6.90%	5.30%
	MAV (>6A)	3	3	4	6	8	6.71%	5.86%	5.30%
	AADT	13,332	14,248	19,791	26,319	35,581	6.81%	5.87%	5.15%
	PCU's	37,310	39,900	55,807	74,461	99,846	6.94%	5.94%	5.01%

Source: Steer analysis

7.7 This Asset connects the business centres of Delhi- Mumbai, via one of the main business corridors in the country, and already carries a large number of MAVs. The Asset is expected to grow at an average of 6.9% (PCU) in the short term, which reduces to 5.0% in the long term due to stabilising long-term macro assumptions. Detailed vehicle wise AADT growth rates have been presented in the Appendix D.

7.8 The figure below shows the tollable AADT and the growth rates of traffic across the concession period.

Figure 7.1: TP01 Total AADT forecast and growth Rates, FY20-FY36



Source: Steer analysis

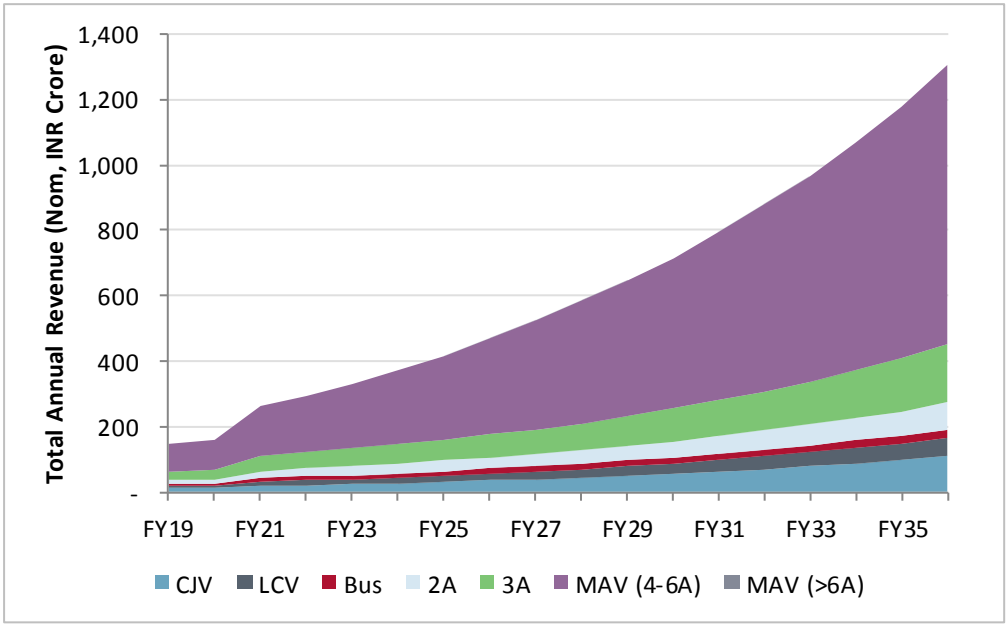
7.9 As discussed earlier, tolling has been taking place on the Asset for the last decade. The client has recently overtaken the toll plaza in September 2017. The Asset is partially tolled and full tolling is expected in FY21, however, we believe that since some level of tolling has already been in place for a long period of time, the impact of full tolling will not affect the traffic on the Asset.

7.10 The diminishing growth observed between FY20-FY26 can be explained by a combination of factors which include the growth of GSDP of the state of Rajasthan, 3A/MAV share shift, and elasticity dampening (as discussed in previous Chapters) acting in conjunction. From FY26 onwards, growth is expected to stabilise, except in FY28, when the impact of GSDP growth and 3A/MAV share again impacts the forecast, and results in a minor flattening of the AADT growth.

7.11 The figure below shows the vehicle wise contribution to overall revenue. As can be seen, heavy vehicles (3A and MAV) form the major contributors to revenue, this is based on our forecasting assumptions (derived from OD analysis and site visits) which indicate that this asset caters to long distance movement connecting Delhi to Mumbai. FY19-FY20 see a flat revenue profile since the toll rates have been kept contestant at 75% of FY18 toll rates, the minor revenue growth is achieved due to the traffic growth on the asset.

7.12 The spike in revenue collection in FY21 is a result of the increase in toll rates to full tolling (100%) as per the NHAI notifications. FY21 onwards the growth stabilises over the concession period. Detailed vehicle wise revenue growth rates have been presented in the Appendix D.

Figure 7.2: Total revenues (Nominal, INR Crore) by vehicle type, FY19-FY36



Source: Steer analysis

Appendices

A Toll rates by plaza

Overview

A.1 This Appendix covers the toll rates charged at the toll plaza on the Asset, by vehicle type and the SCF used to arrive at FY19 base AADT.

Udaipur – Gujarat Border

Table A.1: FY18 toll rates (INR) for Udaipur-Gujarat

Toll Plaza	Category of Vehicle	Fee per vehicle per Single trip	Return Trips within 24hrs	Monthly Pass for 50 single journeys	Fee for Commercial vehicles registered in District	Monthly Pass for local car (Car/ Jeep/Van/LMW)
TP01 Khandi Obri	Car, Passenger Van, Jeep and Light Motor Vehicle	95	145	3,210	50	255
	Light Commercial Vehicle, LGV or Mini Bus	155	235	5,185	80	NA
	Bus or Truck (2 Axle)	325	490	10,860	165	NA
	3 Axle Commercial Vehicles	355	535	11,845	180	NA
	HCM, EME, MAV (4-6 Axle)	510	765	17,030	255	NA
	Oversized Vehicle (7+ Axle)	620	935	20,730	310	NA

Source: NHAI toll notifications

Seasonality Correction Factors

A.2 The table below presents the SCF's used to arrive at FY19 base tollable traffic:

Table A.1: SCF used to arrive at Sept-Mar (FY19) traffic using the Apr-Aug (FY19) toll plaza data

Udaipur Shamlaji	
TP01	Seasonality Correction Factor
Car	1.39

LCV	1.58
2A	1.58
Bus	1.41
3A +	1.42

Source: Steer Analysis

B Forecasting assumptions

Construction impacts

B.1 The construction vehicles which are currently using the Asset for road upgradation purposes are given below for each of the asset:

Table B.1: Construction vehicles used for roadworks

Asset	Vehicle Category	COD Year	Vehicles to be Reduced (AADT)
TP1 - Khandi Obri	2A	FY21	6
	3A	FY21	21
	MAV (4-6A)	FY21	14

Overloading

B.2 The proportion of overloaded vehicles is presented in the table below:

Table B.2: Overloading proportions (%) as per Schedule N and Schedule M data

Asset	Toll Plaza	LCV	2A	3A	MAV
UGBOT	TP01- KhandiObri	0.01	0.4	0.00	0.00

Source: Steer Analysis based on Schedule N and Schedule M data provided by Client

3A/MAV shift

B.3 3A/MAV share shift assumptions between FY20 and FY28 are given below:

Table B.3: 3A/MAV share shift between FY20 and FY28

Toll Plaza	3A/MAV Share	
	Current Share	New share by FY28
TP01	32/68	25/75

Toll level changes

B.4 Tolling lengths as per the concession agreement are presented below.

Table B.4: Equitable Toll-able Lengths for Each toll Plaza, Till Construction Completes

Toll Plaza	Old tollable road length (km)	New tolling length (km)
TP01	120.726	122.346

Source: As per 2018 toll notifications issued by NHAI, and schedule R of the concession agreements

B.5 As per the tolling notifications issued by NHAI, a toll road which is under expansion from 4 lane to 6 lane undergoes tolling at 75% of the Toll (at the start of the concession), and remain constant until the end of the concession. In the case of Asset, construction started in FY18 and

is expected to complete by FY20. Hence once tolling finishes, after agreement with the client and as per the NHAI notification No. H-25016/01/2014-Toll which refers to NHAI D.O. letter no NHAI/CO/2015/60473; the revision in toll rates to normal tolling will be effective from FY21 itself. The change in toll rates is presented below:

Table B.1: Proportion increase in toll rates port construction completion in FY20

Khandi Obri			
Vehicle type	FY20 Toll	FY21 Toll	% increase
CJV	95	150	57.9%
LCV	155	240	54.8%
Bus	325	510	56.9%
2A	355	555	56.3%
3A	510	795	55.9%
MAV (4-6A)	620	970	56.5%

Source: Steer analysis

B.6 As we can see, from the table above that the tolls increase by more than 50% for different vehicle classes, we believe that there is a risk of local traffic being diverted away, due to this toll increase. The table below presents the proportion of the total traffic which is assumed to be at risk because of such a steep one-time toll increase in FY21.

Table B.2: Vehicle wise proportion of traffic at risk of being diverted away from asset due to toll increase in FY21

	Khandi Obri	
	Proportion of Local traffic	Negative Impact Assumed (as a proportion of total traffic)
CJV	18%	3.1%
LCV	5%	0.8%
Bus	1%	0.2%
2A	1%	0.2%
3A	2%	0.3%
MAV (4-6A)	1%	0.2%

Source: Steer analysis, Proportion of local traffic is the sum of local commercial and local categories

C Trip frequencies

Ticket Type Assumptions

C.1 The ticket type assumptions for as shown below:

Vehicle Category	Ticket Type	TP01
CJV	Single	59%
CJV	Return	22%
CJV	Monthly	0%
CJV	Local Commercial	4%
CJV	Violations	0%
CJV	Exemptions	0%
CJV	Discounts	0%
CJV	Local Monthly Pass	14%
LCV	Single	74%
LCV	Return	20%
LCV	Monthly	1%
LCV	Local Commercial	5%
LCV	Violations	0%
LCV	Exemptions	0%
LCV	Discounts	0%
LCV	Local Monthly Pass	0%
Bus	Single	20%
Bus	Return	75%
Bus	Monthly	4%
Bus	Local Commercial	1%
Bus	Violations	0%
Bus	Exemptions	0%
Bus	Discounts	0%
Bus	Local Monthly Pass	0%
2A	Single	92%
2A	Return	7%
2A	Monthly	0%
2A	Local Commercial	1%
2A	Violations	0%

2A	Exemptions	0%
2A	Discounts	0%
2A	Local Monthly Pass	0%
3A	Single	94%
3A	Return	4%
3A	Monthly	0%
3A	Local Commercial	2%
3A	Violations	0%
3A	Exemptions	0%
3A	Discounts	0%
3A	Local Monthly Pass	0%
MAV (4-6A)	Single	97%
MAV (4-6A)	Return	2%
MAV (4-6A)	Monthly	0%
MAV (4-6A)	Local Commercial	1%
MAV (4-6A)	Violations	0%
MAV (4-6A)	Exemptions	0%
MAV (4-6A)	Discounts	0%
MAV (4-6A)	Local Monthly Pass	0%
MAV (>6A)	Single	97%
MAV (>6A)	Return	2%
MAV (>6A)	Monthly	0%
MAV (>6A)	Local Commercial	1%
MAV (>6A)	Violations	0%
MAV (>6A)	Exemptions	0%
MAV (>6A)	Discounts	0%
MAV (>6A)	Local Monthly Pass	0%

Source: Steer analysis

D Traffic and Revenue forecasts

D.1 The below section presents the AADT and Revenue growth rates for each vehicle type for the concession period:

Table D.1: Annual vehicle wise AADT growth rates at Khandi Obri, FY20-FY45

	TP1 : Khandi Obri						
	CJV	LCV	Bus	2A	3A	MAV (4-6A)	MAV (>6A)
FY20	8.4%	6.3%	2.0%	3.8%	3.8%	8.8%	6.8%
FY21	8.4%	6.3%	2.0%	3.8%	3.8%	8.9%	6.9%
FY22	8.3%	6.2%	2.0%	3.8%	3.8%	8.9%	6.9%
FY23	8.0%	6.0%	1.9%	3.7%	3.7%	8.7%	6.7%
FY24	7.7%	5.8%	1.9%	3.6%	3.6%	8.4%	6.6%
FY25	7.4%	5.5%	1.8%	3.5%	3.5%	8.2%	6.4%
FY26	7.1%	5.3%	1.7%	3.4%	3.4%	8.0%	6.2%
FY27	6.9%	5.2%	1.7%	3.3%	3.3%	7.8%	6.0%
FY28	6.7%	5.0%	1.6%	3.3%	3.3%	7.5%	5.9%
FY29	6.5%	4.9%	1.6%	3.1%	5.0%	5.7%	5.7%
FY30	6.4%	4.8%	1.5%	3.1%	5.0%	5.6%	5.6%
FY31	6.3%	4.7%	1.5%	3.1%	4.9%	5.5%	5.5%
FY32	6.2%	4.6%	1.5%	3.0%	4.8%	5.4%	5.4%
FY33	6.1%	4.5%	1.5%	3.0%	4.7%	5.3%	5.3%
FY34	6.0%	4.5%	1.4%	2.9%	4.6%	5.2%	5.2%
FY35	6.0%	4.5%	1.4%	2.9%	4.6%	5.2%	5.2%
FY36	5.9%	4.4%	1.4%	2.9%	4.6%	5.2%	5.2%
FY37	5.9%	4.4%	1.4%	2.9%	4.6%	5.2%	5.2%
FY38	5.9%	4.4%	1.4%	2.9%	4.6%	5.2%	5.2%
FY39	5.9%	4.4%	1.4%	2.9%	4.6%	5.1%	5.1%
FY40	5.9%	4.4%	1.4%	2.9%	4.6%	5.1%	5.1%
FY41	5.9%	4.4%	1.4%	2.9%	4.6%	5.1%	5.1%
FY42	5.9%	4.4%	1.4%	2.9%	4.6%	5.1%	5.1%
FY43	5.9%	4.4%	1.4%	2.9%	4.6%	5.1%	5.1%
FY44	5.9%	4.4%	1.4%	2.9%	4.6%	5.1%	5.1%
FY45	5.9%	4.4%	1.4%	2.9%	4.6%	5.1%	5.1%

Source: Steer analysis

Table D.2: Annual vehicle wise revenue growth rates at Khandi Obri, FY20-FY45

	TP1 : Khandi Obri						
	CJV	LCV	Bus	2A	3A	MAV (4-6A)	MAV (>6A)
FY20	8.5%	6.3%	2.0%	3.6%	3.8%	8.8%	6.8%
FY21	69.6%	64.5%	58.7%	62.8%	62.2%	69.7%	67.2%
FY22	15.0%	12.8%	7.3%	8.9%	9.5%	15.1%	12.4%
FY23	12.3%	11.8%	7.4%	8.6%	9.1%	13.9%	12.5%
FY24	13.5%	10.1%	6.9%	9.2%	8.7%	14.0%	12.0%
FY25	13.6%	11.1%	7.0%	8.8%	9.2%	14.1%	11.6%
FY26	12.9%	10.5%	7.2%	9.3%	8.0%	13.5%	11.6%
FY27	12.4%	10.4%	6.7%	8.1%	9.2%	13.0%	11.6%
FY28	11.9%	11.2%	6.6%	8.5%	8.1%	13.0%	11.1%
FY29	11.5%	9.7%	6.9%	8.9%	10.4%	11.3%	11.4%
FY30	11.6%	10.4%	6.7%	7.9%	10.7%	10.9%	10.7%
FY31	12.5%	10.2%	7.1%	8.9%	10.3%	11.0%	11.0%
FY32	10.8%	9.9%	6.6%	7.9%	10.5%	11.0%	11.0%
FY33	12.0%	10.7%	6.9%	8.8%	10.1%	10.6%	10.9%
FY34	12.0%	9.4%	6.5%	7.9%	9.8%	11.0%	10.6%
FY35	11.2%	10.0%	7.0%	8.7%	10.0%	10.7%	10.8%
FY36	11.3%	9.9%	6.7%	8.4%	10.2%	10.7%	10.8%
FY37	11.1%	10.3%	6.7%	8.1%	10.3%	10.7%	10.8%
FY38	12.2%	10.2%	7.0%	8.3%	10.1%	10.7%	10.7%
FY39	11.5%	9.9%	6.8%	8.4%	10.2%	10.7%	10.9%
FY40	11.5%	9.7%	6.8%	8.5%	10.3%	11.0%	10.8%
FY41	11.5%	10.1%	6.9%	8.3%	10.3%	10.7%	10.7%
FY42	11.9%	10.5%	7.0%	8.7%	10.4%	10.9%	10.8%
FY43	11.1%	9.7%	6.9%	8.4%	10.1%	10.8%	10.9%
FY44	11.6%	10.0%	7.0%	8.4%	10.4%	10.9%	10.9%
FY45	12.2%	10.3%	7.0%	8.5%	10.4%	11.0%	10.8%

Source: Steer analysis

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Report
November 2018

Aurangabad - Yedeshi: Traffic and Revenue Forecasts



IRB Infrastructure Developers limited
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Appendices

A Toll rates by plaza

B Forecasting assumptions

C Trip frequencies

D Traffic and Revenue Forecasts

Disclaimer

This report has been produced for the sole benefit of IRB Infrastructure Developers limited. The report may only be relied upon by Approved Addressees in accordance with the terms of our engagement letter.

