IRB Infrastructure private limited
(A subsidiary of
IRB INFRASTRUCTURE DEVELOPERS LTD)
CIN :U28920MH1997PTC112628

IRB InvIT Fund

May 15, 2026

Corporate Relationship Department, **BSE Limited** Phiroze Jeejeebhoy Towers Dalal Street, Mumbai 400 001	Listing Department, **National Stock Exchange of India Limited** Exchange Plaza, C-1 Block G Bandra Kurla Complex, Bandra (E), Mumbai 400 051

Dear Sir / Madam,

Ref.: Scrip Code: 540526, Symbol: IRBINVIT

Sub.: Valuation Report as on March 31, 2026

Please find enclosed the Valuation Report dated May 15, 2026, issued by M/s. KPMG Valuation Services LLP (IBBI Reg. No. IBBI/RV-E/06/2020/115) as on March 31, 2026.

We are also enclosing herewith the traffic reports issued by M/s. GMD Consultants, Technical Consultant, for Project SPVs.

Based on the aforesaid Valuation Report issued by the Valuer, the Net Asset Value pursuant to Regulation 10 of SEBI (Infrastructure Investment Trusts) Regulations, 2014 is as follows:

Statement of Net Assets at Fair Value as at March 31, 2026:

Sr. No.	Particulars	Amount in millions
A	Assets	1,92,811.58
B	Liabilities	88,668.57
C	Net Assets	1,04,143.00
	Outstanding units	1,281.60
	NAV at Fair value per Unit (INR)	**81.26**

You are requested to take note of the same.

Thanking you,

Yours faithfully,

For IRB Infrastructure Private Limited
(Investment Manager to IRB InvIT Fund)

Rushabh Rakesh Gandhi
Digitally signed by Rushabh Rakesh Gandhi
Date: 2026.05.16 00:08:47 +05'30'

Rushabh Gandhi
Director & CFO

Encl.: As above

CC:
IDBI Trusteeship Services Limited
Ground Floor, Universal Insurance Bldg,
Sir Phirozshah Mehta Rd., Fort
Mumbai 400 001



IRB InvIT Fund

Valuation of IRB InvIT Fund and its SPVs

Valuation Report

May 2026

KPMG Valuation Services LLP
2nd Floor, Block T2 (B Wing),
Lodha Excelus
Apollo Mills Compound
N.M. Joshi Marg, Mahalakshmi
Mumbai – 400 011, India
Telephone: +91 22 3989 6000

Strictly private and confidential

15 May 2026

IRB InvIT Fund
(IDBI Trusteeship Services Limited acting on behalf of IRB InvIT Fund)
IRB Complex,
Chandivali Farm, Chandivali Village,
Andheri (East), Mumbai 400 072,
India

IRB Infrastructure Private Limited

3rd Floor, IRB Complex,
Chandivali Farm, Chandivali Village,
Andheri (East), Mumbai 400 072,
India

Dear Sir,

Valuation Report ("Valuation Report")

This is in accordance with the terms of reference set out in our Letter of Engagement dated 15 October 2025 ("LoE"), wherein KPMG Valuation Services LLP (Registered valuer entity under Companies (Registered Valuers and Valuation) Rules, 2017 having IBBI Registration No. IBBI/RV-E/06/2020/115) (hereinafter referred to as the "KVSL " or "Us" or "We") has been appointed by IRB InvIT Fund ("the Client", or "IRB InvIT Fund", or "the Trust" or "You") in relation to carrying out Enterprise Valuation of 10 Special Purpose Vehicles ("SPVs") of IRB InvIT Fund and Equity Valuation of IRB InvIT Fund (jointly referred as "Targets") as on the agreed date of the valuation in accordance with Regulation 21 of the Securities Exchange Board of India (Infrastructure Investment Trusts) Regulations, 2014 ("SEBI InvIT Regulations") where valuation is required to be conducted by a registered valuer (as defined under section 247 of the Companies Act, 2013) and such valuation report ("Report") is required to be in compliance with the SEBI InvIT Regulations ("Engagement"). The date for the valuation is 31 March 2026 ("Valuation Date").

We hereby enclose our Valuation Report dated 15 May 2026. This is our deliverable and sets out KVSL's conclusions on the valuation of the Targets and has been prepared in accordance with the LoE as of Valuation Date.

The report is based on the information provided to KVSL by the management of the Targets ("Management"). As detailed in the enclosed Valuation Report, the NAV at fair value per unit of IRB InvIT Fund is **INR 81.26 per unit** as on 31 March 2026.

The Valuation Report is confidential to the Client and will be used by the Client only for the purpose, as indicated in this Report, for which we have been appointed. The results of our valuation analysis and our Report cannot be used or relied by the Client for any other purpose or by any other party for any other purpose whatsoever.

The Valuation Report is issued by us on the express understanding that it shall not be copied, disclosed or circulated or referred to in correspondence or in discussion with any third party or used for any other purpose without KVSL's prior written consent. We are aware that the Report may have to be shared with certain regulatory authorities in India and stock exchanges in India and therefore Report may enter the public domain and hereby provide our consent to such sharing. It is clarified that reference to this Valuation Report in any document and/ or filing with aforementioned regulatory authorities/ stock exchanges in India, shall not be deemed to be an acceptance by the Valuer of any responsibility or liability to any person/ party other than the Client.

We will not, pursuant to the LoE, perform any management functions for You, nor make any decisions. You are responsible for making management decisions, including accepting responsibility for the results. Additionally, the Clients are responsible for designating a management-level individual or individuals responsible for overseeing the services provided, evaluating the adequacy of the services provided, evaluating any findings or recommendations, establishing and maintaining internal controls, and monitoring ongoing activities.

The Valuation Report does not constitute an offer or invitation to any section of the public to subscribe for or purchase any securities in, or the other business or assets or liabilities of the Targets or Client. This letter forms an integral part of the Valuation Report and should be read in conjunction with the Valuation Report enclosed herein.

The Valuation Report has been prepared by KPMG Valuation Services LLP (IBBI Registration No. IBBI/RV-E/06/2020/115) solely for the purpose as stated above. The Valuation Report forms an integral whole and cannot be split into parts. The outcome of the valuation can only lead to proper conclusions if the Valuation Report as a whole is taken into account.

Yours faithfully
For KPMG Valuation Services LLP
LLP Identification Number – AAP-2732
Registered Valuer Entity under Companies (Registered Valuers and Valuation) Rules, 2017
IBBI Registration No. IBBI/RV-E//06/2020/115

Asset Class: Securities or Financial Assets



Amit Jain, Partner
IBBI Registered Valuer No- IBBI/RV/06/2018/10501

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Glossary

%	Percentage
A	Actual
Adj.	Adjusted
B	Budgeted
bn	Billion
CAGR	Compounded Annual Growth Rate
Capex	Capital Expenditure
CoCo	Comparable Companies
COD	Commercial operation date
CoTrans	Comparable Transactions
Cr	Crore
CWIP	Capital Work In Progress
BOT	Build, Operate and Transfer
DCF	Discounted Cash Flow
EBIT	Earnings Before Interest and Tax
EBITDA	Earnings Before Interest, Tax, Depreciation and Amortization
EV	Enterprise Value
FCFF	Free Cash Flows to Firm
FV	Fair Value
FY	Financial Year
HAM	Hybrid Annuity Model
IBEF	India Brand Equity Foundation
IDAA	IDAA Infrastructure Limited
IMF	International Monetary Fund
INR	Indian Rupee
InvIT	Investment Trust
IHMTL	IRB Hapur Moradabad Tollway Limited
IRB InvIT	IRB Infrastructure Trust
IRBIDL	IRB Infrastructure Developers Limited
IRBJD	IRB Jaipur Deoli Tollway Limited
IRBPA	IRB Pathankot Amritsar Toll road Limited
IRBSD	IRB Surat Dahisar Tollway Limited
IRBTA	IRB Talegaon Amravati Tollway Limited
IRBTC	IRB Tumkur Chitradurga Tollway Limited
Kd	Cost of Debt
Ke	Cost of Equity
KGTL	Kishangarh Gulabpura Tollway Limited
Km	Kilometer
KPMG	KPMG Valuation Services LLP
KTL	Kaithal Tollway Limited
LoE	Letter of Engagement
Management	Management of IRB InvIT Fund and its 10 SPVs
MAT	Minimum Alternate Tax
mn	Million
MoRTH	The Ministry of Road Transport and Highways
MVR	M.V.R. Infrastructure and Tollways Limited
n.m.	No Meaningful Figure
NA	Not applicable
NAV	Net Asset Value
NHAI	National Highway Authority of India
NWC	Net Working Capital
O&M	Operation and Maintenance
PAT	Profit After Tax
PBT	Profit Before Tax
PIB	Press Information Bureau
PV	Present Value
R(f)	Risk free rate of Return
R(m)	Market rate of Return
Rf	Risk-free Rate
SEBI	Securities and Exchange Board of India
SPV	Special Purpose Vehicle
Valuation Date	31-Mar-26
VK1	VK1 Expressway Limited
VM7	VM7 Expressway Private Limited
WACC	Weighted Average Cost Of Capital
WPI	Wholesale Price Index
y-o-y	Year on year
YTD	Year to date

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1.
Executive Summary

Executive Summary

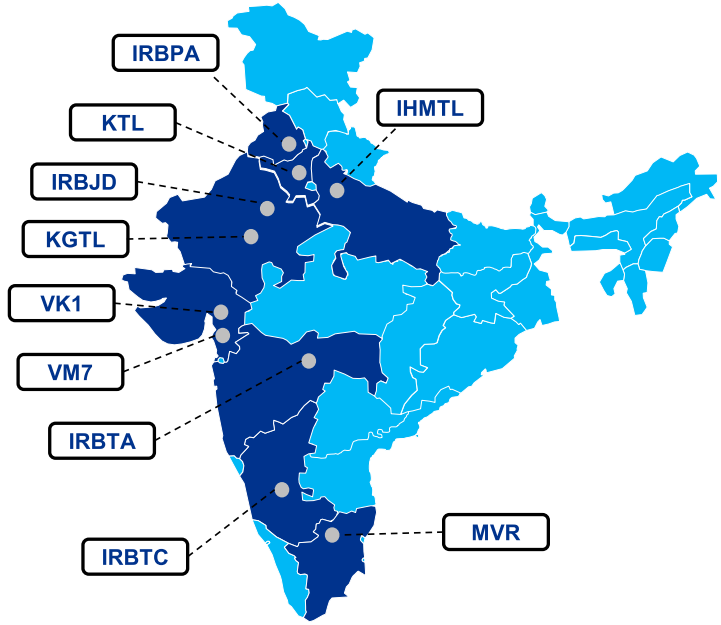
Overview

Terms of the Engagement

- We have been appointed by IRB InvIT Fund to undertake Enterprise Valuation of 10 Special Purpose Vehicles including the newly acquired SPVs of the Trust and Equity Valuation of IRB InvIT Fund in accordance with Regulation 21 of the Securities Exchange Board of India (Infrastructure Investment Trusts) Regulations, 2014 where valuation is required to be conducted by a registered valuer.
- As per the LoE, the valuation is to be carried out as on 31 March 2026. This report has been prepared by KVSL pursuant to terms of LoE.
- As at 31 March 2026 IRB InvIT Fund assets comprised of the following 10 operational SPVs :
  - IRB Pathankot Amritsar Toll Road Limited (“IRBPA”)
  - IRB Jaipur Deoli Tollway Limited (“IRBJD”)
  - IRB Talegaon Amravati Tollway Limited (“IRBTA”)
  - IRB Tumkur Chitradurga Tollway Limited (“IRBTC”)
  - M.V.R. Infrastructure and Tollways Limited (“MVR”)
  - VK1 Expressway Limited (“VK1”)
  - VM7 Expressway Private Limited (“VM7”)
  - Kaithal Tollway Limited (“KTL”)
  - Kishangarh Gulabpura Tollway Limited (“KGTL”)
  - IRB Hapur Moradabad Tollway Limited (“IHMTL”)

SPV Overview

The Trust owns, operates and maintain a portfolio of 10 operational road assets that includes eight BOT assets and two HAM assets, in the Indian state(s) of Maharashtra, Gujarat, Rajasthan, Karnataka, Tamil Nadu, Haryana, Uttar Pradesh and Punjab. These roads assets are operated and maintained pursuant to concessions granted by the National Highways Authority of India (NHAI).



Valuation Approach and Methodology

Approach	Method
Income Approach	Discounted Cash Flow Method (DCF)

Source(s): Management information, KVSL analysis

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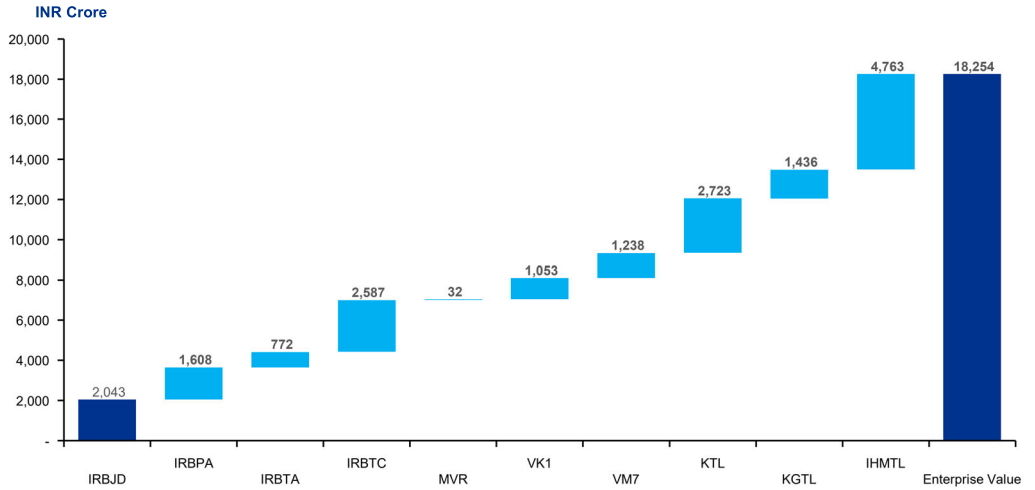
Valuation Conclusion

Valuation Conclusion (INR Crore)

Valuation Conclusion 31 March 2026	INR Crore
IRB Jaipur Deoli Tollway Limited	2,043
IRB Pathankot Amritsar Toll Road Limited	1,608
IRB Talegaon Amravati Tollway Limited	772
IRB Tumkur Chitradurga Tollway Limited	2,587
MVR Infrastructure and Tollways Limited	32
VK1 Expressway Limited	1,053
VM7 Expressway Limited	1,238
Kaithal Tollway Limited	2,723
Kishangarh Gulabpura Tollway Limited	1,436
IRB Hapur Moradabad Tollway Limited	4,763
Enterprise Value of the SPVs	**18,254**
Cash and cash Equivalents	249
PV of Investment manager fees	(214)
Surplus	590
Capital Creditors	(17)
Debt and Debt like items	(8,449)
Equity value of IRB InvIT Fund	**10,414**

NAV at fair value per unit as on 31 March 2026	
Equity Value of IRB InvIT Fund (INR Cr)	10,414
Units outstanding (No.)	1,281,600,000
NAV at fair value per unit (INR)	**81.26**

Enterprise Value of SPVs



The Enterprise Value of the SPVs is INR 18,254 crores and the 100% Equity Value of the IRB InvIT Fund is INR 10,414 crores as on 31 March 2026.

The NAV at fair value per unit of IRB InvIT Fund as on 31 March 2026 is INR 81.26 per unit.

Note: *SPVs are individually referred as "Target", "Business", "Company", "SPV" or the "Asset" Collectively referred as SPVs or Assets*

Source(s): Management information, KVSL analysis

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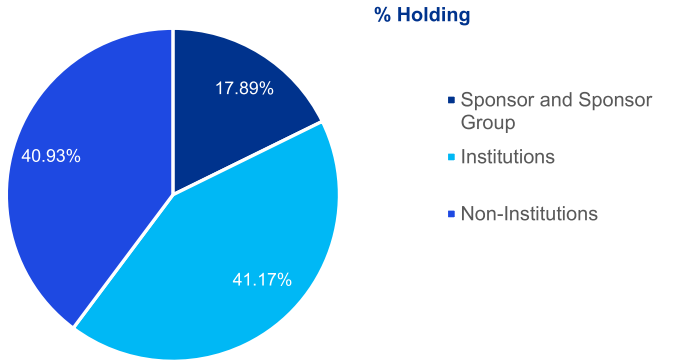
IRB InvIT Fund Overview

IRB InvIT Fund Overview

IRB InvIT Fund - Overview

- IRB Infrastructure Developers Limited ("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 27 July 1998 and is based in Mumbai, India.
- IRB InvIT Fund (the "Trust") is a Trust constituted by "The Indenture of Trust" dated October 16, 2015 registered under the Registration Act, 1908 and registered with the Securities and Exchange Board of India ("SEBI") as an infrastructure investment trust under the SEBI (Infrastructure Investment Trusts) Regulations, 2014. The Trust is backed by IRB Infrastructure Developers Ltd., as a Sponsor and Project Manager. The Trustee to IRB InvIT is IDBI Trusteeship Services Limited (the Trustee") and Investment manager for the Trust is IRB Infrastructure Private Limited.
- The Trust has been formed to invest in infrastructure assets primarily being in the road sector in India. All of the Trust's road projects are implemented and held through Special Purpose Vehicles. IRB InvIT Fund was listed in May 2017 with an initial portfolio of six operational Build-Operate-Transfer (BOT) road infrastructure assets. A seventh asset was transferred to the Trust in September 2017. Since then, two assets have been handed back to the National Highways Authority of India following the successful completion of their concession periods, and one Hybrid Annuity Mode (HAM) asset was acquired in October 2022 from the Sponsor.
- IRB InvIT Fund has acquired 100% equity share capital of IRB Hapur Moradabad Tollway Limited ("IHMTL"), Kaithal Tollway Limited ("KTL") and Kishangarh Gulabpura Tollway Limited ("KGTL") from IRB Infrastructure Trust with effect from 01 November 2025 in a related party transaction. To fund this acquisition, IRB InvIT raised INR 3,248 cr through issue of 54,14,05,000 units at price of INR 60 per unit in October 2025. Further, IRB InvIT Fund raised another 1,005.28 cr through preferential allotment of 15,96,50,000 units each at INR 62.95 per unit in November 2025.
- IRB InvIT Fund has acquired 100% equity share capital of VM7 Expressway Private Limited ("VM7") from IRB Infrastructure Developers Limited with effect from 01 December 2025 in a related party transaction.

Shareholding Pattern of IRB InvIT Fund as on 31 March 2026



Key related parties of the IRB InvIT

Role	Entity Name
Sponsor	IRB Infrastructure Developers Limited
Investment Manager	IRB Infrastructure Private Limited
Project Manager	IRB Infrastructure Developers Limited
Trustee	IDBI Trusteeship Services Limited

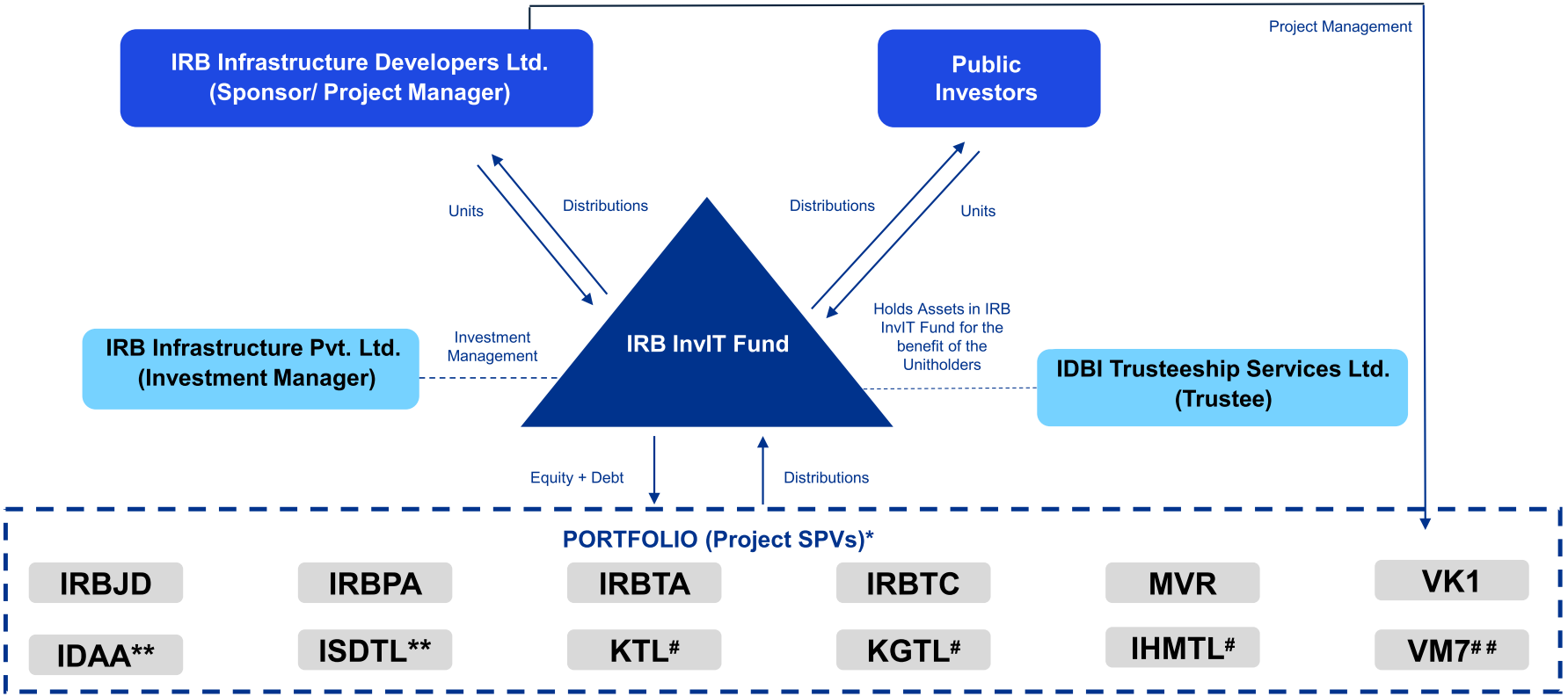
Source: Management Information, Company filings, Annual Report FY25

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IRB InvIT Fund Overview

Structure of the IRB InvIT Fund



**100% of project SPV held by the IRB InvIT Fund.*

*** Concession period for IDAA and ISTDL ended on 31 March 2022 and 25 May 2022 respectively. Hence currently they are classified as Non-operational entities*

#Acquired by the fund on 01 November 2025

##Acquired by the Fund on 01 December 2025

Source(s): IRB InvIT Fund Annual Report, Management

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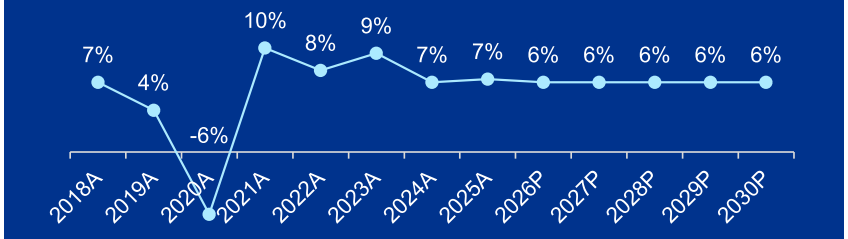
Industry Overview

Industry Overview

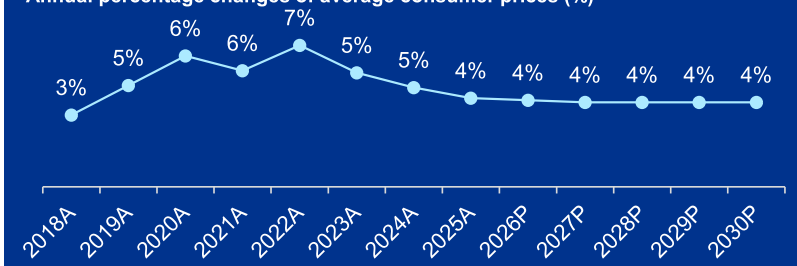
Indian Economy Outlook

The IMF, in its January 2026 World Economic Outlook Update, has projected that India's economy will grow at 6.4% each in 2026-27 and 2027-28. With this, India will remain the fastest-growing economy, and based on the calendar year, the IMF sees India's economy growing at 6.3% in 2026 and 6.5% in 2027.

Real GDP growth rate (%)



Annual percentage changes of average consumer prices (%)

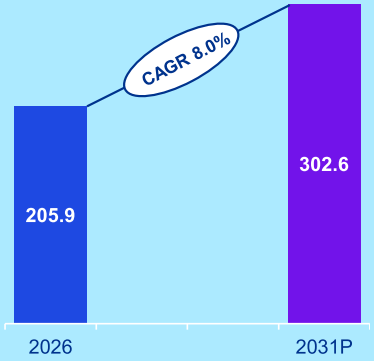


Infra Sector

Infrastructure is a key enabler in helping India become a USD 26 trillion economy by 2047.

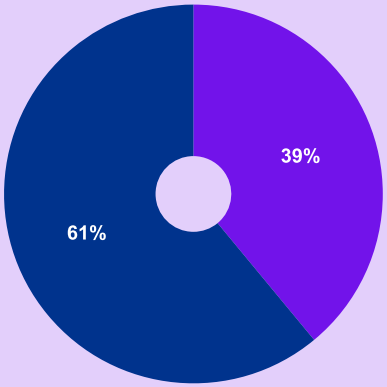
Capital investment outlay for infrastructure has been increased to Rs. 12.21 trillion in the FY2027 budget estimate (BE), compared to Rs 11.21 trillion in the FY2026 revised estimate (RE), marking a 10.0 per cent year-on-year growth; which would be 3.1% of the GDP.

India Infrastructure market (USD billion)



Infrastructure Segmentation

(2025)



Source(s): International Monetary Fund ("IMF"), India Brand Equity Foundation ("IBEF"), Mordor intelligence

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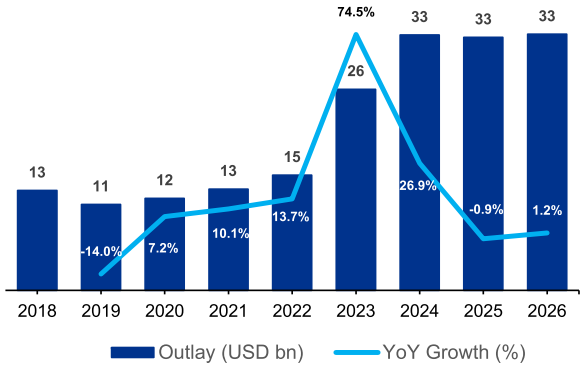
Industry Overview

Road Transport and Highways

Road Transport and Highways sector

- The Ministry of Road Transport and Highways ("MoRTH") formulates and administers policies for road transport, national highways and transport research. It is also involved with the construction and maintenance of the National Highways ("NHs") through the National Highways Authority of India ("NHAI"), and the National Highway and Infrastructure Development Corporation Limited ("NHIDCL"). NHAI is an agency of MoRTH which is also responsible for the toll collection on several highways.
- Under Budget 2026-27, capital investment outlay for infrastructure has been increased to Rs 12.22 trillion, which is 4.4% of GDP.

Outlay for Roads under the Union Budget (USD billion)

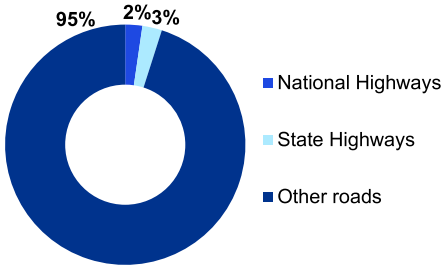


Source(s): MoRTH, IBEF, Invest India

2nd

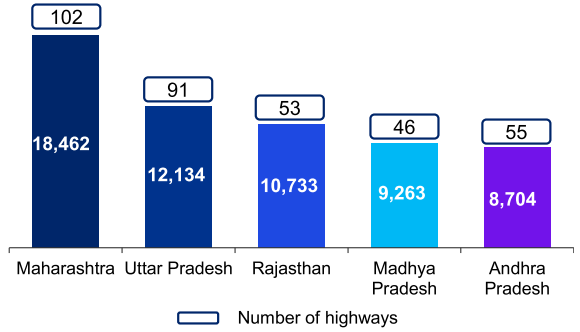
India has the second largest road network in the world of about 63 lakh km. This comprises National Highways, Expressways, State Highways, District Roads, Other District Roads and Village Roads.

Road & Highway – classification breakup



As per the data from Ministry of Road Transport and Highways, National Highways (NHs) make up for about 2.2 per cent (1,46,145 km) of the total road network of India (63,73,581 km).

Top 5 states by length of NHs in India (Km)



National Highways carry over 40 per cent of the total traffic across the length and breadth of the country. Maharashtra has the largest network of National Highways with 18,462 km (12.6%). As of 31 April 2026, 102 National Highway and road projects have been evaluated.

(*State-wise split is as per December 2025)*

4.9%

The roads and highways market size has grown steadily in recent years. It will grow from $732.88 billion in 2026 to $886.97 billion in 2030 at a compounded annual growth rate (CAGR) of 4.9%. The growth in the forecast period can be attributed to smart transportation solutions, sustainable and green infrastructure, emphasis on safety measures and adoption of advanced materials.

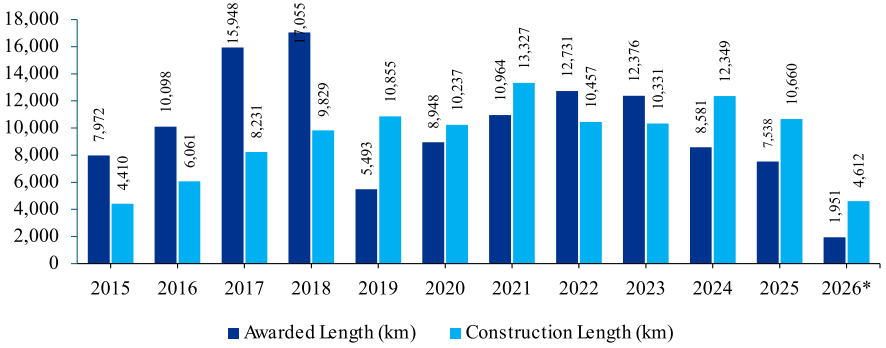
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Industry Overview

Key drivers of the sector

Pace of length of highways awarded and constructed (in kms)

The awarding of projects has picked up pace after the sanction of ambitious Bharatmala program. The Government of India has allocated INR 2.9 lakh crore under the National Infrastructure Pipeline for 2026. The government also aims to construct 10,000 Km of new roads in 2026.



* 2026 data is as of November 2025

9% (2015-2025) — CAGR - Length of highways constructed per day

1.3 (2030) — Estimated toll collection (in INR lakh crore)

10k (2026) — Road construction target (in km)

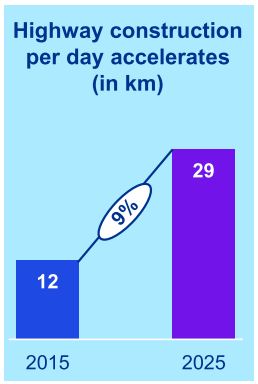
27 km (FY2026) — Estimated National Highway constructed per day to be achieved

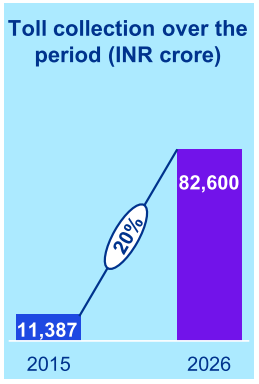
Source(s): MoRTH, Press Information Bureau ("PIB"), Money control

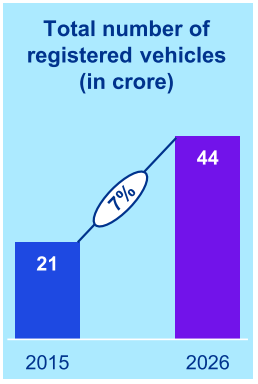
Toll operations efficiency increased due to adoption and growth of FASTag

11.9 Cr As of 31st January 2026, banks have issued over 11.9 crore FASTags.

232 Cr The average daily collection via FASTag on NH fee plaza is INR 232 crore thereby increasing efficiency in toll operations.







2026 data is as of March 2026
- CAGR

Government has implemented multiple initiatives in the last 9 years to augment the capacity of the National Highway infrastructure in the country. The pace of National Highways construction has increased consistently due to the systematic push through corridor-based National Highway development approach.

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Financing in road infrastructure

Financing infrastructure

Investment in road infrastructure is long-term and returns are seen several years after construction. Roads and highways are financed through Government and private sources. Funding from Government sources includes budgetary allocations.

Private financing

Under private financing, the private developer builds a road, and in return has the right to collect toll for a specified period of time. The developer is responsible for the maintenance of roads during this period.

Public financing

Funding from government sources includes budgetary allocations, which are financed from taxes, cesses, or dedicated road funds. Publicly funded projects are usually given to contractors under various contract models such as the Engineering Procurement Construction (EPC).

Financing in road sector & MoRTH, NHAI budget

The Ministry is estimated to spend INR 3,09,692 crore in 2026-27. This is 7.9% higher than the revised estimates for 2025-26 (INR 2,86,963 crore). Major allocations are towards NHAI and expenditure on roads and bridges as show:

Sub-Head	Actuals FY 2024-25	RE FY 2025-26	BE FY 2026-27	% Change BE over RE
NHAI	168,602.0	170,266.0	187,293.0	10.0%
Roads & Bridges (MoRTH)	130,965.0	116,337.0	121,999.0	5.0%
Road Transport & Safety	254.0	360.0	400.0	11.0%
Total	299,821.0	286,963.0	309,692.0	7.9%

Note: BE – Budget Estimate, RE – Revised Estimate; "Total" includes recoveries which have not been shown in the table; "Others" covers establishment expenditure of the central government and allocations towards road transport and safety.

Allocation to Roads and Bridges

In 2026-27, the government has allocated INR 1,21,999 crore towards the development and maintenance of roads and bridges. This marks a 5% increase over the revised estimates for 2025 - 26. Expenditure under this allocation includes:

- **Projects related to expressways**
- **Expansion and development of national highways**
- **Increase number of lanes under various projects**
- **Development of road connectivity in left-wing extremism affected areas**

Investment Opportunities in Roads & Highways

3.20	14,563	2,613.7	50 Bn
Road InvIT Assets (INR Trillion)	Projects under NIP	Total Project Cost (USD billion)	Monetization Pipeline 2.0 Budget FY26 – FY30

Types of projects awarded by NHAI

a. Engineering Procurement & Construction

Under the EPC model, Government pays private players to lay roads. The private player has no role in the road's ownership, toll collection or maintenance.

b. Build Operate Transfer ("BOT")

Private players build, operate and maintain the road for a specified period before transferring the asset back to the Government. The private player arranges all the finances for the project, while collecting toll revenue/ annuity fee from the Government.

c. Hybrid Annuity Model ("HAM")

HAM is a hybrid model, a mix of the EPC and BOT (build, operate, transfer) models. HAM combines EPC (40 per cent) and BOT-Annuity (60 per cent). On behalf of the government, NHAI releases 40 per cent of the total project cost. The balance 60 per cent is arranged by the developer.

Source(s): PRS Legislative research, IBEF, CRISIL, MoRTH, Invest India

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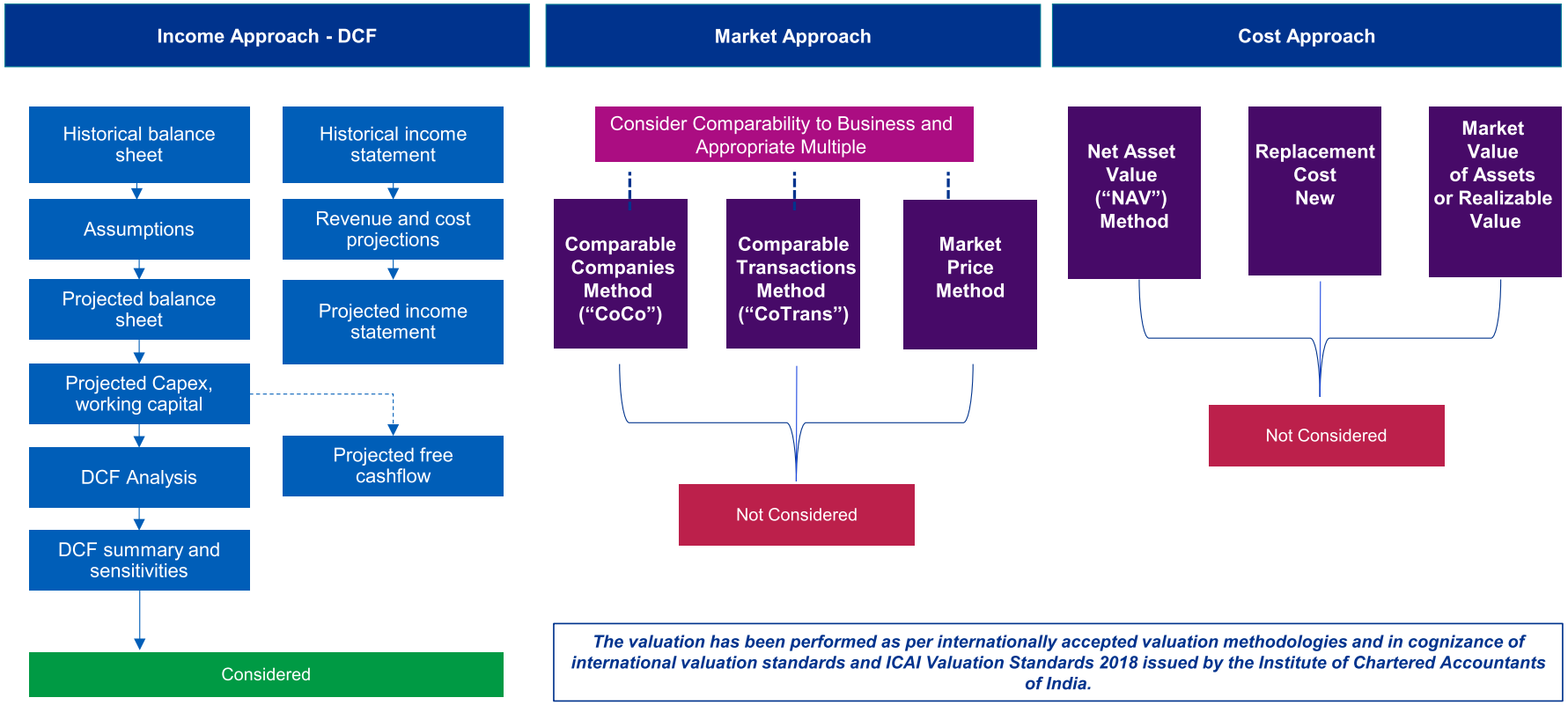
4.

Valuation Methodology and Approach

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Valuation Methodology and Approach

Methodology and Approach



The valuation has been performed 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.

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Valuation Methodologies - Income Approach

Discounted Cash Flows ("DCF")

- Under a DCF approach, forecast cash flows are discounted back to the present date, generating a net present value for the cash flow stream of the business. A terminal value at the end of the explicit forecast period is then determined and that value is also discounted back to the valuation date to give an overall value for the business.
- A discounted cash flow methodology typically requires the forecast period to be of such a length to enable the business to achieve a stabilized level of earnings, or to be reflective of an entire operation cycle for more cyclical industries.
- The rate at which the future cash flows are discounted ("the discount rate") should reflect not only the time value of money, but also the risk associated with the business' future operations. The discount rate most generally employed is weighted average cost of capital ("WACC"), reflecting an optimal as opposed to actual financing structure.
- In calculating the terminal value, regard must be had to the business' potential for further growth beyond the explicit forecast period. The "constant growth model", which applies an expected constant level of growth to the cash flow forecast in the last year of the forecast period and assumes such growth is achieved in perpetuity, is a common method. These results would be cross-checked, however, for reasonability to implied exit multiples.
- Due to the finite life of the concession period of the SPVs, we have not computed a terminal value for the valuation of the SPVs.
- The rate at which future cash flows are discounted should reflect not only the time value of the cash flows but also the risk associated with the business' future operations. This means that in order for a DCF to produce a sensible valuation figure, the importance of the quality of the underlying cash flow forecasts is fundamental.
- The DCF approach has been applied in the valuation of the SPVs.

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Valuation Methodologies - Market Approach

Comparable Companies ("CoCo")

- Under comparable companies method, the value of shares / business of a company is determined based on market multiples of publicly traded comparable companies. Although no two companies are entirely alike, the companies selected as comparable companies should be engaged in the same or a similar line of business as the subject company.
- The appropriate multiple is generally based on the performance of listed companies with similar business models and size.
- The CoCo methodology has not been applied in the valuation of IRB InvIT Fund and SPVs.
- The list of companies in the road segment have mix of assets which are at different stages of operation / development / revenue mix/ leasing period. Therefore, comparable companies' method is not considered.

Comparable Transactions ("CoTrans")

- Under comparable transactions method, the value of shares / business of a company is determined based on market multiples of publicly disclosed transactions in the similar space as that of the subject company. Due to different purposes of investments, transaction rationale and synergy benefits, different control premiums and minority discounts are embedded in the transaction values.
- Multiples are generally based on data from recent transactions in a comparable sector, but with appropriate adjustment after consideration has been given to the specific characteristics of the business being valued.
- The list of transactions in the road segment have mix of assets which are at different stages of operation / development / revenue mix/ leasing period. Therefore, comparable transactions method has not been considered for the valuation of IRB InvIT Fund and SPVs.

Market Price Method

- Under this approach, the value of the business is arrived at considering the market price of the company based on the daily moving averages of the last six-month volume traded weighted average of closing price on the stock exchange where the company's shares are most frequently traded.
- The market price methodology has not been considered in the valuation of SPVs as it is not publicly listed or traded on any stock exchange.

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Valuation Methodologies – Cost Approach

Net Asset Value ("NAV") Method	• Under the net asset value approach, total value is based on the sum of net asset value as recorded on the balance sheet. • A net asset methodology is most applicable for businesses where the value lies in the underlying assets and not the ongoing operations of the business. • The net assets methodology has not been considered for the valuation of IRB InvIT Fund and SPVs as the Targets are operational and the financials are made on a going concern basis.
Replacement Cost New	• The replacement cost of a business is the cost of acquiring similar assets employed in the business and/or reaching a similar level of development. A purchaser, faced with a build versus buy scenario, may be prepared to pay significantly over and above this cost to obtain advantages including time saved in developing a similar business, and risk of failure. • The replacement cost method quantifies the cost and risk to reach the present stage of development. • This approach is often used for start-up/non-mature technology or biotech businesses. • Hence, the replacement cost method has not been considered.
Market Value of Assets or Realizable Value	• Under the market value methodology, total value is based on the sum of market value of asset less market value of liabilities plus, the value of intangible assets not recorded on the balance sheet. • This methodology is most applicable for businesses where the value lies in the underlying assets and not the ongoing operations of the business. • Hence, the market value method has not been considered.

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Procedures adopted

Procedures adopted

We have carried out the Enterprise Valuation of the SPVs, in accordance with valuation standards as specified / applicable as per SEBI InvIT Regulations, to the extent applicable.

In connection with this analysis, we have adopted the following procedures to carry out the valuation analysis:

- Requested and received financial and qualitative information relating to the SPVs.
- Considered the key terms of concession agreements;
- Analysis of the Management Business Plan;
- Considered the Traffic Study Reports from the independent consultant;
- Discussed with the Management on background of the SPVs– business and fundamental factors that affect its earning-generating capacity and historical and expected financial performance;
- Analysis of the key economic and industry factors which may affect the valuation of the SPVs;
- Analysis of the information available in public domain/ subscribed databases in respect of the comparable companies/ comparable transactions, as considered relevant by us;
- Conducted site visits in December 2025, March/ April/ May 2026 to assess the operating condition of the projects under the SPVs as per the requirements of SEBI (InvIT Regulations) 2014 (as amended);
- Selection of valuation approach and valuation methodology, in accordance with SEBI (InvIT Regulations), as considered appropriate and relevant by us;
- Analysis of other publicly available information, as considered relevant by us; and
- Determination of Enterprise Value of the SPVs and equity value of IRBI InvIT Fund as on the Valuation Date.

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WACC Analysis

Discount Rate and Terminal Value

Discount rate

In order to determine the discount rate, we have used the WACC methodology as set out below:

WACC = Ke * (E/(D + E)) + Kd * (1-T) * (D/(D + E))

Where:	Ke	=	cost of equity
	E	=	market value of equity
	Kd	=	cost of debt
	D	=	market value of debt
	T	=	corporate taxation rate

The cost of equity is derived using the Capital Asset Pricing Model ("CAPM") as follows:

	Ke	=	Rf + ß * (Rm – Rf) + α
Where:	Rf	=	the current return on risk-free assets
	Rm market	=	the expected average return of the
	(Rm – Rf)	=	the average risk premium above the risk - free rate that a "market" portfolio of assets is earning
	ß	=	the beta factor, being the measure of the systematic risk of a particular asset relative to the risk of a portfolio of all risky assets
	α	=	company specific risk factor (alpha)

Terminal Value

- Due to the finite life of the concession period of the SPVs, we have not computed a terminal value for the valuation of the SPVs.

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WACC Parameters

a. Risk free rate (Rf)

- Risk free rate forms the basis for any discount rate estimation using the build up methodology. As the name implies, this rate should not take into account any risk factors and should only include two general components – time value of money and inflation.
- Since there are no investments that are truly risk free, the risk free rate is commonly approximated by reference to yield on long-term debt instruments issued by government of India.
- For our analysis, the nominal risk-free rate is based 10 year benchmark government of India securities yield as well as analysis of the consensus forecast yield which stands at 6.8%.

b. Market risk premium

- Market risk premium is the difference between the expected return on the market as a whole and the risk-free rate (like the return on government bonds). This premium compensates investors for taking on the higher risk associated with investing in the stock market
- The ERP is not directly observable in the market and therefore must be estimated. There are various approaches for estimating ERP which can be categorized as (i) Historical ERP approach (ii) Surveys and (iii) implied ERP approach. Historical ERP is most commonly used approach, and we have used the same. Under this method the ERP is estimated as the difference between broad based equity market index returns and government debt returns over a selected sample period. Different assumptions considered in this approach include – selection of Time period for measurement, stock market benchmark and the risk free rate.
- The historical ERP can be estimated using any historical period; however, it is frequently calculated using a long back period. When calculated over a long period, the historical ERP is found to be relatively consistent with lower standard of error. We have considered long term returns on BSE Sensex index for our estimation of ERP over long period of time.
- Rf is subtracted from stock index returns for estimating ERP. The difference between Rf and market returns is averaged over the period to estimate the range.
- Based on our calculations, while Equity risk premium varies per period, it converges around 7 per cent. We have considered ERP of 7 per cent in our estimation of WACC.

c. Beta

- Beta is a measure of the risk of the shares of a company. ß is the co-variance between the return on sample stock and the return on the market. In order to determine the appropriate beta factor for the Company, consideration must be given either to the market beta of the Company or betas of comparable quoted companies.
- We have screened for companies in the road operating industry and infrastructure investment trusts. We have also included InvIT in the transmission sector that are based on a BOT model. We have considered companies operating in India.
- Betas are low in this industry due to the stable nature of the road operating industry and low level of cash flow volatility due to the relatively steady usage of roads. We have arrived at a levered beta of 0.82. This includes the additional risk due to debt financing of the comparable companies.
    - Adjusted Beta = (0.67* Raw Beta)+ (0.33*1)
- We have then unlevered and then Relevered this beta using the optimal capital structure and tax rate applicable to the each SPV to reflect difference in operating leverage across comparable companies.

    Unlevered beta = Beta / (1 + (1-tax rate) Debt to Equity ratio}*

    *Relevered beta = Unlevered Beta * (1 + (1-tax rate)* Debt to Equity ratio}*
- We have considered Median of re-levered beta of comparable companies for our WACC estimation of BOT SPV's. Given lower risk attached with cash flows for HAM assets, We have considered Quartile 1 of Relevered beta of comparable companies for estimating WACC for VK1 and VM7.

Source(s): Management information

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WACC Parameters

d. Alpha

- The Alpha factor incorporates company specific risk factor to reflect different stages of maturity and levels of uncertainty that are not already reflected in the projected cash flows. Considering the length of remaining concession period, forecast cashflows and discussion with the Management, We have considered an alpha at 1% in IRBJD, IRBTA. Whereas an alpha of 2% has been considered in IRBTC and 3% in IRBPA. No alpha has been considered in VK1, VM7, MVR, KGTL, KTL and IHMTL.

e. Cost of Debt

- As per the Management, the actual average cost of debt for IRB InvIT Fund as on Valuation date is 7.75%. We have considered the same for our analysis.

f. Tax

- We understand that eventually all the SPVs will transition to the new tax regime once its MAT credit is exhausted, hence we have considered tax rate of 25.17% for the WACC. In case of MVR where, the MAT credit is expected to be exhausted in the last year of the concession, a tax rate of 16.31% has been considered in accordance with the old Tax regime.

g. Capital structure

- To estimate an appropriate capital structure for the SPVs we have considered capital structure of comparable companies, IRB InvIT Fund's actual capital structure and discussion with Management on long term view on normalized capital structure.
- The debt capitalization (based on market values) of publicly traded companies operating in a similar industry as the IRB InvIT Fund ranged from 11.4 per cent to 72.2 per cent of total capital with median of 50.3 per cent. Please refer to the next slide in this regard.
- The actual debt to capital for IRB InvIT Fund as on valuation date (based on market capitalization) stood at 50.3 per cent, which is around median level of the of the industry levels.
- However, given that comparable companies have assets portfolio which is mix of operational and under-construction assets, We have also considered status of IRB InvIT Fund's asset portfolio and borrowing capacity when determining where within the Industry debt level ranges to select. All assets of IRB InvIT Fund are completed and fully operational. Considering remaining concession life of BOT assets in IRB InvIT Fund's portfolio and discussion with the Management on their long term view on normalized capital structure including refinancing capacity, We have estimated a normalized capital structure of 50 per cent debt and 50 per cent equity.
- In case of completed HAM assets, since the cash flows are less volatile and have very low risk, higher debt to capital structure is observed. Therefore, we have considered the debt to equity ratio for VK1 and VM7 to be 70:30.

WACC Indication

- Based on selected rate of return on equity, cost of debt and capital structure discussed above, we have calculated WACC for SPV's to be in range of 7.7 per cent to 10.9 per cent. Refer subsequent slides for SPV wise Beta and WACC computation

Source(s): Management information

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Beta Computation – Toll Assets other than MVR

Beta computation as on 31 March 26	Market Capitalization	Total Debt excl. Cap Lease	Debt / Equity	Debt / Total Capital	Beta	Tax Rate	Unlevered Beta	Target's Debt Equity	Target's Tax Rate	Re Levered Beta
IRB Infrastructure Developers Limited	252,339	208,516	82.6%	45.2%	0.95	25.17%	0.59	100.00%	25.17%	1.03
PNC Infratech Limited	53,107	50,688	95.4%	48.8%	0.99	25.17%	0.58	100.00%	25.17%	1.01
Capital Infra Trust	22,547	37,376	165.8%	62.4%	0.49	25.17%	0.22	100.00%	25.17%	0.38
Dilip Buildcon Limited	71,546	103,749	145.0%	59.2%	1.10	25.17%	0.53	100.00%	25.17%	0.92
Bharat Road Network Limited	1,671	4,343	259.9%	72.2%	0.89	25.17%	0.30	100.00%	25.17%	0.53
National Highways Infra Trust	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Energy Infrastructure Trust	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indus Infra Trust	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anantam Highways Trust	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indigrid Infrastructure Trust	157,201	220,359	140.2%	58.4%	0.41	25.17%	0.20	100.00%	25.17%	0.35
Powergrid Infrastructure Investment Trust	83,187	10,718	12.9%	11.4%	0.56	25.17%	0.51	100.00%	25.17%	0.89
IRB InvIT Fund	78,198	79,300	101.4%	50.3%	0.50	25.17%	0.28	100.00%	25.17%	0.49
G R Infraprojects Limited	85,993	55,922	65.0%	39.4%	0.82	25.17%	0.55	100.00%	25.17%	0.96
Median			**101.4%**	**50.3%**	**0.82**		**0.51**			**0.89**

Note:

a) Market capitalization of comparable companies has been considered based on volume weighted average share prices till 31 March 2026.
b) Debt of the comparable companies has been considered based on latest financials of 31 March 2026
c) Beta has been computed based on analysis of adjusted beta over 1-year, 3-year and 5-year daily/weekly/monthly data.
d) Although, National Highway Infra Trust, Indus Infra Trust, India Infrastructure Trust and Anantam Highways Trust are a part of our comparable companies set, they have been excluded while calculating the beta due to low trading.
e) Market beta is unlevered using each company's tax rate and capital structure. (Beta/ 1+(1-tax rate)*Debt/Equity).
f) We have considered re levered beta to give impact to the SPV's capital structure and applicable tax rate. Debt/equity ratio used to re-lever beta is based on the optimal capital structure of the SPV as communicated by the Management i.e. 100% (Unlevered beta * (1+(1-Re-levered beta)*Target's Debt Equity)).
g) Refer annexure 4 for business description of comparable companies.

Source(s): KVSL analysis based on data sourced from S&P Capital IQ database.

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Beta Computation – MVR

Beta computation as on 31 March 26										
	Market Capitalization	Total Debt excl. Cap Lease	Debt / Equity	Debt / Total Capital	Beta	Tax Rate	Unlevered Beta	Target's Debt Equity	Target's Tax Rate	Re Levered Beta
IRB Infrastructure Developers Limited	252,339	208,516	82.6%	45.2%	0.95	25.17%	0.59	100.00%	16.31%	1.08
PNC Infratech Limited	53,107	50,688	95.4%	48.8%	0.99	25.17%	0.58	100.00%	16.31%	1.06
Capital Infra Trust	22,547	37,376	165.8%	62.4%	0.49	25.17%	0.22	100.00%	16.31%	0.40
Dilip Buildcon Limited	71,546	103,749	145.0%	59.2%	1.10	25.17%	0.53	100.00%	16.31%	0.97
Bharat Road Network Limited	1,671	4,343	259.9%	72.2%	0.89	25.17%	0.30	100.00%	16.31%	0.55
National Highways Infra Trust	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Energy Infrastructure Trust	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indus Infra Trust	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anantam Highways Trust	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indigrid Infrastructure Trust	157,201	220,359	140.2%	58.4%	0.41	25.17%	0.20	100.00%	16.31%	0.37
Powergrid Infrastructure Investment Trust	83,187	10,718	12.9%	11.4%	0.56	25.17%	0.51	100.00%	16.31%	0.93
IRB InvIT Fund	78,198	79,300	101.4%	50.3%	0.50	25.17%	0.28	100.00%	16.31%	0.52
G R Infraprojects Limited	85,993	55,922	65.0%	39.4%	0.82	25.17%	0.55	100.00%	16.31%	1.01
Median			**101.4%**	**50.3%**	**0.82**		**0.51**			**0.93**

Note:

a) Market capitalization of comparable companies has been considered based on volume weighted average share prices till 31 March 2026.
b) Debt of the comparable companies has been considered based on latest financials of 31 March 2026
c) Beta has been computed based on analysis of adjusted beta over 1-year, 3-year and 5-year daily/weekly/monthly data.
d) Although, National Highway Infra Trust, Indus Infra Trust, India Infrastructure Trust and Anantam Highways Trust are a part of our comparable companies set, they have been excluded while calculating the beta due to low trading.
e) Market beta is unlevered using each company's tax rate and capital structure. (Beta/ 1+(1-tax rate)*Debt/Equity).
f) We have considered re levered beta to give impact to the SPV's capital structure and applicable tax rate. Debt/equity ratio used to re-lever beta is based on the optimal capital structure of the SPV as communicated by the Management i.e. 100% (Unlevered beta * (1+(1-Re-levered beta)*Target's Debt Equity)).
g) Refer annexure 4 for business description of comparable companies.

Source(s): KVSL analysis based on data sourced from S&P Capital IQ database.

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Beta Computation – VK1, VM7

Beta computation as on 31 March 26										
	Market Capitalization	Total Debt excl. Cap Lease	Debt / Equity	Debt / Total Capital	Beta	Tax Rate	Unlevered Beta	Target's Debt Equity	Target's Tax Rate	Re Levered Beta
IRB Infrastructure Developers Limited	252,339	208,516	82.6%	45.2%	0.95	25.17%	0.59	233.33%	25.17%	1.61
PNC Infratech Limited	53,107	50,688	95.4%	48.8%	0.99	25.17%	0.58	233.33%	25.17%	1.59
Capital Infra Trust	22,547	37,376	165.8%	62.4%	0.49	25.17%	0.22	233.33%	25.17%	0.60
Dilip Buildcon Limited	71,546	103,749	145.0%	59.2%	1.10	25.17%	0.53	233.33%	25.17%	1.44
Bharat Road Network Limited	1,671	4,343	259.9%	72.2%	0.89	25.17%	0.30	233.33%	25.17%	0.83
National Highways Infra Trust	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Energy Infrastructure Trust	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indus Infra Trust	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anantam Highways Trust	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indigrid Infrastructure Trust	157,201	220,359	140.2%	58.4%	0.41	25.17%	0.20	233.33%	25.17%	0.56
Powergrid Infrastructure Investment Trust	83,187	10,718	12.9%	11.4%	0.56	25.17%	0.51	233.33%	25.17%	1.39
IRB InvIT Fund	78,198	79,300	101.4%	50.3%	0.50	25.17%	0.28	233.33%	25.17%	0.77
G R Infraprojects Limited	85,993	55,922	65.0%	39.4%	0.82	25.17%	0.55	233.33%	25.17%	1.51
Median			**101.4%**	**50.3%**	**0.82**		**0.51**			
Quartile 1										**0.77**

Note:

a) Market capitalization of comparable companies has been considered based on volume weighted average share prices till 31 March 2026.
b) Debt of the comparable companies has been considered based on latest financials of 31 March 2026
c) Beta has been computed based on analysis of adjusted beta over 1-year, 3-year and 5-year daily/weekly/monthly data.
d) Although, National Highway Infra Trust, Indus Infra Trust, India Infrastructure Trust and Anantam Highways Trust are a part of our comparable companies set, they have been excluded while calculating the beta due to low trading.
e) Market beta is unlevered using each company's tax rate and capital structure. (Beta/ 1+(1-tax rate)*Debt/Equity).
f) We have considered re levered beta to give impact to the SPV's capital structure and applicable tax rate. Debt/equity ratio used to re-lever beta is based on the optimal capital structure of the SPV as communicated by the Management i.e. 100% (Unlevered beta * (1+(1-Re-levered beta)*Target's Debt Equity)).
g) Refer annexure 4 for business description of comparable companies.

Source(s): KVSL analysis based on data sourced from S&P Capital IQ database.

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Valuation Methodology and Approach — WACC Analysis

Summary - WACC

WACC calculation										
Name of SPV	**IRBJD**	**IRBPA**	**IRBTA**	**IRBTC**	**MVR**	**VK1**	**VM7**	**KTL**	**KGTL**	**IHMTL**
Risk free rate of return	6.8%	6.8%	6.8%	6.8%	6.8%	6.8%	6.8%	6.8%	6.8%	6.8%
Beta	0.89	0.89	0.89	0.89	0.93	0.77	0.77	0.89	0.89	0.89
Equity risk premium	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
Alpha	1.0%	3.0%	1.0%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cost of Equity	**14.0%**	**16.0%**	**14.0%**	**15.0%**	**13.3%**	**12.2%**	**12.2%**	**13.0%**	**13.0%**	**13.0%**
Cost of Debt	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%
Tax Rate	25.2%	25.2%	25.2%	25.2%	16.3%	25.2%	25.2%	25.2%	25.2%	25.2%
After Tax Cost of Debt	**5.8%**	**5.8%**	**5.8%**	**5.8%**	**6.5%**	**5.8%**	**5.8%**	**5.8%**	**5.8%**	**5.8%**
Debt to Capital %	50.0%	50.0%	50.0%	50.0%	50.0%	70.0%	70.0%	50.0%	50.0%	50.0%
Equity to Capital %	50.0%	50.0%	50.0%	50.0%	50.0%	30.0%	30.0%	50.0%	50.0%	50.0%
Weighted Average Cost of Capital	**9.9%**	**10.9%**	**9.9%**	**10.4%**	**9.9%**	**7.7%**	**7.7%**	**9.4%**	**9.4%**	**9.4%**

Source: KVSL analysis, Management Information and S&P Capital IQ

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WACC – Comparison between current and previous valuation

WACC calculation										
Name of SPV	**IRBJD**		**IRBPA**		**IRBTA**		**IRBTC**		**MVR**	
Valuation Date	**31-Mar-26**	**30-Nov-25**	**31-Mar-26**	**30-Nov-25**	**31-Mar-26**	**30-Nov-25**	**31-Mar-26**	**30-Nov-25**	**31-Mar-26**	**30-Nov-25**
Risk free rate of return	6.8%	6.5%	6.8%	6.5%	6.8%	6.5%	6.8%	6.5%	6.8%	6.5%
Beta	0.89	0.88	0.89	0.88	0.89	0.92	0.89	0.88	0.93	0.92
Equity risk premium	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
Alpha	1.0%	1.0%	3.0%	3.0%	1.0%	1.0%	2.0%	2.0%	0.0%	0.0%
Cost of Equity	**14.0%**	**13.7%**	**16.0%**	**15.7%**	**14.0%**	**13.9%**	**15.0%**	**14.7%**	**13.3%**	**12.9%**
Cost of Debt	7.8%	8.0%	7.8%	8.0%	7.8%	8.0%	7.8%	8.0%	7.8%	8.0%
Tax Rate	25.2%	25.2%	25.2%	25.2%	25.2%	17.5%	25.2%	25.2%	16.3%	17.5%
After Tax Cost of Debt	**5.8%**	**6.0%**	**5.8%**	**6.0%**	**5.8%**	**6.6%**	**5.8%**	**6.0%**	**6.5%**	**6.6%**
Debt to Capital %	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Equity to Capital %	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Weighted Average Cost of Capital	**9.9%**	**9.8%**	**10.9%**	**10.8%**	**9.9%**	**10.3%**	**10.4%**	**10.3%**	**9.9%**	**9.8%**

Source: KVSL analysis, Management Information and S&P Capital IQ

Rf	Yield on government of India securities has increased leading to the change of Rf presented above
Rm	Equity risk premium has remained the same. However, there is an increase in Beta on account of changes in the market.
Debt to capital	The debt to capital structure has remained unchanged.
Cost of Debt	IRB InvIT Fund's cost of borrowing has declined from 8.0 per cent to 7.75 per cent primarily attributable to a decline in the average cost of borrowings, driven by IRB InvIT Fund's ability to raise new debt at relatively lower interest rates.
WACC	The cost of capital for IRBJD, IRBPA, IRBTC, and MVR has increased due to a rise in the risk-free rate, which has more than offset the benefit from the reduction in the cost of debt. In contrast, for IRBTA, changes in income tax regulations have resulted in a lower post-tax cost of debt, leading to a reduction in WACC.

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WACC – Comparison between current and previous valuation

WACC calculation								
Name of SPV	**VK1**		**KTL**		**KGTL**		**IHMTL**	
Valuation Date	**31-Mar-26**	**30-Nov-25**	**31-Mar-26**	**30-Nov-25**	**31-Mar-26**	**30-Nov-25**	**31-Mar-26**	**30-Nov-25**
Risk free rate of return	6.8%	6.5%	6.8%	6.5%	6.8%	6.5%	6.8%	6.5%
Beta	0.77	0.89	0.89	0.88	0.89	0.88	0.89	0.88
Equity risk premium	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
Alpha	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cost of Equity	**12.2%**	**12.7%**	**13.0%**	**12.7%**	**13.0%**	**12.7%**	**13.0%**	**12.7%**
Cost of Debt	7.8%	8.0%	7.8%	8.0%	7.8%	8.0%	7.8%	8.0%
Tax Rate	25.2%	25.2%	25.2%	25.2%	25.2%	25.2%	25.2%	25.2%
After Tax Cost of Debt	**5.8%**	**6.0%**	**5.8%**	**6.0%**	**5.8%**	**6.0%**	**5.8%**	**6.0%**
Debt to Capital %	70.0%	70.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Equity to Capital %	30.0%	30.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%
Weighted Average Cost of Capital	**7.7%**	**8.0%**	**9.4%**	**9.3%**	**9.4%**	**9.3%**	**9.4%**	**9.3%**

Source: KVSL analysis, Management Information and S&P Capital IQ

Rf	Yield on government of India securities has increased leading to the change of Rf presented above
Rm	Equity risk premium has remained the same. However, there is an increase in Beta for toll assets on account of changes in the market. Beta for VK1 has decreased as we have considered Quartile 1 of re-levered beta of comparable companies.
Debt to capital	The debt to capital structure has remained unchanged.
Cost of Debt	IRB InvIT Fund's cost of borrowing has declined from 8.0 per cent to 7.75 per cent primarily attributable to a decline in the average cost of borrowings, driven by IRB InvIT Fund's ability to raise new debt at relatively lower interest rates.
WACC	The cost of capital has increased due particularly the upward movement in the risk-free rate which outweigh the impact of the reduction in cost of debt..

Please note, VM7 has been acquired by the Trust on 01 December 2025. The valuation for this SPVs is being carried out for the first time hence comparison is not performed

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5.

Valuation of Individual SPVs

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IRB Jaipur Deoli Tollway Limited

Valuation of Individual SPVs — IRB Jaipur Deoli Tollway Limited

Overview

Project details

IRBJD has entered into a concession agreement for four-laning of km 18.7 to km 165.00, Jaipur to Deoli section of NH-12 in the state of Rajasthan on a design, build, finance, operate and transfer (DBFOT) basis. The project stretch is 595 lane kms long with 2 toll plazas. The project is in the state of Rajasthan and passes through districts, viz. Jaipur and Tonk.

Concession period

IRBJD is required to build, operate and transfer the project highway in accordance with the concession agreement for a period of 25 years commencing from the appointed date.
This project has been extended by 1,957 days according to article 29 and article 34 of concession agreement for various reasons discussed in the next slide.

Premium / Grant

There is no premium payable to NHAI as per the concession agreement. NHAI provided to IRBJD cash support by way of an outright grant of INR 306 Crores, in accordance with the provisions of the Concession Agreement. The Grant was disbursed to by way of equity support.

Source(s): Management information

Highlights

Particulars	Details
Project location	Jaipur - Deoli
Concessionaire	IRBJD
State	Rajasthan
Tollable length (kms)	146.3
No. of toll plazas	2
Tolling commencement date	May 2014
Concession agreement date	16-Dec-09
Appointed date	14-Jun-10
Completion certificate date	01-Apr-16
Scheduled end date	13-Jun-35
New scheduled end date	21-Oct-40

Interest held by Trust as at 31 March 2026

Particulars	Stake %
Equity stake	100%
Debt held by InvIT in IRBJD	INR 1,291 Cr

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Key Assumptions

a. Modification in concession period

- As per Clause 29.2 of the concession agreement between NHAI and IRBJD, *"In the event actual average traffic shall have fallen short of the target traffic, then for every 1% shortfall as compared to the target traffic, the concession period shall, subject to payment of concession fee in accordance with this agreement, be increased by 1.5% thereof; provided such increase in concession period shall not in any case exceed 20% of the concession period"*.
- Traffic sampling has been conducted in year 2017, 2018 and 2019. Actual Traffic sampled was 45.25% short than Target Traffic specified in the Concession Agreement. Since the agreement caps the extension to 20%, the maximum allowable extension to concession period was granted, which is 5 years (i.e. 1,826 days). NHAI has approved the extension vide letter dated 18 March 2020.
- Besides the extension mentioned in the agreement, Management represented that the concession period will be increased by further 107 days on account of covid-19 and another 24 days on account of demonetization.
- Accordingly, the Management has confirmed to us to consider revised concession period till 21 October 2040. Thus, the explicit period for the current valuation analysis exercise has been considered from 1 April 2026 to 21 October 2040.

b. Revenue

- Revenue for IRBJD is derived from Toll collections for the concession period. Management has provided Traffic volume, toll rates and toll revenue for the forecast period based on the traffic report prepared by independent consultant in May 2026.
- As stated in the Traffic Study Report of IRBJD, elasticity model of growth projection has been considered for traffic forecast. While estimating traffic volume, consultant has considered factors such as GDP growth rate of India, developments along the project road, elasticity value of different vehicle type for computing the traffic growth rate.
- As stated in the traffic report, there are many upcoming projects in the area which have the potential to boost economic growth of the area and add value to the development of the region. All these developments have potential to give a positive impact to traffic flow on the project. Basis above factors, Traffic is forecast to increase in range of 4-6 per cent annually initially and stepped down for future years.
- Annual revision of toll rate for the forecast period shall be in accordance with National Highway Fee (Determination of Rates and Collection) Rules, 2008 and amendment thereto.
- Additionally, the applicable base rate shall be revised annually on April 1 to reflect 3% fixed increase plus increase in wholesale price index ("WPI") but such revision shall be restricted to 40% of the increase in WPI on overall basis during the concession period. As given in the traffic report, average inflation in WPI from FY2013-25 is 3.13%. Historically WPI inflation in India has been around 5%. Hence a 4.5% annual increase has been considered for the remaining concession period.
- Toll revenue has been considered basis the pessimistic scenario from the traffic report prepared by an independent consultant appointed by the Management.
- As per the NHAI Circular No. 17.7.12/2025 dated 17 October 2025, the Ministry of Road Transport & Highways (MoRTH), vide Gazette Notification No. 388 (E) dated 17 June 2025, has inserted sub-section (3B) in Rule 9 of the National Highways Fee (Determination of Rates and Collection) Rules, 2008, thereby introducing the concept of an Annual Pass with effect from 15 August 2025. MoRTH vide Circular No. H-25011/05/2025-Toll (E-245443) dated 1 September 2025 has notified a fair compensation framework for addressing revenue losses arising out of the Annual Pass in InvIT Projects.
- The impact of Annual Pass has been considered by the traffic consultant in the traffic study while estimating toll revenue for the forecast period.

Source(s): Management information

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Key Assumptions

c. Operating expenses

- Operational expenditure includes base operating expenditure, admin expenses, insurance, project management fees and various other expenses. These are broadly categorized as routine maintenance expenses and other operating expenses.
- Periodic maintenance expense, also referred to as major maintenance expenses are incurred to restore the road asset to its original condition or to maintain its current operating standard.
- Upto FY2030, IRBJD has entered into a fixed price Project Implementation Agreement ("PIA") for periodic and routine maintenance with IRB Infrastructure Developers Limited ("Project Manager").
- Operating expenses for the forecast period post FY2030, routine and periodic maintenance expense and other operating expenses, have been forecast by the Management and reviewed by independent technical consultant to ensure that the estimates are reasonable.
- Other operating expenses are estimated to increase by ~8 per cent in the forecast period.

d. Depreciation & amortization

- Management has provided the forecast depreciation on assets. Management has forecast depreciation to increase in line with the increase in revenue.

e. Tax

- The valuation has been prepared by analysing the potential impact of both the existing and the new tax regimes. From an FCFF perspective, the new tax regime may appear to result in a lower effective tax outflow over the projection period and hence we have used the same in our valuation analysis. However, management is still evaluating the option to migrate to the new tax regime at this stage and therefore timing of the transition to new tax regime will remain managements option.

f. Working capital

- The change is WC each year is not material. Therefore, we have only considered the impact of release of working capital at the end of the concession period.

g. Capex

- Since the SPV is already operational, there is no capex to be incurred in the remainder of the concession period.

h. Changes in assumption

- No material change in forecast assumption from previous valuation exercise

Source(s): Management information

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Valuation of Individual SPVs — IRB Jaipur Deoli Tollway Limited

Discounted Cash Flows (1/2)

Discounted Cash Flow									
INR crores		FY2027 12 months	FY2028 12 months	FY2029 12 months	FY2030 12 months	FY2031 12 months	FY2032 12 months	FY2033 12 months	FY2034 12 months
Revenue		223	245	268	294	323	353	386	418
y-o-y growth		*9.3%*	*10.3%*	*9.3%*	*9.8%*	*9.6%*	*9.3%*	*9.4%*	*8.4%*
Routine O&M		(14)	(14)	(15)	(16)	(36)	(39)	(40)	(42)
y-o-y growth		*3.7%*	*3.7%*	*3.7%*	*3.6%*	*131.7%*	*7.0%*	*5.0%*	*5.0%*
Other Operational expenses		(7)	(7)	(8)	(8)	-	-	-	-
Major maintenance O&M		(78)	(84)	(110)	(23)	-	-	(13)	(118)
EBITDA	**[A]**	124	139	135	248	287	314	332	258
EBITDA margin		56%	57%	50%	84%	89%	89%	86%	62%
Less: Depreciation		(43)	(48)	(52)	(57)	(63)	(69)	(75)	(82)
EBIT		81	92	83	190	224	245	257	176
EBIT margin		36%	37%	31%	65%	69%	70%	67%	42%
Less: Tax on EBIT	[B]	-	-	-	-	-	-	(14)	(48)
Change in working capital	[C]	-	-	-	-	-	-	-	-
Less : Capex	[D]	-	-	-	-	-	-	-	-
Free cash flows to the firm	**E = [A+B+C+D]**	**124**	**139**	**135**	**248**	**287**	**314**	**319**	**210**
Discounting period		0.50	1.50	2.50	3.50	4.50	5.50	6.50	7.50
Discount factor	[F]	0.95	0.87	0.79	0.72	0.65	0.59	0.54	0.49
Present value of cash flows	**[E*F]**	**119**	**121**	**107**	**178**	**187**	**187**	**173**	**103**

Source(s): Management information, KVSL analysis

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Valuation of Individual SPVs — IRB Jaipur Deoli Tollway Limited

Discounted Cash Flows (2/2)

Discounted Cash Flow								
INR crores		FY2035 12 months	FY2036 12 months	FY2037 12 months	FY2038 12 months	FY 2039 12 months	FY2040 12 months	FY2041 7 months
Revenue		460	500	541	586	636	693	416
y-o-y growth		*9.9%*	*8.6%*	*8.2%*	*8.5%*	*8.5%*	*8.9%*	
Routine O&M		(45)	(47)	(49)	(52)	(54)	(57)	(60)
y-o-y growth		*5.0%*	*5.3%*	*5.0%*	*5.0%*	*5.0%*	*5.3%*	
Other Operational expenses		-	-	-	-	-	-	-
Major maintenance O&M		(75)	-	-	-	-	-	-
EBITDA	**[A]**	340	453	491	535	582	636	356
EBITDA margin		74%	91%	91%	91%	91%	92%	86%
Less: Depreciation		(90)	(97)	(105)	(114)	(124)	(135)	(81)
EBIT		250	355	386	420	458	501	275
EBIT margin		54%	71%	71%	72%	72%	72%	66%
Less: Tax on EBIT	[B]	(69)	(109)	(124)	(135)	(146)	(160)	(89)
Change in working capital	[C]	-	-	-	-	-	-	-
Less : Capex	[D]	-	-	-	-	-	-	-
Free cash flows to the firm	**E = [A+B+C+D]**	**271**	**343**	**368**	**400**	**436**	**476**	**266**
Discounting period		8.50	9.50	10.50	11.50	12.50	13.50	14.28
Discount factor	[F]	0.45	0.41	0.37	0.34	0.31	0.28	0.26
Present value of cash flows	**[E*F]**	**122**	**140**	**136**	**135**	**134**	**133**	**69**

Source(s): Management information, KVSL analysis

Valuation conclusion	
INR Crore	
Present value of cash flows	2,043
Present value of release of working capital	(0)
Enterprise Valuation	**2,043**
WACC	**9.90%**

Present value of release in working capital represent working capital of INR 1 Cr released at the end of the concession period.

Please refer to "Summary – WACC" for WACC breakup.

Basis the above and using a WACC of 9.90%, the Enterprise Value of IRBJD, as on 31 March 2026 is INR 2,043 crore.

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IRB Pathankot Amritsar Toll Road Limited

Valuation of Individual SPVs — IRB Pathankot Amritsar Toll Road Limited

Overview

Project details

IRBPA has entered into a concession agreement for four laning for 6.1 kms to 108.5 kms, Pathankot to Amritsar section of NH-15 in the state of Punjab on a design, build, finances, operate and transfer basis. The project stretch is 410 lane kms long with 2 toll plazas. The project is in the state of Punjab and passes through districts of Gurudaspur, Amritsar, Firozpur, Faridkot, Moga, Mukatsar and Bhatinda.

Concession period

IRBPA is required to build, operate and transfer the project highway in accordance with the concession agreement for a period of 20 years commencing from the appointed date.
This project has been extended by 2,068 days according to article 29 and article 34 of concession agreement for various reasons discussed in the next slide. Additionally, IRBPA has sought extension of 518 days due to delay in completion of construction of the project. However, the same is under litigation.

Premium / Grant

There is no premium payable to NHAI as per the concession agreement.
NHAI provided to IRBPA cash support by way of an outright grant of INR 126.9 Crore, in accordance with the provisions of the Concession Agreement.

Source(s): Management information

Highlights

Particulars	Details
Project location	Pathankot – Amritsar
Concessionaire	IRBPA
State	Punjab
Tollable length (kms)	102.4
No. of toll plazas	2
Tolling commencement date	November 2014
Concession agreement date	16-Nov-09
Appointed date	31-Dec-10
Completion certificate date	27-Nov-14
Scheduled end date	30-Dec-30
New scheduled end date	29-Jan-38

Interest held by Trust as at 31 March 2026

Particulars	Stake %
Equity Stake	100%
Debt held by InvIT in IRBPA	INR 1,726 Crore

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Valuation of Individual SPVs — IRB Pathankot Amritsar Toll Road Limited

Key Assumptions

a. Modification in concession period

- As per Clause 29.2 of the concession agreement between NHAI and IRBPA, *"In the event actual average traffic shall have exceeded the target traffic, then for every 1% excess as compared to the target traffic, the concession period shall, subject to payment of concession fee in accordance with this agreement, be increased by 1.5% thereof; provided such increase in concession period shall not in any case exceed 20% of the concession period"*.
- Traffic sampling has been conducted in year 2018 and 2020. Actual Traffic sampled was 27% short than Target Traffic specified in the Concession Agreement. Since the agreement caps the extension to 20%, the maximum allowable extension to concession period was granted, which is 4 years (i.e. 1,460 days). NHAI has approved the extension vide letter dated 5 March 2021.
- Besides the extension mentioned in the agreement, Management presented that the concession period will be increased by 90 days on account of covid-19, 24 days on account of demonetization, and 467 days on account of farmer's protest. Further, Management has sought an additional extension of 27 days due to farmers protest in FY25.
- Additionally, IRBPA has sought further extension of 518 days due to delay in completion of construction of the project on account of reasons not attributable to IRBPA. However, the matter is under litigation as on Valuation date. Management has considered 518 days of extension in concession period.
- However, the matter is under litigation as on Valuation date. To account for uncertainty associated with this assumption, We have considered higher Alpha in WACC calculation for IRBPA.
- Accordingly, the Management has confirmed to us to consider revised concession period is till 29 January 2038. Thus, the explicit period for the current valuation analysis exercise has been considered from 1 April 2026 to 29 January 2038.

b. Revenue

- Revenue for IRBPA is derived from Toll collections for the concession period. Management has provided Traffic volume, toll rates and toll revenue for the forecast period based on the traffic report prepared by independent consultant in May 2026.
- As stated in the Traffic Study Report of IRBPA, elasticity model of growth projection has been considered for traffic forecast. While estimating traffic volume, consultant has considered factors such as GDP growth rate of India, developments along the project road, elasticity value of different vehicle type for computing the traffic growth rate.
- Further, the traffic consultant has also considered positive impact of alignment the IRBPA project road with the proposed Delhi Amritsar Katra Expressway and is expected to be completed in FY2030 leading to higher growth in toll revenue estimate in FY30 and FY31.
- Basis above factors, Traffic is forecast to increase in range of 3-6 per cent annually initially and suitably stepped down in forecast and a one-time increase of additional ~3 per cent in FY30 and FY31.
- Annual revision of toll rate for the forecast period shall be in accordance with National Highway Fee (Determination of Rates and Collection) Rules, 2008 and amendment thereto.
- Additionally, the applicable base rate shall be revised annually on April 1 to reflect 3% fixed increase plus increase in wholesale price index ("WPI") but such revision shall be restricted to 40% of the increase in WPI on overall basis during the concession period. As given in the traffic report, average inflation in WPI from FY2013-25 is 3.13%. Historically WPI inflation in India has been around 5%. Hence a 4.5% annual increase has been considered for the remaining concession period.
- Toll revenue has been considered basis the pessimistic scenario from the traffic report prepared by an independent consultant appointed by the Management.

Source(s): Management information

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Key Assumptions

- As per the NHAI Circular No. 17.7.12/2025 dated 17 October 2025, the Ministry of Road Transport & Highways (MoRTH), vide Gazette Notification No. 388 (E) dated 17 June 2025, has inserted sub-section (3B) in Rule 9 of the National Highways Fee (Determination of Rates and Collection) Rules, 2008, thereby introducing the concept of an Annual Pass with effect from 15 August 2025. MoRTH vide Circular No. H-25011/05/2025-Toll (E-245443) dated 1 September 2025 has notified a fair compensation framework for addressing revenue losses arising out of the Annual Pass in InvIT Projects.
- The impact of Annual Pass has been considered by the traffic consultant in the traffic study while estimating toll revenue for the forecast period.

c. Periodic maintenance & routine maintenance costs

- Operational expenditure includes base operating expenditure, admin expenses, insurance, project management fees and various other expenses. These are broadly categorized as routine maintenance expenses and other operating expenses.
- Periodic maintenance expense, also referred to as major maintenance expenses are incurred to restore the road asset to its original condition or to maintain its current operating standard.
- Upto FY2030, IRBPA has entered into a fixed price Project Implementation Agreement for periodic and routine maintenance with IRB Infrastructure Developers Limited (“Project Manager”).
- Operating expenses for the forecast period post FY2030, routine and periodic maintenance expense and other operating expenses, have been forecast by the Management and reviewed by independent technical consultant to ensure that the estimates are reasonable.
- Other operating expenses are estimated to increase by ~8 per cent in the forecast period.

d. Depreciation & amortization

- Forecasted depreciation on assets has been provided by the Management. Management has forecasted depreciation to increase in line with the increase in revenue.

e. Tax

- The valuation has been prepared by analysing the potential impact of both the existing and the new tax regimes. From an FCFF perspective, the new tax regime may appear to result in a lower effective tax outflow over the projection period and hence we have used the same in our valuation analysis. However, management is still evaluating the option to migrate to the new tax regime at this stage and therefore timing of the transition to new tax regime will remain managements option.

f. Working capital

- The change is WC each year is not material. Therefore, we have only considered the impact of release of working capital at the end of the concession period.

g. Capex

- Since the SPV is already operational, there is no capex to be incurred in the remainder of the concession period.

h. Changes in assumption

- No material change in forecast assumption from previous valuation exercise

Source(s): Management information

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Valuation of Individual SPVs — IRB Pathankot Amritsar Toll Road Limited

Discounted Cash Flows

Discounted Cash Flow													
INR crores		FY2027 12 months	FY2028 12 months	FY2029 12 months	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 10 months
Revenue		183	202	220	248	279	309	334	363	394	430	467	421
y-o-y growth		*11.6%*	*10.4%*	*9.1%*	*12.8%*	*12.6%*	*10.6%*	*8.2%*	*8.6%*	*8.4%*	*9.3%*	*8.5%*	
Routine O&M		(23)	(24)	(25)	(26)	(29)	(30)	(31)	(32)	(33)	(34)	(34)	(36)
y-o-y growth		*12.2%*	*4.0%*	*4.6%*	*4.2%*	*11.4%*	*2.7%*	*2.6%*	*2.6%*	*2.5%*	*5.0%*	*0.0%*	
Other Operational expenses		(6)	(6)	(7)	(7)	-	-	-	-	-	-	-	-
Major maintenance O&M		(8)	-	(15)	(47)	-	-	-	-	-	-	-	-
EBITDA	**[A]**	146	171	173	167	250	279	303	331	361	396	433	385
EBITDA margin		80%	85%	79%	67%	89%	90%	91%	91%	92%	92%	93%	91%
Depreciation		(52)	(58)	(63)	(71)	(80)	(89)	(96)	(104)	(113)	(124)	(134)	(121)
EBIT		93	113	110	96	170	190	207	227	248	272	298	264
EBIT margin		51%	56%	50%	39%	61%	61%	62%	63%	63%	63%	64%	63%
Less: Tax on EBIT	[B]	-	-	-	-	-	-	-	-	(37)	(100)	(109)	(97)
Change in working capital	[C]	-	-	-	-	-	-	-	-	-	-	-	-
Less : Capex	[D]	-	-	-	-	-	-	-	-	-	-	-	-
Free cash flows to the firm	**E = [A+B+C+D]**	**146**	**171**	**173**	**167**	**250**	**279**	**303**	**331**	**324**	**296**	**324**	**288**
Discounting period		0.50	1.50	2.50	3.50	4.50	5.50	6.50	7.50	8.50	9.50	10.50	11.42
Discount factor	[F]	0.95	0.86	0.77	0.70	0.63	0.57	0.51	0.46	0.41	0.37	0.34	0.31
Present value of cash flows	**[E*F]**	**138**	**146**	**133**	**116**	**157**	**158**	**155**	**152**	**134**	**111**	**109**	**88**

Source(s): Management information, KVSL analysis

Valuation conclusion	
INR Crore	
Present value of cash flows	1,599
Present value of release of working capital	9
Enterprise Valuation	**1,608**
WACC	**10.90%**

Present value of release in working capital represent working capital of INR 29 Cr released at the end of the concession period.

Please refer to "Summary – WACC" for WACC breakup.

Basis the above and using a WACC of 10.90%, the Enterprise Value of IRBPA, as on 31 March 2026 is INR 1,608 crore.

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IRB Talegaon Amravati Tollway Limited

Valuation of Individual SPVs — IRB Talegaon Amravati Tollway Limited

Overview

Project details

IRBTA has entered into a concession agreement for four laning for 100 kms to 166.7 kms, Talegaon to Amravati section of NH-6 in the state of Maharashtra on a design, build, finances, operate and transfer (DBFOT) basis. The project stretch is 267 lane kms long with 1 toll plaza. The project is in the state of Maharashtra and passes through cities of Nandgaon Peth, Mozri, Tivsa, and Ramdara.

Concession period

IRBTA is required to build, operate and transfer the project highway in accordance with the concession agreement for a period of 22 years commencing from the appointed date.
This project has been extended by 1,733 days according to article 29 and article 34 of concession agreement for various reasons discussed in the next slide.

Premium / Grant

There is no premium payable to NHAI as per the concession agreement.
NHAI provided to IRBTA cash support by way of an outright grant of INR 216 Crores, in accordance with the provisions of the Concession Agreement. The Grant was disbursed to by way of equity support.

Source(s): Management information

Highlights

Particulars	Details
Project location	Talegaon – Amravati
Concessionaire	IRBTA
State	Maharashtra
Tollable length (kms)	66.7
No. of toll plazas	1
Tolling commencement date	April 2014
Concession agreement date	18-Nov-09
Appointed date	03-Sep-10
Completion certificate date	25-Jul-18
Scheduled end date	02-Sep-32
New scheduled end date	02-Jun-37

Interest held by Trust as at 31 March 2026

Particulars	Stake %
Equity Stake	100%
Debt held by InvIT in IRBTA	INR 493 crore

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Key Assumptions

a. Modification in concession period

- As per Clause 29.2 of the concession agreement between NHAI and IRBTA, *"In the event actual average traffic shall have fallen short of the target traffic, then for every 1% shortfall as compared to the target traffic, the concession period shall, subject to payment of concession fee in accordance with this agreement, be increased by 1.5% thereof; provided such increase in concession period shall not in any case exceed 20% of the concession period"*.
- Traffic sampling has been conducted in year 2019, 2020 and 2021. Actual Traffic sampled was 46% short than Target Traffic specified in the Concession Agreement. Since the agreement caps the extension to 20%, the maximum allowable extension to concession period has been considered, which is 4.4 years (i.e. 1, 606 days). NHAI approval on this extension is yet to be received.
- Besides the extension mentioned in the agreement, Management represented that the concession period will be increased by further 103 days on account of covid-19 and another 24 days on account of demonetization.
- Accordingly, the Management has confirmed to us to consider revised concession period till 2 June 2037. Thus, the explicit period for the current valuation analysis exercise has been considered from 1 April 2026 to 2 June 2037.

b. Revenue

- Revenue for IRBTA is derived from Toll collections for the concession period. Management has provided Traffic volume, toll rates and toll revenue for the forecast period based on the traffic report prepared by independent consultant in May 2026.
- As stated in the Traffic Study Report of IRBPA, elasticity model of growth projection has been considered for traffic forecast. While estimating traffic volume, consultant has considered factors such as GDP growth rate of India, developments along the project road, elasticity value of different vehicle type for computing the traffic growth rate.
- Basis above factors, Traffic is forecast to increase in range of 4.5-6 per cent annually initially and stepped down for future years.
- Additionally, the applicable base rate shall be revised annually on April 1 to reflect 3% fixed increase plus increase in wholesale price index ("WPI") but such revision shall be restricted to 40% of the increase in WPI on overall basis during the concession period. As given in the traffic report, average inflation in WPI from FY2013-25 is 3.13%. Historically WPI inflation in India has been around 5%. Hence a 4.5% annual increase has been considered for the remaining concession period.
- Toll revenue has been considered basis the pessimistic scenario from the traffic report prepared by an independent consultant appointed by the Management.
- As per the NHAI Circular No. 17.7.12/2025 dated 17 October 2025, the Ministry of Road Transport & Highways (MoRTH), vide Gazette Notification No. 388 (E) dated 17 June 2025, has inserted sub-section (3B) in Rule 9 of the National Highways Fee (Determination of Rates and Collection) Rules, 2008, thereby introducing the concept of an Annual Pass with effect from 15 August 2025. MoRTH vide Circular No. H-25011/05/2025-Toll (E-245443) dated 1 September 2025 has notified a fair compensation framework for addressing revenue losses arising out of the Annual Pass in InvIT Projects.
- The impact of Annual Pass has been considered by the traffic consultant in the traffic study while estimating toll revenue for the forecast period.

c. Periodic maintenance & routine maintenance costs

- Operational expenditure includes base operating expenditure, admin expenses, insurance, project management fees and various other expenses. These are broadly categorized as routine maintenance expenses and other operating expenses.
- Periodic maintenance expense, also referred to as major maintenance expenses are incurred to restore the road asset to its original condition or to maintain its current operating standard.
- Upto FY2030, IRBTA has entered into a fixed price Project Implementation Agreement ("PIA") for periodic and routine maintenance with IRB Infrastructure Developers Limited ("Project Manager").

Source(s): Management information

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Key Assumptions

- Operating expenses for the forecast period post FY2030, routine and periodic maintenance expense and other operating expenses, have been forecast by the Management and reviewed by independent technical consultant to ensure that the estimates are reasonable..
- Other operating expenses are estimated to increase by ~8 per cent in the forecast period.

d. Depreciation & Amortization

- Forecasted depreciation on assets has been provided by the Management. Management has forecasted depreciation to increase in line with the increase in revenue.

e. Tax

- The valuation has been prepared by analysing the potential impact of both the existing and the new tax regimes. From an FCFF perspective, the new tax regime may appear to result in a lower effective tax outflow over the projection period and hence we have used the same in our valuation analysis. However, management is still evaluating the option to migrate to the new tax regime at this stage and therefore timing of the transition to new tax regime will remain managements option.

f. Working capital

- The change is WC each year is not material. Therefore, we have only considered the impact of release of working capital at the end of the concession period.

g. Capex

- Since the SPV is already operational, there is no capex to be incurred in the remainder of the concession period.

h. Changes in assumption

- In the previous valuation exercise IRBTA was expected to continue to pay tax under MAT regime for balance concession period. However due to recent changes in Finance Bill 2026, no credit shall be available for set off for any MAT tax paid from FY27 and onwards. Based on the discussion with Management, from an FCFF perspective, the new tax regime may appear to result in a lower effective tax outflow over the projection period and hence we have used the same in our current valuation analysis.

Source(s): Management information

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Valuation of Individual SPVs — IRB Talegaon Amravati Tollway Limited

Discounted Cash Flows (1/1)

Discounted Cash Flow													
INR crores		FY2027 12 months	FY2028 12 months	FY2029 12 months	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 2 months
Revenue		107	118	130	143	157	174	190	210	231	253	277	52
y-o-y growth		*11.0%*	*10.6%*	*9.8%*	*10.7%*	*9.8%*	*10.4%*	*9.4%*	*10.3%*	*10.0%*	*9.5%*	*9.5%*	
Routine O&M		(14)	(14)	(15)	(16)	(27)	(28)	(29)	(31)	(32)	(34)	(36)	(38)
y-o-y growth		*4.3%*	*4.3%*	*4.2%*	*4.2%*	*71.4%*	*5.0%*	*5.0%*	*5.0%*	*5.0%*	*5.2%*	*5.0%*	
Other Operational expenses		(4)	(4)	(4)	(5)	-	-	-	-	-	-	-	
Major maintenance O&M		-	(34)	(42)	(5)	-	-	-	(49)	(58)	-	-	-
EBITDA	**[A]**	89	66	69	118	131	146	161	130	141	218	241	15
EBITDA margin		84%	56%	53%	82%	83%	84%	85%	62%	61%	86%	87%	28%
Depreciation		(26)	(29)	(32)	(36)	(39)	(43)	(47)	(52)	(57)	(63)	(69)	(13)
EBIT		63	37	36	82	92	103	113	77	83	156	172	2
EBIT margin		59%	31%	28%	57%	58%	59%	60%	37%	36%	62%	62%	3%
Less: Tax on EBIT	[B]	-	-	-	-	-	-	(31)	(24)	(27)	(46)	(52)	(3)
Change in working capital	[C]	-	-	-	-	-	-	-	-	-	-	-	-
Less : Capex	[D]	-	-	-	-	-	-	-	-	-	-	-	-
Free cash flows to the firm	**E = [A+B+C+D]**	**89**	**66**	**69**	**118**	**131**	**146**	**130**	**105**	**114**	**172**	**189**	**12**
Discounting period		0.50	1.50	2.50	3.50	4.50	5.50	6.50	7.50	8.50	9.50	10.50	11.09
Discount factor	[F]	0.95	0.87	0.79	0.72	0.65	0.59	0.54	0.49	0.45	0.41	0.37	0.35
Present value of cash flows	**[E*F]**	**85**	**57**	**54**	**85**	**85**	**87**	**70**	**52**	**51**	**70**	**70**	**4**

Source(s): Management information, KVSL analysis

Valuation conclusion	
INR Crore	
Present value of cash flows	770
Present value of release of working capital	1
Enterprise Valuation	**772**

WACC	**9.90%**

Present value of release in working capital represent working capital of INR 4 Cr released at the end of the concession period.

Please refer to "Summary – WACC" for WACC breakup.

Basis the above and using a WACC of 9.90%, the Enterprise Value of IRBTA, as on 31 March 2026 is INR 772 crore

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IRB Tumkur Chitradurga Tollway Limited

Valuation of Individual SPVs — IRB Tumkur Chitradurga Tollway Limited

Overview

Project details

IRBTC has entered into a concession agreement for six laning for 75 kms to 189 kms, Tumkur to Chitradurga section of NH-4 in the state of Karnataka on a design, build, finances, operate and transfer (DBFOT) basis. The project stretch is 684 lane kms long with 2 toll plazas. The project is in the state of Karnataka and passes through cities of Tumkur, Sira, Hiriyur and Chitradurga.

Concession period

IRBTC is required to build, operate and transfer the project highway in accordance with the concession agreement for a period of 26 years commencing from the appointed date.
This project has been extended by 2,034 days according to article 29 and article 34 of concession agreement for various reasons discussed in the next slide.

Premium

Concession agreement required IRBTC to pay NHAI a premium of INR 140.4 Cr in the 1st year and due in each subsequent year with an 5% increment each year.
Subsequently, IRBTC has entered into a supplementary agreement with the NHAI dated June 6, 2014, in relation to the deferment of premium payable by IRBTC. This deferment is limited to IRBTC's actual revenue shortfall after meeting the debt obligation and operation expenditure. The deferred portion also carries an interest rate of 2% above the RBI bank rate.

Highlights

Particulars	Details
Project location	Tumkur – Chitradurga
Concessionaire	IRBTC
State	Karnataka
Tollable length (kms)	114.0
No. of toll plazas	2
Tolling commencement date	June 2011
Concession agreement date	16-Aug-10
Appointed date	04-Jun-11
Completion certificate date	04-Jul-14
Scheduled end date	03-Jun-37
New scheduled end date	29-Dec-42

Interest held by Trust as at 31 March 2026

Particulars	Stake %
Equity Stake	100%
Debt held by InvIT in IRBTC	INR 1,256 Crore

Source(s): Management information

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Valuation of Individual SPVs — IRB Tumkur Chitradurga Tollway Limited

Key Assumptions

a. Modification in concession period

- As per Clause 29.2 of the concession agreement between NHAI and IRBTC, *"In the event actual average traffic shall have fallen short of the target traffic, then for every 1% shortfall as compared to the target traffic, the concession period shall, subject to payment of concession fee in accordance with this agreement, be increased by 1.5% thereof; provided such increase in concession period shall not in any case exceed 20% of the concession period"*.
- Traffic sampling has been conducted in year 2019, 2020 and 2021. Actual Traffic sampled was 25% short than Target Traffic specified in the Concession Agreement. Since the agreement caps the extension to 20%, the maximum allowable extension to concession period has been considered, which is 5.2 years (i.e. 1,899 days). NHAI Approval on this extension is yet to be received.
- Besides the extension mentioned in the agreement, Management represented that the concession period will be increased by further 111 days on account of covid-19 and further 24 days on account of demonetization.
- Accordingly, the Management has confirmed to us to consider revised concession period till 29 December 2042. Thus, the explicit period for the current valuation analysis exercise has been considered from 1 April 2026 to 29 December 2042.

b. Revenue

- Revenue for IRBTC is derived from Toll collections for the concession period. Management has provided Traffic volume, toll rates and toll revenue for the forecast period based on the traffic report prepared by independent consultant in May 2026.
- As stated in the Traffic Study Report of IRBTC, elasticity model of growth projection has been considered for traffic forecast. While estimating traffic volume, consultant has considered factors such as GDP growth rate of India, developments along the project road, elasticity value of different vehicle type for computing the traffic growth rate.
- Basis above factors, Traffic is forecast to increase in range of 4-5 per cent annually initially and stepped down for future years.
- Additionally, the applicable base rate shall be revised annually on April 1 to reflect 3% fixed increase plus increase in wholesale price index ("WPI") but such revision shall be restricted to 40% of the increase in WPI on overall basis during the concession period. As given in the traffic report, average inflation in WPI from FY2013-25 is 3.13%. Historically WPI inflation in India has been around 5%. Hence a 4.5% annual increase has been considered for the remaining concession period.
- Toll revenue has been considered basis the pessimistic scenario from the traffic report prepared by an independent consultant appointed by the Management. Further, IRBTC also collects toll for an additional 13 km stretch. The revenue pertaining to this is transferred to NHAI after deducting 3 per cent as collection charges. Therefore, this additional toll is a pass through cashflow and collection charges are considered other operating income in our analysis which is forming part of revenue.
- As per the NHAI Circular No. 17.7.12/2025 dated 17 October 2025, the Ministry of Road Transport & Highways (MoRTH), vide Gazette Notification No. 388 (E) dated 17 June 2025, has inserted sub-section (3B) in Rule 9 of the National Highways Fee (Determination of Rates and Collection) Rules, 2008, thereby introducing the concept of an Annual Pass with effect from 15 August 2025. MoRTH vide Circular No. H-25011/05/2025-Toll (E-245443) dated 1 September 2025 has notified a fair compensation framework for addressing revenue losses arising out of the Annual Pass in InvIT Projects.
- The impact of Annual Pass has been considered by the traffic consultant in the traffic study while estimating toll revenue for the forecast period.

c. Premium payable

- The premium payable to NHAI is considered and corroborated from the concession agreement as given by the Management.

Source(s): Management information

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Key Assumptions

d. Periodic maintenance & routine maintenance costs

- Operational expenditure includes base operating expenditure, admin expenses, insurance, project management fees and various other expenses. These are broadly categorized as routine maintenance expenses and other operating expenses.
- Periodic maintenance expense, also referred to as major maintenance expenses are incurred to restore the road asset to its original condition or to maintain its current operating standard.
- Upto FY2030, IRBTC has entered into a fixed price Project Implementation Agreement ("PIA") for periodic and routine maintenance with IRB Infrastructure Developers Limited ("Project Manager").
- Operating expenses for the forecast period post FY2030, routine and periodic maintenance expense and other operating expenses, have been forecast by the Management and reviewed by independent technical consultant to ensure that the estimates are reasonable.
- Other operating expenses are estimated to increase by ~6 per cent in the forecast period.

e. Depreciation & Amortization

- Forecasted depreciation on assets has been provided by the Management. Management has forecasted depreciation to increase in line with the increase in revenue.

f. Tax

- The valuation has been prepared by analysing the potential impact of both the existing and the new tax regimes. From an FCFF perspective, the new tax regime may appear to result in a lower effective tax outflow over the projection period and hence we have used the same in our valuation analysis. However, management is still evaluating the option to migrate to the new tax regime at this stage and therefore timing of the transition to new tax regime will remain managements option.

g. Working capital

- The change is WC each year is not material. Therefore, we have only considered the impact of release of working capital at the end of the concession period.

Source(s): Management information

h. Capex

- Since the SPV is already operational, there is no capex to be incurred in the remainder of the concession

i. Deferment of Premium

- Due to inadequate cashflows, IRBTC had made an application under Scheme of Deferment Premium issued by Ministry of Road and Transport Highways vide letter No. NH-37012/22/2011-H dated 04 March 2014. The application was granted on 06 June 2014. Accordingly, premium deferment was granted for a period of 10 years starting from FY2015 as per the schedule given in the adjacent table:
- As per the terms of the premium deferment approval letter, deferred premium has been allowed to be deferred over concession period at an interest rate at 2% above the Bank Rate.
- As on Valuation Date, Management has represented that IRBTC has INR 768 cr outstanding as Deferred premium (including accumulated interest of INR 363 cr on the deferred premium).
- Given this understanding, We have relied on Management assumptions to consider payment of deferred premium to the extent of available cashflows and Interest on deferred premium has been considered at 7.75% for the forecast period.

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Key Assumptions

Year	Premium payment as orginally contracted	Deferment of Premium granted	Revised premium payable under this scheme
INR Crore			
2014-15	162.53	81.45	81.08
2015-16	170.66	67.80	102.86
2016-17	179.19	52.93	126.26
2017-18	188.15	36.20	151.95
2018-19	197.56	59.32	138.24
2019-20	207.43	-	207.43
2020-21	217.81	-	217.81
2021-22	228.70	22.94	205.76
2022-23	240.13	16.29	223.84
2023-24	252.14	68.48	183.66

j. Changes in assumption

- No material change in forecast assumption from previous valuation exercise

Source(s): Management information

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Valuation of Individual SPVs — IRB Tumkur Chitradurga Tollway Limited

Discounted Cash Flows (1/2)

Discounted Cash Flow									
INR crores		FY2027 12 months	FY2028 12 months	FY2029 12 months	FY2030 12 months	FY2031 12 months	FY2032 12 months	FY2033 12 months	FY2034 12 months
Revenue		477	529	576	636	698	771	842	932
y-o-y growth		*10.4%*	*10.9%*	*8.8%*	*10.5%*	*9.6%*	*10.6%*	*9.1%*	*10.7%*
Routine O&M		(3)	(3)	(3)	(3)	(18)	(19)	(20)	(21)
y-o-y growth		*5.6%*	*4.1%*	*2.1%*	*-2.9%*	*445.5%*	*5.6%*	*5.3%*	*5.0%*
Other Operational expenses		(9)	(9)	(10)	(11)	-	-	-	-
Major maintenance O&M		-	-	-	(55)	-	-	-	-
EBITDA	**[A]**	465	517	562	567	680	752	822	911
EBITDA margin		97%	98%	98%	89%	97%	98%	98%	98%
Depreciation		(166)	(184)	(200)	(221)	(243)	(268)	(293)	(324)
EBIT		299	332	362	345	437	484	529	587
EBIT margin		63%	63%	63%	54%	63%	63%	63%	63%
Less: Tax on EBIT	[B]	-	-	-	-	-	-	-	(0)
Change in working capital	[C]	-	-	-	-	-	-	-	-
Less : Capex	[D]	-	-	-	-	-	-	-	-
Premium Payment to NHAI		(292)	(395)	(441)	(445)	(564)	(651)	(673)	(411)
Free cash flows to the firm F = [A+B+C+D+E]		**174**	**122**	**122**	**122**	**115**	**101**	**149**	**500**
Discounting period		0.50	1.50	2.50	3.50	4.50	5.50	6.50	7.50
Discount factor	[G]	0.95	0.86	0.78	0.71	0.64	0.58	0.53	0.48
Present value of cash flows	**[F*G]**	**165**	**105**	**95**	**86**	**74**	**59**	**79**	**238**

Source(s): Management information, KVSL analysis

- Premium payment to NHAI presented in the above table is inclusive of Premium payable as per Concession agreement, Deferred premium forecast to be paid during the year and interest on deferred premium to be paid.
- EBITDA calculated in the above table is excluding Premium and interest on Deferred Premium.

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Valuation of Individual SPVs — IRB Tumkur Chitradurga Tollway Limited

Discounted Cash Flows (2/2)

Discounted Cash Flow										
INR crores		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 9 months
Revenue		1,021	1,117	1,218	1,335	1,460	1,606	1,738	1,896	1,545
y-o-y growth		*9.6%*	*9.4%*	*9.0%*	*9.6%*	*9.4%*	*10.0%*	*8.2%*	*9.1%*	
Routine O&M		(22)	(23)	(25)	(26)	(28)	(29)	(30)	(32)	(25)
y-o-y growth		*5.0%*	*4.3%*	*8.7%*	*5.0%*	*5.0%*	*5.3%*	*4.7%*	*5.0%*	
Other Operational expenses		-	-	-	-	-	-	-	-	-
Major maintenance O&M		(89)	-	-	-	-	-	-	-	-
EBITDA	**[A]**	910	1,094	1,193	1,308	1,433	1,577	1,708	1,864	1,520
EBITDA margin		89%	98%	98%	98%	98%	98%	98%	98%	98%
Depreciation		(355)	(389)	(424)	(880)	(1,105)	(1,168)	(1,228)	(1,295)	(1,023)
EBIT		555	706	769	428	327	409	480	569	497
EBIT margin		54%	63%	63%	32%	22%	25%	28%	30%	32%
Less: Tax on EBIT	[B]	(108)	(149)	(168)	(201)	(229)	(258)	(284)	(316)	(262)
Change in working capital	[C]	-	-	-	-	-	-	-	-	-
Less : Capex	[D]	-	-	-	-	-	-	-	-	-
Premium Payment to NHAI		(431)	(453)	(475)	(499)	(524)	(550)	(578)	(607)	(478)
Free cash flows to the firm F = [A+B+C+D+E]		**370**	**492**	**549**	**608**	**680**	**768**	**846**	**941**	**780**
Discounting period		8.50	9.50	10.50	11.50	12.50	13.50	14.50	15.50	16.37
Discount factor	[G]	0.43	0.39	0.35	0.32	0.29	0.26	0.24	0.22	0.20
Present value of cash flows	**[F*G]**	**160**	**192**	**194**	**195**	**197**	**202**	**201**	**203**	**154**

- Premium payment to NHAI presented in the above table is inclusive of Premium payable as per Concession agreement, Deferred premium forecast to be paid during the year and interest on deferred premium to be paid.
- EBITDA calculated in the above table is excluding Premium and interest on Deferred Premium.