The projections of traffic contained within this document represent Steer's best estimates. While they are not precise forecasts, they do represent, in our view, a reasonable expectation for the future, based on the most credible information available as of the date of this report.

The estimates contained within this document rely on numerous assumptions and professional judgements that are influenced by external circumstances. These can change quickly and that can affect the outcome of our forecasts. In addition, it has been necessary to base most of this analysis on data collected by third parties and shared by the Client. This has been independently checked whenever possible. However, Steer does not guarantee the accuracy of this data.

Finally, it is important to note that the traffic forecasts presented represent long term growth profiles. In reality, there will be a degree of year-on-year oscillation of actual traffic levels around these growth rates in line with macroeconomic cycles. We do not believe it is feasible to include such oscillations within our concession life forecast, and would recommend that such uncertainties are addressed through "stress tests" within the financial model.

Glossary Items

Acronym	Meaning
AADT	Annual Average Daily Traffic
CJV	Cars / Jeeps / Vans
COD	Commercial Operations Date
DFC	Dedicated Freight Corridor
DMIC	Delhi Mumbai Industrial Corridor
EMV	Electric Motor Vehicles
FY	Financial Year
GSDP	Gross State Domestic Production
HCM	Heavy Commercial Vehicles
IRB	IRB Infrastructure Developers Ltd.
LCV	Light Commercial Vehicles
MAV	Multi Axle Vehicle
NH	National Highway
NHAI	National Highways Authority of India
NSDP	National State Domestic Production
PCI	Per Capita Income
SCF	Seasonality Correction Factors
SH	State Highway
TP	Toll Plaza
WPI	Whole sale price index

1 Introduction

The assignment

1.1 IRB Infrastructure Developers Ltd. (the "Client") has commissioned Steer to act as the traffic and revenue advisor, in the evaluation of Yedeshi-Aurangabad (NH-211/NH-52) (the "Asset") which forms part of the portfolio of infrastructure concessions currently being operated by the Client, in India.

1.2 We understand that the Client is looking to obtain a Fair Market Valuation of this Asset through this evaluation, consisting of a robust assessment of the current condition and potential of the Asset from a traffic and revenue perspective. The aim of this study is therefore to identify the traffic and revenue potential of the Asset.

1.3 The following table summarises the Asset and its operating history. As can be seen, it is currently comprised of 2 lanes, with expansion being carried out from 2 to 4 lanes. The remaining concession period for the Asset is 22 years.

Table 1.1: Description of Asset

Asset Name	State	Length	Toll plazas	Code	Tolling History	Improvements	Remaining Concession Period
Yedeshi-Aurangabad (NH-211/NH-52)	Maharashtra	190km	km 134+000 Pargaon km 195+900 Shirapur km 254+550 Pachod	TP1 TP2 TP3	None	2-lane to 4-lane expansion ongoing	22 years

Source: Steer analysis based on NHAI data

1.4 This report constitutes our final deliverable under this study and includes the traffic and revenue forecasts for the Asset.

Our approach

1.5 Since, tolling on the asset is yet to be started, the approach employed by Steer in the preparation of the traffic and revenue forecast was to take advantage of the existing knowledge of the Asset, of the available data, and of Steer's experience on working on similar roads having similar characteristics. It follows normal practices well established in addressing the issue of forecasting on-going traffic growth on a brownfield/greenfield project.

1.6 The analysis focused on two sets of issues:

- understanding and verifying the traffic which is at present using the Asset; and
- identifying how and why that traffic will change in the future.

1.7 Regarding the former (i.e. current traffic on the Asset), independent primary data collection was commissioned as part of this study.

1.8 The estimation of future traffic demand on the Asset is driven by:

- **Growth of 'background' traffic**: this depends to a certain extent on the on-going socio-economic and demographic development of the area served by the Asset;
- **Change in the local and international industry**: which drives heavy goods traffic on the Asset; and
- **Change in the competitive position of the Asset**: this reflects changes in highway capacity of competing roads and the relative changes in service levels (time, congestion, price, etc.) for the Asset, and their competitors.

Contents of this report

1.9 This report is divided into 7 chapters, including this introduction:

- Chapter 2 describes the key features of the Asset based on site visits;
- Chapter 3 summarizes the traffic volumes and user/commodity profile, on the Asset;
- Chapter 4 discusses the socio-economic context in the corridors containing the Asset;
- Chapter 5 reports the approach developed to forecast future traffic demand on the Asset;
- Chapter 6 presents our base year traffic estimates and forecasting assumptions; and
- Chapter 7 presents the traffic and revenue forecasts for the Asset.

2 The Asset

Introduction

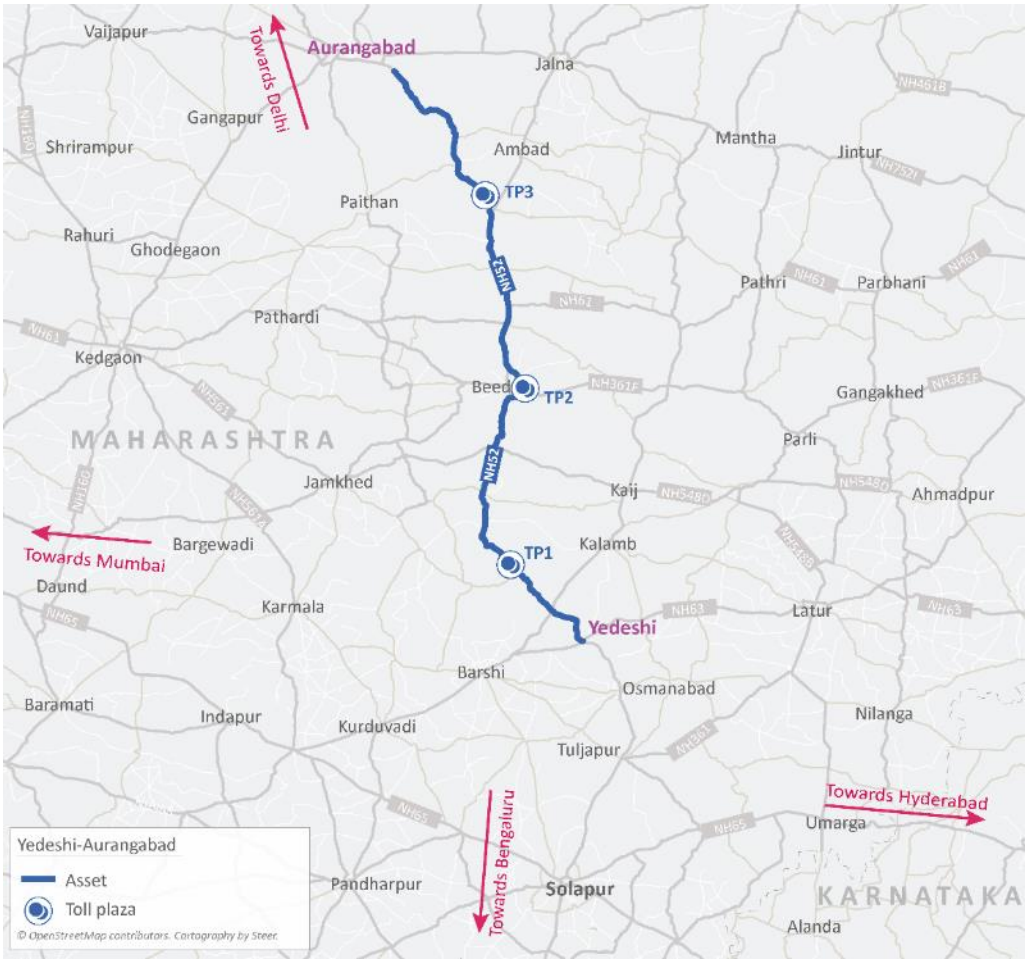
2.1 This chapter provides a description of the Asset, prepared using available information, and our own analysis based on site visits and understanding of the local areas around the Asset.

2.2 We also describe the key alternative routes to each Asset (if any), the relative competitive advantage between the Asset and the alternatives, and places of interest which could be attractors/generators of travel demand along the corridor.

Asset description

2.3 This Asset is a 190-km two-lane road, part of the NH-52 section in Maharashtra, as illustrated in Figure 2.1. The Asset is currently being upgraded to four lanes, and is proposed to have 3 toll plazas, which are all under construction.

Figure 2.1: Location of Asset: Yedeshi – Aurangabad and corresponding toll plazas



Source: Steer cartography using OpenStreetMap data

Figure 2.2: Road cross-section on Asset: Yedeshi-Aurangabad



Source: Steer site visit

2.4 According to information provided by the Client, tolling is expected to commence at 75% in December 2018 with full COD in June 2019. Appendix A contains the toll rates for the three toll plazas on the Asset for FY19. As the Asset is still largely under construction, the toll fees were calculated based on a generic NHAI toll fee calculation methodology and the tollable lengths mentioned in the Schedule R of the concession agreement.

Economic activities in the region

2.5 The inter-urban areas along the Asset have vast stretches of agricultural fields. Aurangabad has several breweries. The Asset, being part of the long-distance North-South Corridor (NH-52) between Delhi and Bengaluru, showed a mix of commodities and traffic from/to various parts of the country.

Potential network impacts and competition

2.6 As construction activity is currently ongoing on the Asset, NH-48 (the Mumbai – Bengaluru corridor) represents a more attractive alternative through Pune. However, once construction is completed, it is expected that the Asset will be the first choice for strategic long distance north-south movements. It is also expected that some sections of the Asset such as Shirapur (near Beed) become part of short-to-medium-distance east-west movement for CJVs and light trucks.

3 Data Analysis

Introduction

3.1 This Chapter outlines the current traffic and revenues on the Asset, as well as our analysis of Origin Destination (OD) data, as provided by the Client/based on Vendor's reports.

3.2 Traffic demand data is used to understand the volume and vehicle composition of demand using the Asset, and the OD data is used to obtain a better understanding of trip purposes/areas of influence in the vicinity of the Asset, as well as, the commodities being moved by goods vehicles. This analysis, combined with our understanding of the Asset (based on our site visits), enables us to identify the key drivers of demand, on the Asset.

Current traffic and revenue

Overview

3.3 On this Asset that have limited/no historical data on traffic, we have used our TVCs to determine the Weekly Average Daily Traffic (WADT), which (along with seasonality information) are the basis for establishing our Average Annual Daily Traffic (AADTs) – this process is discussed further in Chapter 6.

3.4 The following table indicates the dates for the TVC counts conducted at the toll plazas for the Asset.

Table 3.1: Dates for TVC Counts

Asset Name	TVC counts (7 days)
Yedeshi-Aurangabad	13/09/2018 – 19/09/2018

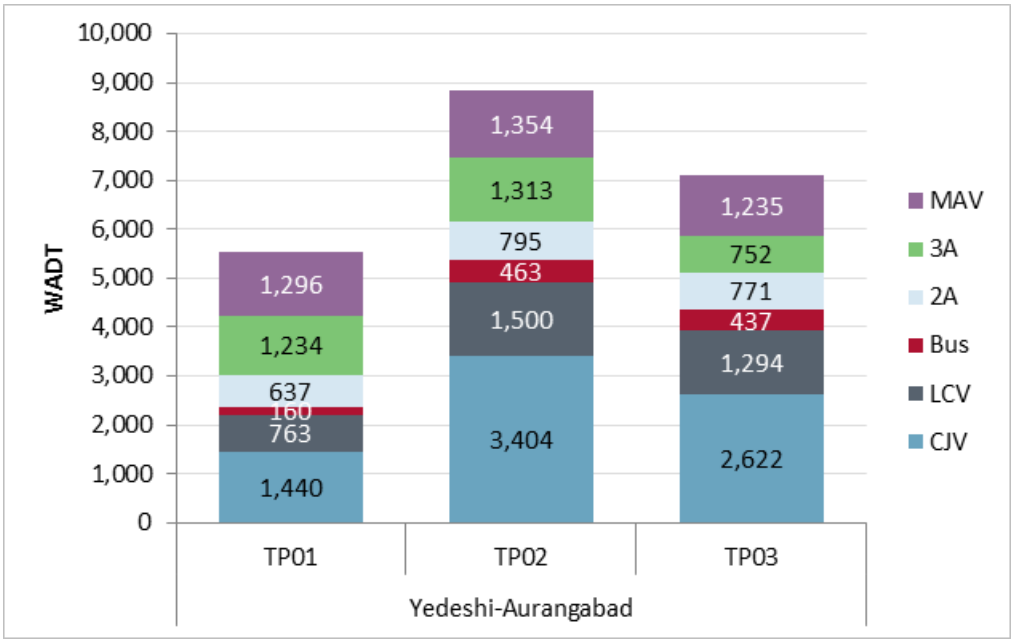
Source: Steer analysis

3.5 Traffic along the national highways shows variation across the week due to the nature of industrial and port activity, and economic activities surrounding the Asset. To derive a representative TVC count considering daily variation, three-day to seven-day traffic counts are generally recommended, and hence, in order to fully understand this weekly fluctuation, we collected seven-day counts for each toll plaza of the Asset.

Traffic

3.6 Taking a simple average of the seven-day TVC counts, we have arrived at the following weekly average daily traffic (WADT). This WADT includes non-tollable, exempt and toll-violating vehicles, which we remove while estimating AADT.

Figure 3.1: WADT



Source: Steer analysis of independent data collection

Origin-Destination analysis

Overview

3.7 Origin-destination (OD) analysis enables the understanding of the nature of traffic movement on the Assets. While zoning analysis helps to understand 'where' people and goods travel, commodity distribution and trip purpose throw light on 'why' people travel or 'what' goods get transported.

3.8 This analysis is generally used to estimate the key drivers of traffic and aid the making of informed forecasting assumptions around traffic demand elasticities, growth drivers and exogenous impacts. As part of this assignment, we have analysed the regional drivers of demand based on a zoning of OD data, commodity distribution and trip purpose for each Asset.

Data source and categories

3.9 The following table presents the sources of data used to perform this analysis. While data provided by the Client was available in raw format, the Vendor reports were at a more aggregate level.

Table 3.2: Sources of data for OD Analysis

Zoning Analysis	Commodity Distribution	Trip Purpose
Client Data	Client Data	Client Data

Source: Steer analysis based on Client/Vendor information. Data from June 2018.

3.10 We have grouped various commodities into fewer aggregate categories for ease of interpretation, as shown in the table below. Empty vehicles have been excluded from the proportions presented in this Chapter for better understanding.

Table 3.3: Aggregate commodity categories

Aggregate Commodity Category	Commodity Description
Agricultural/Food	Agricultural, Food, Groceries, Fruit, Vegetables, Fish, Meat, etc.
Construction	Cement, tar, tiles, stones, JCB, fly ash, etc.
Petroleum Products	Petrol, Diesel, Gas, LPG, Sulphur, Oil, CNG, etc.
Industrial/Manufacturing	Container; Machinery, Equipment, Industrial goods; Car/bike manufacturing; Chemicals, Fertilizers; Leather, Textile; Mining Minerals (coal, zinc, etc.)
Miscellaneous	Couriers / Parcels; Others

Source: Steer analysis

3.11 To facilitate better interpretation of key regional drivers of traffic as determined by their OD zones, and influenced by various towns, cities, states and regions in the vicinity of the Asset, we have aggregated zonal data as described in Table 3.4.

Table 3.4: Zone aggregation

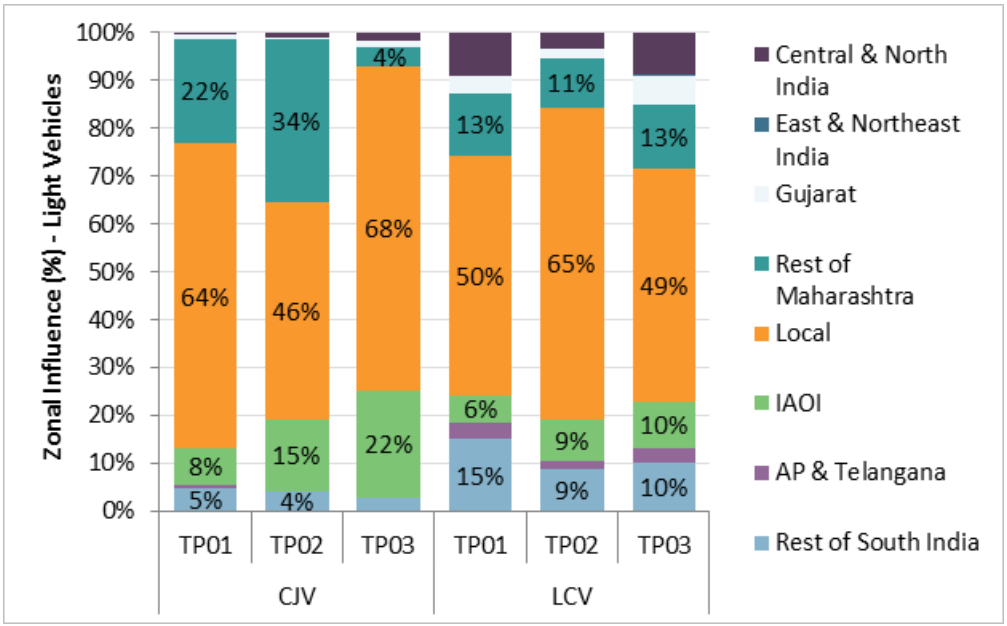
Aggregate Zone	Description
Local	Towns or cities lying on or very close to the asset
Immediate area of influence (IAOI)	Towns, cities and zones up to about 100 km from the asset
Rest of the State	Towns, cities or districts in the state that do not fall in the Local and IAOI categories
North India	The national region comprising the states of Chandigarh, Delhi, Haryana, Punjab, Himachal Pradesh, Jammu & Kashmir, Rajasthan, Uttaranchal and Uttar Pradesh.
East & Northeast India	The national region comprising Bihar, Odisha, West Bengal, Jharkhand, Assam, Sikkim, Arunachal Pradesh, Nagaland, Manipur, Mizoram, Tripura and Meghalaya.
Central India	The national region comprising the states of Chhattisgarh and Madhya Pradesh
West India	The national region comprising the states of Gujarat, Maharashtra, Daman & Diu, and Dadra & Nagar Haveli
South India	The national region comprising the states of Telangana, Tamil Nadu, Karnataka, Kerala, Goa, Lakshadweep, Puducherry, and Andaman & Nicobar Islands

Source: Steer analysis

Zonal influence

3.12 The following figure indicates the zonal influence on light vehicles. As can be expected, this is largely dominated by local traffic (50-70%). Osmanabad, Beed and Aurangabad are major contributors to traffic on both CJV and LCV. Given the additional east-west movement on the asset, we also see considerable IAOI traffic.

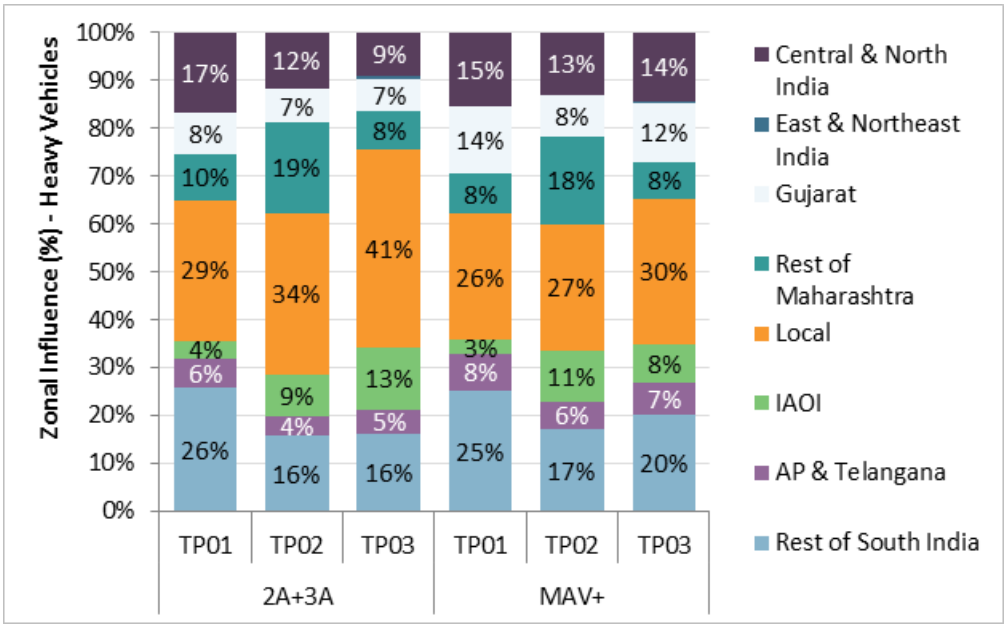
Figure 3.2: Zonal influence on light vehicles



Source: Client OD Data and Steer analysis

3.13 The following figure indicates the zonal influence on heavy vehicles. With about 20% lesser influence from local zones compared to light vehicles, we see more contribution from regions north and south of the asset. This corroborates the view that the Asset forms part of the strategic long-distance movement for heavy trucks on NH-52 between North India and South India. Bengaluru shows considerable influence, along with Gujarat.

Figure 3.3: Zonal Influence on heavy vehicles

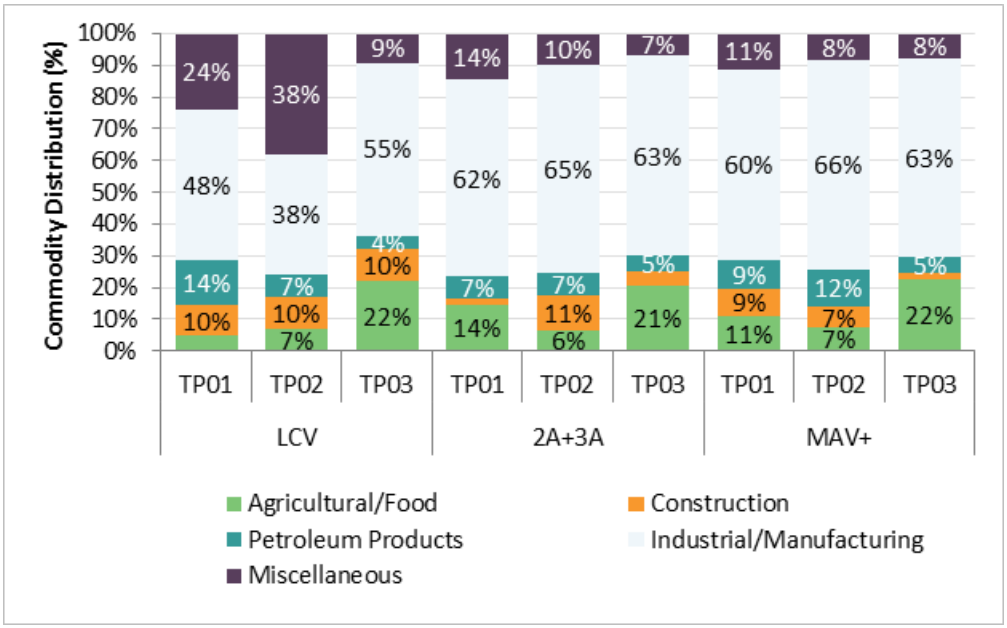


Source: Client OD Data and Steer analysis

Commodity distribution

3.14 The following figure shows the commodity distribution for goods vehicles on the Asset. As seen in the graph, 'Industry/Manufacturing' is the largest aggregate commodity category for goods vehicles. Leather and textiles represent a large share of this aggregate commodity. 'Agriculture/Food' is second largest aggregate commodity given the largely agricultural nature of the region, with greater influence seen in TP3.

Figure 3.4: Commodity distribution for goods vehicles

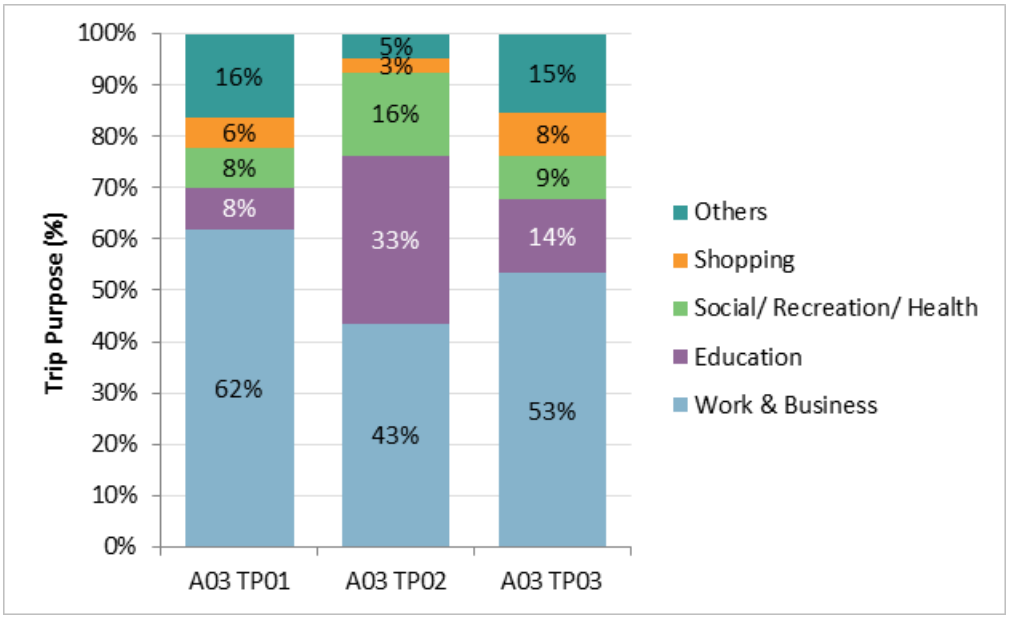


Source: Client OD Data and Steer analysis

Trip purpose

3.15 The figure below presents the trip purpose for car passenger trips on the Asset. A majority (40-60%) of the trips are related to work and business. TP2 is closer to the town Beed, which is resulting in a greater proportion of educational trips.

Figure 3.5: Trip purpose for car passenger trips



Source: Client OD Data and Steer analysis

Summary of OD analysis

3.16 The following table summarises the OD analysis and highlights the key influences/drivers of traffic on the Asset, by vehicle type.

Table 3.5: Summary of OD analysis

Vehicle type	Zonal influence	Commodities	Trip purposes
CJV	Solapur/Osmanabad are key drivers across all vehicle types	N/A	Largely work/business, no particular tourism/leisure focus
LCV		Largely agricultural, in particular at TP1	N/A
2A		Largely industrial/manufacturing driven, with higher share in larger trucks, and higher share at TP2 (proximity to iron ore mines)	
3A			
MAV			
2A			
3A			
MAV			

Source: Steer analysis based on Vendor's reports and Client data

4 Socio-Economic Context

Introduction

4.1 The growth of traffic on existing (brownfield) roads depends on, firstly, how fast the background travel demand grows (background growth); and secondly, how successful the roads are in attracting that traffic (traffic capture). Background travel demand is driven by the socio-economic conditions in the regions where the Asset is located and the country as a whole. These include:

- Changes in factors such as population, economic growth (regional and national) and industrial production; and
- Other local factors such as strategic port growth, and growth in local industries near the Asset.

4.2 In turn, the change in the relative competitive position of the Asset (and thus of the traffic capture they can achieve) derives from how the relative offer for the roads changes, i.e. the service offered and the tolls charged on the project roads, in comparison to that on competing roads; and whether any competing road facilities are planned.