Valuation conclusion	
INR Crore	
Present value of cash flows	2,599
Present value of release of working capital	(12)
Enterprise Valuation	**2,587**
WACC	**10.40%**

Present value of release in working capital represent working capital of negative INR 62 Cr released at the end of the concession period.

Please refer to "Summary – WACC" for WACC breakup.

Basis the above and using a WACC of 10.40%, the Enterprise Value of IRBTC, as on 31 March 2026 is INR 2,587 crore.

Source(s): Management information, KVSL analysis

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M.V.R. Infrastructure and Tollways Limited

Valuation of Individual SPVs — M.V.R. Infrastructure and Tollways Limited

Overview

Project details

MVR has entered into a concession agreement for (i) design, construction, development, finance, operation and maintenance of km 207.05 (Salem) to km 248.625 (start of proposed flyover on Namakkal Bypass) and (ii) improvement, operation and maintenance of Km 199.2 (start of Salem Bypass on NH-7) to km 207.050 (Salem) on NH-7 in the State of Tamil Nadu under North-South Corridor (NHDP Phase II) on build, operate and transfer (BOT) basis (iii) improvement, operations and maintenance of MVR Additional Highway

Concession period

MVR is required to build, operate and transfer the project highway in accordance with the concession agreement for a period of 20 years commencing from the appointed date.

Premium / Grant

MVR is required to provide to NHAI cash payment equal to INR 46 Crores at net present value at the rate of 10% in accordance with the provisions of the Concession Agreement.
As confirmed by Management 100% of the payment for negative grant of INR 126.3 cr has been made and no premium or grant is to be payable on or after Valuation Date.

Source(s): Management information

Highlights

Particulars	Details
Project location	Salem – Namakkal
Concessionaire	MVR
State	Tamil Nadu
Tollable length (kms)	68.6
No. of toll plazas	1
Tolling commencement date	August 2009
Concession agreement date	16-Feb-06
Appointed date	14-Aug-06
Completion certificate date	06-Aug-09
Scheduled end date	14-Aug-26
New scheduled end date	14-Aug-26

Interest held by Trust as at 31 March 2026

Particulars	Stake %
Equity Stake	100%
Debt held by InvIT in MVR	Nil

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Valuation of Individual SPVs — M.V.R. Infrastructure and Tollways Limited

Key Assumptions

a. Modification in concession period

- The concession agreement does not have any provisions regarding the extension or reduction of the concession period.
- Accordingly, the concession period considered for the valuation exercise is 14 August 2026. Thus, the explicit period for the current valuation analysis exercise has been considered from 1 April 2026 to 14 August 2026.

b. Revenue

- Revenue for MVR is derived from Toll collections for the concession period. Management has provided Traffic volume, toll rates and toll revenue for the forecast period based on the traffic report prepared by independent consultant in May 2026.
- As stated in the Traffic Study Report of MVR, elasticity model of growth projection has been considered for traffic forecast. While estimating traffic volume, consultant has considered factors such as GDP growth rate of India, developments along the project road, elasticity value of different vehicle type for computing the traffic growth rate.
- Basis above factors, Traffic is forecast to increase in range of 3-4 per cent for FY27.
- Traffic volume for the forecast period has been considered based on the traffic report prepared by an independent consultant in May 2026.
- FY27 is last year of concession and hence no annual revision of toll rate for the forecast period has been considered.
- Pursuant to the terms of the Concession Agreement, consequent to MVR being handed over the Additional Highway along with the revised fees notification, MVR is required to pay 80.43% of the additional proportional revenue per year for that year to NHAI for the entire remaining operations period.
- The additional proportional revenue per year is required to be computed as the MVR Additional Highway length multiplied by the total toll collection of MVR for that accounting year divided by the MVR Project Highway length (including MVR Additional Highway length).
- Toll revenue has been considered basis the pessimistic scenario from the traffic report prepared by an independent consultant appointed by the Management net of NHAI share in revenue for additional highway.
- As per the NHAI Circular No. 17.7.12/2025 dated 17 October 2025, the Ministry of Road Transport & Highways (MoRTH), vide Gazette Notification No. 388 (E) dated 17 June 2025, has inserted sub-section (3B) in Rule 9 of the National Highways Fee (Determination of Rates and Collection) Rules, 2008, thereby introducing the concept of an Annual Pass with effect from 15 August 2025. MoRTH vide Circular No. H-25011/05/2025-Toll (E-245443) dated 1 September 2025 has notified a fair compensation framework for addressing revenue losses arising out of the Annual Pass in InvIT Projects.
- The impact of Annual Pass has been considered by the traffic consultant in the traffic study while estimating toll revenue for the forecast period.

c. Operating Expenses

- Routine maintenance and other operating expenses are based fixed price Project implementation Agreement with IRB Infrastructure Developers Limited till FY2027.

d. Depreciation & Amortization

- Forecasted depreciation on assets has been provided by the Management. Management has forecasted depreciation to increase in line with the increase in revenue.

Source(s): Management information

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Key Assumptions

e. Tax

- Management represented that MVR is eligible to claim Tax benefit under section 80IA of Income Tax,1961 in FY2027 and the same has been considered while calculating forecast tax outflows along with any carried forward business loss and unabsorbed depreciation. Based on the current forecast, the SPV will pay tax under MAT for the balance of the concession period.

f. Working capital

- The change is WC each year is not material. Therefore, we have only considered the impact of release of working capital at the end of the concession period.

g. Capex

- Since the SPV is already operational, there is no capex to be incurred in the remainder of the concession period.

h. Changes in assumption

- MVR project is nearing completion and the Management is yet to receive approval on extension of concession period. Hence, the extension has been eliminated from for the purpose of Valuation.

Source(s): Management information

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Valuation of Individual SPVs — M.V.R. Infrastructure and Tollways Limited

Discounted Cash Flows (1/1)

Discounted Cash Flow		
INR crores		FY2027 4 months
Revenue		57
y-o-y growth		
Routine O&M		(7)
y-o-y growth		
Other Operational expenses		(1)
y-o-y growth		
EBITDA	[A]	49
EBITDA margin		87%
Depreciation		(23)
EBIT		26
EBIT margin		45%
Less: Tax on EBIT	[B]	(4)
Change in working capital	[C]	-
Less : Capex	[D]	-
Free cash flows to the firm	**E = [A+B+C+D]**	**45**
Discounting period		0.18
Discount factor	[F]	0.98
Present value of cash flows	**[E*F]**	**44**

Source(s): Management information, KVSL analysis

Valuation conclusion	
INR Crore	
Present value of cash flows	44
Present value of release of working capital	(12)
Enterprise Valuation	**32**

WACC	**9.90%**

Present value of release in working capital represent working capital of negative INR 12 Cr released at the end of the concession period.

Please refer to "Summary – WACC" for WACC breakup.

Basis the above and using a WACC of 9.90%, the Enterprise Value of MVR, as on 31 March 2026 is INR 32 crore.

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VK1 Expressway Limited

Valuation of Individual SPVs — VK1 Expressway Limited

Overview

Project details

VK1 has entered into a concession agreement for construction of eight lane Vadodara kim Expressway from km 355 to 378.7, Padara to Vadodara section of NH-8 in the state of Gujarat on a Hybrid Annuity Mode (HAM) basis.

Concession period

VK1 has to construct; operate, maintain, modify, repair or otherwise make improvements to the project highway in accordance with the concession agreement for a construction period of 730 days and operation period of 15 years post completion of construction.

Annuity

40% of the Adjusted Bid Project has been paid in form of equity support during construction. The remaining Adjusted Bid Project Cost shall be payable in 30 bi-annual installments and the 1st annuity was due on 29th September 2022.

Highlights

Particulars	Details
Project location	Padra – Vadodara
Concessionaire	VK1
State	Gujarat
Total length (kms)	208.4 lane kms
No. of lanes	8
Concession agreement date	09-May-18
Completion certificate date	30-Aug-22
Construction Period	730 days
Operational Period	15 years
Annuity Details	30 annuities over 15 years
Bid Project Cost	INR 2,043 Cr
Adjusted Bid Project Cost	INR 2,331 Cr

Interest held by Trust as at 31 March 2026

Particulars	Stake %
Equity Stake	100%
Debt held by InvIT in VK1	INR 773 crore

Source(s): Management information

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Valuation of Individual SPVs — VK1 Expressway Limited

Key Assumptions

a. Payment of bid project cost

- As per Clause 23 of the concession agreement;
  - **a) 40% of the bid project cost** (Also known as "NHAI support") adjusted for price index multiple shall be due and payable to the Concessionaire in 5 equal instalments of 8% each during the **Construction period on milestone basis**. Construction of the highway has been completed and the COD has been achieved hence, the entire NHAI support has been paid to VK1.
  - b) The balance bid project cost shall be due and payable in 30 biannual instalments from 180th day of COD ("Annuity payments") during the 15 years of **Operation period**. Each such annuity is a **fixed percentage** of the completion cost remaining to be paid on COD.

b. Revenue

- Revenue forecast for VK1 comprises of Annuity receivable from NHAI, interest on annuity and O&M Support receivable from NHAI.
- As per information provided by the Management, we understand that VK1 has received payments for 7 annuity installments and 8th installment (including interest) was due on 29 March 2026 and considered due for the valuation exercise.
- Balance annuity of INR 1,052 cr (excluding GST) is forecast to be received over next 11 years in 22 bi-annual installments.

c. Interest on Annuity

- Each of the biannual instalments payable above shall be paid along with interest at a rate of applicable bank rate plus 3 per cent. Thus, interest on annuity has been considered at 8.50 per cent (5.50 per cent Bank Rate plus 3 per cent).

d. Periodic and routine maintenance payments by Authority

O&M expenses shall be borne by NHAI and a lump sum financial support in the form of biannual payments shall be due and payable by NHAI to VK1. This shall be computed on INR 2.7 Cr. Thus, O&M payments by Authority have been considered accordingly by adjusting for price index multiple by 5 per cent p.a..

e. O&M Cots

- O&M cost is based on the fixed price Project Implementation Agreement with IRB Infrastructure Developers Limited till FY2037.

f. Depreciation & amortisation

- Amortization has been considered based on intangible asset model where the capital cost net of NHAI support is depreciated at 25 per cent over the operational period.

g. Tax

- Management represented that the VK1 has adopted the new tax regime. Thus, tax outflows for the forecast have been calculated based on the new regime of income tax. Carried forward business loss and unabsorbed depreciation if any has been considered while calculating tax outflows.

h. Capex

- Construction of the highway has been completed. Hence, no major capex cost needs to be incurred.

i. Working capital

- The change is WC in first three forecast years represent utilization of GST credit against GST payable on annuity receipts. Thereafter, we have only considered the impact of release of working capital at the end of the concession period.

j. Changes in assumption

- Interest on Annuity has reduced from 8.75 per cent to 8.5 per cent due to reduction in Bank Rate

Source: Management Information

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Valuation of Individual SPVs — VK1 Expressway Limited

Discounted Cash Flows (1/2)

Discounted cash flow												
FYE 31 March		**2027**	**2027**	**2028**	**2028**	**2029**	**2029**	**2030**	**2030**	**2031**	**2031**	**2032**
Date		**30-Sep-26**	**31-Mar-27**	**30-Sep-27**	**31-Mar-28**	**30-Sep-28**	**31-Mar-29**	**30-Sep-29**	**31-Mar-30**	**30-Sep-30**	**31-Mar-31**	**30-Sep-31**
INR Crore		**6 months**	**6 months**	**6 months**	**6 months**	**6 months**	**6 months**	**6 months**	**6 months**	**6 months**	**6 months**	**6 months**
Revenue		85	85	84	84	83	82	82	81	80	80	79
y-o-y growth		*(0.6)%*	*(0.6)%*	*(0.7)%*	*(0.6)%*	*(0.7)%*	*(0.7)%*	*(0.8)%*	*(0.7)%*	*(0.8)%*	*(0.9)%*	*(0.8)%*
O&M Expense		(9)	(9)	(7)	(7)	(6)	(6)	(6)	(6)	(6)	(6)	(8)
y-o-y growth		*40.4%*	*-*	*(23.3)%*	*-*	*(12.7)%*	*-*	*3.5%*	*-*	*3.3%*	*-*	*22.4%*
EBITDA	**[A]**	**77**	**76**	**77**	**77**	**77**	**77**	**76**	**75**	**74**	**74**	**71**
EBITDA margin (%)		*89.8%*	*89.8%*	*92.1%*	*92.0%*	*93.0%*	*93.0%*	*92.6%*	*92.6%*	*92.3%*	*92.2%*	*90.4%*
Less: Depreciation		-	-	-	-	-	-	-	-	-	-	-
EBIT		**77**	**76**	**77**	**77**	**77**	**77**	**76**	**75**	**74**	**74**	**71**
EBIT margin (%)		*89.8%*	*89.8%*	*92.1%*	*92.0%*	*93.0%*	*93.0%*	*92.6%*	*92.6%*	*92.3%*	*92.2%*	*90.4%*
Less: Taxes on EBIT	[B]	-	-	-	-	-	-	-	-	(11)	(11)	(15)
(Increase)/decrease in net working capital	[C]	3	-	-	-	-	-	-	-	-	-	-
Less: Capital expenditure	[D]	-	-	-	-	-	-	-	-	-	-	-
Free cash flow to the firm [E] = [A] + [B] + [C] + [D]		**80**	**76**	**77**	**77**	**77**	**77**	**76**	**75**	**63**	**62**	**57**
Period factor - mid year discounting		0.50	1.00	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50
Discount factor - mid year discounting	[F]	0.96	0.93	0.89	0.86	0.83	0.80	0.77	0.74	0.72	0.69	0.664
Present value of cash flow to the firm [E] * [F]		**77**	**71**	**69**	**66**	**64**	**61**	**58**	**56**	**45**	**43**	**38**

Source(s): Management information, KVSL analysis

Since the annuities are paid semi annually, we have considered half yearly cash flows for discounting.

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Valuation of Individual SPVs — VK1 Expressway Limited

Discounted Cash Flows (2/2)

Discounted cash flow												
FYE 31 March		**2032**	**2033**	**2033**	**2034**	**2034**	**2035**	**2035**	**2036**	**2036**	**2037**	**2037**
Date		**31-Mar-32**	**30-Sep-32**	**31-Mar-33**	**30-Sep-33**	**31-Mar-34**	**30-Sep-34**	**31-Mar-35**	**30-Sep-35**	**31-Mar-36**	**30-Sep-36**	**31-Mar-37**
INR Crore		**6 months**	**6 months**	**6 months**	**6 months**	**6 months**	**6 months**	**6 months**	**6 months**	**6 months**	**6 months**	**6 months**
Revenue		78	78	77	76	75	74	71	71	72	70	67
y-o-y growth		*(0.9)%*	*(1.0)%*	*(1.1)%*	*(1.0)%*	*(1.1)%*	*(2.1)%*	*(3.4)%*	*(0.1)%*	*1.2%*	*(3.2)%*	*(4.1)%*
O&M Expense		(8)	(10)	(10)	(8)	(8)	(7)	(7)	(7)	(7)	(4)	(4)
y-o-y growth		*-*	*36.4%*	*-*	*(22.1)%*	*-*	*(13.2)%*	*-*	*2.8%*	*-*	*(40.0)%*	*-*
EBITDA	**[A]**	**71**	**67**	**66**	**68**	**67**	**67**	**64**	**64**	**65**	**65**	**62**
EBITDA margin (%)		*90.3%*	*86.7%*	*86.5%*	*89.4%*	*89.3%*	*90.5%*	*90.1%*	*89.8%*	*90.0%*	*93.8%*	*93.5%*
Less: Depreciation		-	-	-	-	-	-	-	-	-	-	-
EBIT		**71**	**67**	**66**	**68**	**67**	**67**	**64**	**64**	**65**	**65**	**62**
EBIT margin (%)		*90.3%*	*86.7%*	*86.5%*	*89.4%*	*89.3%*	*90.5%*	*90.1%*	*89.8%*	*90.0%*	*93.8%*	*93.5%*
Less: Taxes on EBIT	[B]	(15)	(14)	(14)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)
(Increase)/decrease in net working capital	[C]	-	-	-	-	-	-	-	-	-	-	
Less: Capital expenditure	[D]	-	-	-	-	-	-	-	-	-	-	-
Free cash flow to the firm [E] = [A] + [B] + [C] + [D]		**56**	**53**	**52**	**53**	**52**	**51**	**49**	**49**	**49**	**50**	**47**
Period factor - mid year discounting		6.00	6.50	7.00	7.50	8.00	8.50	9.00	9.50	10.00	10.50	11.00
Discount factor - mid year discounting	[F]	0.640	0.616	0.594	0.572	0.551	0.531	0.512	0.493	0.475	0.458	0.441
Present value of cash flow to the firm [E] * [F]		**36**	**33**	**31**	**30**	**29**	**27**	**25**	**24**	**24**	**23**	**21**

Summary of value	
INR Crore	
Primary value	950
Annuity receivable - March 26	103
PV of Working Capital	0
Enterprise value	**1,053**

WACC	**7.73%**

Present value of release in working capital represent working capital of INR 0.4 Cr released at the end of the concession period.

Please refer "Summary – WACC" for WACC breakup.

Basis the above and using a WACC of 7.73%, the Enterprise Value of VK1, as on 31 March 2026 is INR 1,053 crore.

Source(s): Management information, KVSL analysis

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VM7 Expressway Private Limited

Valuation of Individual SPVs — VM7 Expressway Private Limited

Overview

Project details

VM7 has entered into a concession agreement for construction of eight lane Vadodara Mumbai Expressway from 190 km to 217.5 km, Gandeva to Ena section in Gujrat on a Hybrid Annuity Mode (HAM) basis.

Concession period

VM7 has to construct; operate, maintain, modify, repair or otherwise make improvements to the project highway in accordance with the concession agreement for a construction period of 730 days and operation period of 15 years post completion of construction.

Annuity

40% of the Adjusted Bid Project has been paid in form of equity support during construction. The remaining Adjusted Bid Project Cost shall be payable in 30 bi-annual installments, and the 1st annuity was due on 27th November 2025.

Highlights

Particulars	Details
Project location	Gandeva – Ena
Concessionaire	VM7
State	Gujarat
Total length (kms)	220.0 lane kms
No. of lanes	8
Concession agreement date	30-June-24
Provisional Completion date	31-May-25
Construction Period	730 days
Operational Period	15 years
Annuity Details	30 annuities over 15 years
Bid Project Cost	INR 1,755 Cr
Adjusted Bid Project Cost	INR 2,061 Cr

Interest held by Trust as at 31 March 2026

Particulars	Stake %
Equity Stake	100%
Debt held by InvIT in VM7	INR 1,151 crore

Source(s): Management information

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Valuation of Individual SPVs — VM7 Expressway Private Limited

Key Assumptions

a. Payment of bid project cost

- As per Clause 23 of the concession agreement;
  - **a) 40% of the bid project cost** (Also known as "NHAI support") adjusted for price index multiple shall be due and payable to the Concessionaire in 5 equal instalments of 8% each during the **Construction period on milestone basis**. Construction of the highway has been completed and the COD has been achieved hence, the entire NHAI support has been paid to VM7.
  - b) The balance bid project cost shall be due and payable in 30 biannual instalments from 180th day of COD ("Annuity payments") during the 15 years of **Operation period**. Each such annuity is a **fixed percentage** of the completion cost remaining to be paid on COD.

b. Revenue

- Revenue forecast for VM7 comprises of Annuity receivable from NHAI, interest on annuity and O&M Support receivable from NHAI.
- As per information provided by the Management, we understand that VM7 has received payments for 1 annuity installments and 1st installment (including interest) was due on 27 November 2025 has been received IN FY26.
- Balance annuity of INR 1,019 cr (excluding GST) is forecast to be received over next 14.5 years in 29 bi-annual installments.

c. Interest on Annuity

- Each of the biannual instalments payable above shall be paid along with interest at a rate of applicable bank rate plus 3 per cent. Thus, interest on annuity has been considered at 8.5 per cent (5.5 per cent Bank Rate plus 3 per cent).

d. Periodic and routine maintenance payments by Authority

O&M expenses shall be borne by NHAI and a lump sum financial support in the form of biannual payments shall be due and payable by NHAI to VM7. This shall be computed on INR 8.1 Cr. Thus, O&M payments by Authority have been considered accordingly by adjusting for price index multiple by 5 per cent p.a..

e. O&M Cots

- O&M cost is based on the fixed price Project Implementation Agreement with IRB Infrastructure Developers Limited till FY2040.

f. Depreciation & amortisation

- Amortization has been considered based on intangible asset model where the capital cost net of NHAI support is depreciated at 25 per cent over the operational period.

g. Tax

- Management represented that the VM7 has adopted the new tax regime. Thus, tax outflows for the forecast have been calculated based on the new regime of income tax. Carried forward business loss and unabsorbed depreciation if any has been considered while calculating tax outflows.

h. Capex

- Construction of the highway has been completed. Hence, no major capex cost needs to be incurred.

i. Working capital

- The change is WC in first three forecast years represent utilization of GST credit against GST payable on annuity receipts. Thereafter, we have only considered the impact of release of working capital at the end of the concession period.

j. Changes in assumption

- Changes in assumption is not appliable for VM7 as the asset has been acquired on 1 December 2025 and is being valued for the first time since acquisition.

Source: Management Information

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Valuation of Individual SPVs — VM7 Expressway Private Limited

Discounted Cash Flows (1/3)

Discounted cash flow												
FYE 31 March		**2027**	**2027**	**2028**	**2028**	**2029**	**2029**	**2030**	**2030**	**2031**	**2031**	**2032**
Date		**31-May-26**	**30-Nov-26**	**31-May-27**	**30-Nov-27**	**31-May-28**	**30-Nov-28**	**31-May-29**	**30-Nov-29**	**31-May-30**	**30-Nov-30**	**31-May-31**
INR Crore		**6 months**	**6 months**	**6 months**	**6 months**	**6 months**	**6 months**	**6 months**	**6 months**	**6 months**	**6 months**	**6 months**
Revenue		77	77	77	76	76	75	75	75	74	74	73
y-o-y growth		*(0.4)%*	*(0.5)%*	*(0.5)%*	*(0.5)%*	*(0.6)%*	*(0.6)%*	*(0.5)%*	*(0.6)%*	*(0.6)%*	*(0.7)%*	*(0.6)%*
O&M Expense		(2)	(9)	(2)	(9)	(2)	(10)	(2)	(12)	(2)	(11)	(2)
Other expense		(0)	(0)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
EBITDA	**[A]**	**75**	**68**	**74**	**67**	**73**	**65**	**72**	**62**	**71**	**62**	**70**
EBITDA margin (%)		*97.1%*	*87.8%*	*96.9%*	*87.3%*	*96.7%*	*86.3%*	*96.0%*	*83.0%*	*96.2%*	*84.2%*	*96.2%*
Less: Depreciation		-	-	-	-	-	-	-	-	-	-	-
EBIT		**75**	**68**	**74**	**67**	**73**	**65**	**72**	**62**	**71**	**62**	**70**
EBIT margin (%)		*97.1%*	*87.8%*	*96.9%*	*87.3%*	*96.7%*	*86.3%*	*96.0%*	*83.0%*	*96.2%*	*84.2%*	*96.2%*
Less: Taxes on EBIT	[B]	-	-	-	-	-	-	-	-	-	-	-
(Increase)/decrease in net working capital	[C]	14	12	13	12	13	12	13	11	13	11	12
Less: Capital expenditure	[D]	-	-	-	-	-	-	-	-	-	-	-
Free cash flow to the firm [E] = [A] + [B] + [C] + [D]		**89**	**80**	**88**	**78**	**87**	**77**	**85**	**73**	**84**	**73**	**82**
Period factor - mid year discounting		0.17	0.67	1.17	1.67	2.17	2.67	3.17	3.67	4.17	4.67	5.17
Discount factor - mid year discounting	[F]	0.99	0.95	0.92	0.88	0.85	0.82	0.79	0.76	0.73	0.71	0.681
Present value of cash flow to the firm [E] * [F]		**88**	**76**	**80**	**69**	**74**	**63**	**67**	**55**	**62**	**52**	**56**

Source(s): Management information, KVSL analysis

Since the annuities are paid semi annually, we have considered half yearly cash flows for discounting.

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Valuation of Individual SPVs — VM7 Expressway Private Limited

Discounted Cash Flows (2/3)

Discounted cash flow											
FYE 31 March		**2032**	**2033**	**2033**	**2034**	**2034**	**2035**	**2035**	**2036**	**2036**	**2037**
Date		**30-Nov-31**	**31-May-32**	**30-Nov-32**	**31-May-33**	**30-Nov-33**	**31-May-34**	**30-Nov-34**	**31-May-35**	**30-Nov-35**	**31-May-36**
INR Crore		**6 months**	**6 months**	**6 months**	**6 months**	**6 months**	**6 months**	**6 months**	**6 months**	**6 months**	**6 months**
Revenue		73	72	71	71	70	70	69	69	68	67
y-o-y growth		*(0.7)%*	*(0.7)%*	*(0.8)%*	*(0.7)%*	*(0.8)%*	*(0.9)%*	*(0.8)%*	*(0.9)%*	*(1.0)%*	*(1.1)%*
O&M Expense		(11)	(2)	(11)	(2)	(11)	(2)	(12)	(3)	(15)	(3)
Other expense		(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
EBITDA	**[A]**	**61**	**69**	**60**	**68**	**58**	**67**	**56**	**65**	**52**	**64**
EBITDA margin (%)		*84.4%*	*96.0%*	*83.6%*	*95.8%*	*82.8%*	*95.4%*	*81.5%*	*94.5%*	*76.9%*	*94.7%*
Less: Depreciation		-	-	-	-	-	-	-	-	-	-
EBIT		**61**	**69**	**60**	**68**	**58**	**67**	**56**	**65**	**52**	**64**
EBIT margin (%)		*84.4%*	*96.0%*	*83.6%*	*95.8%*	*82.8%*	*95.4%*	*81.5%*	*94.5%*	*76.9%*	*94.7%*
Less: Taxes on EBIT	[B]	-	-	-	(6)	(6)	(13)	(13)	(13)	(13)	(13)
(Increase)/decrease in net working capital	[C]	-	-	-	-	-	-	-	-	-	-
Less: Capital expenditure	[D]	-	-	-	-	-	-	-	-	-	-
Free cash flow to the firm [E] = [A] + [B] + [C] + [D]		**61**	**69**	**60**	**62**	**53**	**54**	**43**	**52**	**39**	**50**
Period factor - mid year discounting		5.67	6.17	6.67	7.17	7.67	8.17	8.67	9.17	9.67	10.17
Discount factor - mid year discounting	[F]	0.656	0.632	0.609	0.587	0.565	0.545	0.525	0.505	0.487	0.469
Present value of cash flow to the firm [E] * [F]		**40**	**44**	**36**	**37**	**30**	**29**	**23**	**26**	**19**	**24**

Source(s): Management information, KVSL analysis

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Valuation of Individual SPVs — VM7 Expressway Private Limited

Discounted Cash Flows (3/3)

Discounted cash flow									
FYE 31 March		**2037**	**2038**	**2038**	**2039**	**2039**	**2040**	**2040**	**2041**
Date		**30-Nov-36**	**31-May-37**	**30-Nov-37**	**31-May-38**	**30-Nov-38**	**31-May-39**	**30-Nov-39**	**31-May-40**
INR Crore		**6 months**	**6 months**	**6 months**	**6 months**	**6 months**	**6 months**	**6 months**	**6 months**
Revenue		66	66	64	62	62	63	61	58
y-o-y growth		*(1.0)%*	*(1.1)%*	*(2.0)%*	*(3.3)%*	*(0.2)%*	*1.0%*	*(3.1)%*	*(3.9)%*
O&M Expense		(13)	(3)	(13)	(3)	(13)	(3)	(13)	(3)
Other expense		(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
EBITDA	**[A]**	**52**	**62**	**50**	**59**	**48**	**59**	**47**	**55**
EBITDA margin (%)		*78.6%*	*94.7%*	*78.5%*	*94.2%*	*77.1%*	*94.3%*	*77.5%*	*93.9%*
Less: Depreciation		-	-	-	-	-	-	-	-
EBIT		**52**	**62**	**50**	**59**	**48**	**59**	**47**	**55**
EBIT margin (%)		*78.6%*	*94.7%*	*78.5%*	*94.2%*	*77.1%*	*94.3%*	*77.5%*	*93.9%*
Less: Taxes on EBIT	[B]	(13)	(13)	(13)	(13)	(13)	(13)	(13)	(7)
(Increase)/decrease in net working capital	[C]	-	-	-	-	-	-	-	-
Less: Capital expenditure	[D]	-	-	-	-	-	-	-	-
Free cash flow to the firm [E] = [A] + [B] + [C] + [D]		**39**	**49**	**37**	**46**	**35**	**46**	**34**	**48**
Period factor - mid year discounting		10.67	11.17	11.67	12.17	12.67	13.17	13.67	14.17
Discount factor - mid year discounting	[F]	0.452	0.436	0.420	0.404	0.390	0.375	0.362	0.348
Present value of cash flow to the firm [E] * [F]		**18**	**21**	**16**	**19**	**14**	**17**	**12**	**17**

Summary of value	
INR Crore	
Primary value	1,183
PV of Working Capital	7
Surplus asset	14
Enterprise value	**1,238**

WACC	**7.73%**

Present value of release in working capital represent working capital of INR 20 Cr released at the end of the concession period.

Please refer "Summary – WACC" for WACC breakup.

Basis the above and using a WACC of 7.73%, the Enterprise Value of VM7, as on 31 March 2026 is INR 1,238 crore.

Source(s): Management information, KVSL analysis

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Kaithal Tollway Limited

Valuation of Individual SPVs — Kaithal Tollway Limited

Overview

Project details

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 to 241.58 Km i.e. total design length of 166.3 Km in the state of Haryana under National Highway Development Program Phase IV on a DBFOT basis.

Concession period

KTL is required to construct; operate and maintain and modify, repair or otherwise make improvements to the project highway in accordance with the concession agreement for a period of 27 years commencing from the appointed date.
Probable extension of concession period is estimated according to article 29 of concession agreement which comes to about 5.4 years and 446 days for various reasons discussed in the next slide.

Premium

There is no premium clause in the concession agreement.

Source(s): Management information

Highlights

Particulars	Details
Project location	Kaithal – Rajasthan border
Concessionaire	KTL
State	Haryana
Tollable length (kms)	166.3
No. of toll plazas	3
Concession agreement date	23-Jun-14
Appointed date	15-Jul-15
Four laning completion certificate date	29-Mar-19
Scheduled end date	14-Jul-42
New scheduled end date	25-Feb-49

Interest held by Trust as at 31 March 2026

Particulars	Stake %
Equity stake	100%
Debt held by InvIT in KTL	INR 2,545 Cr

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Key Assumptions

a. Modification in concession period

- As per Clause 29.2 of the concession agreement between NHAI and KTL, *"In the event actual average traffic shall have fallen short of the target traffic, then for every 1% shortfall as compared to the target traffic, the concession period shall, subject to payment of concession fee in accordance with this agreement, be increased by 1.5% thereof; provided such increase in concession period shall not in any case exceed 20% of the concession period"*.
- Thus, the concession period is increased as per the above clause as follows:

Particulars	
Shortfall in traffic (Management estimate)	31%
1.5% increase for every 1% decrease	47%
Maximum increase in concession period	20%
Increase in concession period (years)	5.4
Original concession period	27.0
Revised concession period	32.4
Scheduled end date	14-Jul-42
New scheduled end date	**25-Feb-49**

- Besides the extension mentioned in the agreement, Management represented that the concession period will be increased by further 446 days on account of covid-19 and farmer protests (included above).
- The Management has confirmed to us to consider revised concession period till 25 February 2049. Thus, the explicit period for the current valuation analysis exercise has been considered from 1 April 2026 to 25 February 2049.

b. Revenue

- Revenue for KTL is derived from Toll collections for the concession period. Management has provided Traffic volume, toll rates and toll revenue for the forecast period based on the traffic report prepared by independent consultant in May 2026.
- As per the NHAI Circular No. 17.7.12/2025 dated 17 October 2025, the Ministry of Road Transport & Highways (MoRTH), vide Gazette Notification No. 388 (E) dated 17 June 2025, has inserted sub-section (3B) in Rule 9 of the National Highways Fee (Determination of Rates and Collection) Rules, 2008, thereby introducing the concept of an Annual Pass with effect from 15 August 2025. MoRTH vide Circular No. H-25011/05/2025-Toll (E-245443) dated 1 September 2025 has notified a fair compensation framework for addressing revenue losses arising out of the Annual Pass in InvIT Projects.
- The impact of Annual Pass has been considered by the traffic consultant in the traffic study while estimating toll revenue for the forecast period.
- As stated in the Traffic Study Report of KTL, elasticity model of growth projection has been considered for traffic forecast. While estimating traffic volume, consultant has considered factors such as GDP growth rate of India, developments along the project road, elasticity value of different vehicle type for computing the traffic growth rate. Further, while estimating growth for FY26-FY28, traffic consultant has also taken positive impact of the recovery in major infrastructure projects post general elections.
- Haryana Power Generation Cooperation Ltd. (HPGCL) is in process to set up a 800MW thermal unit based on super critical technology at Yamunagar (Hisar) as an expansion of existing coal base thermal plant. This is expected to give a boost to goods traffic plying on the KTL project road from Financial Year 2027 to 2028.
- Further, as stated in the traffic report, the development of Maharaja Agrasen International Airport (Hisar Airport) is a major infrastructure initiative aimed at transforming Hisar into an aviation and logistics hub for Haryana and the NCR region. This is expected to give a boost to goods traffic plying on the Project stretch from Financial Year 2031.
- Basis above factors, Traffic is forecast to increase in range of 3-6 per cent annually initially and stepped down for future years.

Source(s): Management information, External traffic study

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Key Assumptions

- Annual revision of toll rate for the forecast period shall be in accordance with National Highway Fee (Determination of Rates and Collection) Rules, 2008 and amendment thereto.
- Additionally, the applicable base rate shall be revised annually on April 1 to reflect 3% fixed increase plus increase in wholesale price index ("WPI") but such revision shall be restricted to 40% of the increase in WPI on overall basis during the concession period. As given in the traffic report, average inflation in WPI from FY2013-25 is 3.13%. Historically WPI inflation in India has been around 5%. Hence a 4.5% annual increase has been considered for the remaining concession period.
- Toll revenue has been considered basis the pessimistic scenario from the traffic report prepared by an independent consultant appointed by the Management. Please refer to traffic report for detailed study on forecast traffic growth rates, toll rates and toll revenue.
- Refer Annexure 2c for a detailed breakup of Revenue.

c. Periodic maintenance & routine maintenance costs

- Operational expenditure includes base operating expenditure, admin expenses, insurance, project management fees and various other expenses. These are broadly categorized as routine maintenance expenses and other operating expenses.
- Periodic maintenance expense, also referred to as major maintenance expenses are incurred to restore the road asset to its original condition or to maintain its current operating standard.
- KTL has entered into a fixed price Project Implementation Agreement ("PIA") for periodic and routine maintenance with IRB Infrastructure Developers Limited ("Project Manager") for the entire concession period.

d. Depreciation & Amortization

- Forecasted depreciation on assets has been provided by the Management. Management has forecasted depreciation to increase in line with the increase in revenue.

e. Tax

- The valuation has been prepared by analysing the potential impact of both the existing and the new tax regimes. From an FCFF perspective, the new tax regime may appear to result in a lower effective tax outflow over the projection period and hence we have used the same in our valuation analysis. However, management is still evaluating the option to migrate to the new tax regime at this stage and therefore timing of the transition to new tax regime will remain managements option.

f. Working capital

- The change is WC each year is not material. Therefore, we have only considered the impact of release of working capital at the end of the concession period.

g. Capex

- Since the SPV is already operational, there is no capex to be incurred in the remainder of the concession period.

h. Changes in assumption from previous valuation

- Toll Revenue has been moderated by ~10 per cent in the initial years based on actual toll revenue for FY26

Source(s): Management information, External traffic study

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Valuation of Individual SPVs — Kaithal Tollway Limited

Discounted Cash Flows (1/3)

Discounted Cash Flow								
INR crores		FY2027 12 months	FY2028 12 months	FY2029 12 months	FY2030 12 months	FY2031 12 months	FY2032 12 months	FY2033 12 months
Revenue		164	181	200	223	245	272	298
y-o-y growth		*15%*	*10%*	*11%*	*11%*	*10%*	*11%*	*10%*
Routine maintenance		(24)	(25)	(26)	(27)	(29)	(30)	(31)
y-o-y growth		*-47%*	*5%*	*5%*	*5%*	*5%*	*5%*	*4%*
Major maintenance expense		-	-	-	-	-	(128)	(134)
Other expenses		-	-	-	-	-	-	-
EBITDA	[A]	**140**	**156**	**174**	**195**	**217**	**114**	**133**
EBITDA margin		86%	86%	87%	88%	88%	42%	45%
Depreciation		(24)	(27)	(30)	(33)	(37)	(41)	(44)
EBIT		**116**	**129**	**144**	**162**	**180**	**73**	**88**
EBIT margin		71%	71%	72%	73%	73%	27%	30%
Less: Tax on EBIT	[B]	-	-	-	-	-	-	-
Change in working capital	[C]	-	-	-	-	-	-	-
Less : Capex	[D]	-	-	-	-	-	-	-
Free cash flows to the firm	**E = [A+B+C+D]**	**140**	**156**	**174**	**195**	**217**	**114**	**133**
Discounting period		0.50	1.50	2.50	3.50	4.50	5.50	6.50
Discount factor	[F]	0.96	0.87	0.80	0.73	0.67	0.61	0.56
Present value of cash flows	**[E*F]**	**134**	**136**	**139**	**143**	**145**	**69**	**74**

Source(s): Management information, KVSL analysis

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Valuation of Individual SPVs — Kaithal Tollway Limited

Discounted Cash Flows (2/3)

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
Revenue		329	362	397	433	475	519	569	622
y-o-y growth		*10%*	*10%*	*10%*	*9%*	*10%*	*9%*	*10%*	*9%*
Routine maintenance		(33)	(35)	(36)	(38)	(40)	(42)	(44)	(46)
y-o-y growth		*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*
Major maintenance expense		(140)	-	-	-	-	-	(94)	(99)
Other expenses		-	-	-	-	-	-	-	-
EBITDA	**[A]**	**155**	**327**	**361**	**395**	**435**	**477**	**431**	**477**
EBITDA margin		47%	90%	91%	91%	92%	92%	76%	77%
Depreciation		(49)	(54)	(59)	(65)	(71)	(77)	(85)	(93)
EBIT		**106**	**273**	**301**	**330**	**364**	**399**	**346**	**384**
EBIT margin		32%	76%	76%	76%	77%	77%	61%	62%
Less: Tax on EBIT	[B]	-	-	-	(76)	(88)	(99)	(88)	(99)
Change in working capital	[C]	-	-	-	-	-	-	-	-
Less : Capex	[D]	-	-	-	-	-	-	-	-
Free cash flows to the firm	**E = [A+B+C+D]**	**155**	**327**	**361**	**318**	**346**	**378**	**343**	**378**
Discounting period		7.50	8.50	9.50	10.50	11.50	12.50	13.50	14.50
Discount factor	[F]	0.51	0.47	0.43	0.39	0.36	0.33	0.30	0.27
Present value of cash flows	**[E*F]**	**79**	**152**	**154**	**124**	**123**	**123**	**102**	**103**

Source(s): Management information, KVSL analysis

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Valuation of Individual SPVs — Kaithal Tollway Limited

Discounted Cash Flows (3/3)

Discounted Cash Flow									
		FY2042	FY2043	FY2044	FY2045	FY2046	FY2047	FY2048	FY2049
INR crores		12 months	12 months	12 months	12 months	12 months	12 months	12 months	10.8 months
Revenue		680	744	815	891	973	1,062	1,161	1,156
y-o-y growth		*9%*	*9%*	*9%*	*9%*	*9%*	*9%*	*9%*	*0%*
Routine maintenance		(49)	(51)	(54)	(56)	(59)	(62)	(65)	(62)
y-o-y growth		*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*-5%*
Major maintenance expense		(104)	-	-	-	-	-	-	-
Other expenses		-	-	-	-	-	-	-	-
EBITDA	[A]	**528**	**693**	**761**	**834**	**914**	**1,000**	**1,096**	**1,094**
EBITDA margin		78%	93%	93%	94%	94%	94%	94%	95%
Depreciation		(101)	(111)	(121)	(133)	(145)	(158)	(173)	(172)
EBIT		**427**	**582**	**639**	**701**	**769**	**841**	**923**	**921**
EBIT margin		63%	78%	78%	79%	79%	79%	79%	80%
Less: Tax on EBIT	[B]	(112)	(169)	(191)	(210)	(230)	(252)	(276)	(275)
Change in working capital	[C]	-	-	-	-	-	-	-	-
Less : Capex	[D]	-	-	-	-	-	-	-	-
Free cash flows to the firm	**E = [A+B+C+D]**	**416**	**524**	**569**	**624**	**684**	**748**	**820**	**818**
Discounting period		15.50	16.50	17.50	18.50	19.50	20.50	21.50	22.45
Discount factor	[F]	0.25	0.23	0.21	0.19	0.17	0.16	0.14	0.13
Present value of cash flows	**[E*F]**	**103**	**119**	**118**	**118**	**119**	**119**	**119**	**109**

Valuation conclusion	
INR Crore	
Present value of cash flows	2,723
Present value of release of working capital	0
Enterprise Valuation	**2,723**

WACC	**9.40%**

Present value of release in working capital represent working capital of INR 2 Cr released at the end of the concession period.

Please refer WACC Summary for WACC breakup.

Basis the above and using a WACC of 9.40%, the Enterprise Value of KTL, as on 31 March 2026 is INR 2,723 crore.

Source(s): Management information, KVSL analysis

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Kishangarh Gulabpura Tollway Limited

Valuation of Individual SPVs — Kishangarh Gulabpura Tollway Limited

Overview

Project details

KGTL was engaged for six laning the existing four lane highway on DBFOT basis The project stretch is 90 kms long involving the Kishangarh to Gulabpura section of NH-79A and NH-79 in Rajasthan with a single toll plaza.

Concession period

KGTL is required to construct; operate and maintain and modify, repair or otherwise make improvements to the project highway in accordance with the concession agreement for a period of 20 years commencing from the appointed date. Probable extension of concession period is estimated according to article 29 of concession agreement which comes to about 4 years and 136 days for various reasons discussed in the next slide

Premium

KGTL was engaged on payment of premium of INR 186.3 Crs to NHAI immediately after the 3rd 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. KGTL has filed Writ petition with Rajasthan High Court with prayer to commence payment of premium to NHAI, six months post actual completion of the project construction work. The High Court prima facie agreed with the contention and have provided interim relief from payment of premium. The matter is currently under arbitration.

Source(s): Management information

Highlights

Particulars	Details
Project location	Kishangarh Gulabpura
Concessionaire	KGTL
State	Rajasthan
Tollable length (kms)	90
No. of toll plazas	1
Concession agreement date	22-Feb-17
Appointed date	21-Feb-18
Six laning completion certificate date	20-Jul-22
Scheduled end date	20-Feb-38
New scheduled end date	05-Jul-42

Interest held by Trust as at 31 March 2026

Particulars	Stake %
Equity stake	100%
Debt held by InvIT in KGTL	INR 1,867 Cr

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Valuation of Individual SPVs — Kishangarh Gulabpura Tollway Limited

Key Assumptions

a. Modification in concession period

- As per Clause 29.2 of the concession agreement between NHAI and KGTL, *"In the event actual average traffic shall have fallen short of the target traffic, then for every 1% shortfall as compared to the target traffic, the concession period shall, subject to payment of concession fee in accordance with this agreement, be increased by 1.5% thereof; provided such increase in concession period shall not in any case exceed 20% of the concession period"*.
- Thus, the concession period is increased as per the above clause as follows:

Particulars	
Shortfall in traffic (Management estimate)	36%
1.5% increase for every 1% decrease	54%
Maximum increase in concession period	20%
Increase in concession period (years)	4.0
Original concession period	20.0
Revised concession period	24.0
Scheduled end date	20-Feb-38
New scheduled end date	**5-Jul-42**

- Besides the extension mentioned in the agreement, Management represented that the concession period will be increased by further 136 days on account of covid-19 (included above).
- The Management has confirmed to us to consider revised concession period till 5 July 2042. Thus, the explicit period for the current valuation analysis exercise has been considered from 1 April 2026 to 5 July 2042.

b. Revenue

- Revenue for KGTL is derived from Toll collections for the concession period. Management has provided Traffic volume, toll rates and toll revenue for the forecast period based on the traffic report prepared by independent consultant in May 2026.
- As per the NHAI Circular No. 17.7.12/2025 dated 17 October 2025, the Ministry of Road Transport & Highways (MoRTH), vide Gazette Notification No. 388 (E) dated 17 June 2025, has inserted sub-section (3B) in Rule 9 of the National Highways Fee (Determination of Rates and Collection) Rules, 2008, thereby introducing the concept of an Annual Pass with effect from 15 August 2025. MoRTH vide Circular No. H-25011/05/2025-Toll (E-245443) dated 1 September 2025 has notified a fair compensation framework for addressing revenue losses arising out of the Annual Pass in InvIT Projects.
- The impact of Annual Pass has been considered by the traffic consultant in the traffic study while estimating toll revenue for the forecast period.
- As stated in the Traffic Study Report of KGTL, elasticity model of growth projection has been considered for traffic forecast. While estimating traffic volume, consultant has considered factors such as GDP growth rate of India, developments along the project road, elasticity value of different vehicle type for computing the traffic growth rate. Further, while estimating growth for FY26-FY28, traffic consultant has also taken positive impact of the recovery in major infrastructure projects post general elections.
- While estimating traffic volume, consultant has considered factors such as the historical traffic data, GDP growth rate of India, developments along the project road and elasticity value of different vehicle type for computing the traffic growth rate.
- Further as stated in the traffic report, the ongoing development of the Jaipur Ring Road is expected to generate positive impacts on commercial traffic along the Kishangarh–Gulabpura corridor in the coming years. Upon full or near-full completion, the ring road will enable efficient bypassing of Jaipur city, reducing travel time and congestion delays for long-distance freight vehicles operating on the NH-48.
- Basis above factors, Traffic is forecast to increase by 6-7 per cent up to FY28 and in range of 5-6 per cent annually thereafter.

Source(s): Management information, External traffic study

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Key Assumptions

- Annual revision of toll rate for the forecast period shall be in accordance with National Highway Fee (Determination of Rates and Collection) Rules, 2008 and amendment thereto.
- Additionally, the applicable base rate shall be revised annually on April 1 to reflect 3% fixed increase plus increase in wholesale price index ("WPI") but such revision shall be restricted to 40% of the increase in WPI on overall basis during the concession period. As given in the traffic report, average inflation in WPI from FY2013-25 is 3.13%. Historically WPI inflation in India has been around 5%. Hence a 4.5% annual increase has been considered for the remaining concession period.
- Toll revenue has been considered basis the pessimistic scenario from the traffic report prepared by an independent consultant appointed by the Management. Please refer to traffic report for detailed study on forecast traffic growth rates, toll rates and toll revenue.
- Refer Annexure 2c for a detailed breakup of Revenue.

c. Premium payable

- The premium payable to NHAI is considered and corroborated from the concession agreement as given by the Management.

d. Periodic maintenance & routine maintenance costs

- Operational expenditure includes base operating expenditure, admin expenses, insurance, project management fees and various other expenses. These are broadly categorized as routine maintenance expenses and other operating expenses.
- Periodic maintenance expense, also referred to as major maintenance expenses are incurred to restore the road asset to its original condition or to maintain its current operating standard.
- KGTL has entered into a fixed price Project Implementation Agreement ("PIA") for periodic and routine maintenance with IRB Infrastructure Developers Limited ("Project Manager") for the entire concession period.

e. Depreciation & Amortization

- Forecasted depreciation on assets has been provided by the Management. Management has forecasted depreciation to increase in line with the increase in revenue.

f. Tax

- Management represented that KGTL has 35AD benefit for income tax and the same has been considered while calculating forecast tax outflows along with any carried forward business loss and mat credit. The SPV will initially pay tax under MAT and gradually shift to the new regime of income tax once its carry forward losses are exhausted.

g. Working capital

- The change in WC each year is not material. Therefore, we have only considered the impact of release of working capital at the end of the concession period.

h. Capex

- Since the SPV is already operational, there is no capex to be incurred in the remainder of the concession period.

i. Changes in assumption from previous valuation

- Toll revenue forecast has been moderated in the initial years vis-à-vis previous valuation exercise based on actual toll revenue for FY26

Source(s): Management information, External traffic study

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Valuation of Individual SPVs — Kishangarh Gulabpura Tollway Limited

Discounted Cash Flows (1/2)

Discounted Cash Flow									
INR crores		FY2027 12 months	FY2028 12 months	FY2029 12 months	FY2030 12 months	FY2031 12 months	FY2032 12 months	FY2033 12 months	FY2034 12 months
Revenue		91	118	148	173	198	225	257	292
y-o-y growth		*18%*	*30%*	*25%*	*17%*	*14%*	*14%*	*14%*	*14%*
Routine maintenance		(28)	(29)	(30)	(32)	(33)	(35)	(37)	(39)
y-o-y growth		*4%*	*5%*	*5%*	*5%*	*5%*	*5%*	*4%*	*5%*
Major maintenance expense		(100)	-	-	-	-	-	(104)	(102)
CSR expenses		-	-	-	-	-	-	-	(1)
EBITDA	[A]	**(37)**	**89**	**118**	**141**	**164**	**190**	**115**	**151**
EBITDA margin		-40%	76%	80%	82%	83%	84%	45%	52%
Depreciation		(40)	(45)	(49)	(55)	(61)	(68)	(75)	(83)
EBIT		**(77)**	**45**	**68**	**86**	**103**	**122**	**41**	**68**
EBIT margin		-84%	38%	46%	50%	52%	54%	16%	23%
Less: Tax on EBIT	[B]	-	(1)	(11)	(14)	(17)	(20)	(7)	(11)
Change in working capital	[C]	-	-	-	-	-	-	-	-
Less : Capex	[D]	-	-	-	-	-	-	-	-
Free cash flows to the firm	**E = [A+B+C+D]**	**(37)**	**88**	**106**	**127**	**148**	**170**	**109**	**139**
Discounting period		0.50	1.50	2.50	3.50	4.50	5.50	6.50	7.50
Discount factor	[F]	0.96	0.87	0.80	0.73	0.67	0.61	0.56	0.51
Present value of cash flows	**[E*F]**	**(35)**	**77**	**85**	**93**	**98**	**104**	**61**	**71**

Source(s): Management information, KVSL analysis

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Valuation of Individual SPVs — Kishangarh Gulabpura Tollway Limited

Discounted Cash Flows (2/2)

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 3.2 months
Revenue		332	368	410	451	500	558	617	675	78
y-o-y growth		*14%*	*11%*	*11%*	*10%*	*11%*	*12%*	*11%*	*9%*	*-88%*
Routine maintenance		(41)	(43)	(45)	(47)	(49)	(52)	(54)	(57)	(16)
y-o-y growth		*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*-72%*
Major maintenance expense		(110)	-	-	-	-	-	-	-	-
CSR expenses		(1)	(1)	(2)	(4)	(6)	(7)	(9)	(10)	-
EBITDA	**[A]**	**180**	**325**	**363**	**400**	**445**	**499**	**554**	**608**	**62**
EBITDA margin		54%	88%	89%	89%	89%	89%	90%	90%	80%
Depreciation		(92)	(100)	(110)	(120)	(131)	(144)	(157)	(171)	(49)
EBIT		**89**	**225**	**253**	**281**	**314**	**355**	**397**	**437**	**14**
EBIT margin		27%	61%	62%	62%	63%	64%	64%	65%	18%
Less: Tax on EBIT	[B]	(15)	(37)	(42)	(102)	(113)	(127)	(142)	(155)	(16)
Change in working capital	[C]	-	-	-	-	-	-	-	-	-
Less : Capex	[D]	-	-	-	-	-	-	-	-	-
Free cash flows to the firm	**E = [A+B+C+D]**	**166**	**288**	**321**	**299**	**331**	**372**	**412**	**452**	**47**
Discounting period		8.50	9.50	10.50	11.50	12.50	13.50	14.50	15.50	16.13
Discount factor	[F]	0.47	0.43	0.39	0.36	0.33	0.30	0.27	0.25	0.23
Present value of cash flows	**[E*F]**	**77**	**123**	**125**	**106**	**108**	**110**	**112**	**112**	**11**

Valuation conclusion	
INR Crore	
Present value of cash flows	1,438
Present value of release of working capital	(2)
Enterprise Valuation	**1,436**

WACC	**9.40%**

Present value of release in working capital represent working capital of negative INR 10 Cr released at the end of the concession period.

Please refer WACC Summary for WACC breakup.

Basis the above and using a WACC of 9.40%, the Enterprise Value of KGTL, as on 31 March 2026 is INR 1,436 crore.

Source(s): Management information, KVSL analysis

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IRB Hapur Moradabad Tollway Limited

Valuation of Individual SPVs — IRB Hapur Moradabad Tollway Limited

Overview

Project details

IHMTL was engaged for six laning the existing four lane highway on DBFOT basis The project stretch is 99.87 kms long involving the Hapur bypass to Moradabad section from 50 kms to 148.277 kms (Design chainage 149.87 kms) of NH-24 in Uttar Pradesh with 2 toll plazas.

Concession period

IHMTL is required to construct; operate and maintain and modify, repair or otherwise make improvements to the project highway in accordance with the concession agreement for a period of 22 years commencing from the appointed date.
Probable extension of concession period is estimated according to article 29 of concession agreement which comes to about 2.05 years and 105 days for various reasons discussed in the next slide.

Premium

IHMTL was engaged on payment of premium of INR 31.5 Crs to NHAI immediately after the 3rd 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.

Source(s): Management information

Highlights

Particulars	Details
Project location	Hapur Moradabad
Concessionaire	IHMTL
State	Uttar Pradesh
Tollable length (kms)	99.87
No. of toll plazas	2
Concession agreement date	29-May-18
Appointed date	28-May-19
Six laning completion certificate date	7-Apr-23
Scheduled end date	31-May-41
New scheduled end date	11-Aug-43

Interest held by Trust as at 31 March 2026

Particulars	Stake %
Equity stake	100%
Debt held by InvIT in IHMTL	INR 2,835 Cr

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Key Assumptions

a. Modification in concession period

- As per Clause 29.2 of the concession agreement between NHAI and IHMTL, *"In the event actual average traffic shall have fallen short of the target traffic, then for every 1% shortfall as compared to the target traffic, the concession period shall, subject to payment of concession fee in accordance with this agreement, be increased by 1.5% thereof; provided such increase in concession period shall not in any case exceed 20% of the concession period"*.
- Thus, the concession period is increased as per the above clause as follows:

Particulars	
Shortfall in traffic (Management estimate)	6%
1.5% increase for every 1% difference	9%
Maximum increase in concession period	20%
Increase in concession period (years)	1.9
Original concession period	22%
Revised concession period	24%
Scheduled end date	31-May-41
New scheduled end date	**11-Aug-43**

- Besides the extension mentioned in the agreement, Management represented that the concession period will be increased by further 105 days on account of covid-19. (included above).
- The Management has confirmed to us to consider revised concession period till 22 May 2043. Thus, the explicit period for the current valuation analysis exercise has been considered from 1 April 2026 to 11 August 2043.

b. Revenue

- Revenue for IHMTL is derived from Toll collections for the concession period. Management has provided Traffic volume, toll rates and toll revenue for the forecast period based on the traffic report prepared by independent consultant in January 2026.
- As per the NHAI Circular No. 17.7.12/2025 dated 17 October 2025, the Ministry of Road Transport & Highways (MoRTH), vide Gazette Notification No. 388 (E) dated 17 June 2025, has inserted sub-section (3B) in Rule 9 of the National Highways Fee (Determination of Rates and Collection) Rules, 2008, thereby introducing the concept of an Annual Pass with effect from 15 August 2025. MoRTH vide Circular No. H-25011/05/2025-Toll (E-245443) dated 1 September 2025 has notified a fair compensation framework for addressing revenue losses arising out of the Annual Pass in InvIT Projects.
- The impact of Annual Pass has been considered by the traffic consultant in the traffic study while estimating toll revenue for the forecast period.
- As stated in the Traffic Study Report of IHMTL, elasticity model of growth projection has been considered for traffic forecast. While estimating traffic volume, consultant has considered factors such as GDP growth rate of India, developments along the project road, elasticity value of different vehicle type for computing the traffic growth rate.
- While estimating traffic volume, consultant has considered factors such as the historical traffic data, GDP growth rate of India, developments along the project road and elasticity value of different vehicle type for computing the traffic growth rate. Further, while estimating growth for FY26-FY28, traffic consultant has also taken positive impact of the recovery in major infrastructure projects post general elections.
- Basis above factors, Traffic is forecast to increase in range of 3-6 per cent annually. The traffic consultant expects that the Moradabad section will have major traffic increase post 2031 considering the UP Govt plan. The traffic growth is expected to gradually taper post this period.

Source(s): Management information, External traffic study

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Valuation of Individual SPVs — IRB Hapur Moradabad Tollway Limited

Key Assumptions

- Annual revision of toll rate for the forecast period shall be in accordance with National Highway Fee (Determination of Rates and Collection) Rules, 2008 and amendment thereto.
- Additionally, the applicable base rate shall be revised annually on April 1 to reflect 3% fixed increase plus increase in wholesale price index ("WPI") but such revision shall be restricted to 40% of the increase in WPI on overall basis during the concession period. As given in the traffic report, average inflation in WPI from FY2013-25 is 3.13%. Historically WPI inflation in India has been around 5%. Hence a 4.5% annual increase has been considered for the remaining concession period.
- Toll revenue has been considered basis the pessimistic scenario from the traffic report prepared by an independent consultant appointed by the Management. Please refer to traffic report for detailed study on forecast traffic growth rates, toll rates and toll revenue.
- Refer Annexure 2c for a detailed breakup of Revenue.

c. Premium payable

- The premium payable to NHAI is considered and corroborated from the concession agreement as given by the Management.

d. Periodic maintenance & routine maintenance costs

- Operational expenditure includes base operating expenditure, admin expenses, insurance, project management fees and various other expenses. These are broadly categorized as routine maintenance expenses and other operating expenses.
- Periodic maintenance expense, also referred to as major maintenance expenses are incurred to restore the road asset to its original condition or to maintain its current operating standard.
- IHMTL has entered into a fixed price Project Implementation Agreement ("PIA") for periodic and routine maintenance with IRB Infrastructure Developers Limited ("Project Manager") for the entire concession period.

e. Depreciation & Amortization

- Forecasted depreciation on assets has been provided by the Management. Management has forecasted depreciation to increase in line with the increase in revenue.

f. Tax

- Management represented that IHMTL has 35AD benefit for income tax and the same has been considered while calculating forecast tax outflows along with any carried forward business loss and mat credit. The SPV will initially pay tax under MAT and gradually shift to the new regime of income tax once its carry forward losses are exhausted.

g. Working capital

- Working capital has been assumed to be constant across the forecast period and will be released at the end of concession period.

h. Changes in assumption from previous valuation

- No material change in forecast assumption from previous valuation exercise

Source(s): Management information, External traffic study

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Valuation of Individual SPVs — IRB Hapur Moradabad Tollway Limited

Discounted Cash Flows (1/2)

Discounted Cash Flow										
INR crores		FY2027 12 months	FY2028 12 months	FY2029 12 months	FY2030 12 months	FY2031 12 months	FY2032 12 months	FY2033 12 months	FY2034 12 months	FY2035 12 months
Revenue		371	405	436	471	531	593	663	740	827
y-o-y growth		*13%*	*9%*	*8%*	*8%*	*13%*	*12%*	*12%*	*12%*	*12%*
Routine maintenance		(10)	(10)	(10)	(11)	(11)	(12)	(12)	(12)	(13)
y-o-y growth		*4%*	*4%*	*3%*	*3%*	*3%*	*3%*	*3%*	*3%*	*3%*
Major maintenance expense		(90)	(85)	-	(5)	(74)	(77)	(57)	(2)	-
CSR expenses		-	-	-	-	-	-	-	-	(0)
EBITDA	**[A]**	**272**	**310**	**425**	**455**	**446**	**505**	**594**	**725**	**814**
EBITDA margin		73%	76%	98%	97%	84%	85%	90%	98%	98%
Depreciation		(64)	(70)	(75)	(81)	(91)	(101)	(113)	(125)	(140)
EBIT		**208**	**240**	**351**	**374**	**355**	**404**	**482**	**600**	**675**
EBIT margin		56%	59%	80%	79%	67%	68%	73%	81%	82%
Less: Tax on EBIT	[B]	(34)	(39)	(57)	(61)	(58)	(66)	(79)	(168)	(205)
Change in working capital	[C]	-	-	-	-	-	-	-	-	-
Less : Capex	[D]	-	-	-	-	-	-	-	-	-
Free cash flows to the firm	**E = [A+B+C+D]**	**238**	**271**	**368**	**394**	**388**	**439**	**516**	**558**	**609**
Discounting period		0.50	1.50	2.50	3.50	4.50	5.50	6.50	7.50	8.50
Discount factor	[F]	0.96	0.87	0.80	0.73	0.67	0.61	0.56	0.51	0.47
Present value of cash flows	**[E*F]**	**227**	**237**	**294**	**288**	**259**	**268**	**288**	**284**	**284**

Source(s): Management information, KVSL analysis

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Valuation of Individual SPVs — IRB Hapur Moradabad Tollway Limited

Discounted Cash Flows (2/2)

Discounted Cash Flow										
INR crores		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 4 months
Revenue		918	1,019	1,134	1,261	1,393	1,539	1,705	1,869	757
y-o-y growth		*11%*	*11%*	*11%*	*11%*	*11%*	*10%*	*11%*	*10%*	*-59%*
Routine maintenance		(13)	(13)	(14)	(14)	(14)	(15)	(16)	(15)	(7)
y-o-y growth		*3%*	*2%*	*3%*	*3%*	*3%*	*5%*	*5%*	*-7%*	*-56%*
Major maintenance expense		(212)	(229)	(238)	(7)	-	-	-	-	-
CSR expenses		(2)	(2)	(2)	(2)	(4)	(8)	(11)	(12)	-
EBITDA	**[A]**	**692**	**774**	**880**	**1,238**	**1,375**	**1,516**	**1,679**	1,842	**751**
EBITDA margin		75%	76%	78%	98%	99%	99%	98%	99%	99%
Depreciation		(155)	(171)	(190)	(211)	(233)	(257)	(285)	(312)	(126)
EBIT		**537**	**602**	**690**	**1,027**	**1,141**	**1,259**	**1,394**	**1,530**	**624**
EBIT margin		58%	59%	61%	81%	82%	82%	82%	82%	82%
Less: Tax on EBIT	[B]	(175)	(195)	(222)	(312)	(347)	(383)	(425)	(467)	(189)
Change in working capital	[C]	-	-	-	-	-	-	-	-	-
Less : Capex	[D]	-	-	-	-	-	-	-	-	-
Free cash flows to the firm	**E = [A+B+C+D]**	**517**	**579**	**658**	**926**	**1,028**	**1,133**	**1,254**	**1,375**	**562**
Discounting period		9.50	10.50	11.50	12.50	13.50	14.50	15.50	16.50	17.18
Discount factor	[F]	0.43	0.39	0.36	0.33	0.30	0.27	0.25	0.23	0.21
Present value of cash flows	**[E*F]**	**220**	**225**	**234**	**301**	**305**	**308**	**311**	**312**	**120**

Valuation conclusion	
INR Crore	
Present value of cash flows	4,765
Present value of release of working capital	**(2)**
Enterprise Valuation	**4,763**

WACC	**9.40%**

Present value of release in working capital represent working capital of negative INR 11 Cr released at the end of the concession period.

Please refer WACC Summary for WACC breakup.

Basis the above and using a WACC of 9.32%, the Enterprise Value of IHMTL, as on 31 March 2026 is INR 4,762 crore.

Source(s): Management information, KVSL analysis

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6.

Valuation Conclusion

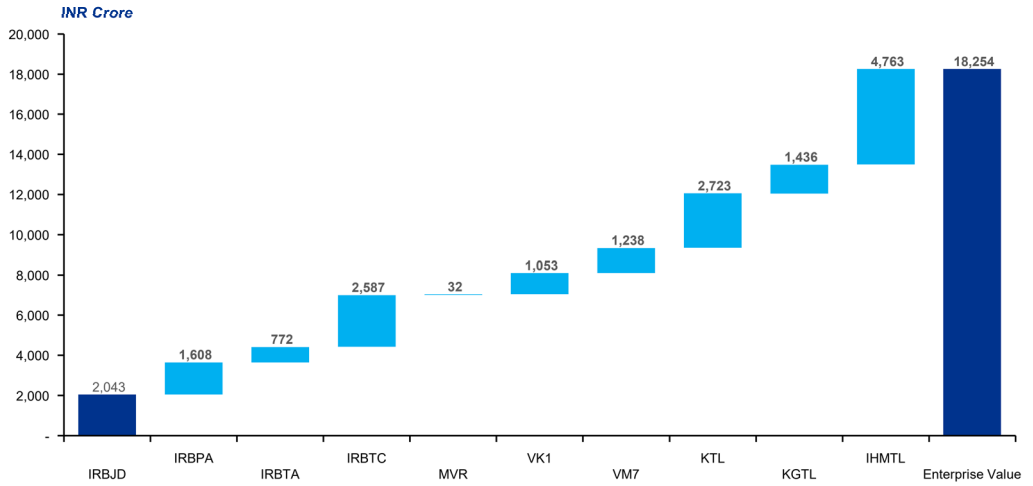
Valuation Conclusion (1/2)

Valuation Conclusion (INR Crore)

Valuation Conclusion 31 March 2026	INR Crore
IRB Jaipur Deoli Tollway Limited	2,043
IRB Pathankot Amritsar Toll Road Limited	1,608
IRB Talegaon Amravati Tollway Limited	772
IRB Tumkur Chitradurga Tollway Limited	2,587
MVR Infrastructure and Tollways Limited	32
VK1 Expressway Limited	1,053
VM7 Expressway Limited	1,238
Kaithal Tollway Limited	2,723
Kishangarh Gulabpura Tollway Limited	1,436
IRB Hapur Moradabad Tollway Limited	4,763
Enterprise Value of the SPVs	**18,254**
Cash and cash Equivalents	249
PV of Investment manager fees	(214)
Surplus	590
Capital Creditors	(17)
Debt and Debt like items	(8,449)
Equity value of IRB InvIT Fund	**10,414**

NAV at fair value per unit as on 31 March 2026	
Equity Value of IRB InvIT Fund (INR Cr)	10,414
Units outstanding (No.)	1,281,600,000
NAV at fair value per unit (INR)	**81.26**

Enterprise Value of SPVs



The chart above presents the Enterprise Value of the SPVs. Refer subsequent slide for details about the post Enterprise Value adjustments.

The Enterprise Value of the SPVs is INR 18,254 crores and the 100% Equity Value of the IRB InvIT Fund is INR 10,414 crores as on 31 March 2026.

The NAV at fair value per unit of IRB InvIT Fund as on 31 March 2026 is INR 81.26 per unit.

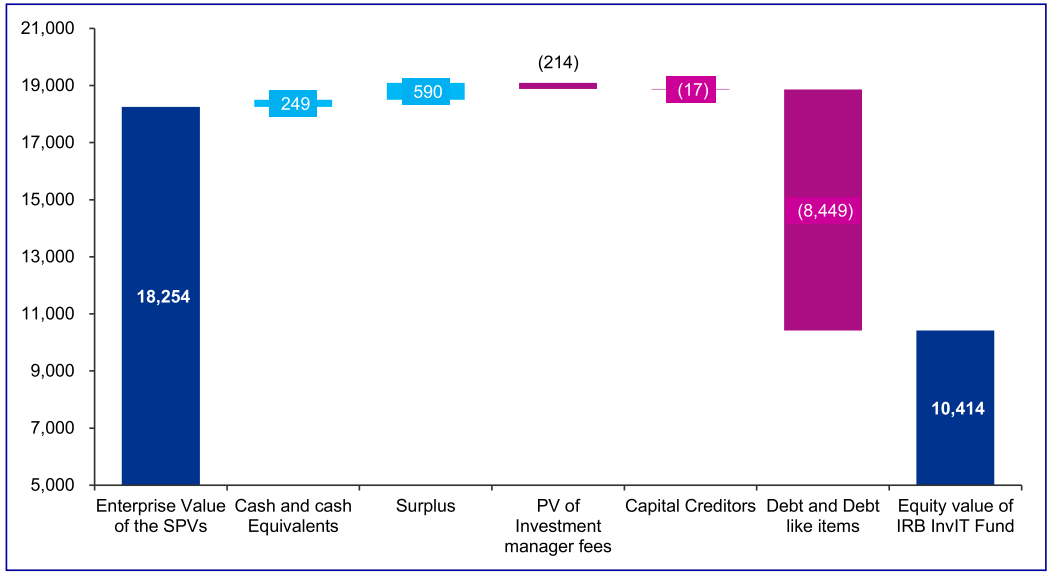
Source(s): Management information, KVSL analysis

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Valuation Conclusion (2/2)

Calculation of Equity Value of IRB InvIT Fund from Enterprise Value of the SPVs



1	Cash and cash equivalents comprise balance and deposits with banks (excluding balance held towards DSRA) as at 31 March 2026.
2	Surplus assets primarily comprise of investment in mutual funds and other non operating assets as at 31 March 2026
3	Present value of standalone expenses of the IRB InvIT Fund represent the present value of the investment manager fee in the books of IRB InvIT Fund. The expenses have been forecasted assuming 1% of Toll Revenue (net off premium / revenue share) with a floor of INR 10 Crore and a Cap of INR 25 Crore per annum.
4	Capital creditors of INR 17 Cr have been considered debt like in nature and adjusted from the Enterprise Value to arrive at the Equity Value of IRB InvIT Fund. Management represented that they do not consider these liabilities as part of the working capital and thus they have not been considered as part of the forecast working capital
5	Debt and debt like items primarily represents loan from banks and financial institutions of INR 8,652 Cr as at 31 March 2026. The debt and debt like items has been adjusted by INR 203 Cr, which represents the present value of the release of DSRA as at 31 March 2026. The release schedule of the DSRA along with applicable interest earned on the DSRA balance has been provided by the Management.

The Enterprise Value of the SPVs is INR 18,255 crores and the 100% Equity Value of the IRB InvIT Fund is INR 10,414 crores as on 31 March 2026.

The NAV at fair value per unit of IRB InvIT Fund as on 31 March 2026 is INR 81.26 per unit.

Source(s): Management information, KVSL analysis

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7.

Annexures

Annexure 1: Sources of Information (1/2)

This Report is prepared based on the below sources of information as provided to us by the Management:

The following information provided to KVSL by Management was used in preparation of the Valuation Report:

- Audited financial statements for FY2021, FY2022, FY2023, FY2024 and FY2025 for all the SPVs.
- Consolidated and Standalone audited financial statements for FY2022, FY2023, FY2024 and FY2025 of IRB InvIT Fund.
- Provisional financial statements for the period ended 31 March 2026 for all the SPVs and IRB InvIT Fund (standalone and consolidated).
- Financial projections of SPV's, Investment Manager fee, DSRA requirement from 1 April 2026 till the end of the concession period of the respective SPV's
- Other data for all the SPVs which is as follows –
    - Concession Agreements
    - Premium Deferment agreement for IRBTC
    - Completion Certificates
    - Traffic Reports prepared by GMD consultants
    - Toll Rate Notifications
    - Extract of O&M agreement with IRBIDL
    - Details of brought forward losses and MAT credit (as per Income Tax Act) of the SPVs as at 31 March 2026.
- List of approvals, permits, licenses and litigations for the SPVs as at 31 March 2026.
- NHAI letters for modification of concession period for IRBJD and IRBPA.
- Letter from the SPV to NHAI for modification of concession period in accordance with terms of concession agreement for IRBTC and IRBTA.
- Management has provided project completion cost certificate for VK1.
- Management has provided Traffic consultant reports prepared by GMD Consultants (appointed independently by Client) dated May 2026 for Toll SPV's. Management has confirmed that the traffic studies shared are the most recent studies available. Forecast revenue has been considered from the aforesaid traffic study reports for each of the SPVs. We have compared the revenue considered in the forecast model with the revenue forecasted in the traffic study reports and noted that the Management has considered the pessimistic revenue scenario in their forecast.
- Management has informed that O&M for the SPVs projects would be done by IRBIDL based on fixed price contract. O&M payments are fixed for the contract period till FY2030 for IRBJD, IRBPA, IRBTA and IRBTC; FY2027 for MVR; FY2037 for VK1; FY 2043 for KGTL; FY 2049 for KTL, FY 2041 for VM7 and FY 2044 for IHMTL after which terms of the contract may get renegotiated upon renewal. Management has shared extract of the contract and we have validated forecasted periodic and routine maintenance expense for contract period from the same. For the forecast period post the contract period O&M has been considered based on the technical feasibility study conducted by the external third party. We have gone ahead with Management assumption on O&M cost. Given the technical nature of this study, review of the same is not part of our scope of work.

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Annexure 1: Sources of Information (2/2)

- We understand that KGTL has filed Writ petition with Hon'ble Rajasthan High Court with prayer to commence payment of premium to NHAI, six months post actual completion of the project construction work. The Hon'ble High Court prima facie agreed with the contention of KGTL and have provided interim relief from payment of premium. The matter is currently under arbitration. Forecast provided is based on assumption that said relief will be granted to respective SPVs.
- The investment management fees is computed assuming 1% of net Toll Revenue with a floor of INR 10 Crore and a Cap of INR 25 Crore per annum which is in line with agreement between Fund and Investment manager.
- Management represented that due to covid 19 the concession period end dates across all BOT SPVs increased by 90-446 days pursuant to notification no F.18/4/2020-PPD dated 13th May 2020 and Notification no. Covid-19/Roadmap/JS(H)/2020 dated 26th August 2021. Concession period of IRBPA in addition to covid 19 increase, increased by further 494 days due to farmer agitations on its route. Apart from this, concession period is increased by 24 days for all BOT SPVs excluding KGTL, KTL and IHMTL due to demonetization.
- Management has considered 518 days of extension in concession period for IRBPA due to delay in completion of construction for reasons not attributable to IRBPA. However, the NHAI has challenged the extension of 518 days and the matter is still under litigation. Based on this representation from Management, we have considered 518 days of extension in concession period in our analysis. We have considered higher alpha for IRBPA to account for uncertainty associated with extension of concession period.
- Given the nature of the liability, capital creditors of INR 17 Cr outstanding in the books of the SPVs have been considered debt like in nature and adjusted from the Enterprise Value to arrive at the Equity Value of IRB InvIT Fund.
- We note that borrowings of INR 437 Cr is outstanding in the financials of KGTL and KTL, payable to IRBIDL as on 31 March 2026, which has not been considered as debt like in nature for the purpose of valuation analysis. We have been given to understand that SPVs have ongoing claims and litigations with NHAI for respective projects. The SPVs have entered into a debt novation agreement with IRBIDL pursuant to which any amount received by SPVs or Trust towards these NHAI claims will be paid to IRBIDL. Management has also confirmed that these claims and liabilities have no financial impact on the SPVs or the Trust and the claim amounts from NHAI are significantly higher than the liabilities recognized by the Trust. Based on the above, we have not considered any impact of these liabilities in our valuation analysis.
- As per the NHAI Circular No. 17.7.12/2025 dated 17 October 2025, the Ministry of Road Transport & Highways (MoRTH), vide Gazette Notification No. 388 (E) dated 17 June 2025, has inserted sub-section (3B) in Rule 9 of the National Highways Fee (Determination of Rates and Collection) Rules, 2008, thereby introducing the concept of an Annual Pass with effect from 15 August 2025. MoRTH vide Circular No. H-25011/05/2025-Toll (E-245443) dated 1 September 2025 has notified a fair compensation framework for addressing revenue losses arising out of the Annual Pass in InvIT Projects. The impact of Annual Pass has been considered by the traffic consultant in the traffic study while estimating toll revenue for the forecast period.
- Besides the above, there may be other information provided by the Management which may not have been perused by us in any detail, if not considered relevant for our defined scope.
- In addition to the above, we have also obtained such other information and explanations from the Management, either verbally or in written form, as were considered relevant for the purpose of the valuation. We had discussions with the key members of the Management;
- The following external sources were used in the preparation of the report:
  - External databases such as Capital IQ, etc.
  - Relevant information made available to us by Management at our request.
  - Publicly available information and secondary information.

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Annexure 2a: Investment Management Expenses

Present value of stand alone expenses pertaining to InvIT												
	FY2027	FY2028	FY2029	FY2030	FY2031	FY2032	FY2033	FY2034	FY2035	FY2036	FY2037	FY2038
INR crores	12 months	12 months	12 months	12 months	12 months	12 months	12 months	12 months	12 months	12 months	12 months	12 months
IM Expenses	13.8	14.0	15.3	17.4	18.6	20.4	22.9	25.0	25.0	25.0	25.0	25.0
IM Expenses (including GST)	16.3	16.5	18.1	20.6	22.0	24.1	27.1	29.5	29.5	29.5	29.5	29.5
Discounting period	0.500	1.500	2.500	3.500	4.500	5.500	6.500	7.500	8.500	9.500	10.500	11.500
Discount factor	0.954	0.868	0.790	0.719	0.655	0.596	0.542	0.494	0.449	0.409	0.372	0.339
Present value of cash flows	**15.5**	**14.4**	**14.3**	**14.8**	**14.4**	**14.4**	**14.7**	**14.6**	**13.3**	**12.1**	**11.0**	**10.0**

Present value of stand alone expenses pertaining to InvIT											
	FY 2039	FY2040	FY2041	FY2042	FY2043	FY2044	FY2045	FY2046	FY2047	FY2048	FY2049
INR crores	12 months	12 months	12 months	12 months	12 months	12 months	12 months	12 months	12 months	12 months	12 months
IM Expenses	25.0	25.0	25.0	25.0	25.0	16.5	10.0	10.0	10.6	11.6	10.8
IM Expenses (including GST)	29.5	29.5	29.5	29.5	29.5	19.4	11.8	11.8	12.5	13.7	12.8
Discounting period	12.500	13.500	14.500	15.500	16.500	17.500	18.500	19.500	20.500	21.500	22.500
Discount factor	0.308	0.281	0.255	0.232	0.212	0.193	0.175	0.160	0.145	0.132	0.120
Present value of cash flows	**9.1**	**8.3**	**7.5**	**6.9**	**6.2**	**3.7**	**2.1**	**1.9**	**1.8**	**1.8**	**1.5**

Valuation conclusion	
INR Crore	
Present value of cash flows	**214**

WACC	***9.87%***

Source(s): Management Information, KVSL Analysis

The investment management fees is computed assuming 1% of net Toll Revenue with a floor of INR 10 Crore and a Cap of INR 25 Crore which is in line with agreement between Fund and Investment manager. We have relied on Management representation for the same.
We have considered the median WACC of the BOT SPVs for discounting Investment Management Expenses.

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Annexure 2b: Revenue - IRBJD

Revenue Breakup													
INR crores	FY2027 12 months	FY2028 12 months	FY2029 12 months	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	FY 2039 12 months
Toll Revenue	223	245	268	294	323	353	386	418	460	500	541	586	636
Less: premium payment to NHAI	-	-	-	-	-	-	-	-	-	-	-	-	-
Other operating income	-	-	-	-	-	-	-	-	-	-	-	-	-
Total revenue	**223**	**245**	**268**	**294**	**323**	**353**	**386**	**418**	**460**	**500**	**541**	**586**	**636**

Revenue Breakup		
INR crores	FY2040 12 months	FY2041 7 months
Toll Revenue	693	416
Less: premium payment to NHAI	-	-
Other operating income	-	-
Total revenue	**693**	**416**

Category wise year-on-year traffic growth in PCU for the projected period as shown in the Traffic Repot of IRBJD is as below:

Category / Year	FY 2027–2030	FY 2031–2035	FY 2036–2040	FY 2041–2045
Car	6.54%	5.46%	4.45%	3.50%
Minibus / LCV	4.23%	3.52%	2.59%	1.70%
Truck / Bus	4.97%	4.19%	3.47%	2.81%
Multi Axle	4.06%	3.41%	2.81%	2.26%
Oversized Vehicles	4.06%	3.41%	2.81%	2.26%

Source(s): Management Information, KVSL Analysis

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Annexure 2b: Revenue - IRBPA

Revenue Breakup												
INR crores	FY2027 12 months	FY2028 12 months	FY2029 12 months	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 10 months
Toll Revenue	183	202	220	248	279	309	334	363	394	430	467	421
Less: premium payment to NHAI	-	-	-	-	-	-	-	-	-	-	-	-
Other operating income	-	-	-	-	-	-	-	-	-	-	-	-
Total revenue	**183**	**202**	**220**	**248**	**279**	**309**	**334**	**363**	**394**	**430**	**467**	**421**

Category wise year-on-year traffic growth in PCU for the projected period as shown in the Traffic Repot of IRBPA is as below:

Category / Year	FY 2026–27	FY 2028–32	FY 2033–37	FY 2038–42
Car / Jeep / Van	6.34%	5.34%	4.34%	3.84%
LCV	4.90%	3.90%	2.90%	2.65%
Truck / Bus	3.63%	2.63%	1.63%	1.38%
Multi Axle (> 2 axle)	5.90%	4.90%	3.90%	3.65%

Source(s): Management Information, KVSL Analysis

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Annexure 2b: Revenue - IRBTA

Revenue Breakup												
INR crores	FY2027 12 months	FY2028 12 months	FY2029 12 months	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 2 months
Toll Revenue	107	118	130	143	157	174	190	210	231	253	277	52
Less: premium payment to NHAI	-	-	-	-	-	-	-	-	-	-	-	-
Other operating income	-	-	-	-	-	-	-	-	-	-	-	-
Total revenue	**107**	**118**	**130**	**143**	**157**	**174**	**190**	**210**	**231**	**253**	**277**	**52**

Category wise year-on-year traffic growth in PCU for the projected period as shown in the Traffic Repot of IRBTA is as below:

Category / Year	FY 2027–2030	FY 2031–2035	FY 2036–2040
Car	5.61%	5.14%	4.72%
Minibus / LCV	4.56%	4.25%	3.96%
Truck / Bus	5.34%	5.03%	4.46%
Multi Axle	5.34%	5.03%	4.46%
Oversized Vehicles	5.34%	5.03%	4.46%

Source(s): Management Information, KVSL Analysis

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Annexure 2b: Revenue - IRBTC

Revenue Breakup													
INR crores	FY2027 12 months	FY2028 12 months	FY2029 12 months	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	FY 2039 12 months
Toll Revenue	477	529	576	636	698	771	842	932	1,021	1,117	1,218	1,335	1,460
Less: premium payment to NHAI	-	-	-	-	-	-	-	-	-	-	-	-	-
Other operating income	-	-	-	-	-	-	-	-	-	-	-	-	-
Total revenue	**477**	**529**	**576**	**636**	**698**	**771**	**842**	**932**	**1,021**	**1,117**	**1,218**	**1,335**	**1,460**

Revenue Breakup				
INR crores	FY2040 12 months	FY2041 12 months	FY2042 12 months	FY2043 9 months
Toll Revenue	1,606	1,738	1,896	1,545
Less: premium payment to NHAI	-	-	-	-
Other operating income	-	-	-	-
Total revenue	**1,606**	**1,738**	**1,896**	**1,545**

Category wise year-on-year traffic growth in PCU for the projected period as shown in the Traffic Repot of IRBTC is as below:

Category / Year	FY 2027–30	FY 2031–35	FY 2036–40	FY 2041–45
Car	5.16%	4.71%	4.11%	3.44%
LCV	5.55%	5.09%	4.66%	4.30%
Truck / Bus	4.76%	4.35%	3.94%	3.54%
HCM / EME / MAV	5.53%	5.05%	4.59%	4.13%
Oversized Vehicles	5.53%	5.05%	4.59%	4.13%

Source(s): Management Information, KVSL Analysis

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Annexure 2b: Revenue - MVR

Revenue Breakup	
INR crores	FY2027 4 months
Toll Revenue	73
Less: Revenue share to NHAI	(16)
Other operating income	-
Total revenue	**57**

Category wise year-on-year traffic growth in PCU for the projected period as shown in the Traffic Repot of MVR is as below:

Category / Year	2027–2030
Car	3.74%
Minibus / LCV	2.38%
Truck / Bus	3.02%
Multi Axle	3.02%

Source(s): Management Information, KVSL Analysis

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Annexure 2b: Revenue – VK1

Revenue Breakup													
INR crores	30-Sep-26 6 months	31-Mar-27 6 months	30-Sep-27 6 months	31-Mar-28 6 months	30-Sep-28 6 months	31-Mar-29 6 months	30-Sep-29 6 months	31-Mar-30 6 months	30-Sep-30 6 months	31-Mar-31 6 months	30-Sep-31 6 months	31-Mar-32 6 months	30-Sep-32 6 months
Annuity receipt from NHAI	35	36	37	38	39	40	41	43	44	45	47	48	50
Interest on Annuity Receivable	50	49	47	45	43	41	39	38	35	33	31	29	27
O&M Support	2	2	2	2	2	2	2	2	2	2	2	2	2
Total revenue	**87**	**86**	**85**	**85**	**84**	**84**	**83**	**82**	**81**	**81**	**80**	**79**	**78**

Revenue Breakup									
INR crores	31-Mar-33 6 months	30-Sep-33 6 months	31-Mar-34 6 months	30-Sep-34 6 months	31-Mar-35 6 months	30-Sep-35 6 months	31-Mar-36 6 months	30-Sep-36 6 months	31-Mar-37 6 months
Annuity receipt from NHAI	51	53	54	55	55	58	61	62	62
Interest on Annuity Receivable	24	22	19	17	14	12	9	6	3
O&M Support	2	2	2	2	2	2	2	2	2
Total revenue	**77**	**77**	**76**	**74**	**71**	**71**	**72**	**70**	**67**

Source(s): Management Information, KVSL Analysis

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Annexure 2b: Revenue – VM7

Revenue Breakup													
INR crores	31-May-26 6 months	30-Nov-26 6 months	31-May-27 6 months	30-Nov-27 6 months	31-May-28 6 months	30-Nov-28 6 months	31-May-29 6 months	30-Nov-29 6 months	31-May-30 6 months	30-Nov-30 6 months	31-May-31 6 months	30-Nov-31 6 months	31-May-32 6 months
Annuity receipt from NHAI	23	23	24	25	26	26	27	28	29	30	31	31	32
Interest on Annuity Receivable	50	49	48	47	46	44	43	42	40	39	37	36	34
O&M Support	5	5	5	5	5	5	5	5	5	5	5	5	5
Total revenue	**77**	**77**	**77**	**76**	**76**	**75**	**75**	**75**	**74**	**74**	**73**	**73**	**72**

Revenue Breakup													
INR crores	30-Nov-32 6 months	31-May-33 6 months	30-Nov-33 6 months	31-May-34 6 months	30-Nov-34 6 months	31-May-35 6 months	30-Nov-35 6 months	31-May-36 6 months	30-Nov-36 6 months	31-May-37 6 months	30-Nov-37 6 months	31-May-38 6 months	30-Nov-38 6 months
Annuity receipt from NHAI	33	34	35	36	38	39	40	41	42	44	44	44	46
Interest on Annuity Receivable	33	31	29	28	26	24	22	20	18	16	14	12	10
O&M Support	5	5	6	6	6	6	6	6	6	6	6	6	6
Total revenue	**71**	**71**	**70**	**70**	**69**	**69**	**68**	**67**	**66**	**66**	**64**	**62**	**62**

Revenue Breakup			
INR crores	31-May-39 6 months	30-Nov-39 6 months	31-May-40 6 months
Annuity receipt from NHAI	49	49	49
Interest on Annuity Receivable	7	5	2
O&M Support	6	6	6
Total revenue	**63**	**61**	**58**

Source(s): Management Information, KVSL Analysis

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Annexure 2b: Revenue - KTL

Revenue Breakup													
INR crores	2027 12 months	2028 12 months	2029 12 months	2030 12 months	2031 12 months	2032 12 months	2033 12 months	2034 12 months	2035 12 months	2036 12 months	2037 12 months	2038 12 months	2039 12 months
Toll Revenue	163	180	199	222	245	271	297	328	361	396	432	474	517
Less: premium payment to NHAI	-	-	-	-	-	-	-	-	-	-	-	-	-
Other operating income	0	0	0	1	1	1	1	1	1	1	1	1	1
Total revenue	**164**	**181**	**200**	**223**	**245**	**272**	**298**	**329**	**362**	**397**	**433**	**475**	**519**

Revenue Breakup										
INR crores	2040 12 months	2041 12 months	2042 12 months	2043 12 months	2044 12 months	2045 12 months	2046 12 months	2047 12 months	2048 12 months	2049 11 months
Toll Revenue	568	620	679	743	813	888	971	1,059	1,159	1,153
Less: premium payment to NHAI	-	-	-	-	-	-	-	-	-	-
Other operating income	1	1	2	2	2	2	2	2	3	3
Total revenue	**569**	**622**	**680**	**744**	**815**	**891**	**973**	**1,062**	**1,161**	**1,156**

Category wise year-on-year traffic growth in PCU for the projected period as shown in the Traffic Repot of KTL is as below:

Category / Year	FY 2026–2027	FY 2028–2030	FY 2031–2035	FY 2036–2040	FY 2041–2045	FY 2046–2050
Car / Jeep / Van	5.17%	4.95%	4.72%	4.50%	4.28%	4.06%
Bus	2.71%	2.59%	2.22%	2.11%	2.00%	1.90%
LCV	2.88%	2.67%	2.22%	2.03%	1.85%	1.67%
2 - Axle	3.46%	3.24%	2.73%	2.54%	2.36%	2.17%
3 - Axle	3.46%	3.24%	2.73%	2.54%	2.36%	2.17%
4 to 6 Axle	3.46%	3.24%	3.03%	2.82%	2.62%	2.41%
7 and Above Axle	3.46%	3.24%	3.03%	2.82%	2.62%	2.41%

Source(s): Management information

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Annexure 2b: Revenue - KGTL

Revenue Breakup													
	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
INR crores	12 months	12 months	12 months	12 months	12 months	12 months	12 months	12 months	12 months	12 months	12 months	12 months	12 months
Toll Revenue	300	334	369	412	456	505	558	617	683	749	819	894	978
Less: premium payment to NHAI	(210)	(216)	(222)	(240)	(259)	(281)	(302)	(327)	(353)	(382)	(411)	(444)	(480)
Other operating income	1	1	1	1	1	1	1	1	1	2	2	2	2
Total revenue	**91**	**118**	**148**	**173**	**198**	**225**	**257**	**292**	**332**	**368**	**410**	**451**	**500**

Revenue Breakup				
	2040	2041	2042	2043
INR crores	12 months	12 months	12 months	3 months
Toll Revenue	1,076	1,174	1,277	364
Less: premium payment to NHAI	(520)	(560)	(605)	(286)
Other operating income	2	2	3	1
Total revenue	**558**	**617**	**675**	**78**

Category wise year-on-year traffic growth in PCU for the projected period as shown in the Traffic Repot of KGTL is as below:

Category / Year	FY 2027–2030	FY 2031–2035	FY 2036–2040	FY 2041–2045	FY 2046–2051
Car / Jeep / Van	8.20%	7.66%	7.12%	7.08%	6.53%
Bus	3.62%	3.38%	3.14%	3.07%	2.83%
LCV	3.24%	3.42%	3.60%	3.77%	3.94%
2 - Axle	3.45%	3.02%	2.59%	2.36%	1.91%
3 - Axle	4.38%	3.83%	3.30%	3.17%	2.58%
4 to 6 Axle	5.30%	4.65%	4.00%	3.77%	3.08%
7 and Above Axle	5.30%	4.65%	4.00%	3.77%	3.08%

Source(s): Management information

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Annexure 2b: Revenue - HMTL

Revenue Breakup													
	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
INR crores	12 months	12 months	12 months	12 months	12 months	12 months	12 months	12 months	12 months	12 months	12 months	12 months	12 months
Toll Revenue	406	441	472	511	574	640	713	793	885	981	1,086	1,206	1,339
Less: premium payment to NHAI	(35)	(37)	(38)	(41)	(44)	(47)	(51)	(55)	(60)	(65)	(70)	(75)	(81)
Other operating income	1	1	1	1	1	1	1	2	2	2	2	2	3
Total revenue	**371**	**405**	**436**	**471**	**531**	**593**	**663**	**740**	**827**	**918**	**1,019**	**1,134**	**1,261**

Revenue Breakup					
	2040	2041	2042	2043	2044
INR crores	12 months	12 months	12 months	12 months	6 months
Toll Revenue	1,478	1,630	1,804	1,976	800
Less: premium payment to NHAI	(88)	(95)	(102)	(110)	(43)
Other operating income	3	3	4	4	-
Total revenue	**1,393**	**1,539**	**1,705**	**1,869**	**757**

Category wise year-on-year traffic growth in PCU for the projected period as shown in the Traffic Repot of IHMTL is as below:

Category / Year	FY 2027–2030	FY 2031–2035	FY 2036–2040	FY 2041–2046
Car / Jeep / Van	5.51%	5.28%	3.86%	3.67%
LCV	2.56%	1.97%	1.26%	1.07%
Bus	2.70%	2.94%	2.23%	2.12%
2-Axle	3.11%	2.67%	1.26%	1.07%
3-Axle	3.11%	2.67%	1.26%	1.07%
4 to 6 Axle	3.42%	2.93%	1.39%	1.18%
7 and Above Axle	3.42%	2.93%	1.39%	1.18%

Source(s): Management information

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Annexure 3: Other disclosures as required under SEBI InvIT Regulations

The following disclosures are as at 31 March 2026 for the SPVs

1. **Valuation of the project in the previous 3 years:** Refer annexure 3a for the aforementioned information.
2. **List of one-time sanctions/approvals which are obtained or pending/ List of up to date/overdue periodic clearances:** Refer annexure 3b for the aforementioned information.
3. **Estimates of already carried as well as proposed major repairs and improvements along with estimated time of completion:** Refer annexure 3c for the aforementioned information.
4. **Purchase price of the project by the InvIT:** Refer annexure 3d for the aforementioned information.
5. **On-going and closed material litigations including tax disputes in relation to the assets, if any:** Refer annexure 3e for the aforementioned information. There are no material litigations in VM7
6. **Statement of assets**: Refer annexure 3f for the aforementioned information.
7. **Revenue pendencies including local authority taxes associated with InvIT asset and compounding charges, if any:** Management represented that there are no revenue pendencies including local authority taxes and compounding charges with respect to the 10 SPVs.
8. **Vulnerability to natural or induced hazards that may not have been covered in town planning/ building control:** Management represented that there are no such natural or induced hazards which have been not considered in town planning/building control with respect to the 10 SPVs.
9. **Latest pictures of the SPVs:** Refer annexure 3g for the aforementioned information
10. **Date of site inspection**: During the month of December 2025, March/ April/ May 2026.
11. **In term of the SEBI InvIT Regulations, we hereby confirm that:**

- We are competent to undertake the valuation.
- We are independent and have prepared this Report on fair and unbiased basis.
- The Valuation has been performed 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.
- KVSL is not affiliated to the Client in any manner whatsoever. Further KVSL does not have a prospective interest in the Targets which is the subject of this Valuation and KVSL's fee is not contingent on an action or event resulting from the analysis, opinions or conclusions in the Valuation.

12. **Valuers brief profile: Refer annexure 3h for Valuers profile**

Caveat to disclosures
KVSL has not independently verified the documents related to disclosures mentioned in the annexures (other than annexure 3h) and have relied on Management representation for the same.

Source(s): Management information, KVSL analysis

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Annexure 3a: Valuation of the projects in the previous 3 years

Valuation Summary						
INR Crore						
Name of the SPV	Sep-23	Mar-24	Sep-24	Mar-25	Sep-25	Nov-25
IRB Jaipur Deoli Tollway Limited	1,939	1,949	2,058	2,015	2,046	2,047
IRB Pathankot Amritsar Toll Road Limited	1,611	1,590	1,518	1,507	1,520	1,526
IRB Talegaon Amravati Toll Road Limited	841	791	788	798	739	740
IRB Tumkur Chitradurga Tollway Limited	2,176	2,078	2,914	2,167	2,301	2,318
MVR Infrastructure and Tollways Limited	327	295	237	196	148	135
VK1 Expressway Limited	1,300	1,267	1,183	1,145	1,092	982
VM7 Expressway Private Limited	NA	NA	NA	NA	NA	NA
Kaithal Tollway Limited	NA	NA	NA	NA	NA	2,733
Kishangarh Gulabpura Highway Limited	NA	NA	NA	NA	NA	1,493
IRB Hapur Moradabad Highway Limited	NA	NA	NA	NA	NA	4,723

Source(s): Previous Valuation Reports
Valuation up till March 2024 was conducted by a different valuer.
KTL, KGTL, IHMTL were acquired with effect from 01 November 2025. Hence, previous valuation for these 3 SPVs is not presented.
VM7 was acquired on 01 December 2025. Hence, previous valuation for VM7 is not presented.

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Annexure 3b: One-time sanctions and approvals and overdue periodic clearances (1/7)

Sr. No.	Description of the permits	Issuing Authority	Validity/ Current status
IRB Jaipur Deoli Tollway Limited			
1	**Provisional permission for energization of Installation (DG) set/Captive power) under Rule 63 & 47 A of Indian Electricity Rules, 1956**		
i	Barkheda-Chandlai Toll Plaza	Sr.Electrical Inspector, Jaipur	Valid up to 31.03.2026 -Renewal is in under process.
ii	Sonwa Toll Plaza	Sr.Electrical Inspector, Jaipur	Valid up to 31.03.2026 -Renewal is in under process.
2	**WIM System**		
i	Inspection certificate for Barkheda -Chandlai Toll Plaza	Weigh and Measure Department, Jaipur	Stamping Certificate renewed upto (02.09.2026, 21.12.2026, & 22.12.2026).
ii	Inspection certificate for Sonwa Toll Plaza	Weigh and Measure Department, Tonk	Stamping Certificate renewed upto (17.08.2026, 20.11.2026, & 22.12.2026).
3	**Static Weigh Bridge**		
i	Inspection Certificate for Static Weight Bridge at Barkheda-Chandlai Toll Plaza	Weigh and Measure Department, Jaipur	1.Stamping of WBE 44 - Renewed upto 30.12.2026 2. Stamping Certificate for WBE 47 (Tonk Side) Renewed upto 30.12.2026
ii	Inspection Certificate for Static Weight Bridge at Sonwa Toll Plaza	Weigh and Measure Department, Tonk	Stamping of WBE 45 (Jaipur Side) & WBE 46 (Tonk Side): Valid up to 20.11.2026

Source(s): Management information

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Annexure 3b: One-time sanctions and approvals and overdue periodic clearances (2/7)

Sr. No.	Description of the permits	Issuing Authority	Validity/ Current status
IRB Pathankot Amritsar Toll Road Limited			
1	Labour License for Contract Labours CLRA/ALCJALANDHAR/2025/202294/L-537 dated 29.10.2025	Office of the Assist. Labour Commissioner, Jalandhar	28-Oct-26
2	Inspection Certificate, WIM at Ladpalwan Toll Plaza (5 Nos.) and Receipt No. 250376421, LCR No.-37202173165, VC S no. 91202503715878	Controller Legal Metrology, Punjab, Pathankot	17-Jun-26
3	Inspection Certificate, WIM at Ladpalwan Toll Plaza (5 Nos.) and Receipt No. 250376422, LMUR No.37202173165, VC S no. 91202503715879	Controller Legal Metrology, Punjab, Pathankot	17-Jun-26
4	Inspection Certificate, Static Weigh Bridge at Ladpalwan Toll Plaza PTK & ASR Side Application No. 250317WM000146, VC S. no. PB/250317028WMV0161 and Fee Receipt No. 025110007179	Controller Legal Metrology, Punjab, Pathankot	27-Nov-26
5	Inspection Certificate, WIM at Waryam Nangal Toll (8 Nos.) LCR No. 25202358066, VC S no.91202502573671 Fee Receipt 250257580	Controller Legal Metrology, Punjab, Amritsar	29-Jul-26
6	Inspection Certificate, WIM at Waryam Nangal Toll (2 Nos.) LMUR No. 25202358066, VC S no.91202502573672 Fee Receipt 250257580	Controller Legal Metrology, Punjab, Amritsar	29-Jul-26
7	Inspection Certificate, Static Weigh Bridge at Waryam Nangal Toll Plaza PTK & ASR Side LCR No. 25202153506, VC S. no. 91202502573824 and Fee Receipt No. 250257732	Controller Legal Metrology, Punjab, Amritsar	14-Sep-26

Source(s): Management information

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Annexure 3b: One-time sanctions and approvals and overdue periodic clearances (3/7)

Sr. No.	Description of the permits	Issuing Authority	Validity/ Current status	Remarks
IRB Talegaon Amravati Tollway Limited				
1	Principle employer registration - No. (Labour License No.ALCN/46(L)/158/2010-CL, dated 26.11.2010)	Office the Regional Labour, Nagpur	Valid up to 20.12.2026	-
2	License for Building & Other Construction activities No. (ALCN/42 (R)/150/2010/BOCW, dated 21.12.2010)	Office the Regional Labour, Nagpur	Valid up to 02.09.2032	-
3	Inspection Certificate for WIM installed at Nandagaon Toll Plaza	Inspector, Legal Metrology, Amravati	Valid upto 23.06.2023	Letter issued to Office of the Inspector of legal metrology Amravati Division
4	Inspection Certificate for Static Weigh Bridge at Nandagaon Toll Plaza (Amravati Side)	Inspector, Legal Metrology, Amravati	Valid upto 26/01/2024	
5	Inspection Certificate for Static Weigh Bridge at Nandagaon Toll Plaza (Nagpur Side)	Inspector, Legal Metrology, Amravati	Valid upto 26/01/2024	

Sr. No.	Description of the permits	Issuing Authority	Validity/ Current status
M.V.R. Infrastructure and Tollways Limited			
1	Certificate of registration of captive generating plant.	Electrical Inspector, Government of Tamil Nadu.	Life time validity
2	Licence No. CLRA/ALCCHENNAI/2020/L-116/ under the Contract Labour (Regulation and Abolition) Act, 1971, dated 03.08.2021	Regional Labour Commissioner Central), Chennai	Valid up to 03-Aug-26

Source(s): Management information

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Annexure 3b: One-time sanctions and approvals and overdue periodic clearances (4/7)

Sr. No.	Description of the permits	Issuing Authority	Validity/ Current status
IRB Tumkur Chitradurga Tollway Limited			
1	Labour License for Contract Labours Licence no. 46(97)2011.B3 /2011 dated 16.02.2026	Office of the Assist. Labour Commissioner, Bangalore	30-Mar-27
2	Labour License for Contract Labours Licence no. 33/2011-AH dated 19.02.2025	Office of the Assist. Labour Commissioner, Hubli	5-Apr-26
3	Inspection Certificate, Iron hexagon weight at Guilalu Toll Plaza and Receipt No. 2401113119, LCR No.-AC11046 Sl no. 91202401112308	Controller Legal Metrology, Karnataka	29-Jul-26
4	Inspection Certificate, Iron hexagon weight at karjeevanahally Toll Plaza and Receipt No. 2403516207, LCR No.-AC51251 Sl no. 91202403521106	Controller Legal Metrology, Karnataka	15-Aug-26
5	Inspection Certificate, WIM Lane 2,3,7,8 & 10 at Guilalu Toll Plaza and Receipt No. 2601114594, LCR No.-AC11046 Sl no. 91202601113885	Controller Legal Metrology, Karnataka	27-Jan-27
6	Inspection Certificate, WIM at Lane 1,4 & 9 Guilalu Toll Plaza and Receipt No. 2601114700, LCR No.-AC11046 Sl no. 91202601114034	Controller Legal Metrology, Karnataka	6-Mar-27
7	Inspection Certificate, WIM at Lane 12 at Guilalu Toll Plaza and Receipt No. 2501114245, LCR No.-AC11046 Sl no. 91202501113497	Controller Legal Metrology, Karnataka	28-Sep-26

Source(s): Management information

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Annexure 3b: One-time sanctions and approvals and overdue periodic clearances (5/7)

Sr. No.	Description of the permits	Issuing Authority	Validity/ Current status
IRB Tumkur Chitradurga Tollway Limited			
8	Inspection Certificate, Static weigh bridge towards Chitradurga at Guilalu Toll Plaza and Receipt No. 2501113804, LCR No.-AC11046 Sl no. 91202501113041	Controller Legal Metrology, Karnataka	28-Apr-26
9	Inspection Certificate, Static weigh bridge towards Tumkur at Guilalu Toll Plaza and Receipt No. 2501114486, LCR No.-AC11046 Sl no. 91202501113763	Controller Legal Metrology, Karnataka	10-Dec-26
10	Inspection Certificate, WIM at Lane 1,3,4,7 & 10 at Karjevvanahally Toll Plaza and Receipt No. 261922297, LCR No.-AC179202401138 Sl no. 9120261922179	Controller Legal Metrology, Karnataka	20-Feb-27
11	Inspection Certificate, WIM at Lane 2,8 and 9 at Karjevvanahally Toll Plaza and Receipt No. 261922218, LCR No.-AC179202401138 Sl no. 9120261922109	Controller Legal Metrology, Karnataka	19-Jan-27
12	Inspection Certificate, Static weighbridge towards Bangalore at Karjevvanahally Toll Plaza and Receipt No. 251921742, LCR No.-AC179202401138 Sl no. 9120251921673	Controller Legal Metrology, Karnataka	10-Jul-26
13	Inspection Certificate, Static weighbridge towards Chitradurga at Karjeevanahally Toll Plaza and Receipt No. 251922137, LCR No.-AC179202401138 Sl no. 9120251922032	Controller Legal Metrology, Karnataka	17-Dec-26

Source(s): Management information

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Annexure 3b: One-time sanctions and approvals and overdue periodic clearances (6/7)

Sr. No.	Description of the permits	Issuing Authority	Validity/ Current status	Remarks
VK1 Expressway limited				
1	Clearing of Pollution Control Board	Gujarat Pollution control board	06-Dec-17 to 30-Sep-24	Not Required in O&M Phase
2	Labour License	Ministry of Labour & Employment	19-Dec-26	
3	Permission of Village Panchayat and Pollution control board for installation of crushers	Gujarat Pollution control board, Vadodara	18-Apr-19 to 25-Mar-26	Not Required in O&M Phase

Source(s): Management information

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Annexure 3b: One-time sanctions and approvals and overdue periodic clearances (7/7)

Sr. No.	Description of the permits	Issuing Authority	Validity/ Current status
VM7 Expressway Private limited			
1	Factory License – Kanbad Plant	Directorate Industrial Safety and Health, Gujarat	31-Dec-26
2	Consent to Establish (GPCB) – Kanbad Plant	Gujarat Pollution control board, Navsari	31-Dec-28
3	Consent to Operate (GPCB) – Kanbad Plant	Gujarat Pollution control board, Navsari	31-Mar-27
4	Licence No. CLRA/RLCVADODARA/2021/L-443 under the Contract Labour (Regulation and Abolition) Act, 1971, dated 31.12.2021	Regional Labour Commissioner Central), Vadodara	12-Dec-26
5	BOCW Registration	Gujarat Building and Other Construction Workers Welfare Board	Active
6	Employee Compensation Policy	IFFCO - Tokio General Insaurance Co. Ltd	30.01.2027

Source(s): Management information

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Annexure 3c: Estimates of already carried as well as proposed major repairs and improvements

Estimates of already carried out as well as proposed major repairs and improvements															
INR Crore															
Name of the SPV	FY 2020	FY 2021	FY 2022	FY 2023	FY2024	FY2025	FY2026	FY2027	FY 2028	FY 2029	FY 2030	FY 2031	FY2032	FY2033	FY2034
IRB Jaipur Deoli Tollway Limited	32	32	-	-	-	-	-	78	84	110	23	-	-	13	118
IRB Pathankot Amritsar Toll Road Limited	27	31	22	-	-	32	29	8	-	15	47	-	-	-	-
IRB Talegaon Amravati Toll Road Limited	3	0	23	24	-	-	-	-	34	42	5	-	-	-	49
IRB Tumkur Chitradurga Tollway Limited	19	-	-	-	-	44	-	-	-	-	55	-	-	-	-
MVR Infrastructure and Tollways Limited	5	-	-	-	10	10	-	-	-	-	-	-	-	-	-
Kaithal Tollway Limited	NA	NA	NA	NA	NA	NA	48	-	-	-	-	-	128	134	140
Kishangarh Gulabpura Tollway Limited	NA	NA	NA	NA	NA	NA	-	100	-	-	-	-	-	104	102
IRB Hapur Moradabad Tollway Limited	NA	NA	NA	NA	NA	NA	89	90	85	-	5	74	77	57	2

Estimates of already carried out as well as proposed major repairs and improvements															
INR Crore															
Name of the SPV	FY2035	FY 2036	FY 2037	FY 2038	FY 2039	FY2040	FY2041	FY2042	FY2043	FY2044	FY2045	FY2046	FY2047	FY2048	FY2049
IRB Jaipur Deoli Tollway Limited	75	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IRB Pathankot Amritsar Toll Road Limited	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IRB Talegaon Amravati Toll Road Limited	58	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IRB Tumkur Chitradurga Tollway Limited	89	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MVR Infrastructure and Tollways Limited	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kaithal Tollway Limited	-	-	-	-	-	94	99	104	-	-	-	-	-	-	-
Kishangarh Gulabpura Tollway Limited	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IRB Hapur Moradabad Tollway Limited	-	212	229	238	7	-	-	-	-	-	-	-	-	-	-

Source(s): Management information

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Annexure 3d: Purchase price of the SPVs by the InvIT

Purchase price of the SPVs		
Name of the SPV	**Acqusition Value (INR Crore)**	**% Stake in SPV**
IRB Jaipur Deoli Tollway Limited	1,484.7	100%
IRB Pathankot Amritsar Toll Road Limited	1,485.7	100%
IRB Talegaon Amravati Toll Road Limited	657.6	100%
IRB Tumkur Chitradurga Tollway Limited	1,329.0	100%
MVR Infrastructure and Tollways Limited	340.0	100%
VK1 Expressway Limited	1,325.4	100%
Kaithal Tollway Limited		100%
Kishangarh Gulabpura Tollway Limited	8,436.0	100%
IRB Hapur Moradabad Tollway Limited		100%
VM7 Expressway Private Limited	1,217.0	100%

- The table above presents the acquisition value of the SPVs by the trust from the Sponsor and % stake held by the trust in each SPV.
- IRB InvIT Fund has acquired 100% equity share capital of IRB Hapur Moradabad Tollway Limited ("IHMTL "), Kaithal Tollway Limited ("KTL') and Kishangarh Gulabpura Tollway Limited ("KGTL ") from IRB Infrastructure Trust with effect from 01 November 2025 in a related party transaction for a consolidated Enterprise Value of INR 8,436 Cr.
- IRB InvIT Fund has acquired 100% equity share capital of VM7 Expressway Private Limited with effect from 01 December 2025 in a related party transaction for an Enterprise Value of INR 1,217 Cr.