4.3 In this Chapter, we have assessed the trends of the above growth drivers, as indicators of the socio-economic conditions in the regions surrounding the Asset.

Population growth

National level

4.4 Total population in India has grown at a CAGR of 1.5% from 2000, decreasing over the decades from 2.3% in 1970 – 1985 and 2.0% from 1985 – 2000. The World Bank forecasts this growth to decrease even further, till it reaches 0.6% CAGR (2030 – 45).

4.5 The growth rate of urban populations has been consistently higher than that of total population, indicating a trend towards urban agglomerations. The urbanization trend is forecasted to continue, with an expected shrinking of the rural population over the next 30 years.

State level

4.6 The following table shows the evolution of population in the state containing the Asset, compared to that of the country. Overall, as can be seen, the trend observed at the country level is also noticeable at the state level, namely, a move towards urban agglomeration with the growth in rural population being slower than that of urban population.

Table 4.1: Population Growth in India (2001 – 2011)

State	2001 Population (m)			2011 Population (m)			CAGR (2001 – 2011)		
	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
Maharashtra	97	56	41	113	62	51	1.5%	1.0%	2.2%

India	1,028	742	286	1,210	833	377	1.6%	1.2%	2.8%

Source: National Institution for Transforming India (NITI Aayog) – Census Data

4.7 Due to the complexities of the patterns in which urbanisation takes place, and the very dynamic nature of local population migration (which are very difficult to forecast with accuracy), we do not propose to use population growth as a proxy for understanding future travel demand growth on the Asset. It has been included in this section simply to provide a socio-economic context of the state/trends in the regions in which the Asset is located.

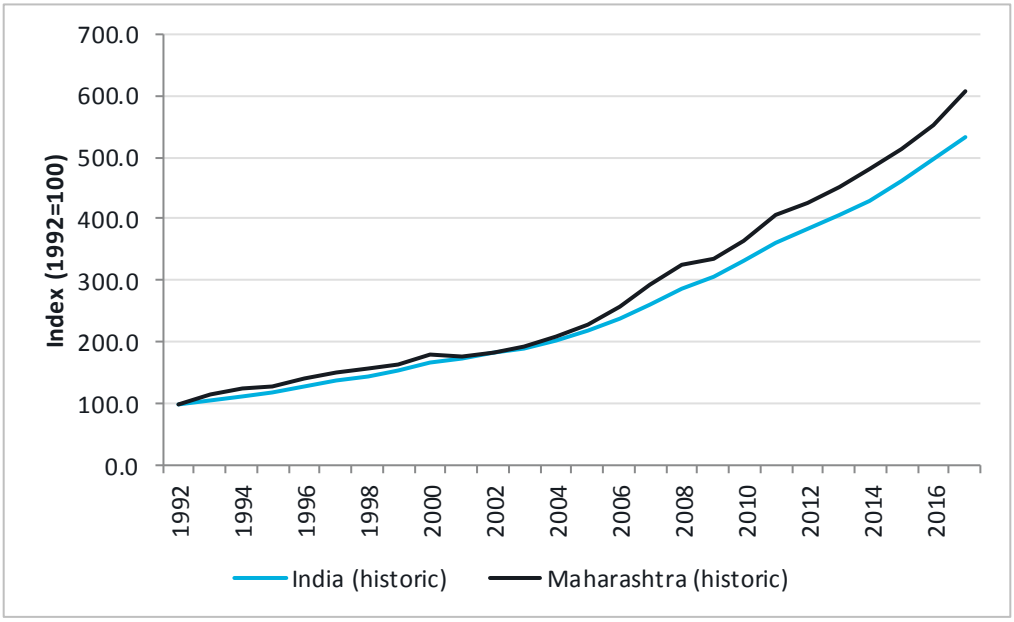
Economic growth and industrial production

GDP Growth

4.8 The Indian economy has grown at a CAGR of 7.5% over the past decade, aided by a strong growth in the services/tertiary sector (9.4% CAGR, 2005 – 2013), which includes the infrastructure and construction sector. The economic performance of each state however, is different, and various drivers contribute to the disparities in performance observed, at the state level, which are discussed in the following sections.

4.9 The following figure illustrates the evolution of Maharashtra's GDP. This state, which contributed to approx. 15% of India's GDP in 2016, has been growing at a higher rate than the national average between 2011-2016 (CAGR of 7.0%). Mumbai and Pune, which are well-known as financial hubs for India, as well as for IT and educational services are located in Maharashtra.

Figure 4.1: Evolution of Maharashtra's state GDP and national GDP

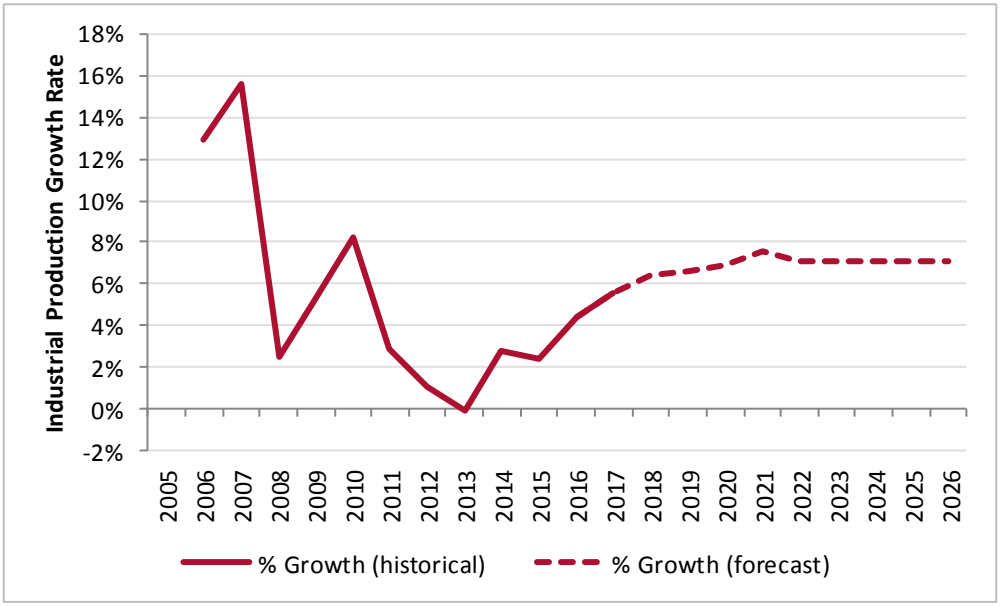


Source: Open Government Data (OGD) Platform (State GDPs) and IMF (National GDP)

Industrial Production

4.10 Industrial production (IP) is often a key driver of heavy goods traffic along road networks. As can be seen in the following figure, industrial production has grown at a steady pace in recent years, recovering from a slowdown between 2010 and 2013.

Figure 4.2: Historical and forecast growth rates of Industrial Production



Source: Consensus Global Outlook 2016 – 2026

4.11 National IP forecasts are encouraging for the coming decades, indicating growth in line with national GDP, but at a slightly slower rate. No information is available at the state level.

5 Traffic Growth

Introduction

5.1 The Asset under consideration has no time series data available as the Asset is yet to start commercial tolling operations. We have therefore conducted a benchmarking analysis based on our experience of having studied trends on other roads in the states in which the Asset is located, to develop forecasting assumptions for the elasticity of traffic demand to key macroeconomic variables.

Elasticity selection

Overview of our approach

5.2 We have applied the approach described in this section to the Assets for which no time-series of historic traffic was available. To benchmark traffic demand growth elasticities, we selected a series of relevant benchmark projects, which complied with the following characteristics:

- Roads that were relevant to the Asset in terms of geographical proximity, traffic and commodity composition, and similar drivers of growth;
- Quality of historical data series available; and
- Consistency in concession agreement conditions across the time series (e.g. no transfer from public funded (PF) to build, operate, transfer (BOT) during the selected period), wherever possible.

5.3 Additionally, in cases where the benchmarking assets did not entirely match the previous characteristics, we carried out an analysis of data sourced from the NHAI. This set of data covers plaza wide toll revenue collection on sections of National Highways (NHs) across India, covering the period since the inception of Public Funded tolling, between FY2002 until 2016, inclusive. This dataset was only recently made publicly available and proved useful in providing another reference point, against which to benchmark our assumptions.

5.4 To develop our views on the most suitable set of drivers for traffic for each vehicle type across the Assets studied, we considered the following sources of information:

- Client Data/third-party reports
  - Asset characterisation;
  - OD surveys;
- Geographic location of the asset;
- Socio-economic profile of the state;
- Site visits
  - Interviews with toll plaza managers;
  - Visual observation of traffic composition and industries along the project road; and
- Behaviour of benchmarked assets.

Summary of assumptions

5.5 Based on the assessment described above, we have established a general socio-economic relationship for each vehicle type and each toll plaza, which is detailed in the table below and in the following sections. Elasticities and long-term assumptions around the same, by toll plaza are described later in this Chapter.

Table 5.1: Socio-economic indicator used in growth forecasting, by vehicle type

Vehicle Type	Socio-Economic Indicator Used
CJV	Gross State Domestic Production (GSDP)
Bus	Gross State Domestic Production (GSDP)
LCV	Gross State Domestic Production (GSDP)
2-Axle Trucks	Gross Domestic Production (GDP)
3-Axle Trucks/MAV/OSV	Gross Domestic Production (GDP)

Source: Steer analysis

5.6 **CJV traffic growth**: State GDP (GSDP) is assumed to be the key driver for CJV traffic, with a relationship of either 1 to 1 or above – as observed from our elasticity estimation on other relevant Assets. This is in line with the observation that in fast-growing economies such as India with relatively low car ownership levels, car traffic growth rates are often in line with/slightly higher than growth in GDP.

5.7 **Bus traffic growth**: Bus traffic is assumed to grow at very low rates during the concession period. Based on our experience with Assets of a similar nature, bus volumes are generally small and traffic history shows volatile growth patterns. As the economy grows, passenger numbers on public transport are expected to increase too, but at rates below car growth rates as an increase in car ownership levels will also lead to a reduction of potential passengers. To reflect this, we used a growth assumption related to an elasticity of 0.50 across all toll plazas.

5.8 **LCV traffic growth**: Again, for LCVs, GSDP is assumed to be the key driver of traffic growth, as these vehicles tend to serve more local movements, which is confirmed by our observations and the analysis of data from OD surveys. For Assets with predominantly long-distance traffic we have assumed a relationship with GSDP that is below 1.00. This is in line with trends on similar Assets where we have observed that for long-distance movements small commercial vehicles such as LCVs and 2A trucks are increasingly being replaced by larger vehicle types.

5.9 **2A Truck growth:** Historically, the share of 2A trucks has been decreasing across the country. The lower unit costs offered by higher productivity trucks (3A and MAV) for freight transport make them a better alternative for long-distance trips where the road network capacity and configuration allow it. With significant improvements in road infrastructure and a continuing

shift towards larger vehicles, we expect 2A truck growth to be below that of larger commercial vehicles.

5.10 **3A and MAV growth:** Based on the OD analysis and our observations/experience, we believe that heavy vehicles generally cater to long distance movements beyond the state level, and have therefore linked 3A and MAV traffic growth to growth in the economy at a national (GDP) and not a state-level. For Assets for which we were not able to identify relevant corresponding reference assets, our approach to obtaining elasticities for 3A and MAV traffic growth was to estimate a blended elasticity based on the commodity split observed on the Asset in combination with our understanding of historically observed growth trends in the respective commodities.

5.11 Lastly, we believe that for CJV and LCVs, traffic growth at toll plazas located closer to urban centres can generally be expected to be higher. This is because growth of these vehicle types is highly correlated with the economic activity and growth of major urban centres.

5.12 For this Asset in the state of Maharashtra, our analysis suggests that future growth expectations are focused on regional and long-distance journeys. More specifically, it is part of a wider investment plan that aims at making the route more attractive for strategic movements between Delhi and Bangalore – vehicles currently predominantly use the more Western route via Satara or the more Eastern route via Hyderabad for these trips. The following table presents the proposed elasticities.

Table 5.2: Elasticity assumptions

Toll Plaza	CJV	LCV	Bus	2A	3A	MAV
TP1 Pargaon	0.95	0.42	0.50	0.50	0.71	0.80
TP2 Shirapur	0.95	0.42	0.50	0.50	0.71	0.80
TP3 Pachod	0.95	0.52	0.50	0.50	0.71	0.80
Long term dampening	No dampening					

Source: Steer analysis

Growth driver forecasts

5.13 In the following sections we describe the assumptions in relation to forecasts of the key socio-economic drivers of traffic.

National GDP

5.14 India's GDP is the core variable that drives our socio-economic forecasts. We have reviewed several independent sources providing national GDP forecasts, as detailed in the table below.

Table 5.3: Summary of Independent Economic Forecasts of India's GDP

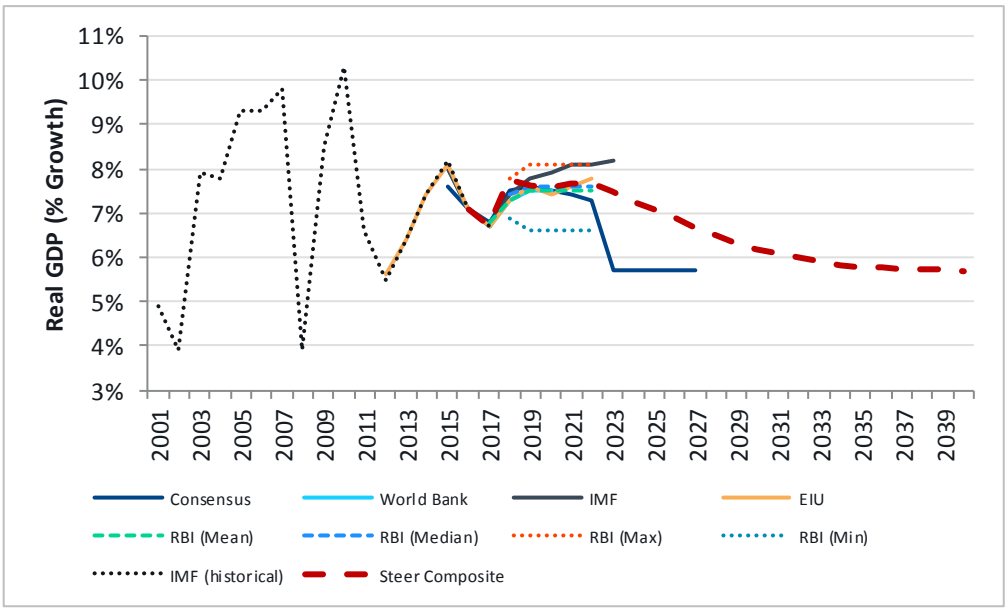
Source	Month/year of data	Forecasted Period
Consensus Forecasts	October 2017	2015 – 2027
World Bank (WB)	June 2018	2015 – 2020
Economist Intelligence Unit (EIU)	August 2018	2012 – 2022
Reserve Bank of India (RBI)	August 2018	2017 – 2022
International Monetary Fund (IMF)	April 2018	2015 – 2023

Source: Steer analysis based on third party forecasts

5.15 Based on the information detailed above and after discussion with the client, we created a composite GDP forecast for India that considers the following assumptions, and is illustrated in the following figure.

- For the years 2018 – 2023, we used an average of the growth rates from all the sources listed in the table above, smoothed to avoid minor variations across sources. This resulted in a 7.6% growth rate per annum for the period;
- Subsequently, we reduced the annual growth rate gradually to reach 6.3% in 2029. This is the value forecast by using the only long-term source available; and finally
- Until FY40, we assume a linear reduction, till it stabilises at 5.7% and remains constant thereafter.

Figure 5.1: Historic and forecast GDP growth



Source: Steer analysis with information using publicly available data from Consensus, WB, EIU, RBI and IMF and as agreed with the client

State GDP (GSDP)

5.16 As discussed in Chapter 4, some states have historically been growing at a faster pace than others. For forecasting, we have assumed that as the Indian economy grows, the states which have historically grown at a faster pace than the national average will (over 10 years) see a slowdown in GSDP growth (tending to GDP) as other states, such as Jharkhand, Sikkim, Assam start growing faster than the national average/GDP.

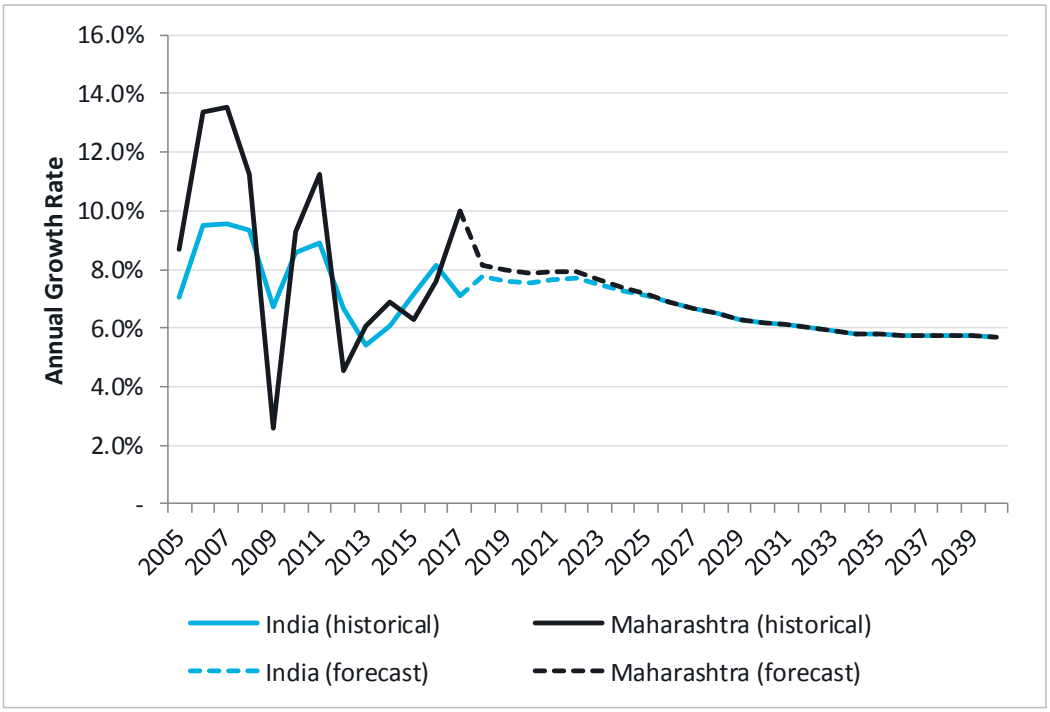
5.17 The following table summarises the historic differentials between GSDPs and GDP, and the assumptions employed to forecast GSDP going forwards. The resulting forecasts have been illustrated in Figure 5.2.

Table 5.4: GSDP/GDP differentials and forecasting assumptions

GSDP/GDP	Average growth			GSDP minus GDP			Assumptions for forecasting
	1992-05	2001-10	2011-17	1992-05	2001-10	2011-17	
Maharashtra	6.2%	7.5%	7.5%	0.3%	0.3%	0.5%	0.5%
India	5.8%	7.2%	7.1%	-	-	-	-

Source: Steer analysis based on data from the Central Statistics Office, Ministry of Statistics and Programme Implementation, Government of India

Figure 5.2: Historic and forecast GSDP growth



Source: Steer analysis and as agreed with the client

6 Forecasting assumptions

Introduction

6.1 In this chapter, we present the forecasting inputs and assumptions used within our modelling framework to develop forecasts for each toll plaza, and the Asset. We cover:

- Base year traffic estimation (including seasonality assumptions);
- Exogenous impacts which are expected to influence traffic demand on the Asset, covering:
  - Capacity/quality augmentation;
  - Introduction of tolling;
  - Wider network changes; and
  - Reductions in construction vehicles (currently part of ongoing construction on some Assets).

6.2 We further detail the assumptions around ticket types, trip factors and whole sale price index (WPI), in order to determine the evolution of toll rates and revenues.

6.3 It should be noted that the base year for all traffic presented in this chapter is FY19[1]. Further, we only report tollable traffic, and as such, exemptions/violations have not been included in this Chapter, or in our forecasts.

Base traffic

6.4 As discussed in previous chapters, our independent traffic count surveys (TVCs) were conducted in September 2018. The average of the seven-day TVC counts provided the weekly average daily traffic (WADT) which pertains to the specific month of the year when the surveys were conducted.

Seasonality correction factors (SCF)

6.5 SCFs specify how much traffic in a specific period within the financial year (FY) varies from the annual average, e.g. monthly variation in traffic due to local events/festivals, weather patterns, production cycles, etc. They are defined as the ratio between AADT for the full FY and ADT of the specific period within the FY.

6.6 To be able to establish SCFs, it is essential to have information on the seasonality of a full FY. Further, SCFs should be established for each vehicle category individually, as different factors affect different vehicle types in unique manners, e.g. agricultural/industrial production cycles have little impact on car traffic.

6.7 In absence of tolling history on the Asset. The SCFs for the Asset have been derived from the Regional References (RR).

[1] FY19 runs from April 2018 until March 2019

Base year traffic (tollable, FY19)

6.8 As mentioned earlier, the independent traffic count surveys were conducted in September 2018. Using the traffic counts and the seasonality factors described above, the base traffic for year FY19 was synthesised.

Vehicle Category	TP1 – Pargaon	TP2 – Hirapur	TP3 – Pachod
CJV	1,508	3,657	2,745
LCV	744	1,524	1,262
Bus	170	490	462
2A	862	1,083	1,044
3A	1,229	1,303	749
MAV (4-6A)	1,301	1,360	1,240
MAV (>6A)	1	1	0
Total	5,815	9,418	7,503
PCU	15,266	20,696	16,985

Exogenous Impacts

Overview

6.9 The sections below detail on the various impacts which we believe would affect traffic on the Asset during the concession period. As mentioned previously, there are four main impacts which we have considered – these are summarised below and their individual impact is detailed in following sections:

- Capacity and quality augmentation post completion of construction on the Asset;
- Traffic responsiveness to the introduction of tolling on Asset on which tolling has recently commenced/is scheduled to commence;
- Network changes due to completion of strategic corridors; and
- Reduction in construction vehicles on the Asset (which are currently part of ongoing construction works).

Capacity and quality augmentation

6.10 The Asset is currently under upgrade, from 2 to 4 lanes. Once construction on the Assets is complete, it is expected that an improved level of service – with higher capacity and better quality of road surface, will offer an improved drive quality for all users.

6.11 In our experience of working on assets in similar conditions across the country where construction has recently been completed, we have observed an increase in the levels of traffic, over and above the background growth driven by socio-economic drivers, which can be attributed to users' responsiveness to improvements in capacity and road quality on these assets. The scale of this impact is typically seen to be larger for local users who travel part of the length of the asset. The timing of this impact is typically seen in the period immediately after the construction activity has been completed.

6.12 Therefore, we have estimated that it is likely that there would be an increased level of travel of local/relatively short distance traffic that would start using the Asset due to savings in

journey time and improved ride quality. This could in turn lead to an increase in traffic on the asset. The quantification of this impact is presented, in the following sections.

Introduction of tolling

6.13 On the Asset tolling is yet to commence. In our experience of working on greenfield and brownfield assets in India and across the world, where tolling has been introduced or increased significantly, a drop in traffic levels is typically observed, depending on the levels of tolls imposed/change in toll levels and alternative route options available to existing users, amongst other factors. For the purposes of this study we have calculated the impact of toll imposition/increases by comparing the generalised journey cost (GJC) a road user incurs as a result of new tolls for each vehicle type by using an elasticity of traffic level with respect to toll changes based on our observations for the Asset under consideration.

6.14 In our analysis we have estimated a short term negative impact on vehicles, especially light vehicles (CJV's and LCV's) which generally try to find local alternate routes to avoid paying tolls or change their travel patterns by making fewer trips to save on travel costs. The impact of the introduction of tolling is considerably more than the impact if toll rates are increased by a certain proportion (as in the case from PCOD to COD).

6.15 Further, the impact of toll imposition is expected to be more on the local traffic moving on the road as they are regular users of the road, and the long-distance movement would only be affected in cases where there are other strategic corridor options available. The quantification of such an event is presented in following sections.

Reduction in construction vehicles

6.16 As discussed in Chapter 2, a majority of the assets are currently under construction. During our site visits it was observed that several construction vehicles are used specifically for ongoing construction works on the Assets. We believe that once the construction is complete these vehicles would no longer be using the Assets.

6.17 We have assumed that only LCV, 2A, 3A and MAV will carry construction material – no other vehicle types have been considered in this analysis. The table in Appendix B presents the number of construction vehicles that would be reduced from the traffic volumes, as they are currently non-toll paying and will not use the Asset once construction is complete.

Summary

6.18 The quality of road is expected to improve once the construction completes. This would provide improved level of service for road users as the whole connection between Aurangabad and Solapur will be improved. As per the OD analysis 50-60% of light vehicles and 25-30% of heavy vehicles use the asset for local trips, and as discussed earlier, it is likely that once the Asset construction completes there would be positive diversion.

6.19 However, as construction activity is currently ongoing, an alternate route through Pune on NH-48 (Mumbai – Bengaluru corridor) is still attractive. Once construction is completed it is expected that the Asset should be the first choice for North –South movements based on the shortest distance between the two business centres. Further, as per the discussions with the Client, the Aurangabad – Dhule section is expected to be fully upgraded by FY21, which could result in further increase in traffic on the Asset, as the Indore-Dhule- Solapur-Bengaluru movement becomes attractive for the goods vehicles.

6.20 As discussed earlier, tolling is yet to be introduced on the asset . As indicated in the OD analysis the asset carries 40-50% local traffic (including CJV's, LCV's and 2A trucks), and we believe that a proportion of this traffic is at risk of diverting away from the Assets.

6.21 In the case of heavy vehicles, as discussed in previous chapters, the Asset provides a shorter route for the Delhi – Bangalore movement than the current route which goes through Pune. While there might be some immediate drop in traffic due to implementation of tolls, we believe that long-distance trip on 3A and MAV would increase on this road over time, due to the infrastructure and journey time improvements.

6.22 The impact of each of the above events is summarised in the tables below.

Table 6.1: Summary of impacts, for the period of the concession

	Impact 1: Capacity/quality Improvement	Impact 2: Beginning of Tolling	Impact 3: Network changes	Combined Impact
CJV	FY20 = +4% reducing to +2% in FY25 FY25 onwards = +2%	FY19 = -5% FY20 = -8% reducing to -4% in FY25 FY25 onwards = -4%	FY21 = +5% increasing to +7% in FY27 FY27 onwards = +7%	FY19 = -5% decreasing to -4% in FY20 FY21 = +2% increasing to +5% in FY27 FY27 onwards = +5%
LCV	FY20 = +4% reducing to +2% in FY25 FY25 onwards = +2%	FY19 = -2% FY20 = -5% through FY22 FY23 onwards = -4%	FY21 = +5% increasing to +7% in FY27 FY27 onwards = +7%	FY19 = -2% decreasing to -1% in FY20 FY21 = +4% increasing to +5% in FY27 FY27 onwards = +5%
Bus	-N/A	N/A-	N/A-	N/A-
2A	FY20 = +4% reducing to +2% in FY25 FY25 onwards = +2%	FY19 = -2% FY20 = -5% FY21 onwards = -4%	FY21 = +3% increasing to +5% in FY27 FY27 onwards = +5%	FY19 = -2% decreasing to -1% in FY20 FY21 onwards = ~+3%
3A	-	FY20 = -2% FY21 onwards = -1%	FY21 = +4% increasing to +6% in FY27 FY27 onwards = +6%	FY20 = -2% FY21 = +3% increasing to +5% in FY27 FY27 onwards = +5%
MAV	-	FY19 = -2% reducing to -1% in FY21 FY21 onwards = -1%	FY21 = +5% increasing to +7% in FY27 FY27 onwards = +7%	FY20 = -2% FY21 = +4% increasing to +6% in FY27 FY27 onwards = +6%

Source: Steer analysis based on benchmarking

3A/MAV share shift

6.23 In our analysis of the trends on different toll roads across the country, we have observed a consistent shift between the shares of 3A/MAV on most roads, i.e. a move from 3A to MAVs. This shift is primarily caused by the increasing preference for MAV vehicles for long-distance movements due to their higher load capacity that generate economies of scale.

6.24 We believe that transition trend to MAVs will continue till a certain cap is reached, as it is unlikely that all 3A trucks will disappear from the market – there are likely to always be certain transporters for whom 3A's will be preferable. Forecasting assumptions regarding the expected share of 3A/MAV are presented in the table in Appendix B.

6.25 In calculating growth for 3A and MAV during the transition period, we have used the elasticities described in Chapter 5. The share adjustment is then applied to obtain the final implied elasticity. Post this expected transition period, both 3A and MAVs are assumed to continue growing using the estimated elasticity relationship.

Revenue forecasting assumptions

Toll level changes

6.26 To forecast the revenues, traffic forecast for each vehicle type was multiplied by the relevant toll level for each year. The assumption was that toll levels will continue to increase at normal inflation-linked rates as specified in the concession agreement.

6.27 As per the concession agreements (refer Schedule R), the effective toll-able lengths will change from the current toll notifications as issued by NHAI, once construction is complete. This is primarily because new structures and bypasses are currently being built on the Asset. The old and the new lengths are given for each of the toll plazas, in Appendix B.

6.28 The old toll lengths have been used to calculate toll rates until full COD is achieved on each of the toll plaza on annual basis.

Inflation Linked Changes

6.29 As discussed since tolling has not yet commenced we have used the standard NHAI WPI based tolling calculation to arrive at the toll rates for this asset. The length used for each toll plaza has been used from concession agreement. The concession agreement based toll escalation formula also includes a rounding of the toll levels to the nearest INR 5.