Source(s): Management information

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Annexure 3e: Pending litigations – IRBJD (1/13)

Sr. No	Matter	Pending Before	Particulars	Amount Involved (INR Million)
1	Civil Litigation (Writ Petition)	Rajasthan High Court	**Background of the case:** Jagannath University (the "Petitioner") had filed a writ petition before the Rajasthan High Court against the project manager of IRBJD and certain others (the "Respondent") seeking that the Respondents be directed to issue monthly pass to the buses/ vehicles of the Petitioner for the toll fee of Rs. 215 per month as per the notification dated 8 April 2013 and any other appropriate relief in favour of the Petitioner which the court deems fit. The said relief has been sought on the alleged grounds that the Respondents had previously issued a monthly pass of a higher denomination without taking into consideration the non-commercial nature of the vehicles of the Petitioner, which was in violation of Clause 3 of the notification dated 8 April 2013. Further, the Petitioner has also filed a stay application before the Rajasthan High Court seeking that during the pendency of the writ petition, the Respondents be directed to permit the vehicles of the Petitioner on the toll fee of Rs. 215 per month. The project manager of IRBJD has filed its reply denying the averments made by the Petitioner. **Current Status:** The matter is currently pending.	Not quantified
2	Direct Tax Matters	CIT (A)	**Background of the case:** IRBJD has received order u/s 143(3) r.w.s 147 of Income Tax Act, 1961 ("ITA 1961") dated 30 Dec 2019 for A Y 2012-13. The matter pertains to addition on account of interest under section 56 of ITA 1961 under Income from other sources. Assessing Officer has also levied Interest u/s 244A and 234D of ITA 1961 and has initiated penalty proceedings u/s.271(1)(c) of ITA 1961. However, IRBJD does not accept the views, findings and contentions of the Assessing Officer and has filed an appeal against the order on 27 Jan 2020. Commissioner of Income-tax (Appeals) was passed in favor of the Company. Department has filed an Appeal with ITAT. The ITAT passed an order in favor of the Company. Department has filed an appeal with Hon'ble High Court. **Current Status:** The matter is currently pending.	27.2

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Annexure 3e: Pending litigations – IRBTA (2/13)

Sr. No	Matter	Pending Before	Particulars	Amount Involved (INR Million)
1	Public Interest Litigation (PIL)	Bombay High Court Aurangabad bench	The Petitioners have filed a PIL against NHAI & Ors. raising allegations regarding the quality of various roads in Maharashtra. The petitioners have alleged that the quality of roads from Nagpur to Dhule is not in good condition and there are pot holes on the road. The concessionaire is only responsible for the patch of road between Talegaon to Amravati and not for the larger stretch referred by the petitioner. There are no pot holes on the highway and the quality of the road is good and is maintained as per the concession agreement. **Current Status:** The matter is pending.	Not quantified

Source(s): Management information

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Annexure 3e: Pending litigations – VK1 (3/13)

Sr. No	Matter	Pending Before	Particulars	Amount Involved (INR Million)
1	Arbitration Tribunal	Arbitration Tribunal	**Background of the case:** The Concessionaire submitted its claim under Article 29.2 of the Concession Agreement on the basis of claim submitted by the Project manager for compensation of additional cost/losses on account of the delay in completion of construction due to reasons attributable to the NHAI, damages under Article 4.2 and compensation under Article 35.1 on account of Change in Law along with interest as per Article 41.4. Since there was no response from NHAI, the Concessionaire crystallised dispute under Article 38. Further, the conciliation failed and the arbitration was invoked as per Article 38.3 of the Concession Agreement. **Current Status:** The Arbitral Award was received on 24.02.2026. As per the Award, the claims of both parties have been disposed of, with no liability on either side.	4,483.3
2	Direct Tax Matters	CIT (A)	**Background of the case:** During the Assessment Year 2023–24, VK1 received an assessment order under Section 143(3) of the Income-tax Act, 1961, wherein the Department made certain additions for non-deduction of TDS on Interest payment made to IRB InvIT Fund. On account of non-deduction of TDS, the Department has made additions of Rs. 2.71 Crores under section 40(a)(ia) of the Act of 30% of the total interest amounting to Rs. 9.03 Crores paid by VK1 to IRB InvIT Fund. The management believes that the said interest is exempt u/s. 194A r.w.s 10(23FC) and 2(13A) of the Act. Against the said Order, the Company has filed appeal before the CIT (Appeal) and also filed for rectification u/s. 154 of the Act. **Current Status:** The matter is yet to come up for hearing. The management believes that it has a strong case on merits.	271.0

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Annexure 3e: Pending litigations – IRBTC (4/13)

Sr. No	Matter	Pending Before	Particulars	Amount Involved (INR Million)
1	Civil Litigation	Delhi High Court	**Background of the case:** Due to a dispute on the deferred premium calculation of the previous years between the IRBTC and the NHAI, the concessionaire has filed an appeal with the Honorable High Court of Delhi for resolution against the NHAI's demand of advance premium of Rs. 16.98 Cr in aggregate and interest on it. As per the interim order of the Division Bench of Honorable High Court, withdrawals from Escrow Account are not permitted till final order in the matter. **Current Status:** The Section 37 matters were disposed off on 26.04.2022 with directions that interim relief in terms of order dated 19.12.2019 will continue to operate and also directed Arbitral Tribunal to conduct a hearing on 10.0.5.2022. Subsequently, the Arbitral Tribunal was constituted and the Learned Tribunal by its order dated 14.07.2022 directed NHAI to withdraw Rs. 97.8 Crore as an interim measure and then by interim order dated 09.08.2022 further directed NHAI to withdraw Rs 453.9 Crore and Concessionaire to withdraw Rs 193 Crore. The embargo on the operation of Escrow was also lifted. The proceedings have been concluded and the award has been reserved. NHAI filed Section 37 against interim AT order dated 09.08.2022. The matter is pending.	949.8 + interest (consolidated extension to concession period of 138.03 days.)

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Annexure 3e: Pending litigations – MVR (5/13)

Sr. No	Matter	Pending Before	Particulars	Amount Involved (INR Million)
1	Civil Litigation	Madras High Court	**Background of the case:** Certain colleges in Salem (the "Petitioners") have filed 25 writ petitions before the High Court of Madras, against MVR and others (collectively the "Respondents") alleging the legality of act of collecting entry fee at increased rates from college buses. The Petitioners have sought the directions against Respondents to collect entry fee at toll plaza for educational institution vehicles at par with that of school buses. An order was passed by the High Court of Madras, which took into consideration various petitions filed against MVR regarding the above mentioned issue and held that the discounted rates were only applicable to school buses carrying school students and not to college buses. However, the High Court of Madras passed an order granting an interim stay and ordered MVR to collect entry fee from the college buses of the Petitioners at par with the rates applicable to school buses. **Current Status:** The High Court of Madras has dismissed the petitions filed by the 23 colleges / educational institutions. The matters filed by the other colleges / educational institutions (5 nos.) are currently pending before the Madras High Court.	Not quantified
2	Arbitration with NHAI	Arbitration Tribunal	**Background of the case:** 2. National Highways Authority of India ("NHAI") had filed an application for permission to file Additional Counter Claim on February 28, 2020 in the arbitration matter Reference 1. Hon'ble Arbitral Tribunal has directed that the amendment with respect to the counterclaim of NHAI will be dealt with in a separate proceeding simultaneously with the (Reference 1) proceedings. Thus, the arbitration proceedings initiated by NHAI (Claimant) before the Hon'ble Tribunal for Rs. 12.61 Crore (Flyover at KM188/850 – left out structure on LHS) & Rs. 7.77 Crore (towards provision of safety structure i.e. pedestrian guard rail & safety barriers) (hereinafter referred to as "Reference 2"). **Current Status:** The proceedings have been concluded and the award has been reserved.	203.8

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Annexure 3e: Pending litigations – MVR (6/13)

Sr. No	Matter	Pending Before	Particulars	Amount Involved (INR Million)
3	Arbitration with NHAI	Arbitration Tribunal	**Background of the case:** 1. MITL had initiated arbitration proceedings against National Highways Authority of India ("NHAI") before the Arbitration Tribunal for its claim to the tune of Rs. 5.14 Crores (towards positive Change of scope for construction of additional arm of flyover) and Rs. 0.26 Crore (negative Change of Scope on account of deletion of 19 hume pipe culverts) (hereinafter referred to as "Reference 1"). The conciliation meeting between NHAI and MITL meeting was concluded. As NHAI did not respond on the matter, MITL invoked Arbitration proceedings against NHAI. The arbitration proceedings have concluded and the Hon'ble Arbitral Tribunal has pronounced the Award in favour of MITL on February 17, 2022 and NHAI was directed to pay Rs. 4,89,71,505/. In case the payment is not made within a period of two months, MITL will be entitled to interest @ 8% per annum from the date of Award till date of payment of the aforesaid amount by the NHAI Arbitral Award on September 19, 2022. As per direction of the Court, NHAI deposited Rs. 5.39 Crore in the registry of the Delhi High Court on August 22, 2023. The said amount was withdrawn by MITL with an undertaking to redeposit the amount released with upto-date interest thereof within four weeks, in case if the review petition filed in O.M.P. (COMM.) No. 482 of 2022 filed by the NHAI is allowed. The matter is pending. **Current Status:** NHAI challenged the Arbitral Award under Section 34 which was dismissed by the Hon'ble Delhi High Court. Thereafter, NHAI further appealed against the Section 34 judgment under Section 37 in the Delhi High Court which was also dismissed but a liberty was granted to NHAI to file a review petition against the Section 34 judgment. The review petition filed by NHAI is pending.	48.9 + interest @ 8% pa wef 17.02.2022

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Annexure 3e: Pending litigations – IRBPA (7/13)

Sr. No	Matter	Pending Before	Particulars	Amount Involved (INR Million)
1	Civil Litigation	NA	**Background of the case:** IRBPA has initiated arbitration proceedings against NHAI before Arbitration Tribunal consisting of Mr. Ajit Prakash Shah (Presiding Arbitrator), Mr. S S.Agarwal & Mr. Navin Kumar. The claim is for sum of Rs. 2522.5 Mn and extension in concession period by 518 days. **Current Status:** The Hon'ble Arbitral Tribunal pronounced unanimous Award on July 13, 2021 in favour of IPATRL and granted, i) extension in Concession Period by 518 days; ii) compensation of Rs. 252.251 Cr along with 9% interest w.e.f. November 27, 2014 till the date of realisation; and iii) cost of arbitration of Rs. 1.58 Crores. Further, the Hon'ble Tribunal passed an order on July 27, 2021 incorporating the factual corrections in the Award in response to IPATRL's application under Section 33 of the Arbitration and Conciliation Act 1996. IPATRL submitted a demand to NHAI requesting for implementation of the terms of the said Award. However, NHAI challenged Award in the Delhi High Court and filed a petition under section 34 under Arbitration and Conciliation Act 1996 on November 26, 2021 which was dismissed by the Court on March 8, 2022. IPATRL has served a legal notice for execution of the Award on March 30, 2022. IPATRL had filed application for execution of Section 34 order dated March 8, 2022 in the Delhi High Court. The Court vide its order dated May 20, 2022 had directed NHAI to release 75% of the arbitral amount awarded in terms of the decision of the Cabinet Committee and the SOP within 2 weeks. Pursuant to the Order dated May 20, 2022, IPATRL complied with the SOP of NHAI and submitted a BG of Rs. 317.3 crores on May 24, 2022 towards release of 75% of Payout Amount. Subsequently, NHAI released net amount of Rs. 310.91 crores after statutory deductions. In the meantime, on May 10, 2022, NHAI filed appeal under Section 37 challenging the Delhi High Court (Section 34) order dated March 8, 2022. Subsequently, the Delhi High Court by its order dated July 03, 2023 set aside the Award and Section 34 order. IPATRL had to redeposit the Arbitral amount of Rs. 317.3 crores with NHAI and the BG submitted has been withdrawn. IPATRL filed Special Leave Petition (SLP) in the Supreme Court challenging the Section 37 order of the Delhi High Court. The Supreme Court admitted the SLP and the matter is pending.	2522.5 + interest @ 9% wef 27.11.2014 (extension in concession period by 518 days)

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Annexure 3e: Pending litigations – IRBPA (8/13)

Sr. No	Matter	Pending Before	Particulars	Amount Involved (INR Million)
2	Criminal Litigation	HIGH COURT OF PUNJAB AND HARYANA	**Background of the case**: The Concessionaire had constructed the toll plaza building on the land acquired and handed to the concessionaire by NHAI. Irrigation Distributary was shifted along the boundary of Ladpalwan Toll building. SDO, Irrigation department requested the concessionaire that water is not flowing smoothly in the shifted irrigation distributory and needs to be constructed as per approved drawings. NHAI submitted necessary documents to the irrigation department. Irrigation department did not approve the drawings and been continuously writing to concessionaire and NHAI for disturbed flow of water through Irrigation distributary. Irrigation Department imposed case on employees of Concessionaire with the help of adjacent farmers in the court of Divisional Officer, Gurdaspur for non-smooth flow of water in Irrigation Distributary, who imposed Rs. 20,000/- as penalty on the concessionaire. Hence, writ petition is filed in Punjab and Haryana High Court, praying that to Issue a writ in the nature of Certiorari for quashing the order dated June 20, 2018 passed by Divisional Officer Nehar, Gurdaspur Division, Upper Bari Daab Canal (UBDC),Gurdaspur and subsequent Order dated July 29, 2022 passed by secretary, Irrigation and water resources, Government of Punjab vide which the personal liability of the petitioners has been fixed under section 30 FF (3) of the Northern India Canal and Drainage Act 1873, Issue a writ of Mandamus staying the operation of both the aforesaid orders during the pendency of the writ petition, etc. **Current Status**: The matter is pending.	Rs. 20,000/-+
3	Regulatory Action (ESIC)	NA	**Background of the case:** Employees' State Insurance Corporation, sub-regional office Marol ("ESIC") issued a notice to IRBPA demanding payment of Rs. 0.08 Mn towards pending employers contributions and employees' contributions required to be paid by IRBPA, in its capacity as the principal employer, under Section 40 read with Section 39 of the Employees' State Insurance Act, 1948. Further, ESIC has also directed IRBPA to show cause as to why the assessment of an amount of Rs. 5.83 Mn towards contributions payable in respect of the employees should not be recovered from IRBPA. IRBPA has replied to the aforementioned notice. **Current Status:** No further communication has been received in this regard.	5.8

Source(s): Management information

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Annexure 3e: Pending litigations – IRBPA (9/13)

Sr. No	Matter	Pending Before	Particulars	Amount Involved (INR Million)
4	Civil Litigation	High Court	**Background of the case:** In the month of September 2020, Government of India passed three new Farm bills in the Parliament. This drew flak among some group of farmers in the state of Haryana who forcefully stopped the operation of the toll plazas in Haryana. IRBPA had notified this event as the Force Majeure under Indirect Political Event and submitted its claim for the period i.e. 01.10.2020 to 15.12.2021 (Farmer's strike/ protest I)amounting to Rs. 121 crores and consequent extension to Concession Period by 441 days in terms of Clause 34.7.2 (b) and 34.6.2 (b) of the Concession Agreement respectively. Since there was no response received from NHAI, IRBPA crystallised this matter as the dispute and subsequently invoked arbitration as per Clause 44.3 of the Concession Agreement. Thereafter, during 17.11.2023 to 25.11.2022 and 15.12.2022 to 15.01.2023 (Farmer's strike/ protest II), the toll collection was affected due to Farmer's agitation against the State Govt. IRBPA filed claim for extension of Concession Period by 32.28 days and compensation of Force Majeure cost of Rs 7.19 Crore. **Current Status**: NHAI released partial amount of Rs. 36.03 Crore on 25.08.2022 and approved extension of Concession Period by 436 days. However, IRBPA has requested NHAI to resume conciliation through CCIE for resolution of the dispute with respect to the balance dues and extension in Concession Period. Till then Arbitration is kept in abeyance and both the above referred claims of IRBPA were taken up with CCIE for conciliation but the conciliation failed. Subsequently, IRBPA reinvoked the arbitration on 16.02.2023. IRBPA filed a consolidated claim towards Farmer's protest I & II amounting to Rs. 111.62 Cr (Rs 92.44 Cr + interest of Rs 19.18 Cr upto 31.03.2023) & execution of Supplementary Agreement for extension of Concession Period by 473.28 days (i.e. 441 days [approved is 436 days] +32.28 days). The Arbitral Award was pronounced on 17.02.2024, the Tribunal awarded Rs. 28.54 Crore as the compensation (as on 17.02.2024) along with interest @ 10.5% per annum till realisation of payment and allowed extension fo Concession Period by 472 days. NHAI filed section 34 challenging the Award. Concessionaire has also filed section 34 to the extent of reimbursement of Force Majeure Costs towards Interest payment on Debt. The matters are pending.	1116.2 + interest & extension of 473.28 days

Source(s): Management information

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Annexure 3e: Pending litigations - KTL (10/13)

Sr. No.	Complainant/Applicant/ Plaintiff	Respondents	Name & Address of the Court and	Brief Description of Case	Status as on 31 March 2026	Financial implications
1	Kaithal Tollway Ltd	NHAI	Arbitration	Claimant had submitted claims to NHAI for compensation as per Clause 35.2 and Clause 35.3 of the Concession Agreement on account of delays attributable to NHAI. The claim for cost stands at Rs. 190.68 Crore in terms of Clause 35.2 and extension of Concession Period for 136.77 days in terms of Clause 35.3 of the Concession Agreement. The Claimant crystallised dispute on 09.03.2022 (and subsequently invoked arbitration on 19.04.2022) Against the claim of Rs 100.1 Cr on account of Farmer's strike, Rs 58.48 Cr was released by NHAI on 10.10.2022 NHAI recommended extension of Concession Period of 365 days. The Balance claim amount of Rs 41.62 Crore was disputed. and arbitration was invoked This matter is clubbed with the above referred arbitration.	The Arbitral Award was pronounced on 27.02.2026 in favour of Kaithal Tollway Ltd., awarding an amount of Rs 2,656.60 million along with applicable interest until realisation of payment, and granting an extension of the Concession Period by 582.77 days	Rs. 288.07 Cr + 582.77 days of extension of Concesison Period

Source(s): Management information

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Annexure 3e: Pending litigations – KGTL (11/13)

Sr. No.	Complainant/Applicant /Plaintiff	Respondents	Name & Address of the Court and case number	Brief Description of Case	Status as on 31 March 2026	Financial implications
1	Kishangarh Gulabpura Tollway Ltd	NHAI	Arbitration	Claimants filed Statement of Claim including the claim on account of compensation of Force Majeure Cost and extension in Concession Period on account of COVID 19) , Claim for compensation under Clause 35.2 & 35.3 along with a prayer that Premium is applicable after 6 months of Actual completion	Arbitration proceedings are in progress.In view of the demise of Sri Justice V.K. Gupta, the NHAI has substituted Sri B.S. Bhullar, Retired IAS as their arbitrator. Further, NHAI has filed writ petitions before the Delhi High Court for quashing the arbitral tribunal's order dated August 6, 2024 with respect to applications filed under the Section 16 of the Arbitration and Conciliation Act, 1996 by NHAI in respect of KGTL, CGTL and UTL. The matters are pending.	Commencement of Premium after 6 months of actual completion Claim :Rs. 868.96 + + interest & extension of 387.18 days

Source(s): Management information

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Annexure 3e: Pending litigations – IRBSD (12/13)

Sr. No	Matter	Pending Before	Particulars	Amount Involved (INR Million)
1	Civil Litigation	Bombay High Court	**Background of the case:** 1. Mr. Vasantrai Harilal Gohil and Mr. Vijay Vasantrai Gohil (the "Plaintiffs") have filed a special civil suit before the Court of the Civil Judge (Senior Division) at Vasai, against the Sponsor, certain directors of the Sponsor and IRB Surat Dahisar Tollway Pvt. Ltd. The Plaintiffs have alleged that on 05 Jan 2011, certain employees of the Sponsor acted violently and forcefully with them when they could not provide a money change at the toll plaza at Khanivade, Taluka Vasai. The Plaintiffs have alleged that they were chased, threatened and beaten by the employees of the Sponsor which resulted in serious injuries. The Plaintiffs have sought a direction that the Sponsor and its directors be directed to pay the medical expenses of Rs. 0.5 million incurred by the Plaintiffs along with damages of Rs. 50 Mn with interest. The Plaintiffs have also sought a direction from the court requiring the Sponsor and the directors to disclose on oath, their respective movable and immovable property and to record charge of Rs. 50.5 Mn over such property until the decretal amount is paid. The Plaintiffs have filed an application for adding IRBSD as a necessary party in the suit. The IRBSD, its directors and employees have filed their reply in the matter. The Civil Judge (Senior Division) at Vasai has vide its Judgement dated 09 July 2019 directed the respondents jointly and severally to pay Rs. 0.5 Mn with interest at the rate of 9% p.a. to the Plaintiffs. **Current Status:** IRBSD has filed writ petition in Bombay High Court challenging the Judgement of the Vasai Court dated 09 July 2019. The plaintiffs have also challenged the judgement before the Bombay high court. Both the matters are pending.	Rs. 50 lakhs plus interest
2	Public Interest Litigation (PIL)	Bombay High Court	**Background of the case:** Jimmy Gonsalves and another (the "Petitioners") have filed a public interest litigation before the High Court of Bombay against the MoRTH, NHAI, IRBSD and Ideal Road Builders Private Limited and certain others (the "Respondents"). The Petitioners have inter alia alleged that commuters are facing hardship and inconvenience due to traffic at Varsova Creek bridge and that IRBSD has denied its duty to build a new bridge on Varsova Creek, and have sought inter alia, that MoRTH be directed to take steps for the construction of a third bridge on Varsova Creek and that all vehicles travelling from Khaniwade toll on NH-8 and Ghodbunder Road toll on the state highway be exempt from toll till the completion of said new bridge. IRBSD and Ideal Road Builders Private Limited are yet to file their respective replies in this matter. **Current Status:** The matter is currently pending.	Not quantified

Source(s): Management information

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Annexure 3e: Pending litigations – IDAA (13/13)

Sr. No	Matter	Pending Before	Particulars	Amount Involved (INR Million)
1	Indirect Tax Matters		There is one indirect tax proceeding pending against IDAA, which involves an aggregate amount of Rs. 9.37 Mn.	9.4

Source(s): Management information

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Annexure 3f: Statement of assets as at 31 March 2026

Statement of assets					
INR Crore					
Name of the SPV	Net tangible assets (A)	Intangible assets (B)	Other non current assets (C)	Total Non current assets (A+B+C)	Current assets
IRB Jaipur Deoli Tollway Limited	0	1,236	0	1,236	21
IRB Pathankot Amritsar Toll Road Limited	0	1,106	423	1,528	42
IRB Talegaon Amravati Toll Road Limited	0	506	-	506	13
IRB Tumkur Chitradurga Tollway Limited	0	6,757	0	6,757	52
MVR Infrastructure and Tollways Limited	0	23	-	23	73
VK1 Expressway Limited	-	-	1,019	1,019	174
IRB Surat Dahisar Tollway Limited	-	-	-		524
IDAA Infrastructure Limited	-	-	-	-	176
Kaithal Tollway Limited	0	1,904	-	1,904	17
Kishangarh Gulabpura Tollway Limited	0	1,549	-	1,549	266
IRB Hapur Moradabad Tollway Limited	0	2,800	-	2,800	60
VM7 Expressway Private Limited	-	-	1,059	1,059	299

Source(s): Management information, Provisional Financial Statements

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Annexure 3g: Site pictures - IRBJD









Source(s): Site visits conducted in March / April / May 2026

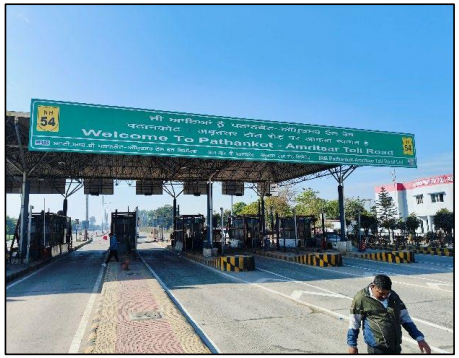
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Annexure 3g: Site pictures - IRBPA









Source(s): Site visits conducted in March / April / May 2026

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Annexure 3g: Site pictures - IRBTA









Source(s): Site visits conducted in March / April / May 2026

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Annexure 3g: Site pictures - IRBTC









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Annexure 3g: Site pictures - MVR









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Annexure 3g: Site pictures – VK1



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Annexure 3g: Site pictures – VM7









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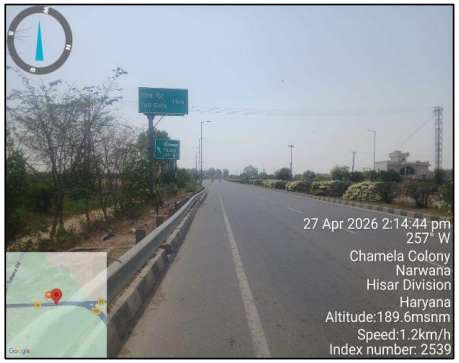
Annexures

Annexure 3g: Site pictures - KTL









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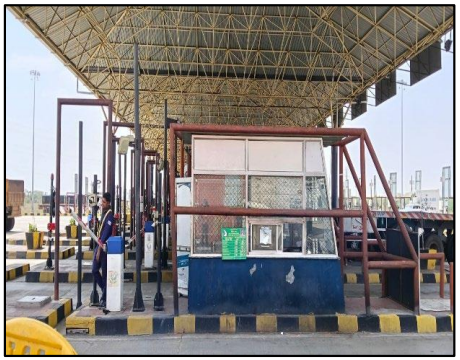
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Annexure 3g: Site pictures - KGTL





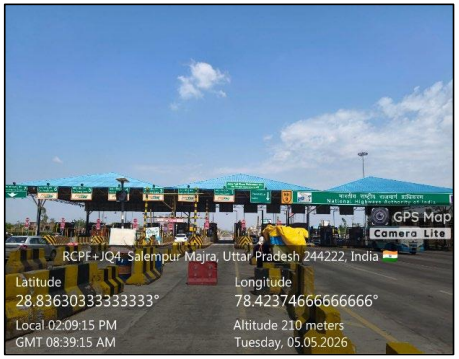




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Annexure 3g: Site pictures - IHMTL









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Annexures

Annexure 3h: Valuer Profile

Valuer Details	
Name of Registered Valuer	**KPMG Valuation Services LLP**
Signing Partner	**Amit Jain – Partner, KPMG Valuation Services LLP**
Contact Details	Tel : +91 22 3090 2674 Cell : +91 98193 38660 amitsjain@kpmg.com
Registration Details	LLP Identification Number: AAP-2732 IBBI Registration No: (KVSL) - IBBI/RV/06/2018/10501 IBBI Registration No: - Amit Jain - IBBI/RV/06/2018/10501 Asset Class: Securities and Financial Assets
Brief detail on Valuer	KPMG Valuation Services LLP (a partnership firm with Registration no 414) converted into a Limited Liability Partnership Firm with effect from May 13,2019
Brief experience summary	KPMG Valuation Services LLP – Registered valuer entity – 6 years (Feb 2020) KPMG Valuation Services LLP has provided valuation advisory services for financial reporting, restructuring, dispute valuation, Purchase price allocation and regulatory requirements. Amit Jain has overall experience of more than 25 years and has advised clients with their valuation needs across key strategic purposes including (i) Transactions / Fairness Opinions / Funding (ii) Regulatory – RBI / Tax (iii) Accounting / Purchase price allocations (iv) Disputes / Arbitration etc. He has an experience ranging across several industries especially IT/ ITES, Infrastructure, Power, Renewable energy, Roads, Airports, Construction, Oil & Gas (Upstream/Mid / Downstream) and Chemicals sectors.

Annexure 4: Comparable companies business description (1/2)

Company	Description
IRB Infrastructure Developers Limited	IRB Infrastructure Developers Limited engages in the infrastructure development business in India. It operates in two segments, Built, Operate and Transfer/Toll Operate and Transfer; and Construction. The company develops roads and operates and maintains roadways. It also provides real estate, hospitality, and airport development services, as well as operates as an investment manager. The company was incorporated in 1998 and is based in Mumbai, India.
PNC Infratech Limited	PNC Infratech Limited, together with its subsidiaries, operates as an infrastructure investment, development, construction, operation, and management company in India. The company undertakes various infrastructure projects, including roads, highways, bridges, flyovers, power transmission lines, airport runways and pavements, rural drinking water supply, irrigation, industrial area development, rail freight corridors, and other infrastructure projects. It also provides end-to-end infrastructure implementation solutions, such as engineering, procurement, and construction services on a fixed-sum turnkey basis, as well as on an item rate basis; and executes and implements projects on a design-build-finance-operate-transfer, operate-maintain-transfer, hybrid annuity model, and other public-private partnership formats. The company was formerly known as PNC Construction Company Limited and changed its name to PNC Infratech Limited in August 2007. PNC Infratech Limited was founded in 1989 and is headquartered in Agra, India.
Dilip Buildcon Limited	Dilip Buildcon Limited, together its subsidiaries, engages in the development of infrastructure facilities on engineering, procurement, and construction (EPC) basis in India. The company operates through Engineering, Procurement and Construction (EPC) Projects & Road Infrastructure Maintenance and Annuity Projects & Other segments. It is involved in roads, highway, bridges, tunnels, water supply, canals, dams, metro and airport construction, mining, irrigation, metro rail viaducts, and urban development related business. In addition, the company engages in road infrastructure maintenance and toll operations. Dilip Buildcon Limited was founded in 1987 and is headquartered in Bhopal, India.
Capital Infra Trust	Capital Infra Trust, an infrastructure investment trust, engages in building, operating, and management of road construction projects and all other related activities in India. The company focuses on investing in infrastructure projects primarily national highways. The company was formerly known as National Infrastructure Trust and changed its name to Capital Infra Trust in October 2024. Capital Infra Trust was incorporated in 2023 and is based in Gurugram, India.
Bharat Road Network Limited	Bharat Road Network Limited owns, designs, develops, builds, and operates transfers road and related services in India. It is involved in project development an implementation; tolling operations and highway management; and advisory and project management services, including construction supervision/debt syndication. The company was incorporated in 2006 and is based in Kolkata, India.
National Highways Infra Trust	National Highways Infra Trust is an infrastructure investment trust.

Source: S&P Capital IQ

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Annexure 4: Comparable companies business description (2/2)

Company	Description
Indigrid Infrastructure Trust	Indigrid Infrastructure Trust operates as an infrastructure investment trust that owns and operates power transmission and solar energy assets. Its asset portfolio consists of 46 transmission lines with a total circuit length of approximately 8,468 circuit kilometers, 13 substations with approximately 17,550 mega volt ampere transformation capacity, and 100 megawatt of solar power capacity in 19 states and 1 union territory in India. The company was formerly known as India Grid Trust and changed its name to Indigrid Infrastructure Trust in January 2025. Indigrid Infrastructure Trust was founded in 2016 and is based in Mumbai, India.
Powergrid Infrastructure Investment Trust	Powergrid Infrastructure Investment Trust, an infrastructure investment trust, owns, constructs, operates, maintains, and invests in power projects and power transmission assets in India. Its projects include 11 transmission lines comprising six 765 kV transmission lines and five 400 kV transmission lines, with a total circuit length of approximately 3,699 km; and three substations with transformation capacity of 6,630 MVA and 1,955.66 km of optical ground wire. The company was founded in 2020 and is based in Gurugram, India.
IRB InvIT Fund	IRB InvIT Fund specializes in investing in toll road assets in the Indian states of Maharashtra, Gujarat, Rajasthan, Karnataka, and Tamil Nadu.
Indus Infra Trust	Indus Infra Trust, an infrastructure investment trust, focuses to acquire, manage, and invest in a portfolio of infrastructure assets in India. The company was formerly known as Bharat Highways InvIT and changed its name Indus Infra Trust in November 2024. Indus Infra Trust was incorporated in 2022 and is based in Gurugram, India.
G R Infraprojects Limited	G R Infraprojects Limited, through its subsidiaries, provides engineering, procurement, and construction services for roads, bridges, rails, airport runways, metros, and highways in India. It operates through Construction and Contract; Built, Operate and Transfer/Annuity Projects; and Others segments. The company constructs state and national highways, bridges, culverts, flyovers, airport runways, tunnels, and rail over bridges. It also offers a range of services on a turnkey basis in railway infrastructure projects, such as civil infrastructures, including earthworks, bridges, station buildings, and facilities; new track laying & rehabilitation of existing tracks; railway electrification and power systems; and signaling & telecommunication services. In addition, the company designs, engineering, procures, fabricates, erects, installs, and commissions power transmission lines. Further, it manufactures thermoplastic road-marking paints and road signage; and fabricates and galvanizes metal crash barriers, as well as processes bitumen. The company was formerly known as G.R. Agarwal Builders and Developers Limited and changed its name to G R Infraprojects Limited in August 2007. G R Infraprojects Limited was incorporated in 1995 and is headquartered in Udaipur, India.
Anantam Highways Trust	Anantam Highways Trust, an infrastructure investment trust, acquires, manages, and invests in road infrastructure assets in India. Its portfolio of road infrastructure assets include the national highways having total aggregate length of 271.65 km located in the states of Karnataka, Telangana, Gujarat, Bihar, and Tamil Nadu, India. The company was founded in 2024 and is based in Mumbai, India.
Energy Infrastructure Trust	Energy Infrastructure Trust, an infrastructure investment trust, engages in the transportation of natural gas in India. The company owns and operates a natural gas pipeline with a length of approximately 1,480 kilometers across India, as well as compressor stations and pipeline operation centers. It also offers imbalance management services, such as parking and lending services. The company serves customers in the refinery, fertilizer, petrochemical, power, city gas distribution, and other industrial sectors. The company was formerly known as India Infrastructure Trust and changed its name to Energy Infrastructure Trust in January 2025. Energy Infrastructure Trust was incorporated in 2018 and is based in Thane, India. Energy Infrastructure Trust is a subsidiary of Rapid Holdings 2 Pte. Ltd.

Source: S&P Capital IQ

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Annexure 5: Interest held by Trust in SPVs

InvIT - Equity Stake and debt held in SPVs		
Name of the SPV	**Equity Interest in SPV**	**Outstanding Debt**
INR Crore		
IRB Jaipur Deoli Tollway Limited	100%	1,291
IRB Pathankot Amritsar Toll Road Limited	100%	1,726
IRB Talegaon Amravati Tollway Limited	100%	493
IRB Tumkur Chitradurga Tollway Limited	100%	1,256
M.V.R. Infrastructure & Tollways Limited	100%	-
VK1 Expressway Limited	100%	773
VM7 Expressway Limited	100%	1,151
Kaithal Tollway Limited	100%	2,545
Kishangarh Gulabpura Tollway Limited	100%	1,867
IRB Hapur Moradabad Tollway Limited	100%	2,835
Total		**13,937**

Source: Management

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8.

Scope & Limitations

Scope & Limitations (1/3)

Terms of Engagement

- KPMG Valuation Services LLP ("KVSL" or "we") has been appointed by IRB InvIT Fund ("IRB InvIT Fund", "Trust" or "Client" or "you") in relation to carrying out Enterprise Valuation of 10 Special Purpose Vehicles ("SPVs" or "Trust Assets") of IRB InvIT Fund and Equity Valuation of IRB InvIT Fund (jointly referred as "Targets") as on the agreed date of the valuation in accordance with Regulation 21 of the Securities Exchange Board of India (Infrastructure Investment Trusts) Regulations, 2014 where valuation is required to be conducted by a registered valuer (as defined under section 247 of the Companies Act, 2013) and such valuation report ("Report") is required to be in compliance with the SEBI InvIT Regulations ("Engagement" or "Valuation").
- The terms of the Engagement are set out in our letter of engagement dated 15 October 2025 ("LoE"). This letter of engagement is preceded by signed undertaking dated 17 October 2025 ("Undertaking letter") provided by us. As agreed, Undertaking letter shall be read in conjunction and shall form part of the aforesaid letter of engagement.
- The date of Valuation is 31 March 2026 ("Valuation Date").
- This Report sets out KVSL's conclusions on the Valuation and has been prepared in accordance with LoE. Our Report is confidential to the Client and will be used by the Client only for purposes mentioned in the LoE. The Report will be issued by us on the express understanding that it shall not be copied, disclosed or circulated or referred to in correspondence or discussion with any third party. This Report is confidential to the Client and it is given on the express understanding that it is not communicated, in whole or in part, to any third party without KVSL's prior written consent. Neither the Report nor its content may be used for any other purpose without prior written consent of KVSL. This Report has a limited scope as specified in it. KVSL will not accept any responsibilities to any other party to whom the Report may be shown or who may acquire a copy of the Report.
- We are not responsible to any other person/ party for any decision of such person/ party based on this Report. Any person/ party intending to provide finance/ invest in the shares/ businesses of the Targets/ their holding companies/ subsidiaries/ group companies, if any, shall do so after seeking their own professional advice and after carrying out their own due diligence procedures to ensure that they are making an informed decision. If any person/ party (other than the Client) chooses to place reliance upon any matters included in the report, they shall do so at their own risk and without recourse to the Valuer. It is hereby notified that usage, reproduction, distribution, circulation, copying or otherwise quoting of this Report or any part thereof, except for the purpose as set out earlier in this report, without our prior written consent, is not permitted, unless there is a statutory or a regulatory requirement to do so.
- We are aware that the Report may have to be shared with certain regulatory authorities in India and stock exchanges in India and therefore Report may enter the public domain and hereby provide our consent to such sharing subject to the following:
  - You shall indemnify and hold us harmless against any loss that may be incurred by us arising out of or relating to sharing of the Report with regulatory authorities in India or stock exchanges in India, or the Report entering the public domain as mentioned herein, as also against all costs, charges and expenses (including legal expenses) suffered or incurred by us on account of the aforesaid. In this clause "us" shall include all Firm Persons and "you" shall include Other Beneficiaries (as these terms have been defined in the LoE).
  - Such Report shall be disclosed in full and strictly in such forms as KVSL has provided to the Client without any deviation.
  - KVSL shall not be liable to any person or party for any reason and under any circumstances.
  - The readers of the Report shall not bring any claim against KVSL for matters arising out of or consequent upon disclosure of the Report.
  - The Report shall be issued with all the disclaimers as provided by KVSL at the time of issuance of the Report.

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Scope & Limitations (2/3)

Disclosure of Interest/Conflict

- KVSL is not affiliated to the Client in any manner whatsoever. Further, KVSL does not have a prospective interest in the business which is the subject of this engagement.
- KVSL's fee is not contingent on an action or event resulting from the analyses, opinions or conclusions in this Report.
- You are aware that KVSL is already providing/has provided valuation services to IRB Infrastructure Trust and IRBIDL. Notwithstanding the aforesaid past/ongoing relationship with you, we do not perceive any conflict in undertaking this engagement.

Basis of Value

- The report has been prepared on the basis of "Fair Value" as at Valuation Date. The generally accepted definition of "Fair Value" is the value as applied between a hypothetical willing vendor and a hypothetical willing prudent buyer in an open market and with access to all relevant information.

Premise of Value

- The report has adopted "Going Concern Value" as the premise of value in the given circumstances. The generally accepted definition of Going concern value is the value of a business enterprise that is expected to continue to operate in the future.
- The valuation has been performed 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.

Scope and Limitations

- This Report is based on the information provided by the Client and has been confirmed by the Client. KVSL have not independently verified or checked the accuracy or timeliness of the same. KVSL have indicated within this Report the sources of the information presented and have satisfied ourselves, so far as possible, that the information presented is consistent with other information which is made available to us in the course of our work in accordance with the terms of this engagement letter. KVSL have not, however, sought to establish the reliability of the sources by reference to other evidence, except as may be specifically agreed in writing between us.
- KVSL has read, analyzed and discussed the financial information and underlying management assumptions pertaining to the SPVs as provided by the Management of the Client ("Management"). This information has been solely relied upon by KVSL for the Valuation.
- We have based our analysis on the audited financial statements of the SPVs for the years ended 31 March 2021 to 31 March 2025 and provisional financial statements of the SPVs for the period from 01 April 2025 to 31 March 2026. Additionally, our analysis is based on the business plan of the SPVs for the period from 1 April 2026 to the end of the concession periods of respective SPVs as provided by the Management ("Management Business Plan") and key underlying assumptions. Any changes in the assumptions or methodology used to consolidate the financial statements may significantly impact our analysis and therefore the Valuation.
- KVSL has read and analyzed but have not commented on the appropriateness of or independently verified the Management Business Plan and underlying data and assumptions and accordingly provided no opinion on the same. If there were any omissions, inaccuracies or misrepresentations of the information provided by the Management, this may have a material effect on our findings and therefore the Valuation.
- The realization of the projections in the Management Business Plan will be dependent on the continuing validity of assumptions on which it is based. Our analysis therefore will not and cannot be directed to providing any assurance about the achievability of the future plans. Since the projections relate to the future, actual results are likely to be different from the projected results because events and circumstances do not occur as expected and the differences may be material.

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Scope & Limitations (3/3)

- This Report makes reference to 'KVSL analysis'. This indicates only that we have (where specified) undertaken certain analytical activities on the underlying data to arrive at the information presented.
- Our work did not constitute an audit of the financial statements and accordingly, we do not express any opinion on the truth and fairness of the financial position as indicated in this Report. Our work did not constitute a validation of the financial statements of the Targets, and accordingly, we do not express any opinion on the same.
- We have carried out the Valuation based on Management Business Plan received. Our scope of work does not include any commercial / legal / technical due diligence or carrying out any environmental / technical feasibility analysis or comparison of Management Business Plan with approved budgets / annual operating plans of the Targets. We have relied on Management's representation on such considerations and any changes in the same may significantly impact our analysis and therefore the Valuation.
- Wherever applicable, we have relied upon the legal opinion document / affidavit copies provided by Management in relation to the current status of the projects. We have not carried out / sought any independent legal opinion, nor have we verified the accuracy of the legal opinion shared. Any discrepancy in the same may significantly impact our analysis and therefore the Valuation.
- Our opinion is based on prevailing market, economic, and other conditions at the Valuation Date. It should be appreciated that these conditions can change over relatively short periods of time, not only as a result of internal factors, but because of external factors, which could impact the value, either positively or negatively.
- For our analysis, we have relied on published and secondary sources of data, whether or not made available by the Client. We have not independently verified the accuracy or timeliness of the same.
- Neither KVSL nor any of its affiliates worldwide are responsible for updating this Report because of events or transactions occurring subsequent to the date of this Report. Any updates or second opinions in this Report cannot be sought by the Management from external agencies including global offices of KVSL without the prior written permission of KVSL.
- KVSL has not considered any finding made by other external agencies in carrying out the Valuation analysis other than the one mentioned herein.
- For the purpose of the Valuation, our scope does not include valuation or legal due diligence of current assets and liabilities and as represented by the Management, the same has been considered at their respective book value.
- For the purpose of this engagement and Report, we have made no investigation of, and assume no responsibility for the title to, or liabilities against the Targets. Our conclusion of value assumes that the title to the assets and liabilities of the Targets reflected in the financial statements as on Valuation Date is intact as at the date of this Report.
- Any discrepancies in any table/ annexure between the total and the sums of the amounts listed are due to rounding-off.
- The Report should be read in the light of these limitations, and we caution that had these matters been within the scope of our review, our conclusions may have changed, and that change could be material.
- The information presented in this Report does not reflect the outcome of any due diligence procedures. The reader is cautioned that the outcome of due diligence process could change the information herein and our Valuation, and that change could be material.
- This Report forms an integral whole and cannot be split in parts. The outcome of the Valuation can only lead to proper conclusions if the Report as a whole is taken into account.

Management representation

- This Report is prepared on the basis of the sources of information listed in Annexure 1. KVSL has relied upon written representation provided by the Management that the information contained in the Report is materially accurate and complete, fair in its manner of portrayal and therefore forms a reliable basis for the Valuation.

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IRB InvIT Fund

JAIPUR TO DEOLI SECTION OF NH-12

(KM 18.700 To 165.00)

IN THE STATE OF RAJASTHAN



MAY 2026





TOLL REVENUE AND O&M COST PROJECTION REPORT (FINAL)

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Adding Value

JAIPUR TO DEOLI SECTION OF NH-12

(KM 18.700 To 165.00)

IN THE STATE OF RAJASTHAN

TOLL REVENUE AND O&M COST PROJECTION REPORT (FINAL)

MAY 2026

GMD CONSULTANTS ★ NAVI MUMBAI ★

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ABBREVIATIONS

AADT	-	Annual Average Daily Traffic	**NHAI**	-	National Highways Authority of India
BOT	-	Build Operate Transfer	**NHDP**	-	National Highways Development Project
CAGR	-	Compound Annual Growth Rate	**NSDP**	-	Net State Domestic Product
CTV	-	Classified traffic volume	**O&M**	-	Operation & Maintenance
DBFOT	-	Design, Build, Finance, Operate & Transfer	**PCDP**	-	Per Capita Domestic Product
EME	-	Earth Moving Equipment	**PCI**	-	Per Capita Income
GDP	-	Gross Domestic Product	**PCU**	-	Passenger Car Unit
GSDP	-	Gross State Domestic Product	**PSC**	-	Pre-stressed Concrete
HCM	-	Heavy Construction Machinery	**RCC**	-	Reinforced cement concrete
HCV	-	Heavy Commercial Vehicle	**RHS**	-	Right Hand Side
HTMS	-	Highway Traffic Management System	**SH**	-	State Highway
IRC	-	Indian Road Congress	**TP**	-	Toll Plaza
IRR	-	Internal Rate of Return	**WPI**	-	Wholesale Price Index
LCV	-	Light Commercial Vehicle	**SIR**	-	Special Investment Region
LHS	-	Left Hand Side	**c.**	-	Circa
LGV	-	Light Goods Vehicle	**ROB**	-	Railway Over Bridge
MAV	-	Multi Axle Vehicle	**MDR**	-	Major District Road
MORTH	-	Ministry of Road Transport and Highways	**ODR**	-	Other District Road
NH	-	National Highway	**CA**	-	Concession Agreement
PCC	-	Plain Cement Concrete	**RMT**	-	Running Meter
CR	-	Coarse Rubble			

CHAPTER 1
INTRODUCTION

1.1 Background

The Government of India through National Highway Authority of India (NHAI) embarked upon a program to enhance the traffic capacity and safety for efficient transportation of goods as well as passenger traffic on National Highway Sections under NHDP Phase V. Under Phase V NHAI has planned to convert 6,500 km of existing 4-lane National Highways into 6-lane National Highway. Sections envisaged under 6-laning comprise the Golden Quadrilateral section (5,700 km) and some other sections which are 800 km in length.

The project under consideration, Jaipur - Deoli section of NH-12 from Km 18.700 to km 165.000 is one such road project NHAI intended to implement on a BOT basis in the DBFOT format. *M/s IRB Jaipur Deoli Tollway Ltd*. (Concessionaire) has been awarded the Project for concession period of 25 years starting from 14th June 2010 to 13th June 2035. The Project has been commissioned and is currently in the operation / maintenance phase.

Asset and regional context

The Asset is 146 kms long four lanes national highway located in the state of Rajasthan, connecting Jaipur in the north to Deoli in the south via Tonk. The Asset was awarded on June 2010 and followed by Full COD in April 2016 and scheduled end of concession period in June 2035 and we understand that there has been an extension of 5 years on the Asset and the new concession end date is 21st Oct 2040.

The Asset is part of NH52, being the fourth longest National highway in India, on a national level it starts from Sangrur in Punjab and terminates in Ankola, Karnataka. It traverses through the major cities like Sangrur, Hisar, Sikar, Jaipur, Deoli, Kota, Biora, Dewas, Aurangabad and Belagavi, and the Asset is the section of the NH52 corridor, and it connects the Jaipur with Deoli, Kota and provides trips an access to Madhya Pradesh that is Biora, Dewas, Indore etc.

The Jaipur-Deoli section of NH52 is a 146 km four-lane road. It serves as a key connector for both long- and short-distance travel between the northern states of Punjab and Haryana and the states of Rajasthan and MP (connecting cities like Indore

and Jaipur) and Gujarat. It also facilitates short-distance travel between Jaipur, Deoli, Tonk, and Kota.

The Asset consists of two toll plazas – Barkheda (located closer to Jaipur), and Sonwa (closer to Deoli). The distance between the two toll plazas is 83.5 km. Of the two plazas on this Asset, the Barkheda toll plaza caters to a higher volume of total traffic due to its proximity to the urban cluster of Jaipur. TP1 Barkheda is located 30 kms south of Jaipur, the capital of Rajasthan and one of India's most prominent tourist destinations. Further, TP1 Barkheda is located 6 kms south of the Jaipur Ring Road, highlighting the local characteristics of this plaza.

In contrast, TP2 Sonwa toll plaza is located 60 kms north of Deoli, which serves as the agricultural backbone for local villages in the region. The two toll plazas exhibit distinct differences in terms of traffic volume and composition.

Traffic at TP1 Barkheda toll plaza is observed to consist predominantly of short- and medium-distance journeys. This is attributed to its proximity to Jaipur, with passenger vehicles frequently traveling for tourism and educational purposes. Heavy commercial vehicles primarily cater to construction materials, such as sand (Bajri) and aggregates destined to Jaipur and North. Long-distance traffic, on the other hand, carries commodities like parcels, manufactured goods, pipes, LPG, and petroleum.

FASTag penetration is high, with 85-90% at TP1 Barkheda toll plaza and 90-95% at TP2 Sonva toll plaza. Most vehicles at TP1 Barkheda toll plaza were observed to be travelling short distances, while at TP2 Sonva toll plaza, trips are primarily long-distance. Consequently, the proportion of single trips reported at TP2 Sonva is higher compared to TP1 Barkheda, which sees a greater share of return tickets due to its proximity to Jaipur.

1.2 Objective of the Study

M/s IRB INVIT FUND has engaged *GMD Consultants* to assess the future traffic and toll potential of the project along with related operation & maintenance expenditure involved.

This report named as "***Toll Revenue and O&M Cost Projection Report***" mainly focuses on traffic and O&M aspects of the project. Other parameters like competing road, area developments etc. have been considered from a traffic development point of view.

1.2.1 Scope of Services

The broad scope of work covered in the assignment is as follows:

a) Analysis of Traffic Growth
b) Toll Rate Growth
c) Revenue Forecasting
d) Operation and Maintenance Cost Projections

The Concessionaire has provided basic historical traffic data and other project details on the basis of which the above analysis has been carried out, after applying our judgment to the traffic estimates.

"***Toll Revenue and O&M Cost Projection Report***" was submitted in March 2017. In this report traffic data for the year 2015-16 was used as base traffic. The report was updated based on traffic data for the year 2017-18 and submitted in April 2018. The report was further updated with traffic Data of the period from April 2018 to September 2018 and was submitted in October 2018. A revised report was submitted with updated traffic for the years 2018-19 in April 2019. The report was further updated with yearly traffic data for 2019-20 in May 2020. With traffic data from April 2020 to March 2021 report was updated, report was further updated with yearly traffic data from April 2021 to March 2022, April 2022 to March 2023, April 2023 to March 2024, April 2024 to March 2025 and now concessionaire has provided traffic data from April 2025 to February 2026, report is updated with this annual traffic data.

CHAPTER 2

TRAFFIC SURVEYS AND ANALYSIS

2.1 Traffic Surveys

In the course of our work, we have collected the required information for project corridor to understand the general traffic and travel characteristics of the corridor.

The following traffic data has been collected for project:

- Classified traffic volume counts at the two toll plaza locations on Jaipur-Deoli section of NH-12 for base year 2015-16, 2016-17, 2017, 2017, 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2023-24,2024-25 and annual traffic data from April 2025 to February 2026.
- Local Component of traffic
- Component of Return Journey
- Component of Monthly Pass Journey

The main objective of the traffic data analysis is to:

- Determine the existing traffic movement characteristics of the project.
- Establish base year traffic.
- Identification of travel patterns and modal split of project traffic
- Deriving growth factors for traffic 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

The project can be divided into two homogenous sections from a traffic point of view.

These sections can be:

1. Jaipur to Tonk
2. Tonk to Deoli

Traffic of both sections is represented by toll plaza in each section. The table below provides details of locations from where traffic details have been collected:

Table 2-1 : Traffic Data Details

SR. NO	LOCATION	CTV	Single Journey Traffic	Return Pass Traffic	Monthly Pass Traffic	Local Traffic
1	Km 30.500 Toll Plaza	AADT for Year 2015-2016	For Year 2015-2016	For Year 2015-2016	For Year 2015-2016	For Year 2015-2016
		AADT for year 2016-2017	For Year 2016-2017	For Year 2016-2017	For Year 2016-2017	For Year 2016-2017
		AADT for year 2017-2018	For Year 2017-2018	For Year 2017-2018	For Year 2017-2018	For Year 2017-2018
		AADT for year 2018-2019	For year 2018-2019	For year 2018-2019	For year 2018-2019	For year 2018-2019
		AADT for year 2019-2020	For year 2019-2020	For year 2019-2020	For year 2019-2020	For year 2019-2020
		AADT for year 2020-2021	For year 2020-2021	For year 2020-2021	For year 2020-2021	For year 2020-2021
		AADT for year 2021-2022	For year 2021-2022	For year 2021-2022	For year 2021-2022	For year 2021-2022
		AADT for year 2022-2023	For year 2022-2023	For year 2022-2023	For year 2022-2023	For year 2022-2023
		AADT for year 2023-2024	For year 2023-2024	For year 2023-2024	For year 2023-2024	For year 2023-2024
		AADT for year 2024-2025	For year 2024-2025	For year 2024-2025	For year 2024-2025	For year 2024-2025
		AADT for year 2025-2026	For year 2025-2026	For year 2025-2026	For year 2025-2026	For year 2025-2026
2	Km 105.000 Toll Plaza	AADT for Year 2015-2016	For Year 2015-2016	For Year 2015-2016	For Year 2015-2016	For Year 2015-2016
		AADT for year 2016-2017	For Year 2016-2017	For Year 2016-2017	For Year 2016-2017	For Year 2016-2017
		AADT for year 2017-2018	For Year 2017-2018	For Year 2017-2018	For Year 2017-2018	For Year 2017-2018

SR. NO	LOCATION	CTV	Single Journey Traffic	Return Pass Traffic	Monthly Pass Traffic	Local Traffic
		AADT for year 2018-2019	For year 2018-2019	For year 2018-2019	For year 2018-2019	For year 2018-2019
		AADT for year 2019-2020	For year 2019-2020	For year 2019-2020	For year 2019-2020	For year 2019-2020
		AADT for year 2020-2021	For year 2020-2021	For year 2020-2021	For year 2020-2021	For year 2020-2021
		AADT for year 2021-2022	For year 2021-2022	For year 2021-2022	For year 2021-2022	For year 2021-2022
		AADT for year 2022-2023	For year 2022-2023	For year 2022-2023	For year 2022-2023	For year 2022-2023
		AADT for year 2023-2024	For year 2023-2024	For year 2023-2024	For year 2023-2024	For year 2023-2024
		AADT for year 2024-2025	For year 2024-2025	For year 2024-2025	For year 2024-2025	For year 2024-2025
		AADT for year 2025-2026	For year 2025-2026	For year 2025-2026	For year 2025-2026	For year 2025-2026

The locations of each of the traffic surveys are illustrated in Figure 2-1.

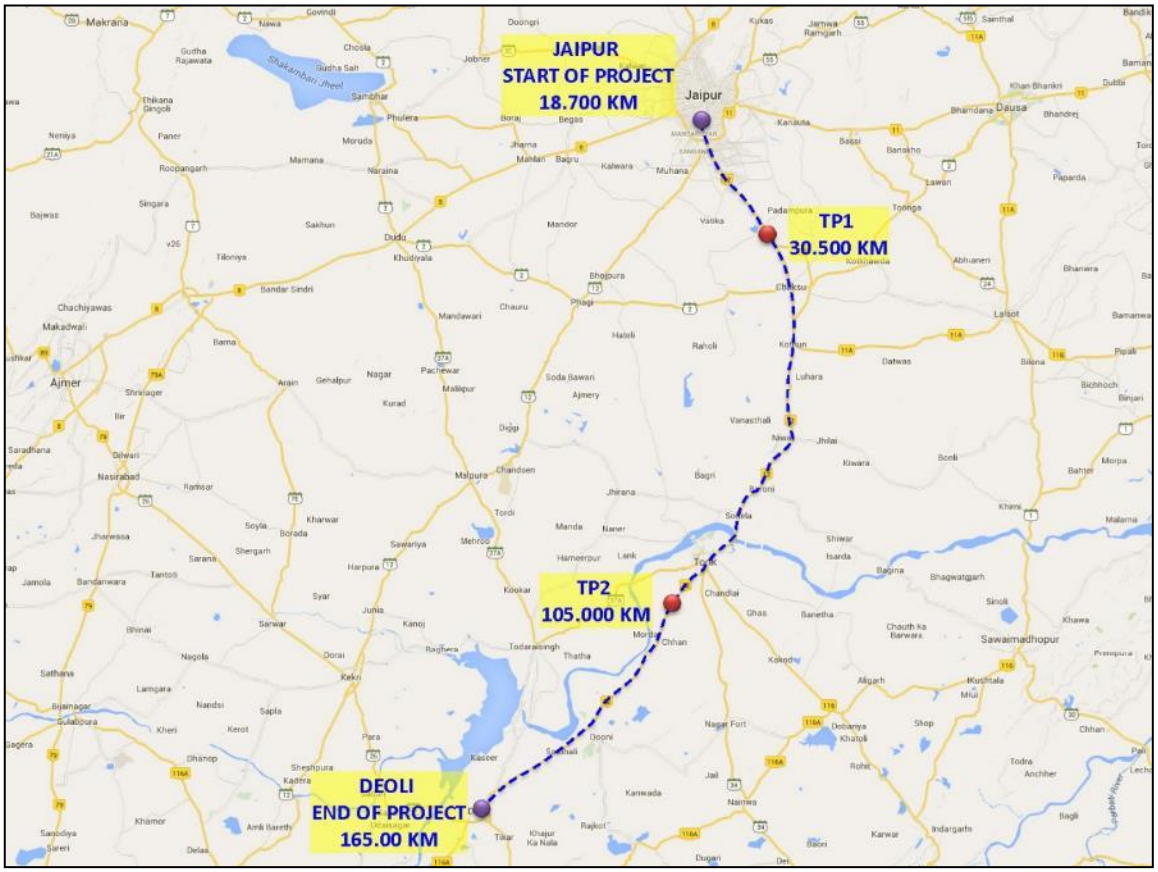


Figure 2-1: Toll Plaza Locations

2.2 Classified Traffic Volume Count

The objective of conducting a Classified Traffic Volume Count is to understand the traffic flow pattern including modal split on a roadway. The Classified Traffic Volume Count survey has been provided by concessionaire of project highway from actual traffic data gathered at toll plaza locations based on monthly data shared with NHAI. These locations are 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 are further segregated to capture the tollable vehicle categories specifically and toll exempted vehicles are counted separately. The detailed vehicle classification system as per IRC: 64-1990 is given in the table below.

Table 2-2 : Vehicle Classification System

Vehicle Type	
Auto Rickshaw	
Passenger Car	Car, Jeep, Taxi & Van (Old /new technology)

Vehicle Type	
Bus	Minibus
	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

However, since the project highway is currently under toll operation, the data collected corresponds to the category of tollable vehicles. Following are the types of vehicles as per concession agreement:

- Car / Jeep / van
- Minibus /LCV
- Truck / Bus
- Multi Axle
- Oversize Vehicle

2.3 Traffic Characteristic

Toll revenue of the project highway does not solely depend on traffic volume. There are certain characteristics of traffic which have significant potential to affect toll revenue. Components of local traffic, components of passenger and commercial traffic, portion of return journey traffic, portion of monthly pass traffic are some such characteristics of traffic. These will be discussed in subsequent sections of this report.

2.3.1 Traffic Data

Project concessionaire has provided Traffic data for base years 2015-16, 2016-17 2017-18, 2018-19, 2019-20, 2020-21, 2021-22,2022-23,2023-24,2024-25 & traffic data from April 2025 to February 2026.

Since the traffic data available for this update is for only Annual, from April 2025 to February 2026, it may not represent the whole year traffic. Hence a seasonality factor for balance part of year has been applied to average traffic of the current Eleven months to arrive at Annual Average Daily Traffic of base year 2025-26. Thus, corrected traffic is used for future projections and revenue calculations. The following table shows historical traffic on project stretch and derived Annual Average Daily Traffic (AADT) for year 2025-26.

Table 2-3 : Traffic Data at Toll Plaza Km 30.500

Sr. No	Type of Vehicle	Annual Average Daily Traffic (Nos.) FY 2018-19	Annual Average Daily Traffic (Nos.) FY 2019-20	Annual Average Daily Traffic (Nos.) FY 2020-21	Annual Average Daily Traffic (Nos.) FY 2021-22	Annual Average Daily Traffic (Nos.) FY 2022-23	Annual Average Daily Traffic (Nos.) FY 2023-24	Annual Average Daily Traffic (Nos.) FY 2024-25	Annual Average Daily Traffic (Nos.) FY 2025-26
1	Car	8428	8860	9044	7684	8808	8880	9597	13334
2	Minibus / LCV	1506	1370	1056	377	553	665	718	766
3	Truck / Bus	1109	1278	996	1178	1314	1266	1307	1321
4	Multi Axle	1453	1402	1390	1616	2207	2362	2132	2092
5	Oversized Vehicles	60	50	28	5	7	4	3	7
	Total	**12556**	**12960**	**12515**	**10860**	**12889**	**13176**	**13758**	**17520**

Similar traffic data for toll plaza at km 105.000 is given as under

Table 2-4 : Traffic Data at Toll Plaza @ Km 105.000

Sr. No	Type of Vehicle	Annual Average Daily Traffic (Nos.) FY 2018-19	Annual Average Daily Traffic (Nos.) FY 2019-20	Annual Average Daily Traffic (Nos.) FY 2020-21	Annual Average Daily Traffic (Nos.) FY 2021-22	Annual Average Daily Traffic (Nos.) FY 2022-23	Annual Average Daily Traffic (Nos.) FY 2023-24	Annual Average Daily Traffic (Nos.) FY 2024-25	Annual Average Daily Traffic (Nos.) FY 2025-26
1	Car	3276	3446	3736	3612	3918	4557	4454	5709
2	Minibus/ LCV	780	661	573	235	363	497	514	486
3	Truck/Bus	691	778	767	913	914	1243	1316	1127
4	Multi Axle	1315	1248	1556	2031	2203	2529	2872	3068

Sr. No	Type of Vehicle	Annual Average Daily Traffic (Nos.) FY 2018-19	Annual Average Daily Traffic (Nos.) FY 2019-20	Annual Average Daily Traffic (Nos.) FY 2020-21	Annual Average Daily Traffic (Nos.) FY 2021-22	Annual Average Daily Traffic (Nos.) FY 2022-23	Annual Average Daily Traffic (Nos.) FY 2023-24	Annual Average Daily Traffic (Nos.) FY 2024-25	Annual Average Daily Traffic (Nos.) FY 2025-26
5	Oversized Vehicles	25	19	18	6	9	7	5	5
	Total	**6087**	**6151**	**6650**	**6798**	**7407**	**8832**	**9161**	**10394**

2.4 Data Analysis

2.4.1 Analysis of Traffic Volume Count

Understanding the character of existing traffic forms the basis of traffic forecast. The various vehicle types having different sizes and characteristics can be 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 2-5.***

Table 2-5 : PCU Factors Adopted for Study

Vehicle Type	PCUs
Car	1.0
Minibus	1.5
Standard Bus	3.0
LCV/LGV	1.5
2 Axle Truck	3.0
3 – 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

Traffic volume at each toll plaza was converted to PCU and same is presented as under.

Table 2-6 : Traffic in PCU at both sections

Toll Plaza Location	Period	PCU	PCU Index
30.500	FY 2015-16	26809	2.17
	FY 2016-17	28629	2.07
	FY 2017-18	26323	1.98
	FY 2018-19	20823	1.66
	FY 2019-20	21283	1.64
	FY 2020-21	19998	1.60
	FY 2021-22	19077	1.76
	FY 2022-23	23541	1.83
	FY 2023-24	24321	1.85
	FY 2024-25	24204	1.76
	FY 2025-26	27891	1.59
105.000	FY 2015-16	15963	2.29
	FY 2016-17	13747	2.25
	FY 2017-18	14917	2.30
	FY 2018-19	12549	2.06
	FY 2019-20	12472	2.03
	FY 2020-21	13979	2.10
	FY 2021-22	15871	2.33
	FY 2022-23	17158	2.32
	FY 2023-24	20443	2.31
	FY 2024-25	22120	2.41
	FY 2025-26	23646	2.27

It can be observed from above that project traffic has a PCU index ranging from 1.5 to 2.4.

which indicates a good mix of commercial and passenger traffic.

2.4.2 Components of Traffic

As discussed previously, components of traffic volume play an important role in determining project revenue. A larger component of commercial traffic with higher axle configuration adds to project revenue positively. Similarly, a larger component of local traffic affects the project revenue potential negatively.

For the purpose of analysis, the recent yearly traffic numbers for the year 2025-26 have been considered as the base numbers.

It is observed that car traffic forms 76% of total traffic at toll plaza location 30.5 while multi axle vehicles are 12% of total traffic. 8% of traffic is Truck /Bus while LCV traffic forms the balance 4%. Overall, about 24% of traffic is commercial in nature.

At toll plaza location 105.00 car traffic forms 55% of total traffic at toll plaza while multi axle and LCV are 29% and 5%. Truck/ Bus volume is 11% of the total traffic. Overall, about 44% of traffic is commercial in nature which is higher as compared to toll plaza location 30.5.

Another important bifurcation of traffic is components of traffic with respect to various type of toll ticketing like

1. Single Journey
2. Return Journey
3. Overweight Vehicles (Concessionaire provided special tariff for this category)
4. Monthly Pass (Local and General)
5. Annual Pass car

The following table provides numbers of vehicles falling in each of the above categories on base year 2015-16, 2016-17, 2017-18, 2018-19, 2019-20 2020-21, 2021-22 ,2022-23, 2023-24 ,2024-25 and April 2025 to February 2026.

Table 2-7 : Journey Type Bifurcation of Traffic at KM 30.500

Sr. No	Type	Traffic Volume (Nos.) FY 2018-19	Traffic Volume (Nos.) FY 2019-20	Traffic Volume (Nos.) FY 2020-21	Traffic Volume (Nos.) for FY 2021-22	Traffic Volume (Nos.) for FY 2022-23	Traffic Volume (Nos.) for FY 2023-24	Traffic Volume (Nos.) for FY 2024-25	Traffic Volume (Nos.) for FY 2025-26
1	Single Journey	4395	5113	6409	4900	5273	5325	5647	5693

Sr. No	Type	Traffic Volume (Nos.) FY 2018-19	Traffic Volume (Nos.) FY 2019-20	Traffic Volume (Nos.) FY 2020-21	Traffic Volume (Nos.) for FY 2021-22	Traffic Volume (Nos.) for FY 2022-23	Traffic Volume (Nos.) for FY 2023-24	Traffic Volume (Nos.) for FY 2024-25	Traffic Volume (Nos.) for FY 2025-26
2	Return Journey	5372	5188	3676	5858	7502	7736	7982	7866
3	Overweight vehicles	314	2	0	0	0	0	0	0
4	Monthly Pass	2475	2657	2430	102	114	115	129	140
5	Annual Pass car								3821

A significant part of the traffic at KM 30.500 is return journey (45%) followed by single journey (32%), monthly passes which share 1% and Annual pass car is 22% of the total traffic volume. Overweight vehicle shares have reduced to almost nil.

Similarly, traffic numbers for the type of journey at KM 105.000 are given in the following table.

Table 2-8 : Journey Type Bifurcation of Traffic at KM 105.000

Sr. No	Type	Traffic Volume (Nos.) FY 2018-19	Traffic Volume (Nos.) FY 2019-20	Traffic Volume (Nos.) FY 2020-21	Traffic Volume (Nos.) for FY 2021-22	Traffic Volume (Nos.) for FY 2022-23	Traffic Volume (Nos.) for FY 2023-24	Traffic Volume (Nos.) for FY 2024-25	Traffic Volume (Nos.) for FY 2025-26
1	Single Journey	2999	3379	4475	3950	4082	5791	5912	5151
2	Return Journey	2036	1978	1634	2816	3300	3018	3226	3488
3	Overweight vehicles	252	6	0	0	0	0	0	0
4	Monthly Pass	800	788	541	32	25	23	23	28
5	Annual Pass car								1727

Here single journey (49%) forms the highest portion of traffic followed by return journey (34%) monthly pass journey (0%) and Annual Pass car is (17%). It can be observed as 105.000 is predominantly a rural part, monthly passes and return journey components have reduced as compared to location 30.500. Components of overweight vehicles remain the same though.

2.5 Secondary Data Collection

There are several other factors which have a substantial impact on traffic patterns and growth on any project corridor. The following are some of such important factors.

- Industrial development around project corridor and its catchment
- Educational infrastructure along project corridor
- Demographic pattern
- Urban area development
- Tourism potential
- Upcoming major infrastructural or Industrial projects
- Special Industry in project corridor
- Overall trends of economic growth local as well as national / regional

Hence in addition to traffic details on the project site, secondary data was also collected from the various sources. Typical secondary data includes the following:

1. Vehicle registration data of regional and national level.
2. Economic Data
   a) GDP
   b) NSDP
   c) Population Growth
   d) Per Capita Income growth
   e) Industrial Growth
   f) Special Industry Potential
   g) Regional and National development vision / plan
   h) Any other relevant data

CHAPTER 3
GROWTH OF TRAFFIC ON PROJECT HIGHWAY

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 forecasts of factors such as population, gross domestic product (GDP), vehicle ownership, per capita income (PCI), agricultural output, fuel consumption etc. Future patterns 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 Jaipur – Deoli section of NH-12 has been done taking above factors into consideration. "**IRC: 108-2015-Guidelines for Traffic Prediction on Rural Highways**" is established best practice and has been used for traffic growth forecast**.**

3.2 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 types of vehicles. 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 below

- 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, the 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

Time series data of vehicle (both passenger and goods) Registered in state of Rajasthan is used as the base data for analysis of growth.

3.3 Estimation of Traffic Demand Elasticity

The 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 categories of vehicle with one of the economic variables considered, such as NSDP, per capita income and population growth. Latest available data for vehicle registration, per capita income, NSDP and population is used in analysis.

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:

$$Log\ (P) = k\ x\ Log\ (EI) + A$$

Where,

P = *Number of Vehicles (Mode wise)*

EI = *Economic Indicator*

A = *Regression constant*

k = *Elasticity coefficient (Regression coefficient)*

The elasticity for cars 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).

The following tables and graphs depict regression and elasticity of growth model.

Table 3-1 : Per Capita Income Vs Car

Year	PCI	Car	Log PCI	Log Car	PCI Growth	Average Growth
2004	18565	397290	4.27	5.60		
2005	19445	417701	4.29	5.62	5%	
2006	21342	467675	4.33	5.67	10%	
2007	21922	524723	4.34	5.72	3%	
2008	23356	585161	4.37	5.77	7%	
2009	24304	659616	4.39	5.82	4%	
2010	27502	748295	4.44	5.87	13%	
2011	29612	845909	4.47	5.93	8%	
2012	30839	947598	4.49	5.98	4%	
2013	31386	1053406	4.50	6.02	2%	
2014	33186	1171267	4.52	6.07	6%	6.0%

Regression analysis of same is given in figure below.

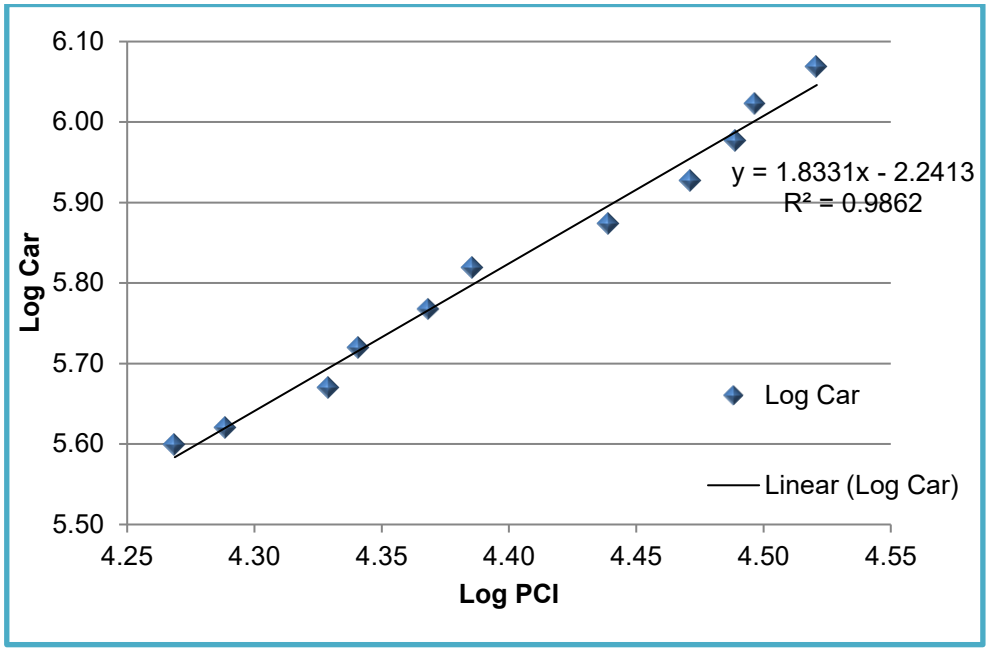


Figure 3-1: Regression and Elasticity PCI vs. Car-Extrapolation

Table 3-2 : Population Vs Bus

Year	Population	Buses	Log Pop	Log Bus	Pop Growth	Average Growth
2004	59984000	57542	7.78	4.76		
2005	61136000	60979	7.79	4.79	2%	
2006	62377000	63320	7.80	4.80	2%	
2007	63407000	65605	7.80	4.82	2%	
2008	64533000	69298	7.81	4.84	2%	
2009	65650000	73257	7.82	4.86	2%	
2010	66750000	77980	7.82	4.89	2%	
2011	68548437	83345	7.84	4.92	3%	
2012	70314000	88616	7.85	4.95	3%	
2013	71584000	93892	7.85	4.97	2%	
2014	72877000	97650	7.86	4.99	2%	1.97%

Regression analysis of same is given in figure below.

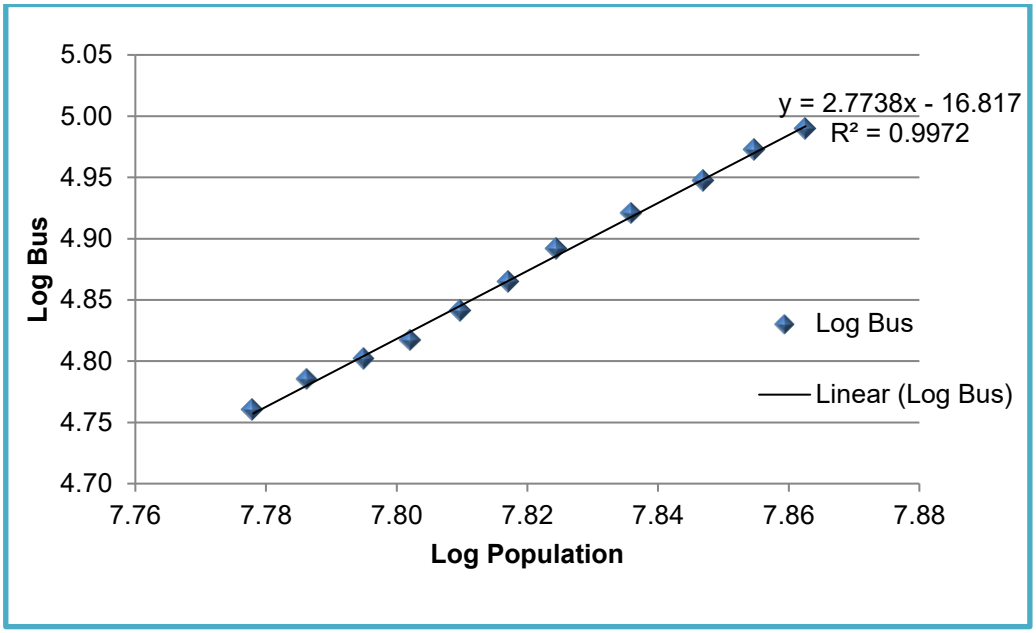


Figure 3-2: Regression and Elasticity Population vs. Bus – Extrapolation

The elasticity of goods traffic has been worked out by regression analysis with NSDP. The following table represents the data and details.

Table 3-3 : Goods Traffic Vs NSDP

Year	NSDP	Trucks	Log NDSP	Log Truck	NSDP Growth	Average Growth (5 Year)
2004	112636000	186431	8.05	5.27		
2005	120202000	206381	8.08	5.31	7%	
2006	134350000	232007	8.13	5.37	12%	
2007	140471000	252109	8.15	5.40	5%	
2008	152284000	266048	8.18	5.42	8%	
2009	161159000	289925	8.21	5.46	6%	
2010	185366000	323273	8.27	5.51	15%	
2011	202749000	362028	8.31	5.56	9%	
2012	214391000	401983	8.33	5.60	6%	
2013	224632000	434379	8.35	5.64	5%	
2014	237530000	472365	8.38	5.67	6%	7.43%

The following figure depicts regression analysis and extrapolation.

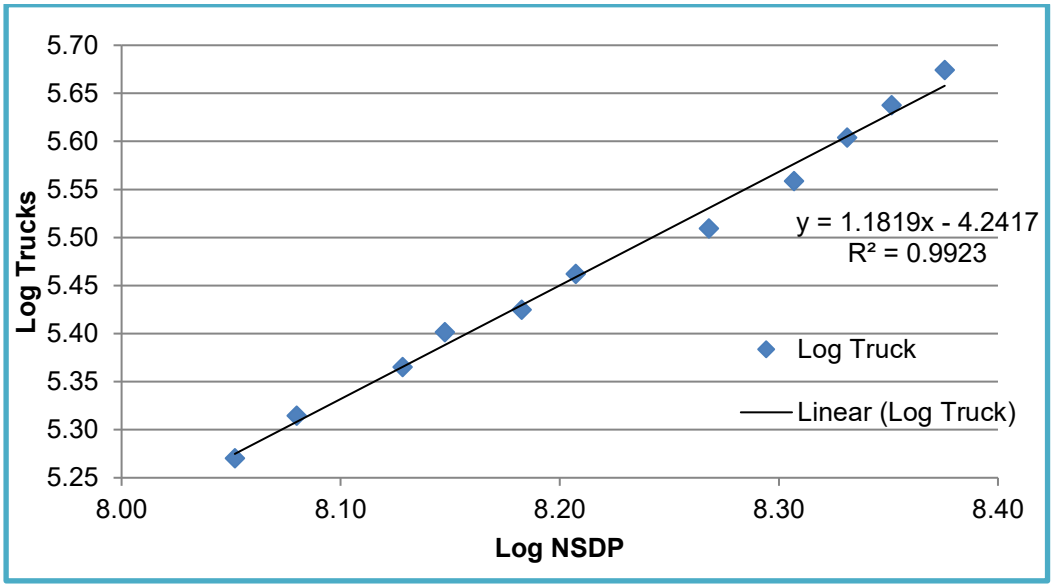


Figure 3-3: Regression and Elasticity NSDP vs. Goods Traffic – extrapolation.

Using the regression analysis above, we have arrived at the elasticity of traffic demand for each class of vehicle to a given change in relevant economic indicators. Average traffic growth of a vehicle class is multiplied by the corresponding elasticity coefficient to arrive at traffic growth. R^2 is a statistical measure of how close the data are to the fitted regression line. It varies from 0 to 1. The higher the value of R^2 more representative is the regression model of data.

The results of these analyses for the good fit as reflected by R^2 values are presented in the Table below.

Table 3-4 : Summary Regression Analysis

State	Vehicle Category	Independent Variable	Regression Equation	R Square	Elasticity Coefficient (y)	Average Growth	Growth Elastic Model
Rajasthan	Car/Jeep	PCI	y = 1.8331x - -2.2413	R² = 0.9862	1.8331	6.03%	11.05%
	Bus	Population	y = 2.7738x - -16.8173	R² = 0.9972	2.7738	1.97%	5.46%
	Truck	NSDP	y = 1.1819x - -4.2417	R² = 0.9923	1.1819	7.43%	8.78%

The economic model for predicting growth is good tool, however other local, regional, national factors should also be considered before finalizing growth factors. Considering factors such as proposed developments and other influencing economic

factors, moderate growth should be considered. These factors are discussed in subsequent sections.

3.4 Analysis of Historic Traffic Data

Historic traffic data forms useful information for any highway project. It provides useful information for establishing past trends of growth. Project stretch of Jaipur to Deoli has recently been commissioned and tolling only commenced in 2013-14. Only 3-4 years of traffic data is available with the project concessionaire. The following factors also have added to the inconsistency in traffic volume on project during previous years.

a) Demonetization in November 2016
b) Ban on mining in Rajasthan
c) Covid-19 Impact from Feb-20 onwards by successive waves

It is assumed that as the project is now completed after adding the balance length, the impact of demonetization is diminishing, and mining ban has also been lifted in area. This had impacted the traffic growth adversely.

3.5 Other Factors Influencing Growth

There are many factors which have an impact on traffic growth. As discussed previously these factors can be economic, social, educational, and industrial.

Potentiality of such factors for project highway is discussed as under.

ECONOMY

After witnessing a slowdown during 2011-12, the economy recovered in 2013-14, and a high growth rate of GDP was recorded up to 2018-19. Pandemic of COVID-19 impacted all economies of world including India up to year 2021-22. Following figure show trend of GDP growth in India.

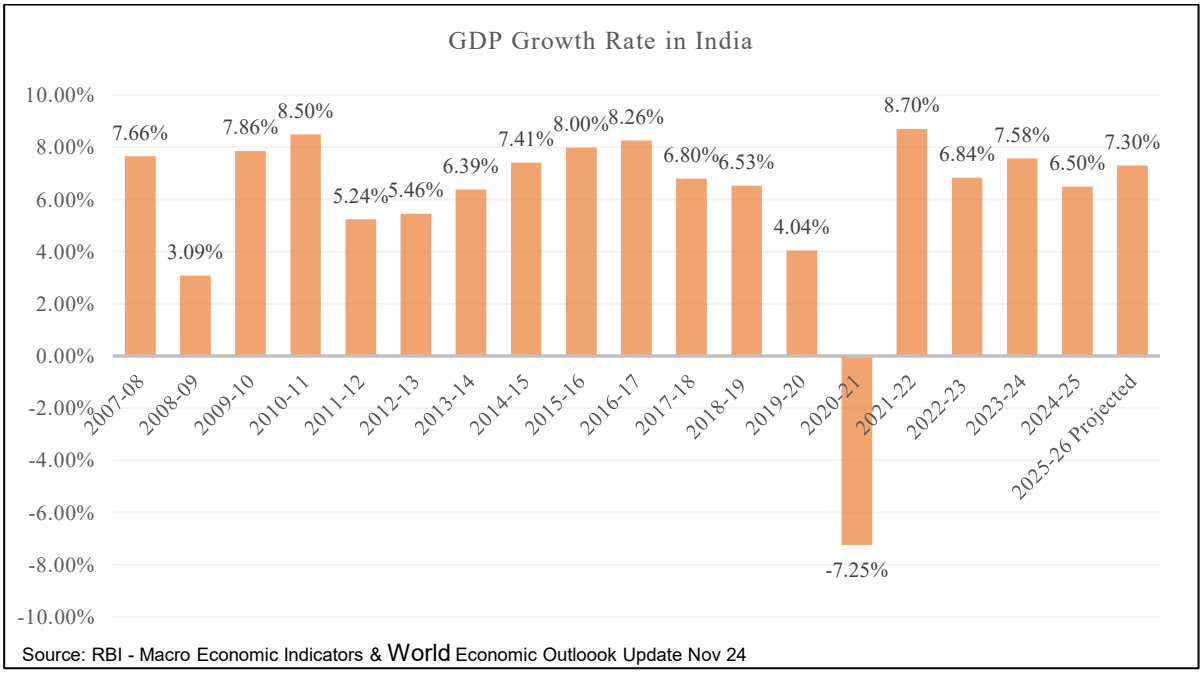


Figure 3-4 : Growth of GDP in India

FY 2017-18 recorded a growth of 6.7% which had a slight impact of GST and demonetization. Indian economy appears on recovery path with estimated growth of 6.8% in FY 2018-19. The government took major policy decisions including tax infrastructure reforming, banking sector improvement and ease of doing business.

In post COVID-19 scenario, in year 2022-23 and 2023-24 India registered an impressive growth of 7% to 7.5%. In last year despite global slow down due to Russia-Ukraine war and Gaza crises, India grew at good rate of 7%(Estimated).
Indian economy is now on good growth path and all major institutions including IMF / ADB have estimated growth of Indian Economy to peg around 6.5% to 7% in coming years.

Key economic activities

The Asset is situated in the state of Rajasthan. Rajasthan is the largest state in India by area, sharing borders with five major states- Uttar Pradesh, Haryana, Punjab, Madhya Pradesh and Gujarat. It is rich in natural resources, particularly minerals, and produces about 57 different minerals. 1 Predominantly an agrarian economy and a major producer of grains, oilseeds and edible oil, the recent times has seen a high rise in the service sector growth wherein the sector contributed to 44% to state's GSDP in 2023-24 followed by agriculture at 29% and industries at 27%. The region is also a significant mineral rich state where in FY24 Rajasthan's revenue from mineral production was estimated at over **₹7,460 crore**. The state produces 22 major and 36 minor minerals and is the sole producer of key minerals like lead, zinc, wollastonite, selenite, calcite, and gypsum.

3.6 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 below. The rate of growth is moderate in light of overall regional trends. Growth of multi-Axle is kept slightly higher as trend of technological advances in logistic industry favors multi-axle over 2/3 axle carriage. It is also expected that as the economy moves from developing to developing, the rate of growth diminishes. The same growth rate is not sustainable for long.

Temporary disruptions caused by implementation of Goods and Service Tax (GST) and demonetization have dissipated, and growth of economy has significantly improved since then. The curb on mining activity in the area due to the ban on quarrying had affected traffic on this project.

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 3-5 : Recommended Growth Rates Optimistic

Year/ Vehicle Type	FY 2027-2030	FY 2031-2035	FY 2036-2040	FY 2041-2045
Car	7.54%	6.46%	5.45%	4.50%
Minibus /LCV	5.23%	4.52%	3.59%	2.70%
Truck / Bus	5.97%	5.19%	4.47%	3.81%
Multi Axle	5.06%	4.41%	3.81%	3.26%
Oversized Vehicles	5.06%	4.41%	3.81%	3.26%

Table 3-6 : Recommended Growth Rates Pessimistic

Year/ Vehicle Type	FY 2027-2030	FY 2031-2035	FY 2036-2040	FY 2041-2045
Car	6.54%	5.46%	4.45%	3.50%
Minibus /LCV	4.23%	3.52%	2.59%	1.70%
Truck / Bus	4.97%	4.19%	3.47%	2.81%
Multi Axle	4.06%	3.41%	2.81%	2.26%
Oversized Vehicles	4.06%	3.41%	2.81%	2.26%

Table 3-7 : Recommended Growth Rates Most Likely

Year/ Vehicle Type	FY 2027-2030	FY 2031-2035	FY 2036-2040	FY 2041-2045
Car	7.04%	5.96%	4.95%	4.00%
Minibus /LCV	4.73%	4.02%	3.09%	2.20%
Truck / Bus	5.47%	4.69%	3.97%	3.31%
Multi Axle	4.56%	3.91%	3.31%	2.76%
Oversized Vehicles	4.56%	3.91%	3.31%	2.76%

The annual pass system was implemented effective 15 August 2025. Accordingly, the Annual Average Daily Traffic (AADT) for the year has been computed using a blended approach, wherein traffic for the first five months reflects non-annual pass (regular toll-paying) vehicles, while traffic for the subsequent period incorporates annual pass traffic volumes.

This adjustment ensures that the reported AADT appropriately captures the change in traffic composition and usage patterns resulting from the introduction of the annual pass system.

Traffic and revenue have been worked out on the basis of the above growth, and some are presented in subsequent chapters of the report.

CHAPTER 4

TRAFFIC FORECAST

4.1 Traffic Projections

The growth rates recommended in the previous section of the report are used to arrive at traffic projections for future years. Toll plaza wise futuristic traffic projection is given in tables below.

These projections have been done for the following three cases of growth.

1. Optimistic Scenario
2. Pessimistic Scenario
3. Most Likely Scenario

Table 4-1 : Total Tollable Traffic @ Toll Plaza 1- Chainage 30.500 KM

(Optimistic Growth Scenario)

Year	Car	Minibus /LCV	Truck/ Bus	Multi axle	Oversized Vehicles	Total No.	Total PCU
2026-27	14014	788	1368	2147	7	**18324**	**28993**
2027-28	15070	829	1449	2256	7	**19611**	**30844**
2028-29	11563	872	1535	2370	7	**16347**	**28173**
2029-30	17429	917	1627	2490	7	**22470**	**34922**
2030-31	18555	958	1711	2600	7	**23831**	**36856**
2031-32	14092	1001	1800	2714	7	**19614**	**33238**
2032-33	21028	1046	1893	2834	7	**26808**	**41060**
2033-34	22385	1093	1991	2958	7	**28434**	**43340**
2034-35	17001	1141	2095	3088	7	**23332**	**38925**
2035-36	25127	1182	2188	3206	7	**31710**	**47923**
2036-37	26496	1225	2285	3328	7	**33341**	**50196**
2037-38	19931	1268	2387	3455	7	**27048**	**44573**
2038-39	29459	1313	2494	3587	7	**36860**	**55084**
2039-40	31064	1360	2605	3723	7	**38759**	**57704**
2040-41	23159	1396	2704	3843	7	**31109**	**50690**

Table 4-2 : Total Tollable Traffic @ Toll Plaza 2- Chainage 105.000 KM

(Optimistic Growth Scenario)

Year	Car	Minibus /LCV	Truck/ Bus	Multi axle	Oversized Vehicles	Total No.	Total PCU
2026-27	6000	499	1167	3149	5	**10820**	**24442**
2027-28	6451	525	1237	3309	5	**11527**	**25862**
2028-29	6937	552	1310	3477	5	**12281**	**27364**
2029-30	7459	580	1389	3653	5	**13086**	**28957**
2030-31	7941	607	1461	3815	5	**13829**	**30425**
2031-32	8454	634	1536	3983	5	**14612**	**31959**
2032-33	9001	662	1615	4158	5	**15441**	**33572**
2033-34	9581	692	1699	4342	5	**16319**	**35278**
2034-35	10200	723	1786	4534	5	**17248**	**37068**
2035-36	10755	749	1866	4706	5	**18081**	**38676**
2036-37	11341	776	1950	4885	5	**18957**	**40360**
2037-38	11958	804	2037	5071	5	**19875**	**42117**
2038-39	12609	832	2127	5264	5	**20837**	**43949**
2039-40	13296	862	2222	5465	5	**21850**	**45870**
2040-41	13894	886	2306	5642	5	**22733**	**47553**

Table 4-3 : Total Tollable Traffic @ Toll Plaza 1- Chainage 30.500 KM

(Pessimistic Growth Scenario)

Year	Car	Minibus /LCV	Truck/ Bus	Multi axle	Oversized Vehicles	Total No.	Total PCU
2026-27	13880	781	1354	2126	7	**18148**	**28712**
2027-28	14788	814	1421	2211	7	**19241**	**30253**
2028-29	11240	848	1491	2301	7	**15887**	**27371**
2029-30	16785	884	1566	2394	7	**21636**	**33613**
2030-31	17701	915	1631	2475	7	**22729**	**35135**
2031-32	13317	947	1699	2558	7	**18528**	**31377**

Year	Car	Minibus /LCV	Truck/ Bus	Multi axle	Oversized Vehicles	Total No.	Total PCU
2032-33	19686	980	1770	2645	7	**25088**	**38400**
2033-34	20759	1014	1845	2735	7	**26360**	**40154**
2034-35	15618	1050	1923	2828	7	**21426**	**35720**
2035-36	22865	1077	1989	2907	7	**28845**	**43561**
2036-37	23882	1105	2057	2988	7	**30039**	**45188**
2037-38	17794	1134	2128	3071	7	**24134**	**39730**
2038-39	26052	1163	2202	3156	7	**32580**	**48636**
2039-40	27210	1193	2279	3245	7	**33934**	**50471**
2040-41	20091	1212	2342	3319	7	**26971**	**43902**

Table 4-4 : Total Tollable Traffic@ Toll Plaza 2- Chainage 105.000 KM

(Pessimistic Growth Scenario)

Year	Car	Minibus /LCV	Truck/ Bus	Multi axle	Oversized Vehicles	Total No.	Total PCU
2026-27	5943	494	1156	3117	5	**10715**	**24201**
2027-28	6331	515	1213	3244	5	**11308**	**25363**
2028-29	6745	537	1273	3376	5	**11936**	**26584**
2029-30	7185	560	1336	3513	5	**12599**	**27864**
2030-31	7577	580	1392	3633	5	**13187**	**28994**
2031-32	7990	601	1450	3756	5	**13802**	**30166**
2032-33	8426	622	1510	3885	5	**14448**	**31394**
2033-34	8885	644	1573	4018	5	**15125**	**32674**
2034-35	9370	667	1639	4155	5	**15836**	**34007**
2035-36	9786	685	1696	4272	5	**16444**	**35148**
2036-37	10221	703	1754	4392	5	**17075**	**36324**
2037-38	10674	721	1814	4515	5	**17729**	**37538**
2038-39	11148	739	1877	4642	5	**18411**	**38799**

Year	Car	Minibus /LCV	Truck/ Bus	Multi axle	Oversized Vehicles	Total No.	Total PCU
2039-40	11643	758	1943	4772	5	**19121**	**40106**
2040-41	12051	772	1998	4880	5	**19706**	**41185**

Table 4-5 : Total Tollable Traffic @ Toll Plaza 1- Chainage 30.500 KM

(Most Likely Growth Scenario)

Year	Car	Minibus /LCV	Truck/ Bus	Multi axle	Oversized Vehicles	Total No.	Total PCU
2026-27	13946	784	1360	2136	7	**18233**	**28846**
2027-28	14929	821	1435	2233	7	**19425**	**30545**
2028-29	11400	860	1513	2334	7	**16114**	**27764**
2029-30	17104	901	1596	2440	7	**22048**	**34255**
2030-31	18124	937	1671	2535	7	**23274**	**35981**
2031-32	13700	975	1749	2634	7	**19065**	**32294**
2032-33	20347	1014	1831	2736	7	**25935**	**39704**
2033-34	21559	1055	1917	2842	7	**27380**	**41713**
2034-35	16297	1098	2007	2953	7	**22362**	**37285**
2035-36	23973	1132	2087	3050	7	**30249**	**45689**
2036-37	25159	1166	2170	3151	7	**31653**	**47629**
2037-38	18836	1202	2256	3255	7	**25556**	**42086**
2038-39	27708	1239	2345	3363	7	**34662**	**51767**
2039-40	29079	1277	2437	3474	7	**36274**	**53970**
2040-41	21576	1306	2518	3569	7	**28976**	**47181**

Table 4-6 : Total Tollable Traffic @ Toll Plaza 2- Chainage 105.000 KM

(Most Likely Growth Scenario)

Year	Car	Minibus /LCV	Truck/ Bus	Multi axle	Oversized Vehicles	Total No.	Total PCU
2026-27	5971	496	1161	3133	5	**10766**	**24319**
2027-28	6391	520	1224	3276	5	**11416**	**25608**
2028-29	6842	544	1291	3425	5	**12107**	**26966**
2029-30	7322	569	1361	3582	5	**12839**	**28400**
2030-31	7758	592	1425	3722	5	**13502**	**29693**
2031-32	8220	616	1492	3867	5	**14200**	**31044**
2032-33	8709	641	1562	4017	5	**14934**	**32456**
2033-34	9228	666	1635	4174	5	**15708**	**33937**
2034-35	9778	693	1711	4337	5	**16524**	**35489**
2035-36	10261	714	1779	4481	5	**17240**	**36856**
2036-37	10768	736	1849	4629	5	**17987**	**38272**
2037-38	11300	759	1922	4782	5	**18768**	**39746**
2038-39	11859	783	1998	4941	5	**19586**	**41285**
2039-40	12446	807	2077	5104	5	**20439**	**42878**
2040-41	12944	825	2146	5245	5	**21165**	**44244**

4.2 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 Jaipur - Deoli project, the Target Date and Target Traffic are defined as below:

Target Date - 1st October 2018

Target Traffic - 30344 in PCU

Extension of the concession period is worked out as per article 29 of concession agreement. The following table provides details of modification in concession agreement.

Scenario	Actual Average Traffic in PCU (Average of traffic on target date, one year before target date and one year after target date)	Expected extension in Concession Period
All	16611	5 years

Due to the suspension in toll in the year FY17 because of demonetization for a period of 24 days, the Concessionaire would be entitled to an extension of an additional 24 days.

Traffic was severely impacted on the project highway during the covid lockdown period. NHAI has declared a policy of providing extension of concessions to make up for revenue loss during lockdown. It is expected that extensions will be provided to project the concession period on this account as well.
Accordingly, traffic and revenue projections have been worked out up to the year 2040-41.

Table 4-7 : Summary of concession

	Particulars
State	Rajasthan
Highway and lane configuration	NH-52/Old NH-12, 4 lane divided
Toll plazas	• TP1 Barkheda at KM 30+500 (tolling length: 59.260) • TP2 Sonwa at KM 105+000 (tolling length: 70.210)
Tolling start date	14th June 2010
Commercial Operation date	01st April 2016
Concession period	25 years
Concession period with extension	30 years
Last year of concession	21st Oct 2040

Source: Client data

CHAPTER 5
FORECAST OF TOLL REVENUE

5.1 General

This chapter presents the tolling rate calculations, categories and toll revenue of the project.

5.2 Discount Categories

As per the Toll Notification (Schedule R) the following discounts have been considered:

1. Monthly Pass: For frequent users a monthly pass is issued for 50 trips per month. The discount factor works out to 33.33% for 50 journeys. Similarly, there is a pass for 100 trips per month as well, with a discount factor of 33.33% for 100 journeys.
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 350 per month (2007)

Building of inflation and escalation of rate on the basis of WPI are done as per toll notification (Schedule R) as given under

The formula for determining the applicable rate of fee shall be as follows:-

$$\text{Applicable rate of fee} = \text{base rate} + \text{base rate} \times \left\{ \frac{\text{WPI A-WPI B}}{\text{WPI B}} \right\} \times 0.4$$

Factors of inflation / growth have been incorporated as per Schedule R. WPI are available up to the year 2025-26.

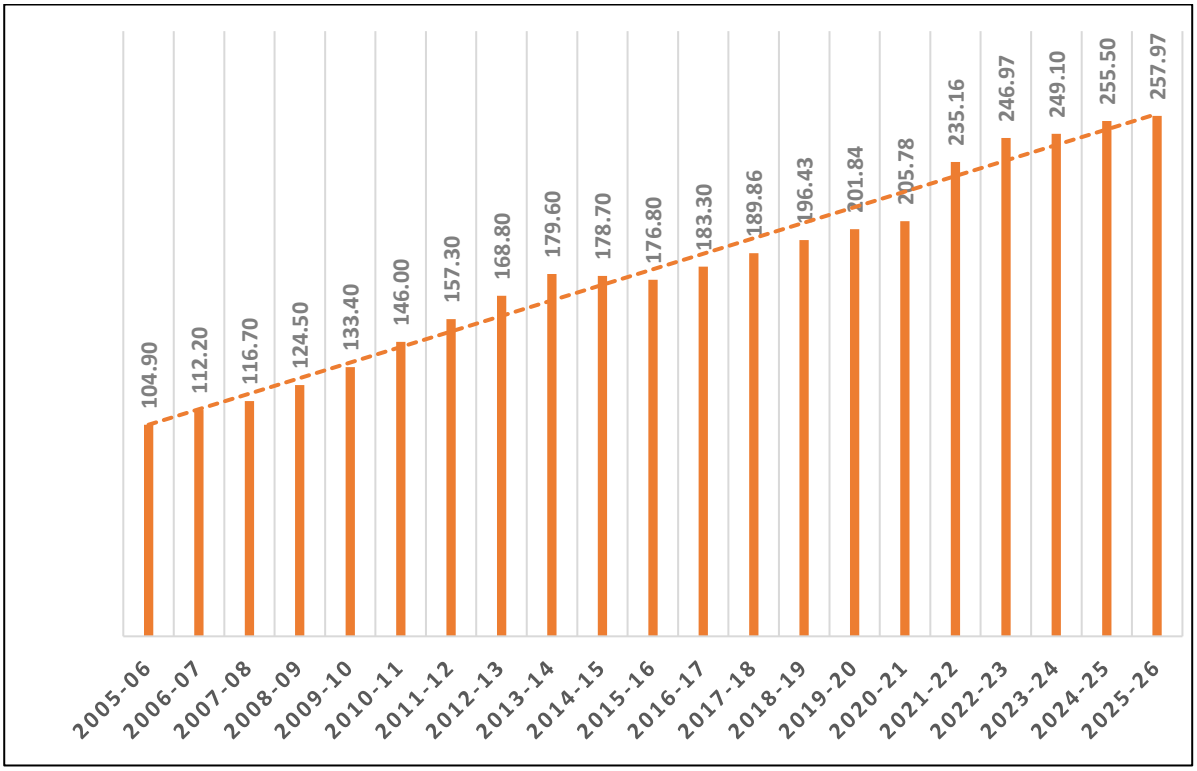


Figure 5-1 : Historical Rate of WPI Inflation in India

The wholesale price index (WPI) and the inflation rate in the past are presented in Table below.

Table 5-1 : Historical WPI value and Growth Inflation

December of year	2021	2022	2023	2024	2025	Avg.
WPI	235.2	247.0	249.1	255.5	257.97	
Inflation	14.27%	5.02%	0.86%	2.57%	0.96%	4.74%

WPI of December 2025 is posted on ministry site which is shows 0.96% inflation from the previous year. Same has been applied for FY 2026-27.

The average WPI inflation over the period FY 2021 to FY 2025 works out to approximately 4.74%, reflecting inflationary cycles across both high and low inflation years. Based on this analysis, an annual escalation factor of 4.5% has been adopted for the remaining concession period.

Table 5-2 : Overweight Traffic Rate

Category	Rate (Rs)
LCV (Single Journey of Ten Times)	1300
LCV (Single Journey of Two Times)	260

Category	Rate (Rs)
Truck/ Bus (Single Journey of Ten Times)	2700
Truck/ Bus (Single Journey of Two Times)	540
Multi Axle Vehicle (Single Journey of Ten Times)	4150
Multi Axle Vehicle (Single Journey of Two Times)	830

Normal escalation in the basis of WPI would be applicable to these rates as well.

In addition to above concessive has also declared special rates for overweight return journey as under

Table 5-3 : Special Overweight Return Pass

Category	Rate (Rs.)
Minibus /LCV	170
Truck/Bus	210
Multi Axle	205

These rates would be escalated at a normal inflation rate.

5.3 Estimation of Toll Rates

As per the applicable MORTH notification and Schedule R of contract agreement, the following Base rate of fee for the categories mentioned in the table stands true in the National Highways Fee Rules, 2008.

Table 5-4 : 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 Minibus	1.05

Type of Vehicle	Base Rate of Fee / Km (in Rs.)
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

There are a number of bypasses and structures in each package. Equivalent length for structures is added to tollable length at each toll plaza. Bypasses cost more than Rs. 10 Cr. are to be charged 1.5 times the normal fee. This has been incorporated in rates. The following table provides details of tollable lengths at each toll plaza.

Table 5-5 : Tollable Length Jaipur – Deoli section of NH -12

Toll Plaza Chainage	Length (km)	Bypass Cost (Cr)	Equivalent Structure length (km)	Tollable highway + structure length (km)
30.500	59.164	64.5 (Chaksu Bypass)	-	59.194
105.000	66.500	-	-	66.50

Additional rate for bypass having cost more than 10 Cr has been added as per schedule -R in toll rates for toll plaza at 30.50 km.

Other than this there is no structure or bypass which qualifies for additional toll rate at any toll plaza.

Toll rates are calculated as per guidelines provided in schedule R (rounded to nearest Rs. five) for the concession period and are given below. Since applicable length of highway length is equal for both plazas, applicable toll rates are also same

Thus, worked out rates for various categories of vehicle and discounts are given as under;

Table 5-6 : Toll Rates for Single Journey @ Km 30.500

Year	Car	LCV	Truck / Bus	Multi Axle	Oversized Vehicles
2026-27	130	205	420	650	810
2027-28	135	215	440	680	850
2028-29	140	225	460	715	890
2029-30	145	235	480	745	930
2030-31	155	245	505	780	975
2031-32	160	255	530	820	1020
2032-33	170	270	555	860	1070
2033-34	175	280	580	900	1120
2034-35	185	295	610	940	1175
2035-36	195	310	640	985	1230
2036-37	205	325	670	1035	1290
2037-38	215	340	700	1085	1355
2038-39	225	355	735	1135	1420
2039-40	235	370	770	1190	1490
2040-41	245	390	810	1250	1560

Table 5-7 : Toll Rates for Return Journey @ Km 30.500

Year	Car	LCV	Truck / Bus	HCM /EME/ MAV	Oversized Vehicles
2026-27	190	305	630	975	1220
2027-28	200	320	660	1020	1275
2028-29	210	335	690	1070	1335
2029-30	220	350	725	1120	1400
2030-31	230	365	760	1175	1465
2031-32	240	385	795	1230	1535
2032-33	255	400	830	1285	1605
2033-34	265	420	870	1350	1685
2034-35	280	440	915	1415	1765
2035-36	290	460	955	1480	1850
2036-37	305	485	1005	1550	1935
2037-38	320	510	1050	1625	2030
2038-39	335	530	1100	1705	2130
2039-40	355	560	1155	1790	2235
2040-41	370	585	1210	1875	2340

Table 5-8 : Toll Rates for Overweight Ticket @ Km 30.500

Year	LCV (Single Journey of Ten Times)	LCV (Single Journey of Two Times)	Truck/ Bus (Single Journey of Ten Times)	Truck/ Bus (Single Journey of Two Times)	Multi Axle Vehicle (Single Journey of Ten Times)	Multi Axle Vehicle (Single Journey of Two Times)
2026-27	2050	410	4200	840	6500	1300
2027-28	2150	430	4400	880	6800	1360
2028-29	2250	450	4600	920	7150	1430
2029-30	2350	470	4800	960	7450	1490
2030-31	2450	490	5050	1010	7800	1560
2031-32	2550	510	5300	1060	8200	1640
2032-33	2700	540	5550	1110	8600	1720
2033-34	2800	560	5800	1160	9000	1800
2034-35	2950	590	6100	1220	9400	1880
2035-36	3100	620	6400	1280	9850	1970
2036-37	3250	650	6700	1340	10350	2070
2037-38	3400	680	7000	1400	10850	2170
2038-39	3550	710	7350	1470	11350	2270
2039-40	3700	740	7700	1540	11900	2380
2040-41	3900	780	8100	1620	12500	2500

Table 5-9 : Toll Rates for Overweight Return Ticket (RPPU) @Km 30.500

Year	Minibus /LCV	Truck/ Bus	Multi Axle
2026-27	320	435	475
2027-28	335	455	495
2028-29	350	475	515
2029-30	365	495	540
2030-31	380	515	565
2031-32	395	540	590

Year	Minibus /LCV	Truck/ Bus	Multi Axle
2032-33	415	565	615
2033-34	435	590	645
2034-35	455	615	675
2035-36	475	645	705
2036-37	495	675	735
2037-38	515	705	770
2038-39	540	735	805
2039-40	565	770	840
2040-41	590	805	880

Table 5-10 : Toll Rates for Monthly Pass Local @ Km 30.500

Year	Car (Non-Commercial Vehicles)	Car SPL (10 to 20 Km)	LCV / Minibus SPL	LCV / Minibus (10 to 20 Km)
2026-27	360	1880	3170	4160
2027-28	375	1965	3315	4345
2028-29	395	2055	3465	4540
2029-30	415	2145	3620	4745
2030-31	430	2240	3785	4960
2031-32	455	2340	3955	5185
2032-33	475	2445	4135	5420
2033-34	495	2555	4320	5665
2034-35	520	2670	4515	5920
2035-36	545	2790	4720	6185
2036-37	570	2915	4930	6465
2037-38	600	3045	5150	6755

Year	Car (Non-Commercial Vehicles)	Car SPL (10 to 20 Km)	LCV / Minibus SPL	LCV / Minibus (10 to 20 Km)
2038-39	630	3180	5380	7060
2039-40	660	3325	5620	7380
2040-41	690	3475	5875	7710

Table 5-11 : Toll Rates for Monthly Pass @ Km 30.500

Year	Car	Minibus /LCV	Truck/ Bus	Multi Axle	Oversized Vehicle	Truck/Bus - 100 Trips
2026-27	4275	6765	14005	21680	27065	28010
2027-28	4475	7085	14665	22695	28335	29325
2028-29	4685	7415	15355	23765	29670	30705
2029-30	4905	7765	16075	24885	31070	32155
2030-31	5140	8135	16840	26060	32535	33675
2031-32	5380	8520	17635	27300	34080	35270
2032-33	5640	8925	18475	28595	35700	36950
2033-34	5905	9350	19355	29960	37405	38715
2034-35	6190	9800	20285	31395	39195	40565
2035-36	6485	10270	21255	32900	41075	42515
2036-37	6800	10765	22280	34485	43055	44560
2037-38	7130	11285	23355	36150	45135	46710
2038-39	7475	11830	24490	37905	47320	48975
2039-40	7835	12405	25680	39745	49620	51355
2040-41	8220	13010	26930	41685	52040	53860

Table 5-12 : Toll Rates for Single Journey @ Km 105.000

Year	Car	Minibus /LCV	Truck/ Bus	Multi axle	Oversized Vehicles
2026-27	110	175	370	580	705
2027-28	115	185	385	610	740
2028-29	120	195	405	635	775
2029-30	125	205	425	665	810
2030-31	130	210	445	700	850
2031-32	140	220	465	730	890
2032-33	145	235	490	765	930
2033-34	150	245	510	800	975
2034-35	160	255	535	840	1025
2035-36	165	270	560	880	1070
2036-37	175	280	590	925	1125
2037-38	180	295	615	970	1180
2038-39	190	310	645	1015	1235
2039-40	200	325	680	1065	1295
2040-41	210	340	710	1115	1360

Table 5-13 : Toll Rates for Return Journey @ Km 105.000

Year	Car	Minibus /LCV	Truck/ Bus	Multi axle	Oversized Vehicles
2026-27	165	265	555	870	1060
2027-28	170	275	580	910	1110
2028-29	180	290	610	955	1160
2029-30	190	305	635	1000	1215
2030-31	195	320	665	1045	1275

Year	Car	Minibus /LCV	Truck/ Bus	Multi axle	Oversized Vehicles
2031-32	205	335	700	1095	1335
2032-33	215	350	730	1150	1400
2033-34	225	365	765	1205	1465
2034-35	240	385	805	1260	1535
2035-36	250	400	840	1320	1610
2036-37	260	420	885	1385	1685
2037-38	275	440	925	1450	1765
2038-39	285	465	970	1520	1855
2039-40	300	485	1020	1595	1945
2040-41	315	510	1065	1675	2040

Table 5-14 : Toll Rates for Overweight Tickets @ Km 105.000

Year	LCV (Single Journey of Ten Times)	LCV (Single Journey of Two Times)	Truck/ Bus (Single Journey of Ten Times)	Truck/ Bus (Single Journey of Two Times)	Multi Axle Vehicle (Single Journey of Ten Times)	Multi Axle Vehicle (Single Journey of Two Times)
2026-27	1750	350	3700	740	5800	1160
2027-28	1850	370	3850	770	6100	1220
2028-29	1950	390	4050	810	6350	1270
2029-30	2050	410	4250	850	6650	1330
2030-31	2100	420	4450	890	7000	1400
2031-32	2200	440	4650	930	7300	1460
2032-33	2350	470	4900	980	7650	1530
2033-34	2450	490	5100	1020	8000	1600
2034-35	2550	510	5350	1070	8400	1680
2035-36	2700	540	5600	1120	8800	1760
2036-37	2800	560	5900	1180	9250	1850
2037-38	2950	590	6150	1230	9700	1940

Year	LCV (Single Journey of Ten Times)	LCV (Single Journey of Two Times)	Truck/ Bus (Single Journey of Ten Times)	Truck/ Bus (Single Journey of Two Times)	Multi Axle Vehicle (Single Journey of Ten Times)	Multi Axle Vehicle (Single Journey of Two Times)
2038-39	3100	620	6450	1290	10150	2030
2039-40	3250	650	6800	1360	10650	2130
2040-41	3400	680	7100	1420	11150	2230

Table 5-15 : Toll Rates for Overweight Return Pass (RPPU) @ Km 105.00

Year	Minibus /LCV	Truck/ Bus	Multi Axle
2026-27	275	395	410
2027-28	285	415	430
2028-29	300	435	450
2029-30	315	455	470
2030-31	330	475	490
2031-32	345	495	510
2032-33	360	515	535
2033-34	375	540	560
2034-35	390	565	585
2035-36	410	590	610
2036-37	430	615	635
2037-38	450	645	665
2038-39	470	675	695
2039-40	490	705	725
2040-41	510	735	760

Table 5-16 : Toll Rates for Local Monthly Pass @ Km 105.000

Year	Car (Non-Commercial Vehicles)	Car SPL (10 to 20 Km)	LCV / Minibus SPL	LCV / Minibus (10 to 20 Km)
2026-27	360	1870	3070	8275
2027-28	375	1955	3210	8645
2028-29	395	2045	3355	9035
2029-30	415	2135	3505	9440
2030-31	430	2230	3665	9865
2031-32	455	2330	3830	10310
2032-33	475	2435	4000	10775
2033-34	495	2545	4180	11260
2034-35	520	2660	4370	11765
2035-36	545	2780	4565	12295
2036-37	570	2905	4770	12850
2037-38	600	3035	4985	13430
2038-39	630	3170	5210	14035
2039-40	660	3315	5445	14665
2040-41	690	3465	5690	15325

Table 5-17 : Toll Rates for Monthly Pass @ Km 105.000

Year	Car	Minibus /LCV	Truck/ Bus	Multi Axle	Oversized Vehicle	Truck/Bus - 100 Trips
2026-27	3645	5890	12335	19345	23550	24670
2027-28	3815	6165	12915	20255	24655	25830
2028-29	3995	6455	13525	21205	25815	27045
2029-30	4185	6760	14160	22205	27035	28320
2030-31	4380	7080	14830	23255	28310	29660

Year	Car	Minibus /LCV	Truck/ Bus	Multi Axle	Oversized Vehicle	Truck/Bus - 100 Trips
2031-32	4590	7415	15535	24360	29655	31065
2032-33	4810	7765	16270	25520	31065	32545
2033-34	5035	8135	17050	26735	32545	34095
2034-35	5280	8525	17865	28015	34105	35730
2035-36	5530	8935	18720	29360	35740	37445
2036-37	5800	9365	19625	30775	37465	39245
2037-38	6080	9820	20570	32260	39275	41145
2038-39	6370	10295	21570	33825	41175	43135
2039-40	6680	10795	22615	35465	43175	45235
2040-41	7010	11320	23720	37195	45285	47440

5.4 Toll Revenue

As indicated earlier, toll revenue on the Project Road has been calculated under in all three scenarios. The estimates of toll revenue under ***Optimistic***, ***Pessimistic*** and ***Most Likely*** growth scenarios are presented in the following section.

5.5 Toll Revenue at all toll plazas under Scenarios

Toll Revenue estimates under most likely scenario at each of the toll plaza starting from the year 2026-27 are shown in tables below.

Table 5-18 : Toll Revenue Optimistic Scenario

(Rs. Crores)

Year	Toll at Plaza 30.500	Toll at Plaza 105.000	Total
2026-27	123.98	100.73	**224.71**
2027-28	138.29	111.89	**250.19**
2028-29	152.55	123.44	**275.99**
2029-30	169.31	136.66	**305.96**
2030-31	188.45	150.16	**338.61**
2031-32	207.97	165.65	**373.63**
2032-33	230.97	181.66	**412.63**

Year	Toll at Plaza 30.500	Toll at Plaza 105.000	Total
2033-34	252.51	199.16	**451.67**
2034-35	280.81	220.35	**501.17**
2035-36	308.98	240.73	**549.71**
2036-37	337.87	262.82	**600.68**
2037-38	371.32	286.51	**657.83**
2038-39	407.62	313.33	**720.95**
2039-40	448.03	344.44	**792.47**
2040-41	486.21	372.45	**858.66**

Table 5-19 : Toll Revenue Pessimistic Scenario

(Rs. Crores)

Year	Toll at Plaza 30.500	Toll at Plaza 105.000	Total
2026-27	122.77	99.75	**222.52**
2027-28	135.62	109.74	**245.35**
2028-29	148.22	119.90	**268.12**
2029-30	162.95	131.49	**294.44**
2030-31	179.65	143.12	**322.76**
2031-32	196.39	156.40	**352.79**
2032-33	216.00	169.87	**385.87**
2033-34	233.95	184.48	**418.44**
2034-35	257.67	202.16	**459.83**
2035-36	280.82	218.70	**499.53**
2036-37	304.15	236.49	**540.64**
2037-38	331.01	255.32	**586.34**
2038-39	359.84	276.58	**636.42**

Year	Toll at Plaza 30.500	Toll at Plaza 105.000	Total
2039-40	391.82	301.19	**693.01**
2040-41	421.14	322.58	**743.72**

Table 5-20 : Toll Revenue Most Likely Scenario

(Rs. Crores)

Year	Toll at Plaza 30.500	Toll at Plaza 105.000	Total
2026-27	123.32	100.23	**223.55**
2027-28	136.91	110.77	**247.68**
2028-29	150.35	121.61	**271.96**
2029-30	166.05	134.04	**300.10**
2030-31	183.99	146.55	**330.54**
2031-32	202.16	160.93	**363.09**
2032-33	223.47	175.63	**399.09**
2033-34	243.17	191.66	**434.83**
2034-35	269.12	211.03	**480.15**
2035-36	294.75	229.44	**524.20**
2036-37	320.81	249.32	**570.13**
2037-38	350.81	270.45	**621.26**
2038-39	383.23	294.36	**677.58**
2039-40	419.24	322.05	**741.29**
2040-41	452.81	346.56	**799.38**

CHAPTER 6
OPERATION AND MAINTENANCE

6.1 Operation & Maintenance

The following are project parameters which would contribute towards the cost of operation and maintenance.

The estimated cost of operation and maintenance has been provided by the Management.

The following are the key components for operation and maintenance costs:

1. Annual Regular Maintenance – Covering pothole repair, shoulder and slope repair, drain cleaning, median maintenance, Crash barrier, toll plaza maintenance, Toll collection, other services like medical help and rescue operations etc.

2. Periodic Maintenance – This will be done on a periodic basis, say every 5 years. It will consist of overlaying of wearing course and painting and marking. Some pavement strengthening is also anticipated in a few sections. This operation and its cost are spread over three years.

The year wise actual operation and maintenance cost is provided by management of asset and has been found reasonable. Same has been adopted in report for projection of operation and maintenance cost.

Table 6-1 : O&M Cost

Years	Routine O & M	Other Operational expenses	Major Maintenance O & M	Total Expenditure (Rs. Crores)
2026-27	13.95	6.63	77.62	**98.20**
2027-28	14.47	7.15	84.30	**105.92**
2028-29	15.00	7.70	110.37	**133.07**
2029-30	15.54	8.29	22.84	**46.67**
2030-31	27.08	8.93	0.00	**36.01**
2031-32	28.91	9.62	0.00	**38.53**
2032-33	30.09	10.36	13.07	**53.52**
2033-34	31.31	11.16	118.29	**160.77**
2034-35	32.58	12.02	75.39	**119.99**
2035-36	34.01	12.95	0.00	**46.96**
2036-37	35.36	13.95	0.00	**49.31**
2037-38	36.75	15.03	0.00	**51.77**
2038-39	38.18	16.18	0.00	**54.36**
2039-40	39.80	17.43	0.00	**57.23**
2040-41	41.32	18.78	0.00	**60.10**

CHAPTER 7
CONCLUSION & RECOMMENDATIONS

7.1 Conclusion & Recommendations

Project stretch of Jaipur to Deoli section of NH-12 in state of Rajasthan from km 18.700 to km 165.000 is currently a four-lane road. The road is in sound condition and serves reasonably good levels of traffic volume. The project corridor falls in the influence zone of fast upcoming metro city Jaipur. There are many upcoming projects in the area which have the potential to boost economic growth of the area and add value to the development of the region. All these developments have potential to give a positive impact to traffic flow on the project. As estimated in this study report, project traffic revenue is expected to grow at a rate of 6-8% per annum.

The following can be considered as major outcome of study.

a) There is a good amount of tollable traffic running on the project.

b) Project corridor has potential to witness traffic growth @ 6-8% annually in near future due to various development in area and overall growth of the economy.

c) Project corridors do not have risk of traffic leakage due to lack of competing roads of comparable quality.

The project infrastructure is in good condition and its maintenance cost is also reasonable.

Based on the above it can be considered a stable healthy project from the traffic and revenue point of view.

CHAPTER 8

PROJECT ILLUSTRATIONS

8.1 Project Illustrations

Current condition OF Project has been depicted in the following photographs.



Figure 8-1 : Chaksu Junction



Figure 8-2 : General Condition



Figure 8-3 : General Condition



Figure 8-4 : Toll at Barkheda



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IRB InvIT Fund

PATHANKOT TO AMRITSAR SECTION OF NH-15

(KM 6.082 TO 108.502)

IN THE STATE OF PUNJAB



MAY 2026





TOLL REVENUE AND O&M COST PROJECTION REPORT (FINAL)

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ABBREVIATIONS

AADT	-	Annual Average Daily Traffic	**NHAI**	-	National Highways Authority of India
BOT	-	Build Operate Transfer	**NHDP**	-	National Highways Development Project
CAGR	-	Compound Annual Growth Rate	**NSDP**	-	Net State Domestic Product
CTV	-	Classified traffic volume	**O&M**	-	Operation & Maintenance
DBFOT	-	Design, Build, Finance, Operate & Transfer	**PCDP**	-	Per Capita Domestic Product
EME	-	Earth Moving Equipment	**PCI**	-	Per Capita Income
GDP	-	Gross Domestic Product	**PCU**	-	Passenger Car Unit
GSDP	-	Gross State Domestic Product	**PSC**	-	Pre-stressed Concrete
HCM	-	Heavy Construction Machinery	**RCC**	-	Reinforced cement concrete
HCV	-	Heavy Commercial Vehicle	**RHS**	-	Right Hand Side
HTMS	-	Highway Traffic Management System	**SH**	-	State Highway
IRC	-	Indian Road Congress	**TP**	-	Toll Plaza
IRR	-	Internal Rate of Return	**WPI**	-	Wholesale Price Index
LCV	-	Light Commercial Vehicle	**NH**	-	National Highway
LHS	-	Left Hand Side			
LGV	-	Light Goods Vehicle			
MAV	-	Multi Axle Vehicle			
MORTH	-	Ministry of Road Transport and Highways			

CHAPTER 1

INTRODUCTION

1.1 Background

The Government of India through National Highway Authority of India (NHAI) embarked upon a program to enhance the traffic capacity and safety for efficient transportation of goods as well as passenger traffic on National Highway Sections under NHDP Phase III.

The project under consideration, **Pathankot- Amritsar** section of NH 15 from km 6.082 to km 108.502 is one such road project NHAI intended to implement on a BOT basis in the DBFOT format. M/s IPATRL (Concessionaire) has been awarded the Project for a concession period of 20 years starting from December 31, 2010. The Project has been commissioned and is currently in the operation / maintenance phase.

The Pathankot - Amritsar NH 15 Project comprises the section of NH 15 from km 6.082 to km 108.502. IPATRL was entrusted to expand a 102.42 Km section of NH 15 between Pathankot and Amritsar in Punjab from two lanes to four lanes on a DBFOT basis. The project received a completion certificate on November 27, 2014, and IPATRL commenced tolling for a project length of 102.42 Km on that date. Subsequently, the project received a final completion certificate on August 17, 2017.

Asset and regional context

The Asset is 102.42 km long four lane section connecting Amritsar and Pathankot in the state of Punjab. The Asset was awarded on December 2010 and received partial completion certificated (PCOD) on 27th November 2014 followed by Full COD on 17th August 2017.

At a broader level, NH-54 is a 646 kilometer long National Highway in India and it runs from Pathankot in Punjab and ends in Bikaner district in Rajasthan, and the Asset

is the part of this corridor itself.

There are 2 toll plazas on the Asset and are located at:

- Toll Plaza (TP) 1 - Ladpalwan at KM 16+000
- Toll Plaza (TP) 2 – Waryam nangal at KM 88+500

Both Ladpalwan and Waryam Nangal toll plaza have 5x5 lane configuration. Both plazas have an additional lane in each direction for non tollable traffic. Electronic toll collection (ETC) is enabled at both the plazas. Weigh-in-motion (WIM) and static weighing is also available at both plazas to record overloaded trucks.

The Asset has been impacted by episodes of farmers protests which took place at various parts of Punjab and Haryana between August 2020 and December 2021. During this time, operations at all two toll plazas on the Asset were impacted, with no tolling during certain periods. This can be seen in the historical toll frequencies that have been summarized later in the report.

Summarizing the trips on the Asset, Asset primarily caters to three different types of traffic movements:

- Short-distance trips undertaken largely by passenger vehicles for work/business trips wherein the movement is predominantly local between the cities of Amritsar, Batala, Gurdaspur etc.
- Medium-distance trips undertaken largely by the zones along the Asset, which are generated mainly between Amritsar/ South Punjab and states of JCK and Western Himachal Pradesh.
- Long-distance trips mainly by 2A/3A and MAVs, catering to the long-distance movement with one trip-end in Gujarat/ Rajasthan

1.2 Objective of the Study

M/s IRB INVIT FUND has engaged *GMD Consultants* to assess the future traffic and toll potential of the project along with related operation & maintenance expenditure involved.

This report named as "***Toll Revenue and O&M Cost Projection Report***" mainly focuses on traffic and O&M aspects of the project. Other parameters like

competing road, area developments etc. have been considered from a traffic development point of view.

1.2.1 Scope of Services

The broad scope of work covered in the assignment is as follows.

a) Analysis of Traffic Growth
b) Toll Rate Growth
c) Revenue Forecasting
d) Operation and Maintenance Cost Projections

The Concessionaire has provided basic traffic data and other project details on the basis of which the above analysis has been carried out.

"***Toll Revenue and O&M Cost Projection Report***" was submitted in August 2017. In this report traffic data for the year 2016-17 was used as base traffic. The report was updated with traffic data of 2017-18 and same was submitted in April 2018. The report was further updated with traffic Data of the period from April 2018 to September 2019 and was submitted in October 2018. A revised report was submitted with updated traffic for the years 2018-19 in April 2019. The report was further updated with yearly traffic data for 2019-20 in May 2020. Toll collection is affected on project stretch due to ongoing Farmer's agitation in state. Toll collection is suspended at both toll plazas from early October 2020. Traffic data from April 2020 to October 2020, April 2022 to March 2023, April-2023 to March -2024, April-2024 to March -2025 was available, this report was updated taking this latest traffic data into consideration. Hence the data from April-2025 to February 2026 can be considered as base traffic for future projections. Projections have been updated on the basis of this new data.

CHAPTER 2

TRAFFIC SURVEYS AND ANALYSIS

2.1 Traffic Survey

In the course of our work, we have collected the required information for the project corridor to understand the general traffic and travel characteristics of the corridor.

Toll operation on the project was suspended due to farmer's agitation. Toll operation is resumed from December 2021, and only nine-month data is available for that period which is also affected due to Covid-19 Third wave. Classified traffic volume counts at the toll plaza locations on Pathankot-Amritsar section for base year 2022-23, 2023-24,2024-25 and now Annual traffic data from April 2025 to February 2026.

The following traffic data has been collected for the project.

Classified traffic volume counts at the two toll plaza locations on Pathankot Amritsar section of NH-15for base year 2016-17, 2017-18, 2018, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23 2023-24,2024-25 and now Annual traffic data from April 2025 to February 2026.

- Local Component of traffic
- Component of Return Journey
- Component of Monthly Pass Journey

The main objective of the traffic data analysis is to:

- Determine the existing traffic movement characteristics of the project.
- Establish base year traffic.
- Identification of travel patterns and modal split of project traffic
- Deriving growth factors for traffic 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

The project can be divided into two homogenous sections from a traffic point of view.

These sections can be.

1. Pathankot to Gurdaspur
2. Gurdaspur to Amritsar

Traffic of both sections is represented by toll plaza in each section. The table below provides details of locations from where traffic details have been collected.

Table 2-1 : Traffic Data Details

SR. NO	LOCATION	CTV	Single Journey Traffic	Return Pass Traffic	Monthly Pass Traffic	Local Traffic
1	**Km 16.00 Toll Plaza**	AADT for Year 2016-2017	For Year 2016-2017	For Year 2016-2017	For Year 2016-2017	For Year 2016-2017
		AADT for Year 2017-2018	For Year 2017-2018	For Year 2017-2018	For Year 2017-2018	For Year 2017-2018
		AADT for Year 2018-2019	For Year 2018-2019	For Year 2018-2019	For Year 2018-2019	For Year 2018-2019
		AADT for Year 2019-2020	For Year 2019-2020	For Year 2019-2020	For Year 2019-2020	For Year 2019-2020
		AADT for Year 2020-2021 (up to Oct-20)	For Year 2020-2021 (up to Oct-20)	For Year 2020-2021 (up to Oct-20)	For Year 2020-2021 (up to Oct-20)	For Year 2020-2021 (up to Oct-20)
		AADT for Year 2022-2023	For Year 2022-2023	For Year 2022-2023	For Year 2022-2023	For Year 2022-2023
		AADT for Year 2023-2024	For Year 2023-2024	For Year 2023-2024	For Year 2023-2024	For Year 2023-2024

SR. NO	LOCATION	CTV	Single Journey Traffic	Return Pass Traffic	Monthly Pass Traffic	Local Traffic
		AADT for Year 2024-25	For Year 2024-25	For Year 2024-2025	For Year 2024-2025	For Year 2024-2025
		AADT for Year 2025-26	For Year 2025-26	For Year 2025-2026	For Year 2025-2026	For Year 2025-2026
2	**Km 88.50 Toll Plaza**	AADT for Year 2016-2017	For Year 2016-2017	For Year 2016-2017	For Year 2016-2017	For Year 2016-2017
		AADT for Year 2017-2018	For Year 2017-2018	For Year 2017-2018	For Year 2017-2018	For Year 2017-2018
		AADT for Year 2018-2019	For Year 2018-2019	For Year 2018-2019	For Year 2018-2019	For Year 2018-2019
		AADT for Year 2019-2020	For Year 2019-2020	For Year 2019-2020	For Year 2019-2020	For Year 2019-2020
		AADT for Year 2020-2021 (up to Oct-20)	For Year 2020-2021 (up to Oct-20)	For Year 2020-2021 (up to Oct-20)	For Year 2020-2021 (up to Oct-20)	For Year 2020-2021 (up to Oct-20)
		AADT for Year 2022-2023	For Year 2022-2023	For Year 2022-2023	For Year 2022-2023	For Year 2022-2023
		AADT for Year 2023-2024	For Year 2023-2024	For Year 2023-2024	For Year 2023-2024	For Year 2023-2024
		AADT for Year 2024-2025	For Year 2024-25	For Year 2024-2025	For Year 2024-2025	For Year 2024-2025

SR. NO	LOCATION	CTV	Single Journey Traffic	Return Pass Traffic	Monthly Pass Traffic	Local Traffic
		AADT for Year 2025-2026	For Year 2025-26	For Year 2025-2026	For Year 2025-2026	For Year 2025-2026

The locations of each of the traffic surveys are illustrated in Figure below.



Figure 2-1: Toll Plaza Locations

2.2 Classified Traffic Volume Count

The objective of conducting a Classified Traffic Volume Count is to understand the traffic flow pattern including modal split on a roadway. The Classified Traffic Volume Count survey has been provided by concessionaire of project highway from actual traffic data gathered at toll plaza locations based on monthly data shared with NHAI. These locations are indicated in the figure and table given above.

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 are further segregated to capture the toll able vehicle categories specifically and toll exempted vehicles are counted separately. The detailed vehicle classification system as per IRC: 64-1990 is given below.

Table 2-2 : Vehicle Classification System

Vehicle Type	
Auto Rickshaw	
Passenger Car	Car, Jeep, Taxi & Van (Old / new technology)
Bus	Minibus
	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

However, since the project highway is currently under toll operation, the data collected corresponds to the category of toll able vehicles. The following are the types of vehicles as per concession agreement.

- Car / Jeep / van
- Minibus /LCV
- Truck / Bus
- Multi Axle
- Oversize Vehicle

2.3 Traffic Characteristic

Toll revenue of the project highway does not solely depend on traffic volume. There are certain characteristics of traffic which have significant potential to affect toll revenue. Components of local traffic, components of passenger and commercial traffic, portion of return journey traffic, portion of monthly pass traffic are some such characteristics of traffic. These will be discussed in subsequent sections of this report.

2.3.1 Traffic Data

Project concessionaire has provided Traffic data for base years 2018-19, 2019-20, April 2020 to October-2020, 2022-23, 2023-24 2024- 25 & traffic data from April 2025 to February 2026.

Since the traffic data available for this update is for only Annual, from April 2025 to February 2026, it may not represent the whole year traffic. Hence a seasonality factor for balance part of year has been applied to average traffic of the current eleven months to arrive at Annual Average Daily Traffic of base year 2025-26. Thus, corrected traffic is used for future projections and revenue calculations. The following table shows historical traffic on project stretch and derived Annual Average Daily Traffic (AADT) for year 2025-26.

Table 2-3 : Traffic Data at Toll Plaza @ Km 16.00

Sr. No	Type of Vehicle	Annual Average Daily Traffic (Nos.) 2018-19	Annual Average Daily Traffic (Nos.) 2019-20	Annual Average Daily Traffic (Nos.) 2020-21 (up to Oct-20) *	Annual Average Daily Traffic (Nos.) 2022-23	Annual Average Daily Traffic (Nos.) 2023-24	Annual Average Daily Traffic (Nos.) 2024-25	Annual Average Daily Traffic (Nos.) 2025-26
1	Car	9220	9402	5404	5888	5808	5757	6890
2	Minibus / LCV	881	804	660	383	2	0	246
3	Truck / Bus	1109	1063	738	1087	965	954	1125
4	Multi Axle	2450	2113	2013	2134	2441	2301	1826
5	Oversized	17	32	16	10	6	5	5

Sr. No	Type of Vehicle	Annual Average Daily Traffic (Nos.) 2018-19	Annual Average Daily Traffic (Nos.) 2019-20	Annual Average Daily Traffic (Nos.) 2020-21 (up to Oct-20) *	Annual Average Daily Traffic (Nos.) 2022-23	Annual Average Daily Traffic (Nos.) 2023-24	Annual Average Daily Traffic (Nos.) 2024-25	Annual Average Daily Traffic (Nos.) 2025-26
	Vehicles							
	Total	**13677**	**13414**	**8831**	**9502**	**9222**	**9017**	**10092**

Similar traffic data for toll plaza at km 88.50 is given as under

Table 2-4 : Traffic Data at Toll Plaza @ Km 88.50

Sr. No	Type of Vehicle	Annual Average Daily Traffic (Nos.) 2018-19	Annual Average Daily Traffic (Nos.) 2019-20	Annual Average Daily Traffic (Nos.) 2020-21 (up to Oct-20)	Annual Average Daily Traffic (Nos.) 2022-23	Annual Average Daily Traffic (Nos.) 2023-24	Annual Average Daily Traffic (Nos.) 2024-25	Annual Average Daily Traffic (Nos.) 2025-26
1	Car	11271	11633	6284	8064	7714	7858	9592
2	Minibus/ LCV	574	587	496	248	189	181	172
3	Truck/Bus	841	845	395	892	954	1002	1051
4	Multi Axle	1177	1239	1181	1498	1458	1490	1543
5	Oversized Vehicles	8	15	62	8	4	5	14
	Total	**13870**	**14319**	**8418**	**10710**	**10318**	**10535**	**12371**

2.4 Data Analysis

2.4.1 Analysis of Traffic Volume Count

Understanding the character of existing traffic forms the basis of futuristic traffic forecast. The various vehicle types having different sizes and characteristics can be 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 the table given below.

Table 2-5 : PCU Factors Adopted for Study

Vehicle Type	PCUs
Car	1.0
Minibus	1.5
Standard Bus	3.0
LCV/LGV	1.5
2 Axle Truck	3.0
3 – 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

Traffic volume at each toll plaza was converted to PCU and same is presented as under.

Table 2-6 : Traffic in PCU at both sections

Year	Toll Plaza Location (Km)	Traffic No	PCU	PCU Index
FY2016-17	16.00	14107	29951	2.12
	88.50	13013	19067	1.47
FY2017-18	16.00	14249	27926	1.96
	88.50	13642	18999	1.39
FY 2018-19	16.00	13677	24969	1.83
	88.50	13870	19986	1.44
FY 2019-20	16.00	13414	23449	1.75
	88.50	14319	20691	1.45
FY 2020-21 (up to Oct-20)	16.00	17739	8831	2.01
	88.50	13808	8418	1.64
FY 2022-23	16.00	9502	19371	2.04
	88.50	10710	17888	1.67
FY 2023-24	16.00	9222	18578	2.01
	88.50	10318	17438	1.69
FY 2024-25	16.00	9017	17905	1.99
	88.50	10535	17861	1.70
FY 2025-26	16.00	10092	18873	1.87
	88.50	12371	20006	1.62

It can be observed from above that project traffic has a PCU index ranging between 1.4 to 2.0 which indicates a good mix of passenger and commercial traffic on the project corridor.

2.4.2 Components of Traffic

As discussed previously, components of traffic volume play an important role in determining project revenue. A larger component of commercial traffic with higher axle configuration adds to project revenue positively. Similarly, a larger component of local traffic affects the project revenue potential negatively.

It is observed that car traffic forms 68% of total traffic at toll plaza location Km 16.00 while multi axle vehicles are 18% of total traffic. 12% of traffic is Truck /Bus while LCV traffic forms the balance 2%. Overall, about 33% of traffic is commercial in nature.

At toll plaza location Km 88.50 car traffic forms 78% of total traffic at toll plaza while multi axle and truck / bus are 4% and 5%. LCV volume is 1% of the total traffic. Overall, about 23% of traffic is commercial in nature which is lower as compared to toll plaza location Km 16.00.

Another important bifurcation of traffic is components of traffic with respect to various type of toll ticketing like

1. Single Journey
2. Return Journey
3. Monthly Pass
4. Annual Pass car

The following table provides numbers of vehicles falling in each of the above categories in various years.

Table 2-7 : Journey Type Bifurcation of Traffic at KM 16.00

Sr. No	Type	Traffic Volume (Nos.) 2018-19	Traffic Volume (Nos.) 2019-20	Traffic Volume (Nos.) 2020-21 (up to Oct-21)	Traffic Volume (Nos.) 2022-23	Traffic Volume (Nos.) 2023-24	Traffic Volume (Nos.) 2024-25	Traffic Volume (Nos.) 2025-26
1	Single Journey	4574	4407	3786	4674	4313	4165	3753
2	Return Journey	4322	4236	1924	4676	4770	4698	4436
3	Monthly Pass	4781	4771	3121	152	139	154	124
4	Annual Pass car							1779

A significant part of the traffic at KM 16.00 is monthly and return journey, which is 1% and 44% respectively. The single journey component is 37% and Annual Pass car is 18 %. This indicated the presence of dedicated urban traffic in the corridor.

Similarly, traffic numbers for type of journey at KM 88.50 are returned and monthly journey 46% and 1% respectively. Single journey component is 33% and Annual Pass car is 20%.

Table 2-8 : Journey Type Bifurcation of Traffic at KM 88.50

Sr. No	Type	Traffic Volume (Nos.) 2018-19	Traffic Volume (Nos.) 2019-20	Traffic Volume (Nos.) 2020-21 (up to Oct-20)	Traffic Volume (Nos.) 2022-23	Traffic Volume (Nos.) 2023-24	Traffic Volume (Nos.) 2024-25	Traffic Volume (Nos.) 2025-26
1	Single Journey	3177	3616	3406	5021	4458	4504	4139
2	Return Journey	5620	5736	2332	5542	5740	5904	5692
3	Monthly Pass	5073	4967	2680	149	120	127	107
4	Annual Pass car							2424

2.5 Secondary data collection

There are several other factors which have substantial impact on traffic patterns and growth on any project corridor. The following are some of such important factors.

- Industrial development around project corridor and its catchment
- Educational infrastructure along project corridor
- Demographic pattern
- Urban area development
- Tourism potential
- Upcoming major infrastructural or Industrial projects
- Special Industry in project corridor
- Overall trends of economic growth local as well as national / regional

Hence in addition to traffic details on the project site, secondary data was also collected from the various sources. Typical secondary data includes the following:

1. Vehicle registration data of regional and national level.
2. Economic Data
   a) GDP
   b) NSDP
   c) Population Growth
   d) Per Capita Income growth
   e) Industrial Growth
   f) Special Industry Potential
   g) Regional and National development vision / plan
   h) Any other relevant data

CHAPTER 3

GROWTH OF TRAFFIC ON PROJECT HIGHWAY

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 forecasts of factors such as population, gross domestic product (GDP), vehicle ownership, per capita income (PCI), agricultural output, fuel consumption etc. Future patterns 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 Pathankot- Amritsar section of NH-15 has been done taking the above factors into consideration. Established best practices and standard guidelines such as "**IRC: 108-2015-Guidelines for Traffic Forecast on Highways**" have been used for traffic growth forecast**.**

3.2 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 Forecast on Highways**. Since the entire project alignment falls in Punjab State and has very little contribution from other states in terms of traffic, all developmental parameters pertaining to traffic growth are considered for Punjab State only.

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 types of vehicles. 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, the 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

Time series data of vehicles (both passenger and goods) Registered in the state of Punjab is used as the base data for analysis of growth.

3.3 Estimation of Traffic Demand Elasticity

The 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 categories 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:

$$Log\ (P) = k\ x\ Log\ (EI) + A$$

Where,

P = Number of Vehicles (Mode wise)

EI = Economic Indicator

A = *Regression constant*

k = *Elasticity coefficient (Regression coefficient)*

The elasticity for cars 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).

The following tables and graphs depict regression and elasticity of growth model.

Table 3-1: Per Capita Income Vs Car

Year	PCI	Car	Log PCI	Log Car	PCI Growth	Average Growth
2004-05	33103	337345	4.52	5.53		
2005-06	34096	376954	4.53	5.58	3%	
2006-07	37087	414612	4.57	5.62	9%	
2007-08	39567	456521	4.60	5.66	7%	
2008-09	41003	496658	4.61	5.70	4%	
2009-10	42831	538862	4.63	5.73	4%	
2010-11	44783	609469	4.65	5.78	5%	
2011-12	46422	680076	4.67	5.83	4%	
2012-13	48496	774611	4.69	5.89	4%	
2013-14	49411	869565	4.69	5.94	2%	
2014-15	51517	960734	4.71	5.98	4%	4.5%

Regression analysis of same is given in figure below.

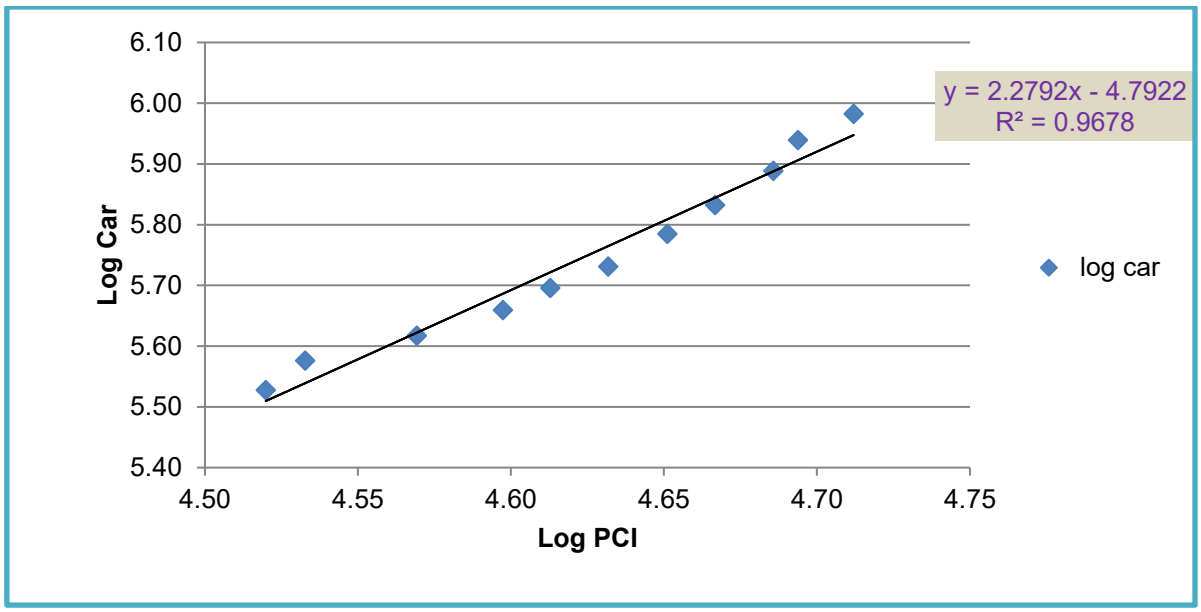


Figure 3-1: Regression and Elasticity PCI vs. Car-Extrapolation

Table 3-2 : Population Vs Bus

Year	Population	Buses	Log Pop	Log Bus	Pop Growth	Average Growth
2004-05	26012183	19855	7.42	4.30		
2005-06	26492788	21136	7.42	4.33	2%	
2006-07	26982983	22373	7.43	4.35	2%	
2007-08	27482038	24457	7.44	4.39	2%	
2008-09	27989725	25682	7.45	4.41	2%	
2009-10	28506747	27146	7.45	4.43	2%	
2010-11	29034180	28653	7.46	4.46	2%	
2011-12	29571111	30160	7.47	4.48	2%	
2012-13	29795907	33475	7.47	4.52	1%	
2013-14	35222450	35864	7.55	4.55	18%	
2014-15	35579780	40545	7.55	4.61	1%	3.29%

Regression analysis of same is given in figure below.

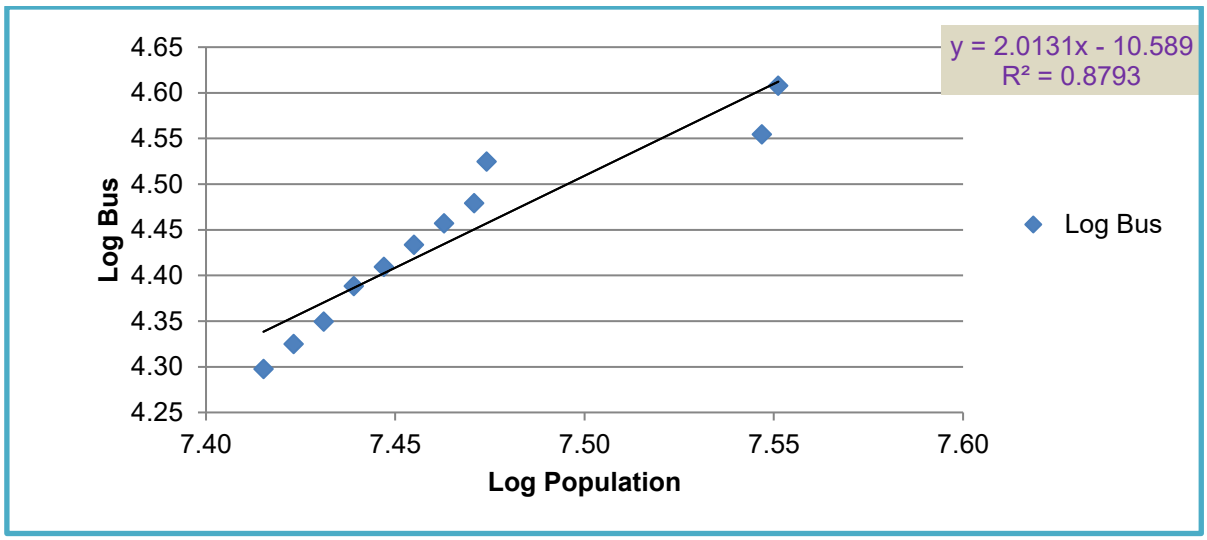


Figure 3-2: Regression and Elasticity Population vs. Bus – Extrapolation

The elasticity of goods traffic has been worked out by regression analysis with NSDP. The following table represents the data and details.

Table 3-3 : Goods Traffic Vs NSDP

Year	NSDP	Trucks	Log NDSP	Log Truck	NSDP Growth	Average Growth (5 Year)
2004-05	8610813	119183	6.94	5.08		
2005-06	9032981	128201	6.96	5.11	5%	
2006-07	10007179	140380	7.00	5.15	11%	
2007-08	10873818	150720	7.04	5.18	9%	
2008-09	11476627	160113	7.06	5.20	6%	
2009-10	12209725	170519	7.09	5.23	6%	
2010-11	13002377	186725	7.11	5.27	6%	
2011-12	13727501	202930	7.14	5.31	6%	
2012-13	14449823	216238	7.16	5.33	5%	
2013-14	17403765	233211	7.24	5.37	20%	
2014-15	18329810	251035	7.26	5.40	5%	7.96%

The following figure depicts regression analysis and extrapolation.

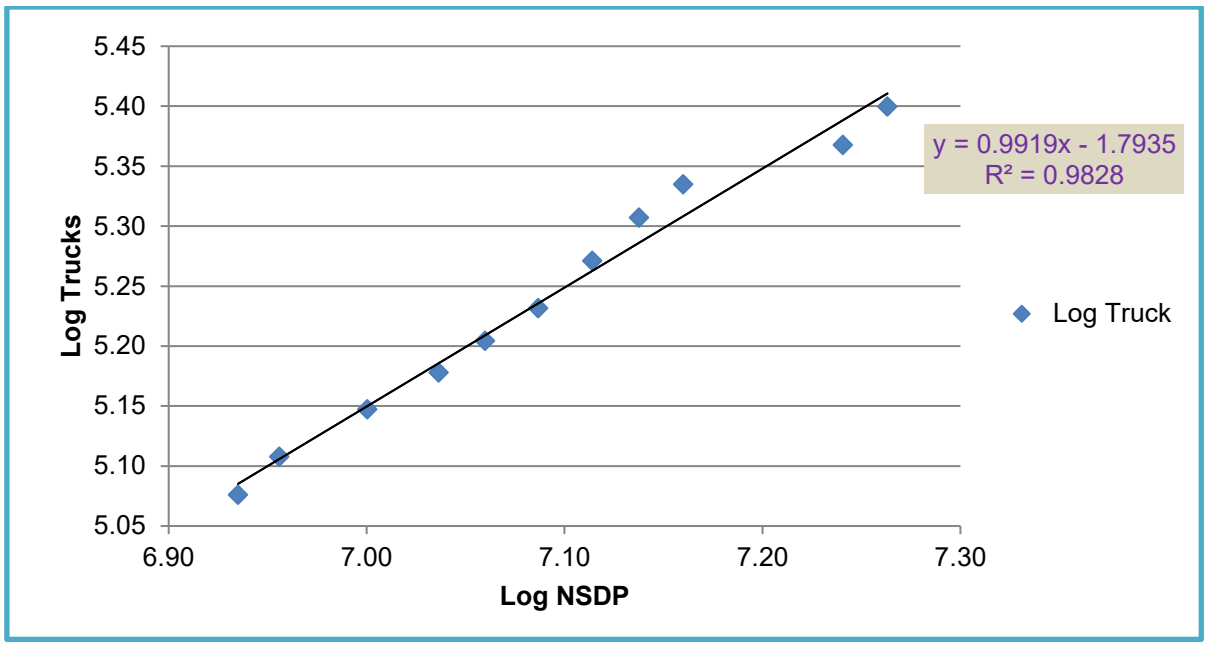


Figure 3-3: Regression and Elasticity NSDP vs. Goods Traffic – extrapolation.

Using the regression analysis above, we have arrived at the elasticity of traffic demand for each class of vehicle to a given change in relevant economic indicators. Average traffic growth of a vehicle class is multiplied by the corresponding elasticity coefficient to arrive at traffic growth.

The results of these analyses for the good fit as reflected by R^2 values are presented in the Table below.

Table 3-4 : Summary Regression Analysis

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 = 2.2792x - 4.7922	R^2 = 0.9678	2.2792	4.54%	10.34%	Good Regression
	Bus	Population	y = 2.0131x - 10.5894	R^2 = 0.8793	2.0131	3.29%	6.63%	Good Regression
	Truck	NSDP	y = 0.9919x - 1.7935	R^2 = 0.9828	0.9919	7.96%	7.90%	Good Regression

The economic model for predicting growth is a good tool, however other local, regional, and national factors should also be considered before finalizing growth factors. Considering factors such as Existing developments and other influencing economic factors, moderated growth should be considered. These factors are discussed in subsequent sections.

3.4 Analysis of Historic Traffic Data

Historic traffic data forms useful information for any highway project. It provides useful information for establishing past trends of growth. Project stretch of Pathankot to Amritsar has recently been commissioned and tolling commenced in 2014. Only a few years of traffic data are available, which is not sufficient to establish any credible trend. Moreover, due to the ban on mining in the area commercial traffic is temporarily affected. Lockdown for Corona Virus pandemic (COVID-19) disrupted project traffic in March 2020. Traffic for the period from April 2020 to September 2020 is impacted due to COVID-19 lockdown and from October-20 onwards toll collection was suspended on project which is recently resumed in December 2021. Hence the same cannot be considered for historical growth.

Hence traffic growth on the project corridor has been taken from the economic model.

3.5 Other Factors Influencing Growth

There are many factors which have an impact on traffic growth. As discussed previously these factors can be economic, social, educational, and industrial.

Potentiality of such factors for project highway is discussed as under.

ECONOMY

After witnessing a slowdown during 2011-12, the economy recovered in 2013-14, and a high growth rate of GDP was recorded up to 2018-19. Pandemic of COVID-19 impacted all economies of world including India up to year 2021-22. Following figure show trend of GDP growth in India.

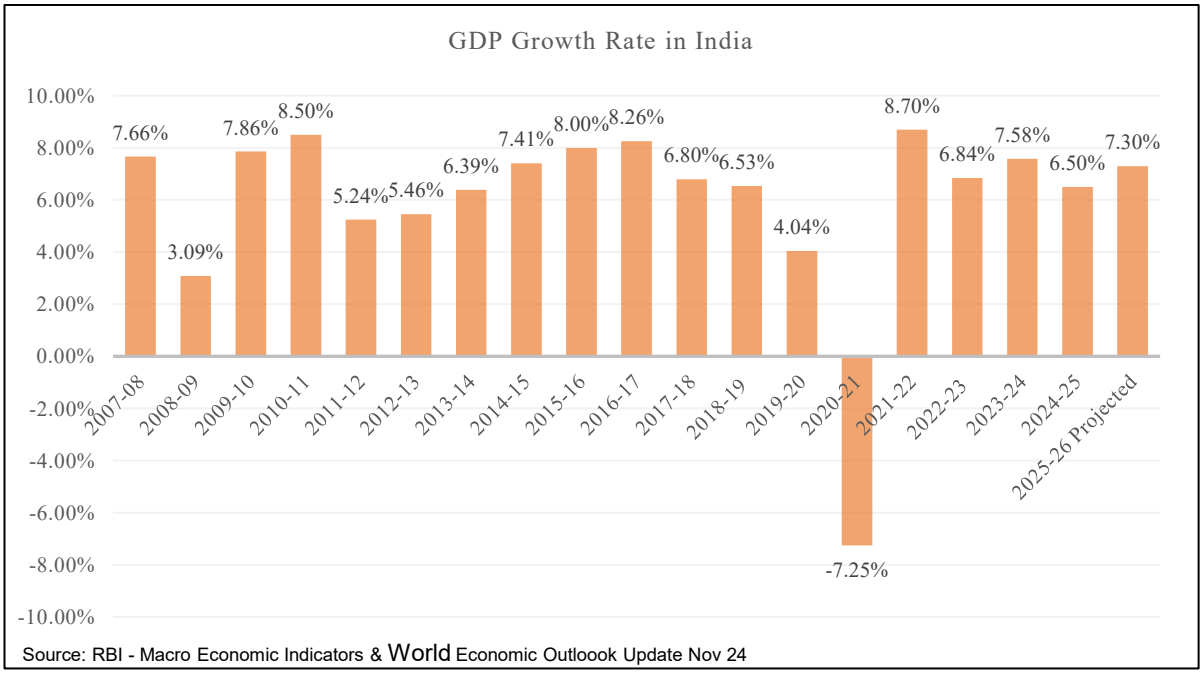


Figure 3-4 : Growth of GDP in India

FY 2017-18 recorded a growth of 6.7% which had a slight impact of GST and demonetization. Indian economy appears on recovery path with estimated growth of 6.8% in FY 2018-19. The government took major policy decisions including tax infrastructure reforming, banking sector improvement and ease of doing business.

In post COVID-19 scenario, in year 2022-23 and 2023-24 India registered an impressive growth of 7% to 7.5%. In last year despite global slow down due to Russia-Ukraine war and Gaza crises, India grew at good rate of 7%(Estimated).
Indian economy is now on good growth path and all major institutions including IMF / ADB have estimated growth of Indian Economy to peg around 6.5% to 7% in coming years.

Key economic activities

The Asset passes through the key cities of Amritsar, Gurdaspur, Dinanagar, Batala and Pathankot in the state of Punjab. The Asset caters to short and long trips mainly generated along the Asset and states of JCK and Himachal Pradesh in the north and Rajasthan and Gujarat in the south.

3.6 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 below. Growth rates are recommended for three scenarios for sensitivity

analysis namely Optimistic, Pessimistic and Most Likely with a positive and negative variation 0.5% and -1.0% from Most Likely case respectively. While working out future growth projections both historical and economic model growth are considered.

The rate of growth is moderate in light of overall regional trends. Growth of multi-Axle is kept slightly higher as the trend of technological advances in the logistics industry favors multi-axle over 2/3 axle carriage. It is also expected that as the economy moves from developing to developing, the rate of growth diminishes. Same growth rate is not sustainable for long. It is an established practice to step down future growth rates at intervals of 5 years.

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Table 3-5 : Recommended Growth Rates Optimistic

Year/ Vehicle Type	FY 2026-27	FY 2028-32	FY 2033-37	FY 2038-42
Car/Jeep/Van	7.84%	6.84%	5.84%	5.34%
LCV	6.40%	5.40%	4.40%	4.15%
Truck/Bus	5.13%	4.13%	3.13%	2.88%
Multi Axle (> 2 axle)	7.40%	6.40%	5.40%	5.15%

Table 3-6 : Recommended Growth Rates Pessimistic

Year/ Vehicle Type	FY 2026-27	FY 2028-32	FY 2033-37	FY 2038-42
Car/Jeep/Van	6.34%	5.34%	4.34%	3.84%
LCV	4.90%	3.90%	2.90%	2.65%
Truck/Bus	3.63%	2.63%	1.63%	1.38%
Multi Axle (> 2 axle)	5.90%	4.90%	3.90%	3.65%

Table 3-7 : Recommended Growth Rates Most Likely

Year/ Vehicle Type	FY 2026-27	FY 2028-32	FY 2033-37	FY 2038-42
Car/Jeep/Van	7.34%	6.34%	5.34%	4.84%
LCV	5.90%	4.90%	3.90%	3.65%

Year/ Vehicle Type	FY 2026-27	FY 2028-32	FY 2033-37	FY 2038-42
Truck/Bus	4.63%	3.63%	2.63%	2.38%
Multi Axle (> 2 axle)	6.90%	5.90%	4.90%	4.65%

The annual pass system was implemented effective 15 August 2025. Accordingly, the Annual Average Daily Traffic (AADT) for the year has been computed using a blended approach, wherein traffic for the first five months reflects non-annual pass (regular toll-paying) vehicles, while traffic for the subsequent period incorporates annual pass traffic volumes.

This adjustment ensures that the reported AADT appropriately captures the change in traffic composition and usage patterns resulting from the introduction of the annual pass system.

Traffic and revenue have been worked out on the basis of the above growth, and some are presented in subsequent chapters of the report.

CHAPTER 4

TRAFFIC FORECAST

4.1 Traffic Projections

The growth rates recommended in the previous section of the report are used to arrive at traffic projections for future years. Toll plaza wise futuristic traffic projection is given in tables below.

These projections have been done for the following three cases of growth.

1. Optimistic Scenario
2. Pessimistic Scenario
3. Most Likely Scenario

Table 4-1 : Total Tollable Traffic @ Toll Plaza 1- Chainage 16.000 KM (Optimistic Growth Scenario)

Year	Car	Minibus	LCV	Truck	Bus	Multi axle	Oversized Vehicles	Total No.	Total PCU
2026-27	7306	0	257	699	463	1928	5	**10658**	**19876**
2027-28	7806	0	270	728	482	2051	5	**11342**	**21093**
2028-29	8340	0	284	758	503	2183	5	**12073**	**22395**
2029-30	9411	0	316	835	554	2454	5	**13575**	**25117**
2030-31	10618	0	352	919	609	2758	5	**15261**	**28163**
2031-32	11345	0	371	957	634	2935	5	**16247**	**29904**
2032-33	12006	0	387	987	654	3094	5	**17133**	**31455**
2033-34	12707	0	403	1018	675	3261	5	**18069**	**33088**
2034-35	13449	0	421	1049	697	3437	5	**19058**	**34807**
2035-36	14234	0	439	1082	719	3623	5	**20102**	**36621**
2036-37	15065	0	457	1115	742	3819	5	**21203**	**38530**
2037-38	15870	0	475	1147	764	4015	5	**22276**	**40406**

Table 4-2 : Total Tollable Traffic @ Toll Plaza 2- Chainage 88.50 KM (Optimistic Growth Scenario)

Year	Car	Minibus	LCV	Truck	Bus	Multi axle	Oversized Vehicles	Total No.	Total PCU
2026-27	10170	2	177	487	599	1629	15	**13079**	**21095**
2027-28	10866	2	187	507	623	1733	16	**13934**	**22410**
2028-29	11610	2	197	529	649	1843	17	**14847**	**23813**

Year	Car	Minibus	LCV	Truck	Bus	Multi axle	Oversized Vehicles	Total No.	Total PCU
2029-30	13101	2	219	583	715	2071	18	**16709**	**26727**
2030-31	14784	2	244	642	787	2328	19	**18806**	**30002**
2031-32	15796	2	257	669	819	2478	20	**20041**	**31889**
2032-33	16718	2	269	691	845	2612	21	**21158**	**33581**
2033-34	17693	2	281	713	872	2754	22	**22337**	**35365**
2034-35	18726	2	294	735	899	2904	23	**23583**	**37244**
2035-36	19818	2	307	758	927	3062	24	**24898**	**39224**
2036-37	20975	2	320	782	956	3228	25	**26288**	**41310**
2037-38	22095	2	333	805	984	3394	26	**27639**	**43354**

Similarly, traffic projections for Pessimistic scenario are given below.

Table 4-3 : Total Tollable Traffic @ Toll Plaza 1- Chainage 16.000 KM

(Pessimistic Growth Scenario)

Year	Car	Minibus	LCV	Truck	Bus	Multi axle	Oversized Vehicles	Total No.	Total PCU
2026-27	7202	0	253	689	456	1901	5	**10506**	**19593**
2027-28	7586	0	262	707	468	1993	5	**11021**	**20495**
2028-29	7991	0	271	725	480	2091	5	**11563**	**21444**
2029-30	8897	0	298	787	521	2319	5	**12827**	**23726**
2030-31	9907	0	328	855	567	2571	5	**14233**	**26257**
2031-32	10435	0	341	877	582	2697	5	**14937**	**27483**
2032-33	10888	0	350	890	591	2802	5	**15526**	**28488**
2033-34	11361	0	359	904	600	2911	5	**16140**	**29533**
2034-35	11854	0	370	919	610	3024	5	**16782**	**30627**
2035-36	12369	0	381	935	620	3142	5	**17452**	**31767**
2036-37	12906	0	392	951	630	3265	5	**18149**	**32952**
2037-38	13402	0	403	964	639	3384	5	**18797**	**34066**

Table 4-4 : Total Tollable Traffic @ Toll Plaza 2- Chainage 88.50 KM

(Pessimistic Growth Scenario)

Year	Car	Minibus	LCV	Truck	Bus	Multi axle	Oversized Vehicles	Total No.	Total PCU
2026-27	10028	2	175	480	591	1607	15	**12898**	**20806**
2027-28	10565	2	181	492	607	1685	16	**13548**	**21791**
2028-29	11129	2	187	504	623	1768	17	**14230**	**22826**
2029-30	12390	2	206	547	676	1961	18	**15800**	**25277**
2030-31	13795	2	227	594	734	2175	19	**17546**	**27996**
2031-32	14533	2	236	610	753	2282	20	**18436**	**29338**
2032-33	15164	2	242	620	765	2370	21	**19184**	**30445**
2033-34	15823	2	248	630	777	2461	22	**19963**	**31592**
2034-35	16509	2	255	640	789	2557	23	**20775**	**32792**
2035-36	17226	2	262	650	802	2656	24	**21622**	**34038**

Year	Car	Minibus	LCV	Truck	Bus	Multi axle	Oversized Vehicles	Total No.	Total PCU
2036-37	17975	2	269	660	815	2760	25	**22506**	**35339**
2037-38	18664	2	276	669	826	2861	26	**23324**	**36558**

Similarly, traffic projections for Most Likely are given below.

Table 4-5 : Total Tollable Traffic @ Toll Plaza 1- Chainage 16.000 KM

(Most Likely Growth Scenario)

Year	Car	Minibus	LCV	Truck	Bus	Multi axle	Oversized Vehicles	Total No.	Total PCU
2026-27	7272	0	255	696	461	1919	5	**10608**	**19783**
2027-28	7733	0	267	722	478	2032	5	**11237**	**20900**
2028-29	8223	0	280	749	495	2152	5	**11904**	**22082**
2029-30	9238	0	310	822	543	2408	5	**13326**	**24657**
2030-31	10378	0	344	901	595	2694	5	**14917**	**27527**
2031-32	11036	0	360	933	617	2853	5	**15804**	**29087**
2032-33	11624	0	374	958	633	2992	5	**16586**	**30444**
2033-34	12244	0	388	983	650	3138	5	**17408**	**31868**
2034-35	12898	0	403	1009	667	3292	5	**18274**	**33367**
2035-36	13585	0	419	1036	684	3453	5	**19182**	**34935**
2036-37	14310	0	435	1063	702	3623	5	**20138**	**36584**
2037-38	15002	0	451	1089	719	3792	5	**21058**	**38189**

Table 4-6 : Total Tollable Traffic @ Toll Plaza 2- Chainage 88.500 KM

(Most Likely Growth Scenario)

Year	Car	Minibus	LCV	Truck	Bus	Multi axle	Oversized Vehicles	Total No.	Total PCU
2026-27	10123	2	176	483	597	1621	15	**13017**	**20992**
2027-28	10765	2	184	501	618	1717	16	**13803**	**22200**
2028-29	11448	2	193	519	640	1819	17	**14638**	**23480**
2029-30	12861	2	214	569	702	2036	18	**16402**	**26241**
2030-31	14448	2	238	624	770	2277	19	**18378**	**29322**
2031-32	15364	2	250	647	798	2411	20	**19492**	**31016**
2032-33	16184	2	260	664	819	2529	21	**20479**	**32501**
2033-34	17047	2	270	682	840	2652	22	**21515**	**34054**
2034-35	17958	2	281	700	862	2783	23	**22609**	**35696**
2035-36	18916	2	293	718	884	2919	24	**23756**	**37408**
2036-37	19925	2	305	738	907	3061	25	**24963**	**39208**
2037-38	20889	2	317	756	928	3203	26	**26121**	**40950**

4.2 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 Pathankot-Amritsar project, the Target Date and Target Traffic are defined as below.

Target Date - 1st January 2019

Target Traffic - 34498 in PCU.

It was observed that as per traffic projections, traffic volume falls short of target traffic in all scenarios. This warrants for extension of the concession period. Extension of the concession period is worked out as per article 29 of concession agreement. The following table provides details of modification in concession agreement.

Scenario	Actual Average Traffic in PCU (Average of traffic on target date, one year before target date and one year after target date)	Expected extension in Concession Period
All	25087	4 years

Further, due to the suspension of toll in the year FY17 for a period of 24 days, the Concessionaire would be entitled to an extension of an additional 24 days.

Traffic was severely impacted on the project highway during the COVID lockdown period. NHAI has declared a policy of providing extension of concessions to make up for revenue loss during lockdown. It is expected extension would be provided to project concession period on this account as well.

Concessionaire had initiated arbitration proceedings against National Highways Authority of India ("NHAI") before the Hon'ble Arbitration Tribunal for extension of the Concession Period by 518 days and compensation for delay in completion of construction of the project on account of the reasons not attributable to Concessionaire.

A petition filed by NHAI challenging the Arbitral Award has been dismissed by the Honorable Delhi High Court & the Arbitral Award has been upheld. As a result, the

Extension of the Concession period by 518 days would accrue to concession period. The matter is currently pending before the Hon'ble Supreme Court.

Thus, a total of about 6 years would be added to the original concession period. Projection of revenue and traffic has been done accordingly.

Due to farmers' protests in the state of Punjab and Haryana, toll operations were suspended from October 2020 to December 2021. As per the provisions of the Concession agreement, the Concessionaire is eligible for extension of concession period by 441 days.

Due to farmers' protests in the state of Punjab, toll operations were temporarily suspended from December 16, 2022, to January 15, 2023. As per the provisions of the Concession agreement, the Concessionaire is eligible for extension of concession period by 31 days.

Table 4-7 : Summary of concession

	Particulars
State	Punjab
Highway and lane configuration	NH-54/NH-15, 4 lanes
Length	102.42 kms
Toll plazas	• TP1 Ladpalwan – Km 16+000 • TP2 Waryamnangal – Km 88+500
Length (km) as per concession agreement, applicable	• TP1 Ladpalwan: 31.310 Kms • TP2 Waryamnangal: 36.970 km
Appointed Date	31st December 2010
Commercial Operation Date	27th November 2014
Concession period	20 years
Concession period with Extension	7 years
Last year of concession	29th Jan 2038

Source: Client data

CHAPTER 5

FORECAST OF TOLL REVENUE

5.1 General

This chapter presents the tolling rate calculations, categories and toll revenue of the project.

5.2 Discount Categories

As per the Toll Notification (Schedule R) the following discounts have been considered:

1. Monthly Pass: For frequent user's monthly pass is issued for 50 trips per month. The applicable discounted rate is 2/3 times the normal rate. Concessionaire has also issued an additional monthly pass for 60 trips at 2/3 times the normal rate.
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 350 per month (2007)

Building of inflation and escalation of rate on the basis of WPI are done as per toll notification (Schedule R) as given under

The formula for determining the applicable rate of fee shall be as follows:-

$$\text{Applicable rate of fee} = \text{base rate} + \text{base rate} \times \left\{ \frac{\text{WPI A-WPI B}}{\text{WPI B}} \right\} \times 0.4$$

Factors of inflation / growth have been incorporated as per Schedule R. WPI are available up to the year 2025-26.

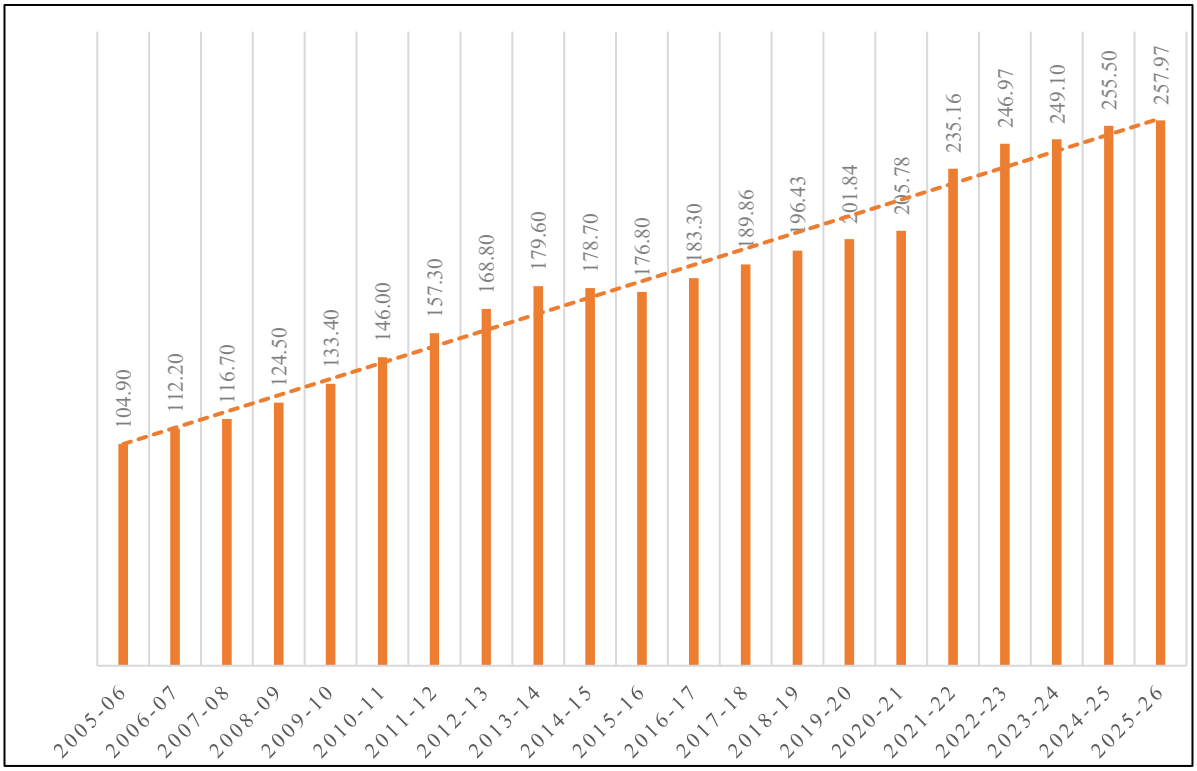


Figure 5-1 : Historical Rate of WPI Inflation in India

The wholesale price index (WPI) and the inflation rate in the past are presented in Table below.

Table 5-1 : Historical WPI value and Growth Inflation

December of year	2021	2022	2023	2024	2025	Avg.
WPI	235.2	247.0	249.1	255.5	257.97	
Inflation	14.27%	5.02%	0.86%	2.57%	0.96%	4.74%

WPI of December 2025 is posted on ministry site which is shows 0.96% inflation from the previous year. Same has been applied for FY 2026-27.

The average WPI inflation over the period FY 2021 to FY 2025 works out to approximately 4.74%, reflecting inflationary cycles across both high and low inflation years. Based on this analysis, an annual escalation factor of 4.5% has been adopted for the remaining concession period.

5.3 Estimation of Toll Rates

As per the applicable MORTH notification and Schedule R of contract agreement, the following Base rate of fee for the categories mentioned in the table stands true in the National Highways Fee Rules, 2008.

Table 5-2 : 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 Minibus	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

There are a number of bypasses and structures in each package. Equivalent length for structures is added to tollable length at each toll plaza. Bypasses cost more than Rs. 50 Cr. are to be charged as per fee notification which provides incremental rate over basic rate for Rs. 15 Cr cost of bypass. The following table provides details of Bypasses having cost more than Rs. 50 Cr.

Additional rates for bypass having cost more than Rs. 50 Cr has been added as per schedule -R in toll rates for both toll plazas. Lengths of bypasses are deducted to arrive at effective length of road for each toll plaza for normal toll rates. Effective length excluding length of bypasses thus works out to Km 31.310 and Km 36.97 for Toll Plaza at Km 16.00 and Km 88.50 respectively.

Toll rates are calculated as per guidelines provided in schedule R (rounded to nearest Rs. five) for the concession period and are given below. Since applicable length of highway length is equal for both plazas, applicable toll rates are also same

Thus, worked out rates for various categories of vehicle and discounts are given as under.

Table 5-3 : Toll Rates for Single Journey @Km 16.00

Year	Car	Minibus	LCV	Truck	Bus	Multi axle	Oversized Vehicles
2026-27	140	220	220	445	445	675	875
2027-28	150	230	230	465	465	705	915
2028-29	155	240	240	490	490	740	960
2029-30	165	250	250	510	510	775	1005
2030-31	170	265	265	535	535	810	1055
2031-32	180	275	275	560	560	850	1105
2032-33	190	290	290	585	585	890	1155
2033-34	195	305	305	615	615	935	1210
2034-35	205	315	315	645	645	980	1270
2035-36	215	330	330	675	675	1025	1330
2036-37	225	350	350	710	710	1075	1395
2037-38	235	365	365	745	745	1125	1460

Table 5-4 : Toll Rates for Return Journey@ Km 16.000

Year	Car	Minibus	LCV	Truck	Bus	Multi axle	Oversized Vehicles
2026-27	215	330	330	670	670	1015	1315
2027-28	225	345	345	700	700	1060	1375
2028-29	235	360	360	730	730	1110	1440
2029-30	245	375	375	765	765	1165	1510
2030-31	255	395	395	805	805	1220	1580
2031-32	270	415	415	840	840	1275	1655
2032-33	280	435	435	880	880	1335	1735
2033-34	295	455	455	925	925	1400	1815
2034-35	310	475	475	965	965	1470	1900
2035-36	325	500	500	1015	1015	1540	1995
2036-37	340	520	520	1065	1065	1610	2090
2037-38	355	550	550	1115	1115	1690	2190

Table 5-5 : Toll Rates for Local Monthly Ticket @ Km 16.000

Year	Car
2026-27	360
2027-28	375
2028-29	395
2029-30	415
2030-31	430
2031-32	455

Year	Car
2032-33	475
2033-34	495
2034-35	520
2035-36	545
2036-37	570
2037-38	600

Table 5-6 : Toll Rates for Monthly Pass Local (50 Trips) @Km 16.000

Year	Car/Jeep/Van	LCV	Truck	Bus	3 - Axle	Multi Axle
2026-27	4740	7300	14845	14845	22525	29190
2027-28	4965	7640	15540	15540	23580	30560
2028-29	5195	8000	16275	16275	24690	32000
2029-30	5440	8375	17040	17040	25855	33505
2030-31	5700	8775	17845	17845	27075	35090
2031-32	5970	9190	18695	18695	28360	36755
2032-33	6255	9625	19580	19580	29710	38505
2033-34	6550	10085	20515	20515	31130	40340
2034-35	6865	10570	21500	21500	32615	42270
2035-36	7195	11075	22530	22530	34185	44300
2036-37	7540	11610	23615	23615	35830	46435
2037-38	7905	12170	24755	24755	37560	48680

Table 5-7 : Toll Rates for Single Journey @ Km 88.500

Year	Car	Minibus	LCV	Truck	Bus	Multi axle	Oversized Vehicles
2026-27	120	190	190	390	390	595	760
2027-28	130	200	200	405	405	620	795
2028-29	135	210	210	425	425	650	835
2029-30	140	220	220	445	445	680	875
2030-31	145	230	230	470	470	715	915
2031-32	155	240	240	490	490	750	955
2032-33	160	250	250	515	515	785	1005
2033-34	170	265	265	540	540	820	1050
2034-35	175	275	275	565	565	860	1100
2035-36	185	290	290	590	590	900	1155
2036-37	195	300	300	620	620	945	1210
2037-38	205	315	315	650	650	990	1270

Table 5-8 : Toll Rates for Return Journey @ Km 88.500

Year	Car	Minibus	LCV	Truck	Bus	Multi axle	Oversized Vehicles
2026-27	185	285	285	585	585	890	1140
2027-28	190	300	300	610	610	935	1195
2028-29	200	310	310	640	640	975	1250
2029-30	210	325	325	670	670	1025	1310
2030-31	220	345	345	700	700	1070	1370
2031-32	230	360	360	735	735	1125	1435
2032-33	240	375	375	770	770	1175	1505
2033-34	255	395	395	805	805	1230	1575
2034-35	265	415	415	845	845	1290	1650
2035-36	280	435	435	885	885	1355	1730
2036-37	290	455	455	930	930	1420	1815
2037-38	305	475	475	975	975	1485	1900

Table 5-9 : Toll Rates for Local Monthly Ticket @ Km 88.500

Year	Car
2026-27	360
2027-28	375
2028-29	395
2029-30	415
2030-31	430
2031-32	455
2032-33	475
2033-34	495
2034-35	520
2035-36	545
2036-37	570
2037-38	600

Table 5-10 : Toll Rates for Monthly Pass Local (50 Trips) @ Km 88.50

Year	Car/Jeep/Van	LCV	Truck	Bus	3 - Axle	Multi Axle
2026-27	4075	6335	12965	12965	19810	25340
2027-28	4265	6630	13575	13575	20740	26530
2028-29	4470	6945	14210	14210	21715	27775
2029-30	4680	7270	14880	14880	22740	29085
2030-31	4900	7615	15585	15585	23815	30460
2031-32	5130	7975	16325	16325	24945	31905
2032-33	5375	8355	17100	17100	26130	33425
2033-34	5630	8755	17920	17920	27380	35020
2034-35	5900	9175	18775	18775	28690	36695

Year	Car/Jeep/Van	LCV	Truck	Bus	3 - Axle	Multi Axle
2035-36	6185	9615	19675	19675	30065	38455
2036-37	6485	10075	20625	20625	31515	40310
2037-38	6795	10565	21620	21620	33035	42255

5.4 Toll Revenue

As indicated earlier, toll revenue on the Project Road has been calculated under in all three scenarios. The estimates of toll revenue under ***Optimistic***, ***Pessimistic*** and ***Most Likely***.

5.5 Toll Revenue at all toll plazas under Scenarios

Toll Revenue estimates under the most likely scenario at each of the toll plaza up to 2037-38 starting from the year 2026-27 are shown in tables below.

Table 5-11 : Toll Revenue Pessimistic Scenario (Crores)

Year	Toll at Plaza 16.00	Toll at Plaza 88.50	Total
2026-27	96.09	86.42	**182.51**
2027-28	105.96	95.61	**201.56**
2028-29	115.54	104.43	**219.98**
2029-30	134.31	113.89	**248.19**
2030-31	154.58	124.85	**279.43**
2031-32	170.61	138.40	**309.01**
2032-33	184.95	149.26	**334.20**
2033-34	200.40	162.69	**363.09**
2034-35	217.59	176.14	**393.72**
2035-36	237.27	192.98	**430.25**
2036-37	257.28	209.52	**466.81**
2037-38	277.90	227.04	**504.94**

Table 5-12 : Toll Revenue Optimistic Scenario

(Rs. Crores)

Year	Toll at Plaza 16.00	Toll at Plaza 88.50	Total
2026-27	97.45	87.63	**185.08**
2027-28	109.03	98.31	**207.34**
2028-29	120.68	108.97	**229.65**
2029-30	142.25	120.57	**262.82**
2030-31	165.91	134.09	**299.99**
2031-32	185.75	150.78	**336.53**
2032-33	204.37	164.93	**369.29**
2033-34	224.73	182.42	**407.15**
2034-35	247.56	200.37	**447.94**
2035-36	273.90	222.67	**496.57**
2036-37	301.28	245.33	**546.60**
2037-38	330.05	269.67	**599.72**

Table 5-13 : Toll Revenue Most Likely Scenario

(Rs. Crores)

Year	Toll at Plaza 16.00	Toll at Plaza 88.50	Total
2026-27	97.00	87.20	**184.20**
2027-28	108.03	97.42	**205.45**
2028-29	118.96	107.47	**226.43**
2029-30	139.56	118.33	**257.89**
2030-31	162.08	130.93	**293.01**
2031-32	180.60	146.45	**327.05**
2032-33	197.75	159.45	**357.19**
2033-34	216.39	175.51	**391.90**
2034-35	237.29	191.85	**429.14**
2035-36	261.21	212.24	**473.45**
2036-37	285.97	232.68	**518.65**
2037-38	311.86	254.54	**566.41**

CHAPTER 6

OPERATION &MAINTENANCE COST

6.1 General

The following are project parameters which would contribute towards the cost of operation and maintenance.

The estimated cost of operation and maintenance has been provided by the Management.

The following are the key components for operation and maintenance costs:

1. Annual Regular Maintenance – Covering pothole repair, shoulder and slope repair, drain cleaning, median maintenance, Crash barrier, toll plaza maintenance, Toll collection, other services like medical help and rescue operations etc.

2. Periodic Maintenance – This will be done on a periodic basis, say every 5 years. It will consist of overlaying of wearing course and painting and marking. Some pavement strengthening is also anticipated in a few sections. This operation and its cost are spread over three years.

The year wise actual operation and maintenance cost is provided by management of asset and has been found reasonable. Same has been adopted in report for projection of operation and maintenance cost.

Table 6-1 : Year wise Details of Operation & Maintenance Cost

Years	Routine O & M	Other Operational expenses	Major Maintenance O & M	Total Expenditure (Rs. Crores)
2026-27	23.29	5.60	7.79	**36.68**
2027-28	24.21	6.37	0.00	**30.58**
2028-29	25.33	6.77	15.00	**47.10**
2029-30	26.40	7.31	47.37	**81.08**
2030-31	21.51	7.89	0.00	**29.40**
2031-32	21.69	8.51	0.00	**30.20**
2032-33	21.82	9.18	0.00	**31.00**
2033-34	21.89	9.91	0.00	**31.80**
2034-35	21.91	10.69	0.00	**32.60**
2035-36	22.69	11.54	0.00	**34.23**
2036-37	21.78	12.45	0.00	**34.23**
2037-38	22.51	13.43	0.00	**35.94**

CHAPTER 7

CONCLUSION & RECOMMENDATIONS

7.1 Conclusion & Recommendations

Project stretch of Pathankot to Amritsar section of NH-15 in state of Punjab from km 6.082 to km 108.502 is currently a four-lane road. The road is in sound condition and serves reasonably good levels of traffic volume. The project corridor falls in the influence zone of fast upcoming metro city Amritsar. There are many upcoming projects in the area which have the potential to boost economic growth of the area and add value to the development of the region. All these developments have potential to give a positive impact to traffic flow on the project. As estimated in this study report, project traffic is expected to grow at rate of 6-8% per annum in post COVID-19 scenario.

The following can be considered as major outcome of study.

a) There is a good amount of toll able traffic running on the project.

b) Project corridor has potential to witness good traffic growth annually in near future due to various development in area and overall growth of the economy once tolling is resumed on project stretch.

c) Project corridor does not have risk of traffic leakage due to lack of competing roads of comparable quality.

d) Project infrastructure is in good condition and its maintenance cost is also reasonable.

Based on the above it can be considered a stable healthy project from the traffic and revenue point of view.

CHAPTER 8

PROJECT ILLUSTRATIONS

8.1 General

Project current condition has been depicted in the following photographs.



Figure 8-1 : General Condition



Figure 8-2 : General Condition



Figure 8-3 : General Condition



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IRB InvIT Fund

TALEGAON TO AMRAVATI SECTION OF NH-6

(KM 100.000 To KM 166.725)

IN THE STATE OF MAHARASHTRA









TOLL REVENUE AND O&M COST PROJECTION REPORT (FINAL)

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GMD CONSULTANTS
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ABBREVIATIONS

AADT	-	Annual Average Daily Traffic	**NHAI**	-	National Highways Authority of India
BOT	-	Build Operate Transfer	**NHDP**	-	National Highways Development Project
CAGR	-	Compound Annual Growth Rate	**NSDP**	-	Net State Domestic Product
CTV	-	Classified traffic volume	**O&M**	-	Operation & Maintenance
DBFOT	-	Design, Build, Finance, Operate & Transfer	**PCDP**	-	Per Capita Domestic Product
EME	-	Earth Moving Equipment	**PCI**	-	Per Capita Income
GDP	-	Gross Domestic Product	**PCU**	-	Passenger Car Unit
GSDP	-	Gross State Domestic Product	**PSC**	-	Pre-stressed Concrete
HCM	-	Heavy Construction Machinery	**RCC**	-	Reinforced cement concrete
HCV	-	Heavy Commercial Vehicle	**RHS**	-	Right Hand Side
HTMS	-	Highway Traffic Management System	**SH**	-	State Highway
IRC	-	Indian Road Congress	**TP**	-	Toll Plaza
IRR	-	Internal Rate of Return	**WPI**	-	Wholesale Price Index
LCV	-	Light Commercial Vehicle	**SIR**	-	Special Investment Region
LHS	-	Left Hand Side	**c.**	-	Circa
LGV	-	Light Goods Vehicle	**ROB**	-	Railway Over Bridge
MAV	-	Multi Axle Vehicle	**MDR**	-	Major District Road
MORTH	-	Ministry of Road Transport and Highways	**ODR**	-	Other District Road
NH	-	National Highway	**CA**	-	Concession Agreement
PCC	-	Plain Cement Concrete	**RMT**	-	Running Meter
CR	-	Coarse Rubble			

CHAPTER 1
INTRODUCTION

1.1 Background

The Government of India through National Highway Authority of India (NHAI) embarked upon a program to enhance the traffic capacity and safety for efficient transportation of goods as well as passenger traffic on National Highway Sections under NHDP Phase V. Under Phase V NHAI has planned to convert 6,500 km of existing 4-lane National Highways into 6-lane National Highway. Sections envisaged under 6-laning comprise the Golden Quadrilateral section (5,700 km) and some other sections which are 800 km in length.

The project under consideration, Talegaon - Amravati section of NH-6 from Km 100.000 to km 166.725 is one such road project NHAI intended to implement on a BOT basis in the DBFOT format. *M/s IRB Talegaon - Amravati Tollway Ltd.* (Concessionaire) has been awarded the Project for concession period of 22 years starting from 3rd September 2010 to 2nd September 2032. The Project has been commissioned and is currently in the operation / maintenance phase.

Asset and regional context

The Asset is 66.725 km, 4-lane toll road located in Maharashtra and is part of NH-53, as shown in the below figure. It runs from Talegaon to Amravati and is part of the East-West national connection between Kolkata and Mumbai via Nagpur, making it a very strategic route, as it is one of the few major east-west highways and spans across the widest central part of the country. It is part of NH-53/NH-6 corridor which connects Hazira and Kolkata via Surat, Dhule, Amravati, Nagpur, Raipur, and Sambalpur. There is one toll plaza on the Asset which is closer to Talegaon - Nandgaon Peth.

The section between Amravati and Nagpur has been in good, 4-lane condition for a long time, making it a seamless connection between various origins and destinations along this route.

Currently, the traffic patterns include high proportion of passenger traffic commuting either locally, or between Nagpur, Kondhali, Talegaon, Tiwsa, Mojhari, Amravati, Karanja etc. Commercial traffic also has these centres as significant

contributors and in addition, there are trips observed between centres such as Dhule, Nashik, Jalna, Pune, Mumbai on western end and Bhilai, Sambalpur Kolkata, on the eastern end. However, the proportion of long-distance has reduced recently due to network developments.

There are trips observed between western regions of Maharashtra and Madhya Pradesh via Morshi, crossing the toll plaza. Therefore, a share of traffic remains unique to this Asset beyond the East-West movement too.

1.2 Objective of the Study

M/s IRB INVIT FUND has engaged GMD Consultants to assess the future traffic and toll potential of the project along with related operation & maintenance expenditure involved.

This report named as "***Toll Revenue and O&M Cost Projection Report***" mainly focuses on traffic and O&M aspects of the project. Other parameters like competing road, area developments etc. have been considered from a traffic development point of view.

1.2.1 Scope of Services

The broad scope of work covered in the assignment is as follows.

a) Analysis of Traffic Growth
b) Toll Rate Growth
c) Revenue Forecasting
d) Operation and Maintenance Cost Projections

The Concessionaire has provided basic historical traffic data and other project details on the basis of which the above analysis has been carried out, after applying our judgment on the traffic estimates.

"***Toll Revenue and O&M Cost Projection Report***" was submitted in March 2017. In this report traffic data for the year 2015-16 was used as base traffic. The report was updated with traffic data for the year 2016-17 and report was submitted in October 2017. The report was further updated with traffic data of 2017-18 and same was submitted in April 2018. The report was further updated with traffic Data of the period from April 2018 to September 2018 and was submitted in October 2018. A revised report was submitted with updated traffic for the years 2018-19 in April 2019. The report was further updated with yearly traffic data of 2019-20 in May 2020. With traffic data from April 2020 to March 2021 report was updated report was further updated with yearly traffic data from April 2021 to March 2022, April 2022 to March 2023,

April 2023 to March 2024 April 2024 to March 2025 and now concessionaire has provided traffic data from April 2025 to February 2026, report is updated with this annual traffic data.

CHAPTER 2
TRAFFIC SURVEYS AND ANALYSIS

2.1 Traffic Surveys

In the course of our work, we have collected the required information for the project corridor to understand the general traffic and travel characteristics of the corridor.

The following traffic data has been collected for the project.

- Classified traffic volume counts at toll plaza locations on Amravati - Talegaon section of NH-6 for base year 2015-16, 2016-17, 2017-18, 2018-19, 2019-20, 2020-21, 2021-22 ,2022-23,2023-24,2024-25 and annual traffic data from April 2025 to February 2026.
- Local Component of traffic
- Component of Return Journey
- Component of Monthly Pass Journey

The main objective of the traffic data analysis is to:

- Determine the existing traffic movement characteristics of project.
- Establish base year traffic.
- Identification of travel patterns and modal split of project traffic
- Deriving growth factors for traffic 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 provides details of locations from where traffic details have been collected.

Table 2-1 : Traffic Data Details

SR. NO	LOCATION	CTV	Single Journey Traffic	Return Journey Traffic	Monthly Pass Traffic	Local Traffic
1	**Km 142.800 Toll Plaza**	AADT for Year 2015-2016	For Year 2015-2016	For Year 2015-2016	For Year 2015-2016	For Year 2015-2016
		AADT for year 2016-2017	For Year 2016-2017	For Year 2016-2017	For Year 2016-2017	For Year 2016-2017
		AADT for year 2017-2018	For Year 2017-2018	For Year 2017-2018	For Year 2017-2018	For Year 2017-2018
		AADT for Year 2018-2019	For Year 2018-2019	For Year 2018-2019	For Year 2018-19	For Year 2018-19
		AADT for Year 2019-2020	For Year 2019-2020	For Year 2019-2020	For Year 2019-2020	For Year 2019-2020
		AADT for year 2020-2021	For Year 2020-2021	For Year 2020-2021	For Year 2020-2021	For Year 2020-2021
		AADT for year 2021-2022	For year 2021-2022	For year 2021-2022	For year 2021-2022	For year 2021-2022
		AADT for year 2022-2023	For year 2022-2023	For year 2022-2023	For year 2022-2023	For year 2022-2023
		AADT for year 2023-2024	For year 2023-2024	For year 2023-2024	For year 2023-2024	For year 2023-2024
		AADT for year 2024-2025	For year 2024-2025	For year 2024-2025	For year 2024-2025	For year 2024-2025
		AADT for year 2025-2026	For year 2025-2026	For year 2025-2026	For year 2025-2026	For year 2025-2026

The locations of each of the traffic surveys are illustrated in the following Figure.

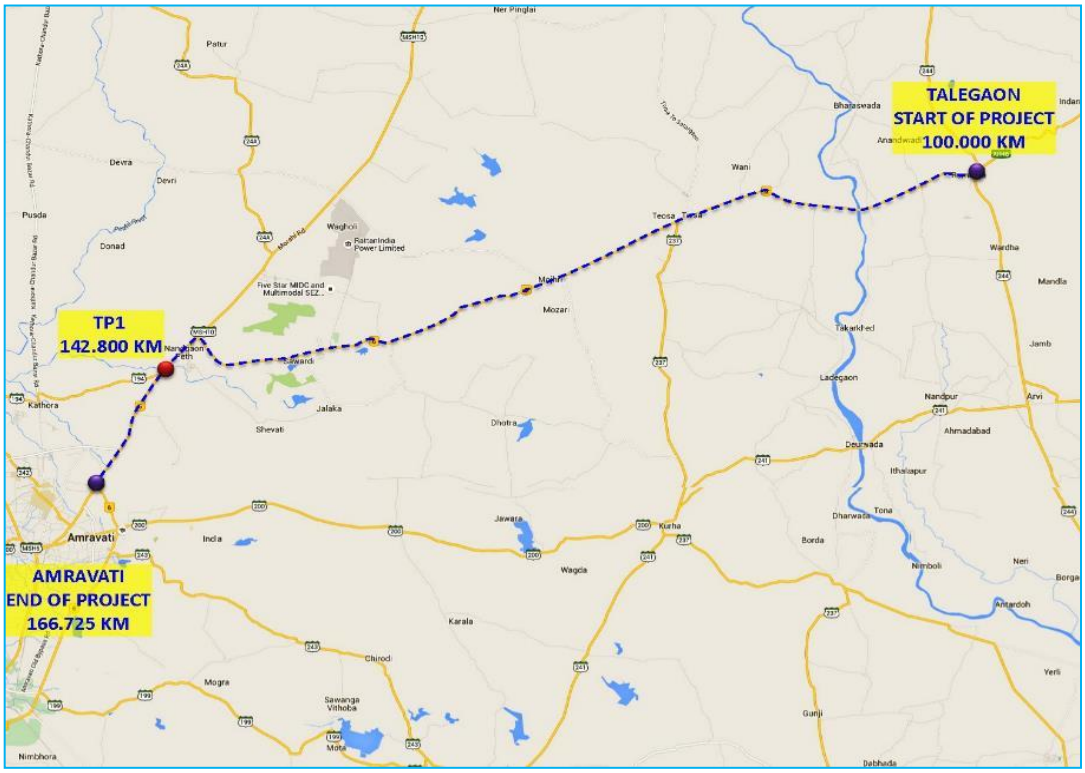


Figure 2-1: Toll Plaza Location

2.2 Classified Traffic Volume Count

The objective of conducting a Classified Traffic Volume Count is to understand the traffic flow pattern including modal split on a roadway. The Classified Traffic Volume Count survey has been provided by concessionaire of project highway from actual traffic data gathered at toll plaza locations based on monthly data shared with NHAI. These locations are 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 are further segregated to capture the tollable vehicle categories specifically and toll exempted vehicles are counted separately. The detailed vehicle classification system as per IRC: 64-1990 is given in the table below.

Table 2-2 : Vehicle Classification System

Vehicle Type	
Auto Rickshaw	
Passenger Car	Car, Jeep, Taxi & Van (Old / new technology)
Bus	Minibus

Vehicle Type	
	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

However, since the project highway is currently under toll operation, the data collected corresponds to category of tollable vehicles. The following are the types of vehicles as per concession agreement.

- Car / Jeep / van
- Minibus /LCV
- Truck / Bus
- Multi Axle
- Oversize Vehicle

2.3 Traffic Characteristic

Toll revenue of the project highway does not solely depend on total traffic volume. There are certain characteristics of traffic which have significant potential to affect toll revenue. Components of local traffic, components of passenger and commercial traffic, portion of return journey traffic, portion of monthly pass traffic are some such characteristics of traffic. These will be discussed in subsequent sections of this report.

2.3.1 Traffic Data

The Concessionaire has provided Traffic data for base year 2015-16, 2016-17, 2017-18, 2018-19, 2019-20, 2020-21,2021-22, 2022-23, 2023-24,2024-25 & traffic data from April 2025 to February 2026.

Since the traffic data available for this update is for only Annual, from April 2025 to February 2026, it may not represent the whole year traffic. Hence a seasonality factor for balance part

of year has been applied to average traffic of the current Eleven months to arrive at Annual Average Daily Traffic of base year 2025-26. Thus, corrected traffic is used for future projections and revenue calculations. The following table shows historical traffic on project stretch and derived Annual Average Daily Traffic (AADT) for year 2025-26.

Table 2-3 : Traffic Data at Toll Plaza at Km 142.800

Sr. No	Type of Vehicle	Annual Average Daily Traffic (Nos.) - FY 2018-19	Annual Average Daily Traffic (Nos.) – FY 2019-20	Annual Average Daily Traffic (Nos.) – FY 2020-21	Annual Average Daily Traffic (Nos.) – FY 2021-22	Annual Average Daily Traffic (Nos.) – FY 2022-23	Annual Average Daily Traffic (Nos.) – FY 2023-24	Annual Average Daily Traffic (Nos.) – FY 2024-25	Annual Average Daily Traffic (Nos.) – FY 2025-26
1	Car	6738	7407	7090	5937	6173	6230	6903	8217
2	Minibus/ LCV	1511	1408	1217	620	547	454	439	435
3	Truck/Bus	1421	1623	1374	1340	1661	1558	1587	1678
4	Multi Axle	2285	2173	2297	2327	2239	1979	2055	1983
5	Oversized Vehicles	2	4	4	7	9	9	7	7
	Total	**11957**	**12616**	**11981**	**10231**	**10629**	**10230**	**10991**	**12320**

2.4 Data Analysis

2.4.1 Analysis of Traffic Volume Count

Understanding the character of existing traffic forms the basis of traffic forecast. The various vehicle types having different sizes and characteristics can be 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
Minibus	1.5
Standard Bus	3.0

Vehicle Type	PCUs
LCV/LGV	1.5
2 Axle Truck	3.0
3 – 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

Traffic volume at each toll plaza was converted to PCU and same is presented as under

Table 2-5 : Traffic in PCU at Project Stretch

Period	Toll Plaza Location	Traffic No	PCU	PCU Index
FY 2015-16	142.800 (Nandgaon Peth)	9340	18547	1.99
FY 2016-17	142.800 (Nandgaon Peth)	10452	20590	1.97
FY 2017-18	142.800 (Nandgaon Peth)	11312	22582	2.00
FY 2018-19	142.800 (Nandgaon Peth)	11957	23558	1.97
FY 2019-20	142.800 (Nandgaon Peth)	12616	24187	1.92
FY 2020-21	142.800 (Nandgaon Peth)	11981	23389	1.95
FY 2021-22	142.800 (Nandgaon Peth)	10231	21390	2.09
FY 2022-23	142.800 (Nandgaon Peth)	10629	22092	2.08
FY 2023-24	142.800 (Nandgaon Peth)	10230	20530	2.01

Period	Toll Plaza Location	Traffic No	PCU	PCU Index
FY 2024-25	142.800 (Nandgaon Peth)	10991	21602	1.97
FY 2025-26	142.800 (Nandgaon Peth)	12320	22860	1.86

It can be observed from above that project traffic has PCU index close to 2.0 which indicates balance mix of commercial, goods traffic and passenger traffic. It can be appreciated that the character of traffic is consistent on stretch.

2.4.2 Components of Traffic

As discussed previously, components of traffic volume play an important role in determining project revenue. A larger component of commercial traffic with higher axle configuration adds to project revenue positively. Similarly, a larger component of local traffic affects the project revenue potential negatively.

For the purpose of analysis, the recent traffic numbers for the period April 2025 to September 2025 have been considered as the base numbers.

It is observed that car traffic forms 66% of total traffic at toll plaza location 142.800 where multi axle commercial vehicles comprise 16% of total traffic. Overall, about 34% of traffic is commercial in nature.

Another important bifurcation of traffic is components of traffic with respect to various type of toll ticketing like

1. Single Journey
2. Return Journey
3. Monthly Pass
4. Annual Pass Car

The following table provides numbers of vehicles falling in each of the above categories. on base year 2015-16, 2016-17, 2017-18, 2018-19, 2019-20, 2020-21, 2021-22 ,2022-23, 2023-24,2024-25 and from April 2025 to February 2026 as under toll plaza

Table 2-6 : Journey Type Bifurcation of Traffic at KM 142.800

Sr. No	Type	Traffic Volume (Nos.) FY 2018-19	Traffic Volume (Nos.) FY 2019-20	Traffic Volume (Nos.) FY 2020-21	Traffic Volume (Nos.) for FY 2021-22	Traffic Volume (Nos.) for FY 2022-23	Traffic Volume (Nos.) for FY 2023-24	Traffic Volume (Nos.) for FY 2024-25	Traffic Volume (Nos.) for FY 2025-26
1	Single Journey	5285	5513	6647	5828	5594	5054	5217	4877
2	Return Journey	3514	3341	1906	4274	4906	5042	5632	6022
3	Monthly Pass	3158	3761	3428	129	129	134	142	140
4	Annual Pass Car								1281

A significant part of the traffic at KM 142.800 is single journey 40% followed by return journey 49%, monthly passes which share 1% and Annual Pass car is 10% of the total traffic volume.

2.5 Secondary Data Collection

There are several other factors which have a substantial impact on traffic patterns and growth on any project corridor. The following are some of such important factors.

- Industrial development around project corridor and its catchment
- Educational infrastructure along project corridor
- Demographic pattern
- Urban area development
- Tourism potential
- Upcoming major infrastructural or Industrial projects
- Special Industry in project corridor
- Overall trends of economic growth local as well as national / regional

Hence in addition to traffic details on the project site, secondary data was also collected from the various sources. Typical secondary data includes the following:

1. Vehicle registration data of regional and national level.
2. Economic Data
   a) GDP
   b) NSDP
   c) Population Growth
   d) Per Capita Income growth

e) Industrial Growth

f) Special Industry Potential

g) Regional and National development vision / plan

h) Any other relevant data

3. Competing road network.

We have collected and utilized such underlying data in the study to estimate the growth and risk factors for traffic along the project corridor. The same was presented in previous report and there is no significant update on this

CHAPTER 3
GROWTH OF TRAFFIC ON PROJECT HIGHWAY

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 patterns 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 Bharuch - Surat section of NH-8 has been done taking the above factors into consideration. "**IRC: 108-2015-Guidelines for Traffic Prediction on Rural Highways**" is established best practice and has been used for traffic growth forecast**.**

3.2 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 types 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 below

- 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, the 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

Time series data of vehicles (both passenger and goods) Registered in state of Maharashtra is used as the base data for analysis of growth.

3.3 Estimation of Traffic Demand Elasticity

The 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 categories of vehicle with one of the economic variables considered, such as NSDP, per capita income and population growth. Latest available data for vehicle registration, per capita income, NSDP and population is used in analysis.

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 cars 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).

The following tables and graphs depict regression and elasticity of growth model.

Table 3-1 : Per Capita Income Vs Car

Year	PCI	Car	Log PCI	Log Car	PCI Growth	Average Growth
2011	59587	2027080	4.78	6.31		
2012	61276	2307841	4.79	6.36	3%	
2013	65095	2592565	4.81	6.41	6%	
2014	69097	2834847	4.84	6.45	6%	
2015	72200	3113773	4.86	6.49	4%	4.9%

Regression analysis of same is given in figure below.

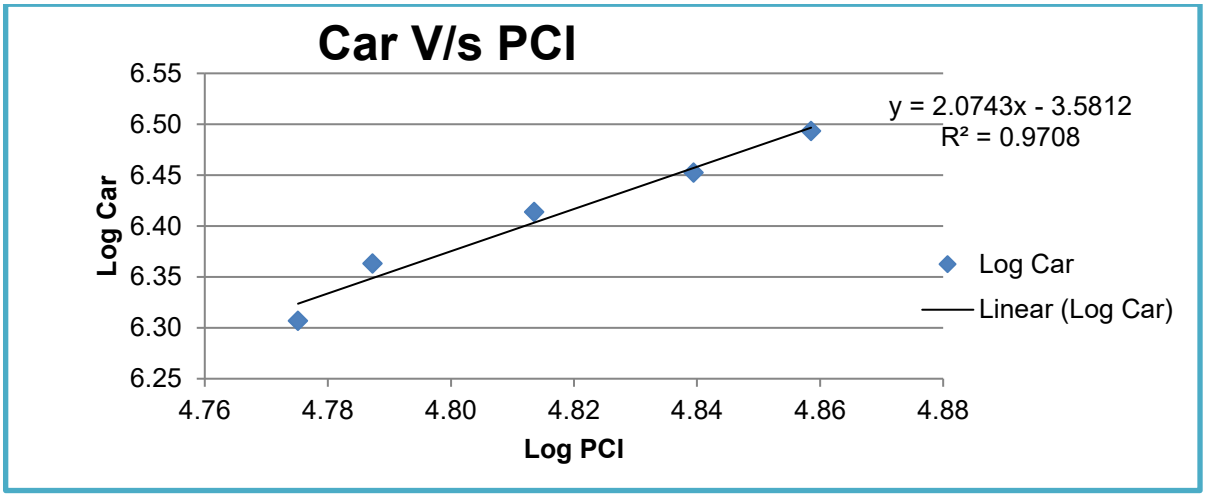


Figure 3-1: Regression and Elasticity PCI vs. Car–Extrapolation

Table 3-2 : Population Vs Bus

Year	Population	Buses	Log Pop	Log Bus	Pop Growth	Average Growth
2011	112374333	89861	8.05	4.95		
2012	113807248	100097	8.06	5.00	1%	
2013	115229410	110121	8.06	5.04	1%	
2014	116640546	120886	8.07	5.08	1%	
2015	118040394	120750	8.07	5.08	1%	1.24%

Regression analysis of same is given in figure below.

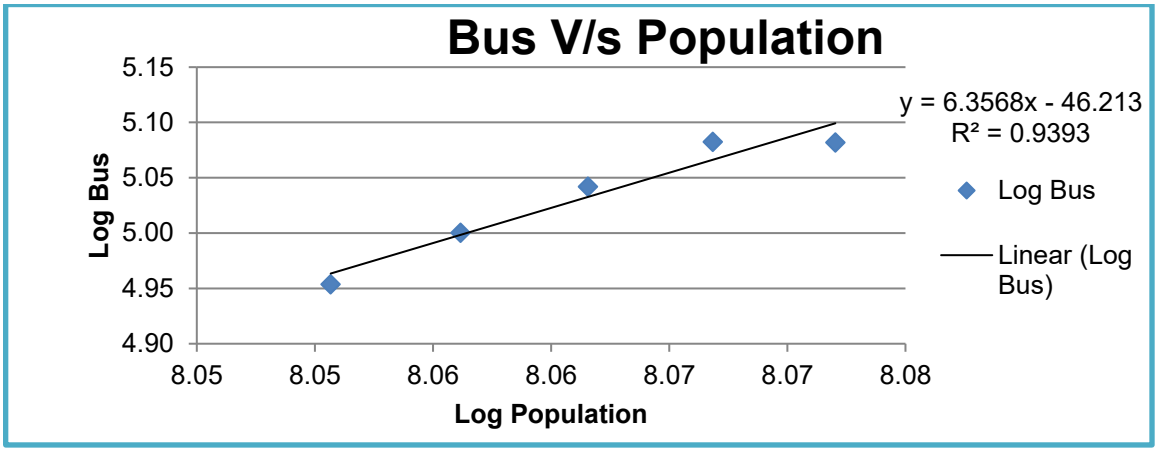


Figure 3-2: Regression and Elasticity Population vs. Bus – Extrapolation

The elasticity of goods traffic has been worked out by regression analysis with NSDP. The following table represents the data and details.

Table 3-3 : Goods Traffic Vs NSDP

Year	NSDP	Trucks	Log NDSP	Log Truck	NSDP Growth	Average Growth
2011	66762536	973788	7.82	5.99		
2012	69590440	1067825	7.84	6.03	4%	
2013	74913695	1142091	7.87	6.06	8%	
2014	80559286	1273256	7.91	6.10	8%	
2015	85245134	1360214	7.93	6.13	6%	6.31%

The following figure depicts regression analysis and extrapolation.