6.30 WPI forecasts are calculated using the forecasts provided by the Reserve bank of India (RBI), and are used as an input to the toll level calculation. The upward trend in inflation is expected to continue in the medium term, before diminishing back to current levels in the long term. Note that the toll level is set in this formula is in nominal terms, hence the total revenue calculated in our forecast model is also the nominal revenue. These WPI assumptions have agreed after discussion with the client. The table below shows the assumed WPI rates

Table 6.2: WPI forecast assumptions

Financial year	Growth rates
FY19	5.0%
FY20	5.5%
FY21	5.4%
FY22	5.3%
FY23	5.2%
FY24	5.2%
FY25	5.1%
FY26	5.0%
FY27	5.0%
FY28	5.0%
FY29	5.0%
FY30	5.0%
FY31	5.0%

Financial year	Growth rates
FY32	5.0%
FY33	5.0%
FY34	5.0%
FY35	5.0%
FY36	5.0%
FY37	5.0%
FY38	5.0%
FY39	5.0%
FY40	5.0%
FY41	5.0%
FY42	5.0%

Source: Steer analysis and as agreed with the client

Ticket type shares (trip frequencies)

6.31 To forecast ticket types (Single, Return, Local, Monthly, Local commercial), we have used ticket type data from regional references.

6.32 As discussed earlier in the SCF section, regional references have been chosen based on proximity to the Asset, similar nature of the traffic and commodity mix.

6.33 As we believe the toll plaza data to be the most reliable to calculate trip frequencies, data from schedule M has been used to calculate these. The percentages for the local commercial category have been benchmarked against the schedule M data shared by the client.

6.34 We have assumed that the split between ticket types will remain the same in the future for all plazas. This assumes that further changes in toll categories, unless specific discounts are offered, are unlikely. The proportions for each of the toll plazas and each Asset are presented in Appendix B.

6.35 Assumptions pertaining to the number of trips made using non-single journey ticket types, are as follows:

- Return ticket for each vehicle type at all plazas is presented below:

Table 6.3: Trip factors for return trips for all plazas

Return Trip Factor	All toll plazas
CJV	1.94
LCV	1.95
Bus	1.96
2A	1.98
3A	1.97
MAV/OSV	1.96

Source: Steer analysis of the toll revenue data shared by client for Solapur – Yedeshi corridor

- Monthly ticket = 1.5 trips per day (based on an assumed 45 trips in a 30-day month)

- Local ticket = a monthly ticket applicable only for CJV's residing within 20 km from the toll plaza.

7 Traffic and Revenue Forecasts

Introduction

7.1 In this chapter, we present our traffic and revenue forecasts (including the base year, FY19) forecasts for all the toll plazas . Assumptions around the expected future values of various parameters (such as changes in GDP, IP and the road network) have been benchmarked against independent data where possible.

7.2 All traffic is presented as tollable traffic (tollable AADT at each plaza). All revenue is presented in INR (nominal terms).

7.3 Details of traffic and revenue forecasts at vehicle type level have already been provided as separate Excel files which should be read in read in conjunction with this report.

7.4 The volumes for the base year (FY19) are largely based on observed numbers during the surveys conducted adjusted for seasonality, as described in previous Chapters.

7.5 The reduction in growth rates across all vehicle types is largely related to the slowing growth rates assumed for national GDP and state GSDP, as derived from publicly available data, as these are the primary drivers in our forecasts.

Traffic and Revenue forecasts

7.6 The table below presents a summary of the tollable AADT and CAGRs for each of the toll plazas, for key years, for the Asset.

Table 7.1: Tollable AADT and CAGR for each toll plaza, for the length of the concession of the Asset

		AADT					CAGR		
Toll Plaza	Vehicle Type	FY19	FY20	FY25	FY35	FY45	FY 20 - 25	FY 25-35	FY 35 -45
Pargaoin	CJV	1,508	1,638	2,526	4,505	7,645	9.06%	5.96%	5.43%
	LCV	744	777	960	1,248	1,582	4.31%	2.66%	2.40%
	Bus	170	176	212	288	382	3.80%	3.11%	2.86%
	2A	862	903	1,122	1,531	2,030	4.44%	3.16%	2.86%
	3A	1,229	1,231	1,458	2,078	3,093	3.45%	3.61%	4.06%
	MAV (4-6A)	1,301	1,385	2,291	4,038	6,314	10.59%	5.83%	4.57%
	MAV (>6A)	1	1	1	2	4	5.95%	4.97%	4.57%
	AADT	5,815	6,111	8,571	13,690	21,051	7.00%	4.79%	4.40%
	PCU's	15,266	15,971	22,661	36,249	54,965	7.25%	4.81%	4.25%
Hirapur	CJV	3,657	3,973	6,129	10,929	18,547	9.06%	5.96%	5.43%
	LCV	1,524	1,590	1,964	2,554	3,238	4.31%	2.66%	2.40%

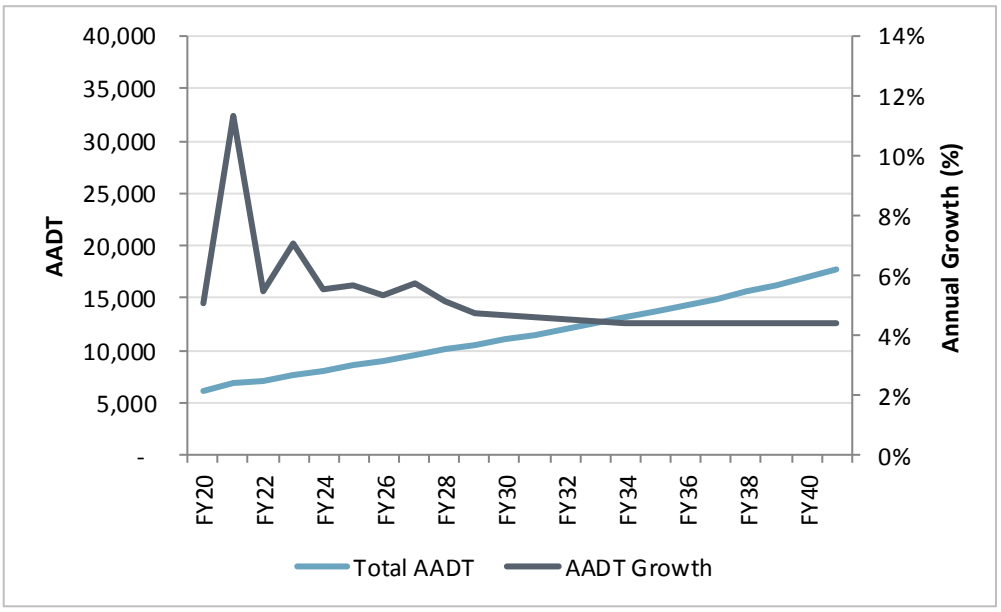
Toll Plaza	Vehicle Type	AADT					CAGR		
		FY19	FY20	FY25	FY35	FY45	FY 20 - 25	FY 25-35	FY 35 -45
	Bus	490	509	614	834	1,105	3.80%	3.11%	2.86%
	2A	1,083	1,134	1,409	1,923	2,550	4.44%	3.16%	2.86%
	3A	1,303	1,302	1,529	2,168	3,227	3.26%	3.56%	4.06%
	MAV (4-6A)	1,360	1,453	2,428	4,301	6,726	10.81%	5.89%	4.57%
	MAV (>6A)	1	1	1	2	4	5.95%	4.97%	4.57%
	AADT	9,418	9,963	14,074	22,711	35,396	7.15%	4.90%	4.54%
	PCU's	20,696	21,738	30,661	48,897	74,332	7.12%	4.78%	4.28%
Pachod	CJV	2,745	3,003	4,800	9,075	16,257	9.83%	6.58%	6.00%
	LCV	1,262	1,328	1,701	2,349	3,149	5.08%	3.28%	2.97%
	Bus	462	481	579	787	1,043	3.80%	3.11%	2.86%
	2A	1,044	1,094	1,359	1,855	2,458	4.44%	3.16%	2.86%
	3A	749	754	914	1,320	1,964	3.93%	3.74%	4.06%
	MAV (4-6A)	1,240	1,315	2,123	3,692	5,775	10.05%	5.69%	4.57%
	MAV (>6A)	0	0	0	0	1	5.95%	4.97%	4.57%
	AADT	7,503	7,975	11,477	19,078	30,647	7.55%	5.21%	4.85%
	PCU's	16,985	17,899	25,465	41,099	63,365	7.31%	4.90%	4.42%

Source: Steer analysis

7.7 As can be seen from the table above, PCU growth at each plaza is an average of 6.8% in the short term. This growth is assumed to be reasonable since the Asset is expected to cater to increase in traffic due to several exogenous impacts as discussed in detail in Chapter 5. Once the exogenous impacts stabilise, the growth of the Asset is expected to slow to an average of 4.8% between FY25 and 35, and further to about 4.3% in the long term due to stabilising long-term macro assumptions.

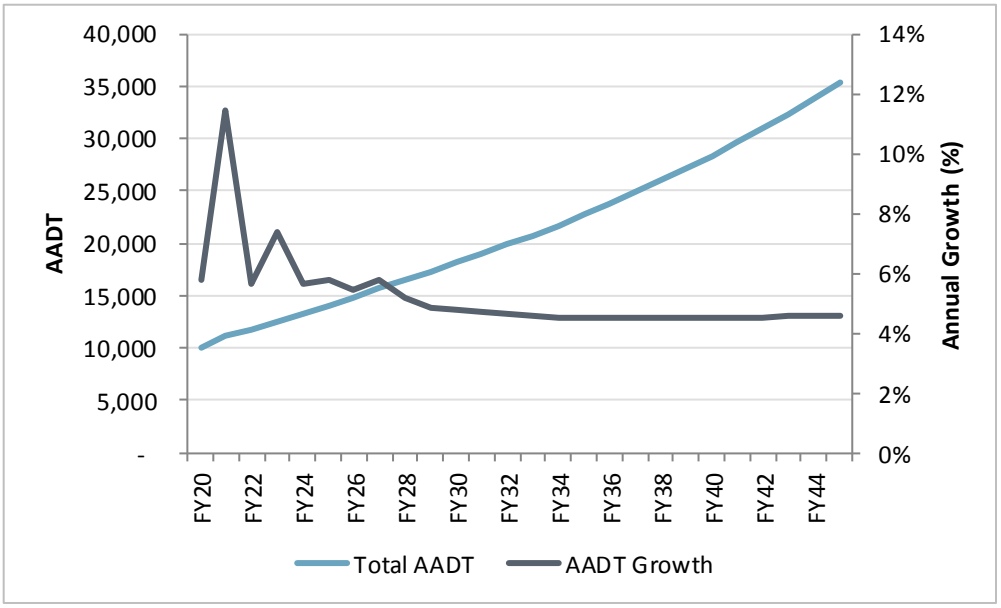
7.8 The figures presented below illustrate the tollable AADT forecasts and growth for each of the toll plazas for Asset 3 over the concession period.

Figure 7.1: TP1 AADT forecast and growth Rates, FY20-FY45



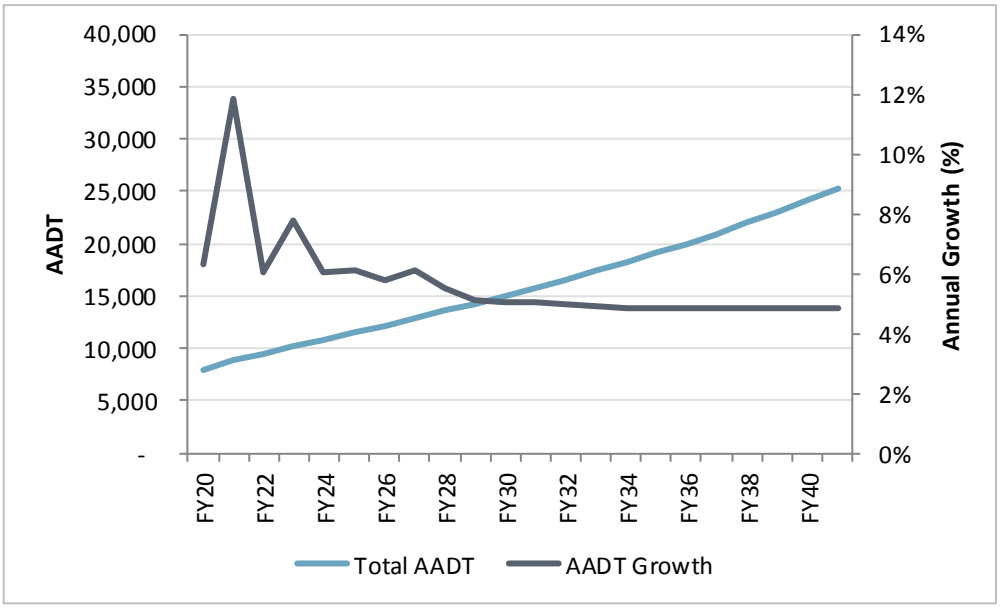
Source: Steer analysis

Figure 7.2: TP2 AADT forecast and growth Rates, FY20-FY45



Source: Steer analysis

Figure 7.3: TP3 AADT forecast and growth Rates, FY20-FY45

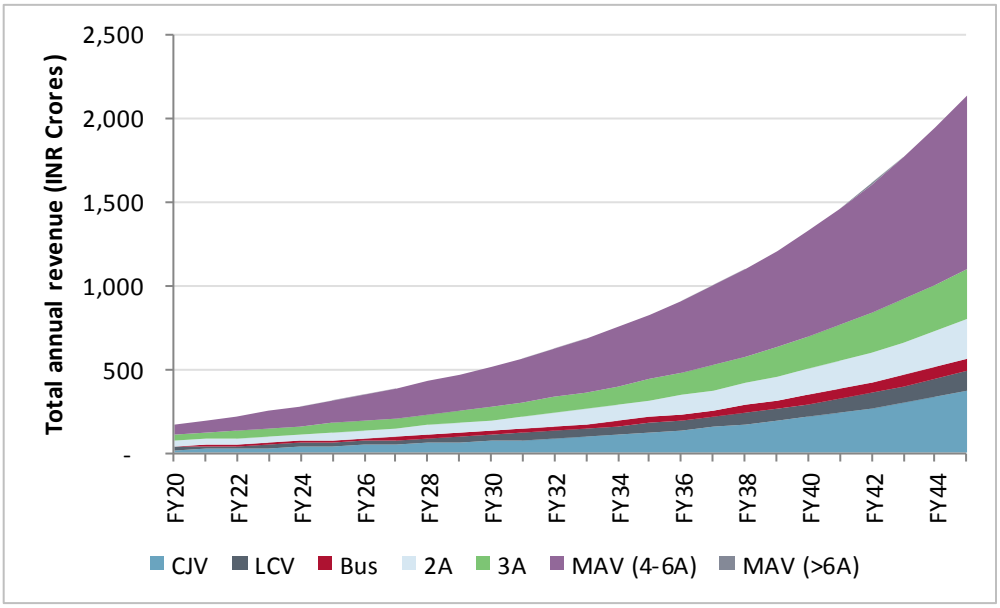


Source: Steer analysis

7.9 The Asset forms the northern part of the Aurangabad – Solapur movement. Tolling is yet to commence on the asset. As discussed in detail in Chapter 5, the Asset is expected to benefit from larger strategic corridor improvements which will connect the cities in the North of India such as Delhi, to the cities in the south such as Bengaluru. The forecasted jump in growth between FY21-26 is a result of the network and level of service improvements. Post FY28, once all the planned network changes are estimated to have been completed, the Asset is expected to grow at a stable rate and in line with the forecast macro variables.