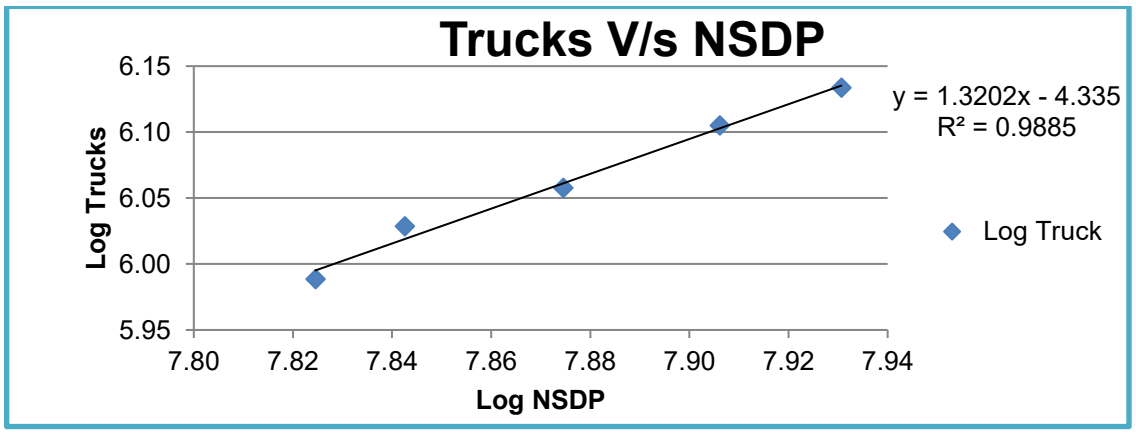


Figure 3-3: Regression and Elasticity NSDP vs. Goods Traffic – extrapolation.

Using the regression analysis above, we have arrived at the elasticity of traffic demand for each class of vehicle to a given change in relevant economic indicators. Average traffic growth of a vehicle class is multiplied by the corresponding elasticity coefficient to arrive at traffic growth. R^2 is a statistical measure of how close the data are to the fitted regression line. It varies from 0 to 1. The higher the value of R^2 more representative is the regression model of data.

The results of these analyses for the good fit as reflected by R^2 values are presented in the Table below.

Table 3-4 : Summary Regression Analysis

State	Vehicle Category	Independent Variable	Regression Equation	R Square	Elasticity Coefficient (y)	Average Growth	Growth Elastic Model
Maharashtra	Car/Jeep	PCI	y = 2.0743x - -3.5812	R² = 0.9708	2.0743	4.93%	11.08%
	Bus	Population	y = 6.3568x - -46.2131	R² = 0.9393	6.3568	1.24%	6.82%
	Truck	NSDP	y = 1.3202x - -4.335	R² = 0.9885	1.3202	6.31%	7.57%

While the economic model for predicting growth is a good tool, other local, regional, national factors such as proposed developments etc. should also be considered before finalizing growth factors. These factors are discussed in subsequent sections.

Sr. No	Type of Vehicle	Annual Average Daily Traffic (Nos.) FY 2018-19	Annual Average Daily Traffic (Nos.) FY 2019-20	Annual Average Daily Traffic (Nos.) FY 2020-21	Annual Average Daily Traffic (Nos.) FY 2021-22	Annual Average Daily Traffic (Nos.) FY 2022-23	Annual Average Daily Traffic (Nos.) FY 2023-24	Annual Average Daily Traffic (Nos.) FY 2024-25	Annual Average Daily Traffic (Nos.) FY 2025-26
1	Car	6738	7407	7090	5937	6173	6230	6903	8217
2	LCV/ Minibus	1511	1408	1217	620	547	454	439	435
3	Bus/ Truck	1421	1623	1374	1340	1661	1558	1587	1678
4	Mav	2285	2173	2297	2327	2239	1979	2055	1983
5	OSV	2	4	4	7	9	9	7	7
	Total	**11957**	**12616**	**11981**	**10231**	**10629**	**10230**	**10991**	**12320**

3.4 Analysis of Historic Traffic Data

Historic traffic data forms useful information for any highway project. It provides useful information for establishing past trends of growth. Project stretch of Talegaon to Amravati has recently been commissioned and tolling commenced in 2013. Stable traffic data from the year 2015-16 is only available for stretching, which is not enough to establish any growth pattern for future. The following table presents details of historic traffic on project road.

3.5 Other Factors Influencing Growth

There are many factors which have an impact on traffic growth. As discussed previously these factors can be economic, social, educational, and industrial.

Potentiality of such factors for project highway is discussed as under.

ECONOMY

After witnessing a slowdown during 2011-12, the economy recovered in 2013-14, and a high growth rate of GDP was recorded up to 2018-19. Pandemic of COVID-19 impacted all economies of world including India up to year 2021-22. Following figure show trend of GDP growth in India.

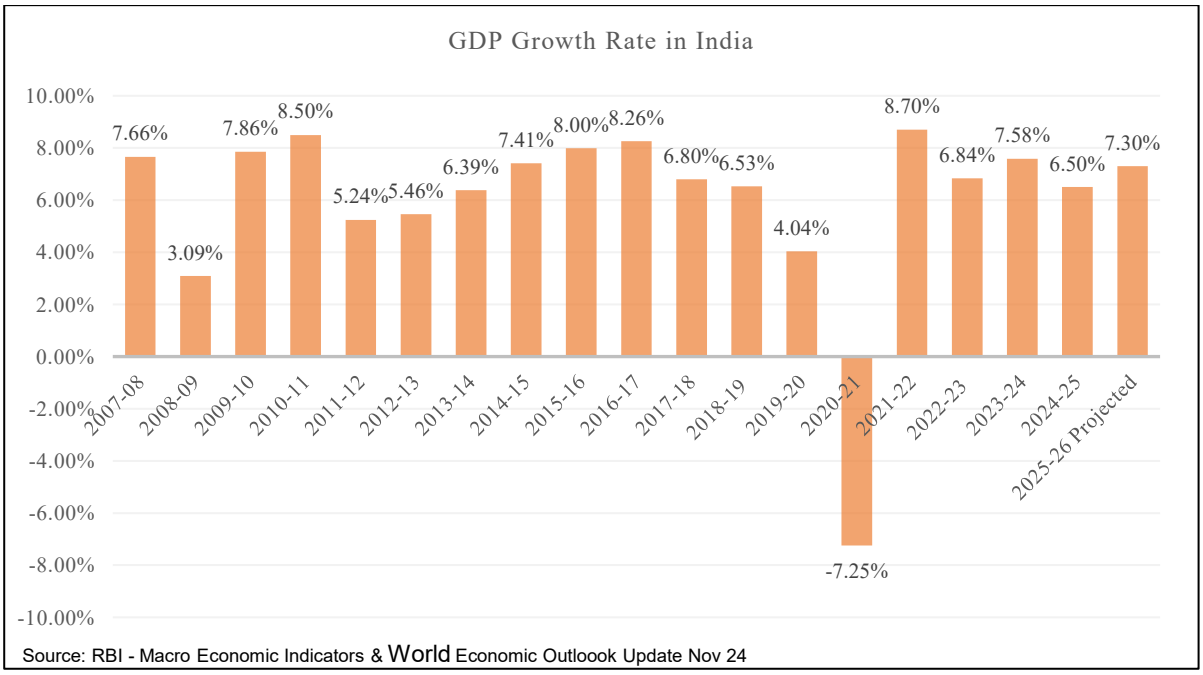


Figure 3-4 : Growth of GDP in India

FY 2017-18 recorded a growth of 6.7% which had a slight impact of GST and demonetization. Indian economy appears on recovery path with estimated growth of 6.8% in FY 2018-19. The government took major policy decisions including tax infrastructure reforming, banking sector improvement and ease of doing business.

In post COVID-19 scenario, in year 2022-23 and 2023-24 India registered an impressive growth of 7% to 7.5%. In last year despite global slow down due to Russia-Ukraine war and Gaza crises, India grew at good rate of 7%(Estimated).
Indian economy is now on good growth path and all major institutions including IMF / ADB have estimated growth of Indian Economy to peg around 6.5% to 7% in coming years.

Key economic activities

Amravati is one of the fastest growing cities of Maharashtra which has the foundation for manufacturing and handicraft industries as well as religious tourism because of the famous *Ambadevi* temple. The city is known for its production of jewellery, carpets and metal ware products. Therefore, there is also movement between steel clusters in Chhattisgarh and Amravati observed on the Asset.

3.6 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 below. The rate of growth is moderate in light of overall regional trends. Growth of multi-Axle is kept slightly higher as trend of technological advances in logistic industry favors multi-axle over 2/3 axle carriage. It is also expected that as the economy moves from developing to developing, the rate of growth diminishes. The same growth rate is not sustainable for long. It is an established practice to step down future growth rates at suitable interval of years.

Temporary disruptions caused by implementation of Goods and Service Tax (GST) and demonetization have dissipated, and growth of economy has significantly improved since then. Hence the corridor can expect to have expected growth.

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 3-5 : Recommended Growth Rates Optimistic

Year/ Vehicle Type	FY 2027-2030	FY 2031-2035	FY 2036-2040
Car	6.11%	5.64%	5.22%
Minibus /LCV	5.06%	4.75%	4.46%
Truck / Bus	5.84%	5.53%	4.96%

Year/ Vehicle Type	FY 2027-2030	FY 2031-2035	FY 2036-2040
Multi Axle	5.84%	5.53%	4.96%
Oversized Vehicles	5.84%	5.53%	4.96%

Table 3-6 : Recommended Growth Rates Pessimistic

Year/ Vehicle Type	FY 2027-2030	FY 2031-2035	FY 2036-2040
Car	5.61%	5.14%	4.72%
Minibus /LCV	4.56%	4.25%	3.96%
Truck / Bus	5.34%	5.03%	4.46%
Multi Axle	5.34%	5.03%	4.46%
Oversized Vehicles	5.34%	5.03%	4.46%

Table 3-7 : Recommended Growth Rates Most Likely

Year/ Vehicle Type	FY 2027-2030	FY 2031-2035	FY 2036-2040
Car	5.86%	5.39%	4.97%
Minibus /LCV	4.81%	4.50%	4.21%
Truck / Bus	5.59%	5.28%	4.71%
Multi Axle	5.59%	5.28%	4.71%
Oversized Vehicles	5.59%	5.28%	4.71%

Traffic and revenue have been worked out on the basis of the above growth, and some are presented in subsequent chapters of the report.

CHAPTER 4

TRAFFIC FORECAST

4.1 Traffic Projections

The growth rates recommended in the previous section of the report are used to arrive at traffic projections for future years. Toll plaza wise futuristic traffic projection is given in tables below.

These projections have been done for the following three cases of growth.

1. Optimistic Scenario
2. Pessimistic Scenario
3. Most Likely Scenario

Table 4-1 : Total Tollable Traffic @ Toll Plaza 1- Chainage 142.800 KM (Optimistic Growth Scenario)

Year	Car	Minibus /LCV	Truck/ Bus	Multi axle	Oversized Vehicles	Total No.	Total PCU (Including Non-Paid Traffic)
2026-27	8718	458	1777	2099	7	**13059**	**24213**
2027-28	9251	481	1880	2222	7	**13841**	**25643**
2028-29	9816	505	1990	2352	7	**14670**	**27159**
2029-30	10414	531	2106	2489	7	**15547**	**28761**
2030-31	11001	555	2222	2626	7	**16411**	**30348**
2031-32	11621	581	2345	2771	7	**17325**	**32028**
2032-33	12276	608	2475	2924	7	**18290**	**33802**
2033-34	12969	637	2612	3086	7	**19311**	**35679**
2034-35	13699	667	2756	3257	7	**20386**	**37655**
2035-36	14414	696	2893	3419	7	**21429**	**39554**
2036-37	15167	727	3037	3589	7	**22527**	**41550**
2037-38	15958.48	759	3188	3767	7	**23679**	**43644**

Table 4-2 : Total Tollable Traffic @ Toll Plaza 1- Chainage 142.800 KM

(Pessimistic Growth Scenario)

Year	Car	Minibus /LCV	Truck/ Bus	Multi axle	Oversized Vehicles	Total No.	Total PCU (Including Non-Paid Traffic)
2026-27	8678	454	1768	2089	7	**12996**	**24095**
2027-28	9165	475	1862	2201	7	**13710**	**25399**
2028-29	9679	496	1961	2319	7	**14462**	**26773**
2029-30	10221	518	2066	2443	7	**15255**	**28221**
2030-31	10746	540	2169	2566	7	**16028**	**29641**
2031-32	11298	563	2278	2696	7	**16842**	**31140**
2032-33	11877	587	2392	2832	7	**17695**	**32709**
2033-34	12487	611	2513	2975	7	**18593**	**34361**
2034-35	13129	637	2639	3124	7	**19536**	**36091**
2035-36	13747	662	2756	3264	7	**20436**	**37728**
2036-37	14397	688	2879	3409	7	**21380**	**39438**
2037-38	15075.78	715	3007	3561	7	**22366**	**41225**

Table 4-3 : Total Tollable Traffic @ Toll Plaza 1- Chainage 142.800 KM

(Most Likely Growth Scenario)

Year	Car	Minibus /LCV	Truck/ Bus	Multi axle	Oversized Vehicles	Total No.	Total PCU (Including Non-Paid Traffic)
2026-27	8698	457	1773	2094	7	**13029**	**24157**
2027-28	9207	479	1872	2212	7	**13777**	**25527**
2028-29	9745	502	1977	2336	7	**14567**	**26972**
2029-30	10316	526	2087	2467	7	**15403**	**28499**
2030-31	10872	550	2197	2598	7	**16224**	**30010**
2031-32	11457	574	2313	2735	7	**17086**	**31596**

Year	Car	Minibus /LCV	Truck/ Bus	Multi axle	Oversized Vehicles	Total No.	Total PCU (Including Non-Paid Traffic)
2032-33	12074	600	2435	2880	7	**17996**	**33271**
2033-34	12724	627	2563	3032	7	**18953**	**35029**
2034-35	13410	655	2698	3193	7	**19963**	**36886**
2035-36	14076	682	2825	3343	7	**20933**	**38649**
2036-37	14775	711	2958	3501	7	**21952**	**40502**
2037-38	15508.73	740	3097	3666	7	**23019**	**42438**

4.2 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 Talegaon - Amravati project, the Target Date and Target Traffic are defined as under:

Target Date - 1st April 2020

Target Traffic - 41052 in PCU

It was observed that as per traffic projections, traffic volume falls short of target traffic in all scenarios. This warrants for extension of the concession period. Extension of the concession period is worked out as per article 29 of concession agreement. The following table provides details of modification in concession agreement.

Scenario	Actual Average Traffic in PCU (Average of traffic on target date, one year before target date and one year after target date)	Expected extension in Concession Period
All	22023	4 .4 years

Due to the suspension in toll in the year FY17 because of demonetization for a period of 24 days, the Concessionaire would be entitled to an extension of an additional 24 days. Traffic was severely impacted on the project highway during the covid lockdown period. NHAI has declared a policy of providing extension of concessions to make up for revenue loss during lockdown. It is expected that an extension would be provided to the project concession period on this account also.

Hence, traffic and toll revenue projections have been worked out for additional 5 years beyond original concession period.

Table 4-4 : Summary of concession

	Particulars
State	Maharashtra
Highway and lane configuration	NH-53/NH-6
Toll plazas	• TP1 Nandgaon Peth at KM 142.800 (tolling length: 66.730 km)
Appointed date	03rd Sep 2010
Tolling start date	24th April 2013
Concession period	22 years
Concession period with extension	27 years
Last year of concession	FY38

Source: Client data

CHAPTER 5
FORECAST OF TOLL REVENUE

5.1 General

This chapter presents the tolling rate calculations, categories and toll revenue of the project.

5.2 Discount Categories

As per the Toll Notification (Schedule R) the following discounts have been considered:

1. Monthly Pass: For frequent users, monthly pass is issued for 50 trips per month. The discount factor works out to 33.33% for 50 journeys.
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 350 per month (2007)
5. Additionally, Concessionaire has introduced monthly rates for local commercial vehicles also.

Building of inflation and escalation of rate on the basis of WPI are done as per toll notification (Schedule R) as given under

The formula for determining the applicable rate of fee shall be as follows:-

$$\text{Applicable rate of fee} = \text{base rate} + \text{base rate} \times \left\{ \frac{\text{WPI A-WPI B}}{\text{WPI B}} \right\} \times 0.4$$

Factors of inflation / growth have been incorporated as per Schedule R. WPI are available up to the year 2025-26.

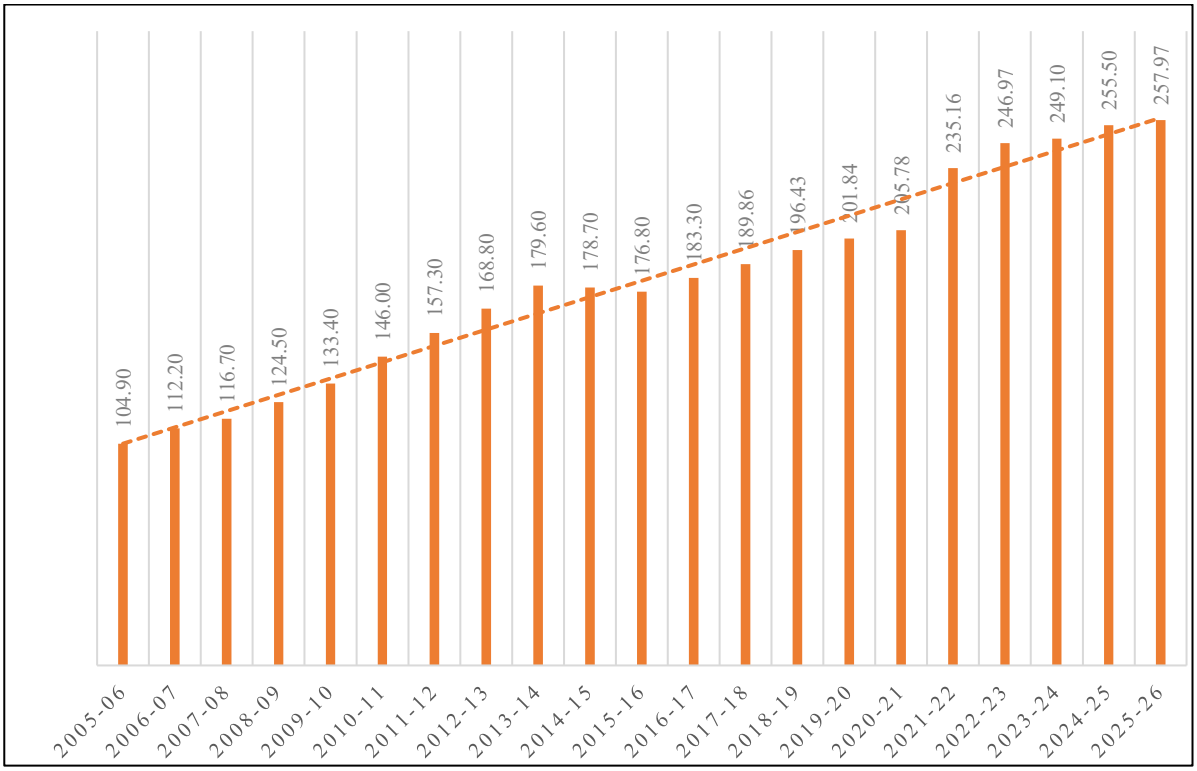


Figure 5-1 : Historical Rate of WPI Inflation in India

The wholesale price index (WPI) and the inflation rate in the past are presented in Table below.

Table 5-1 : Historical WPI value and Growth Inflation

December of year	2021	2022	2023	2024	2025	Avg.
WPI	235.2	247.0	249.1	255.5	257.97	
Inflation	14.27%	5.02%	0.86%	2.57%	0.96%	4.74%

WPI of December 2025 is posted on ministry site which is shows 0.96% inflation from the previous year. Same has been applied for FY 2026-27.

The average WPI inflation over the period FY 2021 to FY 2025 works out to approximately 4.74%, reflecting inflationary cycles across both high and low inflation years. Based on this analysis, an annual escalation factor of 4.5% has been adopted for the remaining concession period.

5.3 Estimation of Toll Rates

As per the applicable MORTH notification and Schedule R of contract agreement, the following Base rate of fee for the categories mentioned in the table stands true in the National Highways Fee Rules, 2008.

Table 5-2 : 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 Minibus	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 2025-26.

Amravati bypass qualifies for adding to toll rate since its cost is more than 10 Cr. There is no structure in a project which qualifies for addition in toll rates.

Table 5-3 : Additional Rate for Amravati Bypass

Total Cost of Bypass	95.09 Cr	Length	17.43 km
Type of Vehicle	**Base Rate for 15 Cr**	**Addition for every 5 Cr over 15 Cr**	**Rate 2007-08**
Car/Jeep/Van	5.00	1.00	**22**
LCV	7.50	1.50	**33**
Bus	15.00	3.00	**66**
2-axle	15.00	3.00	**66**
3 - Axle	22.00	4.50	**98.5**
Multi Axle	30.00	6.00	**132**

The above table provides for rates applicable for accounting for bypass in toll rates. This has been incorporated in toll rates at Toll Plaza at Km 142.800 at Nandgaon Peth.

Other than this there is no structure or bypass which qualifies for additional toll rate at any toll plaza.

Toll rates are calculated as per guidelines provided in schedule R (rounded to nearest Rs. five) for the concession period and are given below.

Thus, worked out rates for various categories of vehicle and discounts are given as under.

Table 5-4 : Toll Rates for Single Journey @ KM 142.800

Year	Car	LCV	Truck / Bus	Multi Axle	Oversized Vehicles
2026-27	130	205	420	645	810
2027-28	135	215	440	675	850
2028-29	140	225	460	705	890
2029-30	150	235	480	740	935
2030-31	155	245	505	775	975
2031-32	165	255	525	810	1025
2032-33	170	270	550	850	1070
2033-34	180	280	580	890	1125
2034-35	190	295	605	930	1175
2035-36	195	310	635	975	1235
2036-37	205	325	665	1025	1290
2037-38	215	340	695	1075	1355

Table 5-5 : Toll Rates for Return Journey @ KM 142.800

Year	Car	LCV	Truck / Bus	HCM /EME/ MAV	Oversized Vehicles
2026-27	195	305	625	965	1220
2027-28	205	320	655	1010	1275
2028-29	215	335	685	1060	1335
2029-30	225	350	720	1110	1400
2030-31	235	365	755	1160	1465
2031-32	245	385	790	1215	1535
2032-33	255	400	825	1275	1605
2033-34	270	420	865	1335	1685
2034-35	280	440	910	1400	1765
2035-36	295	460	950	1465	1850
2036-37	310	485	995	1535	1940
2037-38	325	510	1045	1610	2030

Table 5-6 : Toll Rates for Monthly Pass @ KM 142.800

Year	Car - LP	LCV - LC	Truck/Bus - LC	Car	Minibus /LCV	Truck/Bus	Multi Axle	Oversized Vehicle
2026-27	360	2170	4070	4315	6770	13935	21450	27080
2027-28	375	2270	4255	4520	7085	14585	22455	28350
2028-29	395	2370	4445	4730	7420	15275	23515	29685
2029-30	415	2475	4645	4955	7770	15995	24625	31085
2030-31	430	2585	4855	5190	8140	16750	25785	32555
2031-32	455	2700	5075	5435	8525	17545	27010	34095
2032-33	475	2820	5305	5695	8930	18380	28295	35720

Year	Car - LP	LCV - LC	Truck/Bus - LC	Car	Minibus /LCV	Truck/Bus	Multi Axle	Oversized Vehicle
2033-34	495	2945	5545	5965	9355	19255	29645	37425
2034-35	520	3080	5795	6250	9805	20175	31065	39215
2035-36	545	3220	6055	6550	10275	21145	32555	41095
2036-37	570	3365	6325	6865	10770	22165	34120	43075
2037-38	600	3515	6610	7200	11290	23235	35770	45155

***** LP- Local Passenger, LC – Local Commercial

5.4 Toll Revenue

As indicated earlier, toll revenue on the Project Road has been calculated under in all three scenarios. The estimates of toll revenue under ***Optimistic***, ***Pessimistic*** and ***Most Likely*** growth scenarios are presented in the following section.

5.5 Toll Revenue at all toll plazas under Scenarios

Toll Revenue estimates under most likely scenario at each of the toll plaza up to 2037-38 starting from the year 2025-26 are shown in tables below.

Table 5-7 : Toll Revenue Optimistic Scenario

(Rs. Crores)

Year	Toll at Plaza 142.800	Total
2026-27	107.14	**107.14**
2027-28	119.06	**119.06**
2028-29	131.39	**131.39**
2029-30	146.15	**146.15**
2030-31	161.20	**161.20**
2031-32	178.83	**178.83**
2032-33	196.55	**196.55**
2033-34	217.91	**217.91**
2034-35	240.80	**240.80**
2035-36	265.08	**265.08**
2036-37	291.70	**291.70**
2037-38	320.88	**320.88**

Table 5-8 : Toll Revenue Pessimistic Scenario

(Rs. Crores)

Year	Toll at Plaza 142.800	Total
2026-27	106.64	**106.64**
2027-28	117.94	**117.94**
2028-29	129.50	**129.50**
2029-30	143.36	**143.36**
2030-31	157.35	**157.35**
2031-32	173.78	**173.78**
2032-33	190.08	**190.08**
2033-34	209.72	**209.72**
2034-35	230.60	**230.60**
2035-36	252.61	**252.61**
2036-37	276.63	**276.63**
2037-38	302.82	**302.82**

Table 5-9 : Toll Revenue Most Likely Scenario

(Rs. Crores)

Year	Toll at Plaza 142.800	Total
2026-27	106.91	**106.91**
2027-28	118.51	**118.51**
2028-29	130.47	**130.47**
2029-30	144.77	**144.77**
2030-31	159.32	**159.32**
2031-32	176.35	**176.35**

Year	Toll at Plaza 142.800	Total
2032-33	193.38	**193.38**
2033-34	213.83	**213.83**
2034-35	235.72	**235.72**
2035-36	258.84	**258.84**
2036-37	284.12	**284.12**
2037-38	311.80	**311.80**

CHAPTER 6
OPERATION & MAINTENANCE

6.1 Operation & Maintenance

The following are project parameters which would contribute towards the cost of operation and maintenance.

The estimated cost of operation and maintenance has been provided by the Management.

The following are the key components for operation and maintenance costs:

1. Annual Regular Maintenance – Covering pothole repair, shoulder and slope repair, drain cleaning, median maintenance, Crash barrier, toll plaza maintenance, Toll collection, other services like medical help and rescue operations etc.

2. Periodic Maintenance – This will be done on a periodic basis, say every 5 years. It will consist of overlaying of wearing course and painting and marking. Some pavement strengthening is also anticipated in a few sections. This operation and its cost are spread over three years.

The year wise actual operation and maintenance cost is provided by management of asset and has been found reasonable. Same has been adopted in report for projection of operation and maintenance cost.

Table 6-1 : O&M Cost

Years	Routine O & M	Other Operational expenses	Major Maintenance O & M	Total Expenditure (Rs. Crores)
2026-27	13.77	3.78	0.00	**17.55**
2027-28	14.36	4.07	33.57	**52.00**
2028-29	14.96	4.39	41.65	**61.00**
2029-30	15.59	4.73	5.04	**25.36**
2030-31	21.63	5.09	0.00	**26.72**
2031-32	22.57	5.49	0.00	**28.06**
2032-33	23.55	5.91	0.00	**29.46**
2033-34	24.56	6.37	49.27	**80.20**
2034-35	25.62	6.86	57.52	**90.00**
2035-36	26.78	7.39	0.00	**34.17**
2036-37	27.92	7.96	0.00	**35.88**
2037-38	29.15	8.53	0.00	**37.67**

CHAPTER 7
CONCLUSION & RECOMMENDATIONS

7.1 Conclusion & Recommendations

Project stretch of Talegaon to Amravati section of NH-6 in state of Maharashtra from km 100.000 to km 166.725 is currently a four-lane road. The road is in sound condition and serves stable traffic volumes. Project corridor is part of major east west connectivity National highway NH-6. There are many upcoming projects in the area which will boost economic growth of the area and add value to the development of the region. All these developments have potential to give a positive impact to traffic flow on the project. The following can be considered as major outcome of study.

a) There is a good amount of tollable traffic running on the project.

b) Project corridor has potential to witness traffic growth @ 6-8% annually post COVID-19 impact in the near future, further moderated by 1-2% in the longer term due to various development in area and overall development of economy.

The project infrastructure is in good condition, and its maintenance cost is also reasonable.

Based on the above it can be considered a stable healthy project from the traffic and revenue point of view.

CHAPTER 8

PROJECT ILLUSTRATIONS

8.1 General

Project current condition has been depicted in the following photographs.



Figure 8-1 : General Condition



Figure 8-2 : Toll Plaza



Figure 8-3 : General Condition



Figure 8-4 : General Condition



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IRB InvIT Fund

TUMKUR TO CHITRADURGA
(KM 75.000 TO KM 189.000)
SECTION OF NH-4 IN THE STATE OF KARNATAKA





TOLL REVENUE AND O&M COST PROJECTION REPORT (FINAL)





MAY 2026

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GMD CONSULTANTS ★ NAVI MUMBAI ★

MAY 2026

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ABBREVIATIONS

AADT	-	Annual Average Daily Traffic	**NHAI**	-	National Highways Authority of India
BOT	-	Build Operate Transfer	**NHDP**	-	National Highways Development Project
CAGR	-	Compound Annual Growth Rate	**NSDP**	-	Net State Domestic Product
CTV	-	Classified traffic volume	**O&M**	-	Operation & Maintenance
DBFOT	-	Design, Build, Finance, Operate & Transfer	**PCDP**	-	Per Capita Domestic Product
EME	-	Earth Moving Equipment	**PCI**	-	Per Capita Income
GDP	-	Gross Domestic Product	**PCU**	-	Passenger Car Unit
GSDP	-	Gross State Domestic Product	**PSC**	-	Pre-stressed Concrete
HCM	-	Heavy Construction Machinery	**RCC**	-	Reinforced cement concrete
HCV	-	Heavy Commercial Vehicle	**RHS**	-	Right Hand Side
HTMS	-	Highway Traffic Management System	**SH**	-	State Highway
IRC	-	Indian Road Congress	**TP**	-	Toll Plaza
IRR	-	Internal Rate of Return	**WPI**	-	Wholesale Price Index
LCV	-	Light Commercial Vehicle	**SIR**	-	Special Investment Region
LHS	-	Left Hand Side	**c.**	-	Circa
LGV	-	Light Goods Vehicle	**ROB**	-	Railway Over Bridge
MAV	-	Multi Axle Vehicle	**MDR**	-	Major District Road
MORTH	-	Ministry of Road Transport and Highways	**ODR**	-	Other District Road
NH	-	National Highway	**CA**	-	Concession Agreement
PCC	-	Plain Cement Concrete	**RMT**	-	Running Meter
CR	-	Coarse Rubble			

CHAPTER 1
INTRODUCTION

1.1 Background

The Government of India through National Highway Authority of India (NHAI) embarked upon a program to enhance the traffic capacity and safety for efficient transportation of goods as well as passenger traffic on National Highway Sections under NHDP Phase V. Under Phase V NHAI has planned to convert 6,500 km of existing 4-lane National Highways into 6-lane National Highway. Sections envisaged under 6-laning comprise the Golden Quadrilateral section (5,700 km) and some other sections which are 800 km in length.

The project under consideration, Tumkur - Chitradurga Section of NH-4 is one such road project NHAI intended to implement on a BOT basis in the DBFOT format. *M/s IRB Tumkur Chitradurga Tollway Ltd*. (Concessionaire) has been awarded the Project for concession period of 26 years starting from June 4th, 2011, to June 3rd, 2037. The Project has been commissioned and is currently in the operation / maintenance phase.

Asset and regional context

The Tumkur -Chitradurga Asset is a 114 Kms 6-lane road, part of NH-48 connecting Delhi to Chennai (Tamil Nadu) which is one of the oldest trunk routes in India. The Asset has two toll plazas including Guilalu and Karjeevanhalli.

The Asset is part of the NH 48 that connects Delhi to Chennai and lies on the strategic Delhi – Mumbai – Bengaluru - Chennai corridor.

1.2 Objective of the Study

M/s IRB INVIT FUND has engaged GMD Consultants to assess the future traffic and toll potential of the project along with related operation & maintenance expenditure involved.

This report named as **"*Toll Revenue and O&M Cost Projection Report*"** mainly focuses on traffic and O&M aspects of the project. Other parameters like competing road, area developments etc. have been considered from a traffic development point of view.

1.2.1 Scope of Services

The broad scope of work covered in the assignment is as follows.

a) Analysis of Traffic Growth
b) Toll Rate Growth
c) Revenue Forecasting
d) Operation and Maintenance Cost Projections

The Concessionaire has provided basic historical traffic data and other project details on the basis of which the above analysis has been carried out, after applying our judgment to the traffic estimates.

"***Toll Revenue and O&M Cost Projection Report***" was submitted in March 2017. In this report traffic data for the year 2015-16 was used as base traffic. The report was updated with traffic data for the year 2016-17 and the report was submitted in October 2017. The report was further updated with traffic data of 2017-18 and same was submitted in April 2018. The report was further updated with traffic Data of the period from April 2018 to September 2018 and was submitted in October 2018. A revised report was submitted with updated traffic for the years 2018-19 in April 2019. With traffic data from April 2020 to March 2021 report was updated report was further updated with yearly traffic data from April 2021 to March 2022, April 2022 to March 2023, April 2024 to March 2025 and now concessionaire has provided traffic data from April 2025 to February 2026, report is updated with this annual traffic data.

CHAPTER 2
TRAFFIC SURVEYS AND ANALYSIS

2.1 Traffic Surveys

In the course of our work, we have collected the required information for project corridor to understand the general traffic and travel characteristics of the corridor.

The following traffic data has been collected for the project.

- Classified traffic volume counts at the two toll plaza locations on Tumkur-Chitradurga section of NH-4 for base year 2015-16, 2016-17, 2017-18, 2018-19, 2019-20, 2020-21, 2021-22,2022-23, 2023-24,2024 and annual traffic data from April 2025 to February 2026.
- Local Component of traffic
- Component of Return Journey
- Component of Monthly Pass Journey

The main objective of the traffic data analysis is to:

- Determine the existing traffic movement characteristics of project.
- Establish base year traffic.
- Identification of travel patterns and modal split of project traffic
- Deriving growth factors for traffic 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

The project can be divided into two homogenous sections from a traffic point of view.

These sections can be.

1. Chitradurga to Sira
2. Sira to Tumkur

Traffic of both sections is represented by toll plaza in each section.

Table 2-1 below lists provides details of locations from where traffic details have been collected.

Table 2-1 : Traffic Survey Locations

Sr. No.	Location	CTV	Single Journey Traffic	Return Journey Traffic	Monthly Pass Traffic	Local Traffic
1	**Km 172.770 Toll Plaza (Guilalu)**	AADT for Year 2015-2016	For Year 2015-2016	For Year 2015-2016	For Year 2015-2016	For Year 2015-2016
		AADT for year 2016-2017	For Year 2016-2017	For Year 2016-2017	For Year 2016-2017	For Year 2016-2017
		AADT for year 2017-2018	For Year 2017-2018	For Year 2017-2018	For Year 2017-2018	For Year 2017-2018
		AADT for year 2018-19	For year 2018-19	For year 2018-19	For year 2018-19	For year 2018-19
		AADT for year 2019-20	For year 2019-20	For year 2019-20	For year 2019-20	For year 2019-20
		AADT for year 2020-21	For year 2020-21	For year 2020-21	For year 2020-21	For year 2020-21
		AADT for Year 2021-22	For Year 2021-22	For Year 2021-22	For Year 2021-22	For Year 2021-22
		AADT for Year 2022-23	For Year 2022-23	For Year 2022-23	For Year 2022-23	For Year 2022-23
		AADT for Year 2023-24	For Year 2023-24	For Year 2023-24	For Year 2023-24	For Year 2023-24
		AADT for Year 2024-25	For Year 2024-25	For Year 2024-25	For Year 2024-25	For Year 2024-25
		AADT for Year 2025-26	For Year 2025-26	For Year 2025-26	For Year 2025-26	For Year 2025-26
2	**Km 104.530 Toll Plaza (Karjeevanhalli)**	AADT for Year 2015-2016	For Year 2015-2016	For Year 2015-2016	For Year 2015-2016	For Year 2015-2016
		AADT for year 2016-2017	For Year 2016-2017	For Year 2016-2017	For Year 2016-2017	For Year 2016-2017
		AADT for year 2017-2018	For Year 2017-2018	For Year 2017-2018	For Year 2017-2018	For Year 2017-2018
		AADT for year 2018-19	For year 2018-19	For year 2018-19	For year 2018-19	For year 2018-19
		AADT for year 2019-20	For year 2019-20	For year 2019-20	For year 2019-20	For year 2019-20
		AADT for year 2020-21	For year 2020-21	For year 2020-21	For year 2020-21	For year 2020-21

Sr. No.	Location	CTV	Single Journey Traffic	Return Journey Traffic	Monthly Pass Traffic	Local Traffic
		AADT for Year 2021-22	For Year 2021-22	For Year 2021-22	For Year 2021-22	For Year 2021-22
		AADT for Year 2022-23	For Year 2022-23	For Year 2022-23	For Year 2022-23	For Year 2022-23
		AADT for Year 2023-24	For Year 2023-24	For Year 2023-24	For Year 2023-24	For Year 2023-24
		AADT for Year 2024-25	For Year 2024-25	For Year 2024-25	For Year 2024-25	For Year 2024-25
		AADT for Year 2025-26	For Year 2025-26	For Year 2025-26	For Year 2025-26	For Year 2025-26

The locations of each of the traffic surveys are illustrated in Figure 2-1.



Figure 2-1: Traffic Survey Locations

2.2 Classified Traffic Volume Count

The objective of conducting a Classified Traffic Volume Count is to understand the traffic flow pattern including modal split on a roadway. The Classified Traffic Volume Count survey has been provided by concessionaire of project highway from actual traffic data gathered at toll plaza locations based on monthly data shared with NHAI. 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 are further segregated to capture the tollable vehicle categories specifically and toll exempted vehicles are counted separately. The detailed vehicle classification system as per IRC: 64-1990 is given in ***Table 2-2***.

Table 2-2 : Vehicle Classification System

Vehicle Type	
Auto Rickshaw	
Passenger Car	Car, Jeep, Taxi & Van (Old / new technology)
Bus	Minibus
	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

However, since the project highway is currently under toll operation, the data collected corresponds to the category of tollable vehicles. The following are the types of vehicles as per the Concession Agreement.

- Car / Jeep / Van
- LCV
- Truck / Bus
- HCM/ EME/ MAV

2.3 Traffic Characteristic

Toll revenue of the project highway does not solely depend on traffic volume. There are certain characteristics of traffic which have significant potential to affect toll revenue. Components of local traffic, components of passenger and commercial traffic, portion of return journey traffic, portion of monthly pass traffic are some such characteristics of traffic. These will be discussed in subsequent sections of this report.

2.3.1 Traffic Data

The Concessionaire has provided Traffic data for base year 2015-16, 2016-17, 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2023-2024-25 & traffic data from April 2025 to February 2026.

Since the traffic data available for this update is for only Annual, from April 2025 to February 2026, it may not represent the whole year traffic. Hence a seasonality factor for balance part of year has been applied to average traffic of the current Eleven months to arrive at Annual Average Daily Traffic of base year 2025-26. Thus, corrected traffic is used for future projections and revenue calculations. The following table shows historical traffic on project stretch and derived Annual Average Daily Traffic (AADT) for year 2025-26.

Table 2-3 : Traffic Data at Toll Plaza at Km 172.770

Sr. No	Type of Vehicle	Annual Average Daily Traffic (Nos.) FY 2018-19	Annual Average Daily Traffic (Nos.) FY 2019-20	Annual Average Daily Traffic (Nos.) FY 2020-21	Annual Average Daily Traffic (Nos.) FY 2021-22	Annual Average Daily Traffic (Nos.) FY 2022-23	Annual Average Daily Traffic (Nos.) FY 2023-24	Annual Average Daily Traffic (Nos.) FY 2024-25	Annual Average Daily Traffic (Nos.) FY 2025-26
1	Car	5244	5560	7633	11046	12943	13427	14196	19836
2	LCV	2918	2752	2652	2006	2079	2206	2262	2875
3	Truck/Bus	3157	3167	2631	3423	4395	5015	5216	5867
4	HCM /EME/ MAV	5748	5033	4968	5831	6359	6293	6519	6599
5	Oversized Vehicles	31	37	14	15	25	331	114	317
	Total	**17099**	**16548**	**17898**	**22322**	**25801**	**27272**	**28307**	**35493**

Similar traffic data for toll plaza at Km 104.530 is given as under

Table 2-4 : Traffic Data at Toll Plaza at Km 104.530

Sr. No	Type of Vehicle	Annual Average Daily Traffic (Nos.) FY 2018-19	Annual Average Daily Traffic (Nos.) FY 2019-20	Annual Average Daily Traffic (Nos.) FY 2020-21	Annual Average Daily Traffic (Nos.) FY 2021-22	Annual Average Daily Traffic (Nos.) FY 2022-23	Annual Average Daily Traffic (Nos.) FY 2023-24	Annual Average Daily Traffic (Nos.) FY 2024-25	Annual Average Daily Traffic (Nos.) FY 2025-26
1	Car	6855	7664	10224	8597	10272	11069	12065	14602
2	LCV	3401	3237	3103	1803	1916	2030	2114	2334
3	Truck/Bus	3888	3896	3133	3005	3912	4429	4788	5383
4	HCM /EME/ MAV	6656	5833	5617	5305	5811	5774	6050	6205
5	Oversized Vehicles	35	45	18	15	31	227	105	238
	Total	**20834**	**20675**	**22094**	**18725**	**21942**	**23528**	**25122**	**28761**

2.4 Data Analysis

2.4.1 Analysis of Traffic Volume Count

Understanding the character of existing traffic forms the basis of traffic forecast. The various vehicle types having different sizes and characteristics can be 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 2-5.***

Table 2-5 : PCU Factors Adopted for Study

Vehicle Type	PCUs
Car	1.0
Minibus	1.5
Standard Bus	3.0
LCV/LGV	1.5
2 Axle Truck	3.0
3 – 6 Axle Truck	4.5
MAV	4.5
Auto Rickshaw	1.0

Vehicle Type	PCUs
Van/Tempo	1.0
Agriculture Tractor with Trailer	4.5
Agriculture Tractor without Trailer	1.5

Source: IRC: 64-1990

Traffic volume at each toll plaza was converted to PCU and same is presented as under.

Table 2-6 : Traffic in PCU at both Toll Plazas

Toll Plaza Location	Period	Traffic No	PCU	PCU Index
172.770	FY 2015-16	14885	40661	2.73
	FY 2016-17	15460	41587	2.69
	FY 2017-18	16451	43474	2.64
	FY 2018-19	17099	45099	2.64
	FY 2019-20	16548	42002	2.54
	FY 2020-21	17898	41923	2.34
	FY 2021-22	22322	50632	2.27
	FY 2022-23	25801	57974	2.25
	FY 2023-24	27272	61590	2.26
	FY 2024-25	28307	63087	2.23
	FY 2025-26	35493	72870	2.05
104.530	FY 2015-16	17678	48037	2.72
	FY 2016-17	18782	49471	2.63
	FY 2017-18	19826	51585	2.60
	FY 2018-19	20834	53728	2.58
	FY 2019-20	20675	50659	2.45
	FY 2020-21	22094	49634	2.25
	FY 2021-22	18725	44256	2.36
	FY 2022-23	21942	51171	2.33
	FY 2023-24	23528	54404	2.31
	FY 2024-25	25122	57298	2.28
	FY 2025-26	28761	63244	2.20

It can be observed from the above that project traffic has a PCU index near 2.5 which indicates a good mix of commercial and passenger traffic.

2.4.2 Components of Traffic

As discussed previously, components of traffic volume play an important role in determining project revenue. A Larger component of commercial traffic with higher axle configuration adds to project revenue positively. Similarly, a larger component of local traffic affects the project revenue potential negatively.

For the purpose of analysis, the recent traffic numbers for the period April 2025 to February 2026 have been considered as the base numbers.

It is observed that at Toll KM 172.770 Car traffic forms 56% of total traffic while HCM / EME / MAV comprises 19% of total traffic. Overall, about 36% of traffic is commercial in nature, and at Toll KM 104.530 Car traffic forms 51% of total traffic while HCM / EME / MAV comprises 21% of total traffic. Overall, about 41% of traffic is commercial in nature.

Another important bifurcation of traffic is components of traffic with respect to various types of toll ticketing.

1. Single Journey
2. Return Journey
3. Local Single Journey (Concessionaire provided special tariff for this category)
4. Monthly Pass Journey
5. Annual Pass car

The following table provides numbers of vehicles falling in each of the above categories on base year 2015-16, 2016-17, 2017-18, 2018-19, 2019-20 2020-21, 2021-22 ,2022-23, 2023-24 ,2024-25 and April 2025 to February 2026.

Table 2-7 : Journey Type Bifurcation of Traffic at KM 172.770

Sr. No	Type	Traffic Volume (Nos.) for FY 2018-19	Traffic Volume (Nos.) for FY 2019-20	Traffic Volume (Nos.) for FY 2020-21	Traffic Volume (Nos.) for FY 2021-22	Traffic Volume (Nos.) for FY 2022-23	Traffic Volume (Nos.) for FY 2023-24	Traffic Volume (Nos.) for FY 2024-25	Traffic Volume (Nos.) for FY 2025-26
1	Single Journey	13370	12845	14512	15558	18017	18741	19268	19274
2	Return Journey	3332	3356	3074	6724	7740	8488	9002	8786
3	Local Single Journey	185	128	150	18	22	23	19	25
4	Monthly Pass	212	219	162	22	22	20	18	22
5	Annual Pass car								3693

A significant part of the traffic at KM 172.770 is single journey (60%) followed by return journey (28%) Annual Pass car is 12% with a very low component of local single journey and monthly pass traffic.

Similarly, traffic numbers for a type of journey at KM 104.530 are given in the following table.

Table 2-8 : Journey Type Bifurcation of Traffic at KM 104.530

Sr. No	Type	Traffic Volume (Nos.) for FY 2018-19	Traffic Volume (Nos.) for FY 2019-20	Traffic Volume (Nos.) for FY 2020-21	Traffic Volume (Nos.) for FY 2021-22	Traffic Volume (Nos.) for FY 2022-23	Traffic Volume (Nos.) for FY 2023-24	Traffic Volume (Nos.) for FY 2024-25	Traffic Volume (Nos.) for FY 2025-26
1	Single Journey	15053	14807	16990	13821	16220	17209	18162	18563
2	Return Journey	4820	4910	4456	4782	5632	6242	6894	6880
3	Local Single Journey	387	385	316	65	73	64	56	51
4	Monthly Pass	574	573	332	57	15	13	10	8
5	Annual Pass car								3259

A significant part of the traffic at KM 104.530 is single journey (65%) followed by return journey (24%) Annual Pass car is 11% with a very low component of local single journey and monthly pass traffic.

Here too it was observed that single journey is the most dominant component of traffic consistent across entire length of the project highway.

2.5 Secondary Data Collection

There are several other factors which have a substantial impact on traffic patterns and growth on any project corridor. The following are some of such important factors.

- Industrial development around project corridor and its catchment
- Educational infrastructure along project corridor
- Demographic pattern
- Urban area development
- Tourism potential
- Upcoming major infrastructural or Industrial projects
- Special Industry in project corridor
- Overall trends of economic growth local as well as national / regional

Hence in addition to traffic details on the project site, secondary data was also collected from the various sources. Typical secondary data includes the following:

1. Vehicle registration data of regional and national level.
2. Economic Data
   a) GDP
   b) NSDP
   c) Population Growth
   d) Per Capita Income growth
   e) Industrial Growth
   f) Special Industry Potential
   g) Regional and National development vision / plan
   h) Any other relevant data

CHAPTER 3

GROWTH OF TRAFFIC ON PROJECT HIGHWAY

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 forecasts of factors such as population, gross domestic product (GDP), vehicle ownership, per capita income (PCI), agricultural output, fuel consumption etc. Future patterns 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 viz. Tumkur – Chitradurga section of NH-4 has been done after taking the above factors into consideration. "**IRC: 108-2015-Guidelines for Traffic Prediction on Rural Highways**" is established best practice and has been used for traffic growth forecast**.**

3.2 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.

Elasticity model of growth projection is one of the most widely acceptable methods for traffic forecasts. The same 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 types of vehicles. 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, the 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

Time series data of vehicles (both passenger and goods) Registered in state of Karnataka is used as the base data for analysis of growth.

3.3 Estimation of Traffic Demand Elasticity

The 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 categories of vehicle with one of the economic variables considered, such as NSDP, per capita income and population growth. Latest available data for vehicle registration, per capita income, NSDP and population is used in analysis.

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:

$$Log\ (P) = k\ x\ Log\ (EI) + A$$

Where,

P = *Number of Vehicles (Mode wise)*

EI = *Economic Indicator*

A = *Regression constant*

k = *Elasticity coefficient (Regression coefficient)*

The elasticity for cars and buses (passenger vehicles) is calculated based on the Population and Per Capita Domestic Product (PCDP) respectively and the elasticity for trucks is calculated based on the Net State Domestic Product (NSDP).

The following tables and graphs depict regression and elasticity of growth model.

Table 3-1 : Per Capita Income Vs Car

Year	PCI	Car	Log PCI	Log Car	PCI Growth	Average Growth
2011	40699	1131201	4.61	6.05		
2012	41492	1269430	4.62	6.10	2%	
2013	43266	1420767	4.64	6.15	4%	
2014	46012	1572521	4.66	6.20	6%	
2015	48907	1741831	4.69	6.24	6%	4.7%

Regression analysis PCI Vs Car data is presented in the figure below.

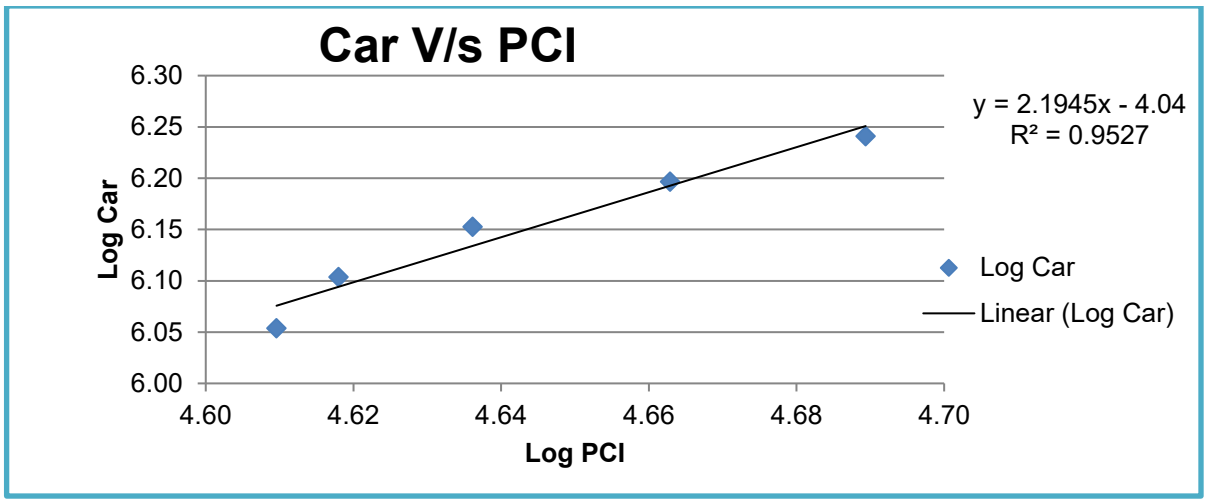


Figure 3-1: Regression and Elasticity PCI vs. Car–Extrapolation

Table 3-2 : Population Vs Bus

Year	Population	Buses	Log Pop	Log Bus	Pop Growth	Average Growth
2011	61095297	58012	7.79	4.76		
2012	62058777	62501	7.79	4.80	2%	
2013	63017877	69718	7.80	4.84	2%	
2014	63972322	75529	7.81	4.88	2%	
2015	64921845	80911	7.81	4.91	1%	1.53%

Regression analysis of population Vs. Bus Traffic is presented in figure below.

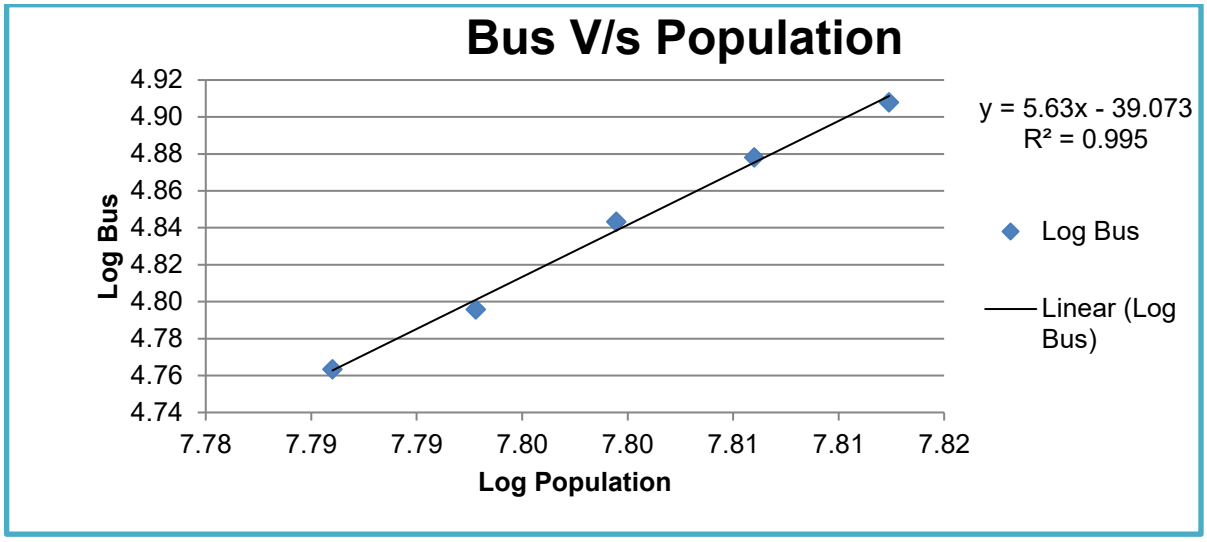


Figure 3-2: Regression and Elasticity Population vs. Bus – Extrapolation

Elasticity of goods traffic demand has been worked out by regression analysis with NSDP. The following table represents the data and details.

Table 3-3 : Goods Traffic Vs NSDP

Year	NSDP	Trucks	Log NDSP	Log Truck	NSDP Growth	Average Growth
2011	24081677	415491	7.38	5.62		
2012	24804028	454582	7.39	5.66	3%	
2013	26125013	506340	7.42	5.70	5%	
2014	28056052	555255	7.45	5.74	7%	
2015	30107076	606352	7.48	5.78	7%	5.76%

The following figure depicts regression analysis and extrapolation of NSDP vs. goods traffic.

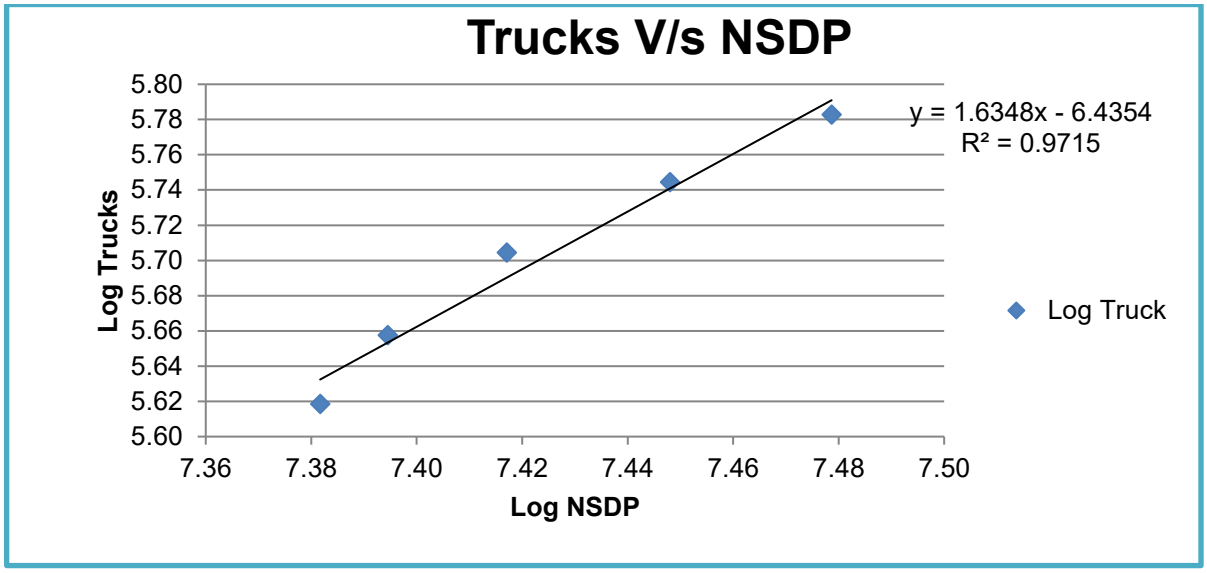


Figure 3-3: Regression and Elasticity NSDP vs. Goods Traffic – extrapolation.

Using the regression analysis above, we have arrived at the elasticity of traffic demand for each class of vehicle to a given change in relevant economic indicators. Average traffic growth of a vehicle class is multiplied by the corresponding elasticity coefficient to arrive at traffic growth. $R^2$is statistical measure of how close the data are to the fitted regression line. It varies from 0 to 1. The higher the value of R^2 more representative is the regression model of data.

The results of these analyses for the good fit as reflected by R^2 values are presented in the Table below.

Table 3-4 : Summary Regression Analysis

State	Vehicle Category	Independent Variable	Regression Equation	R Square	Elasticity Coefficient	Average Growth	Growth Elastic Model
Karnataka	Car/Jeep	PCI	y = 2.1945x - -4.04	R² = 0.9527	2.1945	4.72%	10.35%
	Bus	Population	y = 5.63x - -39.0727	R² = 0.995	5.6300	1.53%	8.62%
	Truck	NSDP	y = 1.6348x - -6.4354	R² = 0.9715	1.6348	5.76%	9.41%

While the economic model for predicting growth is a good tool, other local, regional, national factors such as proposed developments etc. should also be considered before finalizing growth factors. These factors are discussed in subsequent sections.

3.4 Analysis of Historic Traffic Data

Traffic growth on a particular section of the highway depends on a number of factors. Some of these are local and some have regional or national context. Regional or national economic development has a marked impact on traffic growth. Still, historical traffic volume data at the project highway provides a meaningful insight into traffic development on the corridor.

Recently there has been tremendous up-gradation in the logistics industry in terms of processes, technology and mode of transportation. Improvement in road networks has opened the way for larger freight vehicles to be used for transportation of goods. This has added substantial value to logistical operations all across the country. It has been observed that the volume of the typical 2 Axle truck has reduced and multi axle trucks or larger size have come in their place. This phenomenon is observed at project highway under study as well.

The following historical traffic data have been used for our analysis.

a) Traffic Numbers provided in Contract document pertaining to year 2008.

b) Traffic Numbers provided in Report of Lea Associates pertaining to year 2010.

c) Traffic Numbers provided in by concessionaire pertaining to year 2016 to year upto March 2024

Traffic numbers pertaining to tollable category of contract have been compared.

The following tables provide historical traffic numbers at both toll plaza locations i.e., at Km 104.530 (Near Sira) and Km 172.770 (Near Chitradurga)

Table 3-5 : Historical Traffic Volume at Sira

Location	**Year**									
At Sira	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**	**2023-24**	**2024-25**	**2025-26**
Car	6203	6577	6855	7664	10224	8597	10272	11069	12065	14602
LCV	2581	2999	3401	3237	3103	1803	1916	2030	2114	2334
Truck/Bus	3727	3743	3888	3896	3133	3005	3912	4429	4788	5383
HCM /EME/ MAV	6140	6464	6656	5833	5617	5305	5811	5774	6050	6205
Oversized Vehicles	130	43	35	45	18	15	31	227	105	238
Total	**18782**	**19826**	**20834**	**20675**	**22094**	**18725**	**21942**	**23528**	**25122**	**28761**

Table 3-6 : Historical Traffic Volume at Chitradurga

Location	Year									
At Chitradurga	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26
Car	4803	5261	5244	5560	7633	11046	12943	13427	14196	19836
LCV	2237	2514	2918	2752	2652	2006	2079	2206	2262	2875
Truck/Bus	2976	3066	3157	3167	2631	3423	4395	5015	5216	5867
HCM /EME/ MAV	5365	5563	5748	5033	4968	5831	6359	6293	6519	6599
Oversized Vehicles	80	46	31	37	14	15	25	331	114	317
Total	**15460**	**16451**	**17099**	**16548**	**17898**	**22322**	**25801**	**27272**	**28307**	**35493**

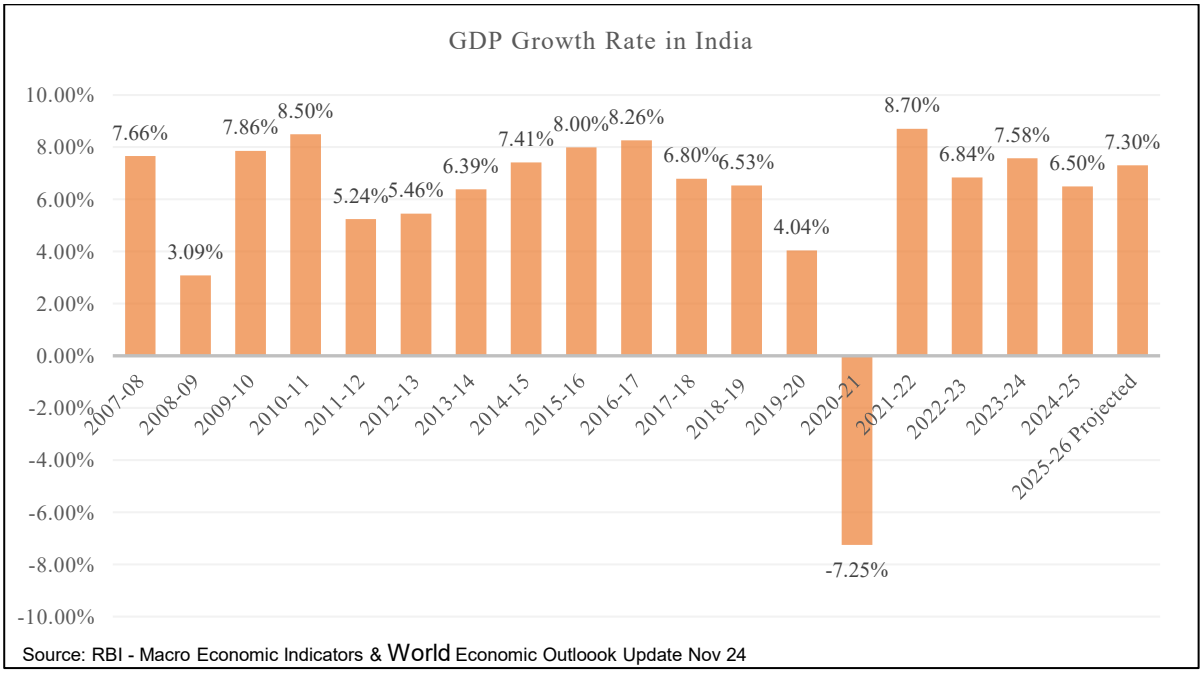
3.5 Other Factors Influencing Growth

There are many factors which have an impact on traffic growth. As discussed previously these factors can be economic, social, educational, and industrial.

Potentiality of such factors for project highway is discussed as under.

Economy

After witnessing a slowdown during 2011-12, the economy recovered in 2013-14, and a high growth rate of GDP was recorded up to 2018-19. Pandemic of COVID-19 impacted all economies of world including India up to year 2021-22. Following figure show trend of GDP growth in India.



Source: RBI - Macro Economic Indicators & World Economic Outloook Update Nov 24

Figure 3-4 : Growth of GDP in India

FY 2017-18 recorded a growth of 6.7% which had a slight impact of GST and demonetization. Indian economy appears on recovery path with estimated growth of 6.8% in FY 2018-19. The government took major policy decisions including tax infrastructure reforming, banking sector improvement and ease of doing business.

In post COVID-19 scenario, in year 2022-23 and 2023-24 India registered an impressive growth of 7% to 7.5%. In last year despite global slow down due to Russia-Ukraine war and Gaza crises, India grew at good rate of 7%(Estimated).
Indian economy is now on good growth path and all major institutions including IMF / ADB have estimated growth of Indian Economy to peg around 6.5% to 7% in coming years.

Key economic activities

The Asset is situated in the state of Karnataka. It is situated to the north of Karnataka's capital city – Bangalore – between Tumkur and Chitradurga. The Asset acts as a feeder for traffic between western Maharashtra, Gujarat and north-west India to Bangalore and south.

The city of Chitradurga which is situated in a hilly region and experiences wind currents throughout the year makes it a suitable place to set up windmills and wind farms. There are several Wind-Power based power plants located around Chitradurga with the installed capacity of 49.7 MW.

3.6 Recommended Growth Rates of Traffic

The rate of growth is moderate in light of overall regional trends. Growth of multi-Axle is kept slightly higher as trend of technological advances in logistic industry favors multi-axle over 2/3 axle carriage. It is also expected that as the economy moves from developing to developed, the rate of growth diminishes. Same growth rate is not sustainable for long. It is an established practice to step down future growth rates at suitable intervals of the year.

Temporary disruptions caused by implementation of Goods and Service Tax (GST) and demonetization have dissipated, and growth of economy has significantly improved since then. Hence corridor can expect to have expected growth.

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 below.

Table 3-7 : Recommended Growth Rates in an Optimistic Scenario

Year/ Vehicle Type	FY 2027-30	FY 2031-35	FY 2036-40	FY 2041-45
Car	5.66%	5.21%	4.61%	3.94%
LCV	6.05%	5.59%	5.16%	4.80%
Truck / Bus	5.26%	4.85%	4.44%	4.04%
HCM /EME/ MAV	6.03%	5.55%	5.09%	4.63%
Oversized Vehicles	6.03%	5.55%	5.09%	4.63%

Table 3-8 : Recommended Growth Rates in a Pessimistic Scenario

Year/ Vehicle Type	FY 2027-30	FY 2031-35	FY 2036-40	FY 2041-45
Car	5.16%	4.71%	4.11%	3.44%
LCV	5.55%	5.09%	4.66%	4.30%
Truck / Bus	4.76%	4.35%	3.94%	3.54%
HCM /EME/ MAV	5.53%	5.05%	4.59%	4.13%
Oversized Vehicles	5.53%	5.05%	4.59%	4.13%

Table 3-9 : Recommended Growth Rates in a Most Likely Scenario

Year/ Vehicle Type	FY 2027-30	FY 2031-35	FY 2036-40	FY 2041-45
Car	5.41%	4.96%	4.36%	3.69%
LCV	5.80%	5.34%	4.91%	4.55%
Truck / Bus	5.01%	4.60%	4.19%	3.79%
HCM /EME/ MAV	5.78%	5.30%	4.84%	4.38%
Oversized Vehicles	5.78%	5.30%	4.84%	4.38%

Traffic and revenue have been worked out on the basis of the above growth, and some are presented in subsequent chapters of the report.

CHAPTER 4

TRAFFIC FORECAST

4.1 Traffic Projections

Growth rates recommended in the previous section of the Report are used to arrive at traffic projections for future years. Traffic projections at the respective toll plazas are presented in the tables below.

These projections have been done for following three growth scenarios:

1. Optimistic Scenario
2. Pessimistic Scenario
3. Most Likely Scenario

Table 4-1 : Total Tollable Traffic @ Toll Plaza 1- Chainage 172.770 KM (Optimistic Growth Scenario)

Year	Car	LCV	Truck / Bus	HCM /EME/ MAV	Oversized Vehicles	Total No.	Total PCU
2026-27	20959	3049	6176	6996	336	**37516**	**77054**
2027-28	22146	3233	6501	7418	356	**39654**	**81481**
2028-29	23399	3429	6843	7865	377	**41913**	**86161**
2029-30	24725	3637	7202	8339	400	**44303**	**91112**
2030-31	26013	3841	7551	8802	422	**46629**	**95936**
2031-32	27368	4055	7917	9291	445	**49076**	**101013**
2032-33	28792	4282	8301	9807	470	**51652**	**106365**
2033-34	30291	4521	8703	10351	496	**54362**	**111993**
2034-35	31869	4773	9125	10926	523	**57216**	**117924**
2035-36	33339	5019	9530	11482	549	**59919**	**123597**
2036-37	34877	5278	9953	12066	577	**62751**	**129546**
2037-38	36486	5550	10395	12680	606	**65717**	**135783**
2038-39	38168	5836	10856	13325	637	**68822**	**142319**
2039-40	39929	6137	11339	14003	669	**72077**	**149175**
2040-41	41501	6431	11796	14651	700	**75079**	**155615**
2041-42	43136	6739	12272	15329	732	**78208**	**162335**
2042-43	44834	7063	12768	16038	766	**81469**	**169350**

Table 4-2 : Total Tollable Traffic @ Toll Plaza 2- Chainage 104.530 KM (Optimistic Growth Scenario)

Year	Car	LCV	Truck / Bus	HCM /EME/ MAV	Oversized Vehicles	Total No.	Total PCU
2026-27	15428	2475	5666	6579	252	**30400**	**66878**
2027-28	16302	2625	5964	6975	267	**32133**	**70721**
2028-29	3900	2784	6277	7396	283	**20640**	**61463**
2029-30	18199	2953	6606	7842	300	**35900**	**79086**
2030-31	19147	3118	6925	8277	317	**37784**	**83272**

Year	Car	LCV	Truck / Bus	HCM /EME/ MAV	Oversized Vehicles	Total No.	Total PCU
2031-32	20143	3292	7260	8736	334	**39765**	**87676**
2032-33	21191	3476	7612	9221	352	**41852**	**92320**
2033-34	22294	3670	7980	9733	371	**44048**	**97207**
2034-35	23455	3875	8366	10273	391	**46360**	**102353**
2035-36	24536	4075	8737	10796	411	**48555**	**107291**
2036-37	25668	4285	9125	11345	432	**50855**	**112467**
2037-38	26852	4505	9530	11922	454	**53263**	**117892**
2038-39	28091	4737	9953	12528	477	**55786**	**123578**
2039-40	29386	4981	10394	13165	501	**58427**	**129536**
2040-41	30543	5220	10814	13774	524	**60875**	**135156**
2041-42	31745	5471	11251	14411	548	**63426**	**141020**
2042-43	32994	5733	11705	15078	573	**66083**	**147138**

Table 4-3 : Total Tollable Traffic @ Toll Plaza 1- Chainage 172.770 KM

(Pessimistic Growth Scenario)

Year	Car	LCV	Truck / Bus	HCM /EME/ MAV	Oversized Vehicles	Total No.	Total PCU
2026-27	20860	3034	6146	6964	334	**37338**	**76690**
2027-28	21938	3202	6438	7349	352	**39279**	**80709**
2028-29	23070	3380	6744	7756	371	**41321**	**84944**
2029-30	24262	3567	7064	8185	391	**43469**	**89396**
2030-31	25404	3749	7370	8599	411	**45533**	**93682**
2031-32	26600	3940	7690	9033	432	**47695**	**98173**
2032-33	27853	4141	8023	9489	454	**49960**	**102877**
2033-34	29165	4351	8371	9969	477	**52333**	**107811**
2034-35	30538	4573	8734	10473	501	**54819**	**112982**
2035-36	31793	4786	9078	10953	524	**57134**	**117853**
2036-37	33101	5009	9435	11455	548	**59548**	**122933**
2037-38	34463	5243	9806	11980	573	**62065**	**128234**
2038-39	35879	5487	10192	12529	599	**64686**	**133762**
2039-40	37355	5743	10592	13104	626	**67420**	**139530**
2040-41	38639	5990	10967	13645	652	**69893**	**144861**
2041-42	39966	6247	11355	14208	679	**72455**	**150393**
2042-43	41341	6516	11757	14794	707	**75115**	**156140**

Table 4-4 : Total Tollable Traffic @ Toll Plaza 2- Chainage 104.530 KM

(Pessimistic Growth Scenario)

Year	Car	LCV	Truck / Bus	HCM /EME/ MAV	Oversized Vehicles	Total No.	Total PCU
2026-27	15354	2464	5639	6548	251	**30256**	**66563**
2027-28	16146	2600	5907	6910	265	**31828**	**70055**
2028-29	3844	2744	6187	7292	280	**20347**	**60595**
2029-30	17857	2896	6482	7695	295	**35225**	**77602**
2030-31	18697	3043	6764	8084	310	**36898**	**81327**

Year	Car	LCV	Truck / Bus	HCM /EME/ MAV	Oversized Vehicles	Total No.	Total PCU
2031-32	19578	3198	7057	8492	326	**38651**	**85227**
2032-33	20499	3361	7363	8921	342	**40486**	**89313**
2033-34	21464	3532	7682	9372	359	**42409**	**93597**
2034-35	22474	3712	8016	9846	377	**44425**	**98094**
2035-36	23399	3885	8332	10298	394	**46308**	**102336**
2036-37	24360	4066	8661	10770	412	**48269**	**106761**
2037-38	25361	4255	9002	11264	431	**50313**	**111377**
2038-39	26404	4453	9357	11780	451	**52445**	**116194**
2039-40	27489	4661	9725	12321	472	**54668**	**121224**
2040-41	28434	4861	10069	12829	491	**56684**	**125873**
2041-42	29411	5070	10426	13358	511	**58776**	**130705**
2042-43	30422	5288	10796	13910	532	**60948**	**135731**

Table 4-5 : Total Tollable Traffic @ Toll Plaza 1- Chainage 172.770 KM

(Most Likely Growth Scenario)

Year	Car	LCV	Truck / Bus	HCM /EME/ MAV	Oversized Vehicles	Total No.	Total PCU
2026-27	20909	3042	6161	6980	335	**37427**	**76873**
2027-28	22042	3218	6470	7383	354	**39467**	**81095**
2028-29	23234	3405	6794	7809	374	**41616**	**85547**
2029-30	24492	3602	7134	8260	395	**43883**	**90244**
2030-31	25706	3794	7462	8698	416	**46076**	**94796**
2031-32	26980	3996	7805	9159	438	**48378**	**99576**
2032-33	28319	4209	8164	9644	461	**50797**	**104597**
2033-34	29722	4434	8539	10155	485	**53335**	**109870**
2034-35	31196	4671	8931	10694	511	**56003**	**115418**
2035-36	32557	4900	9305	11211	536	**58509**	**120683**
2036-37	33976	5140	9695	11753	562	**61126**	**126189**
2037-38	35458	5392	10102	12322	589	**63863**	**131952**
2038-39	37005	5657	10525	12917	617	**66721**	**137969**
2039-40	38619	5934	10966	13541	647	**69707**	**144264**
2040-41	40044	6204	11381	14133	675	**72437**	**150129**
2041-42	41520	6486	11813	14752	704	**75275**	**156240**
2042-43	43051	6781	12260	15397	735	**78224**	**162597**

Table 4-6 : Total Tollable Traffic @ Toll Plaza 2- Chainage 104.530 KM

(Most Likely Growth Scenario)

Year	Car	LCV	Truck / Bus	HCM /EME/ MAV	Oversized Vehicles	Total No.	Total PCU
2026-27	15391	2469	5652	6563	252	**30327**	**66718**
2027-28	16225	2612	5935	6943	266	**31981**	**70389**
2028-29	3872	2763	6232	7344	281	**20492**	**61025**
2029-30	18029	2923	6543	7768	297	**35560**	**78335**
2030-31	18922	3079	6843	8180	313	**37337**	**82288**

Year	Car	LCV	Truck / Bus	HCM /EME/ MAV	Oversized Vehicles	Total No.	Total PCU
2031-32	19860	3244	7157	8614	329	**39204**	**86440**
2032-33	20843	3418	7486	9071	346	**41164**	**90805**
2033-34	21876	3601	7830	9552	364	**43223**	**95389**
2034-35	22959	3794	8190	10058	383	**45384**	**100204**
2035-36	23960	3980	8533	10544	401	**47418**	**104781**
2036-37	25004	4175	8890	11053	420	**49542**	**109565**
2037-38	26094	4380	9263	11588	440	**51765**	**114579**
2038-39	27232	4595	9651	12148	461	**54087**	**119818**
2039-40	28420	4820	10055	12735	483	**56513**	**125296**
2040-41	29467	5039	10436	13292	504	**58738**	**130415**
2041-42	30552	5268	10832	13874	526	**61052**	**135750**
2042-43	31678	5507	11243	14481	549	**63458**	**141302**

4.2 Modification of 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 Tumkur-Chitradurga project, the Target Date and Target Traffic are defined as below:

Target Date - 1st April 2020

Target Traffic - 54558 in PCU

It was observed that as per traffic projections, traffic volume falls short of target traffic in all scenarios. This warrants for extension of the concession period. Extension of the concession period is worked out as per article 29 of concession agreement. The following table provides details of modification in concession agreement.

Scenario	Actual Average Traffic in PCU (Average of traffic on target date, one year before target date and one year after target date)	Expected extension in Concession Period
All	40951	5.20

As per above, traffic and toll revenue have been considered assuming extension of 5.2 years in the concession period. The said extension is subject to approval from NHAI.

Due to the suspension of toll in the year FY-17 because of demonetization for a period of 24 days, the Concessionaire would be entitled to an extension of an additional 24 days.

Traffic was severely impacted on the project highway during the initial lockdown period. NHAI has declared a policy of providing extension of concessions to make up for revenue loss during lockdown. It is expected that extension will be provided to the project concession period on this account also.

Table 4-7 : Summary of concession

	Particulars
State	Karnataka
Highway and lane configuration	NH-48; 6-lane
Toll plazas	• TP1 Karjeevanhalli at KM 104.530 (tolling length: 57 km) • TP2 Guilalu at KM 172.770(tolling length: 57 km)
Tolling start date	4th June 2011
Commercial Operation date	4th July 2014
Concession period	26 years
Concession period with extension	32 years
Last year of concession	FY 43

Source: Client data

CHAPTER 5
FORECAST OF TOLL REVENUE

5.1 General

This chapter presents the toll rate calculations, categories and toll revenue of the project.

5.2 Discount Categories

As per the Toll Notification (Schedule R) the following discounts have been considered:

1. Monthly Pass: For frequent users a monthly pass is issued for 50 trips per month. The discount factor works out to 33.33% for 50 journeys.
2. Daily Pass (for Return Trip): A 25% discount will be offered for a return pass.
3. Single Journey: Full single journey toll would be charged to this category of vehicles who are infrequent travelers.
4. Local Car / Jeep / Van to be charged at Rs 350 per month (2007)

The inflation and escalation of toll rate on the basis of WPI has been built up as per toll notification (Schedule R) as given under

The formula for determining the applicable rate of fee shall be as follows:-

$$\text{Applicable rate of fee} = \text{base rate} + \text{base rate} \times \left\{ \frac{\text{WPI A-WPI B}}{\text{WPI B}} \right\} \times 0.4$$

Concessionaire has further declared special discount rates which are applicable on project corridor.

These categories and rate on base year (2015-16) are given as below

Table 5-1 : Special Local Monthly Rate

Category	Monthly Rate
Car (Local 2)	370.00
Car (Local 3)	615.00
LCV (Local 1)	615.00
LCV (Local 2)	1,850.00
Truck/Bus (Local 1)	3085.00
Truck/Bus (Local 2)	5185.00

Normal escalation in the basis of WPI would be applicable to these rates as well.

In addition to the above, Concessionaire has also declared special rates for single local journey as under

Table 5-2 : Special Local Single Journey Rate

Category	Rate
Car	30.00
LCV	40.00
Truck/Bus	70.00
HCM /EME/ MAV	95.00

Factors of inflation / growth have been incorporated as per Schedule R. WPI are available up to the year 2025-26.

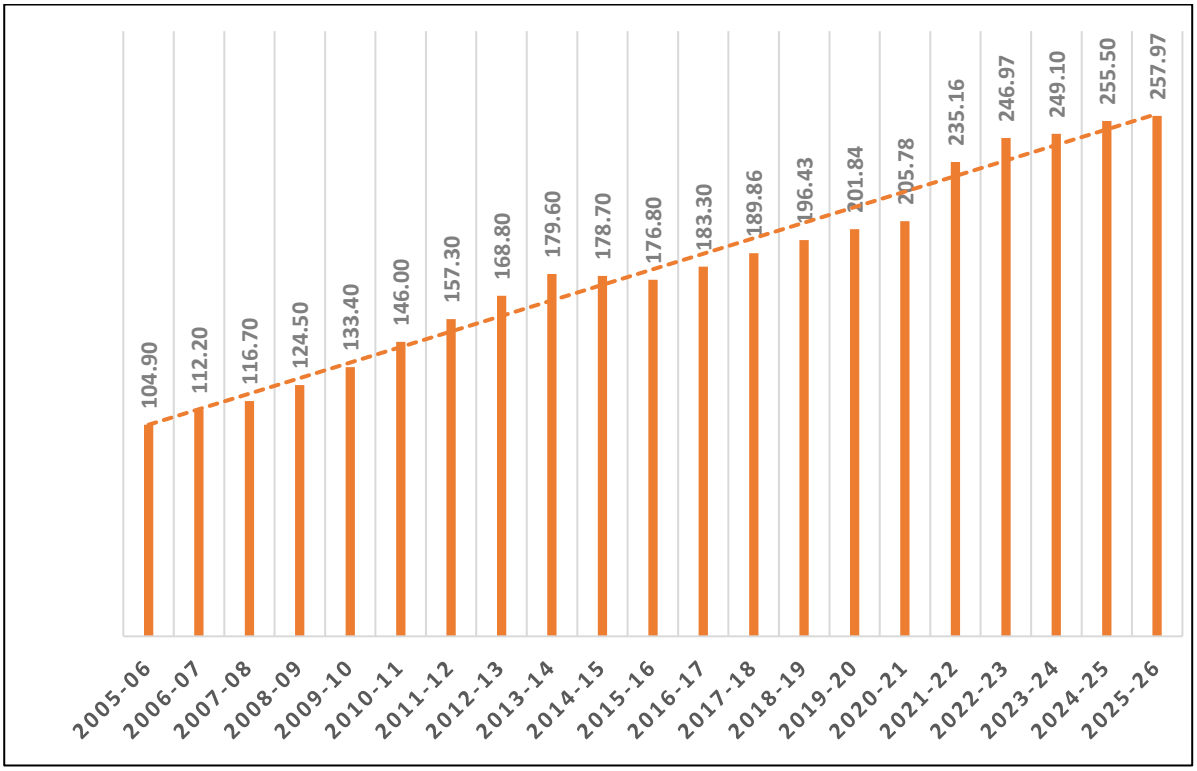


Figure 5-1 : Historical Rate of WPI Inflation in India

The wholesale price index (WPI) and the inflation rate in the past are presented in Table below.

Table 5-3 : Historical WPI value and Growth Inflation

December of year	2021	2022	2023	2024	2025	Avg.
WPI	235.2	247.0	249.1	255.5	257.97	
Inflation	14.27%	5.02%	0.86%	2.57%	0.96%	4.74%

WPI of December 2025 is posted on ministry site which is shows 0.96% inflation from the previous year. Same has been applied for FY 2026-27.

The average WPI inflation over the period FY 2021 to FY 2025 works out to approximately 4.74%, reflecting inflationary cycles across both high and low inflation years. Based on this analysis, an annual escalation factor of 4.5% has been adopted for the remaining concession period.

5.3 Estimation of Toll Rates

As per the applicable MORTH notification and Schedule R of contract agreement, the following Base rate of fee for the categories mentioned in the table stands true in the National Highways Fee Rules, 2008.

Table 5-4 : 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 Minibus	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 108-19. A moderate growth in Wholesale Price Index (WPI)has been assumed after that as discussed above.

Table 5-5 : Tollable Length PKG-I

Toll Plaza Chainage	Length (Km)	Tollable Highway + Structure length (Km)
172.770	57.00	57.00
104.530	57.00	70.680

Toll rates are calculated as per guidelines provided in schedule R (rounded to nearest Rs. five) for the concession period and are given below. Since applicable length of highway length is equal for both plazas, applicable toll rates are also same

Thus, worked out rates for various categories of vehicles and discounts are given as under

Table 5-6 : Toll Rates for Single Journey @ 172.770 & @104.530

Year	Car	LCV	Truck / Bus	HCM /EME/ MAV	Oversized Vehicles
2026-27	90	145	300	470	575
2027-28	95	150	315	495	600
2028-29	95	155	330	515	630
2029-30	100	165	345	540	660
2030-31	105	170	360	565	690
2031-32	110	180	380	595	720
2032-33	115	190	395	620	755
2033-34	125	200	415	650	795
2034-35	130	210	435	680	830
2035-36	135	220	455	715	870
2036-37	140	230	480	750	910
2037-38	150	240	500	785	955
2038-39	155	250	525	825	1005
2039-40	165	265	550	865	1050
2040-41	170	275	580	905	1105
2041-42	180	290	605	950	1155
2042-43	190	305	635	995	1215

Table 5-7 : Toll Rates for Return Journey @ 172.770 & @104.530

Year	Car	LCV	Truck / Bus	HCM /EME/ MAV	Oversized Vehicles
2026-27	135	215	450	705	860
2027-28	140	225	470	740	900
2028-29	145	235	495	775	945

Year	Car	LCV	Truck / Bus	HCM /EME/ MAV	Oversized Vehicles
2029-30	155	245	515	810	990
2030-31	160	260	540	850	1035
2031-32	170	270	565	890	1085
2032-33	175	285	595	930	1135
2033-34	185	295	625	975	1190
2034-35	195	310	655	1025	1245
2035-36	200	325	685	1075	1305
2036-37	210	340	715	1125	1370
2037-38	220	360	750	1180	1435
2038-39	235	375	790	1235	1505
2039-40	245	395	825	1295	1575
2040-41	255	415	865	1360	1655
2041-42	270	435	910	1425	1735
2042-43	280	455	955	1495	1820

Table 5-8 : Toll Rates for Local Single Journey@ 172.770 & @104.530

Year	Car	LCV	Truck / Bus	HCM /EME/ MAV
2026-27	70	80	145	295
2027-28	75	85	150	310
2028-29	80	90	155	325
2029-30	85	95	160	340
2030-31	90	100	165	355
2031-32	95	105	170	370

Year	Car	LCV	Truck / Bus	HCM /EME/ MAV
2032-33	100	110	180	385
2033-34	105	115	190	400
2034-35	110	120	200	420
2035-36	115	125	210	440
2036-37	120	130	220	460
2037-38	125	135	230	480
2038-39	130	140	240	500
2039-40	135	145	250	525
2040-41	140	150	260	550
2041-42	145	155	270	575
2042-43	150	160	280	600

Table 5-9 : Toll Rates for Monthly Pass@ 172.770 & @104.530

Year	Car (Regular)	Car (Local 1)	Car (Local 2)	Car (Local 3)	LCV (Regular)	LCV (Local 1)	LCV (Local 2)	Truck/Bus (Regular)	Truck/Bus ((Local 1)	Truck/Bus (Local 2)	HCM /EME/ MAV	Oversized Vehicles	Truck / Bus (60 Trips)	Truck / Bus (80Trips)
2026-27	2960	360	695	1110	4780	4155	3170	10015	5290	8690	15705	19120	11970	16025
2027-28	3100	375	730	1160	5005	4340	3310	10485	5530	9080	16440	20015	12530	16775
2028-29	3245	395	760	1215	5240	4535	3460	10980	5780	9490	17215	20960	13125	17565
2029-30	3395	415	795	1270	5485	4740	3615	11495	6040	9920	18030	21945	13745	18395
2030-31	3555	430	830	1325	5745	4955	3780	12040	6310	10365	18880	22985	14400	19265
2031-32	3725	455	870	1385	6020	5175	3950	12610	6595	10830	19775	24075	15085	20175
2032-33	3905	475	905	1450	6305	5410	4130	13210	6890	11320	20715	25220	15805	21135
2033-34	4090	495	950	1515	6605	5655	4315	13840	7200	11825	21705	26425	16560	22145
2034-35	4285	520	990	1580	6920	5905	4505	14505	7525	12360	22745	27690	17355	23205
2035-36	4490	545	1035	1650	7255	6175	4710	15200	7865	12915	23835	29015	18190	24320
2036-37	4705	570	1080	1725	7605	6450	4920	15930	8215	13495	24985	30415	19070	25490
2037-38	4935	600	1130	1805	7970	6740	5145	16700	8585	14105	26190	31885	19990	26720
2038-39	5175	630	1180	1885	8355	7045	5375	17510	8975	14740	27460	33430	20960	28015
2039-40	5425	660	1235	1970	8765	7360	5615	18360	9375	15400	28795	35055	21985	29380
2040-41	5690	690	1290	2060	9190	7690	5870	19255	9800	16095	30200	36765	23060	30810
2041-42	5970	725	1350	2150	9640	8040	6135	20200	10240	16820	31675	38560	24190	32320
2042-43	6260	760	1410	2250	10115	8400	6410	21190	10700	17575	33230	40455	25380	33905

5.4 Toll Revenue

As indicated earlier, toll revenue on the Project Road has been calculated under in all three scenarios. The estimates of toll revenue under ***Optimistic***, ***Pessimistic*** and ***Most Likely*** growth scenarios are presented in the following section.

5.5 Toll Revenue at all toll plazas under Scenarios

Starting from the year 2026-27 are shown in the tables below.

Table 5-10 : Toll Revenue Optimistic Scenario

(Rs. Crores)

Year	Toll Plaza at 177.2	Toll Plaza at 104.53	Total
2026-27	248.21	231.54	**479.75**
2027-28	276.50	258.01	**534.51**
2028-29	302.24	282.04	**584.28**
2029-30	335.54	313.10	**648.64**
2030-31	369.58	344.80	**714.38**
2031-32	410.62	383.17	**793.80**
2032-33	450.27	420.08	**870.35**
2033-34	500.67	466.98	**967.65**
2034-35	550.76	514.67	**1065.43**
2035-36	606.08	565.38	**1171.45**
2036-37	663.67	619.35	**1283.02**
2037-38	731.03	682.05	**1413.08**
2038-39	803.64	749.71	**1553.34**
2039-40	888.00	828.41	**1716.41**
2040-41	965.78	901.05	**1866.83**
2041-42	1057.95	988.35	**2046.30**
2042-43	1158.68	1080.97	**2239.65**

Table 5-11 : Toll Revenue Pessimistic Scenario

(Rs. Crores)

Year	Toll Plaza at 177.2	Toll Plaza at 104.53	Total
2026-27	247.05	230.41	**477.46**
2027-28	273.91	255.56	**529.46**
2028-29	298.00	278.05	**576.05**
2029-30	329.25	307.21	**636.46**
2030-31	360.91	336.68	**697.59**
2031-32	399.11	372.39	**771.50**
2032-33	435.59	406.32	**841.91**
2033-34	482.08	449.58	**931.66**

Year	Toll Plaza at 177.2	Toll Plaza at 104.53	Total
2034-35	527.83	493.13	**1020.96**
2035-36	578.09	539.10	**1117.19**
2036-37	629.98	587.72	**1217.69**
2037-38	690.61	644.10	**1334.71**
2038-39	755.59	704.58	**1460.17**
2039-40	830.92	774.88	**1605.80**
2040-41	899.40	838.76	**1738.17**
2041-42	980.56	915.64	**1896.20**
2042-43	1068.81	996.66	**2065.48**

Table 5-12 : Toll Revenue Most Likely Scenario (Rs. Crores)

Year	Toll Plaza at 177.2	Toll Plaza at 104.53	Total
2026-27	247.64	230.97	**478.61**
2027-28	275.21	256.80	**532.01**
2028-29	300.11	280.04	**580.15**
2029-30	332.38	310.12	**642.50**
2030-31	365.22	340.68	**705.89**
2031-32	404.85	377.69	**782.54**
2032-33	442.87	413.10	**855.97**
2033-34	491.24	458.17	**949.41**
2034-35	539.14	503.74	**1042.88**
2035-36	591.86	552.01	**1143.87**
2036-37	646.56	603.21	**1249.77**
2037-38	710.52	662.67	**1373.19**
2038-39	779.19	726.67	**1505.86**
2039-40	858.98	801.03	**1660.01**
2040-41	931.98	869.22	**1801.20**
2041-42	1018.50	951.16	**1969.66**
2042-43	1112.80	1037.80	**2150.60**

CHAPTER 6

OPERATION & MAINTENANCE

6.1 Operation & Maintenance

The following are project parameters which would contribute towards the cost of operation and maintenance.

The estimated cost of operation and maintenance has been provided by the Management.

The following are the key components for operation and maintenance costs:

1. Annual Regular Maintenance – Covering pothole repair, shoulder and slope repair, drain cleaning, median maintenance, Crash barrier, toll plaza maintenance, Toll collection, other services like medical help and rescue operations etc.

2. Periodic Maintenance – This will be done on a periodic basis, say every 5 years. It will consist of overlaying of wearing course and painting and marking. Some pavement strengthening is also anticipated in a few sections. This operation and its cost are spread over three years.

The year wise actual operation and maintenance cost is provided by management of asset and has been found reasonable. Same has been adopted in report for projection of operation and maintenance cost.

Table 6-1 : O&M COST

Years	Routine O & M	Other Operational expenses	Major Maintenance O & M	Total Expenditure (Rs. Crores)
2026-27	3.20	8.80	0.00	**12.00**
2027-28	3.33	9.47	0.00	**12.80**
2028-29	3.40	10.20	0.00	**13.60**
2029-30	3.30	10.98	55.32	**69.60**
2030-31	6.18	11.82	0.00	**18.00**
2031-32	6.28	12.72	0.00	**19.00**
2032-33	6.30	13.70	0.00	**20.00**
2033-34	6.26	14.74	0.00	**21.00**
2034-35	6.18	15.87	88.95	**111.00**
2035-36	5.91	17.09	0.00	**23.00**
2036-37	6.61	18.39	0.00	**25.00**
2037-38	6.45	19.80	0.00	**26.25**
2038-39	6.25	21.31	0.00	**27.56**
2039-40	6.08	22.94	0.00	**29.02**
2040-41	5.69	24.70	0.00	**30.39**
2041-42	5.32	26.58	0.00	**31.91**
2042-43	0.00	25.06	0.00	**25.06**

CHAPTER 7
CONCLUSION & RECOMMENDATIONS

7.1 Conclusion & Recommendations

Project stretch of Tumkur to Chitradurga section of NH-4 in state of Karnataka from km 75.000 to km 189.000 is currently Six lane road. The road is in sound condition and serves to good traffic volume. As Indian economy is poised to grow at 7%+ post COVID-19, project corridor is expected to pick up same trend in terms of traffic flow. All these developments have potential to give a positive impact to traffic flow on the project. Following can considered as major outcome of study:

a) There is a good amount of tollable traffic running on the project.

b) Project corridor has potential to witness good traffic growth annually in near future in post COVID-19 scenario due to various development in area and overall development of economy.

c) Project corridor has committed traffic as long route traffic and does not have risk of traffic leakage due lack of competing road of comparable quality.

The project infrastructure is in good condition and its maintenance cost is also reasonable.

Based on the above it can be considered a stable healthy project from the traffic and revenue point of view.

CHAPTER 8

PROJECT ILLUSTRATIONS

8.1 General

Project current condition has been depicted in the following photographs.



Figure 8-1 : General Condition of project road

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Figure 8-2 : General Condition of project road.



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IRB InvIT Fund

OMALAUR TO NAMAKKAL (KM 180.00 TO KM 248.625) SECTION OF NH-7 IN THE STATE OF TAMIL NADU.







TOLL REVENUE AND O&M COST PROJECTION REPORT (FINAL)

MAY 2026

GMD CONSULTANTS ★ NAVI MUMBAI ★

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OMALAUR TO NAMAKKAL (KM 180.00 TO KM 248.625)

SECTION OF NH-7 IN THE STATE OF

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CONTENTS

Chapter 1 6

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ABBREVIATIONS

AADT	-	Annual Average Daily Traffic	**NHAI**	-	National Highways Authority of India
BOT	-	Build Operate Transfer	**NHDP**	-	National Highways Development Project
CAGR	-	Compound Annual Growth Rate	**NSDP**	-	Net State Domestic Product
CTV	-	Classified traffic volume	**O&M**	-	Operation & Maintenance
DBFOT	-	Design, Build, Finance, Operate & Transfer	**PCDP**	-	Per Capita Domestic Product
EME	-	Earth Moving Equipment	**PCI**	-	Per Capita Income
GDP	-	Gross Domestic Product	**PCU**	-	Passenger Car Unit
GSDP	-	Gross State Domestic Product	**PSC**	-	Pre-stressed Concrete
HCM	-	Heavy Construction Machinery	**RCC**	-	Reinforced cement concrete
HCV	-	Heavy Commercial Vehicle	**RHS**	-	Right Hand Side
HTMS	-	Highway Traffic Management System	**SH**	-	State Highway
IRC	-	Indian Road Congress	**TP**	-	Toll Plaza
IRR	-	Internal Rate of Return	**WPI**	-	Wholesale Price Index
LCV	-	Light Commercial Vehicle	**SIR**	-	Special Investment Region
LHS	-	Left Hand Side	**c.**	-	Circa
LGV	-	Light Goods Vehicle	**ROB**	-	Railway Over Bridge
MAV	-	Multi Axle Vehicle	**MDR**	-	Major District Road
MORTH	-	Ministry of Road Transport and Highways	**ODR**	-	Other District Road
NH	-	National Highway	**CA**	-	Concession Agreement
PCC	-	Plain Cement Concrete	**RMT**	-	Running Meter
CR	-	Coarse Rubble			

CHAPTER 1

INTRODUCTION

1.1 Background

The Government of India through National Highway Authority of India (NHAI) embarked upon a program to enhance the traffic capacity and safety for efficient transportation of goods as well as passenger traffic on National Highway Sections under NHDP Phase V. Under Phase V NHAI has planned to convert 6,500 km of existing 4-lane National Highways into 6-lane National Highway. Sections envisaged under 6-laning comprise the Golden Quadrilateral section (5,700 km) and some other sections which are 800 km in length.

The project under consideration, Omalur - Namakkal section of NH-7 from Km 180.000 to km 248.625 is one such road project NHAI intended to implement on a BOT basis in the DBFOT format. Project has concession period of 20 years. Project achieved COD on 6th August-2009. The Project has been commissioned and is currently in the operation / maintenance phase. Project under consideration is a combination of construction and maintenance packages as given under

Maintenance package – From Km 180.000 to Km 207.500

Construction & Maintenance Package – From Km 207.500 to Km 248.625

Asset and regional context

The Asset is a 68.625 km, 4-lane stretch on NH-44 in the state of Tami Nadu. It serves as a key connector between key cities along the North-South corridor such as Bangalore (to the north of Omallur) and Salem/Namakkal (to the south of Omallur). The project stretch connects Hyderabad, Bangalore in the North to Salem, Namakkal, Karur, Chennai and Kanyakumari in the South. There is one toll plaza on the Asset – TP Omallur. It is located about 15 km to the north of Salem city. The Asset lies to the south of Omallur town and therefore witnesses traffic between the two urban areas.

This Asset primarily serves long-distance traffic from Mumbai, Pune, Hyderabad,

Bangalore in the North to Salem, Chennai and Kanyakumari in the South, with commercial vehicles 3A and MAV dominating the movement. Local commercial traffic movement is reported from Salem mining area.

The highest contributor for revenue is MAVs followed by CJVs. The primary growth drivers of commercial traffic on the Asset are:

• Industrial activity in Salem city and other areas such as Namakkal;

• Coimbatore and Kerala; and

• North-south movement on NH-44.

1.2 Objective of the Study

M/s IRB INVIT FUND has engaged GMD Consultants to assess the future traffic and toll potential of the project along with related operation & maintenance expenditure involved.

This report named as "***Toll Revenue and O&M Cost Projection Report***" mainly focuses on traffic and O&M aspects of the project. Other parameters like competing road, area developments etc. have been considered from a traffic development point of view.

1.2.1 Scope of Services

The broad scope of work covered in the assignment is as follows.

a) Analysis of Traffic Growth
b) Toll Rate Growth
c) Revenue Forecasting
d) Operation and Maintenance Cost Projections

The Concessionaire has provided basic historical traffic data and other project details on the basis of which the above analysis has been carried out, after applying our judgement on the traffic estimates.

"***Toll Revenue and O&M Cost Projection Report***" was submitted in March 2017. In this report traffic data for the year 2015-16 was used as base traffic. The report was updated with traffic data for the year 2016-17 and the report was submitted in October 2017. The report was further updated with traffic data of 2017-18 and same was submitted in April 2018. The report was further updated with traffic Data of the period from April 2018 to September 2018 and was submitted in October 2018. The report was further updated with yearly traffic data for 2019-20 in May 2020. With traffic data from April 2020 to March 2021 report was updated, report was further updated with yearly traffic data from April 2021 to March 2022, April 2022 to March 2023, April 2023 to March 2024, April 2024 to March 2025 and now concessionaire has provided traffic data from April 2025 to February 2026, report is updated with this annual traffic data.

CHAPTER 2

TRAFFIC SURVEYS AND ANALYSIS

2.1 Traffic Surveys

In the course of our work, we have collected the required information for the project corridor to understand the general traffic and travel characteristics on the corridor.

The following traffic data has been collected for the project.

- Classified traffic volume counts at toll plaza location on Omalur - Namakkal section of NH-7for base year 2015-16, 2016-17, 2017-18 2018-19, 2019-20, 2020-21,2021-22,2022-23, 2023-24,2024-25 and annual traffic data from April 2025 to February 2026.
- Local Component of traffic
- Component of Return Journey
- Component of Monthly Pass Journey

The main objective of the traffic data analysis is to:

- Determine the existing traffic movement characteristics of the project.
- Establish base year traffic.
- Identification of travel patterns and modal split of project traffic
- Deriving growth factors for traffic 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

Project can be divided into the following homogenous sections from traffic point of view.

These sections can be.

- Omalur to Salem
- Salem to Rasipuram
- Rasipuram to Namakkal

Table 2-1below lists provides details of locations from where traffic details have been collected.

Table 2-1 : Traffic Data Details

SR. NO	LOCATION	CTV	Single Journey Traffic	Multiple Journey	Monthly Pass	Local Traffic
1	**Km 191.800 Toll Plaza**	AADT for Year 2015-2016	For Year 2015-2016	For Year 2015-2016	For Year 2015-2016	For Year 2015-2016
		AADT for year 2016-2017	For Year 2016-2017	For Year 2016-2017	For Year 2016-2017	For Year 2016-2017
		AADT for year 2017-2018	For Year 2017-2018	For Year 2017-2018	For Year 2017-2018	For Year 2017-2018
		AADT for Year 2018-19	For Year 2018-19	For Year 2018-19	For Year 2018-19	For Year 2018-19
		AADT for Year 2019-20	For Year 2019-20	For Year 2019-20	For Year 2019-20	For Year 2019-20
		AADT for Year 2020-21	For Year 2020-21	For Year 2020-21	For Year 2020-21	For Year 2020-21
		AADT for Year 2021-22	For Year 2021-22	For Year 2021-22	For Year 2021-22	For Year 2021-22
		AADT for Year 2022-23	For Year 2022-23	For Year 2022-23	For Year 2022-23	For Year 2022-23
		AADT for Year 2023-24	For Year 2023-24	For Year 2023-24	For Year 2023-24	For Year 2023-24
		AADT for Year 2024-25	For Year 2024-25	For Year 2024-25	For Year 2024-25	For Year 2024-25
		AADT for Year 2025-26	For Year 2025-26	For Year 2025-26	For Year 2025-26	For Year 2025-26

The locations of each of the traffic surveys are illustrated in Figure 2-1.



Figure 2-1: Toll Plaza Locations

2.2 Classified Traffic Volume Count

The objective of conducting a Classified Traffic Volume Count is to understand the traffic flow pattern including modal split on a roadway. The Classified Traffic Volume Count survey has been provided by concessionaire of project highway from actual traffic data gathered at toll plaza locations based on monthly data shared with NHAI. These locations are 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 are further segregated to capture the tollable vehicle categories specifically and toll exempted vehicles are counted separately. The detailed vehicle classification system as per IRC: 64-1990 is given in ***Table 2-2***.

Table 2-2 : Vehicle Classification System

Vehicle Type	
Auto Rickshaw	
Passenger Car	Car, Jeep, Taxi & Van (Old / new technology)
Bus	Minibus
	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

However, since the project highway is currently under toll operation, the data collected corresponds to the category of tollable vehicles. The following are the types of vehicles as per concession agreement.

- Car / Jeep / Van
- LCV
- Truck / Bus
- Multi Axle

2.3 Traffic Characteristic

Toll revenue of project highway does not solely depend on traffic volume. There are certain characteristics of traffic which have substantial potential to affect toll collection. Component of local traffic, component of passenger and commercial traffic, portion of return journey traffic, % of monthly pass traffic are some of such characteristics of traffic. These will be discussed in subsequent sections of the report.

2.3.1 Traffic Data

Project concessionaire has provided Traffic data for base year 2015-16, 2016-17, 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2023-24 2024-25 & traffic data from April 2025 to February 2026.

Since the traffic data available for this update is for only Annual, from April 2025 to February 2026, it may not represent the whole year traffic. Hence a seasonality factor for balance part of year has been applied to average traffic of the current Eleven months to arrive at Annual Average Daily Traffic of base year 2025-26. Thus, corrected traffic is used for future projections and revenue calculations. The following table shows historical traffic on project stretch and derived Annual Average Daily Traffic (AADT) for year 2025-26.

Table 2-3 : Traffic Data at Toll Plaza at Km 191.800

Sr. No	Type of Vehicle	Annual Average Daily Traffic (Nos.) – FY 2018-19	Annual Average Daily Traffic (Nos.) – FY 2019-20	Annual Average Daily Traffic (Nos.) – FY 2020-21	Annual Average Daily Traffic (Nos.) – FY 2021-22	Annual Average Daily Traffic (Nos.) – FY 2022-23	Annual Average Daily Traffic (Nos.) – FY 2023-24	Annual Average Daily Traffic (Nos.) – FY 2024-25	Annual Average Daily Traffic (Nos.) – FY 2025-26
1	Car	12645	13352	12618	14831	18389	19694	20404	24635
2	LCV	4672	4632	4290	2748	2856	2671	2664	2544
3	Truck/Bus	3199	3446	2666	3075	3796	4319	4431	3947
4	Multi Axle	2952	2873	3017	3350	3765	4057	3944	3816
	Total	**23468**	**24304**	**22591**	**24004**	**28806**	**30741**	**31443**	**34942**

2.4 Data Analysis

2.4.1 Analysis of Traffic Volume Count

Understanding the character of existing traffic forms the basis of traffic forecast. The various vehicle types having different sizes and characteristics can be 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
Minibus	1.5
Standard Bus	3.0
LCV/LGV	1.5
2 Axle Truck	3.0
3 – 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

Traffic volume at each toll plaza was converted to PCU and same is presented as under

Table 2-5 : Traffic in PCU at Project Stretch

Year	Toll Plaza Location	Traffic No.	PCU	PCU Index
FY 2015-16	191.800	19447	36164	1.86
FY 2016-17	191.800	20589	38355	1.86
FY 2017-18	191.800	21977	39232	1.78
FY 2018-19	191.800	23468	42534	1.81
FY 2019-20	191.800	24304	43569	1.79

Year	Toll Plaza Location	Traffic No.	PCU	PCU Index
FY 2020-21	191.800	22591	40626	1.80
FY 2021-22	191.800	24004	43254	1.80
FY 2022-23	191.800	28806	51004	1.77
FY 2023-24	191.800	30741	54914	1.79
FY 2024-25	191.800	31443	55440	1.76
FY 2025-26	191.800	34942	57464	1.64

It can be observed from above that project traffic has PCU index near 2 which is a fair indicator of good mix being split between commercial and urban traffic.

2.4.2 Components of Traffic

As discussed previously, components of traffic volume play an important role in determining project revenue. A larger component of commercial traffic with higher axle configuration adds to project revenue positively. Similarly, a larger component of local traffic affects the project revenue potential negatively.

For the purpose of analysis, the recent traffic numbers of for period from April 2025 to February 2026 have been considered as the base numbers.

It is observed that car traffic forms 71% of total traffic at toll plaza location Km 191.800 LCV and bus / truck share 7% and 11% respectively. Multi axle consists of 11% of total traffic. Overall, about 30% of traffic is commercial in nature. A higher percentage of urban traffic is due to the project corridor passing through the city of Salem which is a fast-upcoming urban C category town.

Another important bifurcation of traffic is components of traffic with respect to various type of toll ticketing like

1. Single Journey
2. Multi Journey
3. Monthly Pass (Local and General)

The following table provides numbers of vehicles falling in each of the above categories on base year 2015-16, 2016-17, 2017-18, 2018-19, 2019-20, 2020-21,2021-22,2022-23, 2023-24 ,2024-25 and April 2025 to February 2026.

Table 2-6 : Journey Type Bifurcation of Traffic at KM 191.800

Sr. No	Type	Traffic Volume (Nos.) For FY 2018-19	Traffic Volume (Nos.) For FY 2019-20	Traffic Volume (Nos.) For FY 2020-21	Traffic Volume (Nos.) For FY 2021-22	Traffic Volume (Nos.) For FY 2022-23	Traffic Volume (Nos.) For FY 2023-24	Traffic Volume (Nos.) For FY 2024-25	Traffic Volume (Nos.) For FY 2025-26
1	Single Journey	16311	16931	16626	16244	19856	20766	21245	19965
2	Return Journey	5210	5280	4492	7196	8280	9200	9438	8532
3	Monthly Pass	1947	2093	1473	564	670	775	760	95
4	Annual Pass car								6350

The single journey component in total traffic numbers is as high as 57% while the return journey component is 25%. The monthly pass share is as low as 0% and Annual Pass car is 18%. As the project corridor serves as primary link for traffic between Madurai and Bangalore the component of single journey ticket is much higher. Moreover, the toll structure of the project is based on old toll policy and there are special rates for local single journey traffic. This makes the option of a monthly pass less attractive.

2.5 Secondary Data Collection

There are several other factors which have a substantial impact on traffic patterns and growth on any project corridor. The following are some of such important factors.

- Industrial development around project corridor and its catchment
- Educational infrastructure along project corridor
- Demographic pattern
- Urban area development
- Tourism potential

- Upcoming major infrastructural or industrial projects
- Special industry in project corridor
- Overall trends of economic growth local as well as national / regional

Hence in addition to traffic details on the project site, secondary data was also collected from the various sources. Typical secondary data includes the following:

1. Vehicle registration data of regional and national level.
2. Economic Data
   a) GDP
   b) NSDP
   c) Population Growth
   d) Per Capita Income growth
   e) Industrial Growth
   f) Special Industry Potential
   g) Regional and National development vision / plan
   h) Any other relevant data
3. Competing road network.

We have collected and utilized such underlying data in the study to estimate the growth and risk factors for traffic along the project corridor.

CHAPTER 3

GROWTH OF TRAFFIC ON PROJECT HIGHWAY

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 forecasts of factors such as population, gross domestic product (GDP), vehicle ownership, per capita income (PCI), agricultural output, fuel consumption etc. Future patterns 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 Omalur - Namakkal section of NH-7 has been carried out taking the above factors into consideration. "**IRC: 108-2015-Guidelines for Traffic Prediction on Rural Highways**" is established best practice and has been used for traffic growth forecast.

3.2 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 vehicular traffic varies for different types of vehicles. 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 below

- 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, the 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
- Time series data of vehicle (both passenger and goods) Registered in the state of Tamil Nadu is used as the base data for analysis of growth.

3.3 Estimation of Traffic Demand Elasticity

The 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 categories of vehicle with one of the economic variables considered, such as NSDP, per capita income and population growth. Latest available data for vehicle registration, per capita income, NSDP and population is used in analysis.

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 cars and buses (passenger vehicles) is calculated based on Population and Per Capita Domestic Product (PCDP) and the elasticity for trucks is calculated based on the Net State Domestic Product (NSDP).

The following tables and graphs depict regression and elasticity of growth model.

Table 3-1 : Per Capita Income Vs Car

Year	PCI	Car	Log PCI	Log Car	PCI Growth	Average Growth
2011	53507	1350722	4.73	6.13		
2012	57093	1504735	4.76	6.18	7%	
2013	58360	1668913	4.77	6.22	2%	
2014	62361	1818284	4.79	6.26	7%	
2015	66635	1972354	4.82	6.29	7%	5.7%

Regression analysis of same is given in figure below.

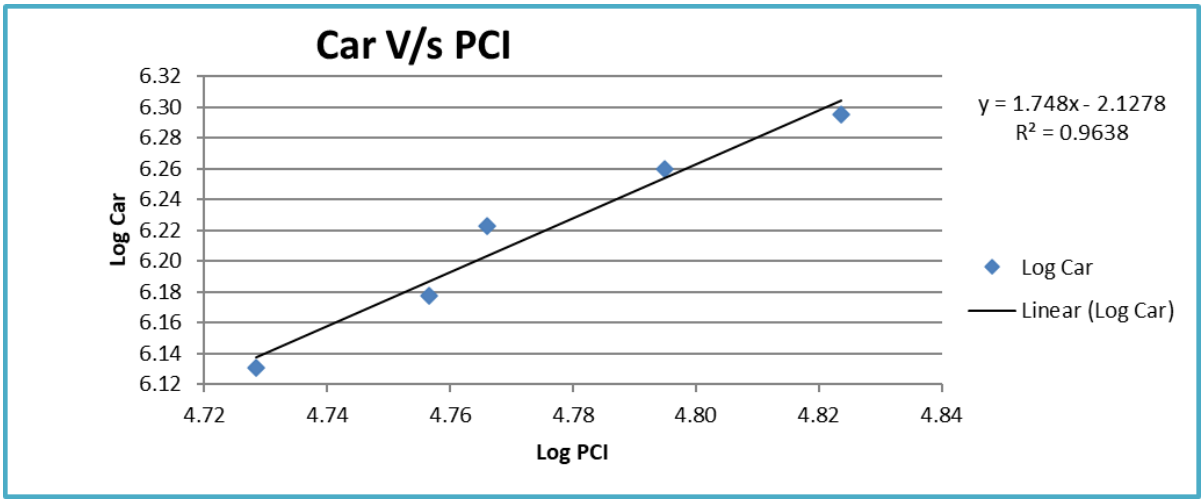


Figure 3-1: Regression and Elasticity PCI vs. Car–Extrapolation

Table 3-2 : Population Vs Bus

Year	Population	Buses	Log Pop	Log Bus	Pop Growth	Average Growth
2011	72147030	134887	7.86	5.13		
2012	73447335	144251	7.87	5.16	2%	
2013	74744601	156470	7.87	5.19	2%	
2014	76038376	165176	7.88	5.22	2%	
2015	77328222	171581	7.89	5.23	2%	1.75%

Regression analysis of same is given in figure below.

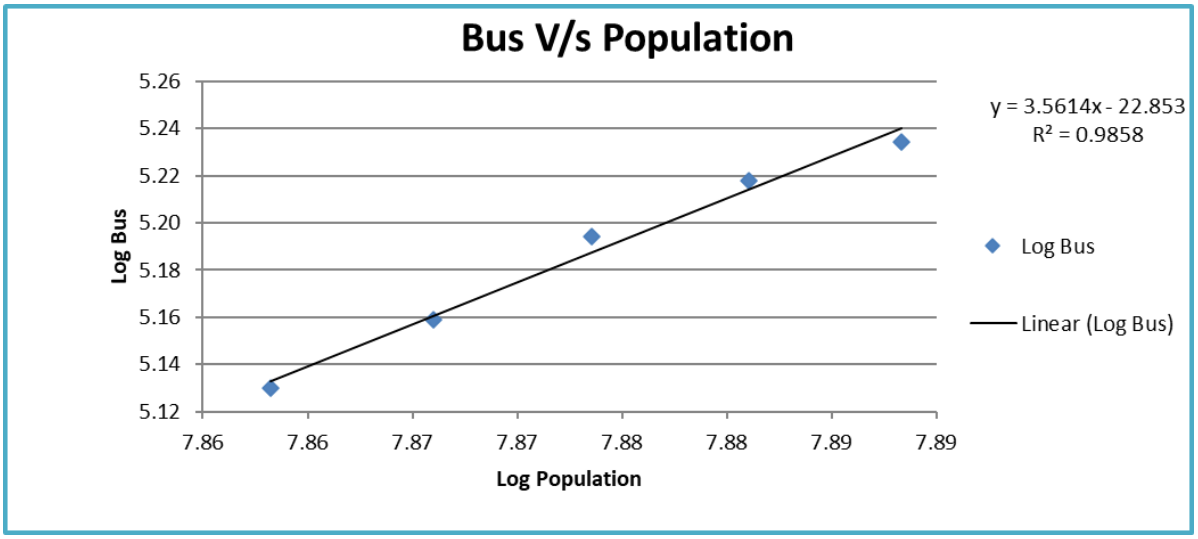


Figure 3-2: Regression and Elasticity Population vs. Bus – Extrapolation

The elasticity of goods traffic has been worked out by regression analysis with NSDP. The following table represents the data and details.

Table 3-3 : Goods Traffic Vs NSDP

Year	NSDP	Trucks	Log NDSP	Log Truck	NSDP Growth	Average Growth (Year)
2011	35996050	744663	7.56	5.87		
2012	38650813	821108	7.59	5.91	7%	
2013	39747091	896985	7.60	5.95	3%	
2014	42718219	924082	7.63	5.97	7%	
2015	45898663	946232	7.66	5.98	7%	6.28%

The following figure depicts regression analysis and extrapolation.

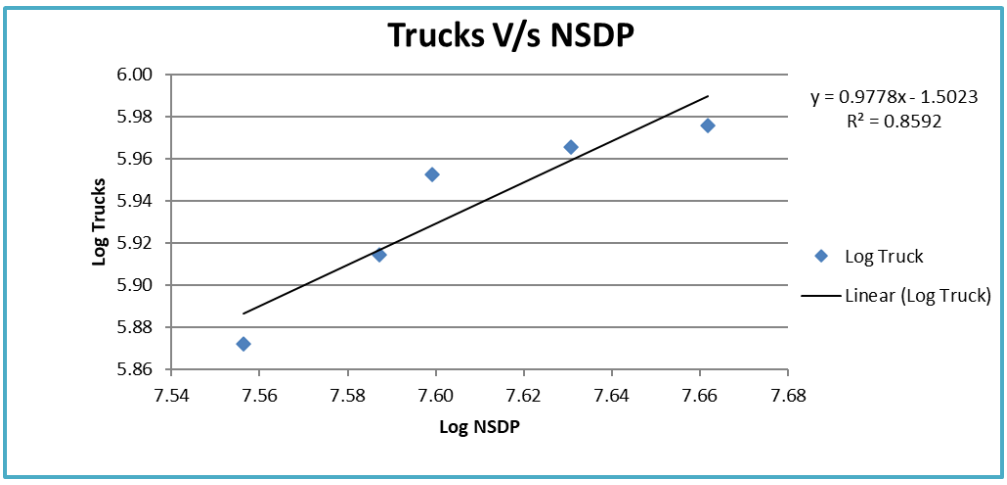


Figure 3-3: Regression and Elasticity NSDP vs. Goods Traffic – extrapolation.

Using the regression analysis above, we have arrived at the elasticity of traffic demand for each class of vehicle to a given change in relevant economic indicators. Average traffic growth of a vehicle class is multiplied by the corresponding elasticity coefficient to arrive at traffic growth. R^2 is a statistical measure of how close the data are to the fitted regression line. It varies from 0 to 1. The higher the value of R^2 more representative is the regression model of data.

The results of these analyses for the good fit as reflected by R^2 values are presented in the Table below.

Table 3-4 : Summary Regression Analysis

State	Vehicle Category	Independent Variable	Regression Equation	R Square	Elasticity Coefficient (y)	Average IV Growth (5yrs)	Growth Elastic Model	Remarks
Tamil Nadu	Car/Jeep	PCI	y = 1.748x - -2.1278	R² = 0.9638	1.7480	5.66%	9.89%	Good Regression
	Bus	Population	y = 3.5614x - -22.8532	R² = 0.9858	3.5614	1.75%	6.23%	Good Regression
	Truck	NSDP	y = 0.9778x - -1.5023	R² = 0.8592	0.9778	6.28%	6.14%	Good Regression

While the economic model for predicting growth is a good tool, other local, regional, national factors such as proposed developments etc. should also be considered before finalizing growth factors. These factors are discussed in subsequent sections.

3.4 Analysis of Historic Traffic Data

Historic traffic data forms useful information for any highway project. It provides useful information for establishing past trends of growth. Project stretch of Omalur to Namakkal has been commissioned and it has been under tolled operation since 2009.

Table 3-5 : Historical Traffic at Project Stretch

Sr. No	Type of Vehicle	Annual Average Daily Traffic (Nos.) FY 2018-19	Annual Average Daily Traffic (Nos.) FY 2019-20	Annual Average Daily Traffic (Nos.) FY 2020-21	Annual Average Daily Traffic (Nos.) FY 2021-22	Annual Average Daily Traffic (Nos.) FY 2022-23	Annual Average Daily Traffic (Nos.) FY 2023-24	Annual Average Daily Traffic (Nos.) FY 2024-25	Annual Average Daily Traffic (Nos.) FY 2025-26
1	Car	12645	13352	12618	14831	18389	19694	20404	24635
2	LCV	4672	4632	4290	2748	2856	2671	2664	2544
3	Truck/Bus	3199	3446	2666	3075	3796	4319	4431	3947
4	Multi Axle	2952	2873	3017	3350	3765	4057	3944	3816
	Total	**23468**	**24304**	**22591**	**24004**	**28806**	**30741**	**31443**	**34942**

3.5 Other Factors Influencing Growth

There are many factors which have an impact on traffic growth. As discussed previously these factors can be economic, social, educational, and industrial.

Potentiality of such factors for project highway is discussed as under.

ECONOMY

After witnessing a slowdown during 2011-12, the economy recovered in 2013-14, and a high growth rate of GDP was recorded up to 2018-19. Pandemic of COVID-19 impacted all economies of world including India up to year 2021-22. Following figure show trend of GDP growth in India.

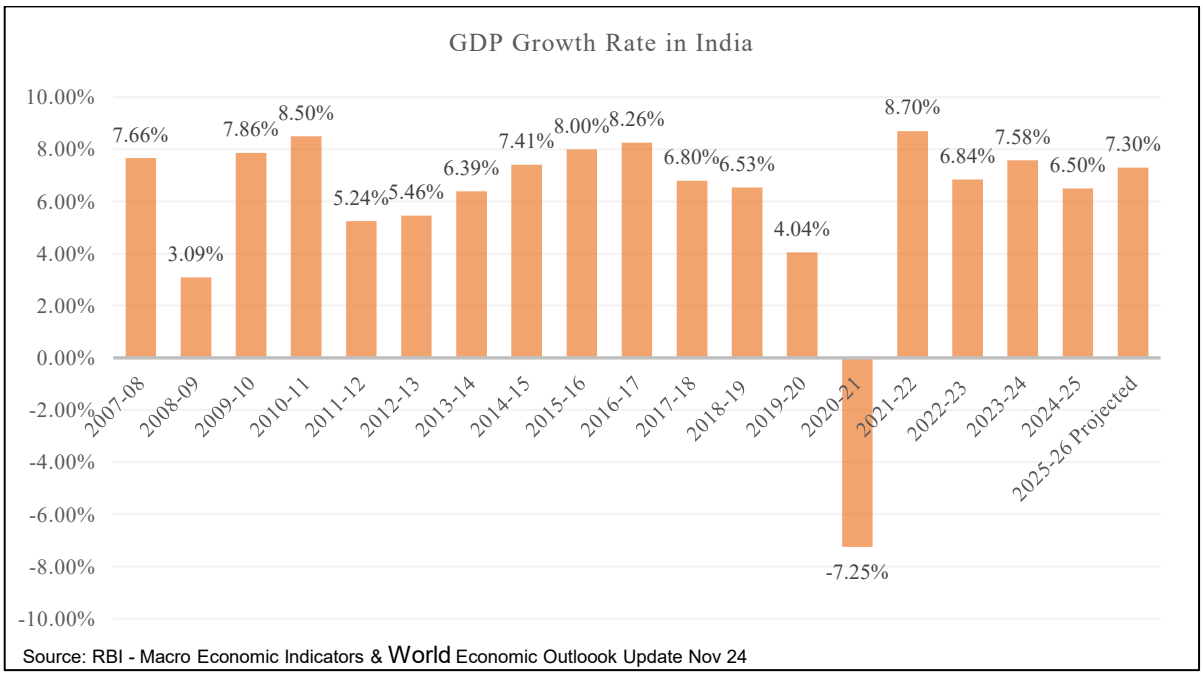


Figure 3-4 : Growth of GDP in India

FY 2017-18 recorded a growth of 6.7% which had a slight impact of GST and demonetization. Indian economy appears on recovery path with estimated growth of 6.8% in FY 2018-19. The government took major policy decisions including tax infrastructure reforming, banking sector improvement and ease of doing business.

In post COVID-19 scenario, in year 2022-23 and 2023-24 India registered an impressive growth of 7% to 7.5%. In last year despite global slow down due to Russia-Ukraine war and Gaza crises, India grew at good rate of 7%(Estimated).
Indian economy is now on good growth path and all major institutions including IMF / ADB have estimated growth of Indian Economy to peg around 6.5% to 7% in coming years.

Key economic activities

Salem also known as the 'Manchester of South India', is a key economic centre of Tamil Nadu. The following sectors are key economic drivers in the region:

- **Mining:** Salem is situated between Dharmapuri in north and Trichy and Namakkal in South. It is key mineral ore zone for minerals extraction of Magnesite, Bauxite, Granite, Limestone, Quartz and Iron ore.
- **Steel:** iron ore from Kanchamalai feeds the Salem Steel Plant located in the area. Steel Authority of India Limited (SAIL) has one of its largest steel plants in Salem.
- **Agricultural produce:** Mango fruits, Tapioca, Coffee, Sandalwood from Salem are world popular. Sago, sabudana, and other starch production units are located around Salem city and are transported to various parts of North India.
- **Cottage Industries**: The Salem handloom industry is one of the ancient, producing quality sarees and dhotis out of silk yarn and cotton yarn. Its Sun-bleached sugar- vellam - Nattu Sarkarai is a major cottage industry with export-oriented units' setup.
- **Automobile parts:** Namakkal is home to one of the largest lorry body manufacturing workshops in the country. In addition, automobile parts and commercial vehicle tires are manufactured here.

3.6 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 below. The rate of growth is moderate in light of overall regional trends. Growth of multi-Axle is kept slightly higher as trend of technological advances in logistic industry favors multi-axle over 2/3 axle carriage. It is also expected that as the economy moves from developing to developing, the rate of growth diminishes. The same growth rate is not sustainable for long. It is established practice to step down future growth rates at suitable intervals of years.

Temporary disruptions caused by implementation of Goods and Service Tax (GST) and demonetization have dissipated, and growth of economy has significantly improved since then. Hence the corridor can have the expected growth.

Growth rates are recommended for three scenarios for sensitivity analysis namely **Optimistic, Pessimistic** and **Most Likely** with a positive and negative variation 0.25% from Most Likely case.

Table 3-6 : Recommended Growth Rates Optimistic

Year/ Vehicle Type	2027-2030
Car	4.24%
Minibus /LCV	2.88%
Truck / Bus	3.52%
Multi Axle	3.52%

Table 3-7 : Recommended Growth Rates Pessimistic

Year/ Vehicle Type	2027-2030
Car	3.74%
Minibus /LCV	2.38%
Truck / Bus	3.02%
Multi Axle	3.02%

Table 3-8 : Recommended Growth Rates Most Likely

Year/ Vehicle Type	2027-2030
Car	3.99%
Minibus /LCV	2.63%
Truck / Bus	3.27%
Multi Axle	3.27%

CHAPTER 4

TRAFFIC FORECAST

4.1 Traffic Projections

Growth rates recommended in the previous section of the report are used to arrive at traffic projections for future years. Toll plaza wise futuristic traffic projection is given in tables below.

These projections have been done for the following three cases of growth.

1. Optimistic Scenario
2. Pessimistic Scenario
3. Most Likely Scenario

Table 4-1 : Total Tollable Traffic @ Toll Plaza 1- Chainage 191.800 KM

(Optimistic Growth Scenario)

Year	Car	LCV	Truck/ Bus	Multi axle	Total No.	Total PCU (Including Non-Paid Traffic)
2026-27	25680	2618	4085	3950	**36333**	**59637**

Table 4-2 : Total Tollable Traffic @ Toll Plaza 1- Chainage 191.800 KM

(Pessimistic Growth Scenario)

Year	Car	LCV	Truck/ Bus	Multi axle	Total No.	Total PCU (Including Non-Paid Traffic)
2026-27	25557	2604	4065	3931	**36157**	**59348**

Table 4-3 : Total Tollable Traffic @ Toll Plaza 1- Chainage 191.800 KM

(Most Likely Growth Scenario)

Year	Car	LCV	Truck/ Bus	Multi axle	Total No.	Total PCU (Including Non-Paid Traffic)
2026-27	25619	2611	4076	3940	**36246**	**59494**

Table 4-4 : Summary of concession

	Particulars
State	Tamil Nadu
Highway and lane configuration	NH-44 (old NH-7)
Toll plazas	• TP1 Omallur at KM 191.800 (tolling length: 68.625 km)
Appointed date	14th Aug 2006
COD	06th Aug 2009
Concession period	20 years
Concession period with extension	21 years
Last year of concession	FY27

Source: Client data

CHAPTER 5

FORECAST OF TOLL REVENUE

5.1 General

This chapter presents the tolling rate calculations, categories and toll revenue of the project.

5.2 Discount Categories

Fee schedule of agreement of Omalur – Namakkal section of NH-7 is based on old toll policy. As per the Toll Notification (Schedule R) the following discounts have been considered:

1. Monthly Pass: For frequent user's monthly pass would be issued at fee 30 times the single journey fee. There are other local monthly passes for cars /Jeep/ Van category I and II and school bus @ Rs.150, Rs.300 and Rs.1000 respectively.
2. Multiple Journeys (for Return Trip): Will be charged at 1.5-time single journey.
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. There are several categories of local discounts.
    a) Local Bus / truck and LCV (within 20 km) will be charged @ Rs. 25 and 15 respectively. The rate will be constant throughout the concession period.

Building of inflation and escalation of rate on the basis of WPI are done as per toll notification (Schedule R) as given under

$$\text{Base Fee} \times \frac{\text{WPI-B}}{\text{WPI-A}} \times \text{length of the said section.}$$

Where

- WPI-A = is the Wholesale Price Index of June, 1997 (131.4).
- WPI-B = is the Average Wholesale Price Index for the year ending March, 31st preceding the fee revision date.

5.3 Estimation of Toll Rates

As per the applicable MORTH notification and Schedule R of contract agreement, the following Base rate of fee for the categories mentioned in the table stands true in the National Highways Fee Rules applicable for contract.

Table 5-1 : Base Toll Rates June 1997

Type of Vehicle	Base Rate of Fee / Km (in Rs.)
Car, Jeep, Van or Jeep	0.40
Light Commercial Vehicle, (LCV)	0.70
Bus or Truck (2 Axle)	1.40
MAV (> 2 axle)	2.25

Factors of inflation / growth have been incorporated as per Schedule R. WPI are available up to the year 2025-26.

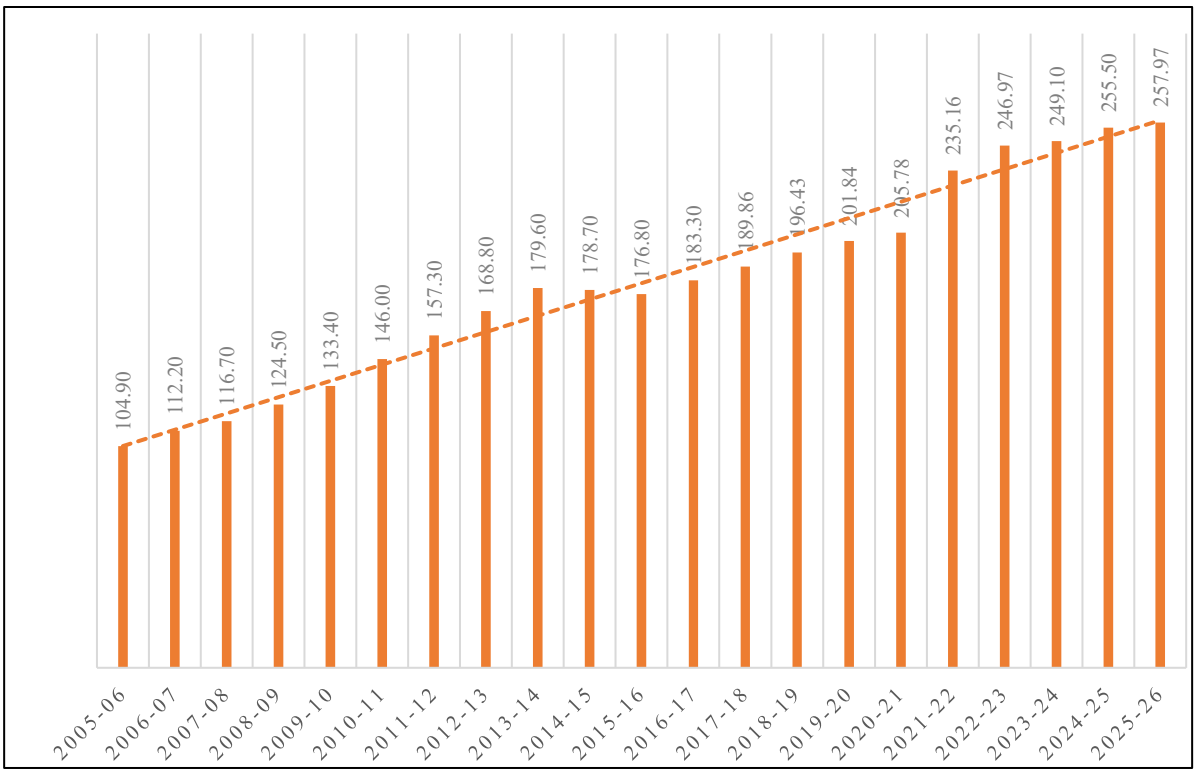


Figure 5-1 : Historical Rate of WPI Inflation in India

The wholesale price index (WPI) and the inflation rate in the past are presented in Table below.

Table 5-2 : Historical WPI value and Growth Inflation

December of year	2021	2022	2023	2024	2025	Avg.
WPI	235.2	247.0	249.1	255.5	257.97	
Inflation	14.27%	5.02%	0.86%	2.57%	0.96%	4.74%

WPI of December 2025 is posted on ministry site which is shows 0.96% inflation from the previous year. Same has been applied for FY 2026-27.

The average WPI inflation over the period FY 2021 to FY 2025 works out to approximately 4.74%, reflecting inflationary cycles across both high and low inflation years. Based on this analysis, an annual escalation factor of 4.5% has been adopted for the remaining concession period.

Thus, worked out rates for various categories of vehicles and discounts are given as under

Table 5-3 : Toll Rates for Single Journey 191.800

Year	Car/ Jeep/ Van	LCV	Truck/ Bus	Multi Axle (> 2 axle)	Car - LCO	LCV - LTO	Truck/ Bus - LTO
2026-27	100	175	355	570	15	15	25

Table 5-4 : Toll Rates for Multiple Journeys 191.800

Year	Car	Minibus /LCV	Truck/ Bus	Multi Axle
2026-27	150	265	530	850

Table 5-5 : Toll Rates for Monthly Pass 191.800

Year	Car/ Jeep/ Van	LCV	Truck/ Bus	Multi Axle (> 2 axle)	Car - LT1	Car - LT2	School Bus
2026-27	3030	5300	10600	17035	150	300	1000

5.4 Toll Revenue

As indicated earlier, toll revenue on the Project Road has been calculated under in all three scenarios. The estimates of toll revenue under ***Optimistic***, ***Pessimistic*** and ***Most Likely*** growth scenarios are presented in the following section.

5.5 Toll Revenue at all toll plazas under Scenarios

Toll Revenue estimates under the most likely scenario at each of the toll plaza up to 2026-27 (End of Concession Period) starting from the year 2025-26 are shown in tables below.

Table 5-6 : Toll Revenue Optimistic Scenario

(Rs. Crores)

Year	Toll Plaza 191.800	Total
198.31	198.31	**198.31**

Table 5-7 : Toll Revenue Pessimistic Scenario

(Rs. Crores)

Year	Toll Plaza 191.800	Total
2026-27	197.32	**197.32**

Table 5-8 : Toll Revenue Most Likely Scenario

(Rs. Crores)

Year	Toll Plaza 191.800	Total
2026-27	197.82	**197.82**

CHAPTER 6

OPERATION & MAINTENANCE

6.1 Operation & Maintenance

The following are project parameters which would contribute towards the cost of operation and maintenance.

The estimated cost of operation and maintenance has been provided by the Management.

The following are the key components for operation and maintenance costs:

1. Annual Regular Maintenance – Covering pothole repair, shoulder and slope repair, drain cleaning, median maintenance, Crash barrier, toll plaza maintenance, Toll collection, other services like medical help and rescue operations etc.

2. Periodic Maintenance – This will be done on a periodic basis, say every 5 years. It will consist of overlaying of wearing course and painting and marking. Some pavement strengthening is also anticipated in a few sections. This operation and its cost are spread over three years.

The year wise actual operation and maintenance cost is provided by management of asset and has been found reasonable. Same has been adopted in report for projection of operation and maintenance cost.

Table 6-1 : O & M Cost

Years	Routine O & M	Other Operational expenses	Major Maintenance O & M	Total Expenditure (Rs. Crores)
2026-27	6.61	0.99	0.00	**7.60**

CHAPTER 7

CONCLUSION & RECOMMENDATIONS

7.1 Conclusion & Recommendations

Project stretch of Omalur to Namakkal section of NH-7 in state of Tamil Nadu from km 180.000 to km 248.625 is presently a four-lane road. The road is in sound condition and serves healthy traffic volumes. The project corridor is a part of critical North – South connectivity via national highway NH-7. Bangalore has already emerged as the IT capital of country and the project stretch falls in its catchment. There are many upcoming projects in the area which are proposed to boost economic growth of the area and add value to the development of the region. All the developments considered in the Report have the potential to have a positive impact on the traffic flow on the project. The following can be considered as major outcome of study.

a) There is a healthy volume of tollable traffic running on the project.

b) Project corridor has the potential to witness good traffic growth annually in the post COVID-19 scenario due to various developments in area and overall development of economy.

c) Project corridor does not have risk of traffic leakage due to lack of competing roads of comparable quality.

The project infrastructure is in good condition and its maintenance cost is also reasonable.

Based on the above it can be considered a stable healthy project from the traffic and revenue point of view.

CHAPTER 8

PROJECT ILLUSTRATIONS

8.1 General

Project current condition has been depicted in the following photographs.



Figure 8-1 : General Project Condition



Figure 8-2 : Toll Plaza



Figure 8-3 General Project Condition



Figure 8-4 General Project Condition



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IRB InvIT Fund

HAPUR TO MORADABAD SECTION OF NH-9 IN THE STATE OF UTTAR PRADESH (KM 50.000 TO KM148.277)









MAY 2026

TRAFFIC STUDY & REVENUE PROJECTION REPORT (FINAL)

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HAPUR TO MORADABAD SECTION OF NH-9 IN THE STATE OF UTTAR PRADESH (KM 50.000 TO KM148.277)

TRAFFIC STUDY & REVENUE PROJECTION REPORT (FINAL)

MAY 2026

GMD CONSULTANTS ★ NAVI MUMBAI ★

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ABBREVIATIONS

AADT	-	Annual Average Daily Traffic	**NHAI**	-	National Highway Authority of India
BOT	-	Build Operate Transfer	**NHDP**	-	National Highways Development Project
CAGR	-	Compound Annual Growth Rate	**NSDP**	-	Net State Domestic Product
CTV	-	Classified traffic volume	**O&M**	-	Operation & Maintenance
DBFOT	-	Design, Build, Finance, Operate & Transfer	**PCDP**	-	Per Capita Domestic Product
EME	-	Earth Moving Equipment	**PCI**	-	Per Capita Income
GDP	-	Gross Domestic Product	**PCU**	-	Passenger Car Unit
GSDP	-	Gross State Domestic Product	**PSC**	-	Pre-stressed Concrete
HCM	-	Heavy Construction Machinery	**RCC**	-	Reinforced cement concrete
HCV	-	Heavy Commercial Vehicle	**RHS**	-	Right Hand Side
HTMS	-	Highway Traffic Management System	**SH**	-	State Highway
IRC	-	Indian Road Congress	**TP**	-	Toll Plaza
IRR	-	Internal Rate of Return	**WPI**	-	Wholesale Price Index
LCV	-	Light Commercial Vehicle	**SIR**	-	Special Investment Region
LHS	-	Left Hand Side	**c.**	-	Circa
LGV	-	Light Goods Vehicle	**ROB**	-	Railway Over Bridge
MAV	-	Multi Axle Vehicle	**MDR**	-	Major District Road
MORTH	-	Ministry of Road Transport and Highways	**ODR**	-	Other District Road
NH	-	National Highway	**CA**	-	Concession Agreement
PCC	-	Plain Cement Concrete	**RMT**	-	Running Meter
CR	-	Coarse Rubble			

CHAPTER 1
INTRODUCTION

1.1 Background

The Government of India through National Highway Authority of India (NHAI) embarked upon a program to enhance the traffic capacity and safety for efficient transportation of goods as well as passenger traffic on National Highway Sections under NHDP Phase V. Under Phase V NHAI has planned to convert 6,500 km of existing 4-lane National Highways into 6-lane National Highway. Sections envisaged under 6-laning comprise the Golden Quadrilateral section (5,700 km) and some other sections which are 800 km in length.

The project under consideration, Six Laning of **Hapur Bypass to Moradabad section** of NH-9 from km 50.000 to km 148.277is one such road project NHAI intended to implement on a BOT basis in the DBFOT format. M/s IRB Hapur Moradabad Tollway Ltd. (Concessionaire) has been awarded the Project for a concession period of 22 years starting from 28th May 2019. The Project is under capacity augmentation to six lanes. Tolling operation under current concession started in May 2019.COD-2 has been received in April 2023.

Project stretch from Hapur to Moradabad is part of new NH-9 which starts from Fazilka in Punjab and terminates in Uttarakhand at Pithoragarh. Previously this section was part of old NH-24 which is still popularly known and Delhi – Lucknow Road. New NH-9 takes off towards Pithoragarh from Rampur. A number of sections along the project road from Hapur to Moradabad have witnessed urban development along the highway. Places like Pilakhua, Babugarh, Brijghat, Gajrola and Joya are fast upcoming urban centers. Close proximity to Delhi and this being main connectivity of region to NCR is main region for this ribbon development along highway. The following figure shows the project road alignment.

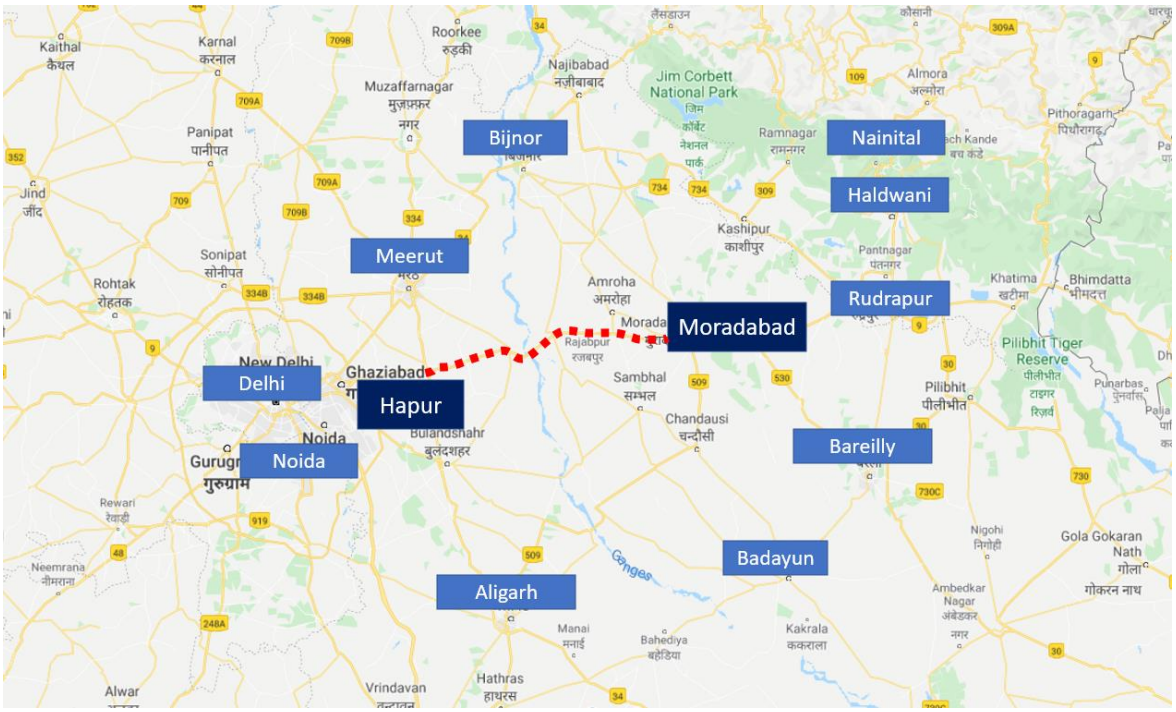


Figure 1-1: Alignment of Project Stretch

1.2 Objective of the Study

M/s IRB INVIT FUND has engaged GMD Consultants to assess the future traffic and toll potential of project along with related operation & maintenance expenditure involved.

This report named as **"Traffic Study & Toll Revenue Projection Report"** mainly focuses on traffic and revenue aspects of the project. Other parameters like competing road, area developments etc. have been considered from a traffic development point of view.

1.2.1 Scope of Services

The broad scope of work covered in the assignment is as follows.

a) Analysis of Traffic Growth
b) Toll Rate Growth
c) Revenue Forecasting

The Concessionaire has provided basic traffic data and other project details on the basis of which the above analysis has been carried out.

CHAPTER 2

PROJECT DETAILS

2.1 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. 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)

2.2 Project Stretch Description

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 99.869 Kms. The existing road is four lane divided carriageway, which is proposed to be six laned. The road passes through the districts of Hapur, Amrohaand 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.

Hapur – Moradabad section of NH-9 was previously known as Delhi Road locally. This forms the main connectivity of areas like Moradabad, Rampur, Bareilly and important destinations in Uttarakhand like Rudrapur, Kashipur, Ranikhet, Pithoragarh etc to the national capital of Delhi.

There are two operative toll plazas at project stretch. The first is at Garh at Km 90.661 and second at Joya at Km 123.875. The following figure shows project alignment and toll plaza locations.

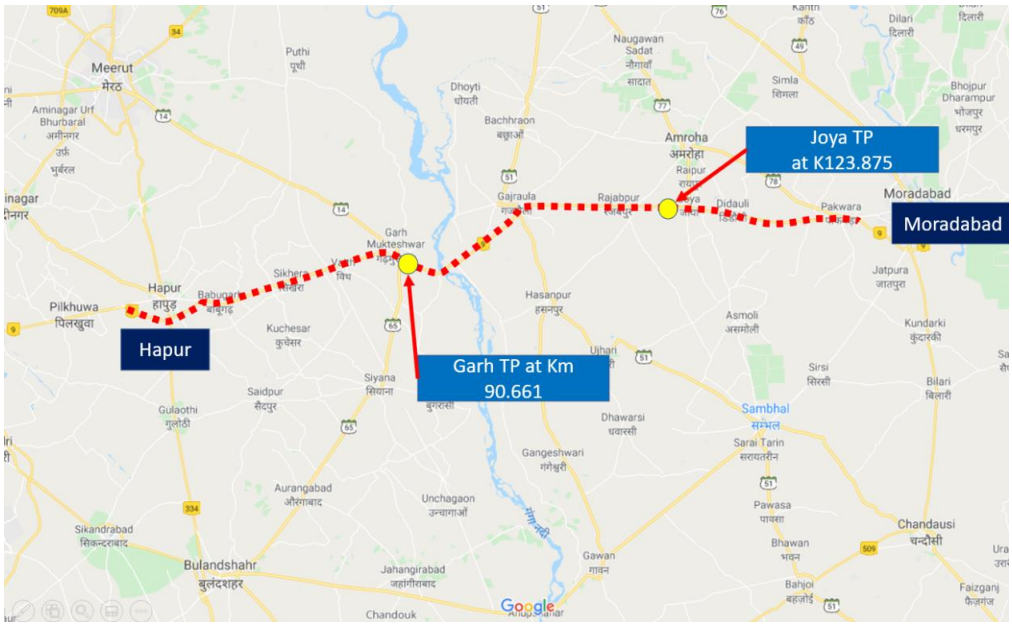


Figure 2-1: Project Alignment with Toll Plaza

2.3 Project Corridor Illustration

The following photographs illustrate the project section along the corridor.



Figure 2-2: Photographs showing Project Corridor

CHAPTER 3

TRAFFIC SURVEYS AND ANALYSIS

3.1 Traffic Surveys

The Consultants have collected the required information for project corridor to understand the general traffic and travel characteristics on the corridor.

The following traffic data has been collected from a client for a project.

- Classified traffic volume counts at toll plaza locations on Hapur Bypass- Moradabad Section of NH-9 for years 2017-18, 2018-19, 2019-20,2020-21,2021-22,2022-23,2023-24,2024-25 and traffic data from April 2025 to February 2026.
- Local Component of traffic
- Component of Return Journey
- Component of Monthly Pass Journey

The main objective of the traffic data analysis is to:

- Determine the existing traffic movement characteristics of the project.
- Establish base year traffic.
- Identification of travel patterns and modal split of project traffic
- Deriving growth factors for traffic 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

ic details have been collected.

Table 3-1below lists provides details of locations from where traffic details have been collected.

Table 3-1 : Traffic Data Details

SR. NO	LOCATION	CTV	Single Journey Traffic	Daily Return Journey	Monthly Pass	Local Pass
1	**Km 90.661 Toll Plaza at Garh**	AADT for Year 2017-18, 2018-19, 2019-20,2020-21 ,2021-22, 2022-23, 2023-24, 2024-25 & Eleven	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-2023,2023-24, 2024-25 & Eleven	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-2023,2023-24, 2024-25 & Eleven	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-2023,2023-24, 2024-25 & Eleven	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-2023,2023-24, 2024-25 & Eleven

SR. NO	LOCATION	CTV	Single Journey Traffic	Daily Return Journey	Monthly Pass	Local Pass
		months from April 2025 to February 2026	months from April 2025 to February 2026	months from April 2025 to February 2026	months from April 2025 to February 2026	months from April 2025 to February 2026
2	**Km 123.875 Toll Plaza at Zoro ka Khera**	AADT for Year 2017-18, 2018-19, 2019-20,2020-21 ,2021-22, 2022-23, 2023-24, 2024-25 & Eleven months from April 2025 to February 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-2023,2023-24, 2024-25 & Eleven months from April 2025 to February 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-2023,2023-24, 2024-25 & Eleven months from April 2025 to February 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-2023,2023-24, 2024-25 & Eleven months from April 2025 to February 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-2023,2023-24, 2024-25 & Eleven months from April 2025 to February 2026

3.2 Classified Traffic Volume

The objective of conducting a Classified Traffic Volume Count is to understand the traffic flow pattern including modal split on a roadway. The Classified Traffic Volume Count survey has been provided by the concessionaire of project highway from actual traffic data gathered at toll plaza locations based on monthly data shared with 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. The groupings of vehicles are further segregated to capture the tollable vehicle categories specifically and toll exempted vehicles are counted separately. The detailed vehicle classification system as per IRC: 64-1990 is given in the table below.

Table 3-2 : Vehicle Classification System

Vehicle Type	
Auto Rickshaw	
Passenger Car	Car, Jeep, Taxi & Van (Old / new technology)
Bus	Minibus
	Standard Bus
Truck	Light Goods Vehicle (LCV)
	2 – Axle Truck

Vehicle Type	
	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

However, since the project highway is currently under toll operation, the data collected corresponds to the category of tollable vehicles. The following are the types of vehicles as per concession agreement.

- Car / Jeep / van
- Min Bus /LCV
- Bus
- Truck
- 3-Axle
- Multi Axle

3.3 Traffic Characteristic

Toll revenue of project highway does not solely depend on traffic volume. There are certain characteristics of traffic which have substantial potential to affect toll collection. Component of local traffic, component of passenger and commercial traffic, portion of return journey traffic, % of monthly pass traffic are some of such characteristics of traffic. These will be discussed in subsequent sections of the report.

3.3.1 Traffic Data

Project concessionaire has provided Traffic data for the years 2019-20 ,2020-21, 2021-22, 2022-23,2023-24,2024- 25 & traffic data from April 2025 to February 2026.

Since the traffic data available for this update is for only Annual, from April 2025 to February 2026, it may not represent the whole year traffic. Hence a seasonality factor for balance part of year has been applied to average traffic of the current Eleven months to arrive at Annual Average Daily Traffic of base year 2025-26. Thus, corrected traffic is used for future projections and revenue calculations. The following table shows historical traffic on project stretch and derived Annual Average Daily Traffic (AADT) for year 2025-26.

Table 3-3 : Traffic Data at Garh (Brijghat) Toll Plaza at Km 90.661

Sr. No	Type of Vehicle	Annual Average Daily Traffic (Nos.)- 2019-20	Annual Average Daily Traffic (Nos.)- 2020-21	Annual Average Daily Traffic (Nos.)- 2021-22	Annual Average Daily Traffic (Nos.)- 2022-23	Annual Average Daily Traffic (Nos.)- 2023-24	Annual Average Daily Traffic (Nos.)- 2024-25	Annual Average Daily Traffic (Nos.)- 2025-26
1	Car	14878	15865	21889	24088	27330	28110	32989

Sr. No	Type of Vehicle	Annual Average Daily Traffic (Nos.)- 2019-20	Annual Average Daily Traffic (Nos.)- 2020-21	Annual Average Daily Traffic (Nos.)- 2021-22	Annual Average Daily Traffic (Nos.)- 2022-23	Annual Average Daily Traffic (Nos.)- 2023-24	Annual Average Daily Traffic (Nos.)- 2024-25	Annual Average Daily Traffic (Nos.)- 2025-26
2	Minibus/LCV	3704	3119	1995	1730	1743	1688	2023
3	Bus	2033	1573	1862	2069	2303	2255	2667
4	Truck	1289	1354	1674	1972	2036	1647	1856
5	3-Axle	1318	1105	1112	1070	1075	819	928
6	Multi Axle	1753	1635	1745	1962	2191	2027	2350
7	Oversized Vehicle	2	6	6	9	7	5	5
	Total	**24977**	**24657**	**30283**	**32899**	**36686**	**36550**	**42818**

Table 3-4 : Traffic Data at Zoya Toll Plaza at Km 123.875

Sr. No	Type of Vehicle	Annual Average Daily Traffic (Nos.)- 2019-20	Annual Average Daily Traffic (Nos.)- 2020-21	Annual Average Daily Traffic (Nos.)- 2021-22	Annual Average Daily Traffic (Nos.)- 2022-23	Annual Average Daily Traffic (Nos.)- 2023-24	Annual Average Daily Traffic (Nos.)- 2024-25	Annual Average Daily Traffic (Nos.)- 2025-26
1	Car	10298	10526	13695	16037	18696	19856	23608
2	Minibus/LCV	2595	2259	1335	1181	1191	1297	1567
3	Bus	1062	1303	1485	1768	2008	1862	2165
4	Truck	1532	1040	1184	1436	1628	1687	2063
5	3-Axle	1128	1064	1081	1008	936	814	929
6	Multi Axle	1365	1370	1458	1765	2017	2065	2394
7	Oversize Vehicle	2	8	8	9	6	5	6
	Total	**17982**	**17570**	**20246**	**23203**	**26481**	**27586**	**32731**

3.4 Data Analysis

3.4.1 Analysis of Traffic Volume Count

Understanding the character of existing traffic forms the basis of the traffic forecast. The various vehicle types having different sizes and characteristics can be 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 3-5.**

Table 3-5 : PCU Factors Adopted for Study

Vehicle Type	PCUs
Car	1.0
Minibus	1.5
Standard Bus	3.0
LCV/LGV	1.5
2 Axle Truck	3.0
3 – 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

Traffic volume at each toll plaza was converted to PCU and same is presented as under

Table 3-6 : Traffic in PCU at Project Stretch Base Year 2023-24

Toll Plaza Location (Km)	Year	Traffic No	PCU	PCU Index
Garh Km 90.661	**2019-2020**	24977	42251	1.69
	2020-2021	24657	40024	1.62
	2021-2022	30283	46705	1.54
	2022-2023	32899	50882	1.55

Toll Plaza Location (Km)	Year	Traffic No	PCU	PCU Index
	2023-2024	36686	56079	1.53
	2024-2025	36550	53947	1.48
	2025-2026	42818	62972	1.47
Joya Km 123.875	**2019-2020**	17982	31508	1.75
	2020-2021	17570	30337	1.73
	2021-2022	20246	33545	1.66
	2022-2023	23203	38427	1.66
	2023-2024	26481	43300	1.64
	2024-2025	27586	44205	1.60
	2025-2026	32731	52227	1.60

It can be observed from above that project traffic has PCU index in range of 1.5 to 1.7 which is an indicator of high proportion of Passenger traffic in traffic mix in project corridors. The following figure illustrates variation of PCU index at four toll plaza locations.

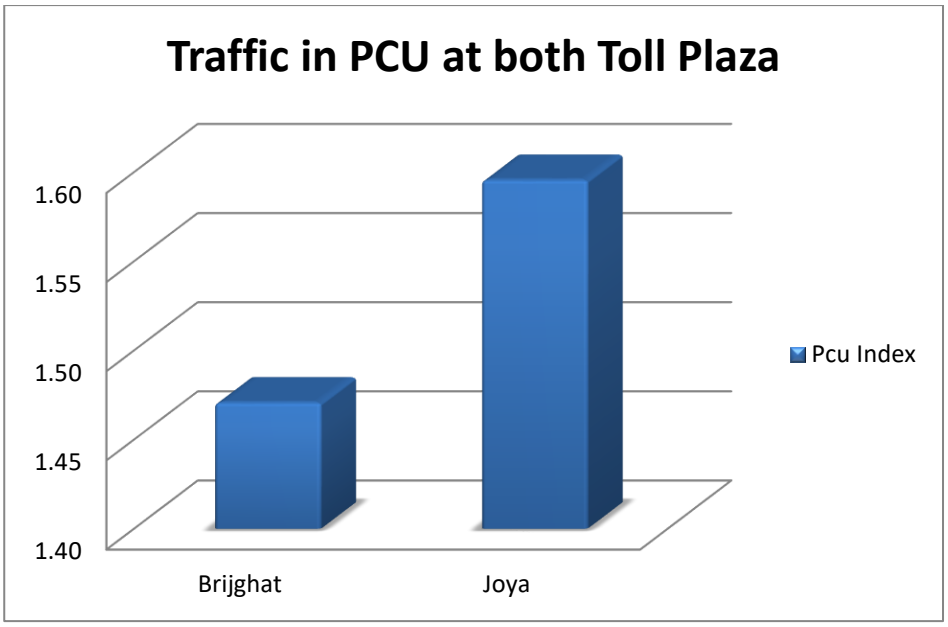


Figure 3-1: Comparison of PCU Index

It can be observed that PCU index is consistent at both toll plaza locations.

3.4.2 Components of Traffic

As discussed previously, components of traffic volume play an important role in determining project revenue. A larger component of commercial traffic with higher axle configuration adds to project revenue positively. Similarly, a larger component of local traffic affects the project revenue potential negatively.

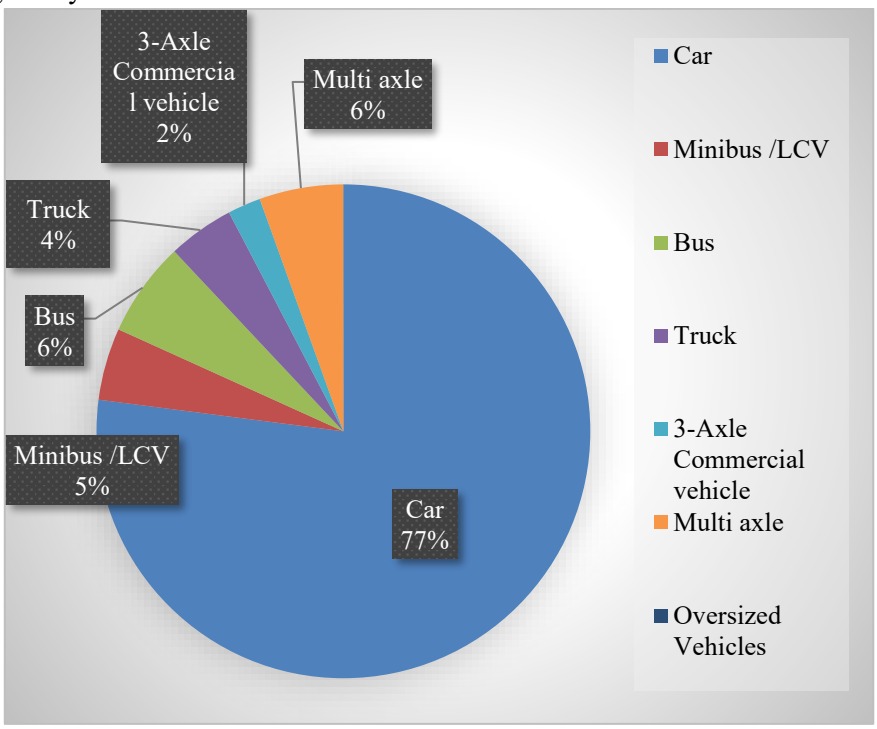


Figure 3-2: Model Split of Tollable Vehicle @TP-1

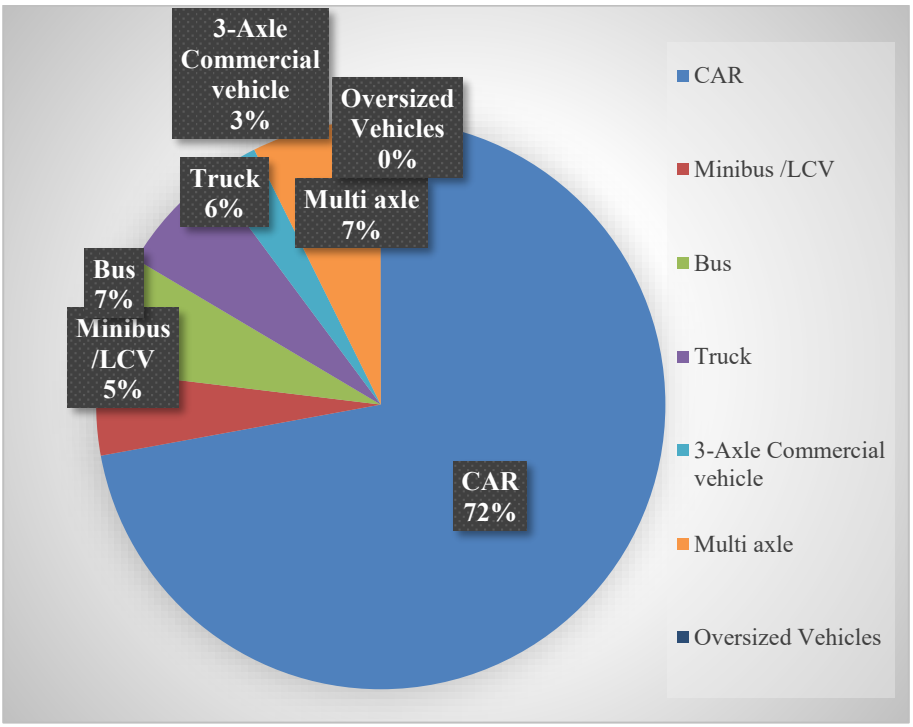


Figure 3-3: Model Split of Tollable Vehicle @TP-2

It is observed that car traffic forms about 77% - 72% of total traffic at toll plaza locations while multi axle commercial vehicles are about 8% -10% of total traffic. Truck / Bus and LCV share about 10% - 13% and 5% - 5% of traffic volume respectively.

Another important bifurcation of traffic is components of traffic with respect to various type of toll ticketing like

1. Single Journey
2. Multi Journey
3. Local Commercial Single Journey
4. Monthly Pass Local
5. Monthly Pass
6. Annual Pass Car

The following table provides numbers of vehicles falling in each of above categories on base year 2025-26

Table 3-7 : Journey Type Bifurcation of Traffic at GarhTP-1 KM 90.661

Sr. No	Type	Traffic Volume (Nos.) 2025-26
1	Single Journey	13755
2	Return Journey	17543
3	Local Commercial Single Journey	18
4	Monthly Pass Local	26
5	Monthly Pass	2
6	Annual Pass Car	11475

Most dominant part of the above is the single journey type followed by return journey at project stretch. Monthly pass commuters are a very low fraction of the total traffic on the project corridor.

The single journey component in total traffic numbers is as high as 32%. Return journey component is 41%. The number of monthly pass local and Local Commercial Journey is 0% & Annual pass car is 27% at Brijghat.

The following tables give the details of journey distribution at Joya toll plaza at Km 123.875.

Table 3-8 : Journey Type Bifurcation of Traffic at Zoro ka Khera TP-2 KM 121.020

Sr. No	Type	Traffic Volume (Nos.) 2025-26
1	Single Journey	12186
2	Return Journey	11981
3	Local Commercial Single Journey	32

Sr. No	Type	Traffic Volume (Nos.) 2025-26
4	Monthly Pass Local	9
5	Monthly Pass	5
6	Annual Pass Car	8519

It is observed that the project corridor demonstrates a similar pattern of single journey dominating mix of traffic across the entire stretch which is typical of major national highways.

3.5 Secondary Data Collection

There are several other factors which have a substantial impact on traffic patterns and growth on any project corridor. The following are some of such important factors.

- Industrial development around project corridor and its catchment
- Educational infrastructure along project corridor
- Demographic pattern
- Urban area development
- Tourism potential
- Upcoming major infrastructural or Industrial projects
- Special Industry in project corridor
- Overall trends of economic growth local as well as national / regional

Hence in addition to traffic details on the project site, secondary data was also collected from various other sources. Typical secondary data includes the following:

1. Vehicle registration data of regional and national level.
2. Economic Data
   a) GDP
   b) NSDP
   c) Population Growth
   d) Per Capita Income growth
   e) Industrial Growth
   f) Special Industry Potential
   g) Regional and National development vision / plan
   h) Any other relevant data
3. Competing road network

We have collected and utilized such underlying data in the study to estimate the growth and risk factors for traffic along the project corridor.

CHAPTER 4

INFLUENCE ZONE TRANSPORT NETWORK ANALYSIS

4.1 Introduction

Highway corridors behave like integrated circuit networks and more often than not every road is connected to various networks having different origins and destinations. Traffic running on these networks behaves like fluid and flow on network on alignment of least friction.

Following Factors can be considered as major contributors to friction on transportation networks.

- Travel Speed / Travel Time
- Geometric deficiencies like blind horizontal curves and steep vertical gradients etc.,
- Configuration of road
- Riding quality
- Traffic delays,
- Length of road,
- Passing through built up or Urban Area,
- Terrain,
- Facilities,

4.2 Competing / Alternate route

Project stretch has toll application history from last few years, and it can be assumed that project traffic is settled. However, from an analysis point of view there can be a few alternate routes at local level. Garh toll plaza is very near to the major river Ganga over which major bridge about 1 km in length is constructed. Due to this there is no locals alternative route to toll plaza at Garh. There can be one alternative route which can bypass the toll plaza at Joya. From Atrasi one can take a left and bypass Toll Plaza at Joya and go back to NH-9 at Moradabad. This route quite long and passes through congested areas of Amroha. Further the road alignment of these district roads is very poor with little chance of improvement.

The following maps show these routes in relation to project stretch at local level.

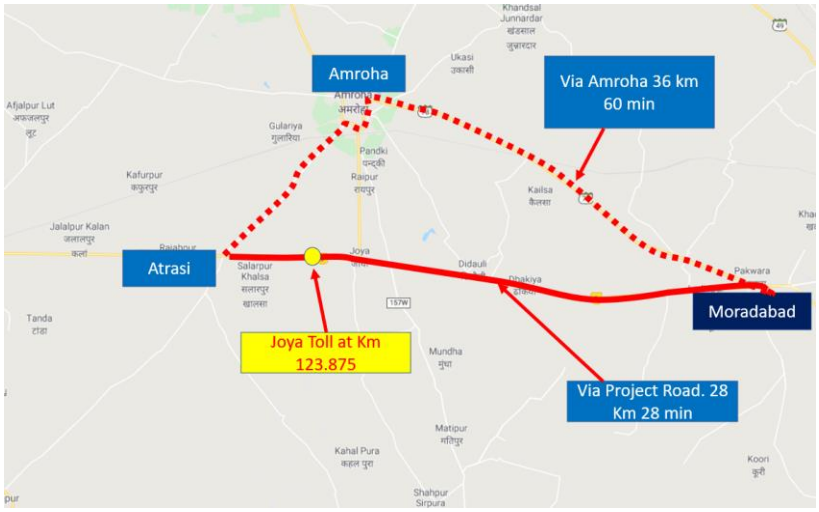


Figure 4-1: Alternate route at regional level

At regional level if we take Hisar and Rudrapur two origin destinations representing Delhi/ Haryana and Uttarakhand region, there can be one alternate via Bulandshahar – Sambhal Road. One can take Bulaandshahar road after getting down from Peripheral Expressway at after Ghaziabad. This road bypasses NH-9 between Ghaziabad and Moradabad. This route is also quite long as compared to NH-9 and also the road between Bulandshahar – Sambhal and Moradabad is poor and mostly of two-lane specifications. Hence in such case it has very little potential of any further traffic diversion from the project road.

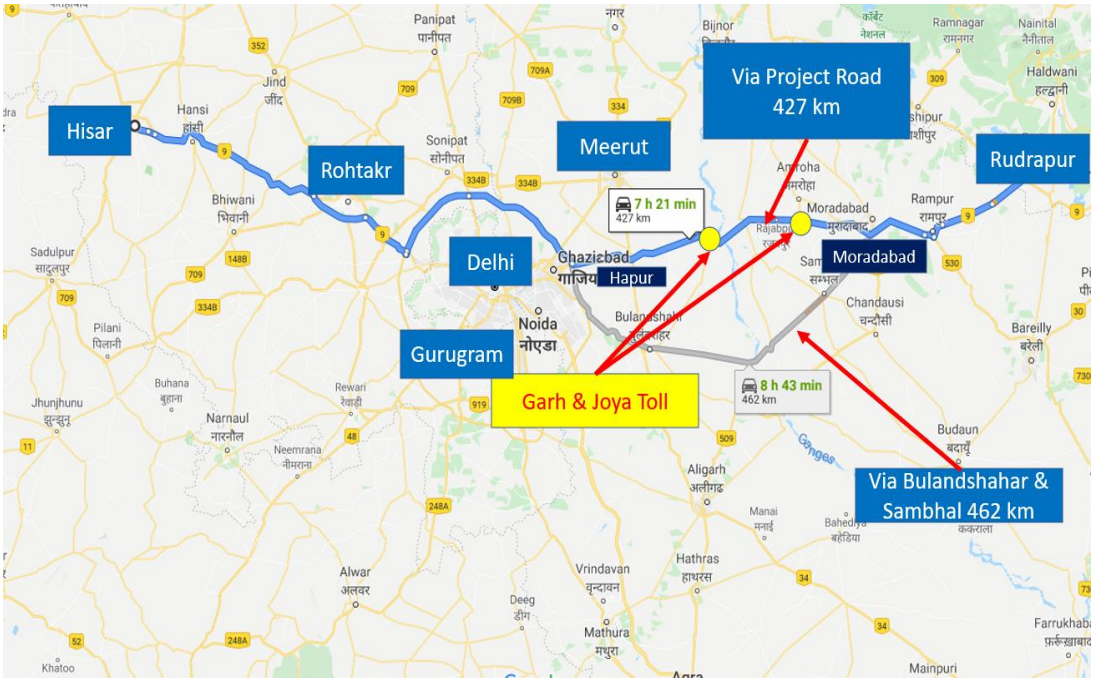


Figure 4-2: Alternate route at local level

It can be observed that the project highway forms one of the main spines of the corridor between Delhi / Ghaziabad/ Hapurand Moradabad / Rudrapur/ Haldwani. Traffic on project road is now settled, and it can be assumed as dedicated traffic on project road for logistic obligations.

With six laning now completed, the project stretch would become slightly more attractive due to the improved level of service. In such a case any diversion of traffic from the project road is not envisaged.

The following table provides summary of analysis of alternate route/ roads discussed above.

Table 4-1 : Competing Roads Details

Sr. No	Route Details	Designation	Length (Km)	Avg. Speed (KMPH)	Time Taken (Min)	Observations
Regional Level						
1	Hisar-Delhi- Bulandshahar- Sambhal- Moradabad – Rudrapur	Alternate Route	462	53	8Hr 43 Min	Alternate route is longer and has poor geometrics and specifications. Traffic diversion not envisaged
	Hisar-Delhi- Hapur- Gajrola- Moradabad – Rudrapur	Project Road	427	57	7 Hr 27 Min	
Local Level						
2	Atrasi- Amroha- Pakbara- Moradabad (bypassing Joya Toll)	Alternate Route	36	51	1 Hr.	Alternate route is unlikely to attract project traffic due to very poor geometrics and high congestion
	Atrasi- Joya- Palkbara- Moradabad	Project Road	220	50	28 Min	

Under these circumstances it is not envisaged that commercial or passenger traffic would switch to alternate roads from the project road. Further, it may be noted that since the project highway has already been commissioned and has a tolling history, the current traffic traversing the project corridor already factors in traffic diversion (if any) that may have taken place.

CHAPTER 5
GROWTH OF TRAFFIC ON PROJECT HIGHWAY

5.1 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 patterns 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 Hapur–Moradabad section of NH-9has been done taking the above factors into consideration**. "IRC: 108-2015-Guidelines for Traffic Prediction on Rural Highways"** is established best practice and has been used for traffic growth forecast.

5.2 Trend Analysis

One of the methods of estimation of future rate of growth is to assume the same rate of growth as in the past. Although such a method is more suitable for projects of short durations say 5-10 years, however for long term projections it would be erroneous to assume that the past rate of growth will continue to prevail for a long time in future. Economic conditions, which are major influencing factors, are bound to change over a long period of time. Thus, it would be necessary to modify the past trends of growth suitably.

Elasticity model of growth projection is one of the most widely acceptable methods for traffic forecasts. The same is recommended in **IRC: 108-2015-Guidelines for Traffic Prediction on Rural Highways.**

In this method the past trend of vehicular data is 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 types of vehicles. It is a proven fact that the growth pattern for passengers and goods vehicle is different. Traffic growth on any highway typically depends on a number of economic parameters. Most important and direct parameters are given as under

- Per Capita Income
- Net State Domestic Product (NSDP)
- Population

It can be observed that the ownership of a car is more closely related to affordability; hence per capita is the index which closely fits the growth of car traffic among other criteria. In a similar fashion, the following can be pairs of vehicle type and independent variable for elasticity modeling of growth.

- Car / Jeep – Par Capita Income
- Bus / Minibus – Population
- Goods Vehicle – NSDP

5.3 Estimation of Traffic Demand Elasticity

Elasticity of traffic demand is defined as the rate at which traffic intensity varies due to a change in the corresponding indicator selected. Hence, in order to estimate the elasticity of traffic demand, it is necessary to establish relationship between the growth in number of given category of vehicles with the relevant economic variable considered, such as NSDP, per capita income and population growth. Latest available data for vehicle registration, per capita income, NSDP and population is used in analysis.

As per IRC: 108-1996 the model for estimating elasticity index for the project corridor is of the following form and is given as below:

Log (P) = k x Log (EI) + A

Where,

P = Number of Vehicles (Mode wise)

EI = Economic Indicator

A = Regression constant

k = Elasticity coefficient (Regression coefficient)

The elasticity for cars 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).

The project corridor spreads across the state of Rajasthan. Toll plazas at Garh and Joya are in the state of Uttar Pradesh. For elasticity calculations, working data from Uttar Pradesh, Delhi and Haryana has been analyzed since Delhi and Haryana have substantial impact on project traffic.

The following tables and graphs depict regression and elasticity of growth model for stretch falling in Maharashtra State.

Table 5-1 : Per Capita Income Vs Car Uttar Pradesh

Year	PCI	Car	Log PCI	Log Car	PCI Growth	Average Growth
2012	32002	1108100	4.51	6.04		
2013	32908	1205374	4.52	6.08	3%	
2014	34044	1423020	4.53	6.15	3%	
2015	34583	1572217	4.54	6.20	2%	

Year	PCI	Car	Log PCI	Log Car	PCI Growth	Average Growth
2016	36973	1746117	4.57	6.24	7%	
2017	40641	2027972	4.61	6.31	10%	4.94%

Regression analysis of same is given in figure below.

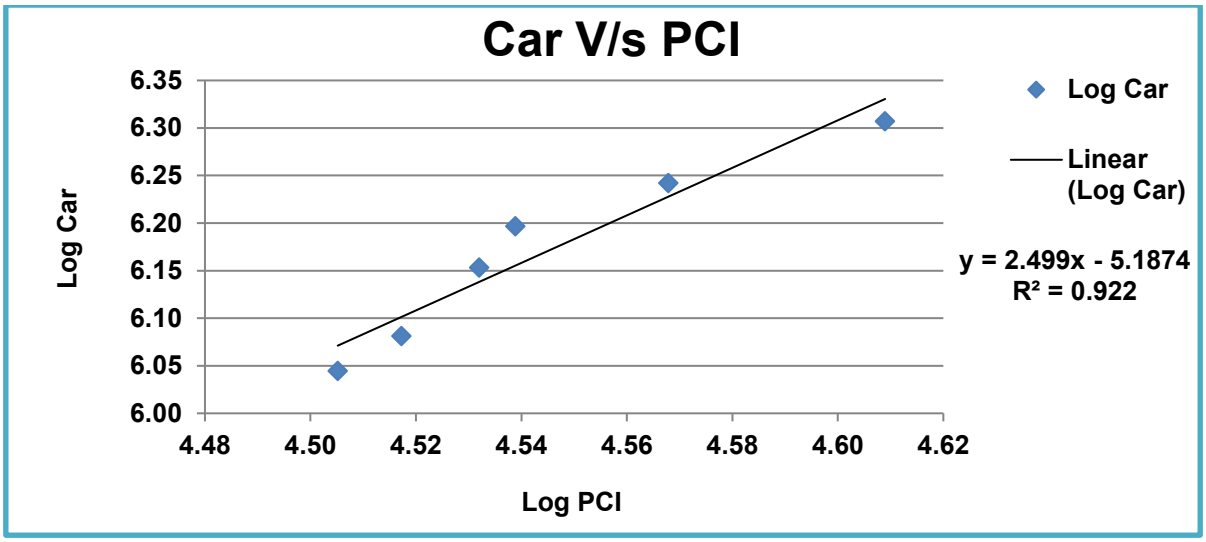


Figure 5-1: Regression and Elasticity PCI vs. Car–Extrapolation Uttar Pradesh

Table 5-2 : Population Vs Bus Uttar Pradesh

Year	Population	Buses	Log Pop	Log Bus	Pop Growth	Average Growth
2012	199812341	57901	8.30	4.76		
2013	203382046	64147	8.31	4.81	2%	
2014	206942855	74389	8.32	4.87	2%	
2015	210493544	80460	8.32	4.91	2%	
2016	214032922	89127	8.33	4.95	2%	
2017	217559836	112020	8.34	5.05	2%	1.72%

Regression analysis of same is given in figure below.

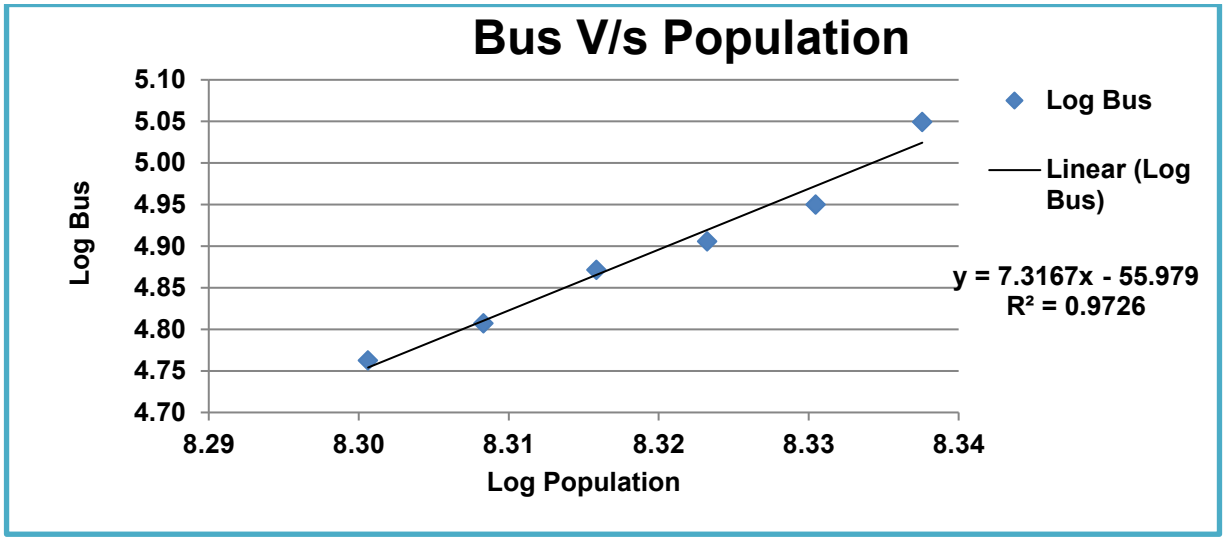


Figure 5-2: Regression and Elasticity Population vs. Bus – Extrapolation Uttar Pradesh

The elasticity of goods traffic has been worked out by regression analysis with NSDP. The following table represents the data and details.

Table 5-3 : LCV Traffic Vs NSDP Uttar Pradesh

Year	NSDP	LCV	Log NDSP	Log LCV	NSDP Growth	Average Growth (5 Year)
2012	645132	176164	5.81	5.25		
2013	673552	213657	5.83	5.33	4%	
2014	707469	265025	5.85	5.42	5%	
2015	729686	294022	5.86	5.47	3%	
2016	792049	316815	5.90	5.50	9%	5.28%

The following figure depicts regression analysis and extrapolation.

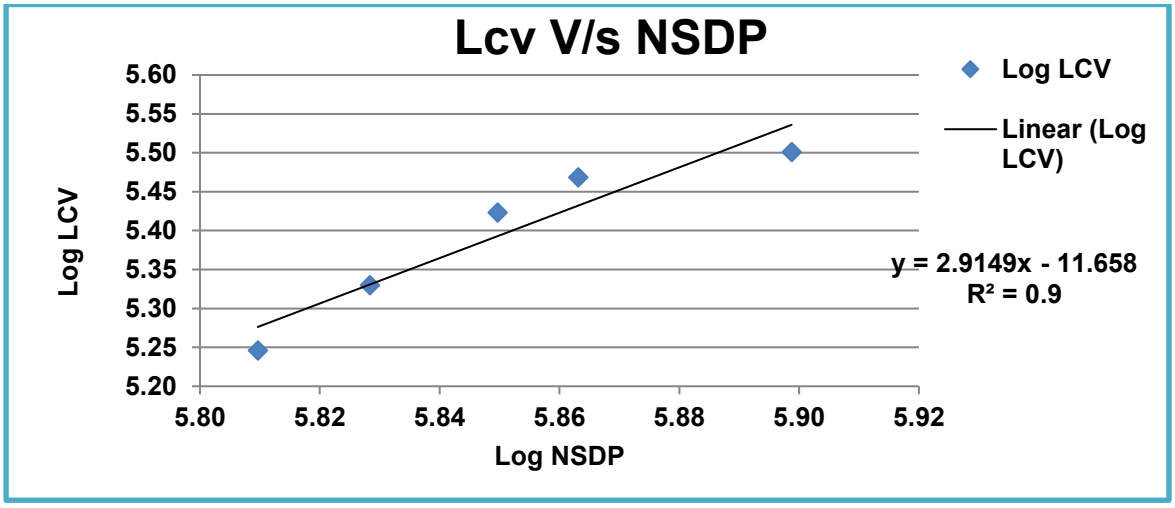


Figure 5-3: Regression and Elasticity NSDP vs. LCV Traffic – extrapolation Uttar Pradesh

Table 5-4: Trucks Traffic Vs NSDP Uttar Pradesh

Year	NSDP	Trucks	Log NDSP	Log Truck	NSDP Growth	Average Growth (5 Year)
2012	645132	162813	5.81	5.21		
2013	673552	186404	5.83	5.27	4%	
2014	707469	202761	5.85	5.31	5%	
2015	729686	217609	5.86	5.34	3%	
2016	792049	245688	5.90	5.39	9%	
2017	883962	265167	5.95	5.42	12%	6.55%

The following figure depicts regression analysis and extrapolation.

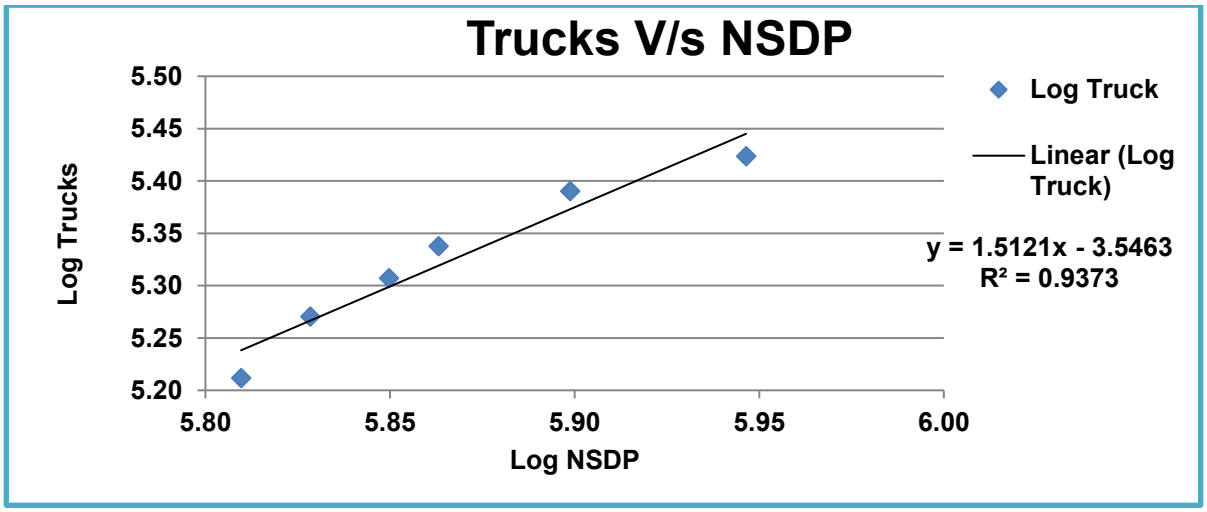


Figure 5-4: Regression and Elasticity NSDP vs. Truck Traffic – extrapolation Uttar Pradesh

Using the regression analysis above, we have arrived at the elasticity of traffic demand for each class of vehicle to a given change in relevant economic indicators. Average traffic growth of a vehicle class is multiplied by the corresponding elasticity coefficient to arrive at traffic growth. R2 statistical measure of how close the data are to the fitted regression line. It varies from 0 to 1. The higher the value of R2 more representative is the regression model of data.

The results of these analyses for *the good fit* regression as reflected by R^2 values are presented in the Table below.

Table 5-4 : Summary Regression Analysis Uttar Pradesh

State	Vehicle Category	Independent Variable	Regression Equation	R Square	Elasticity Coefficient (y)	Average Growth	Growth Elastic Model
Uttar Pradesh	Car/Jeep	PCI	y = 2.499x + -5.1874	R^2 = 0.922	2.4990	4.94%	12.34%
	Bus	Population	y = 7.3167x - - 55.9791	R^2 = 0.9726	7.3167	1.72%	12.56%
	LCV	NSDP	y = 2.9149x - - 11.6585	R^2 = 0.9	2.9149	5.28%	15.40%
	Truck	NSDP	y = 1.5121x - - 3.5463	R^2 = 0.9373	1.5121	6.55%	9.90%

The following tables and graphs depict regression and elasticity of growth model for stretch falling in Delhi State.

Table 5-5 : Per Capita Income Vs Car Delhi

Year	PCI	Car	Log PCI	Log Car	PCI Growth	Average Growth
2012	185361	2172069	5.27	6.34		
2013	193175	2416974	5.29	6.38	4%	
2014	202216	2568380	5.31	6.41	5%	
2015	215726	2730071	5.33	6.44	7%	
2016	235737	2986579	5.37	6.48	9%	
2017	247255	3061817	5.39	6.49	5%	5.95%

Regression analysis of same is given in figure below.

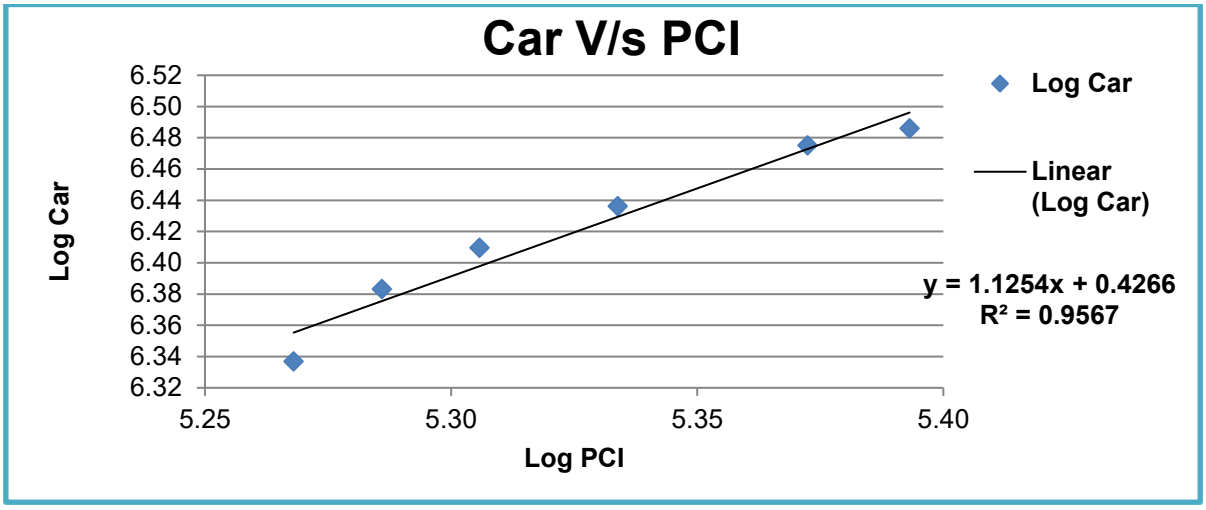


Figure 5-5: Regression and Elasticity PCI vs. Car–Extrapolation Delhi

Table 5-6 : Population Vs Bus Delhi

Year	Population	Buses	Log Pop	Log Bus	Pop Growth	Average Growth
2012	16787941	109790	7.22	5.04		
2013	17071599	19917	7.23	4.30	2%	
2014	17354281	19595	7.24	4.29	2%	
2015	17635897	19700	7.25	4.29	2%	
2016	17916359	43723	7.25	4.64	2%	
2017	18195583	41686	7.26	4.62	2%	1.62%

Regression analysis of same is given in figure below.

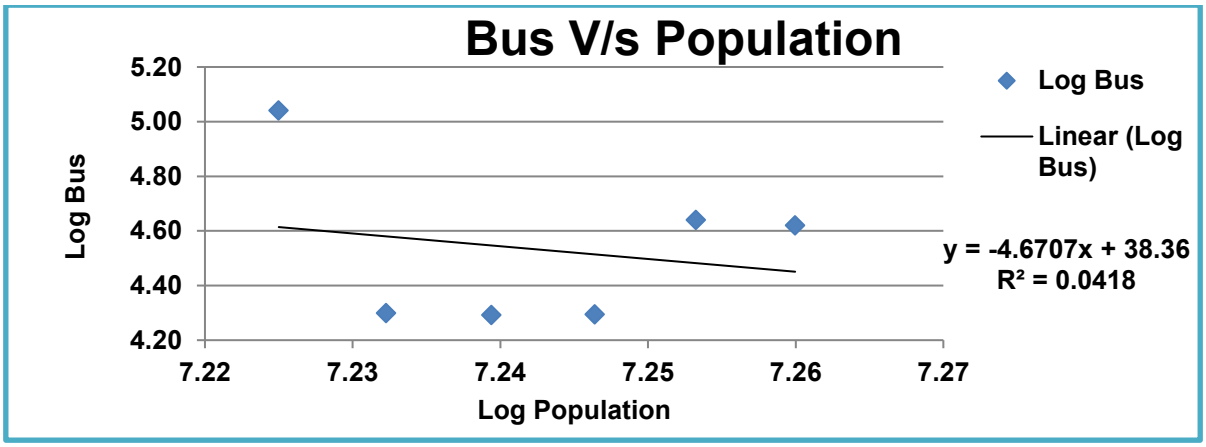


Figure 5-6: Regression and Elasticity Population vs. Bus – Extrapolation Delhi

The elasticity of goods traffic has been worked out by regression analysis with NSDP. The following table represents the data and details.

Table 5-7 : LCV Traffic Vs NSDP Delhi

Year	NSDP	LCV	Log NDSP	Log LCV	NSDP Growth	Average Growth (5 Year)
2012	314650	124547	5.50	5.10		
2013	334193	126539	5.52	5.10	6%	
2014	356528	136110	5.55	5.13	7%	
2015	387639	145903	5.59	5.16	9%	
2016	431730	183486	5.64	5.26	11%	
2017	461476	221068	5.66	5.34	7%	7.98%

The following figure depicts regression analysis and extrapolation.

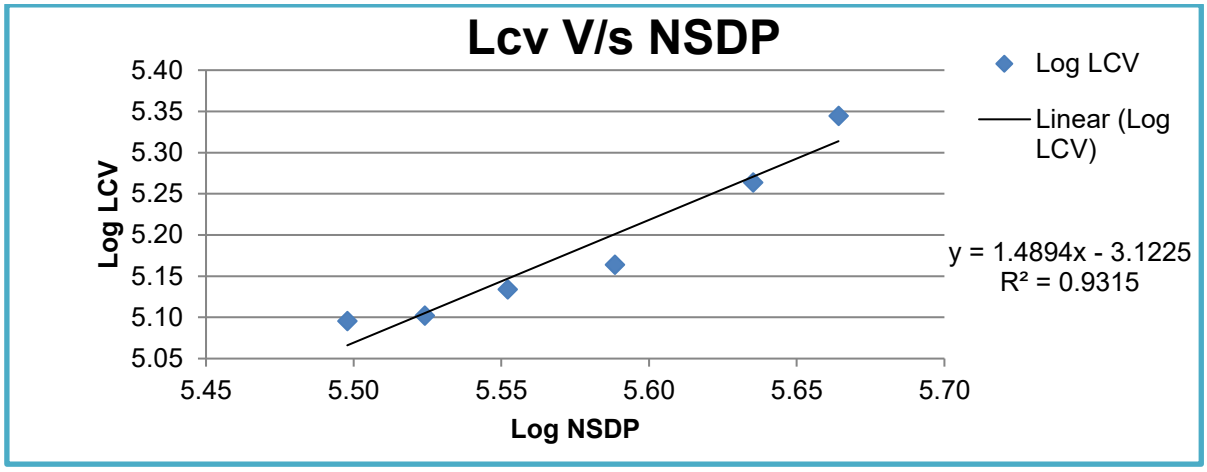


Figure 5-7: Regression and Elasticity NSDP vs. LCV Traffic – extrapolation Delhi

Table 5-4: Trucks Traffic Vs NSDP Delhi

Year	NSDP	Trucks	Log NDSP	Log Truck	NSDP Growth	Average Growth (5 Year)
2012	314650	4792	5.50	3.68		
2013	334193	5176	5.52	3.71	6%	
2014	356528	6093	5.55	3.78	7%	
2015	387639	7503	5.59	3.88	9%	
2016	431730	8703	5.64	3.94	11%	
2017	461476	10440	5.66	4.02	7%	7.98%

The following figure depicts regression analysis and extrapolation.

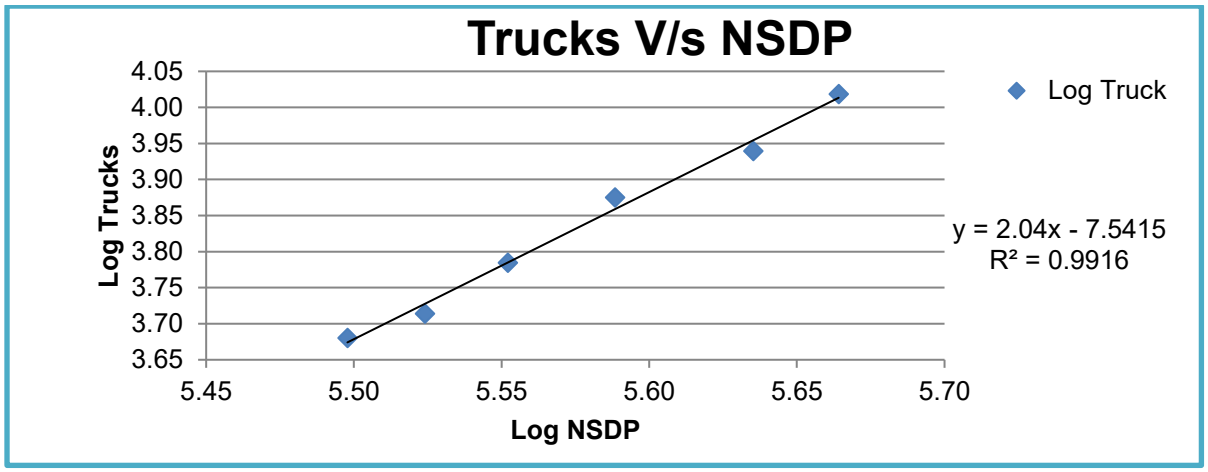


Figure 5-8: Regression and Elasticity NSDP vs. Truck Traffic – extrapolation Delhi

Using the regression analysis above, we have arrived at the elasticity of traffic demand for each class of vehicle to a given change in relevant economic indicators. Average traffic growth of a vehicle class is multiplied by the corresponding elasticity coefficient to arrive at traffic growth. R2 statistical measure of how close the data are to the fitted regression line. It varies from 0 to 1. The higher the value of R2 more representative is the regression model of data.

The results of these analyses for *the good fit* regression as reflected by R^2 values are presented in the Table below.

Table 5-8 : Summary Regression Analysis Delhi

State	Vehicle Category	Independent Variable	Regression Equation	R Square	Elasticity Coefficient (y)	Average Growth	Growth Elastic Model
Delhi	Car/Jeep	PCI	y = 1.1254x + 0.4266	R^2 = 0.9567	1.1254	5.95%	6.69%
	Bus	Population	y = -4.6707x - 38.36	R^2 = 0.0418	-4.6707	1.62%	-7.58%
	LCV	NSDP	y = 1.4894x - -3.1225	R^2 = 0.9315	1.4894	7.98%	11.88%
	Truck	NSDP	y = 2.04x - -7.5415	R^2 = 0.9916	2.0400	7.98%	16.27%

The following tables and graphs depict regression and elasticity of growth model for stretch falling in Haryana State.

Table 5-9 : Per Capita Income Vs Car Haryana

Year	PCI	Car	Log PCI	Log Car	PCI Growth	Average Growth
2012	106085	1134514	5.03	6.05		
2013	111780	1293065	5.05	6.11	5%	
2014	119791	1454182	5.08	6.16	7%	
2015	125032	1609544	5.10	6.21	4%	
2016	137818	1764448	5.14	6.25	10%	
2017	150241	1879587	5.18	6.27	9%	7.23%

Regression analysis of same is given in figure below.

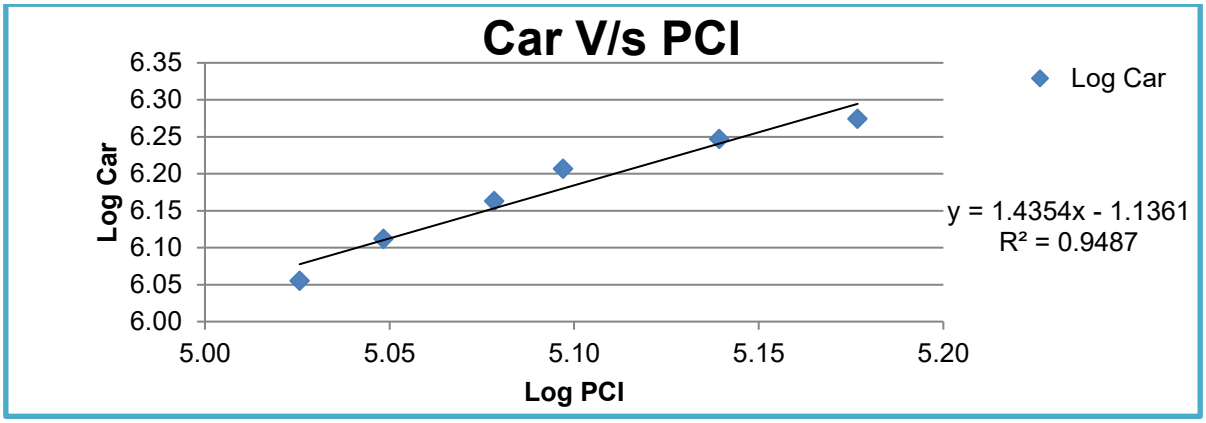


Figure 5-9: Regression and Elasticity PCI vs. Car–Extrapolation Haryana

Table 5-10 : Population Vs Bus Haryana

Year	Population	Buses	Log Pop	Log Bus	Pop Growth	Average Growth
2012	25351462	39153	7.40	4.59		
2013	25751257	43456	7.41	4.64	2%	
2014	26149236	46558	7.42	4.67	2%	
2015	26545282	52640	7.42	4.72	2%	
2016	26939286	55781	7.43	4.75	1%	
2017	27331141	60129	7.44	4.78	1%	1.52%

Regression analysis of same is given in figure below.

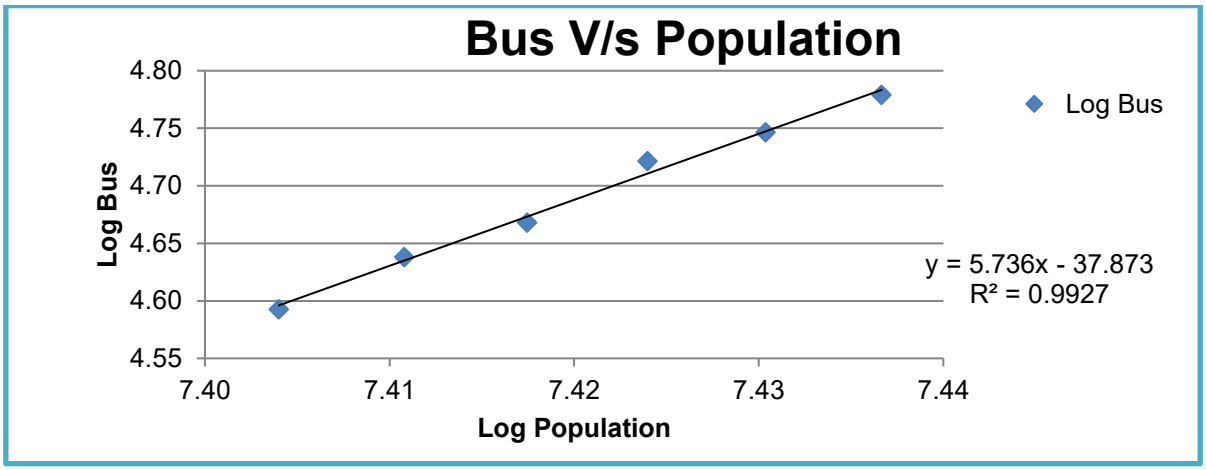


Figure 5-10: Regression and Elasticity Population vs. Bus – Extrapolation Haryana

The elasticity of goods traffic has been worked out by regression analysis with NSDP. The following table represents the data and details.

Table 5-11 : LCV Traffic Vs NSDP Haryana

Year	NSDP	LCV	Log NDSP	Log LCV	NSDP Growth	Average Growth (5 Year)
2012	271152	124897	5.43	5.10		
2013	289756	137511	5.46	5.14	7%	
2014	314931	152069	5.50	5.18	9%	
2015	333359	167901	5.52	5.23	6%	
2016	372659	182776	5.57	5.26	12%	8.30%

The following figure depicts regression analysis and extrapolation.

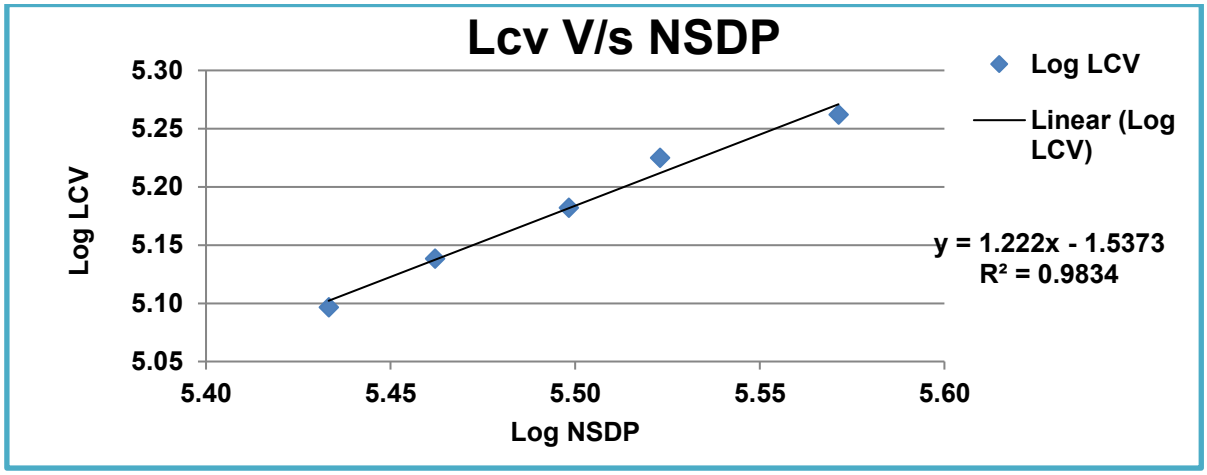


Figure 5-11: Regression and Elasticity NSDP vs. LCV Traffic – extrapolation Haryana

Table 5-4: Trucks Traffic Vs NSDP Haryana

Year	NSDP	Trucks	Log NSDP	Log Truck	NSDP Growth	Average Growth (5 Year)
2012	271152	292735	5.43	5.47		
2013	289756	307509	5.46	5.49	7%	
2014	314931	327882	5.50	5.52	9%	
2015	333359	348732	5.52	5.54	6%	
2016	372659	367730	5.57	5.57	12%	
2017	412006	390321	5.61	5.59	11%	8.75%

The following figure depicts regression analysis and extrapolation.

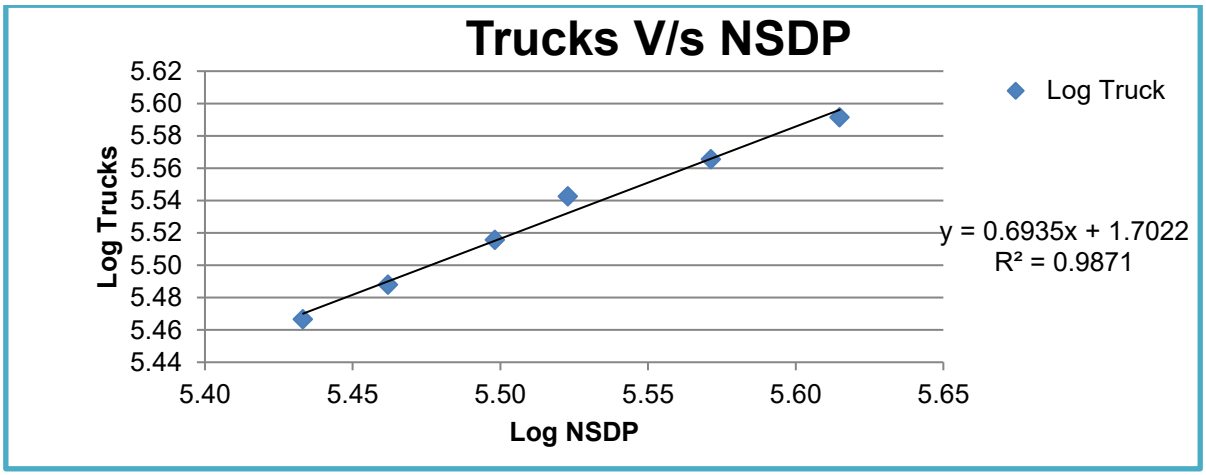


Figure 5-12: Regression and Elasticity NSDP vs. Truck Traffic – extrapolation Haryana

Using the regression analysis above, we have arrived at the elasticity of traffic demand for each class of vehicle to a given change in relevant economic indicators. Average traffic growth of a vehicle class is multiplied by the corresponding elasticity coefficient to arrive at traffic growth. R2 statistical measure of how close the data are to the fitted regression line. It varies from 0 to 1. The higher the value of R2 more representative is the regression model of data.

The results of these analyses for the good fit regression as reflected by R2 values are presented in the Table below.

Table 5-13: Summary Regression Analysis Haryana

State	Vehicle Category	Independent Variable	Regression Equation	R Square	Elasticity Coefficient (y)	Average Growth	Growth Elastic Model
Haryana	Car/Jeep	PCI	y = 1.4354x - -1.1361	R^2 = 0.9487	1.4354	7.23%	10.38%
	Bus	Population	y = 5.736x - -37.8732	R^2 = 0.9927	5.7360	1.52%	8.69%
	LCV	NSDP	y = 1.222x - -1.5373	R^2 = 0.9834	1.2220	8.30%	10.14%
	Truck	NSDP	y = 0.6935x - 1.7022	R^2 = 0.9871	0.6935	8.75%	6.07%

The economic model for predicting growth is a good tool, however other local, regional, and national factors should also be considered before finalizing growth factors. Considering factors such as proposed developments and other influencing economic factors, moderate growth should be considered. These factors are discussed in subsequent sections.

5.4 Analysis of Historic Traffic Data

Historical traffic data forms useful information for any highway project. It provides useful information for establishing past trends of growth. IRB InvIT Fund has recently acquired the project.

5.5 Other Factors Influencing Growth

There are many factors which have an impact on traffic growth. As discussed previously these factors can be economical, social, educational, and industrial.

Potentiality of such factors for project highway is discussed as under.

ECONOMY

After witnessing a slowdown during 2011-12, the economy recovered in 2013-14, and a high growth rate of GDP was recorded up to 2018-19. Pandemic of COVID-19 impacted all economies of world including India up to year 2021-22. Following figure show trend of GDP growth in India.

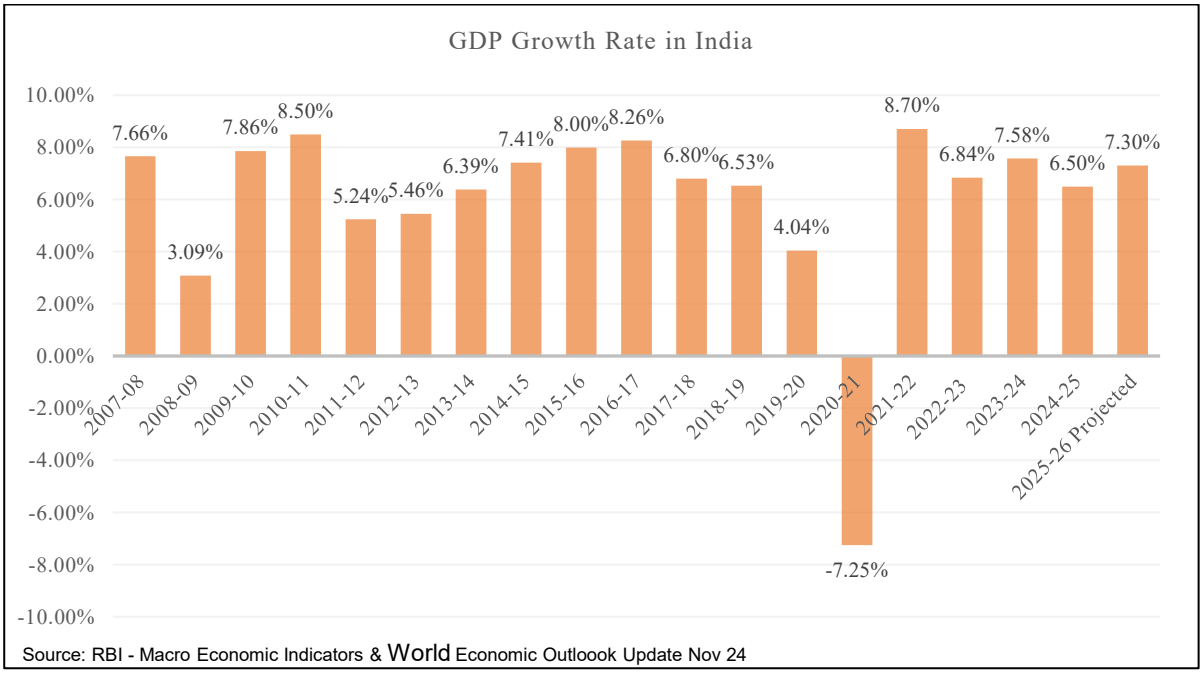


Figure 5-14: Growth of GDP in India

FY 2017-18 recorded a growth of 6.7% which had a slight impact of GST and demonetization. Indian economy appears on recovery path with estimated growth of 6.8% in FY 2018-19. The government took major policy decisions including tax infrastructure reforming, banking sector improvement and ease of doing business.

In post COVID-19 scenario, in year 2022-23 and 2023-24 India registered an impressive growth of 7% to 7.5%. In last year despite global slow down due to Russia-Ukraine war and Gaza crises, India grew at good rate of 7%(Estimated).
Indian economy is now on good growth path and all major institutions including IMF / ADB have estimated growth of Indian Economy to peg around 6.5% to 7% in coming years.

5.6 Developments along and around Project Corridor & State

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 influenced 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 there are minimal risks in terms of growth.

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 most 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 right 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.

5.6.1 Industrial Units along Project Corridor

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. 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 Sugarmill is one of the largest integrated refineries producing gsugar, ethanol and other related products. The following map shows some of the major industrial establishments along and in influence area of project stretch.