7.10 The figure below shows the vehicle wise contribution to overall revenue of the Asset.

Figure 7.4: Total revenues (Nominal, INR Crore) by vehicle type for the Asset, FY20-FY45



Source: Steer analysis

7.11 In the revenue distribution presented above for the Assets, it can be seen that heavy vehicles (3A and MAV) form the major contributors to revenue. This is driven by our assumptions (based on OD data analysis) that there is a significant long distance, and heavy goods movement on this Asset.

7.12 The table below presents a summary of the vehicle wise revenue (INR) and CAGRs for each of the toll plazas, for key years.

Table 7.2: Vehicle wise annual revenue (INR Crore) for the toll plazas, for the length of the concession

		Revenue (INR Crore)					CAGR		
Asset	Vehicle Type	FY19	FY20	FY25	FY35	FY45	FY 20 - 25	FY 25-35	FY 35 -45
Pargaoin	CJV	0.6	2.9	5.6	16.9	48.5	14.1%	11.8%	11.1%
	LCV	0.6	2.4	3.8	8.4	17.8	9.8%	8.1%	7.9%
	Bus	0.3	1.2	1.8	4.0	9.0	9.2%	8.5%	8.4%
	2A	1.6	6.9	10.9	24.8	55.3	9.6%	8.6%	8.4%
	3A	2.5	10.6	15.9	37.8	95.1	8.4%	9.0%	9.7%
	MAV (4-6A)	3.8	17.1	36.4	105.3	279.8	16.3%	11.2%	10.3%
	MAV (>6A)	0.0	0.0	0.0	0.1	0.2	11.3%	10.5%	10.2%
	Revenue	9	41	74	197	506	12.6%	10.2%	9.9%
Hirapur	CJV	2.3	10.6	20.9	60.9	175.5	14.6%	11.3%	11.2%
	LCV	1.5	6.8	10.7	23.2	49.8	9.5%	8.0%	7.9%
	Bus	1.0	4.4	6.9	15.5	34.7	9.2%	8.4%	8.4%
	2A	2.5	11.2	17.8	40.5	90.5	9.7%	8.6%	8.4%
	3A	3.5	15.1	22.4	52.9	132.9	8.2%	9.0%	9.7%
	MAV (4-6A)	5.4	24.7	52.7	154.1	408.8	16.4%	11.3%	10.3%
	MAV (>6A)	0.0	0.0	0.0	0.1	0.3	11.5%	10.4%	10.2%
	Revenue	16	73	132	347	892	12.5%	10.2%	9.9%
Pachod	CJV	1.6	7.8	15.8	50.0	150.8	15.3%	12.2%	11.7%
	LCV	1.3	5.7	9.3	21.0	47.6	10.4%	8.6%	8.5%
	Bus	0.9	4.1	6.4	14.3	32.1	9.1%	8.5%	8.4%
	2A	2.4	10.7	16.9	38.2	85.3	9.6%	8.5%	8.4%
	3A	2.0	8.6	13.3	31.6	79.6	9.2%	9.1%	9.7%
	MAV (4-6A)	4.9	22.1	45.1	130.0	343.7	15.3%	11.2%	10.2%
	MAV (>6A)	0.0	0.0	0.0	0.0	0.0	11.4%	10.4%	10.2%
	Revenue	13	59	107	285	739	12.6%	10.3%	10.0%

Source: Steer analysis, FY19 is expected to be tolled only for 120 days starting December 2018.

Appendices

A Toll rates by plaza

Overview

A.1 This Appendix covers the toll rates charged at each plaza of the Asset, by vehicle type. As the Assets is still under construction, there was no toll fee notification available for the toll plazas. Therefore, we have calculated their toll rates (reported in the tables below) based on a generic NHAI toll fee calculation methodology and the tollable lengths mentioned in Schedule R of the concession agreements. The toll rates presented are 75% while the others are 100%.

Table A.1: FY19 toll rates (INR) for Yedeshi-Aurangabad

Toll Plaza	Category of Vehicle	Fee per vehicle per Single trip	Return Trips within 24hrs	Monthly Pass for 50 single journeys	Fee for Commercial vehicles registered in District	Monthly Pass for local car (Car/ Jeep/Van/LMW)
TP1 Pargoan	Car, Passenger Van, Jeep and Light Motor Vehicle	45	70	1,505	25	255
	Light Commercial Vehicle, LGV or Mini Bus	75	110	2,435	35	NA
	Bus or Truck (2 Axle)	155	230	5,100	75	NA
	3 Axle Commercial Vehicles	165	250	5,565	85	NA
	HCM, EME, MAV (4-6 Axle)	240	360	8,000	120	NA
	Oversized Vehicle (7+ Axle)	290	440	9,735	145	NA
TP2 Shirapur	Car, Passenger Van, Jeep and Light Motor Vehicle	65	95	2,085	30	255
	Light Commercial Vehicle, LGV or Mini Bus	100	150	3,365	50	NA
	Bus or Truck (2 Axle)	210	315	7,055	105	NA
	3 Axle Commercial Vehicles	230	345	7,695	115	NA
	HCM, EME, MAV (4-6 Axle)	330	500	11,065	165	NA

	Oversized Vehicle (7+ Axle)	405	605	13,470	200	NA
TP3 Pachod	Car, Passenger Van, Jeep and Light Motor Vehicle	60	90	2,040	30	255
	Light Commercial Vehicle, LGV or Mini Bus	100	150	3,295	50	NA
	Bus or Truck (2 Axle)	205	310	6,905	105	NA
	3 Axle Commercial Vehicles	225	340	7,530	115	NA
	HCM, EME, MAV (4-6 Axle)	325	485	10,825	160	NA
	Oversized Vehicle (7+ Axle)	395	595	13,180	200	NA

Source: Steer analysis based on concession agreement, toll rates summarized in table are considered at 75% for FY19 based on PCOD

B Forecasting assumptions

Overview

B.1 This Appendix lists the seasonality correction factors used to convert weekly average daily traffic (WADT) to AADTs. These have been defined using regional references from similar roads, based on our experience.

Seasonality correction factors (SCFs)

Table B.1: SCFs for the Asset

Vehicle type	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
CJV	0.94	0.89	1.06	1.12	1.06	1.18	1.01	0.97	0.91	0.97	0.95	0.98
LCV	0.93	1.00	1.04	1.05	1.07	1.09	1.14	1.02	0.96	0.95	0.91	0.89
Bus	0.93	1.00	1.04	1.05	1.07	1.09	1.14	1.02	0.96	0.95	0.91	0.89
2A	0.98	0.92	0.97	1.08	1.08	1.02	1.14	1.05	0.96	0.97	0.93	0.99
3A	1.01	1.06	1.02	1.05	1.03	0.98	1.02	1.04	0.97	0.98	0.94	0.93
MAV	1.01	1.06	1.02	1.05	1.03	0.98	1.02	1.04	0.97	0.98	0.94	0.93
OSV	1.01	1.06	1.02	1.05	1.03	0.98	1.02	1.04	0.97	0.98	0.94	0.93

Source: Steer analysis

Construction impacts

B.2 The construction vehicles which are currently using the Asset for road upgradation purposes are given below for the asset:

Table B.2: Construction Vehicles used for roadworks

Assets	Vehicle Category	COD Year	Vehicles to be Reduced (AADT)
TP1 - Pargaoin	2A	FY20	17
	3A	FY20	51
	MAV (4-6A)	FY20	87
TP2 - Hirapur	2A	FY20	17
	3A	FY20	36
	MAV (4-6A)	FY20	66
TP3 - Pachod	2A	FY20	19
	3A	FY20	17

Assets	Vehicle Category	COD Year	Vehicles to be Reduced (AADT)
	MAV (4-6A)	FY20	61

Source: Steer analysis

Diversion analysis methodology

7.13 For each asset, the methodology to calculate the diversion impacts is given below:

- In-scope demand
  - Analysis of the OD data to ascertain proportion of traffic (for each vehicle category) that could divert on to the competing road
  - Where OD data is available on competing road a proportion of traffic (for each vehicle category) that could divert on to the Asset is estimated. In absence of OD data plausible assumptions are made based on-site visit observations
  - Combined total of the two traffic sources is then defined as in-scope traffic which can choose between the Asset and competing road
- GJC (Generalised journey cost) Analysis
  - For both the Asset and the competing corridor the total Generalised Journey Cost (GJCa, GJCc) is estimated by combining all cost elements using the following equation:

$$GJC_a = VOT \times Time_a + VOC \times Distance_a + Toll_a$$

  - This calculation is carried out at a vehicle type level with Values of Time (VOT) and Vehicle Operating Costs (VOC) parameters based on industry standards
- Logit Choice based Capture Model:
  - For each vehicle category a logit choice model is applied to estimate the capture rates (Asset Share/Competition Share) using the GJC inputs using the following equation:

$$P_c = \frac{1}{(1 + e^{-\lambda K(GJC_a - GJC_c - C)})}$$

  - Where Pc represents the capture rate and λ is the scaling parameter and K and C are constants used for calibration of the model
  - The modelled capture rates are then matched against those observed in the in-scope traffic data
- With a calibrated capture model, forecast scenarios are developed where the competing road undergoes construction, is upgraded with improved speeds post construction, tolls are levied on the competing road, construction on the Asset resulting in delays during upgrades, etc. For each scenario the GJC is re-calculated and the resultant impact on the capture rate of in-scope traffic is estimated using the logit choice model.
- This calculated impact is then transferred on to forecasts in form of diversion impacts which are estimated using the shares of in-scope traffic to total traffic

C Trip frequencies

Ticket Type Assumptions

C.1 The ticket type assumptions for each of the toll plaza for Assets is given below:

Vehicle Category	Ticket Type	TP1	TP2	TP3
CJV	Single	45%	45%	45%
CJV	Return	20%	38%	38%
CJV	Monthly	0%	0%	0%
CJV	Local Commercial	29%	15%	15%
CJV	Violations	0%	0%	0%
CJV	Exemptions	0%	0%	0%
CJV	Discounts	0%	0%	0%
CJV	Local Monthly Pass	6%	2%	2%
LCV	Single	54%	44%	44%
LCV	Return	22%	36%	36%
LCV	Monthly	0%	1%	1%
LCV	Local Commercial	23%	18%	18%
LCV	Violations	0%	0%	0%
LCV	Exemptions	0%	0%	0%
LCV	Discounts	0%	0%	0%
LCV	Local Monthly Pass	0%	0%	0%
Bus	Single	31%	18%	18%
Bus	Return	67%	69%	69%
Bus	Monthly	1%	12%	12%
Bus	Local Commercial	1%	0%	0%
Bus	Violations	0%	0%	0%
Bus	Exemptions	0%	0%	0%
Bus	Discounts	0%	0%	0%
Bus	Local Monthly Pass	0%	0%	0%
2A	Single	88%	70%	70%
2A	Return	4%	22%	22%
2A	Monthly	5%	0%	0%
2A	Local Commercial	3%	7%	7%
2A	Violations	0%	0%	0%

Vehicle Category	Ticket Type	TP1	TP2	TP3
2A	Exemptions	0%	0%	0%
2A	Discounts	0%	0%	0%
2A	Local Monthly Pass	0%	0%	0%
3A	Single	97%	86%	86%
3A	Return	2%	12%	12%
3A	Monthly	0%	1%	1%
3A	Local Commercial	1%	2%	2%
3A	Violations	0%	0%	0%
3A	Exemptions	0%	0%	0%
3A	Discounts	0%	0%	0%
3A	Local Monthly Pass	0%	0%	0%
MAV (4-6A)	Single	98%	96%	96%
MAV (4-6A)	Return	1%	4%	4%
MAV (4-6A)	Monthly	0%	0%	0%
MAV (4-6A)	Local Commercial	0%	1%	1%
MAV (4-6A)	Violations	0%	0%	0%
MAV (4-6A)	Exemptions	0%	0%	0%
MAV (4-6A)	Discounts	0%	0%	0%
MAV (4-6A)	Local Monthly Pass	0%	0%	0%
MAV (>6A)	Single	98%	96%	96%
MAV (>6A)	Return	1%	4%	4%
MAV (>6A)	Monthly	0%	0%	0%
MAV (>6A)	Local Commercial	0%	1%	1%
MAV (>6A)	Violations	0%	0%	0%
MAV (>6A)	Exemptions	0%	0%	0%
MAV (>6A)	Discounts	0%	0%	0%
MAV (>6A)	Local Monthly Pass	0%	0%	0%

Source: Steer analysis and based on toll plaza data of Solapur-Yedeshi asset

D Traffic and Revenue Forecasts

D.1 The below section presents the AADT and Revenue growth rates for each vehicle type at each plaza for the concession period:

Table D.1: Annual vehicle wise AADT growth rates at Pargaoin, FY20-FY45

TP1: Pargaoin							
	CJV	LCV	Bus	2A	3A	MAV (4-6A)	MAV (>6A)
FY20	8.6%	4.4%	3.9%	4.7%	0.1%	6.5%	6.0%
FY21	14.3%	8.5%	4.0%	8.0%	7.4%	15.9%	6.1%
FY22	7.5%	2.3%	4.0%	2.8%	2.2%	9.3%	6.1%
FY23	9.4%	5.2%	3.8%	4.8%	3.1%	10.1%	6.0%
FY24	7.0%	3.1%	3.7%	3.6%	2.1%	8.8%	5.8%
FY25	7.3%	2.5%	3.6%	3.0%	2.5%	9.1%	5.7%
FY26	6.5%	2.9%	3.4%	3.4%	2.0%	8.3%	5.5%
FY27	6.9%	3.3%	3.3%	3.8%	2.4%	8.6%	4.3%
FY28	6.2%	2.7%	3.3%	3.3%	1.9%	7.8%	6.3%
FY29	6.0%	2.6%	3.2%	3.2%	4.5%	5.0%	4.5%
FY30	5.9%	2.6%	3.1%	3.1%	4.4%	5.0%	5.5%
FY31	5.8%	2.6%	3.1%	3.1%	4.3%	4.9%	4.4%
FY32	5.7%	2.5%	3.0%	3.0%	4.3%	4.8%	5.3%
FY33	5.6%	2.5%	3.0%	3.0%	4.2%	4.7%	4.2%
FY34	5.5%	2.4%	2.9%	2.9%	4.1%	4.6%	5.2%
FY35	5.5%	2.4%	2.9%	2.9%	4.1%	4.6%	4.6%
FY36	5.5%	2.4%	2.9%	2.9%	4.1%	4.6%	4.6%
FY37	5.5%	2.4%	2.9%	2.9%	4.1%	4.6%	4.6%
FY38	5.4%	2.4%	2.9%	2.9%	4.1%	4.6%	4.6%
FY39	5.4%	2.4%	2.9%	2.9%	4.1%	4.6%	4.6%
FY40	5.4%	2.4%	2.9%	2.9%	4.0%	4.6%	4.6%
FY41	5.4%	2.4%	2.9%	2.9%	4.0%	4.6%	4.6%
FY42	5.4%	2.4%	2.9%	2.9%	4.0%	4.6%	4.6%
FY43	5.4%	2.4%	2.9%	2.9%	4.0%	4.6%	4.6%
FY44	5.4%	2.4%	2.9%	2.9%	4.0%	4.6%	4.6%
FY45	5.4%	2.4%	2.9%	2.9%	4.0%	4.6%	4.6%