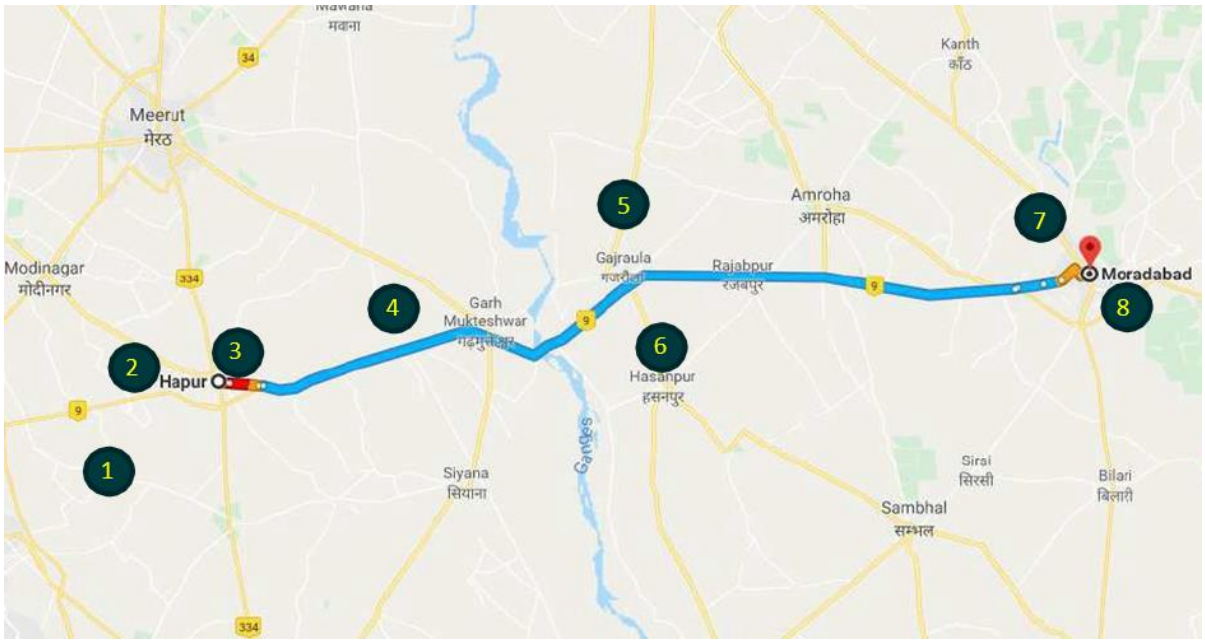


Figure 5-15: Industrial Units along project corridor

Industries shown in the above map are listed below.

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. Agentur (Industries of Milk Powder, Ghee, Acrylic Fibre, Crystal Sugar, Craft Paper)
8. **Dalpatpur** (Moradabad Dugdh Utpadan Sahakari Sangh– Milk & Milk Products)

Rapid expansion of NCR and NOIDA has triggered growth along the project corridor as well. Large number of residential projects can be seen coming up along project road near Hapur, Gajraula and Moradabad. In fact, there is a new city "New Moradabad" has come up near Pakbara on Delhi Road.

5.7 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 below. The rate of growth is moderate in light of overall regional trends. Growth of multi-Axle is kept slightly higher as trend of technological advances in logistic industry favors multi-axle over 2/3 axle carriage. It is also expected that as the economy moves from developing to developing, the rate of growth diminishes. The same growth rate is not sustainable for long. It is established practice to step down future growth rates at suitable intervals of year.

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 for corridors in both states.

5.7.1 Recommended Growth Rates of Traffic for Project Stretch

Table 5-12 : Recommended Growth Rates Optimistic

Category / Year	FY 2027-2030	FY 2031-2035	FY 2036-2040	FY 2041-2046
Car/Jeep/Van	6.01%	5.78%	4.36%	4.17%
LCV	3.06%	2.47%	1.76%	1.57%
Bus	3.20%	3.44%	2.73%	2.62%
2- Axle	3.61%	3.17%	1.76%	1.57%
3 - Axle	3.61%	3.17%	1.76%	1.57%
4 to 6 Axle	3.92%	3.43%	1.89%	1.68%
7 and Above Axle	3.92%	3.43%	1.89%	1.68%

Table 5-13 : Recommended Growth Rates Pessimistic

Category / Year	FY 2027-2030	FY 2031-2035	FY 2036-2040	FY 2041-2046
Car/Jeep/Van	5.51%	5.28%	3.86%	3.67%
LCV	2.56%	1.97%	1.26%	1.07%
Bus	2.70%	2.94%	2.23%	2.12%
2- Axle	3.11%	2.67%	1.26%	1.07%
3 - Axle	3.11%	2.67%	1.26%	1.07%
4 to 6 Axle	3.42%	2.93%	1.39%	1.18%
7 and Above Axle	3.42%	2.93%	1.39%	1.18%

Table 5-14 : Recommended Growth Rates Most Likely

Category / Year	FY 2027-2030	FY 2031-2035	FY 2036-2040	FY 2041-2046
Car/Jeep/Van	5.76%	5.53%	4.11%	3.92%
LCV	2.81%	2.22%	1.51%	1.32%
Bus	2.95%	3.19%	2.48%	2.37%

Category / Year	FY 2027-2030	FY 2031-2035	FY 2036-2040	FY 2041-2046
2- Axle	3.36%	2.92%	1.51%	1.32%
3 - Axle	3.36%	2.92%	1.51%	1.32%
4 to 6 Axle	3.67%	3.18%	1.64%	1.43%
7 and Above Axle	3.67%	3.18%	1.64%	1.43%

The Ganga Expressway, developed by Uttar Pradesh Expressways Industrial Development Authority, is a 594 km, six-lane greenfield, access-controlled highway connecting Meerut to Prayagraj. Upon becoming operational, the expressway is likely to alter traffic patterns on the Hapur–Moradabad stretch, with a partial diversion of long-distance and freight traffic to the corridor. The same has been factored in the coming years.

The annual pass system was implemented effective 15 August 2025. Accordingly, the Annual Average Daily Traffic (AADT) for the year has been computed using a blended approach, wherein traffic for the first five months reflects non-annual pass (regular toll-paying) vehicles, while traffic for the subsequent period incorporates annual pass traffic volumes.
This adjustment ensures that the reported AADT appropriately captures the change in traffic composition and usage patterns resulting from the introduction of the annual pass system.

The Moradabad Master Plan 2031 is expected to drive moderate-to-high traffic growth on the Hapur–Moradabad corridor post-2031, driven by urban expansion, industrial development, and transport upgrades. Planned MSME clusters, logistics hubs, and industrial corridors will increase both freight and commuter movement, while infrastructure such as ring roads will streamline internal traffic but channelize higher volumes onto intercity routes. Population growth and expanding commercial activity will further elevate demand, with nearby nodes like Gajraula strengthening through traffic along NH-9. Overall, improved road infrastructure will support smoother flow, albeit with significantly higher traffic volumes.

Traffic and revenue have been worked out on the basis of the above growth, and some are presented in subsequent chapters of the report.

CHAPTER 6

TRAFFIC FORECAST

6.1 Traffic Projections

Growth rates recommended in the previous section of the report are used to arrive at traffic projections for future years. Toll plaza wise futuristic traffic projection is given in tables below. These projections have been done for the following three cases of growth up to concession period.

1. Optimistic Scenario
2. Pessimistic Scenario
3. Most Likely Scenario

Table 6-1 : Total Tollable Traffic @ Toll Plaza 1- Garh @90.661 KM (Optimistic Growth Scenario)

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU (Including Exempted)
2026-27	34313	2044	2698	1876	939	2383	5	**44258**	**66013**
2027-28	36034	2106	2784	1915	959	2441	5	**46244**	**68645**
2028-29	37840	2170	2873	1955	979	2500	5	**48322**	**71392**
2029-30	39737	2236	2964	1996	1000	2561	5	**50499**	**74260**
2030-31	43027	2347	3140	2109	1057	2713	5	**54398**	**79644**
2031-32	46590	2463	3326	2228	1117	2874	5	**58603**	**85429**
2032-33	50448	2585	3523	2354	1180	3044	5	**63139**	**91648**
2033-34	54625	2714	3732	2488	1247	3224	5	**68035**	**98332**
2034-35	59147	2849	3953	2629	1318	3415	5	**73316**	**105518**
2035-36	63207	2970	4160	2781	1394	3616	5	**78133**	**112215**
2036-37	67546	3097	4378	2941	1475	3829	5	**83271**	**119343**
2037-38	72182	3228	4607	3110	1560	4054	5	**88746**	**126929**
2038-39	77136	3365	4848	3289	1650	4293	5	**94586**	**135003**
2039-40	82430	3508	5101	3478	1745	4546	5	**100813**	**143598**
2040-41	87930	3651	5362	3620	1816	4736	5	**107120**	**151985**
2041-42	93797	3800	5636	3767	1890	4934	5	**113829**	**160880**
2042-43	100056	3955	5924	3920	1967	5140	5	**120967**	**170315**
2043-44	106734	4116	6228	4080	2047	5355	5	**128565**	**180323**

Table 6-2 : Total Tollable Traffic @ Toll Plaza 2- Joya @123.875 KM

(Optimistic Growth Scenario)

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU (Including Exempted)
2026-27	24557	1583	2190	2085	940	2428	6	**33789**	**53183**
2027-28	25787	1631	2260	2129	960	2487	6	**35260**	**55195**
2028-29	27080	1681	2332	2173	980	2547	6	**36799**	**57292**
2029-30	28436	1733	2407	2219	1001	2609	6	**38411**	**59477**
2030-31	30790	1819	2550	2345	1058	2764	6	**41332**	**63683**
2031-32	33339	1909	2702	2478	1118	2928	6	**44480**	**68196**
2032-33	36099	2004	2863	2618	1181	3102	6	**47873**	**73039**
2033-34	39088	2103	3033	2766	1248	3286	6	**51530**	**78237**
2034-35	42324	2207	3213	2923	1319	3481	6	**55473**	**83817**
2035-36	45228	2301	3381	3092	1395	3686	6	**59089**	**89076**
2036-37	48333	2398	3558	3270	1476	3903	6	**62944**	**94670**
2037-38	51649	2500	3744	3459	1561	4133	6	**67052**	**100619**
2038-39	55192	2606	3940	3658	1651	4377	6	**71430**	**106947**
2039-40	58980	2717	4146	3868	1746	4634	6	**76097**	**113678**
2040-41	62916	2828	4358	4025	1817	4828	6	**80778**	**120113**
2041-42	67114	2943	4581	4189	1891	5030	6	**85754**	**126928**
2042-43	71591	3063	4815	4360	1968	5240	6	**91043**	**134146**
2043-44	76368	3188	5062	4538	2048	5459	6	**96669**	**141792**

Table 6-3 : Total Tollable Traffic @ Toll Plaza 1- Garh @ 90.661 KM

(Pessimistic Growth Scenario)

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU (Including Exempted)
2026-27	34149	2034	2685	1867	934	2372	5	**44046**	**65692**
2027-28	35690	2086	2758	1897	949	2417	5	**45802**	**67983**
2028-29	37302	2140	2832	1928	964	2463	5	**47634**	**70364**
2029-30	38986	2194	2908	1959	979	2511	5	**49542**	**72838**
2030-31	42018	2292	3067	2060	1030	2647	5	**53119**	**77755**
2031-32	45286	2394	3233	2166	1083	2790	5	**56957**	**83015**
2032-33	48810	2500	3409	2277	1139	2942	5	**61082**	**88643**
2033-34	52607	2612	3594	2395	1197	3102	5	**65512**	**94665**
2034-35	56699	2728	3790	2519	1259	3271	5	**70271**	**101110**
2035-36	60307	2830	3970	2651	1325	3447	5	**74535**	**107022**
2036-37	64144	2936	4158	2790	1395	3632	5	**79060**	**113286**
2037-38	68226	3046	4355	2937	1468	3827	5	**83864**	**119921**
2038-39	72568	3160	4561	3092	1545	4033	5	**88964**	**126950**
2039-40	77187	3279	4777	3255	1626	4251	5	**94380**	**134398**
2040-41	81952	3396	4997	3371	1684	4408	5	**99813**	**141577**
2041-42	87012	3517	5228	3492	1744	4570	5	**105568**	**149156**
2042-43	92382	3642	5469	3616	1806	4738	5	**111658**	**157159**
2043-44	98085	3772	5721	3745	1871	4912	5	**118111**	**165609**

Table 6-4 : Total Tollable Traffic @ Toll Plaza 2- Joya @123.875 KM

(Pessimistic Growth Scenario)

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU (Including Exempted)
2026-27	24438	1576	2180	2076	935	2416	6	**33627**	**52924**
2027-28	25541	1616	2239	2109	950	2462	6	**34923**	**54661**
2028-29	26693	1657	2299	2143	965	2509	6	**36272**	**56465**
2029-30	27898	1699	2361	2178	980	2558	6	**37680**	**58336**
2030-31	30068	1775	2489	2291	1031	2697	6	**40357**	**62170**
2031-32	32406	1855	2625	2410	1084	2844	6	**43230**	**66265**
2032-33	34927	1938	2768	2535	1140	2999	6	**46313**	**70640**
2033-34	37645	2025	2919	2666	1199	3162	6	**49622**	**75315**
2034-35	40574	2115	3078	2803	1261	3334	6	**53171**	**80310**
2035-36	43155	2195	3224	2951	1327	3513	6	**56371**	**84947**
2036-37	45901	2278	3377	3106	1397	3702	6	**59767**	**89857**
2037-38	48822	2363	3537	3269	1470	3902	6	**63369**	**95055**
2038-39	51929	2452	3705	3441	1547	4112	6	**67192**	**100559**
2039-40	55232	2544	3880	3622	1628	4333	6	**71245**	**106385**
2040-41	58642	2634	4059	3751	1686	4493	6	**75271**	**111876**
2041-42	62260	2728	4247	3885	1746	4659	6	**79531**	**117665**
2042-43	66103	2825	4443	4024	1808	4830	6	**84039**	**123770**
2043-44	70184	2926	4648	4167	1873	5008	6	**88812**	**130207**

Traffic projections for Most Likely scenario is given as under

Table 6-5 : Total Tollable Traffic @ Toll Plaza 1- Garh @ 90.661 KM

(Most Likely Growth Scenario)

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU (Including Exempted)
2026-27	34232	2040	2692	1871	936	2378	5	**44154**	**65852**
2027-28	35863	2098	2771	1905	953	2430	5	**46025**	**68313**
2028-29	37571	2156	2853	1940	970	2482	5	**47977**	**70877**
2029-30	39362	2216	2937	1976	988	2536	5	**50020**	**73546**
2030-31	42521	2320	3104	2083	1041	2680	5	**53754**	**78695**
2031-32	45936	2430	3280	2196	1098	2832	5	**57777**	**84215**
2032-33	49624	2544	3466	2315	1157	2993	5	**62104**	**90135**
2033-34	53610	2664	3663	2441	1220	3163	5	**66766**	**96483**
2034-35	57914	2790	3871	2573	1286	3343	5	**71782**	**103293**
2035-36	61745	2902	4064	2715	1357	3531	5	**76319**	**109591**
2036-37	65829	3018	4267	2865	1431	3731	5	**81146**	**116278**
2037-38	70182	3139	4480	3023	1510	3941	5	**86280**	**123379**
2038-39	74825	3265	4704	3189	1593	4163	5	**91744**	**130920**
2039-40	79773	3396	4939	3365	1681	4397	5	**97556**	**138928**
2040-41	84896	3526	5179	3494	1745	4570	5	**103415**	**146695**
2041-42	90349	3661	5431	3628	1812	4749	5	**109635**	**154914**
2042-43	96151	3800	5695	3767	1881	4935	5	**116234**	**163612**
2043-44	102327	3945	5973	3911	1953	5129	5	**123243**	**172818**

Table 6-6 : Total Tollable Traffic @ Toll Plaza 2- Joya @123.875 KM

(Most Likely Growth Scenario)

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU (Including Exempted)
2026-27	24496	1580	2185	2080	937	2422	6	**33706**	**53053**
2027-28	25663	1624	2249	2118	954	2474	6	**35088**	**54928**
2028-29	26884	1669	2316	2157	971	2528	6	**36531**	**56877**
2029-30	28164	1716	2384	2197	989	2583	6	**38039**	**58904**
2030-31	30425	1797	2520	2316	1043	2730	6	**40837**	**62923**
2031-32	32868	1882	2664	2441	1099	2885	6	**43845**	**67225**
2032-33	35506	1971	2816	2573	1159	3049	6	**47080**	**71831**
2033-34	38357	2063	2977	2713	1221	3223	6	**50560**	**76764**
2034-35	41437	2160	3147	2859	1287	3407	6	**54303**	**82046**
2035-36	44178	2247	3303	3016	1358	3599	6	**57707**	**86990**
2036-37	47099	2337	3467	3182	1433	3802	6	**61326**	**92235**
2037-38	50213	2431	3640	3357	1512	4017	6	**65176**	**97801**
2038-39	53534	2528	3821	3541	1595	4243	6	**69268**	**103707**
2039-40	57074	2629	4011	3736	1683	4482	6	**73621**	**109975**
2040-41	60739	2730	4207	3879	1748	4658	6	**77967**	**115926**
2041-42	64640	2834	4412	4027	1815	4842	6	**82576**	**122214**
2042-43	68791	2942	4627	4181	1885	5032	6	**87464**	**128860**
2043-44	73208	3055	4852	4341	1957	5230	6	**92649**	**135883**

6.2 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 Hapur-Moradabad project, the Target Date and Target Traffic are defined as under:

Target Date - 1st April 2028

Target Traffic - 67413 in PCU

It was observed that as per traffic projections, traffic volume falls short of target traffic in all scenarios. This warrants an extension of the concession period. Extension of the concession period is worked out as per article 29 of concession agreement. The following table provides details of modification in concession
agreement.

Most Likely

Target Year	Target Traffic	Actual Traffic	% of Excess / Short traffic	% Revision (+ or -) in CP as per CA	% Variation in CP	Original CP	Change in CP (In Years)
2028	67413	63908	-5%	8%	8%	22	1.7

Optimistic

Target Year	Target Traffic	Actual Traffic	% of Excess / Short traffic	% Revision (+ or -) in CP as per CA	% Variation in CP	Original CP	Change in CP (In Years)
2028	67413	64377	-5%	7%	7%	22	1.5

Pessimistic

Target Year	Target Traffic	Actual Traffic	% of Excess / Short traffic	% Revision (+ or -) in CP as per CA	% Variation in CP	Original CP	Change in CP (In Years)
2028	67413	63441	-6%	9%	9%	22	1.9

CHAPTER 7

FORECAST OF TOLL REVENUE

7.1 General

This chapter presents the tolling rate calculations, categories and toll revenue of the project.

7.2 Discount Categories

The fee schedule in the CA of Hapur-Moradabad section of NH-9 is based on the old toll policy. As per the Toll Notification (Schedule -G) the discounts and special provisions have been considered. In addition to discounts as per Fee Notification concessionaire has declared special category rates also. Salient features of toll rate structure are given as under

1. Monthly Pass: For frequent user's monthly pass would be issued for 50 trips in month at 2/3d rate.
2. Multiple Journeys (for Return Trip): Will be charged at 1.5 times single journey.
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 Discounts: There are several categories of local discounts.
    a) Local Car Jeep Van I - Rs. 350 per month
    b) Local Commercial Vehicles at 50% rate for single journey

Building of inflation and escalation of rate on the basis of WPI are done as per toll notification (Schedule G) as given under as extract from concession agreement.

The formula for determining the applicable rate of fee shall be as follows:-

$$\text{Applicable rate of fee} = \text{base rate} + \text{base rate} \times \left\{ \frac{\text{WPI A-WPI B}}{\text{WPI B}} \right\} \times 0.4$$

Factors of inflation / growth have been incorporated as per Schedule R. WPI are available up to the year 2025-26.

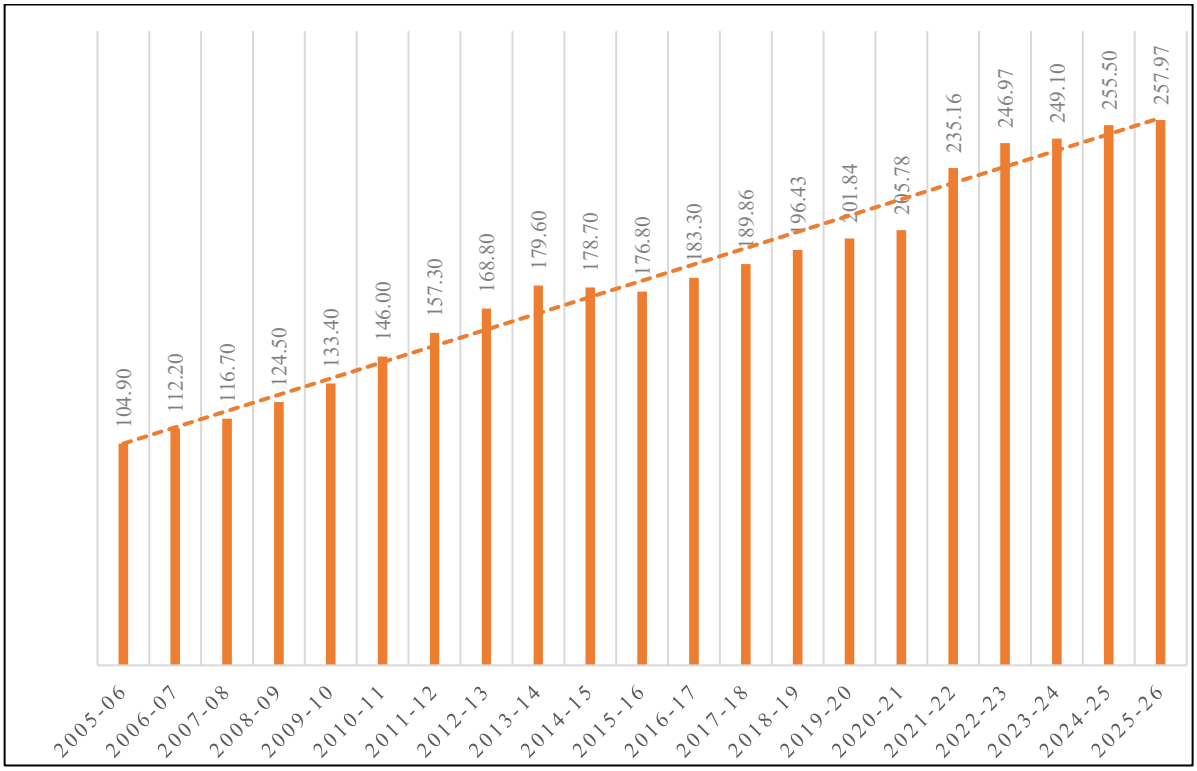


Figure 7-1 : Historical Rate of WPI Inflation in India

The wholesale price index (WPI) and the inflation rate in the past are presented in Table below.

Table 7-1 : Base Toll Rates June 2007-08

December of year	2021	2022	2023	2024	2025	Avg.
WPI	235.2	247.0	249.1	255.5	257.97	
Inflation	14.27%	5.02%	0.86%	2.57%	0.96%	4.74%

WPI of December 2025 is posted on ministry site which is shows 0.96% inflation from the previous year. Same has been applied for FY 2026-27.

The average WPI inflation over the period FY 2021 to FY 2025 works out to approximately 4.74%, reflecting inflationary cycles across both high and low inflation years. Based on this analysis, an annual escalation factor of 4.5% has been adopted for the remaining concession period.

7.3 Estimation of Toll Rates

As per the applicable MORTH notification and Schedule R of contract agreement, the following Base rate of fee for the categories mentioned in the table stands true in the National Highways Fee Rules applicable for contract.

Table 7-2 : Base Toll Rates June 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 Minibus	1.05
Bus or Truck (Two Axles)	2.20
Three Axle Commercial Vehicles	2.40
Heavy Construction Machinery (HCM) or Earth Moving Equipment (EME) or Multi Axle Vehicle (MAV) (4 to 6 axles)	3.45
Oversized Vehicles (7 or more Axles)	4.20

There is no bypass or structure to be factored in for rates calculations.

Toll rates are calculated as per guidelines provided in schedule R (rounded to nearest Rs.) for the concession period and are given below.

Thus, worked out rates for various categories of vehicle and discounts are given below.

Table 7-3 : Toll Rates for Single Journey@ Km 90.661

Year	Car	Minibus /LCV	Bus	Truck	3 Axle	Multi axle	Oversized Vehicles
2026-27	125	200	415	415	455	655	795
2027-28	130	210	435	435	475	685	835
2028-29	135	220	455	455	500	715	875
2029-30	140	230	480	480	520	750	915
2030-31	150	240	500	500	545	785	955
2031-32	155	250	525	525	575	825	1005
2032-33	165	265	550	550	600	865	1050
2033-34	170	275	575	575	630	905	1100
2034-35	180	290	605	605	660	945	1155
2035-36	185	300	635	635	690	995	1210
2036-37	195	315	665	665	725	1040	1265
2037-38	205	330	695	695	760	1090	1330
2038-39	215	350	730	730	795	1145	1390
2039-40	225	365	765	765	835	1200	1460
2040-41	235	385	800	800	875	1260	1530
2041-42	250	400	840	840	920	1320	1605
2042-43	260	420	885	885	965	1385	1685
2043-44	275	440	925	925	1010	1450	1770

Table 7 3: Toll Rates for Single Journey @ Km 123.875

Year	Car	Minibus /LCV	Bus	Truck	3 Axle	Multi axle	Oversized Vehicles
2026-27	75	120	250	250	275	395	480
2027-28	80	125	265	265	285	410	500
2028-29	80	130	275	275	300	430	525
2029-30	85	140	290	290	315	450	550
2030-31	90	145	300	300	330	475	575
2031-32	95	150	315	315	345	495	605
2032-33	100	160	330	330	360	520	630
2033-34	105	165	345	345	380	545	665
2034-35	105	175	365	365	395	570	695
2035-36	115	180	380	380	415	600	730
2036-37	120	190	400	400	435	625	765
2037-38	125	200	420	420	455	655	800
2038-39	130	210	440	440	480	690	840
2039-40	135	220	460	460	500	720	880
2040-41	145	230	485	485	525	755	920
2041-42	150	240	505	505	555	795	965
2042-43	155	255	530	530	580	835	1015
2043-44	165	265	560	560	610	875	1065

Table 7-4 : Toll Rates for Return Journey @ Km 90.661

Year	Car	Minibus /LCV	Bus	Truck	3 Axle	Multi axle	Oversized Vehicles
2026-27	185	300	625	625	685	980	1195
2027-28	195	315	655	655	715	1025	1250
2028-29	205	325	685	685	750	1075	1310
2029-30	210	345	720	720	785	1125	1370
2030-31	220	360	750	750	820	1180	1435
2031-32	235	375	790	790	860	1235	1505
2032-33	245	395	825	825	900	1295	1575
2033-34	255	415	865	865	945	1355	1650
2034-35	270	430	905	905	990	1420	1730
2035-36	280	455	950	950	1035	1490	1815
2036-37	295	475	995	995	1085	1560	1900
2037-38	310	500	1045	1045	1140	1635	1990
2038-39	325	520	1095	1095	1195	1715	2090
2039-40	340	550	1145	1145	1250	1800	2190
2040-41	355	575	1205	1205	1310	1885	2295
2041-42	375	600	1260	1260	1375	1980	2410
2042-43	390	630	1325	1325	1445	2075	2525
2043-44	410	665	1390	1390	1515	2180	2650

Table 7-5 : Toll Rates for Return Journey @ Km 123.875

Year	Car	Minibus /LCV	Bus	Truck	3 Axle	Multi axle	Oversized Vehicles
2026-27	110	180	375	375	410	590	720
2027-28	115	190	395	395	430	620	755
2028-29	120	195	415	415	450	650	790
2029-30	130	205	430	430	470	680	825
2030-31	135	215	455	455	495	710	865
2031-32	140	225	475	475	515	745	905
2032-33	145	235	495	495	540	780	950
2033-34	155	250	520	520	570	815	995
2034-35	160	260	545	545	595	855	1040
2035-36	170	275	570	570	625	895	1090
2036-37	175	285	600	600	655	940	1145
2037-38	185	300	630	630	685	985	1200
2038-39	195	315	660	660	720	1035	1255
2039-40	205	330	690	690	755	1085	1320
2040-41	215	345	725	725	790	1135	1385
2041-42	225	365	760	760	830	1190	1450
2042-43	235	380	795	795	870	1250	1520
2043-44	245	400	835	835	910	1310	1595

Table 7-6 : Toll Rates for Monthly Pass Local @ Km 90.661

Year	Car	Minibus /LCV
2026-27	360	360
2027-28	375	375
2028-29	395	395
2029-30	415	415
2030-31	430	430
2031-32	455	455
2032-33	475	475
2033-34	495	495
2034-35	520	520
2035-36	545	545
2036-37	570	570
2037-38	600	600
2038-39	630	630
2039-40	660	660
2040-41	690	690
2041-42	725	725
2042-43	760	760
2043-44	800	800

Table 7-7 : Toll Rates for Monthly Pass Local @ Km 123.87

Year	Car	Minibus /LCV
2026-27	360	360
2027-28	375	375
2028-29	395	395
2029-30	415	415
2030-31	430	430
2031-32	455	455
2032-33	475	475
2033-34	495	495
2034-35	520	520
2035-36	545	545
2036-37	570	570
2037-38	600	600
2038-39	630	630
2039-40	660	660
2040-41	690	690
2041-42	725	725
2042-43	760	760
2043-44	800	800

Table 7-8 : Toll Rates for Monthly Pass @ Km 90.661

Year	Car	Minibus /LCV	Bus	Truck	3 Axle	Multi axle	Oversized Vehicles
2026-27	4110	6635	13905	13905	15170	21805	26545
2027-28	4300	6950	14555	14555	15880	22830	27790
2028-29	4505	7275	15240	15240	16630	23900	29100
2029-30	4715	7620	15960	15960	17410	25030	30470
2030-31	4940	7980	16715	16715	18235	26215	31910
2031-32	5175	8355	17510	17510	19100	27455	33425
2032-33	5420	8755	18340	18340	20010	28765	35015
2033-34	5680	9170	19215	19215	20965	30135	36685
2034-35	5950	9610	20135	20135	21965	31575	38440
2035-36	6235	10070	21105	21105	23020	33095	40285
2036-37	6535	10555	22120	22120	24130	34685	42225
2037-38	6850	11065	23185	23185	25295	36360	44265
2038-39	7185	11605	24310	24310	26520	38125	46410
2039-40	7530	12165	25495	25495	27810	39975	48670
2040-41	7900	12760	26735	26735	29165	41925	51040
2041-42	8285	13385	28045	28045	30595	43975	53540
2042-43	8690	14040	29420	29420	32095	46135	56165
2043-44	9120	14730	30865	30865	33675	48405	58930

Table 7-9 : Toll Rates for Monthly Pass @ Km 123.875

Year	Car	Minibus /LCV	Bus	Truck	3 Axle	Multi axle	Oversized Vehicles
2026-27	2475	3995	8370	8370	9130	13130	15980
2027-28	2590	4185	8765	8765	9560	13745	16730
2028-29	2710	4380	9175	9175	10010	14390	17520

Year	Car	Minibus /LCV	Bus	Truck	3 Axle	Multi axle	Oversized Vehicles
2029-30	2840	4585	9610	9610	10485	15070	18345
2030-31	2975	4805	10065	10065	10980	15780	19215
2031-32	3115	5030	10540	10540	11500	16530	20125
2032-33	3265	5270	11045	11045	12045	17315	21080
2033-34	3420	5520	11570	11570	12620	18145	22085
2034-35	3580	5785	12125	12125	13225	19010	23145
2035-36	3755	6065	12705	12705	13860	19925	24255
2036-37	3935	6355	13315	13315	14525	20885	25425
2037-38	4125	6665	13960	13960	15230	21890	26650
2038-39	4325	6985	14635	14635	15965	22955	27945
2039-40	4535	7325	15350	15350	16745	24070	29300
2040-41	4755	7680	16095	16095	17560	25240	30730
2041-42	4990	8060	16885	16885	18420	26475	32235
2042-43	5235	8455	17710	17710	19325	27775	33815
2043-44	5490	8870	18585	18585	20275	29145	35480

7.4 Toll Revenue

As indicated earlier, toll revenue on the Project Road has been calculated in all three scenarios based on above rates and projected traffic. The estimates of toll revenue under **Optimistic, Pessimistic and Most Likely** growth scenarios are presented in the following section.

7.5 Toll Revenue at all toll plazas under Scenarios

Toll Revenue estimates under all scenarios at each of the toll plaza up to 2043-44 starting from the year 2026-27 are shown in tables below.

Table 7-10 : Toll Revenue Optimistic Scenario

(Rs. Crores)

Year	TP-1	TP2	Total
2026-27	269.98	137.97	**407.95**
2027-28	294.15	151.17	**445.32**
2028-29	318.29	161.05	**479.34**
2029-30	344.34	176.51	**520.85**
2030-31	389.34	198.47	**587.81**
2031-32	435.20	223.08	**658.28**
2032-33	490.12	247.10	**737.22**
2033-34	546.34	278.17	**824.51**
2034-35	617.37	306.44	**923.81**
2035-36	680.25	348.33	**1028.59**
2036-37	758.80	385.66	**1144.46**
2037-38	847.87	429.38	**1277.25**
2038-39	946.51	478.03	**1424.53**
2039-40	1052.28	527.81	**1580.09**
2040-41	1161.92	588.47	**1750.39**

Year	TP-1	TP2	Total
2041-42	1298.03	648.30	**1946.33**
2042-43	1427.98	713.70	**2141.67**
2043-44	1595.39	797.22	**2392.62**

Table 7-11 : Toll Revenue Pessimistic Scenario

(Rs. Crores)

Year	TP-1	TP2	Total
2026-27	268.74	137.28	**406.01**
2027-28	291.35	149.68	**441.03**
2028-29	313.74	158.68	**472.42**
2029-30	337.78	173.06	**510.83**
2030-31	380.11	193.66	**573.77**
2031-32	422.89	216.64	**639.53**
2032-33	474.04	238.83	**712.87**
2033-34	525.90	267.58	**793.48**
2034-35	591.57	293.39	**884.97**
2035-36	648.73	331.92	**980.65**
2036-37	720.19	365.75	**1085.94**
2037-38	800.98	405.33	**1206.30**
2038-39	889.94	449.11	**1339.05**
2039-40	984.79	493.56	**1478.35**
2040-41	1082.28	547.73	**1630.02**
2041-42	1203.37	600.61	**1803.97**
2042-43	1317.68	658.06	**1975.74**
2043-44	1465.25	731.58	**2196.83**

Table 7-12 : Toll Revenue Most Likely Scenario

(Rs. Crores)

Year	TP-1	TP2	Total
2026-27	269.40	137.62	**407.02**
2027-28	292.81	150.41	**443.22**
2028-29	316.07	159.85	**475.91**
2029-30	341.13	174.77	**515.89**
2030-31	384.78	196.01	**580.79**
2031-32	429.13	219.78	**648.91**
2032-33	482.22	242.90	**725.12**

Year	TP-1	TP2	Total
2033-34	536.29	272.79	**809.07**
2034-35	604.67	299.79	**904.46**
2035-36	664.71	339.96	**1004.67**
2036-37	739.70	375.50	**1115.20**
2037-38	824.69	417.09	**1241.79**
2038-39	918.47	463.25	**1381.72**
2039-40	1018.75	510.34	**1529.09**
2040-41	1122.28	567.68	**1689.96**
2041-42	1250.81	623.95	**1874.76**
2042-43	1372.84	685.29	**2058.13**
2043-44	1530.14	763.69	**2293.83**

CHAPTER 8

CONCLUSION AND RECOMMENDATIONS

8.1 Conclusion & Recommendations

Project stretch of Hapur to Moradabad section of NH-9 in state of Uttar Pradesh from km 50.000 to km 148.277 is currently four lane and would be augmented to six lane in current concession. The road is in sound condition and serves healthy traffic volumes. Project corridor is a part of the busy and prominent national highway NH-9 which is main link for traffic from Punjab, Haryana, Delhi to Moradabad, Rampur and eastern part of Uttarakhand. There are large number of townships, industrial corridors and other business establishments coming up along the project corridor. As Indian economy is poised to grow at 7%+ post COVID-19, the project corridor is expected to pick up the same trend in terms of traffic flow. All these developments have potential to give a positive impact to traffic flow on the project. The following can be considered as major outcomes of the study.

a) There is a good amount of tollable traffic running on the project.

b) Project corridor has potential to witness traffic growth @ 6-8% annually Post COVID-19 in near future due to various development in area and overall development of economy.

c) The Project corridor has committed traffic as long route traffic and does not run a risk of traffic leakage due to quality competing road.

Based on the above it can be considered a stable healthy project from the traffic and revenue point of view.



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IRB InvIT Fund

KISHANGARH TO GULABPURA SECTION OF NH-79 &NH-79A IN THE STATE OF RAJASTHAN (LENGTH 90 KM)







GMD CONSULTANTS ★ NAVI MUMBAI ★

TRAFFIC STUDY & REVENUE PROJECTION REPORT (FINAL)

MAY 2026

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TRAFFIC STUDY & REVENUE PROJECTION REPORT (FINAL)

MAY 2026

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ABBREVIATIONS

AADT	-	Annual Average Daily Traffic	**NHAI**	-	National Highway Authority of India
BOT	-	Build Operate Transfer	**NHDP**	-	National Highways Development Project
CAGR	-	Compound Annual Growth Rate	**NSDP**	-	Net State Domestic Product
CTV	-	Classified traffic volume	**O&M**	-	Operation & Maintenance
DBFOT	-	Design, Build, Finance, Operate & Transfer	**PCDP**	-	Per Capita Domestic Product
EME	-	Earth Moving Equipment	**PCI**	-	Per Capita Income
GDP	-	Gross Domestic Product	**PCU**	-	Passenger Car Unit
GSDP	-	Gross State Domestic Product	**PSC**	-	Pre-stressed Concrete
HCM	-	Heavy Construction Machinery	**RCC**	-	Reinforced cement concrete
HCV	-	Heavy Commercial Vehicle	**RHS**	-	Right Hand Side
HTMS	-	Highway Traffic Management System	**SH**	-	State Highway
IRC	-	Indian Road Congress	**TP**	-	Toll Plaza
IRR	-	Internal Rate of Return	**WPI**	-	Wholesale Price Index
LCV	-	Light Commercial Vehicle	**SIR**	-	Special Investment Region
LHS	-	Left Hand Side	**c.**	-	Circa
LGV	-	Light Goods Vehicle	**ROB**	-	Railway Over Bridge
MAV	-	Multi Axle Vehicle	**MDR**	-	Major District Road
MORTH	-	Ministry of Road Transport and Highways	**ODR**	-	Other District Road
NH	-	National Highway	**CA**	-	Concession Agreement
PCC	-	Plain Cement Concrete	**RMT**	-	Running Meter
CR	-	Coarse Rubble			

CHAPTER 1

INTRODUCTION

1.1 Background

The Government of India through National Highway Authority of India (NHAI) embarked upon a program to enhance the traffic capacity and safety for efficient transportation of goods as well as passenger traffic on National Highway Sections under NHDP Phase V. Under Phase V NHAI has planned to convert 6,500 km of existing 4-lane National Highways into 6-lane National Highway. Sections envisaged under 6-laning comprise the Golden Quadrilateral section (5,700 km) and some other sections which are 800 km in length.

The project under consideration, Six Laning of **Kishangarh** to **Gulabpura** section of NH-79A & NH-79 (length 90.00km) is one such road project NHAI intended to implement on a BOT basis in the DBFOT format. *M/s Kishangarh Gulabpura Tollway Ltd.* (Concessionaire) has been awarded the Project for a concession period of 20 years starting from 21st February 2018. The Project has been commissioned and is currently in the operation / maintenance phase. Six laning of project has also been completed in July 2022.

Length of project road is 90.00 Kms. The project road is section of NH-79A & 79 A, which connects Ajmer to Ghat Bilod. Project section of NH-79 passes through the district of Bhiwara and Ajmer.

Project road alignment passes through the small towns of Shreenagar, Nasirabad, Jharwasa, Bandanwara and Bijainagar (Vijay Nagar). The following figure shows alignment of the project road section from Kishangarh to Gulabpura.

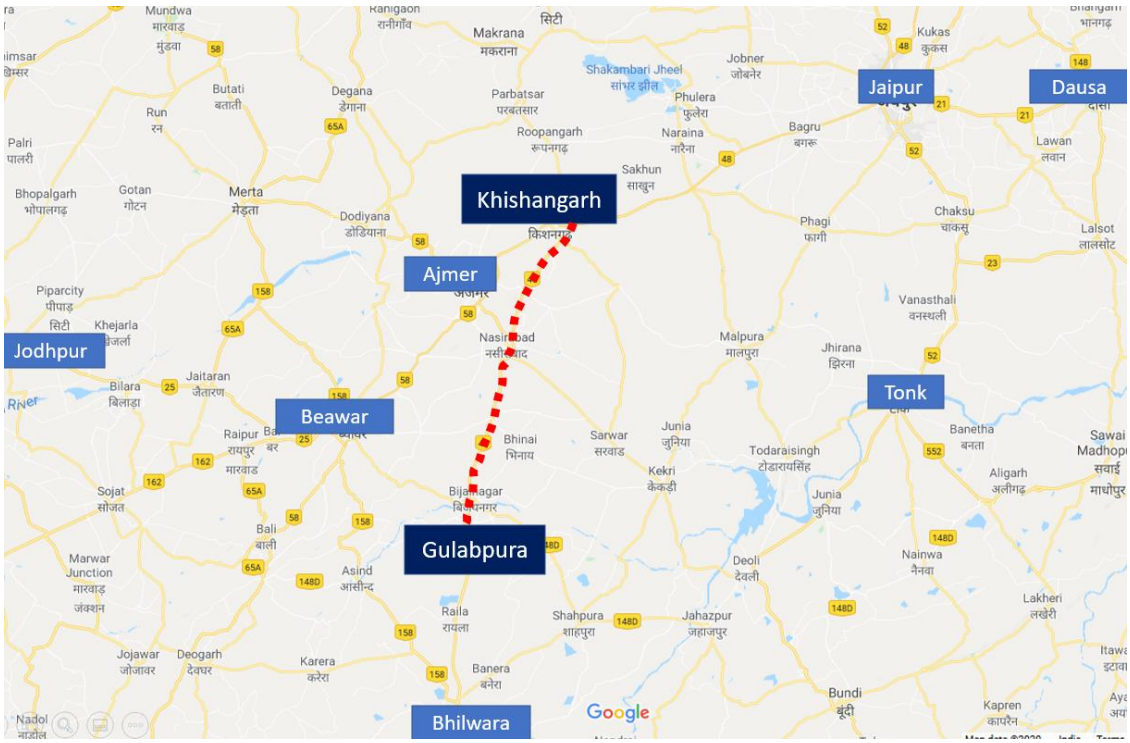


Figure 1-1 : Alignment of Project Stretch

1.2 Objective of the Study

M/s IRB INVIT FUND has engaged *GMD Consultants* to assess the future traffic and toll potential of project along with related operation & maintenance expenditure involved.
This report named as **"Traffic Study & *Toll Revenue Projection Report*"** mainly focuses on traffic and revenue aspects of the project. Other parameters like competing road, area developments etc. have been considered from a traffic development point of view.

1.2.1 Scope of Services

The broad scope of work covered in the assignment is as follows.

a) Analysis of Traffic Growth
b) Toll Rate Growth
c) Revenue Forecasting

The Concessionaire has provided basic traffic data and other project details on the basis of which the above analysis has been carried out.

CHAPTER 2

PROJECT DETAILS

2.1 Project Corridor

National Highway 79 (NH 79) is an important link for traffic connecting Delhi, Jaipur to Udaipur, Chittorgarh and down south. 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.

It is one of the major north-south road connectivity for the traffic from northern states of Haryana, Punjab and Delhi to Industrial and tourist areas of Rajasthan like Jaipur, Chittorgarh, Udaipur and then to Dahod, Ratlam and other parts of Madhya Pradesh.

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)

2.2 Project Stretch Description

Section of NH-79 from Kishangarh to Gulabpura is part of major transportation link in the area connecting industrial / tourist cities of Jaipur-, Bhilwara, Chittorgarh and Udaipur. Project stretch would be faster connectivity to Udaipur from Jaipur once six laning is complete.

Major mining industries of marble, Zink, felspar, quarts of Udaipur and textile industry of Bhiwara provide are major contributor of commercial traffic on project corridor. Additionally, Jaipur, Ajmer, Udaipur, Chittorgarh and Bhilwara major tourist centers of India. This adds substantial value for passenger traffic on the project corridor section.

Like other parts of India rapid ribbon development is happening around these cities on project highway. This also contributes to sustainable traffic growth.

There is one operative toll plaza at project stretch at Bandanwara at 61.020 km. The following figure shows project alignment and toll plaza locations.

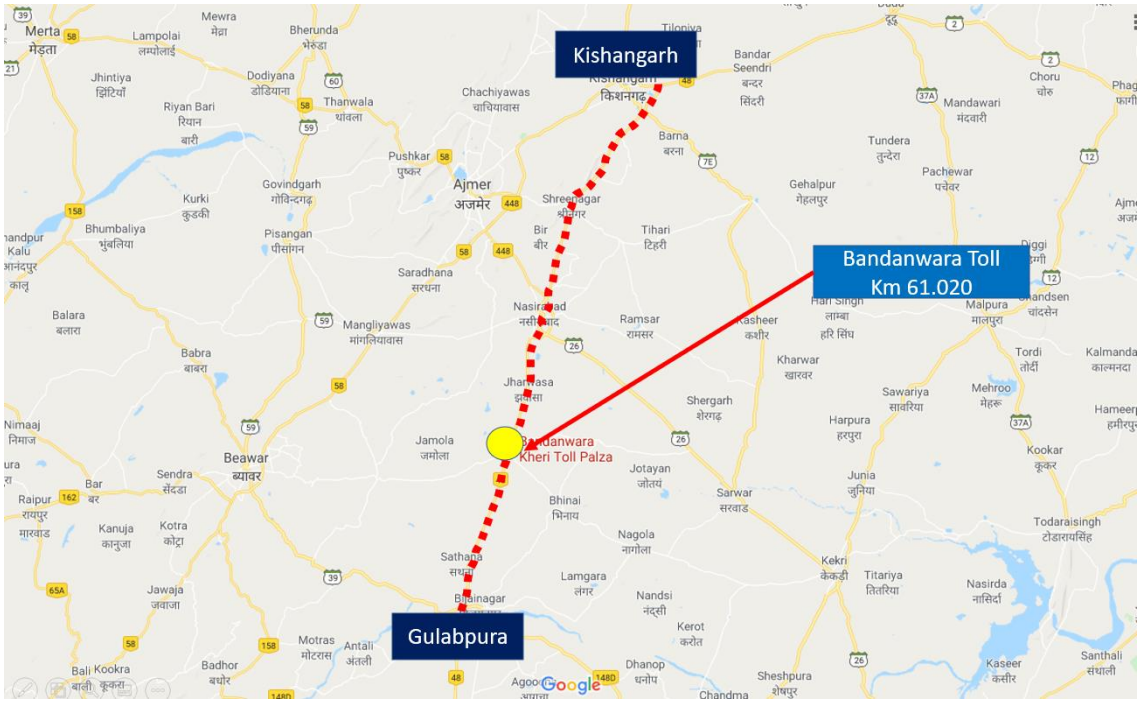


Figure 2-1 : Project Alignment with Toll Plaza

2.3 Project Corridor Illustration

Six laning of project stretch is in progress and will be completed soon. The following photographs illustrate the project section along the corridor.



Figure 2-2 : Photographs showing Project Corridor

CHAPTER 3

TRAFFIC SURVEYS AND ANALYSIS

3.1 Traffic Surveys

The Consultants have collected the required information for project corridor to understand the general traffic and travel characteristics on the corridor.

The following traffic data has been collected from a client for a project.

- Classified traffic volume counts at toll plaza location on Kishangarh – Gulabpura section of NH-79 for year 2017-18, 2018-19, 2019-20, 2020-21 ,2021-22,2022-23, 2023-24,2024-25 and traffic data from April 2025 to February 2026.
- Local Component of traffic
- Component of Return Journey
- Component of Monthly Pass Journey

The main objective of the traffic data analysis is to:

- Determine the existing traffic movement characteristics of the project.
- Establish base year traffic.
- Identification of travel patterns and modal split of project traffic
- Deriving growth factors for traffic 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 3-1 below lists provides details of locations from where traffic details have been collected.

Table 3-1 : Traffic Data Details

SR. NO	LOCATION	CTV	Single Journey Traffic	Daily Return Journey	Monthly Pass	Local Pass
1	**Km 61.020 Toll Plaza at Bandanwara**	AADT for Year 2017-18, 2018-19, 2019-20,2020-21 ,2021-22, 2022-23, 2024-25 & Eleven months from April 2025 to February 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2024-25 & Eleven months from April 2025 to February 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2024-25 & Eleven months from April 2025 to February 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2024-25 & Eleven months from April 2025 to February 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2024-25 & Eleven months from April 2025 to February 2026

3.2 Classified traffic volume

The objective of conducting a Classified Traffic Volume Count is to understand the traffic flow pattern including modal split on a roadway. The Classified Traffic Volume Count survey has been provided by the concessionaire of project highway from actual traffic data gathered at toll plaza locations based on monthly data shared with 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. The groupings of vehicles are further segregated to capture the tollable vehicle categories specifically and toll exempted vehicles are counted separately. The detailed vehicle classification system as per IRC: 64-1990 is given in the table below.

Table 3-2 : Vehicle Classification System

Vehicle Type	
Auto Rickshaw	
Passenger Car	Car, Jeep, Taxi & Van (Old / new technology)
Bus	Minibus
	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

However, since the project highway is currently under toll operation, the data collected corresponds to the category of tollable vehicles. The following are the types of vehicles as per concession agreement.

- Car / Jeep / van
- Min Bus /LCV
- Truck / Bus
- Multi Axle

3.3 Traffic Characteristic

Toll revenue of project highway does not solely depend on traffic volume. There are certain characteristics of traffic which have substantial potential to affect toll collection. Component of local traffic, component of passenger and commercial traffic, portion of return journey traffic, % of monthly pass traffic are some of such characteristics of traffic. These will be discussed in subsequent sections of the report.

3.3.1 Traffic Data

Project concessionaire has provided Traffic data for the years 2019-20 ,2020-21, 2021-22, 2022-23 ,2023-24,2024- 25 & traffic data from April 2025 to February 2026.
Since the traffic data available for this update is for only Annual, from April 2025 to February 2026, it may not represent the whole year traffic. Hence a seasonality factor for balance part of year has been applied to average traffic of the current Eleven months to arrive at Annual Average Daily Traffic of base year 2025-26. Thus, corrected traffic is used for future projections and revenue calculations. The following table shows historical traffic on project stretch and derived Annual Average Daily Traffic (AADT) for year 2025-26.

Table 3-3 : Traffic Data at Bandanwara (Khedi)Toll Plaza at Km 61.020

Sr. No	Type of Vehicle	Annual Average Daily Traffic (Nos.)- 2019-20	Annual Average Daily Traffic (Nos.)- 2020-21	Annual Average Daily Traffic (Nos.)- 2021-22	Annual Average Daily Traffic (Nos.)- 2022-23	Annual Average Daily Traffic (Nos.)- 2023-24	Annual Average Daily Traffic (Nos.)- 2024-25	Annual Average Daily Traffic (Nos.)- 2025-26
1	Car	2572	448	3827	5400	6428	6333	9499
2	Minibus /LCV	1009	326	522	736	868	664	847
3	Bus	376	38	337	486	624	163	487
4	Truck	1511	264	1756	2375	2803	2206	2474
5	3-Axle Commercial vehicle	2095	318	1805	2045	2188	1654	1738
6	Multi axle	4421	748	4141	4709	5396	4444	5219
7	Oversized Vehicle	19	70	319	296	463	473	11
Total		**12003**	**2212**	**12707**	**16046**	**18770**	**15937**	**20276**

3.4 Data Analysis

3.4.1 Analysis of Traffic Volume Count

Understanding the character of existing traffic forms the basis of the traffic forecast. The various vehicle types having different sizes and characteristics can be 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 3-4***.

Table 3-4 : PCU Factors Adopted for Study

Vehicle Type	PCUs
Car	1.0
Minibus	1.5
Standard Bus	3.0
LCV/LGV	1.5
2 Axle Truck	3.0
3 – 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

Traffic volume at each toll plaza was converted to PCU and same is presented as under

Table 3-5 : Traffic in PCU at Project Stretch Base Year 2025-26

Toll Plaza Location (Km)	Year	Traffic No	PCU	PCU Index
Bandanwara 61.020	**2019-20**	12003	36011	3.00
	2020-21	2212	6478	2.93
	2021-22	12707	36374	2.86
	2022-23	16046	43739	2.73
	2023-24	18770	50940	2.71
	2024-25	15937	41525	2.61
	2025-26	20276	48403	2.39

It can be observed from above that project traffic has PCU index is near by 3 which is an indicator of very high proportion of commercial traffic in traffic mix in project corridor. The following figure illustrates variation of PCU index at four toll plaza locations.

3.4.2 Components of Traffic

As discussed previously, components of traffic volume play an important role in determining project revenue. A larger component of commercial traffic with higher axle configuration adds to project revenue positively. Similarly, a larger component of local traffic affects the project revenue potential negatively.

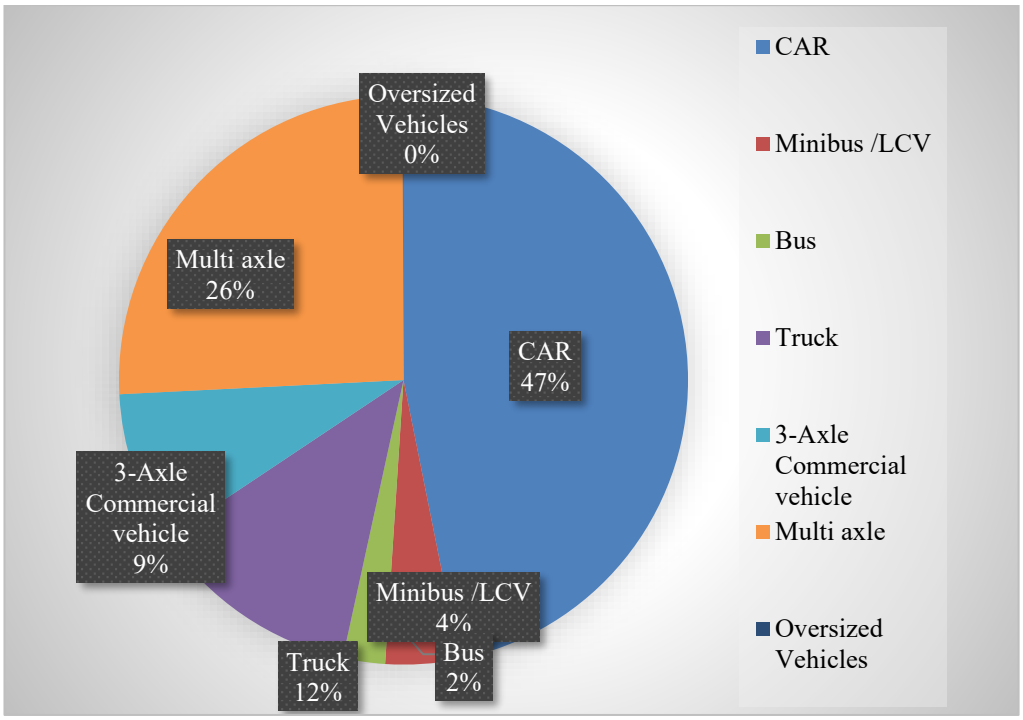


Figure 3-1 : Model Split of Tollable Vehicle

It is observed that car traffic forms about 47% of total traffic at toll plaza locations while multi axle commercial vehicles are about 35% of total traffic. Truck / Bus and LCV share about 14% and 4% of traffic volume respectively.

Another important bifurcation of traffic is components of traffic with respect various type of toll ticketing like

1. Single Journey
2. Multi Journey
3. Local Commercial Single Journey
4. Monthly Pass Local
5. Monthly Pass
6. Annual Pass Car

The following table provides numbers of vehicles falling in each of above category on base year 2025-26

Table 3-6 : Journey Type Bifurcation of Traffic at Bandanwara TP KM 61.020

Sr. No	Type	Traffic Volume (Nos.) 2025-26
1	Single Journey	13142
2	Return Journey	3821
3	Local Commercial Single Journey	616
4	Monthly Pass Local	10
5	Monthly Pass	2
6	Annual Pass Car	2685

Most dominant part of the above is the single journey type followed by return journey at project stretch. Monthly pass commuters are a very low fraction of the total traffic on the project corridor.

The single journey component in total traffic numbers is as high as 65%. Return journey component is 19%. The number of Local Commercial Single Journey is 3% and Monthly Pass Local 0% and Annual Pass Car is 13% at Bandanwara toll plaza.

It is observed that the project corridor demonstrates pattern of single journey dominated mix of traffic at stretch which is typical of major national highways with high component of long-distance traffic.

3.5 Secondary Data Collection

There are several other factors which have a substantial impact on traffic patterns and growth on any project corridor. The following are some of such important factors.

- Industrial development around project corridor and its catchment
- Educational infrastructure along project corridor
- Demographic pattern
- Urban area development
- Tourism potential
- Upcoming major infrastructural or Industrial projects
- Special Industry in project corridor
- Overall trends of economic growth local as well as national / regional

Hence in addition to traffic details on the project site, secondary data was also collected from various other sources. Typical secondary data includes the following:

1. Vehicle registration data of regional and national level.
2. Economic Data
   a) GDP
   b) NSDP
   c) Population Growth
   d) Per Capita Income growth
   e) Industrial Growth
   f) Special Industry Potential
   g) Regional and National development vision / plan
   h) Any other relevant data
3. Competing road network

We have collected and utilized such underlying data in the study to estimate the growth and risk factors for traffic along the project corridor.

CHAPTER 4

INFLUENCE ZONE TRANSPORT NETWORK ANALYSIS

4.1 Introduction

Highway corridors behave like integrated circuit networks and more often than not every road is connected to various networks having different origins and destinations. Traffic running on these networks behaves like fluid and flow on network on alignment of least friction.

Following Factors can be considered as major contributors to friction on transportation network.

- Travel Speed / Travel Time
- Geometric deficiencies like blind horizontal curves and steep vertical gradients etc,
- Configuration of road
- Riding quality
- Traffic delays,
- Length of road,
- Passing through built up or Urban Area,
- Terrain,
- Facilities,

4.2 Competing / Alternate route

Project stretch has toll application history from last few years, and it can be assumed that project traffic is settled. At the local level there is no potential competing route bypassing toll plaza between.

At regional level, there can be two alternates for Udaipur traffic after Kishangarh. One via project road (Kishangarh – Bhiwara- Chittorgarh- Udaipur) and one via Ajmer, Beawer and Rajsamand.

The following maps show these routes in relation to project stretch at regional level.



Figure 4-1 : Alternate route at regional level.

It can be observed that the project highway forms one of the main spines of the corridor between Kishangarh / Jaipur and Chittorgarh. Traffic on project road is now settled and it can be assumed as dedicated traffic on project road for logistic obligations.

At regional level for Udaipur traffic alternate route is faster and traffic is already using this alternate.

With six laning now nearing completion, the project stretch would become slightly more attractive due to the improved level of service. In such a case further diversion of traffic from the project road is not envisaged.

The following table provides summary of analysis of alternate route/ roads discussed above.

Table 4-1 : Competing Roads Details

Sr. No	Route Details	Designation	Length (Km)	Avg. Speed (KMPH)	Time Taken (Min)	Observations
Regional Level						
1	Jaipur – Ajmer- Udaipur	Alternate Route	395	61	6 Hr 23 Min	At present alternate route via Ajmer is a bit faster but after completion of six laning level of service would increase at project road as well
	Jaipur- Bhilwara - Chittorgarh- Udaipur	Project Road	398	51	6 Hr 58 Min	

It may be noted that since the project highway has already been commissioned and has a tolling history, the current traffic traversing the project corridor already factors in traffic diversion (if any)

that may have taken place. Further after completion of six laning, level of service would improve on project corridor, and this would create favorable conditions for traffic. Under these circumstances it is not envisaged that commercial or passenger traffic would switch to alternate roads from the project road. It is expected that there will be some additional traffic on project corridor once six lanes are completed due to improvement in level of service.

CHAPTER 5

GROWTH OF TRAFFIC ON PROJECT HIGHWAY

5.1 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 patterns 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 Kishangarh to Gulabpura section of NH-79 has been done taking the above factors into consideration. "**IRC: 108-2015-Guidelines for Traffic Prediction on Rural Highways**" is established best practice and has been used for traffic growth forecast.

5.2 Trend Analysis

One of the methods of estimation of future rate of growth is to assume the same rate of growth as in the past. Although such a method is more suitable for projects of short durations say 5-10 years, however for long term projections it would be erroneous to assume that the past rate of growth will continue to prevail for a long time in future. Economic conditions, which are major influencing factors, are bound to change over a long period of time. Thus, it would be necessary to modify the past trends of growth suitably.

Elasticity model of growth projection is one of the most widely acceptable methods for traffic forecast. The same is recommended in **IRC: 108-2015-Guidelines for Traffic Prediction on Rural Highways**.

In this method the past trend of vehicular data is 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 types of vehicles. It is a proven fact that the growth pattern for passenger and goods vehicle is different. Traffic growth on any highway typically depends on a number of economic parameters. Most important and direct parameters are given as under

- Per Capita Income
- Net State Domestic Product (NSDP)
- Population

It can be observed that the ownership of a car is more closely related to affordability; hence per capita is the index which closely fits the growth of car traffic among other criteria. In a similar fashion, the following can be pairs of vehicle type and independent variable for elasticity modeling of growth.

- Car / Jeep – Par Capita Income
- Bus / Minibus – Population
- Goods Vehicle – NSDP

5.3 Estimation of Traffic Demand Elasticity

Elasticity of traffic demand is defined as the rate at which traffic intensity varies due to a change in the corresponding indicator selected. Hence, in order to estimate the elasticity of traffic demand, it is necessary to establish relationship between the growth in number of given category of vehicles with the relevant economic variable considered, such as NSDP, per capita income and population growth. Latest available data for vehicle registration, per capita income, NSDP and population is used in analysis.

As per IRC: 108-1996 the model for estimating elasticity index for the project corridor is of the following form and is given as below:

Log (P) = k x Log (EI) + A

Where,

P = Number of Vehicles (Mode wise)

EI = Economic Indicator

A = Regression constant

k = Elasticity coefficient (Regression coefficient)

The elasticity for cars 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).

The project corridor spreads across the state of Rajasthan. Toll plaza at Bandanwara is in the state of Rajasthan but it has influence of Gujarat also. For elasticity calculations, working data from Rajasthan and Gujarat has been analyzed.

The following tables and graphs depict regression and elasticity of growth model for stretch falling in Rajasthan State.

Table 5-1 : Per Capita Income Vs Car Rajasthan

Year	PCI	Car	Log PCI	Log Car	PCI Growth	Average Growth
2012	57192	591069	4.76	5.77		
2013	58441	659542	4.77	5.82	2%	
2014	61053	733916	4.79	5.87	4%	
2015	64496	814079	4.81	5.91	6%	
2016	68565	899307	4.84	5.95	6%	
2017	71394	988391	4.85	5.99	4%	4.55%

Regression analysis of same is given in figure below.

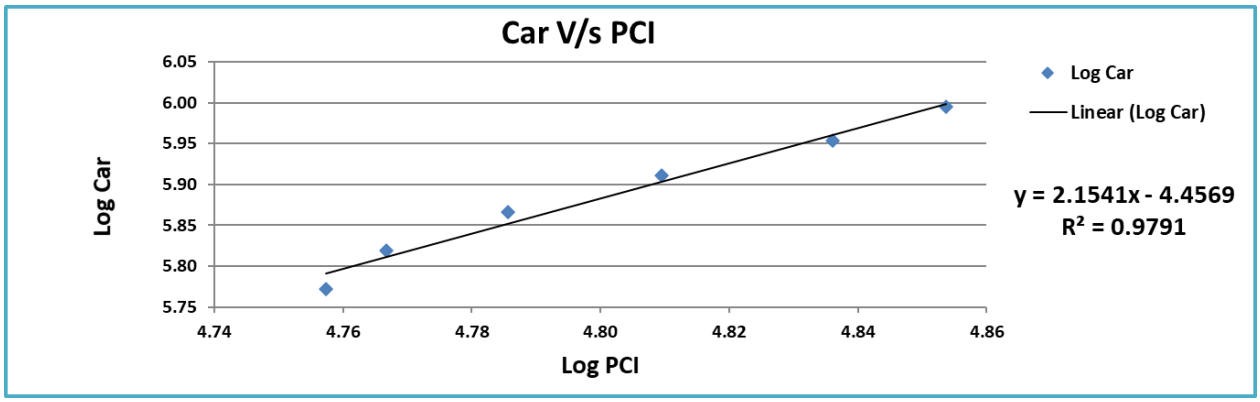


Figure 5-1 : Regression and Elasticity PCI vs. Car – Extrapolation Rajasthan

Table 5-2 : Population Vs Bus Rajasthan

Year	Population	Buses	Log Pop	Log Bus	Pop Growth	Average Growth
2012	68548437	83345	7.84	4.92		
2013	69783885	88616	7.84	4.95	2%	
2014	71016445	93892	7.85	4.97	2%	
2015	72245688	97650	7.86	4.99	2%	
2016	73471198	102818	7.87	5.01	2%	
2017	74692571	108680	7.87	5.04	2%	1.73%

Regression analysis of same is given in figure below.

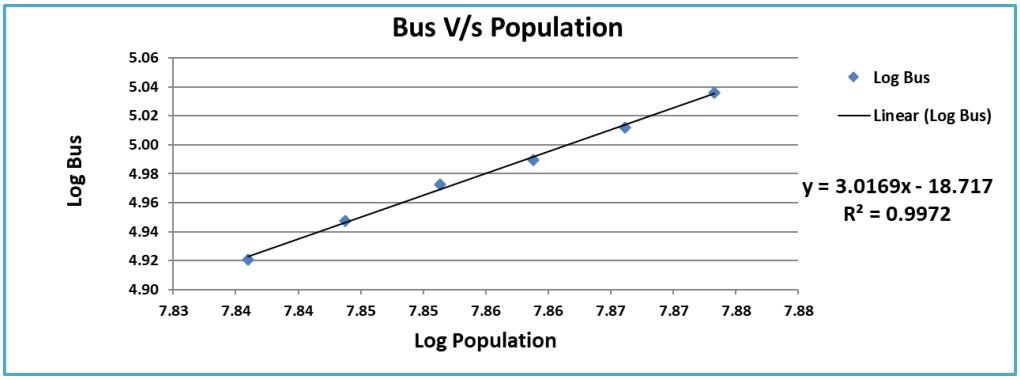


Figure 5-2 : Regression and Elasticity Population vs. Bus – Extrapolation Rajasthan

The elasticity of goods traffic has been worked out by regression analysis with NSDP. The following table represents the data and details.

Table 5-3 : LCV Traffic Vs NSDP Rajasthan

Year	NSDP	LCV	Log NDSP	Log LCV	NSDP Growth	Average Growth
2012	395331	69509	5.60	4.84		
2013	409802	76396	5.61	4.88	4%	
2014	434292	33379	5.64	4.52	6%	
2015	465408	91787	5.67	4.96	7%	
2016	501922	99763	5.70	5.00	8%	6.16%

The following figure depicts regression analysis and extrapolation.

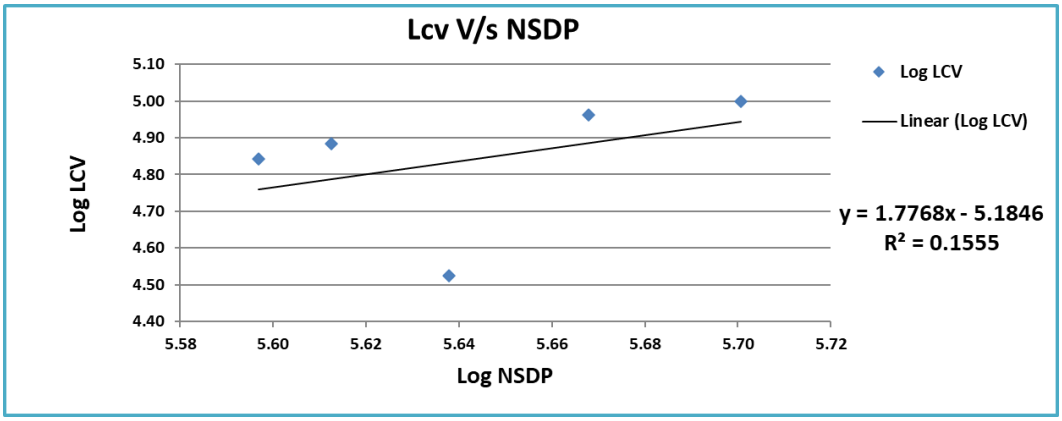


Figure 5-3 : Regression and Elasticity NSDP vs. LCV Traffic - extrapolation Rajasthan.

The following figure depicts regression analysis and extrapolation.

Table 5-4 : Goods Traffic Vs NSDP Rajasthan

Year	NSDP	Trucks	Log NSDP	Log Truck	NSDP Growth	Average Growth
2012	395331	362028	5.60	5.56		
2013	409802	401983	5.61	5.60	4%	
2014	434292	434379	5.64	5.64	6%	
2015	465408	472365	5.67	5.67	7%	
2016	501922	517604	5.70	5.71	8%	
2017	530172	561158	5.72	5.75	6%	6.06%

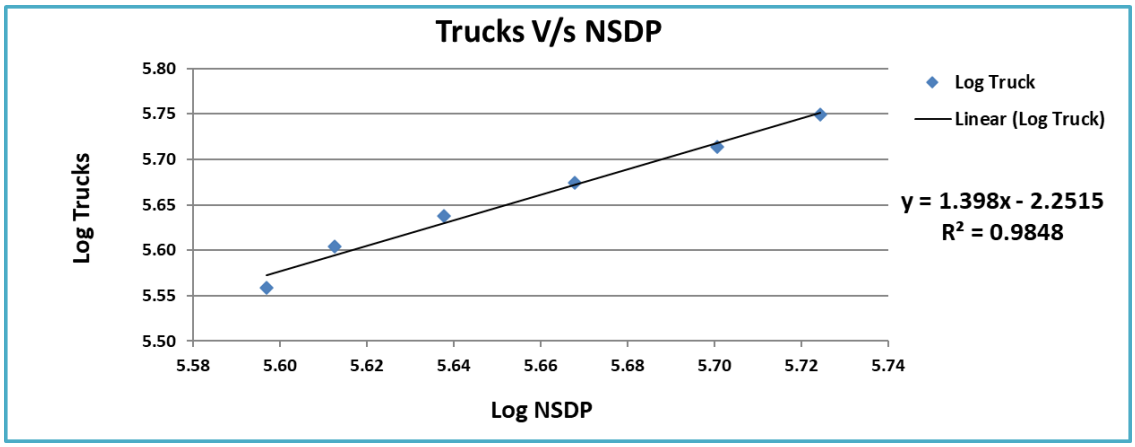


Figure 5-4 : Regression and Elasticity NSDP vs. Goods Traffic - extrapolation Rajasthan.

Using the regression analysis above, we have arrived at the elasticity of traffic demand for each class of vehicle to a given change in relevant economic indicators. Average traffic growth of a vehicle class is multiplied by the corresponding elasticity coefficient to arrive at traffic growth. R2 statistical measure of how close the data are to the fitted regression line. It varies from 0 to 1. The higher the value of R2 more representative is the regression model of data.

The results of these analyses for *the good fit* regression as reflected by R^2 values are presented in the Table below.

Table 5-5 : Summary Regression Analysis 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 = 2.1541x + -4.4569	R^2 = 0.9791	2.1541	4.55%	9.79%	Good Regression
	Bus	Population	y = 3.0169x - -18.7174	R^2 = 0.9972	3.0169	1.73%	5.22%	Good Regression
	LCV	NSDP	y = 1.7768x - -5.1846	R^2 = 0.1555	1.7768	6.16%	10.95%	Poor Regression
	Truck	NSDP	y = 1.398x - -2.2515	R^2 = 0.9848	1.3980	6.06%	8.46%	Good Regression

Table 5-6 : Per Capita Income Vs Car Gujarat

Year	PCI	Car	Log PCI	Log Car	PCI Growth	Average Growth
2012	87481	1411898	4.94	6.15		
2013	96683	1602129	4.99	6.20	11%	
2014	102589	1771298	5.01	6.25	6%	
2015	111370	2008748	5.05	6.30	9%	
2016	120683	2260084	5.08	6.35	8%	
2017	129738	2527537	5.11	6.40	8%	8.21%

Regression analysis of same is given in figure below.

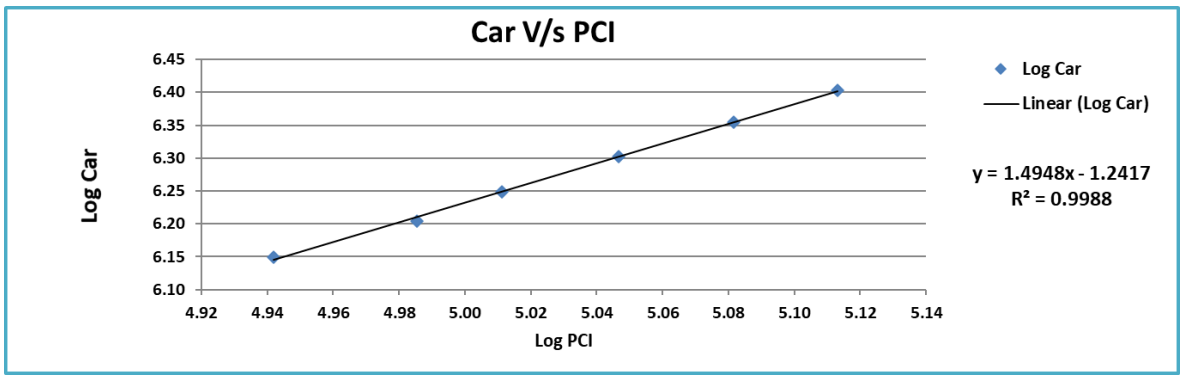


Figure 5-5 : Regression and Elasticity PCI vs. Car – Extrapolation Gujarat

Table 5-7 : Population Vs Bus Gujarat

Year	Population	Buses	Log Pop	Log Bus	Pop Growth	Average Growth
2012	60439692	67546	7.78	4.83		
2013	61563037	70615	7.79	4.85	2%	
2014	62684375	72998	7.80	4.86	2%	
2015	63803304	76435	7.80	4.88	2%	
2016	64919427	82734	7.81	4.92	2%	
2017	66032362	74855	7.82	4.87	2%	1.79%

Regression analysis of same is given in figure below.

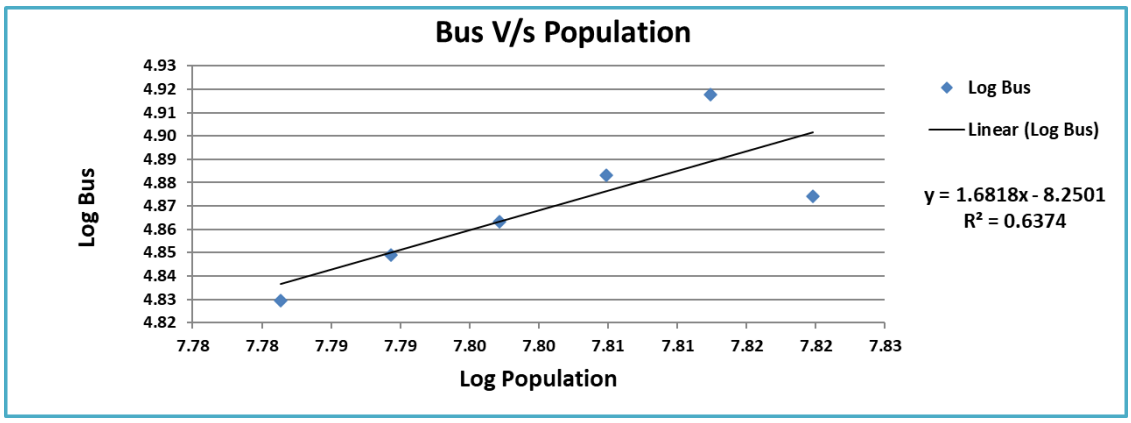


Figure 5-6 : Regression and Elasticity Population vs. Bus – Extrapolation Gujarat

The elasticity of goods traffic has been worked out by regression analysis with NSDP. The following table represents the data and details.

Table 5-8 : LCV Traffic Vs NSDP Gujarat

Year	NSDP	LCV	Log NSDP	Log LCV	NSDP Growth	Average Growth
2012	532809	448958	5.73	5.65		
2013	596659	499277	5.78	5.70	12%	
2014	641489	542918	5.81	5.73	8%	
2015	705629	589984	5.85	5.77	10%	
2016	774775	633599	5.89	5.80	10%	9.82%

The following figure depicts regression analysis and extrapolation.

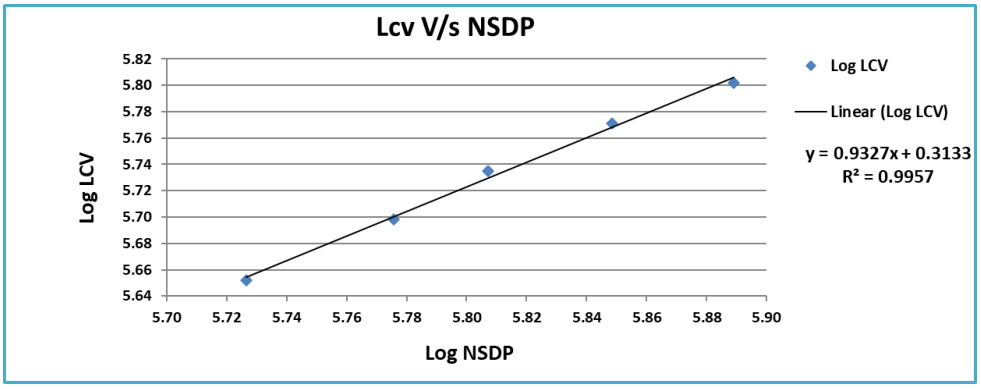


Figure 5-7 : Regression and Elasticity NSDP vs. LCV Traffic - extrapolation Gujarat.

The following figure depicts regression analysis and extrapolation.

Table 5-9 : Goods Traffic Vs NSDP Gujarat

Year	NSDP	Trucks	Log NSDP	Log Truck	NSDP Growth	Average Growth
2012	532809	301533	5.73	5.48		
2013	596659	319207	5.78	5.50	12%	
2014	641489	332185	5.81	5.52	8%	
2015	705629	352225	5.85	5.55	10%	
2016	774775	375265	5.89	5.57	10%	
2017	843930	396061	5.93	5.60	9%	9.64%

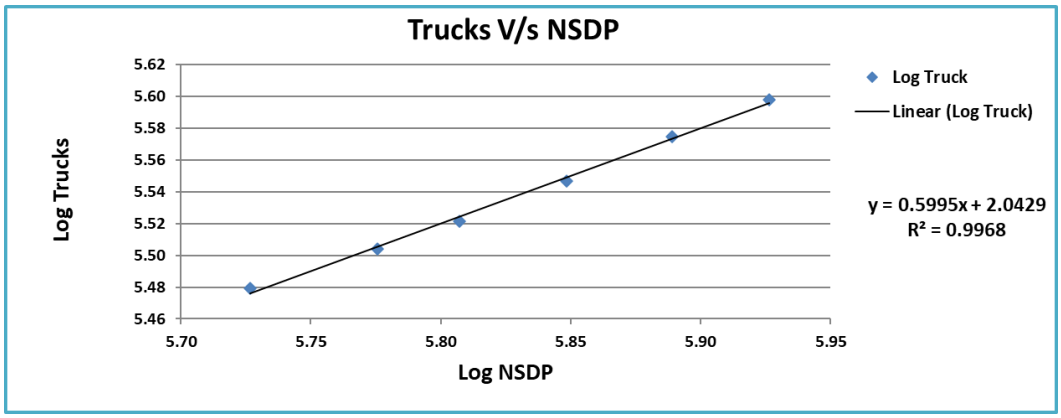


Figure 5-8 : Regression and Elasticity NSDP vs. Goods Traffic - extrapolation Gujarat.

Using the regression analysis above, we have arrived at the elasticity of traffic demand for each class of vehicle to a given change in relevant economic indicators. Average traffic growth of a vehicle class is multiplied by the corresponding elasticity coefficient to arrive at traffic growth. R2 statistical measure of how close the data are to the fitted regression line. It varies from 0 to 1. The higher the value of R2 more representative is the regression model of data.

The results of these analyses for *the good fit* regression as reflected by R^2 values are presented in the Table below.

Table 5-10 : Summary Regression Analysis Gujarat

State	Vehicle Category	Independent Variable	Regression Equation	R Square	Elasticity Coefficient (y)	Average IV Growth (5yrs)	Growth Elastic Model	Remarks
Gujarat	Car/Jeep	PCI	y = 1.4948x + - 1.2417	R^2 = 0.9988	1.4948	8.21%	12.27%	Good Regression
	Bus	Population	y = 1.6818x - - 8.2501	R^2 = 0.6374	1.6818	1.79%	3.00%	Fair Regression
	LCV	NSDP	y = 0.9327x - 0.3133	R^2 = 0.9957	0.9327	9.82%	9.16%	Good Regression
	Truck	NSDP	y = 0.5995x - 2.0429	R^2 = 0.9968	0.5995	9.64%	5.78%	Good Regression

The economic model for predicting growth is a good tool, however other local, regional, and national factors should also be considered before finalizing growth factors. Considering factors such as proposed developments and other influencing economic factors, moderated growth should be considered. These factors are discussed in subsequent sections.

5.4 Analysis of Historic Traffic Data

Historical traffic data forms useful information for any highway project. It provides useful information for establishing past trends of growth. Project stretch of Kishangarh to Gulabpura is under tolling operation with current concessionaire and has two years of tolling history from 2018-19. As traffic data is available with the project concessionaire of year two years, we do not have sufficient data points to be able to establish a reliable past trend of traffic growth. A minimum of about 5 -6 years' traffic data is required for establishing a reliable past trend.

5.5 Other Factors Influencing Growth

There are many factors which have an impact on traffic growth. As discussed previously these factors can be economical, social, educational, and industrial.

Potentiality of such factors for project highway is discussed as under.

ECONOMY

After witnessing a slowdown during 2011-12, the economy recovered in 2013-14, and a high growth rate of GDP was recorded up to 2018-19. Pandemic of COVID-19 impacted all economies of world including India up to year 2021-22. Following figure show trend of GDP growth in India.

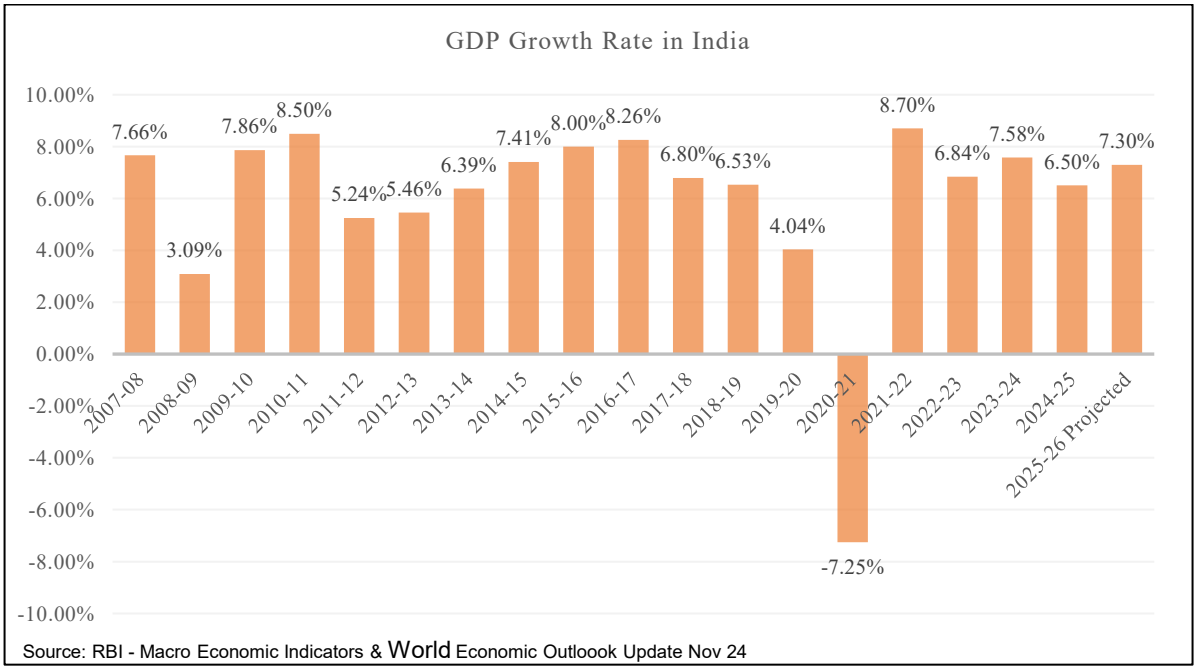


Figure 5-9 : Growth of GDP in India

FY 2017-18 recorded a growth of 6.7% which had a slight impact of GST and demonetization. Indian economy appears on recovery path with estimated growth of 6.8% in FY 2018-19. The government took major policy decisions including tax infrastructure reforming, banking sector improvement and ease of doing business.

In post COVID-19 scenario, in year 2022-23 and 2023-24 India registered an impressive growth of 7% to 7.5%. In last year despite global slow down due to Russia-Ukraine war and Gaza crises, India grew at good rate of 7%(Estimated).
Indian economy is now on good growth path and all major institutions including IMF / ADB have estimated growth of Indian Economy to peg around 6.5% to 7% in coming years.

5.6 Developments along and around the Project Corridor & State

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. Asset primarily serves traffic travelling between Delhi, Rajasthan, Gujarat and Maharashtra. It is observed that 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 results in traffic feeding into the demand being generated.

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 the textile industry and the 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 are mined and processed in Bhilwara.

Growth of Rajasthan has been comparable to the national average economic growth. 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. Considering the scenario, it may be assumed that the traffic growth on the project highway would remain high and there are minimal risks in terms of growth.

Table 5-11 : GDP of India, UP and other important 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

5.6.1 Industrial Units along Project Corridor

There are a number of medium and big size industrial establishments along the project corridor. The following figure shows the spread of these industries along project road.

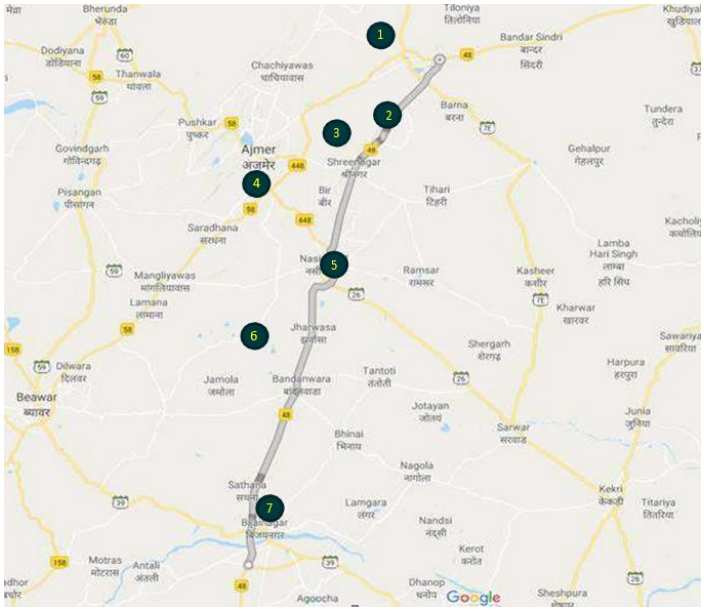


Figure 5-10 : Industrial Units along project corridor.

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)

The presence of these units promotes sustainable traffic in the project corridor.

5.7 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 below. The rate of growth is moderate in light of overall regional trends. Growth of multi-Axle is kept slightly higher as trend of technological advances in logistic industry favors multi-axle over 2/3 axle carriage. It is also expected that as the economy moves from developing to developed, the rate of growth diminishes. The same growth rate is not sustainable for long. Traffic growth is suitably stepped down for future 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 for corridor in both states.

5.7.1 Recommended Growth Rates of Traffic for Project Stretch

Table 5-12 : Recommended Growth Rates Optimistic

Category / Year	FY 2027-2030	FY 2031-2035	FY 2036-2040	FY 2041-2045	FY 2046-2051
Car/Jeep/Van	8.70%	8.16%	7.62%	7.58%	7.03%
Bus	4.12%	3.88%	3.64%	3.57%	3.33%
LCV	3.74%	3.92%	4.10%	4.27%	4.44%
2- Axle	3.95%	3.52%	3.09%	2.86%	2.41%
3 - Axle	4.88%	4.33%	3.80%	3.67%	3.08%
4 to 6 Axle	5.80%	5.15%	4.50%	4.27%	3.58%
7 and Above Axle	5.80%	5.15%	4.50%	4.27%	3.58%

Table 5-13 : Recommended Growth Rates Pessimistic

Category / Year	FY 2027-2030	FY 2031-2035	FY 2036-2040	FY 2041-2045	FY 2046-2051
Car/Jeep/Van	8.20%	7.66%	7.12%	7.08%	6.53%
Bus	3.62%	3.38%	3.14%	3.07%	2.83%
LCV	3.24%	3.42%	3.60%	3.77%	3.94%
2- Axle	3.45%	3.02%	2.59%	2.36%	1.91%
3 - Axle	4.38%	3.83%	3.30%	3.17%	2.58%
4 to 6 Axle	5.30%	4.65%	4.00%	3.77%	3.08%
7 and Above Axle	5.30%	4.65%	4.00%	3.77%	3.08%

Table 5-14 : Recommended Growth Rates Most Likely

Category / Year	FY 2027-2030	FY 2031-2035	FY 2036-2040	FY 2041-2045	FY 2046-2051
Car/Jeep/Van	8.45%	7.91%	7.37%	7.33%	6.78%
Bus	3.87%	3.63%	3.39%	3.32%	3.08%
LCV	3.49%	3.67%	3.85%	4.02%	4.19%
2- Axle	3.70%	3.27%	2.84%	2.61%	2.16%
3 - Axle	4.63%	4.08%	3.55%	3.42%	2.83%
4 to 6 Axle	5.55%	4.90%	4.25%	4.02%	3.33%
7 and Above Axle	5.55%	4.90%	4.25%	4.02%	3.33%

The annual pass system was implemented effective 15 August 2025. Accordingly, the Annual Average Daily Traffic (AADT) for the year has been computed using a blended approach, wherein traffic for the first five months reflects non-annual pass (regular toll-paying) vehicles, while traffic for the subsequent period incorporates annual pass traffic volumes.

This adjustment ensures that the reported AADT appropriately captures the change in traffic composition and usage patterns resulting from the introduction of the annual pass system.

The ongoing development of the Jaipur Ring Road is expected to generate positive impacts on commercial traffic along the Kishangarh–Gulabpura corridor in the coming years. Upon full or near-full completion, the ring road will enable efficient bypassing of Jaipur city, reducing travel time and congestion delays for long-distance freight vehicles operating on the NH-48.

Given the scale of construction, the project is expected to generate significant demand for cement and construction materials, which is likely to be met by the Chittorgarh cement

cluster. This is anticipated to have a positive impact on regional cement producers and associated assets, particularly through increased dispatch volumes and improved capacity utilization.

The positive impact on account of the above has been factored in the future years.

Traffic and revenue have been worked out on the basis of the above growth, and some are presented in subsequent chapters of the report.

CHAPTER 6

TRAFFIC FORECAST

6.1 Traffic Projections

Growth rates recommended in the previous section of the report are used to arrive at traffic projections for future years. Toll plaza wise futuristic traffic projection is given in tables below.

These projections have been done for the following three cases of growth up to concession period.

1. Optimistic Scenario
2. Pessimistic Scenario
3. Most Likely Scenario

Table 6-1 : Total Tollable Traffic @ Toll Plaza Chainage KM 61.02

(Optimistic Growth Scenario)

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU (Including Exempted)
2026-27	10242	871	502	2549	1808	5476	12	**21460**	**49707**
2027-28	11132	904	522	2650	1923	5876	13	**23020**	**53087**
2028-29	12101	938	543	2755	2045	6305	14	**24701**	**56709**
2029-30	13154	973	566	2864	2176	6766	15	**26514**	**60592**
2030-31	14227	1011	587	2965	2297	7199	16	**28302**	**64325**
2031-32	15387	1051	610	3069	2425	7660	17	**30219**	**68302**
2032-33	16642	1093	633	3177	2560	8150	18	**32273**	**72539**
2033-34	17999	1136	657	3289	2703	8672	19	**34475**	**77052**
2034-35	19466	1180	683	3405	2854	9227	20	**36835**	**81862**
2035-36	20950	1229	707	3510	2963	9642	21	**39022**	**85919**
2036-37	22546	1279	733	3618	3076	10076	22	**41350**	**90198**
2037-38	24263	1331	759	3730	3193	10530	23	**43829**	**94710**
2038-39	26113	1385	786	3845	3314	11004	24	**46471**	**99470**
2039-40	28104	1442	815	3963	3440	11500	25	**49289**	**104493**
2040-41	30234	1503	844	4077	3567	11991	26	**52242**	**109627**
2041-42	32359	1570	872	4175	3677	12420	27	**55100**	**114392**
2042-43	34633	1639	901	4276	3790	12865	28	**58132**	**119396**

Table 6-2 : Total Tollable Traffic @ Toll Plaza 2- Chainage KM 61.02
(Pessimistic Growth Scenario)

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU (Including Exempted)
2026-27	10195	867	500	2537	1798	5450	12	**21359**	**49470**
2027-28	11031	895	518	2625	1903	5821	13	**22806**	**52587**
2028-29	11936	924	536	2716	2015	6216	14	**24357**	**55912**
2029-30	12915	955	556	2810	2133	6639	15	**26023**	**59461**
2030-31	13904	988	574	2895	2242	7031	16	**27650**	**62828**
2031-32	14969	1022	594	2982	2356	7446	17	**29386**	**66398**
2032-33	16115	1057	614	3072	2476	7885	18	**31237**	**70185**

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU (Including Exempted)
2033-34	17349	1093	635	3165	2602	8350	19	**33213**	**74201**
2034-35	18677	1130	656	3261	2734	8842	20	**35320**	**78462**
2035-36	20006	1171	676	3346	2824	9196	21	**37240**	**81960**
2036-37	21431	1213	697	3433	2918	9565	22	**39279**	**85632**
2037-38	22956	1257	718	3522	3015	9948	23	**41439**	**89489**
2038-39	24592	1302	741	3614	3115	10347	24	**43735**	**93540**
2039-40	26342	1348	764	3708	3218	10761	25	**46166**	**97797**
2040-41	28207	1399	787	3796	3320	11166	26	**48701**	**102114**
2041-42	30048	1454	810	3869	3406	11509	27	**51123**	**106044**
2042-43	32010	1511	833	3944	3494	11863	28	**53683**	**110154**

Table 6-3 : Total Tollable Traffic @ Toll Plaza 3- Chainage KM 61.02 (Most Likely Growth Scenario)

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU (Including Exempted)
2026-27	10219	869	501	2543	1802	5463	12	**21409**	**49589**
2027-28	11083	900	521	2637	1913	5847	13	**22914**	**52837**
2028-29	12021	932	541	2735	2030	6260	14	**24533**	**56310**
2029-30	13036	965	562	2837	2155	6701	15	**26271**	**60024**
2030-31	14066	1001	582	2930	2270	7113	16	**27978**	**63573**
2031-32	15178	1038	603	3026	2391	7550	17	**29803**	**67345**
2032-33	16378	1076	624	3125	2519	8014	18	**31754**	**71353**
2033-34	17673	1116	647	3227	2653	8507	19	**33842**	**75615**
2034-35	19070	1157	670	3332	2795	9030	20	**36074**	**80146**
2035-36	20477	1201	693	3427	2894	9414	21	**38127**	**83919**
2036-37	21986	1247	716	3524	2997	9815	22	**40307**	**87888**
2037-38	23608	1295	740	3625	3103	10232	23	**42626**	**92066**
2038-39	25346	1345	764	3728	3213	10667	24	**45087**	**96463**
2039-40	27216	1397	790	3834	3327	11120	25	**47709**	**101093**
2040-41	29210	1453	816	3935	3441	11567	26	**50448**	**105808**
2041-42	31190	1513	841	4020	3539	11951	27	**53081**	**110144**
2042-43	33303	1576	867	4107	3639	12349	28	**55869**	**114688**

6.2 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 Gulabpura - Chittorgarh project, the Target Date and Target Traffic are defined as under:

Target Date - 1st May 2026

Target Traffic - 76236 in PCU

It was observed that as per traffic projections. traffic volume falls short of target traffic in all scenarios. This warrants an extension of the concession period. Extension of the concession period is worked out as per article 29 of concession agreement. The following table provides details of modification in concession agreement.

Most Likely

Target Year	Target Traffic	Actual Traffic	% of Excess / Short traffic	% Revision (+ or -) in CP as per CA	% Variation in CP	Original CP	Change in CP (In Years)
2026	76236	49922	-35%	52%	20%	20	4.0

Optimistic

Target Year	Target Traffic	Actual Traffic	% of Excess / Short traffic	% Revision (+ or -) in CP as per CA	% Variation in CP	Original CP	Change in CP (In Years)
2026	76236	50045	-34%	52%	20%	20	4.0

Pessimistic

Target Year	Target Traffic	Actual Traffic	% of Excess / Short traffic	% Revision (+ or -) in CP as per CA	% Variation in CP	Original CP	Change in CP (In Years)
2026	76236	49800	-35%	52%	20%	20	4.0

CHAPTER 7

FORECAST OF TOLL REVENUE

7.1 General

This chapter presents the tolling rate calculations, categories and toll revenue of the project.

7.2 Discount Categories

The fee schedule in the CA of Kishangarh- Gulabpura section of NH-79 is based on the old toll policy. As per the Toll Notification (Schedule - G) the discounts and special provisions have been considered. In addition to discounts as per Fee Notification concessionaire has declared special category rates also. Salient features of toll rate structure are given as under

1. Monthly Pass: For frequent user's monthly pass would be issued for 50 trips in month at 2/3d rate.
2. Multiple Journeys (for Return Trip): Will be charged at 1.5 times single journey.
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 Discounts: There are several categories of local discounts.
    a) Local Car Jeep Van I - Rs. 350 per
    b) Local Commercial Vehicles at 50% rate for single journey

Building of inflation and escalation of rate on the basis of WPI are done as per toll notification (Schedule G) as given under as extract from concession agreement.

The formula for determining the applicable rate of fee shall be as follows:-

$$\text{Applicable rate of fee} = \text{base rate} + \text{base rate} \times \left\{ \frac{\text{WPI A-WPI B}}{\text{WPI B}} \right\} \times 0.4$$

Factors of inflation / growth have been incorporated as per Schedule R. WPI are available up to the year 2025-26.

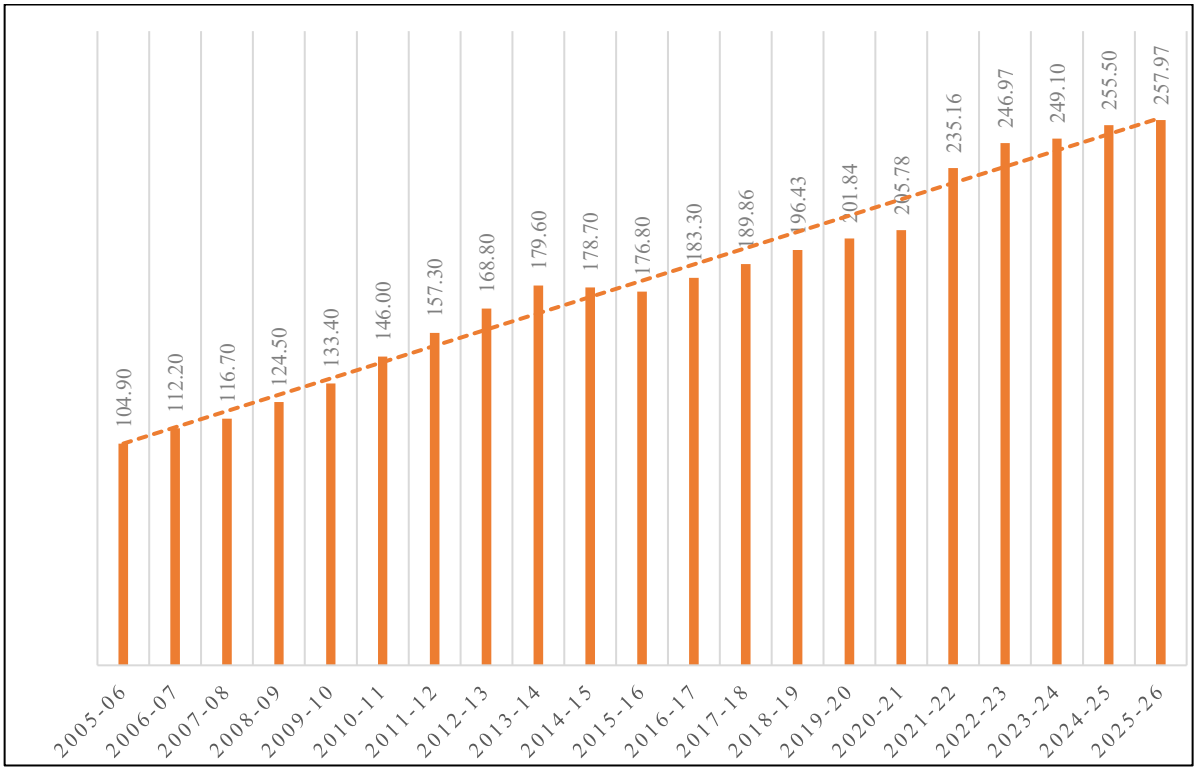


Figure 7-1 : Historical Rate of WPI Inflation in India

The wholesale price index (WPI) and the inflation rate in the past are presented in Table below.

Table 7-1 : Historical Rate of WPI Inflation in India

December of year	2021	2022	2023	2024	2025	Avg.
WPI	235.2	247.0	249.1	255.5	257.97	
Inflation	14.27%	5.02%	0.86%	2.57%	0.96%	4.74%

WPI of December 2025 is posted on ministry site which is shows 0.96% inflation from the previous year. Same has been applied for FY 2026-27.

The average WPI inflation over the period FY 2021 to FY 2025 works out to approximately 4.74%, reflecting inflationary cycles across both high and low inflation years. Based on this analysis, an annual escalation factor of 4.5% has been adopted for the remaining concession period.

7.3 Estimation of Toll Rates

As per the applicable MORTH notification and Schedule R of contract agreement, the following Base rate of fee for the categories mentioned in the table stands true in the National Highways Fee Rules applicable for contract.

Table 7-2 : Base Toll Rates June 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 Minibus	1.05
Bus or Truck (Two Axles)	2.20
Three Axle Commercial Vehicles	2.40
Heavy Construction Machinery (HCM) or Earth Moving Equipment (EME) or Multi Axle Vehicle (MAV) (4 to 6 axles)	3.45
Oversized Vehicles (7 or more Axles)	4.20

There is no bypass or structure to be factored in for rates calculations.

Toll rates are calculated as per guidelines provided in schedule R (rounded to nearest Rs.) for the concession period and are given below.

Thus, worked out rates for various categories of vehicle and discounts are given as under

Table 7-3 : Toll Rates for Single Journey @ Chainage KM 61.02

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles
2026-27	155	245	515	515	565	810	985
2027-28	160	260	540	540	590	850	1030
2028-29	165	270	565	565	615	890	1080
2029-30	175	285	595	595	645	930	1130
2030-31	185	295	620	620	675	975	1185
2031-32	190	310	650	650	710	1020	1240
2032-33	200	325	680	680	745	1070	1300
2033-34	210	340	715	715	780	1120	1360
2034-35	220	355	750	750	815	1175	1425
2035-36	230	375	785	785	855	1230	1495
2036-37	245	390	820	820	895	1290	1570
2037-38	255	410	860	860	940	1350	1645
2038-39	265	430	905	905	985	1415	1725
2039-40	280	450	945	945	1035	1485	1805
2040-41	295	475	995	995	1085	1555	1895
2041-42	310	495	1040	1040	1135	1635	1990
2042-43	325	520	1090	1090	1190	1715	2085

Table 7-4 : Toll Rates for Return Journey @ Chainage KM 61.02

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles
2026-27	230	370	775	775	845	1215	1480
2027-28	240	385	810	810	885	1270	1550
2028-29	250	405	850	850	925	1330	1620
2029-30	265	425	890	890	970	1395	1695
2030-31	275	445	930	930	1015	1460	1775
2031-32	290	465	975	975	1065	1530	1860
2032-33	300	490	1020	1020	1115	1600	1950
2033-34	315	510	1070	1070	1170	1680	2045
2034-35	330	535	1120	1120	1225	1760	2140
2035-36	345	560	1175	1175	1280	1845	2245
2036-37	365	590	1230	1230	1345	1930	2350
2037-38	380	615	1290	1290	1410	2025	2465
2038-39	400	645	1355	1355	1475	2125	2585
2039-40	420	680	1420	1420	1550	2225	2710
2040-41	440	710	1490	1490	1625	2335	2845
2041-42	460	745	1560	1560	1705	2450	2980
2042-43	485	780	1640	1640	1790	2570	3130

Table 7-5 : Toll Rates for Monthly Pass Local@ Chainage KM 61.02

Year	Car	Minibus /LCV
2026-27	360	360
2027-28	375	375
2028-29	395	395
2029-30	415	415
2030-31	430	430
2031-32	455	455
2032-33	475	475
2033-34	495	495
2034-35	520	520
2035-36	545	545
2036-37	570	570
2037-38	600	600
2038-39	630	630
2039-40	660	660
2040-41	690	690
2041-42	725	725
2042-43	760	760

Table 7-6 : Toll Rates for Monthly Pass @ Chainage KM 61.02

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial Vehicle	Multi Axle	Oversized Vehicle
2026-27	5085	8215	17210	17210	18775	26990	32855
2027-28	5325	8600	18020	18020	19655	28255	34400
2028-29	5575	9005	18865	18865	20580	29585	36015
2029-30	5835	9430	19755	19755	21550	30980	37715
2030-31	6115	9875	20690	20690	22570	32445	39500
2031-32	6405	10345	21670	21670	23640	33985	41370
2032-33	6705	10835	22700	22700	24765	35600	43340
2033-34	7025	11350	23785	23785	25945	37300	45405
2034-35	7365	11895	24925	24925	27190	39085	47580
2035-36	7715	12465	26120	26120	28495	40960	49865
2036-37	8090	13065	27375	27375	29865	42930	52265
2037-38	8480	13695	28700	28700	31310	45005	54790
2038-39	8890	14360	30090	30090	32825	47185	57445
2039-40	9320	15060	31555	31555	34420	49480	60235
2040-41	9775	15795	33090	33090	36100	51895	63175
2041-42	10255	16565	34710	34710	37865	54430	66265
2042-43	10760	17380	36415	36415	39725	57100	69515

7.4 Toll Revenue

As indicated earlier, toll revenue on the Project Road has been calculated in all three scenarios based on above rates and projected traffic. The estimates of toll revenue under ***Optimistic***, ***Pessimistic*** and ***Most Likely*** growth scenarios are presented in the following section.

7.5 Toll Revenue at all toll plazas under Scenarios

Toll Revenue estimates under all scenarios at each of the toll plazas up to 2042-43 starting from the year 2026-27 are shown in tables below.