Source: Steer analysis

Table D.2: Annual vehicle wise AADT growth rates at Hirapur, FY20-FY45

TP2: Hirapur							
	CJV	LCV	Bus	2A	3A	MAV (4-6A)	MAV (>6A)
FY20	8.6%	4.4%	3.9%	4.8%	(0.1%)	6.8%	6.0%
FY21	14.3%	8.5%	4.0%	8.0%	7.2%	16.2%	6.1%
FY22	7.5%	2.3%	4.0%	2.8%	2.0%	9.5%	6.1%
FY23	9.4%	5.2%	3.8%	4.8%	2.9%	10.3%	6.0%
FY24	7.0%	3.1%	3.7%	3.6%	1.9%	9.0%	5.8%
FY25	7.3%	2.5%	3.6%	3.0%	2.3%	9.3%	5.7%
FY26	6.5%	2.9%	3.4%	3.4%	1.8%	8.5%	5.5%
FY27	6.9%	3.3%	3.3%	3.8%	2.2%	8.8%	5.4%
FY28	6.2%	2.7%	3.3%	3.3%	1.7%	8.0%	5.2%
FY29	6.0%	2.6%	3.2%	3.2%	4.5%	5.0%	5.0%
FY30	5.9%	2.6%	3.1%	3.1%	4.4%	5.0%	5.0%
FY31	5.8%	2.6%	3.1%	3.1%	4.3%	4.9%	4.9%
FY32	5.7%	2.5%	3.0%	3.0%	4.3%	4.8%	4.8%
FY33	5.6%	2.5%	3.0%	2.9%	4.2%	4.7%	4.7%
FY34	5.5%	2.4%	2.9%	2.9%	4.1%	4.6%	4.6%
FY35	5.5%	2.4%	2.9%	2.9%	4.1%	4.6%	4.6%
FY36	5.5%	2.4%	2.9%	2.9%	4.1%	4.6%	4.6%
FY37	5.5%	2.4%	2.9%	2.9%	4.1%	4.6%	4.6%
FY38	5.4%	2.4%	2.9%	2.9%	4.1%	4.6%	4.6%
FY39	5.4%	2.4%	2.9%	2.9%	4.1%	4.6%	4.6%
FY40	5.4%	2.4%	2.8%	2.9%	4.0%	4.6%	4.6%
FY41	5.4%	2.4%	2.9%	2.9%	4.0%	4.6%	4.6%
FY42	5.4%	2.4%	2.9%	2.9%	4.0%	4.6%	4.6%
FY43	5.4%	2.4%	2.9%	2.9%	4.0%	4.6%	4.6%
FY44	5.4%	2.4%	2.9%	2.9%	4.0%	4.6%	4.6%
FY45	5.4%	2.4%	2.9%	2.9%	4.0%	4.6%	4.6%

Source: Steer analysis

Table D.3: Annual vehicle wise AADT growth rates at Pachod, FY20-FY45

TP3: Pachod							
	CJV	LCV	Bus	2A	3A	MAV (4-6A)	MAV (>6A)
FY20	9.4%	5.2%	3.9%	4.7%	0.6%	6.1%	6.0%
FY21	15.1%	9.4%	4.0%	8.0%	7.9%	15.3%	6.1%
FY22	8.3%	3.1%	4.0%	2.8%	2.7%	8.7%	6.1%
FY23	10.1%	6.0%	3.8%	4.8%	3.6%	9.5%	6.0%
FY24	7.8%	3.8%	3.7%	3.6%	2.6%	8.3%	5.8%
FY25	8.0%	3.2%	3.6%	3.0%	3.0%	8.6%	5.7%
FY26	7.2%	3.6%	3.4%	3.4%	2.4%	7.8%	5.5%
FY27	7.5%	4.0%	3.3%	3.8%	2.8%	8.1%	5.4%
FY28	6.8%	3.4%	3.3%	3.3%	2.3%	7.4%	5.2%
FY29	6.6%	3.3%	3.2%	3.1%	4.5%	5.0%	5.0%
FY30	6.5%	3.2%	3.1%	3.1%	4.4%	5.0%	5.0%
FY31	6.4%	3.2%	3.1%	3.1%	4.3%	4.9%	4.9%
FY32	6.3%	3.1%	3.0%	3.0%	4.3%	4.8%	4.8%
FY33	6.2%	3.1%	3.0%	3.0%	4.2%	4.7%	4.7%
FY34	6.1%	3.0%	2.9%	2.9%	4.1%	4.6%	4.6%
FY35	6.1%	3.0%	2.9%	2.9%	4.1%	4.6%	4.6%
FY36	6.1%	3.0%	2.9%	2.9%	4.1%	4.6%	4.6%
FY37	6.0%	3.0%	2.9%	2.9%	4.1%	4.6%	4.6%
FY38	6.0%	3.0%	2.9%	2.9%	4.1%	4.6%	4.6%
FY39	6.0%	3.0%	2.9%	2.9%	4.1%	4.6%	4.6%
FY40	6.0%	3.0%	2.9%	2.9%	4.0%	4.6%	4.6%
FY41	6.0%	3.0%	2.9%	2.9%	4.0%	4.6%	4.6%
FY42	6.0%	3.0%	2.9%	2.9%	4.0%	4.6%	4.6%
FY43	6.0%	3.0%	2.9%	2.9%	4.0%	4.6%	4.6%
FY44	6.0%	3.0%	2.9%	2.9%	4.0%	4.6%	4.6%
FY45	6.0%	3.0%	2.9%	2.9%	4.0%	4.6%	4.6%

Source: Steer analysis

Table D.4: Annual vehicle wise revenue growth rates at Pargaoin, FY20-FY45

TP1: Pargaoin							
	CJV	LCV	Bus	2A	3A	MAV (4-6A)	MAV (>6A)
FY20	49.0%	41.9%	44.5%	45.0%	41.9%	48.1%	49.9%
FY21	19.0%	17.6%	9.8%	12.7%	11.1%	22.1%	11.3%
FY22	13.5%	6.6%	9.4%	9.5%	8.4%	15.4%	12.3%
FY23	15.1%	10.8%	9.1%	9.2%	9.1%	14.5%	10.7%
FY24	15.2%	8.3%	9.5%	9.8%	5.8%	14.4%	11.4%
FY25	8.3%	6.3%	8.3%	7.1%	7.9%	15.7%	11.0%
FY26	14.9%	10.2%	8.7%	9.0%	7.1%	13.3%	11.5%
FY27	11.4%	7.8%	9.1%	9.3%	8.9%	14.5%	9.0%
FY28	10.5%	8.3%	8.0%	8.3%	6.4%	13.4%	11.8%
FY29	13.1%	6.7%	8.3%	8.0%	10.5%	10.2%	10.5%
FY30	9.8%	9.0%	8.6%	9.1%	8.7%	9.9%	10.4%
FY31	12.2%	8.2%	8.9%	8.8%	9.7%	10.5%	9.8%
FY32	11.8%	6.4%	8.0%	7.2%	10.7%	10.2%	11.3%
FY33	9.6%	8.0%	8.7%	9.4%	9.0%	10.7%	9.7%
FY34	13.6%	7.7%	7.9%	7.9%	9.9%	9.5%	10.5%
FY35	10.6%	9.4%	8.6%	8.8%	9.6%	10.0%	10.3%
FY36	8.9%	7.1%	8.3%	7.4%	9.3%	10.5%	10.0%
FY37	12.4%	7.2%	8.0%	8.2%	10.0%	10.1%	10.3%
FY38	12.0%	8.9%	8.5%	8.9%	9.7%	10.5%	10.0%
FY39	10.1%	8.0%	8.6%	8.6%	9.4%	10.2%	10.2%
FY40	11.7%	7.7%	8.3%	8.3%	9.1%	9.9%	10.4%
FY41	9.8%	8.2%	8.4%	8.1%	9.7%	10.2%	10.1%
FY42	11.2%	7.2%	8.4%	8.6%	10.2%	10.4%	10.2%
FY43	12.3%	7.8%	8.5%	8.3%	9.8%	10.1%	10.0%
FY44	10.5%	8.4%	8.4%	8.7%	9.5%	10.3%	10.5%
FY45	12.1%	8.2%	8.5%	8.4%	9.9%	10.5%	10.2%

Source: Steer analysis

Table D.5: Annual vehicle wise revenue growth rates at Hirapur, FY20-FY45

TP2: Hirapur							
	CJV	LCV	Bus	2A	3A	MAV (4-6A)	MAV (>6A)
FY20	50.8%	47.1%	46.5%	47.1%	40.5%	50.0%	48.0%
FY21	17.3%	15.1%	9.6%	13.0%	11.3%	21.6%	11.8%
FY22	13.3%	6.5%	9.7%	9.2%	7.9%	15.0%	11.5%
FY23	15.2%	10.4%	9.0%	9.7%	7.3%	15.7%	11.9%
FY24	12.2%	9.4%	9.0%	9.3%	7.3%	15.0%	11.4%
FY25	15.2%	6.8%	8.9%	7.6%	7.5%	15.0%	11.0%
FY26	12.2%	7.9%	8.2%	8.7%	7.8%	13.9%	10.6%
FY27	10.4%	8.7%	9.1%	9.2%	7.0%	14.0%	10.9%
FY28	11.4%	8.4%	8.5%	9.1%	7.2%	13.7%	10.4%
FY29	13.2%	8.8%	8.4%	8.0%	9.9%	10.3%	10.6%
FY30	9.8%	7.2%	8.4%	8.5%	9.6%	10.7%	10.3%
FY31	11.1%	7.9%	8.5%	8.4%	10.1%	10.3%	10.5%
FY32	11.9%	8.3%	8.5%	8.8%	9.0%	10.0%	10.1%
FY33	12.2%	7.9%	8.0%	7.8%	10.3%	10.3%	10.3%
FY34	11.0%	7.0%	8.3%	8.3%	9.2%	10.5%	10.4%
FY35	9.8%	7.8%	8.6%	8.8%	9.6%	9.6%	10.1%
FY36	11.1%	8.4%	8.2%	7.9%	9.4%	10.4%	9.8%
FY37	10.8%	7.2%	8.5%	8.3%	9.8%	10.1%	10.4%
FY38	12.6%	8.5%	8.4%	8.6%	9.5%	10.3%	10.0%
FY39	10.2%	7.4%	8.4%	8.4%	9.9%	10.0%	10.1%
FY40	11.8%	7.9%	8.2%	8.1%	9.6%	10.1%	10.2%
FY41	10.7%	8.3%	8.6%	8.6%	9.8%	10.2%	10.2%
FY42	11.1%	7.9%	8.3%	8.2%	9.6%	10.3%	10.3%
FY43	10.9%	8.0%	8.5%	8.5%	9.8%	10.4%	10.3%
FY44	11.4%	7.7%	8.3%	8.6%	9.5%	10.1%	10.3%
FY45	11.1%	7.9%	8.5%	8.5%	9.7%	10.5%	10.5%

Source: Steer analysis

Table D.6: Annual vehicle wise revenue growth rates at Pachod, FY20-FY45

TP3: Pachod							
	CJV	LCV	Bus	2A	3A	MAV (4-6A)	MAV (>6A)
FY20	56.9%	47.0%	46.1%	47.0%	39.8%	47.5%	49.0%
FY21	20.4%	13.8%	9.7%	12.6%	13.1%	20.1%	11.9%
FY22	15.6%	8.5%	8.7%	7.6%	7.3%	14.2%	11.6%
FY23	14.7%	10.2%	9.5%	11.1%	9.6%	15.0%	11.2%
FY24	14.3%	10.3%	9.4%	8.6%	8.0%	14.4%	11.6%
FY25	12.0%	9.3%	8.7%	8.5%	8.3%	13.4%	11.1%
FY26	13.2%	8.7%	8.9%	9.0%	7.5%	13.3%	10.7%
FY27	12.3%	8.0%	8.6%	9.1%	7.6%	14.2%	11.0%
FY28	13.5%	8.6%	8.3%	8.2%	7.9%	12.3%	10.5%
FY29	10.9%	9.6%	8.5%	8.1%	10.0%	10.4%	10.1%
FY30	12.3%	8.5%	8.5%	8.6%	9.7%	10.8%	10.4%
FY31	13.0%	7.7%	8.2%	8.3%	9.3%	9.8%	10.6%
FY32	10.6%	9.1%	8.4%	8.2%	10.0%	10.8%	10.2%
FY33	13.0%	8.0%	8.7%	8.8%	9.6%	9.7%	9.9%
FY34	11.1%	8.4%	8.4%	8.4%	9.3%	10.6%	10.5%
FY35	12.2%	8.9%	8.1%	8.1%	9.8%	9.7%	9.8%
FY36	11.8%	7.8%	8.3%	8.0%	9.5%	10.5%	10.4%
FY37	11.5%	9.2%	8.2%	8.4%	9.9%	9.7%	10.1%
FY38	11.2%	8.4%	8.5%	8.7%	9.6%	10.4%	10.2%
FY39	12.0%	8.3%	8.4%	8.0%	9.3%	10.1%	10.3%
FY40	10.7%	8.6%	8.4%	8.8%	9.7%	10.2%	10.3%
FY41	12.2%	8.3%	8.3%	8.1%	9.9%	10.3%	10.0%
FY42	11.9%	8.6%	8.6%	8.8%	9.7%	10.1%	10.4%
FY43	12.0%	8.7%	8.2%	8.1%	9.4%	10.2%	10.1%
FY44	11.7%	8.4%	8.7%	8.8%	10.1%	10.2%	10.4%
FY45	11.8%	8.6%	8.3%	8.1%	9.4%	10.3%	10.3%

Source: Steer analysis

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