Table 7-7 : Toll Revenue Optimistic Scenario

(Rs. Crores)

Year	TP-1
2026-27	301.44
2027-28	337.01
2028-29	374.65
2029-30	420.17
2030-31	467.02
2031-32	519.36
2032-33	576.43
2033-34	640.52
2034-35	712.88
2035-36	784.90
2036-37	862.72

Year	TP-1
2037-38	945.65
2038-39	1039.37
2039-40	1148.44
2040-41	1259.92
2041-42	1376.37
2042-43	1505.43

Table 7-8 : Toll Revenue Pessimistic Scenario

(Rs. Crores)

Year	TP-1
2026-27	300.00
2027-28	333.87
2028-29	369.41
2029-30	412.30
2030-31	456.17
2031-32	504.96
2032-33	557.86
2033-34	617.03
2034-35	683.45
2035-36	748.94
2036-37	819.45
2037-38	893.97
2038-39	977.96
2039-40	1075.52
2040-41	1174.27
2041-42	1276.65
2042-43	1389.75

Table 7-9 : Toll Revenue Most Likely Scenario

(Rs. Crores)

Year	TP-1
2026-27	300.68
2027-28	335.33
2028-29	371.97
2029-30	416.15
2030-31	461.52
2031-32	512.06
2032-33	567.00
2033-34	628.55
2034-35	697.84
2035-36	766.54
2036-37	840.66
2037-38	919.27
2038-39	1007.86
2039-40	1110.95
2040-41	1215.84

Year	TP-1
2041-42	1325.03
2042-43	1445.96

CHAPTER 8

CONCLUSION & RECOMMENDATIONS

8.1 Conclusion & Recommendations

Project stretch of Kishangarh to Gulabpura section of NH-79 in state of Rajasthan is nearing completion of six laning. The road is in sound condition and serves healthy traffic volumes. Project corridor is a part of the busy and prominent national highway NH-79 which connects Kishangarh to Udaipur via Bhiwala and Chittorgarh. There are large number of townships, industrial corridors and other business establishments coming up along the project corridor. As discussed, the dominant portion of traffic is long route traffic, which is more sensitive towards the growth of national economy. As Indian economy is poised to grow at 7%+ post COVID-19, the project corridor is expected to pick up the same trend in terms of traffic flow. All these developments have potential to give a positive impact to traffic flow on the project. The following can be considered as major outcomes of the study.

a) There is a good amount of tollable traffic running on the project.

b) Project corridor has potential to witness traffic growth @ 7-8% annually in near future due to various development in area and overall development of economy.

c) The Project corridor has committed traffic as long route traffic and does not run a risk of traffic leakage due to quality competing road.

Based on the above it can be considered a stable healthy project from the traffic and revenue point of view.



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IRB InvIT Fund

KAITHAL TO RAJASTHAN SECTION OF NH 152/65 (KM 33.250 TO KM 241.580) IN THE STATE OF HARYANA









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TRAFFIC STUDY & REVENUE PROJECTION REPORT (FINAL)

MAY 2026

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ABBREVIATIONS

AADT	-	Annual Average Daily Traffic	**NHAI**	-	National Highway Authority of India
BOT	-	Build Operate Transfer	**NHDP**	-	National Highways Development Project
CAGR	-	Compound Annual Growth Rate	**NSDP**	-	Net State Domestic Product
CTV	-	Classified traffic volume	**O&M**	-	Operation & Maintenance
DBFOT	-	Design, Build, Finance, Operate & Transfer	**PCDP**	-	Per Capita Domestic Product
EME	-	Earth Moving Equipment	**PCI**	-	Per Capita Income
GDP	-	Gross Domestic Product	**PCU**	-	Passenger Car Unit
GSDP	-	Gross State Domestic Product	**PSC**	-	Pre-stressed Concrete
HCM	-	Heavy Construction Machinery	**RCC**	-	Reinforced cement concrete
HCV	-	Heavy Commercial Vehicle	**RHS**	-	Right Hand Side
HTMS	-	Highway Traffic Management System	**SH**	-	State Highway
IRC	-	Indian Road Congress	**TP**	-	Toll Plaza
IRR	-	Internal Rate of Return	**WPI**	-	Wholesale Price Index
LCV	-	Light Commercial Vehicle	**SIR**	-	Special Investment Region
LHS	-	Left Hand Side	**c.**	-	Circa
LGV	-	Light Goods Vehicle	**ROB**	-	Railway Over Bridge
MAV	-	Multi Axle Vehicle	**MDR**	-	Major District Road
MORTH	-	Ministry of Road Transport and Highways	**ODR**	-	Other District Road
NH	-	National Highway	**CA**	-	Concession Agreement
PCC	-	Plain Cement Concrete	**RMT**	-	Running Meter
CR	-	Coarse Rubble			

CHAPTER 1

INTRODUCTION

1.1 Background

The Government of India through National Highway Authority of India (NHAI) embarked upon a program to enhance the traffic capacity and safety for efficient transportation of goods as well as passenger traffic on National Highway Sections under various NHDP Phases.

The project under consideration, Four Laning of **Kaithal** to **Rajasthan** section of NH-152/65 from km 33.250 to km 241.580 in the state of Haryana is one such road project NHAI intended to implement on a BOT basis in the DBFOT format. *M/s Kaithal Tollway Ltd*. (Concessionaire) has been awarded the Project for a concession period of 27 years starting from appointed date of 15th July 2015. COD was achieved for part length of project in September 2017 and Tolling Operation on Project started. Final COD for full length was achieved on 29th March-2019.

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.

Following figure shows the project road alignment.



Figure 1-1 : Alignment of Project Stretch

1.2 Objective of the Study

M/s IRB INVIT FUND has engaged *GMD Consultants* to assess the future traffic and toll potential of project along with related operation & maintenance expenditure involved.

This report named as **"Traffic Study & *Toll Revenue Projection Report*"** mainly focuses on traffic and revenue aspects of the project. Other parameters like competing road, area developments etc. have been considered from a traffic development point of view.

1.2.1 Scope of Services

The broad scope of work covered in the assignment is as follows.

a) Analysis of Traffic Growth
b) Toll Rate Growth
c) Revenue Forecasting

The Concessionaire has provided basic traffic data and other project details on the basis of which the above analysis has been carried out.

CHAPTER 2

PROJECT DETAILS

2.1 Project Corridor

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.

2.2 Project Stretch Description

The 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 2-1 : Bypass Details

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		
6	Barwa	3.300	212.400
7	Siwani	6.150	

Full COD for project is achieved on 29th March 2019.

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 centres especially on west coastline 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.

Following figure show project alignment and toll plaza locations.

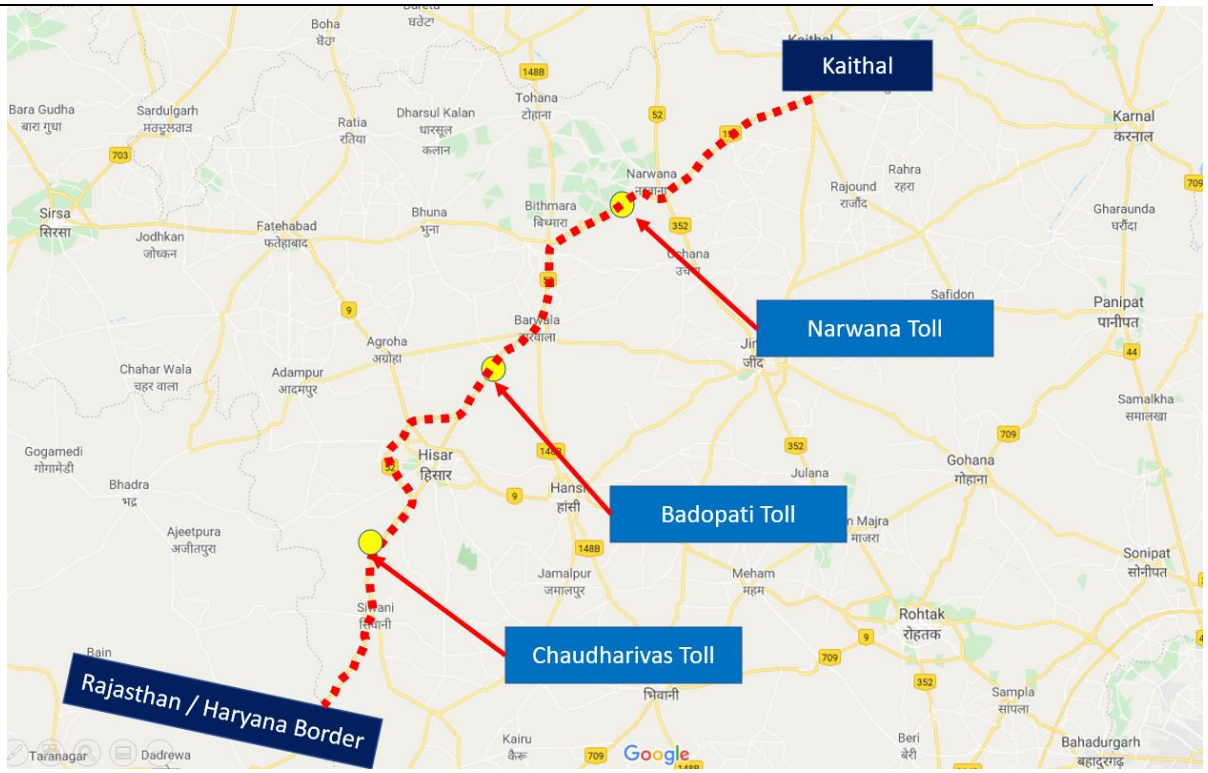


Figure 2-1 : Project Alignment with Toll Plaza

2.3 Project Corridor Illustration

Six laning of project stretch is complete. Following photographs illustrate project section along the corridor.









Figure 2-2 : Photographs showing Project Corridor

CHAPTER 3

TRAFFIC SURVEYS AND ANALYSIS

3.1 Traffic Surveys

The Consultants have collected the required information for project corridor to understand the general traffic and travel characteristics on the corridor.

The following traffic data has been collected from client for project.

- Classified traffic volume counts at three toll plaza locations on Kaithal- Rajasthan Border section of NH-152/65 for year 2017-18, 2018-19, 2019-20, 2020-21 ,2021-22,2022-23, 2023-24, 2024-25 and traffic data from April 2025 to February 2026.
- Local Component of traffic
- Component of Return Journey
- Component of Monthly Pass Journey

The main objective of the traffic data analysis is to:

- Determine the existing traffic movement characteristics of the project.
- Establish base year traffic.
- Identification of travel patterns and modal split of project traffic
- Deriving growth factors for traffic 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 3-1 below lists provides details of locations from where traffic details have been collected.

Table 3-1 : Traffic Data Details

SR. NO	LOCATION	CTV	Single Journey Traffic	Daily Return Journey	Monthly Pass	Local Pass
1	**Km 125 Toll Plaza at Narwana**	AADT for Year 2017-18, 2018-19, 2019- 20, 2020-21, 2021-22, 2022-23, 2024-25 & Eleven months from April 2025 to February 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2024-25 & Eleven months from April 2025 to February 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2024-25 & Eleven months from April 2025 to February 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2024-25 & Eleven months from April 2025 to February 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2024-25 & Eleven months from April 2025 to February 2026

SR. NO	LOCATION	CTV	Single Journey Traffic	Daily Return Journey	Monthly Pass	Local Pass
2	**Km 171 Toll Plaza at Badopatti**	AADT for Year 2017-18, 2018-19, 2019- 20, 2020-21, 2021-22, 2022-23, 2024-25 & Eleven months from April 2025 to February 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2024-25 & Eleven months from April 2025 to February 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2024-25 & Eleven months from April 2025 to February 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2024-25 & Eleven months from April 2025 to February 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2024-25 & Eleven months from April 2025 to February 2026
3	**Km 212 Toll Plaza at Chaudhariwas**	AADT for Year 2017-18, 2018-19, 2019- 20, 2020-21, 2021-22, 2022-23, 2024-25 & Eleven months from April 2025 to February 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2024-25 & Eleven months from April 2025 to February 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2024-25 & Eleven months from April 2025 to February 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2024-25 & Eleven months from April 2025 to February 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2024-25 & Eleven months from April 2025 to February 2026

3.2 Classified traffic volume

The objective of conducting a Classified Traffic Volume Count is to understand the traffic flow pattern including modal split on a roadway. The Classified Traffic Volume Count survey has been provided by the concessionaire of project highway from actual traffic data gathered at toll plaza locations based on monthly data shared with 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. The groupings of vehicles are further segregated to capture the tollable vehicle categories specifically and toll exempted vehicles are counted separately. The detailed vehicle classification system as per IRC: 64-1990 is given in table below.

Table 3-2 : Vehicle Classification System

Vehicle Type	
Auto Rickshaw	
Passenger Car	Car, Jeep, Taxi & Van (Old / new technology)
Bus	Minibus
	Standard Bus
Truck	Light Goods Vehicle (LCV)
	2 – Axle Truck

Vehicle Type	
	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

However, since project highway is currently under toll operation, the data collected is corresponding to category of tollable vehicles. Following is the type of vehicles as per concession agreement.

- Car / Jeep / van
- Min Bus /LCV
- Truck / Bus
- Multi Axle

3.3 Traffic Characteristic

Toll revenue of project highway does not solely depend on traffic volume. There are certain characteristics of traffic which have substantial potential to affect toll collection. Component of local traffic, component of passenger and commercial traffic, portion of return journey traffic, % of monthly pass traffic are some of such characteristics of traffic. These will be discussed in subsequent sections of report.

3.3.1 Traffic Data

Project concessionaire has provided Traffic data for the years 2019-20 ,2020-21, 2021-22, 2022-23 , 2023-24, 2024- 25 & traffic data from April 2025 to February 2026.
Since the traffic data available for this update is for only Annual, from April 2025 to February 2026, it may not represent the whole year traffic. Hence a seasonality factor for balance part of year has been applied to average traffic of the current Eleven months to arrive at Annual Average Daily Traffic of base year 2025-26. Thus, corrected traffic is used for future projections and revenue calculations. The following table shows historical traffic on project stretch and derived Annual Average Daily Traffic (AADT) for year 2025-26.

Table 3-3 : Traffic Data at Narwana Toll Plaza at Km 125

Sr. No	Type of Vehicle	Annual Average Daily Traffic (Nos.)- 2019-20	Annual Average Daily Traffic (Nos.)- 2020-21	Annual Average Daily Traffic (Nos.)- 2021-22	Annual Average Daily Traffic (Nos.)- 2022-23	Annual Average Daily Traffic (Nos.)- 2023-24	Annual Average Daily Traffic (Nos.)- 2024-25	Annual Average Daily Traffic (Nos.)- 2025-26
1	Car	2952	2657	4351	4094	4282	4025	5022
2	Minibus/LCV	633	569	381	325	367	300	319
3	Bus	310	279	315	289	338	320	407
4	Truck	320	287	529	462	477	350	317

Sr. No	Type of Vehicle	Annual Average Daily Traffic (Nos.)- 2019-20	Annual Average Daily Traffic (Nos.)- 2020-21	Annual Average Daily Traffic (Nos.)- 2021-22	Annual Average Daily Traffic (Nos.)- 2022-23	Annual Average Daily Traffic (Nos.)- 2023-24	Annual Average Daily Traffic (Nos.)- 2024-25	Annual Average Daily Traffic (Nos.)- 2025-26
5	3-Axle	314	283	416	345	321	214	230
6	Multi Axle	771	694	1347	1343	1382	1026	990
7	Oversized Vehicles	5	5	20	47	48	32	48
	Total	**5305**	**4774**	**7357**	**6905**	**7215**	**6267**	**7332**

Table 3-4 : Traffic Data at Badopatti Toll Plaza at Km 171

Sr. No	Type of Vehicle	Annual Average Daily Traffic (Nos.)- 2019-20	Annual Average Daily Traffic (Nos.)- 2020-21	Annual Average Daily Traffic (Nos.)- 2021-22	Annual Average Daily Traffic (Nos.)- 2022-23	Annual Average Daily Traffic (Nos.)- 2023-24	Annual Average Daily Traffic (Nos.)- 2024-25	Annual Average Daily Traffic (Nos.)- 2025-26
1	Car	5387	4850	4915	4591	4132	4075	5635
2	Minibus/LCV	630	567	374	331	306	305	311
3	Bus	431	387	395	384	405	404	515
4	Truck	327	295	577	503	437	367	330
5	3-Axle	376	339	505	400	336	301	284
6	Multi Axle	923	831	1522	1326	1130	1012	1001
7	Oversized Vehicles	3	3	16	46	55	59	74
	Total	**8077**	**7272**	**8303**	**7581**	**6800**	**6523**	**8150**

Table 3-5 : Traffic Data at Chaudhariwas Toll Plaza at Km 212

Sr. No	Type of Vehicle	Annual Average Daily Traffic (Nos.)- 2019-20	Annual Average Daily Traffic (Nos.)- 2020-21	Annual Average Daily Traffic (Nos.)- 2021-22	Annual Average Daily Traffic (Nos.)- 2022-23	Annual Average Daily Traffic (Nos.)- 2023-24	Annual Average Daily Traffic (Nos.)- 2024-25	Annual Average Daily Traffic (Nos.)- 2025-26
1	Car	2947	2652	4371	4076	4167	3835	4774
2	Minibus/LCV	592	532	335	335	356	347	330
3	Bus	162	147	181	159	164	164	409
4	Truck	367	331	629	522	497	468	444

Sr. No	Type of Vehicle	Annual Average Daily Traffic (Nos.)- 2019-20	Annual Average Daily Traffic (Nos.)- 2020-21	Annual Average Daily Traffic (Nos.)- 2021-22	Annual Average Daily Traffic (Nos.)- 2022-23	Annual Average Daily Traffic (Nos.)- 2023-24	Annual Average Daily Traffic (Nos.)- 2024-25	Annual Average Daily Traffic (Nos.)- 2025-26
5	3-Axle	470	423	630	537	452	373	313
6	Multi Axle	1395	1257	2121	1812	1656	1481	1345
7	Oversized Vehicles	6	5	29	65	65	72	73
	Total	**5939**	**5347**	**8295**	**7506**	**7356**	**6740**	**7689**

3.4 Data Analysis

3.4.1 Analysis of Traffic Volume Count

Understanding the character of existing traffic forms the basis of the traffic forecast. The various vehicle types having different sizes and characteristics can be 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 3-6.***

Table 3-6 : PCU Factors Adopted for Study

Vehicle Type	PCUs
Car	1.0
Minibus	1.5
Standard Bus	3.0
LCV/LGV	1.5
2 Axle Truck	3.0
3 – 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

Traffic volume at each toll plaza was converted to PCU and same is presented as under

Table 3-7 : Traffic in PCU at Project Stretch Base Year 2023-24

Year	Toll Plaza Location (Km)	Traffic No	PCU	PCU Index
2019-20	Narwana Km 125.79	5305	10226	1.93
	Badopatti Km 171.58	8077	13901	1.72
	Chaudhariwas Km 212.400	5939	13136	2.21
2020-21	Narwana Km 125.79	4774	9203	1.93
	Badopatti Km 171.58	7272	12516	1.72
	Chaudhariwas Km 212.400	5347	11832	2.21
2021-22	Narwana Km 125.79	7357	14849	2.02
	Badopatti Km 171.58	8303	16824	2.03
	Chaudhariwas Km 212.400	8295	18866	2.27
2022-23	Narwana Km 125.79	6905	14124	2.05
	Badopatti Km 171.58	7581	15122	1.99
	Chaudhariwas Km 212.400	7506	16679	2.22
2023-24	Narwana Km 125.79	7215	14676	2.03
	Badopatti Km 171.58	6800	13455	1.98
	Chaudhariwas Km 212.400	7356	15782	2.15
2024-25	Narwana Km 125.79	6267	11889	1.90
	Badopatti Km 171.58	6523	12568	1.93
	Chaudhariwas Km 212.400	6740	14359	2.13
2025-26	Narwana Km 125.79	7332	13030	1.78
	Badopatti Km 171.58	8150	14326	1.76

Year	Toll Plaza Location (Km)	Traffic No	PCU	PCU Index
	Chaudhariwas Km 212.400	7689	15150	1.97

It can be observed from above that project traffic has PCU index ranging from 2.0 to 2.3 which is an indicator of good proportion of commercial traffic in traffic mix in project corridor. Following figure illustrates variation of PCU index at three toll plaza locations.

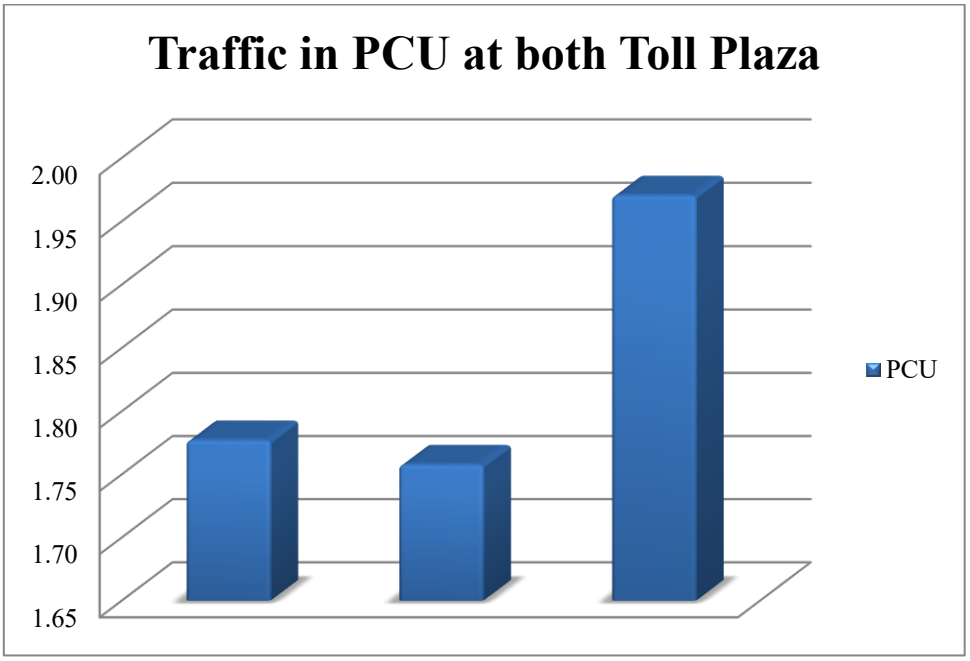


Figure 3-1 : Comparison of PCU Index

3.4.2 Components of Traffic

As discussed previously, components of traffic volume play an important role in determining project revenue. A larger component of commercial traffic with higher axle configuration adds to project revenue positively. Similarly, a larger component of local traffic affects the project revenue potential negatively.

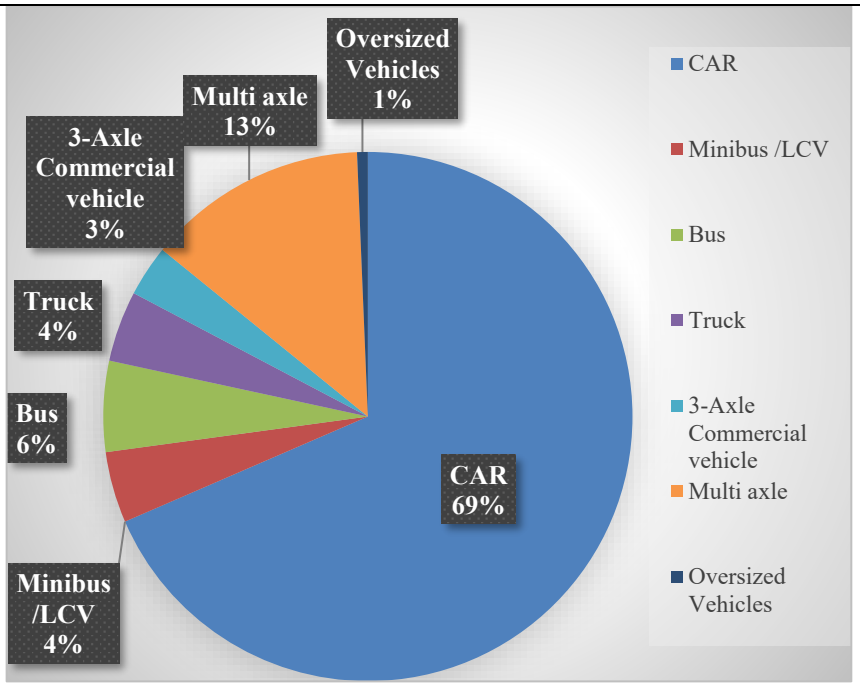


Figure 3-2 :Model Split of Tollable Vehicle-Km 125.79

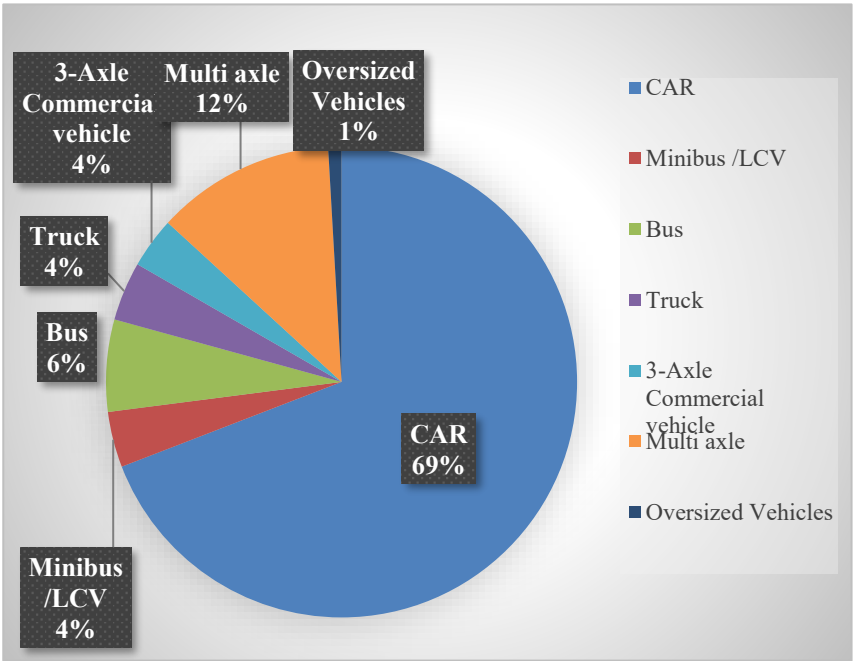


Figure 3-3 :Model Split of Tollable Vehicle-Km 171.58

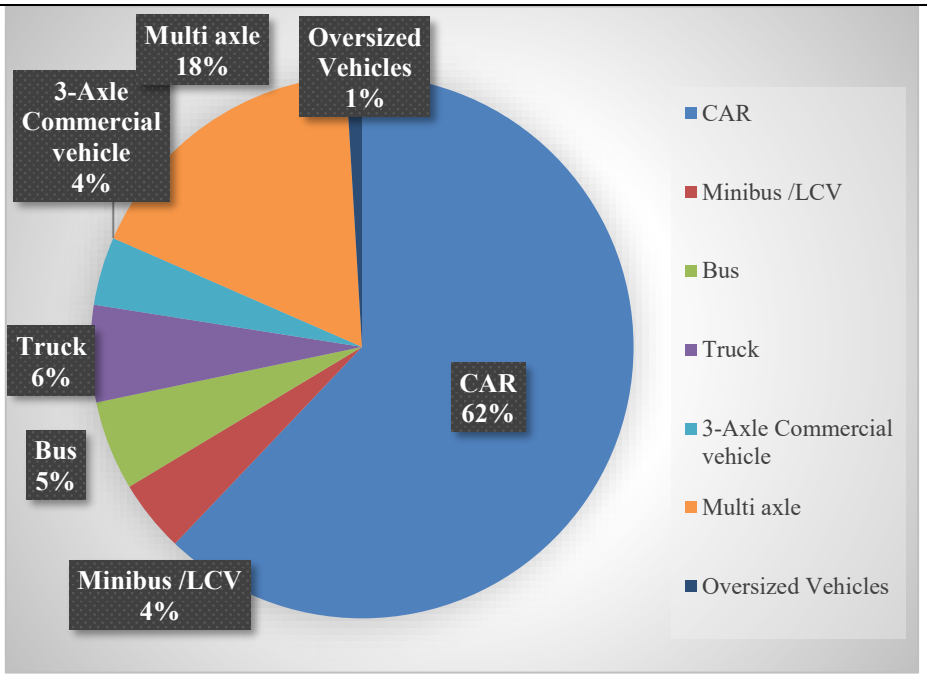


Figure 3-4 :Model Split of Tollable Vehicle-Km 212.400

It is observed that car traffic forms about 60%-70% of total traffic at toll plaza locations while multi axle commercial vehicles are about 15%-25% of total traffic. Truck / Bus and LCV share about 10%-15% and 2%-5% of traffic volume respectively.

Another important bifurcation of traffic is components of traffic with respect various type of toll ticketing like

1. Single Journey
2. Return Journey
3. Local Commercial Single Journey
4. Monthly Pass Local
5. Monthly Pass
6. Annual Pass Car

The following table provides numbers of vehicles falling in each of above category on base year 2025-26.

Table 3-8 : Journey Type Bifurcation of Traffic at Narwana TP-1 KM 125

Sr. No	Type	Traffic Volume (Nos.) 2025-26
1	Single Journey	3124
2	Return Journey	2231
3	Local Commercial Single Journey	46
4	Monthly Pass Local	18
5	Monthly Pass	3

6	Annual Pass Car	1910

Most dominant part of the above is the single journey type followed by return journey at project stretch. Monthly pass commuters are a very low fraction of the total traffic on the project corridor.

The single journey component in total traffic numbers is a high as 43%. Return journey component is 30%. The number of monthly pass local is 0% and local commercial single Journey also 1% and annual pass car is 26% at Narwana toll plaza.

Following tables give the detail of journey distribution at Badopatti and Chaudhariwas toll plaza.

Table 3-9 : Journey Type Bifurcation of Traffic at Badopatti TP KM 171

Sr. No	Type	Traffic Volume (Nos.) 2025-26
1	Single Journey	3183
2	Return Journey	2327
3	Local Commercial Single Journey	218
4	Monthly Pass Local	64
5	Monthly Pass	3
6	Annual Pass Car	2356

Table 3-10 : Journey Type Bifurcation of Traffic at Chaudhariwas TP KM 212

Sr. No	Type	Traffic Volume (Nos.) 2025-26
1	Single Journey	3752
2	Return Journey	2302
3	Local Commercial Single Journey	107
4	Monthly Pass Local	30
5	Monthly Pass	2
6	Annual Pass Car	1496

3.5 Secondary Data Collection

There are several other factors which have a substantial impact on traffic pattern and growth on any project corridor. Following is some of such important factors.

- Industrial development around project corridor and its catchment
- Educational infrastructure along project corridor
- Demographic pattern
- Urban area development
- Tourism potential
- Upcoming major infrastructural or Industrial projects
- Special Industry in project corridor
- Overall trends of economic growth local as well as national / regional

Hence in addition to traffic details on project site, secondary data was also collected from various other sources. Typical secondary data includes the following:

1. Vehicle registration data of regional and national level.
2. Economic Data
   a) GDP
   b) NSDP
   c) Population Growth
   d) Per Capita Income growth
   e) Industrial Growth
   f) Special Industry Potential
   g) Regional and National development vision / plan
   h) Any other relevant data
3. Competing road network

We have collected and utilized such underlying data in the study to estimate the growth and risk factors for traffic along the project corridor.

CHAPTER 4

INFLUENCE ZONE TRANSPORT NETWORK ANALYSIS

4.1 Introduction

Highway corridors behave like integrated circuit network and more often than not every road is connected to various networks having different origin and destinations. Traffic running on these networks behave like fluid and flow on network on alignment of least friction.

Following Factors can be considered as major contributors to friction on transportation network.

- Travel Speed / Travel Time
- Geometric deficiencies like blind horizontal curves and steep vertical gradients etc,
- Configuration of road
- Riding quality
- Traffic delays,
- Length of road,
- Passing through built up or Urban Area,
- Terrain,
- Facilities,

4.2 Competing / Alternate route

Though project road has started collecting toll form mid of year 2017-18 but it was for partial completion of project stretch. Some critical location bypasses and ROBs were pending at beginning of toll. Also stretch from Ambala to Kaithal which is just before project stretch is under four laning. In this case project traffic can be considered as under settlement. 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. 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.

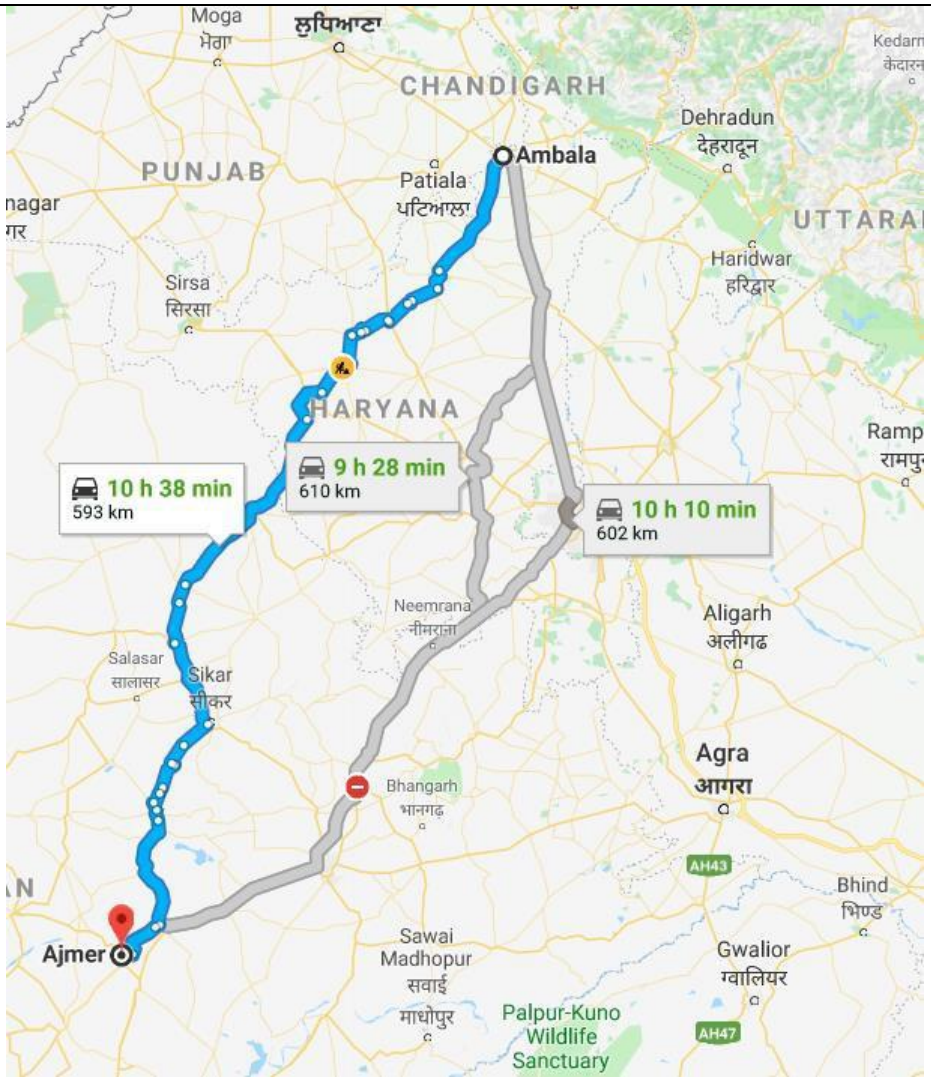


Figure 4-1 : Alternate route at regional level between Zones.

Above figure depicts alternate route between Ambala and Ajmer. Following figure shows alternate routes between Ludhiana and Ajmer

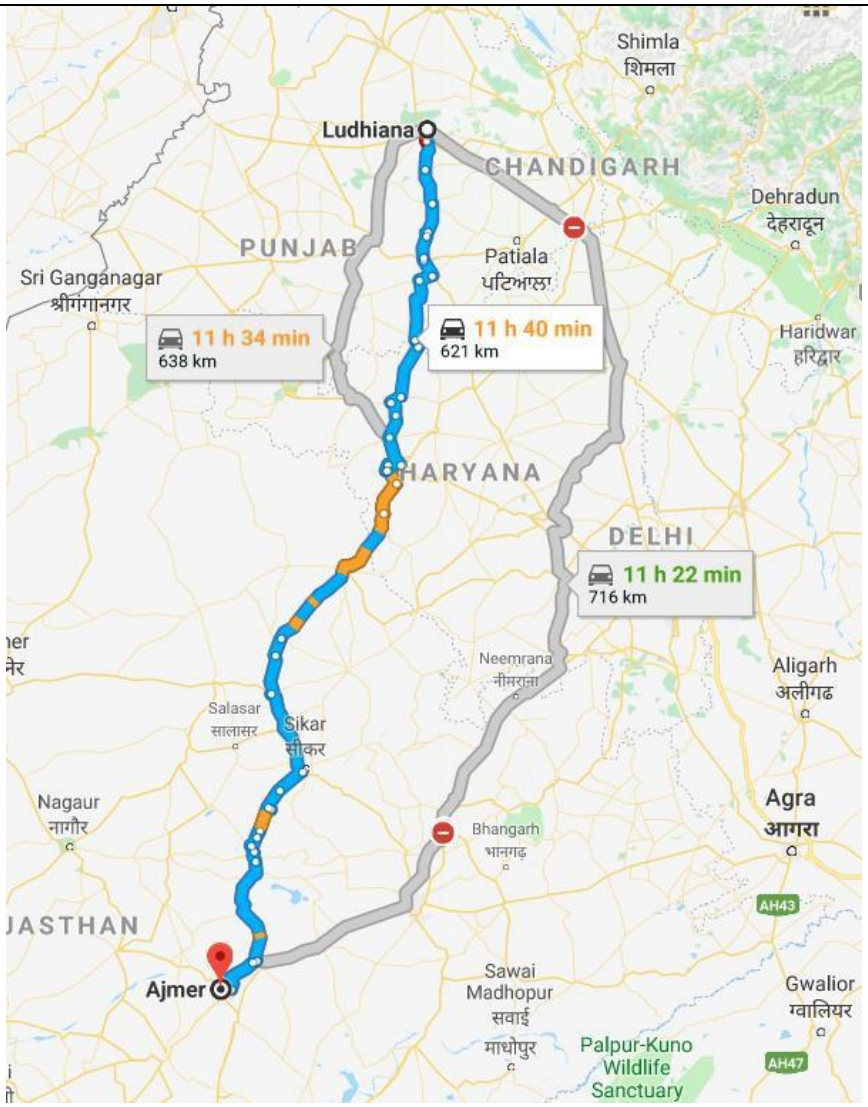


Figure 4-2 : Alternate route at regional level between Ludhiana & Ajmer

From above figures it can be seen that the route containing project alignment has least distance between these origin and destination zones.

Following facts 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.
- Road from Ludhiana to Hisar is part of Bharatmala project and will be converted to four lanes. Currently road from Hisar to Fatehabad only in four lanes.

- 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.

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.

Following table provide summary of analysis of alternate route/ roads discussed above.

Table 4-1 : Summary Network analysis

Sr. No	Route Details	Designation	Length (Km)	Avg. Speed (KMPH)	Time Taken (Min)	Observations
Regional Level						
1	Ambala-Panipat-Karnal-Rohtak-Ajmer	Alternate Route	610	64	9 Hr 28 Min	Alternate route is longer but has shorter travel time. With completion of Ambala - Kaithal four laning of Road induced traffic is expected onto project stretch
	Ambala-Kaithal-Hisar-Ajmer	Project Road	593	55	10 Hr 38 Min	
2	Ludhiana-Chandigarh Panipat-Karnal-Ajmer	Alternate Route	716	63	11 Hr 22 Min	Alternate route is longer but has shorted travel time. With completion of Ambala - Kaithal four laning of Road induced traffic is expected onto project stretch
	Ludhiana - Ambala-Kaithal-Hisar-Ajmer	Project Road	621	53	11 Hr 40 Min	

Table 4-2 : Competing Roads Details

Under these circumstances it is not envisaged that commercial or passenger traffic would switch to alternate roads from the project road.

CHAPTER 5

GROWTH OF TRAFFIC ON PROJECT HIGHWAY

5.1 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-152/65 has been done taking the above factors into consideration. "**IRC: 108-2015-Guidelines for Traffic Prediction on Rural Highways**" is established best practice and has been used for traffic growth forecast.

5.2 Trend Analysis

One of the methods of estimation of future rate of growth is to assume the same rate of growth as in the past. Although such a method is more suitable to projects of short durations say 5-10 years, however for long term projections it would-be erroneous to assume that the past rate of growth will continue to prevail for a long time in future. Economic conditions, which are major influencing factors, are bound to change over a long period of time. Thus, it would be necessary to modify the past trends of growth suitably.

Elasticity model of growth projection is one of the most widely acceptable methods for traffic forecast. The same is recommended in **IRC: 108-2015-Guidelines for Traffic Prediction on Rural Highways**.

In this method the past trend of vehicular data is 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 the growth pattern for passenger and goods vehicle is different. Traffic growth on any highway typically depends on number of economic parameters. Most important and direct parameters are given as under

- Per Capita Income
- Net State Domestic Product (NSDP)
- Population

It can be observed that the ownership of a car is more closely related to affordability; hence per capita is the index which closely fits the growth of car traffic among other criteria. In a similar fashion, the following can be pairs of vehicle type and independent variable for elasticity modelling of growth.

- Car / Jeep – Par Capita Income
- Bus / Minibus – Population
- Goods Vehicle – NSDP

5.3 Estimation of Traffic Demand Elasticity

Elasticity of traffic demand is defined as the rate at which traffic intensity varies due to a change in the corresponding indicator selected. Hence, in order to estimate the elasticity of traffic demand, it is necessary to establish relationship between the growth in number of given category of vehicles with the relevant economic variable considered, such as NSDP, per capita income and population growth. Latest available data for vehicle registration, per capita income, NSDP and population is used in analysis.

As per IRC: 108-1996 the model for estimating elasticity index for the project corridor is of the following form and is given as below:

Log (P) = k x 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).

The project corridor spreads across state of Haryana. Toll plazas at Narwana, Badopatti and Choudhariwas are in the state of Haryana, but project stretch is under impact of Rajasthan state as well. In such circumstances for elasticity calculations, working data from above two states has been analysed.

Following tables and graphs depict regression and elasticity of growth model for stretch falling in Haryana State.

Table 5-1 : Per Capita Income Vs Car Haryana

Year	PCI	Car	Log PCI	Log Car	PCI Growth	Average Growth
2012	106085	989519	5.03	6.00		
2013	111780	1134616	5.05	6.05	5%	
2014	119791	1278272	5.08	6.11	7%	
2015	125032	1420621	5.10	6.15	4%	
2016	137818	1711692	5.14	6.23	10%	
2017	150241	1851788	5.18	6.27	9%	7.23%

Regression analysis of same is given in figure below.

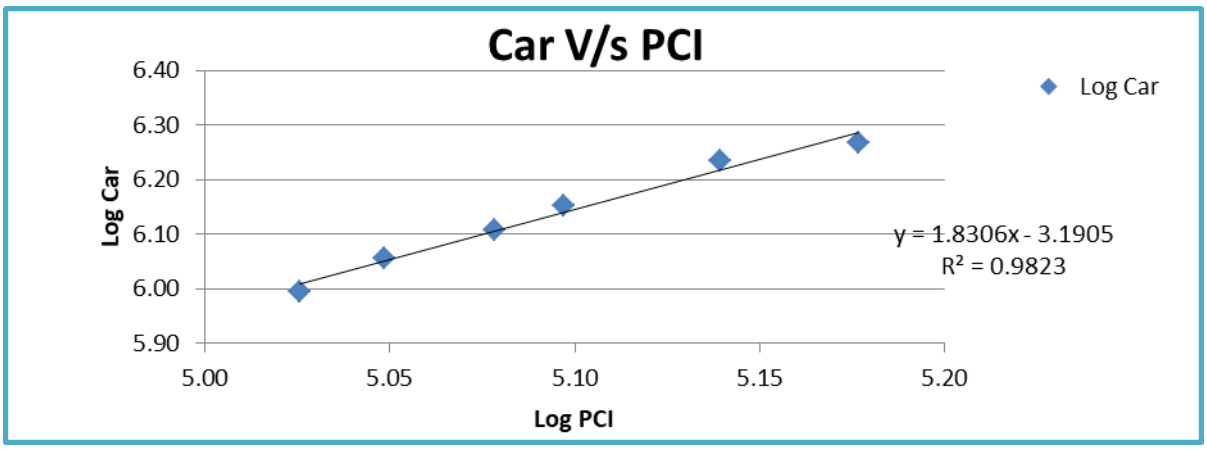


Figure 5-1 : Regression and Elasticity PCI vs. Car – Extrapolation Haryana

Table 5-2 : Population Vs Bus Haryana

Year	Population	Buses	Log Pop	Log Bus	Pop Growth	Average Growth
2012	25351462	39153	7.40	4.59		
2013	25751257	43456	7.41	4.64	2%	
2014	26149236	46558	7.42	4.67	2%	
2015	26545282	52640	7.42	4.72	2%	
2016	26939286	55781	7.43	4.75	1%	
2017	27331141	60129	7.44	4.78	1%	1.52%

Regression analysis of same is given in figure below.

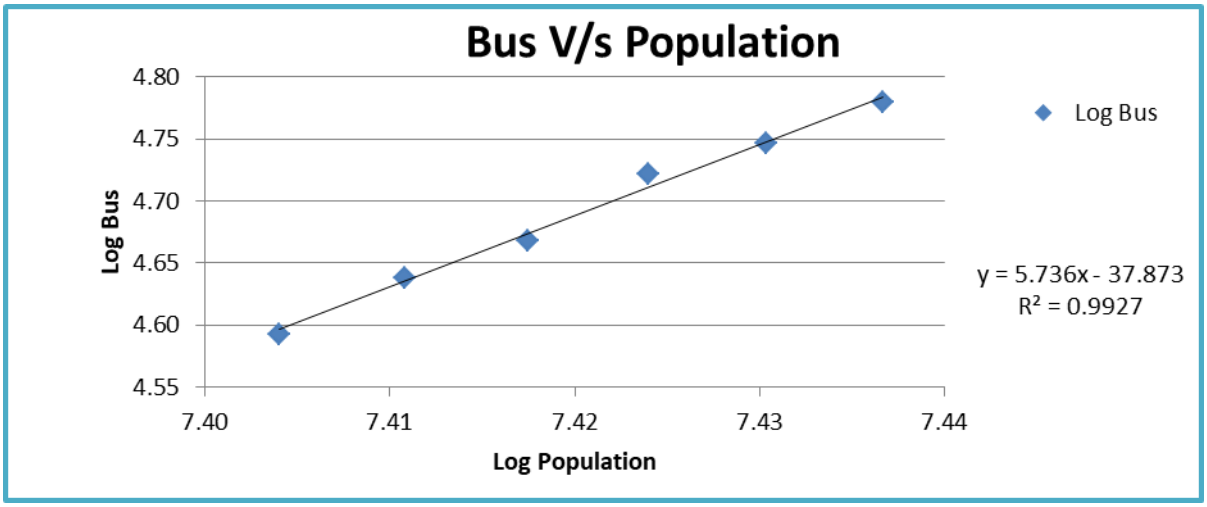


Figure 5-2 : Regression and Elasticity Population vs. Bus – Extrapolation Haryana

Elasticity of goods traffic has been worked out by regression analysis with NSDP. Following table represents the data and details.

Table 5-3 : LCV Traffic Vs NSDP Haryana

Year	NSDP	LCV	Log NSDP	Log LCV	NSDP Growth	Average Growth (5 Year)
2012	271152	124897	5.43	5.10		
2013	289756	137511	5.46	5.14	7%	
2014	314931	152069	5.50	5.18	9%	
2015	333359	167901	5.52	5.23	6%	
2016	372659	182776	5.57	5.26	12%	8.30%

Following figure depict regression analysis and extrapolation.

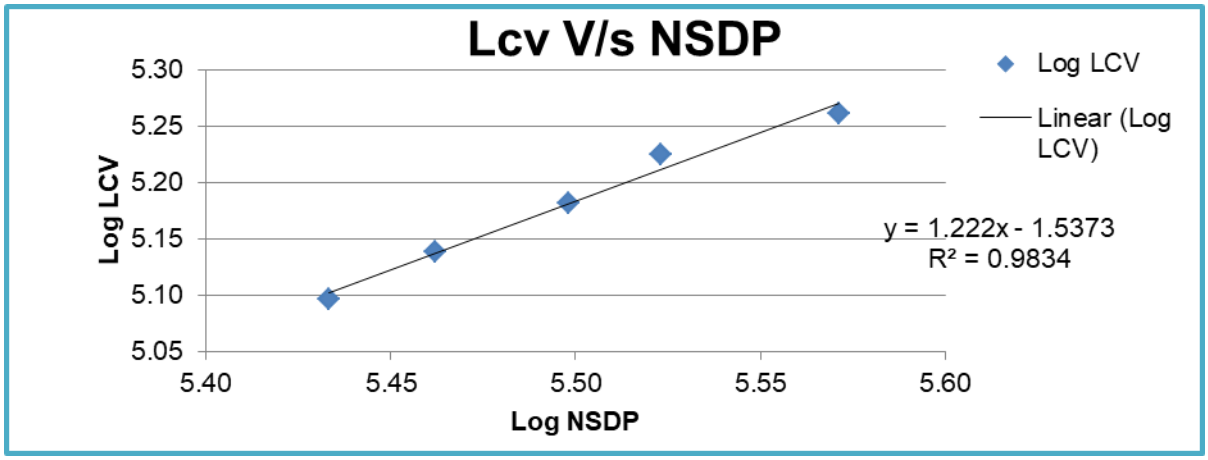


Figure 5-3 : Regression and Elasticity NSDP vs. LCV Traffic - extrapolation Haryana.

Table 5-4 : Goods Traffic Vs NSDP Haryana

Year	NSDP	Trucks	Log NSDP	Log Truck	NSDP Growth	Average Growth (5 Year)
2012	271152	292735	5.43	5.47		
2013	289756	307509	5.46	5.49	7%	
2014	314931	327882	5.50	5.52	9%	
2015	333359	348732	5.52	5.54	6%	
2016	372659	367730	5.57	5.57	12%	
2017	412006	390321	5.61	5.59	11%	8.75%

Following figure depict regression analysis and extrapolation.

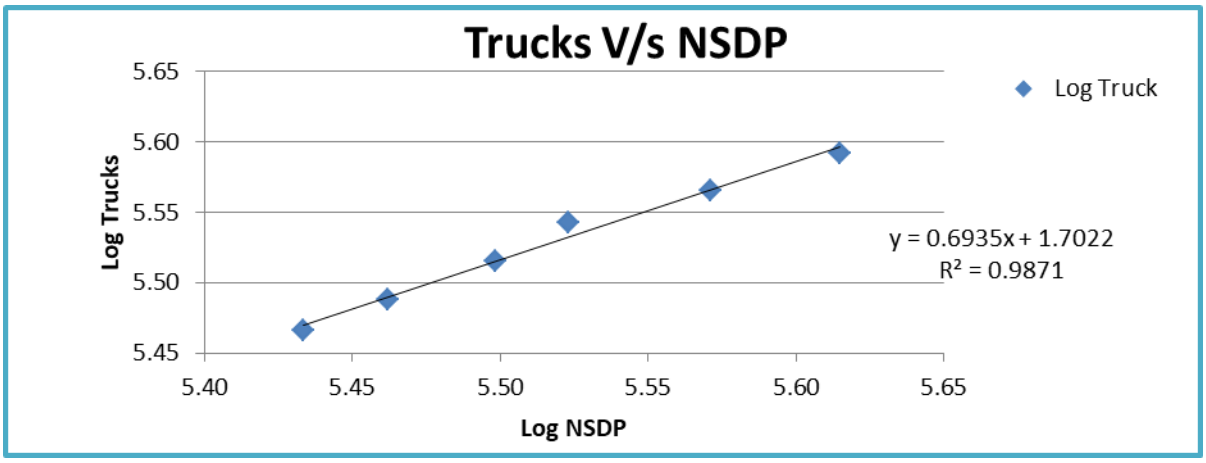


Figure 5-4 : Regression and Elasticity NSDP vs. Goods Traffic - extrapolation Haryana.

Using the regression analysis above, we have arrived at the elasticity of traffic demand for each class of vehicle to a given change in relevant economic indicators. Average traffic growth of a vehicle class is multiplied by the corresponding elasticity coefficient to arrive at traffic growth. R2 statistical measure of how close the data are to the fitted regression line. It varies from 0 to 1. Higher the value of R2 more representative is the regression model of data.

The results of these analyses for *the good fit* regression as reflected by R^2 values are presented in the Table below.

Table 5-5 : Summary Regression Analysis 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 = 1.8306x + -3.1905	R^2 = 0.9823	1.8306	7.23%	13.24%	Good Regression
	Bus	Population	y = 5.736x - -37.8732	R^2 = 0.9927	5.7360	1.52%	8.69%	Good Regression
	LCV	NSDP	y = 1.222x - -1.5373	R^2 = 0.9834	1.2220	8.30%	10.14%	Good Regression
	Truck	NSDP	y = 0.6935x - 1.7022	R^2 = 0.9871	0.6935	8.75%	6.07%	Good Regression

Following tables and graphs depict regression and elasticity of growth model for stretch falling in Rajasthan State.

Table 5-6 : Per Capita Income Vs Car Rajasthan

Year	PCI	Car	Log PCI	Log Car	PCI Growth	Average Growth
2012	57192	591069	4.76	5.77		
2013	58441	659542	4.77	5.82	2%	
2014	61053	733916	4.79	5.87	4%	
2015	64496	814079	4.81	5.91	6%	
2016	68565	899307	4.84	5.95	6%	
2017	71394	988391	4.85	5.99	4%	4.55%

Regression analysis of same is given in figure below.

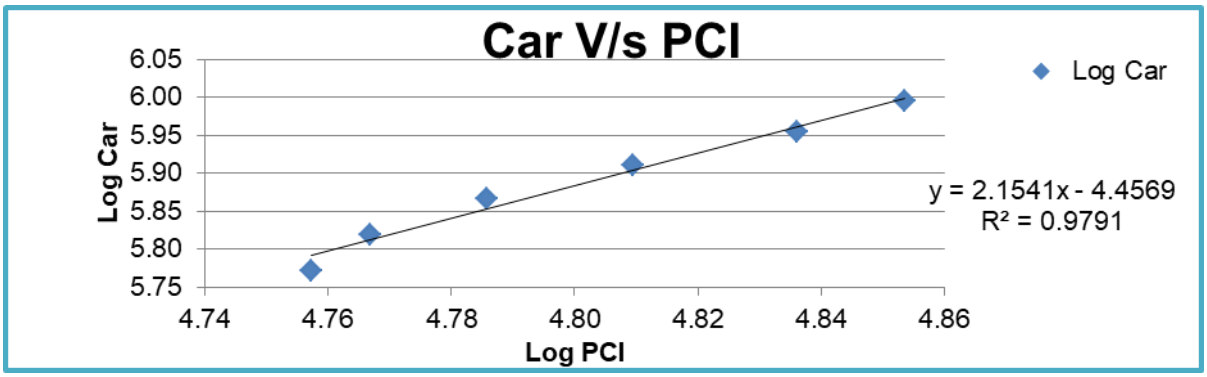


Figure 5-5 : Regression and Elasticity PCI vs. Car – Extrapolation Rajasthan

Table 5-7 : Population Vs Bus Rajasthan

Year	Population	Buses	Log Pop	Log Bus	Pop Growth	Average Growth
2012	68548437	83345	7.84	4.92		
2013	69783885	88616	7.84	4.95	2%	
2014	71016445	93892	7.85	4.97	2%	
2015	72245688	97650	7.86	4.99	2%	
2016	73471198	102818	7.87	5.01	2%	
2017	74692571	108680	7.87	5.04	2%	1.73%

Regression analysis of same is given in figure below.

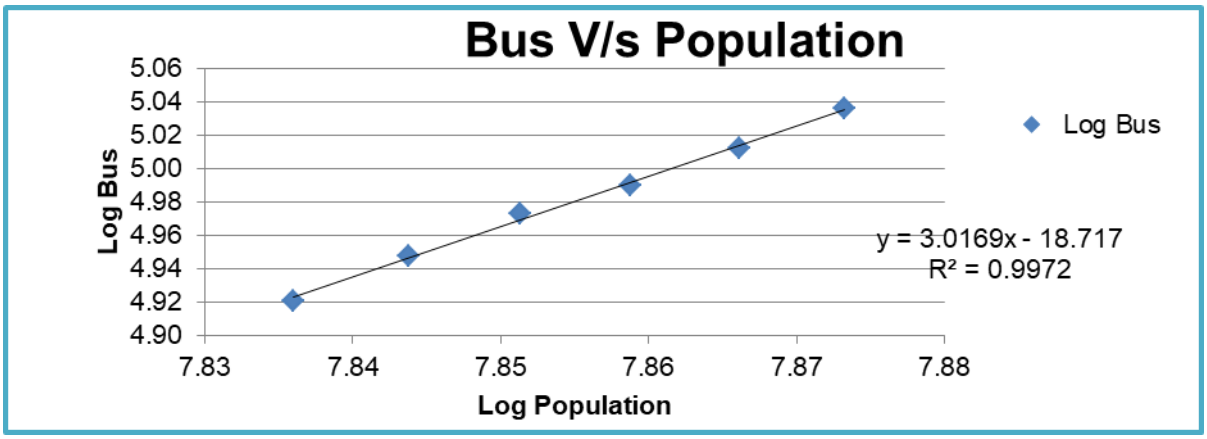


Figure 5-6 : Regression and Elasticity Population vs. Bus – Extrapolation Rajasthan

Elasticity of goods traffic has been worked out by regression analysis with NSDP. Following table represents the data and details.

Table 5-8 : LCV Traffic Vs NSDP Rajasthan

Year	NSDP	LCV	Log NSDP	Log LCV	NSDP Growth	Average Growth (5 Year)
2012	395331	69509	5.60	4.84		
2013	409802	76396	5.61	4.88	4%	
2014	434292	33379	5.64	4.52	6%	
2015	465408	91787	5.67	4.96	7%	
2016	501922	99763	5.70	5.00	8%	6.16%

Following figure depict regression analysis and extrapolation.

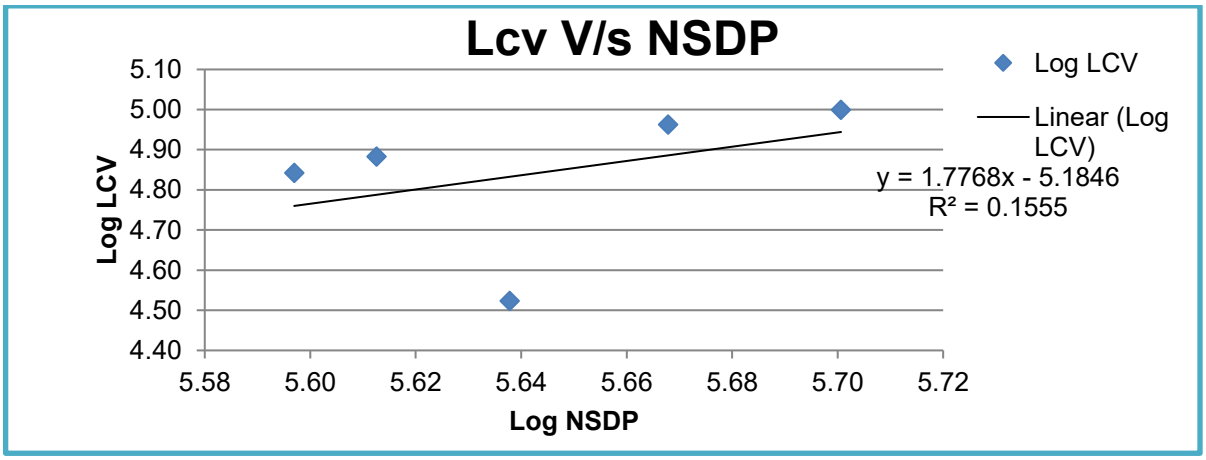


Figure 5-7 : Regression and Elasticity NSDP vs. LCV Traffic - extrapolation Rajasthan.

Table 5-9 : Goods Traffic Vs NSDP Rajasthan

Year	NSDP	Trucks	Log NSDP	Log Truck	NSDP Growth	Average Growth (5 Year)
2012	395331	362028	5.60	5.56		
2013	409802	401983	5.61	5.60	4%	
2014	434292	434379	5.64	5.64	6%	
2015	465408	472365	5.67	5.67	7%	
2016	501922	517604	5.70	5.71	8%	
2017	530172	561158	5.72	5.75	6%	6.06%

Following figure depict regression analysis and extrapolation.

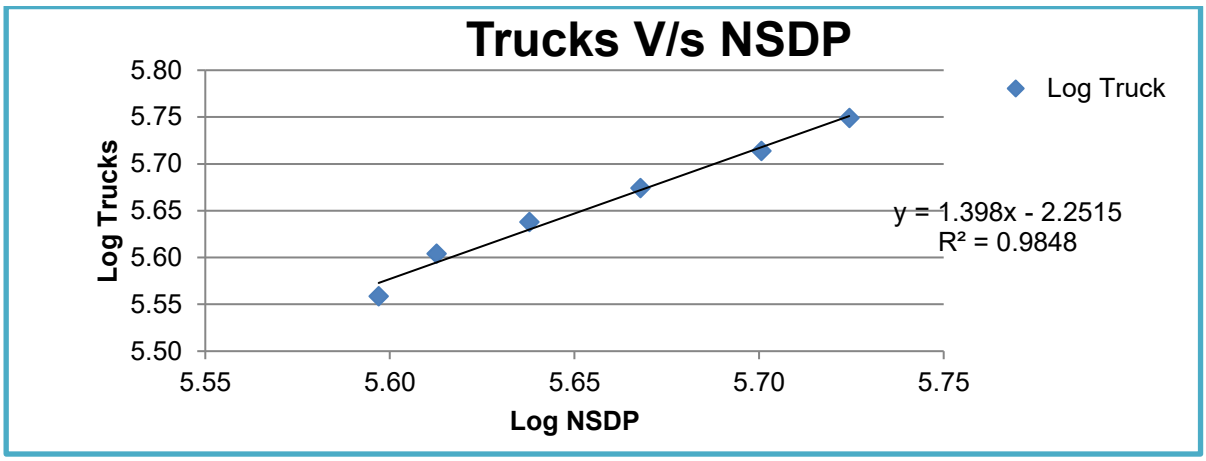


Figure 5-8 : Regression and Elasticity NSDP vs. Goods Traffic - extrapolation Rajasthan.

Using the regression analysis above, we have arrived at the elasticity of traffic demand for each class of vehicle to a given change in relevant economic indicators. Average traffic growth of a vehicle class is multiplied by the corresponding elasticity coefficient to arrive at traffic growth. R2 statistical measure of how close the data are to the fitted regression line. It varies from 0 to 1. Higher the value of R2 more representative is the regression model of data.

The results of these analyses for *the good fit* regression as reflected by R^2 values are presented in the Table below.

Table 5-10 : Summary Regression Analysis 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 = 2.1541x + -4.4569	R^2 = 0.9791	2.1541	4.55%	9.79%	Good Regression
	Bus	Population	y = 3.0169x - -18.7174	R^2 = 0.9972	3.0169	1.73%	5.22%	Good Regression
	LCV	NSDP	y = 1.7768x - -5.1846	R^2 = 0.1555	1.7768	6.16%	10.95 %	Good Regression

State	Vehicle Category	Independent Variable	Regression Equation	R Square	Elasticity Coefficient (y)	Average IV Growth (5yrs)	Growth Elastic Model	Remarks
	Truck	NSDP	y = 1.398x - - 2.2515	R^2 = 0.9848	1.3980	6.06%	8.46%	Good Regression

Economical model for predicting growth is good tool, however other local, regional, national factors should also be considered before finalizing growth factors. Considering factors such as proposed developments and other influencing economic factors, moderated growth should be considered. These factors are discussed in subsequent sections.

5.4 Analysis of Historic Traffic Data

Historical traffic data forms useful information for any highway project. It provides useful information for establishing past trend of growth.

5.5 Other Factors Influencing Growth

There are many factors which have impact on traffic growth. As discussed previously these factors can be economical, social, educational, and industrial.

Potentiality of such factors for project highway is discussed as under.

ECONOMY

After witnessing a slowdown during 2011-12, the economy recovered in 2013-14, and a high growth rate of GDP was recorded up to 2018-19. Pandemic of COVID-19 impacted all economies of world including India up to year 2021-22. Following figure show trend of GDP growth in India.

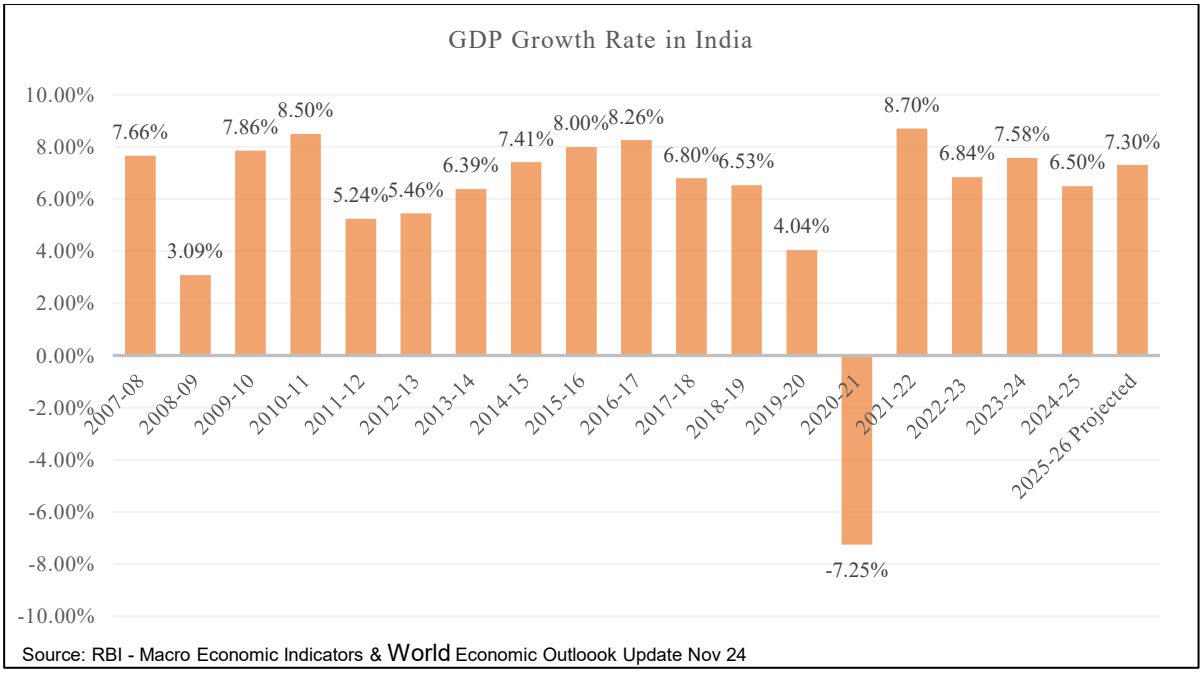


Figure 5-9 : Growth of GDP in India

FY 2017-18 recorded a growth of 6.7% which had a slight impact of GST and demonetization. Indian economy appears on recovery path with estimated growth of 6.8% in FY 2018-19. The government took major policy decisions including tax infrastructure reforming, banking sector improvement and ease of doing business.

In post COVID-19 scenario, in year 2022-23 and 2023-24 India registered an impressive growth of 7% to 7.5%. In last year despite global slow down due to Russia-Ukraine war and Gaza crises, India grew at good rate of 7%(Estimated).
Indian economy is now on good growth path and all major institutions including IMF / ADB have estimated growth of Indian Economy to peg around 6.5% to 7% in coming years.

5.6 Developments along and around the Project Corridor & State

Project stretch 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 cities 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 centre 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 liability.

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 neighbouring 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 breadbasket". 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 manufacturers 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 centres 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, Tec Mahindra, 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 mediums 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.

5.7 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. Rate of growth is moderated in light of overall regional trend. Growth of multi-Axle is kept slightly higher as trend of technological advances in logistic industry Favors multi-axle over 2/3 axle carriage. 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 Traffic growth is suitably stepped down for future 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 for corridor in both states.

5.7.1 Recommended Growth Rates of Traffic for Project Stretch

Table 5-11 : Recommended Growth Rates Optimistic

Category / Year	FY 2026-2027	FY 2028-2030	FY 2031-2035	FY 2036-2040	FY 2041-2045	FY 2046-2050
Car/Jeep/Van	5.67%	5.45%	5.22%	5.00%	4.78%	4.56%
Bus	3.21%	3.09%	2.72%	2.61%	2.50%	2.40%
LCV	3.38%	3.17%	2.72%	2.53%	2.35%	2.17%
2- Axle	3.96%	3.74%	3.23%	3.04%	2.86%	2.67%
3 - Axle	3.96%	3.74%	3.23%	3.04%	2.86%	2.67%
4 to 6 Axle	3.96%	3.74%	3.53%	3.32%	3.12%	2.91%
7 and Above Axle	3.96%	3.74%	3.53%	3.32%	3.12%	2.91%

Table 5-12 : Recommended Growth Rates Pessimistic

Category / Year	FY 2026-2027	FY 2028-2030	FY 2031-2035	FY 2036-2040	FY 2041-2045	FY 2046-2050
Car/Jeep/Van	5.17%	4.95%	4.72%	4.50%	4.28%	4.06%
Bus	2.71%	2.59%	2.22%	2.11%	2.00%	1.90%
LCV	2.88%	2.67%	2.22%	2.03%	1.85%	1.67%
2- Axle	3.46%	3.24%	2.73%	2.54%	2.36%	2.17%
3 - Axle	3.46%	3.24%	2.73%	2.54%	2.36%	2.17%
4 to 6 Axle	3.46%	3.24%	3.03%	2.82%	2.62%	2.41%
7 and Above Axle	3.46%	3.24%	3.03%	2.82%	2.62%	2.41%

Table 5-13 : Recommended Growth Rates Most Likely

Category / Year	FY 2026-2027	FY 2028-2030	FY 2031-2035	FY 2036-2040	FY 2041-2045	FY 2046-2050
Car/Jeep/Van	5.42%	5.20%	4.97%	4.75%	4.53%	4.31%
Bus	2.96%	2.84%	2.47%	2.36%	2.25%	2.15%
LCV	3.13%	2.92%	2.47%	2.28%	2.10%	1.92%
2- Axle	3.71%	3.49%	2.98%	2.79%	2.61%	2.42%
3 - Axle	3.71%	3.49%	2.98%	2.79%	2.61%	2.42%
4 to 6 Axle	3.71%	3.49%	3.28%	3.07%	2.87%	2.66%
7 and Above Axle	3.71%	3.49%	3.28%	3.07%	2.87%	2.66%

The expansion of the Rajiv Gandhi Thermal Power Plant (RGTPP) at Khedar, Hisar by 800 MW is a significant infrastructure project aimed at strengthening Haryana's power generation capacity and meeting rising electricity demand.

The proposed expansion involves the addition of a new 800 MW ultra-supercritical unit to the existing 2×600 MW coal-based Rajiv Gandhi Thermal Power Plant. The project, estimated at around ₹7,250 crore, is intended to enhance reliable and uninterrupted power supply for industrial, agricultural, and domestic consumers.

From a traffic and transportation perspective, the expansion will lead to a temporary increase in construction-phase traffic, including movement of heavy machinery, construction materials, and workforce. During the operational phase, there will be a steady rise in vehicular movement associated with coal transportation (via road/rail), staff commuting, and maintenance logistics. The allocation of dedicated coal linkage ensures continuous fuel supply, which may generate regular freight traffic corridors to and from the plant. This is expected to give a boost to goods traffic plying on the Project stretch from Financial Year Fy 2027.

The development of Maharaja Agrasen International Airport (Hisar Airport) is a major infrastructure initiative aimed at transforming Hisar into an aviation and logistics hub for Haryana and the NCR region.

The project involves the phased development of Hisar Airport into an international aviation hub, including expansion of runway facilities (up to ~3,000 m), construction of new terminals, taxiways, aprons, and associated infrastructure such as cargo facilities, MRO (maintenance, repair, and overhaul) hubs, and an aerocity. Strategically located near NH-9 and integrated with industrial corridors like the Delhi–Mumbai Industrial Corridor, the airport is expected to significantly boost regional connectivity, industrial growth, and logistics activities. This is expected to give a boost to goods traffic plying on the Project stretch from Financial Year 2031.

Traffic and revenue have been worked out on the basis of above growths and same is presented in subsequent chapter of report.

CHAPTER 6

TRAFFIC FORECAST

6.1 Traffic Projections

Growth rates recommended in previous section of report are used to arrive at traffic projections for future years. Toll plaza wise futuristic traffic projection is given in tables below.

These projections have been done for following three cases of growth up to concession period.

1. Optimistic Scenario
2. Pessimistic Scenario
3. Most Likely Scenario

Table 6-1 : Total Tollable Traffic @ Toll Plaza 1- Narwana 125.00 KM

(Optimistic Growth Scenario)

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU (Including Exempted)
2026-27	5307	330	419	335	242	1043	51	**7727**	**13609**
2027-28	5596	341	432	359	259	1115	54	**8156**	**14416**
2028-29	5901	352	445	388	280	1204	58	**8628**	**15341**
2029-30	6223	364	459	418	302	1300	62	**9128**	**16331**
2030-31	6547	374	472	444	320	1384	66	**9607**	**17244**
2031-32	6888	384	485	471	340	1474	70	**10112**	**18210**
2032-33	7247	395	498	500	361	1570	74	**10645**	**19233**
2033-34	7625	406	511	532	383	1672	79	**11208**	**20315**
2034-35	8022	418	525	565	407	1781	84	**11802**	**21460**
2035-36	8423	429	539	594	428	1876	88	**12377**	**22517**
2036-37	8843	440	553	624	449	1976	93	**12978**	**23627**
2037-38	9284	452	568	656	471	2081	98	**13610**	**24793**
2038-39	9748	464	583	689	495	2191	103	**14273**	**26018**
2039-40	10235	476	598	724	520	2307	108	**14968**	**27304**
2040-41	10723	488	613	759	545	2424	113	**15665**	**28600**
2041-42	11235	500	629	796	571	2547	119	**16397**	**29959**
2042-43	11771	512	645	834	599	2677	125	**17163**	**31384**
2043-44	12334	524	661	874	628	2813	131	**17965**	**32878**
2044-45	12923	536	677	917	658	2956	138	**18805**	**34444**
2045-46	13513	548	693	960	688	3101	145	**19648**	**36017**
2046-47	14129	560	709	1005	720	3253	152	**20528**	**37663**
2047-48	14774	572	726	1051	754	3413	159	**21449**	**39386**
2048-49	15448	584	744	1100	789	3580	167	**22412**	**41189**

Table 6-2 : Total Tollable Traffic @ Toll Plaza 2- Badopatti 171.00 KM

(Optimistic Growth Scenario)

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU (Including Exempted)
2026-27	5954	322	532	348	299	1056	78	**8589**	**15096**
2027-28	6279	332	548	372	319	1129	83	**9062**	**15980**
2028-29	6621	342	564	402	345	1218	89	**9581**	**16989**
2029-30	6980	352	581	433	372	1315	96	**10129**	**18066**
2030-31	7345	362	597	460	395	1401	102	**10662**	**19065**
2031-32	7729	372	613	488	420	1492	109	**11223**	**20122**
2032-33	8134	382	629	518	446	1589	116	**11814**	**21239**
2033-34	8558	392	646	550	474	1693	123	**12436**	**22421**
2034-35	9005	402	664	584	503	1804	131	**13093**	**23671**
2035-36	9454	412	681	614	529	1900	138	**13728**	**24831**
2036-37	9926	422	699	645	556	2001	145	**14394**	**26049**
2037-38	10423	432	718	677	584	2107	153	**15094**	**27328**
2038-39	10942	443	737	711	613	2219	161	**15826**	**28671**
2039-40	11490	454	756	746	643	2337	169	**16595**	**30082**
2040-41	12039	464	775	782	674	2457	178	**17369**	**31503**
2041-42	12614	475	794	820	706	2582	187	**18178**	**32992**
2042-43	13218	486	814	859	741	2714	196	**19028**	**34553**
2043-44	13849	497	834	901	777	2853	206	**19917**	**36190**
2044-45	14511	508	854	944	815	2999	216	**20847**	**37905**
2045-46	15172	519	874	988	853	3146	227	**21779**	**39628**
2046-47	15865	530	894	1034	893	3301	238	**22755**	**41431**
2047-48	16589	541	915	1082	934	3463	250	**23774**	**43317**
2048-49	17346	552	938	1132	978	3633	262	**24841**	**45290**

Table 6-3 : Total Tollable Traffic @ Toll Plaza 3- Chainage 212.00 KM

(Optimistic Growth Scenario)

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU (Including Exempted)
2026-27	5044	340	423	469	330	1418	77	**8101**	**15086**
2027-28	5317	351	436	501	353	1516	82	**8556**	**15992**
2028-29	5606	362	449	540	381	1637	88	**9063**	**17039**
2029-30	5910	373	463	583	411	1767	95	**9602**	**18160**
2030-31	6217	383	475	619	436	1882	101	**10113**	**19190**
2031-32	6542	394	487	657	463	2005	107	**10655**	**20281**
2032-33	6884	405	500	698	492	2136	114	**11229**	**21436**
2033-34	7244	416	513	741	523	2275	121	**11833**	**22659**
2034-35	7622	427	527	787	556	2423	129	**12471**	**23955**
2035-36	8002	438	541	826	584	2552	136	**13079**	**25141**
2036-37	8402	449	555	868	614	2688	143	**13719**	**26388**
2037-38	8822	460	570	912	645	2831	151	**14391**	**27698**
2038-39	9262	472	585	958	677	2981	159	**15094**	**29074**
2039-40	9724	484	600	1007	711	3139	167	**15832**	**30520**

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU (Including Exempted)
2040-41	10189	495	615	1056	745	3300	175	**16575**	**31978**
2041-42	10675	507	630	1107	781	3469	184	**17353**	**33507**
2042-43	11184	519	645	1161	818	3647	193	**18167**	**35110**
2043-44	11719	531	661	1217	858	3834	203	**19023**	**36791**
2044-45	12279	543	677	1276	900	4030	213	**19918**	**38555**
2045-46	12839	555	693	1336	942	4228	223	**20816**	**40327**
2046-47	13425	567	709	1398	986	4435	234	**21754**	**42183**
2047-48	14037	579	725	1463	1032	4653	245	**22734**	**44125**
2048-49	14677	591	742	1531	1080	4882	257	**23760**	**46159**

Table 6-4 : Total Tollable Traffic @ Toll Plaza 1- Chainage 125.000 KM (Pessimistic Growth Scenario)

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU (Including Exempted)
2026-27	5283	328	418	333	241	1039	50	**7692**	**13545**
2027-28	5544	336	429	355	257	1106	53	**8080**	**14279**
2028-29	5819	344	441	382	277	1188	57	**8508**	**15125**
2029-30	6106	353	453	410	298	1276	61	**8957**	**16025**
2030-31	6394	361	463	434	315	1353	65	**9385**	**16841**
2031-32	6695	369	473	459	333	1435	69	**9833**	**17700**
2032-33	7012	377	484	486	352	1522	73	**10306**	**18606**
2033-34	7343	385	495	514	372	1613	77	**10799**	**19560**
2034-35	7688	393	507	544	393	1710	82	**11317**	**20564**
2035-36	8034	401	518	569	411	1792	86	**11811**	**21475**
2036-37	8395	409	529	594	429	1879	90	**12325**	**22426**
2037-38	8773	417	541	621	449	1969	94	**12864**	**23421**
2038-39	9167	425	553	649	469	2064	98	**13425**	**24461**
2039-40	9579	433	565	679	490	2164	103	**14013**	**25548**
2040-41	9989	441	577	709	511	2264	108	**14599**	**26633**
2041-42	10416	449	589	740	533	2368	113	**15208**	**27765**
2042-43	10862	457	601	772	557	2477	118	**15844**	**28947**
2043-44	11326	465	613	805	581	2591	123	**16504**	**30180**
2044-45	11811	473	626	840	606	2711	129	**17196**	**31467**
2045-46	12290	481	638	875	631	2831	135	**17881**	**32747**
2046-47	12788	489	650	911	657	2956	141	**18592**	**34080**
2047-48	13307	497	663	949	685	3087	147	**19335**	**35469**
2048-49	13847	505	676	988	714	3223	153	**20106**	**36916**

Table 6-5 : Total Tollable Traffic @ Toll Plaza 2- Chainage 171.00 KM (Pessimistic Growth Scenario)

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU (Including Exempted)
2026-27	5926	320	528	346	298	1050	78	**8546**	**15024**
2027-28	6219	328	542	368	317	1118	83	**8975**	**15829**
2028-29	6526	337	556	395	341	1202	89	**9446**	**16749**
2029-30	6849	347	570	425	367	1291	95	**9944**	**17728**
2030-31	7172	355	583	449	388	1369	101	**10417**	**18619**
2031-32	7510	363	596	475	410	1451	107	**10912**	**19558**
2032-33	7865	371	609	502	434	1538	113	**11432**	**20546**
2033-34	8236	379	623	530	459	1631	120	**11978**	**21587**
2034-35	8624	387	637	560	485	1729	127	**12549**	**22683**
2035-36	9013	395	650	586	507	1813	133	**13097**	**23681**
2036-37	9419	403	664	613	529	1900	139	**13667**	**24724**
2037-38	9844	411	678	640	553	1992	146	**14264**	**25815**
2038-39	10286	419	692	668	578	2088	153	**14884**	**26955**
2039-40	10747	427	706	698	604	2189	160	**15531**	**28146**
2040-41	11208	435	720	728	630	2290	167	**16178**	**29335**
2041-42	11687	443	734	759	657	2395	175	**16850**	**30575**
2042-43	12187	451	748	792	685	2506	183	**17552**	**31869**
2043-44	12710	459	763	826	714	2621	191	**18284**	**33219**
2044-45	13254	467	778	861	745	2742	200	**19047**	**34628**
2045-46	13793	475	793	896	776	2863	209	**19805**	**36029**
2046-47	14354	483	808	934	809	2990	218	**20596**	**37488**
2047-48	14938	491	823	973	843	3122	228	**21418**	**39007**
2048-49	15544	499	839	1014	878	3260	238	**22272**	**40590**

Table 6-6 : Total Tollable Traffic @ Toll Plaza 3- Chainage 212.00 KM (Pessimistic Growth Scenario)

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU (Including Exempted)
2026-27	5022	339	420	466	328	1412	77	**8064**	**15015**
2027-28	5269	348	431	496	349	1503	82	**8478**	**15841**
2028-29	5529	357	442	533	375	1615	88	**8939**	**16799**
2029-30	5802	366	453	572	403	1735	94	**9425**	**17821**
2030-31	6075	374	464	604	426	1840	100	**9883**	**18742**
2031-32	6361	382	475	638	450	1951	106	**10363**	**19713**
2032-33	6661	391	486	675	475	2068	112	**10868**	**20738**
2033-34	6974	400	497	713	502	2192	119	**11397**	**21817**
2034-35	7304	409	508	753	531	2324	126	**11955**	**22956**
2035-36	7633	417	519	787	555	2436	132	**12479**	**23978**
2036-37	7976	426	530	823	580	2553	138	**13026**	**25048**
2037-38	8336	435	541	860	606	2676	145	**13599**	**26166**
2038-39	8711	444	552	899	633	2805	152	**14196**	**27335**
2039-40	9102	453	564	939	662	2941	159	**14820**	**28558**

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU (Including Exempted)
2040-41	9492	461	575	979	691	3077	166	**15441**	**29780**
2041-42	9897	470	586	1022	721	3219	174	**16089**	**31054**
2042-43	10320	479	598	1066	753	3367	182	**16765**	**32385**
2043-44	10760	488	610	1112	786	3522	190	**17468**	**33774**
2044-45	11221	497	622	1161	820	3685	199	**18205**	**35225**
2045-46	11676	505	634	1210	854	3848	208	**18935**	**36668**
2046-47	12150	514	646	1260	889	4018	217	**19694**	**38172**
2047-48	12643	523	658	1312	926	4196	226	**20484**	**39739**
2048-49	13156	532	670	1367	964	4381	236	**21306**	**41372**

Traffic projections for Most Likely scenario is given as under

Table 6-7 : Total Tollable Traffic @ Toll Plaza 1- Chainage 125.000 KM (Most Likely Growth Scenario)

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU (Including Exempted)
2026-27	5296	329	419	334	241	1041	51	**7711**	**13577**
2027-28	5570	338	431	356	257	1111	54	**8117**	**14347**
2028-29	5859	347	444	383	277	1196	58	**8564**	**15233**
2029-30	6163	356	457	413	298	1287	62	**9036**	**16177**
2030-31	6470	364	469	438	316	1368	66	**9491**	**17041**
2031-32	6791	372	481	465	335	1453	70	**9967**	**17954**
2032-33	7128	381	493	493	355	1544	74	**10468**	**18917**
2033-34	7482	390	506	523	376	1641	79	**10997**	**19934**
2034-35	7854	399	519	554	398	1744	84	**11552**	**21008**
2035-36	8227	408	532	581	417	1832	88	**12085**	**21990**
2036-37	8617	417	545	609	437	1925	92	**12642**	**23019**
2037-38	9026	426	558	638	458	2022	97	**13225**	**24098**
2038-39	9454	435	571	668	480	2124	102	**13834**	**25228**
2039-40	9903	444	584	700	503	2232	107	**14473**	**26413**
2040-41	10352	453	597	732	527	2340	112	**15113**	**27600**
2041-42	10820	462	610	765	551	2454	117	**15779**	**28843**
2042-43	11310	471	624	800	576	2574	123	**16478**	**30142**
2043-44	11821	480	638	837	602	2699	129	**17206**	**31502**
2044-45	12355	489	653	875	630	2831	135	**17968**	**32924**
2045-46	12888	498	667	913	658	2963	141	**18728**	**34345**
2046-47	13444	507	682	953	687	3101	147	**19521**	**35829**
2047-48	14024	516	697	996	717	3246	154	**20350**	**37379**
2048-49	14629	525	712	1040	749	3397	161	**21213**	**38996**

Table 6-8 : Total Tollable Traffic @ Toll Plaza 2- Chainage 171.00 KM (Most Likely Growth Scenario)

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU (Including Exempted)
2026-27	5939	321	530	347	299	1053	78	**8567**	**15060**
2027-28	6247	331	545	370	319	1123	83	**9018**	**15904**
2028-29	6572	341	560	398	344	1209	89	**9513**	**16869**
2029-30	6913	351	576	428	371	1302	96	**10037**	**17897**
2030-31	7257	360	590	454	393	1383	102	**10539**	**18841**
2031-32	7616	369	605	481	417	1470	108	**11066**	**19838**
2032-33	7995	379	620	509	442	1562	115	**11622**	**20890**
2033-34	8392	389	635	539	468	1660	122	**12205**	**22001**
2034-35	8810	399	651	571	496	1764	130	**12821**	**23172**
2035-36	9228	409	666	598	520	1853	136	**13410**	**24250**
2036-37	9666	419	682	626	545	1947	143	**14028**	**25379**
2037-38	10125	429	698	656	571	2045	150	**14674**	**26561**
2038-39	10605	439	714	687	598	2149	158	**15350**	**27801**
2039-40	11109	449	730	719	626	2258	166	**16057**	**29099**
2040-41	11612	459	746	752	655	2368	174	**16766**	**30401**
2041-42	12139	469	762	787	685	2483	182	**17507**	**31762**
2042-43	12689	479	778	823	716	2604	191	**18280**	**33186**
2043-44	13264	489	795	861	749	2731	200	**19089**	**34675**
2044-45	13864	499	814	900	784	2863	210	**19934**	**36232**
2045-46	14462	509	831	939	819	2996	220	**20776**	**37788**
2046-47	15085	519	850	981	855	3135	230	**21655**	**39412**
2047-48	15736	529	869	1024	893	3281	241	**22573**	**41108**
2048-49	16416	539	888	1069	932	3434	252	**23530**	**42878**

Table 6-9 : Total Tollable Traffic @ Toll Plaza 3- Chainage 212.00 KM (Most Likely Growth Scenario)

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU (Including Exempted)
2026-27	5032	340	421	467	329	1415	77	**8081**	**15050**
2027-28	5293	349	433	498	351	1510	82	**8516**	**15916**
2028-29	5567	359	445	536	378	1626	88	**8999**	**16919**
2029-30	5856	369	457	578	407	1751	95	**9513**	**17990**
2030-31	6146	378	468	613	431	1860	101	**9997**	**18965**
2031-32	6451	387	480	650	456	1976	107	**10507**	**19995**
2032-33	6772	396	492	689	483	2100	114	**11046**	**21084**
2033-34	7108	405	504	731	512	2232	121	**11613**	**22235**
2034-35	7461	415	516	775	543	2372	128	**12210**	**23451**
2035-36	7815	424	528	812	569	2493	134	**12775**	**24554**
2036-37	8187	433	540	851	596	2619	141	**13367**	**25710**
2037-38	8576	443	552	892	625	2752	148	**13988**	**26922**
2038-39	8983	453	565	935	655	2892	155	**14638**	**28192**
2039-40	9408	463	578	980	687	3039	163	**15318**	**29524**

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU (Including Exempted)
2040-41	9834	472	591	1025	719	3187	171	**15999**	**30860**
2041-42	10279	482	604	1073	752	3342	179	**16711**	**32259**
2042-43	10744	492	617	1122	786	3505	188	**17454**	**33722**
2043-44	11230	502	631	1173	822	3676	197	**18231**	**35252**
2044-45	11737	512	645	1227	859	3855	206	**19041**	**36854**
2045-46	12243	522	659	1282	897	4035	216	**19854**	**38456**
2046-47	12771	532	673	1339	937	4223	226	**20701**	**40130**
2047-48	13323	542	688	1399	979	4420	236	**21587**	**41877**
2048-49	13897	552	703	1461	1022	4626	247	**22508**	**43703**

6.2 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 – Rajasthan Border project, the Target Date and Target Traffic are defined as under:
Target Date - 1st April 2023
Target Traffic - 21919 in PCU

It was observed that as per traffic projections traffic volume falls short of target traffic in all scenarios. This warrants an extension of the concession period. Extension of the concession period is worked out as per article 29 of concession agreement. The following table provides details of modification in concession
agreement.

Scenario	Actual Average Traffic in PCU (Average of traffic on target date, one year before target date and one year after target date)	Expected extension in Concession Period
All	16849	5.4 years

CHAPTER 7

FORECAST OF TOLL REVENUE

7.1 General

This chapter presents the tolling rate calculations, categories and toll revenue of the project.

7.2 Discount Categories

As per the Toll Notification (Schedule - R) the discounts and special provisions have been considered. In addition to discounts as per Fee Notification concessionaire has declared special category rates also. Salient features of toll rate structure are given as under

1. Monthly Pass: For frequent user's monthly pass would be issued at fee 50 time the single journey fee.
2. Multiple Journeys (for Return Trip): Will be charged at 1.5 times single journey.
3. Single Journey: Full single journey toll would be charged to this category of vehicles who are infrequent travellers or whose frequency does not yield any discount from the above categories.
4. Local Discounts: Local Car Jeep Van - Rs. 350 per month (for locals residing within a radius of 20 kms from toll plaza) and local commercial and 50% rate of single trip.

Building of inflation and escalation of rate on the basis of WPI are done as per toll notification (Schedule G) as given under as extract from concession agreement.

The formula for determining the applicable rate of fee shall be as follows:-

$$\text{Applicable rate of fee} = \text{base rate} + \text{base rate} \times \left\{ \frac{\text{WPI A-WPI B}}{\text{WPI B}} \right\} \times 0.4$$

Factors of inflation / growth have been incorporated as per Schedule R. WPI are available up to the year 2025-26.

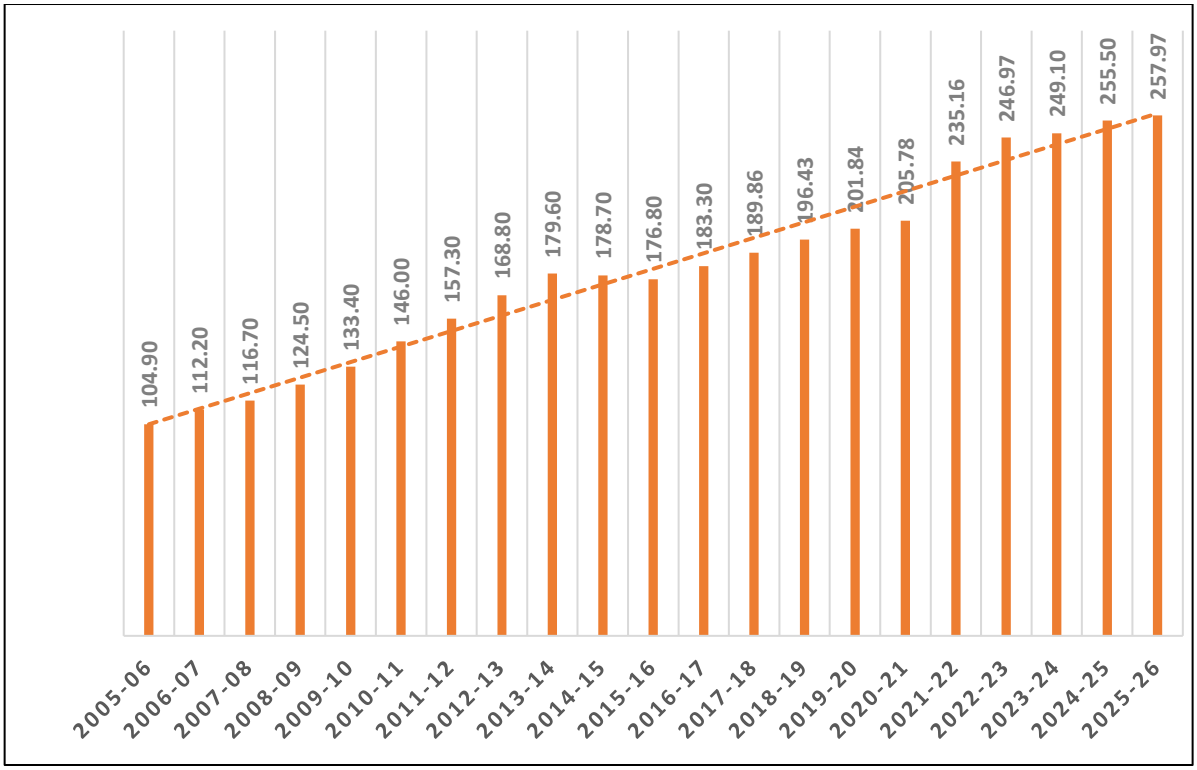


Figure 7-1 : Historical Rate of WPI Inflation in India

The wholesale price index (WPI) and the inflation rate in the past are presented in Table below.

Table 7-1 : Historical WPI value and Growth Inflation

December of year	2021	2022	2023	2024	2025	Avg.
WPI	235.2	247.0	249.1	255.5	257.97	
Inflation	14.27%	5.02%	0.86%	2.57%	0.96%	4.74%

WPI of December 2025 is posted on ministry site which is shows 0.96% inflation from the previous year. Same has been applied for FY 2026-27.

The average WPI inflation over the period FY 2021 to FY 2025 works out to approximately 4.74%, reflecting inflationary cycles across both high and low inflation years. Based on this analysis, an annual escalation factor of 4.5% has been adopted for the remaining concession period.

7.3 Estimation of Toll Rates

As per the applicable MORTH notification and Schedule R of contract agreement, the following Base rate of fee for the categories mentioned in the table stands true in the National Highways Fee Rules applicable for contract.

Table 7-2 : Base Toll Rates June 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 Minibus	1.05

Type of Vehicle	Base Rate of Fee / Km (in Rs.)
Bus or Truck (Two Axles)	2.20
Three Axle Commercial Vehicles	2.40
Heavy Construction Machinery (HCM) or Earth Moving Equipment (EME) or Multi Axle Vehicle (MAV) (4 to 6 axles)	3.45
Oversized Vehicles (7 or more Axles)	4.20

Toll rates are calculated as per guidelines provided in schedule R (rounded to nearest Rs.) for the concession period and are given below.

Thus, worked out rates for various categories of vehicle and discounts are given as under

Table 7-3 : Toll Rates for Single Journey @ Km 125.000

Year	Car	Minibus /LCV	Bus	Truck	3 - Axle	Multi axle	Oversized Vehicles
2026-27	95	155	325	325	355	505	620
2027-28	100	160	340	340	370	530	645
2028-29	105	170	355	355	385	555	675
2029-30	110	175	370	370	405	580	710
2030-31	115	185	390	390	425	610	740
2031-32	120	195	405	405	445	640	780
2032-33	125	205	425	425	465	670	815
2033-34	130	215	445	445	490	700	855
2034-35	140	225	470	470	510	735	895
2035-36	145	235	490	490	535	770	935
2036-37	150	245	515	515	560	805	980
2037-38	160	255	540	540	590	845	1030
2038-39	165	270	565	565	615	885	1080
2039-40	175	285	595	595	645	930	1130
2040-41	185	295	620	620	680	975	1190
2041-42	195	310	650	650	710	1025	1245
2042-43	200	325	685	685	745	1075	1305
2043-44	210	345	720	720	785	1125	1370
2044-45	225	360	755	755	820	1180	1440
2045-46	235	375	790	790	865	1240	1510
2046-47	245	395	830	830	905	1300	1585
2047-48	255	415	870	870	950	1365	1665
2048-49	270	435	915	915	1000	1435	1745

Table 7-4 : Toll Rates for Single Journey @ Km 171.00

Year	Car	Minibus /LCV	Bus	Truck	3 - Axle	Multi axle	Oversized Vehicles
2026-27	130	210	435	435	475	685	835
2027-28	135	220	460	460	500	720	875
2028-29	140	230	480	480	525	750	915

Year	Car	Minibus /LCV	Bus	Truck	3 - Axle	Multi axle	Oversized Vehicles
2029-30	150	240	500	500	550	785	960
2030-31	155	250	525	525	575	825	1005
2031-32	165	265	550	550	600	865	1050
2032-33	170	275	575	575	630	905	1100
2033-34	180	290	605	605	660	950	1155
2034-35	185	300	635	635	690	995	1210
2035-36	195	315	665	665	725	1040	1265
2036-37	205	330	695	695	760	1090	1330
2037-38	215	350	730	730	795	1145	1390
2038-39	225	365	765	765	835	1200	1460
2039-40	235	385	800	800	875	1255	1530
2040-41	250	400	840	840	915	1320	1605
2041-42	260	420	880	880	960	1385	1685
2042-43	275	440	925	925	1010	1450	1765
2043-44	285	465	970	970	1060	1525	1855
2044-45	300	485	1020	1020	1110	1600	1945
2045-46	315	510	1070	1070	1165	1675	2040
2046-47	330	535	1120	1120	1225	1760	2145
2047-48	350	560	1180	1180	1285	1850	2250
2048-49	365	590	1235	1235	1350	1940	2360

Table 7-5 : Toll Rates for Single Journey @ Km 212.00

Year	Car	Minibus /LCV	Bus	Truck	3 - Axle	Multi axle	Oversized Vehicles
2026-27	75	120	255	255	275	395	485
2027-28	80	125	265	265	290	415	505
2028-29	80	135	280	280	305	435	530
2029-30	85	140	290	290	315	455	555
2030-31	90	145	305	305	330	480	580
2031-32	95	150	320	320	350	500	610
2032-33	100	160	335	335	365	525	640
2033-34	105	165	350	350	380	550	670
2034-35	110	175	365	365	400	575	700
2035-36	115	185	385	385	420	605	735
2036-37	120	190	405	405	440	630	770
2037-38	125	200	425	425	460	665	805
2038-39	130	210	445	445	485	695	845
2039-40	135	220	465	465	505	730	885
2040-41	145	235	485	485	530	765	930
2041-42	150	245	510	510	560	800	975
2042-43	160	255	535	535	585	840	1025
2043-44	165	270	565	565	615	880	1075
2044-45	175	280	590	590	645	925	1125
2045-46	185	295	620	620	675	970	1185
2046-47	190	310	650	650	710	1020	1240
2047-48	200	325	685	685	745	1070	1305
2048-49	210	340	715	715	780	1125	1370

Table 7-6 : Toll Rates for Return Journey @ Km 125.000

Year	Car	Minibus /LCV	Bus	Truck	3 - Axle	Multi axle	Oversized Vehicles
2026-27	145	230	485	485	530	760	925
2027-28	150	240	510	510	555	795	970
2028-29	155	255	530	530	580	835	1015
2029-30	165	265	555	555	610	875	1065
2030-31	170	280	585	585	635	915	1115
2031-32	180	290	610	610	665	960	1165
2032-33	190	305	640	640	700	1005	1220
2033-34	200	320	670	670	730	1050	1280
2034-35	210	335	705	705	765	1100	1340
2035-36	220	350	735	735	805	1155	1405
2036-37	230	370	770	770	840	1210	1475
2037-38	240	385	810	810	885	1270	1545
2038-39	250	405	850	850	925	1330	1620
2039-40	265	425	890	890	970	1395	1700
2040-41	275	445	935	935	1020	1465	1780
2041-42	290	465	980	980	1070	1535	1870
2042-43	305	490	1025	1025	1120	1610	1960
2043-44	320	515	1075	1075	1175	1690	2055
2044-45	335	540	1130	1130	1235	1775	2160
2045-46	350	565	1185	1185	1295	1860	2265
2046-47	370	595	1245	1245	1360	1955	2375
2047-48	385	625	1305	1305	1425	2050	2495
2048-49	405	655	1375	1375	1495	2150	2620

Table 7-7 : Toll Rates for Return Journey @ Km 171.00

Year	Car	Minibus /LCV	Bus	Truck	3 - Axle	Multi axle	Oversized Vehicles
2026-27	195	315	655	655	715	1030	1250
2027-28	205	330	685	685	750	1075	1310
2028-29	210	345	720	720	785	1130	1375
2029-30	220	360	755	755	820	1180	1440
2030-31	235	375	790	790	860	1235	1505
2031-32	245	395	825	825	900	1295	1575
2032-33	255	415	865	865	945	1355	1650
2033-34	270	435	905	905	990	1420	1730
2034-35	280	455	950	950	1035	1490	1815
2035-36	295	475	995	995	1085	1560	1900
2036-37	310	500	1045	1045	1140	1635	1990
2037-38	325	520	1095	1095	1195	1715	2090
2038-39	340	545	1145	1145	1250	1800	2190
2039-40	355	575	1205	1205	1310	1885	2295
2040-41	375	600	1260	1260	1375	1980	2410
2041-42	390	630	1325	1325	1445	2075	2525
2042-43	410	660	1390	1390	1515	2175	2650
2043-44	430	695	1455	1455	1590	2285	2780
2044-45	450	730	1530	1530	1665	2395	2920

Year	Car	Minibus /LCV	Bus	Truck	3 - Axle	Multi axle	Oversized Vehicles
2045-46	475	765	1605	1605	1750	2515	3060
2046-47	495	805	1685	1685	1835	2640	3215
2047-48	520	845	1765	1765	1930	2770	3375
2048-49	550	885	1855	1855	2025	2910	3540

Table 7-8 : Toll Rates for Return Journey @ Km 212.00

Year	Car	Minibus /LCV	Bus	Truck	3 - Axle	Multi axle	Oversized Vehicles
2026-27	110	180	380	380	415	595	725
2027-28	120	190	400	400	435	625	760
2028-29	125	200	415	415	455	655	795
2029-30	130	210	435	435	475	685	835
2030-31	135	220	455	455	500	715	875
2031-32	140	230	480	480	520	750	915
2032-33	150	240	500	500	545	785	955
2033-34	155	250	525	525	575	825	1005
2034-35	165	265	550	550	600	865	1050
2035-36	170	275	575	575	630	905	1100
2036-37	180	290	605	605	660	950	1155
2037-38	185	305	635	635	690	995	1210
2038-39	195	315	665	665	725	1040	1270
2039-40	205	335	695	695	760	1095	1330
2040-41	215	350	730	730	795	1145	1395
2041-42	225	365	765	765	835	1200	1465
2042-43	240	385	805	805	880	1260	1535
2043-44	250	405	845	845	920	1325	1610
2044-45	260	425	885	885	965	1390	1690
2045-46	275	445	930	930	1015	1460	1775
2046-47	290	465	975	975	1065	1530	1865
2047-48	305	490	1025	1025	1115	1605	1955
2048-49	320	515	1075	1075	1175	1685	2055

Table 7-9 : Toll Rates for Monthly Pass Local @ Km 125.000

Year	Car	Minibus /LCV
2026-27	360	360
2027-28	375	375
2028-29	395	395
2029-30	415	415
2030-31	430	430
2031-32	455	455
2032-33	475	475
2033-34	495	495
2034-35	520	520
2035-36	545	545
2036-37	570	570
2037-38	600	600

Year	Car	Minibus /LCV
2038-39	630	630
2039-40	660	660
2040-41	690	690
2041-42	725	725
2042-43	760	760
2043-44	800	800
2044-45	835	835
2045-46	880	880
2046-47	920	920
2047-48	970	970
2048-49	1015	1015

Table 7-10 : Toll Rates for Monthly Pass Local @ Km 171.000

Year	Car	Minibus /LCV
2026-27	360	360
2027-28	375	375
2028-29	395	395
2029-30	415	415
2030-31	430	430
2031-32	455	455
2032-33	475	475
2033-34	495	495
2034-35	520	520
2035-36	545	545
2036-37	570	570
2037-38	600	600
2038-39	630	630
2039-40	660	660
2040-41	690	690
2041-42	725	725
2042-43	760	760
2043-44	800	800
2044-45	835	835
2045-46	880	880
2046-47	920	920
2047-48	970	970
2048-49	1015	1015

Table 7-11 : Toll Rates for Monthly Pass Local @ Km 212.000

Year	Car	Minibus /LCV
2026-27	360	360
2027-28	375	375
2028-29	395	395
2029-30	415	415

Year	Car	Minibus /LCV
2030-31	430	430
2031-32	455	455
2032-33	475	475
2033-34	495	495
2034-35	520	520
2035-36	545	545
2036-37	570	570
2037-38	600	600
2038-39	630	630
2039-40	660	660
2040-41	690	690
2041-42	725	725
2042-43	760	760
2043-44	800	800
2044-45	835	835
2045-46	880	880
2046-47	920	920
2047-48	970	970
2048-49	1015	1015

Table 7-12 : Toll Rates for Monthly Pass @ Km 125.000

Year	Car	Minibus /LCV	Bus	Truck	3 - Axle	Multi axle	Oversized Vehicles
2026-27	3185	5145	10785	10785	11765	16910	20585
2027-28	3335	5390	11290	11290	12315	17705	21555
2028-29	3495	5640	11820	11820	12895	18535	22565
2029-30	3655	5910	12380	12380	13505	19410	23630
2030-31	3830	6185	12965	12965	14140	20330	24750
2031-32	4010	6480	13580	13580	14815	21295	25925
2032-33	4205	6790	14225	14225	15520	22305	27155
2033-34	4405	7115	14905	14905	16260	23370	28450
2034-35	4615	7455	15615	15615	17035	24490	29815
2035-36	4835	7810	16365	16365	17855	25665	31245
2036-37	5070	8185	17155	17155	18715	26900	32750
2037-38	5315	8585	17985	17985	19615	28200	34330
2038-39	5570	9000	18855	18855	20570	29565	35995
2039-40	5840	9435	19770	19770	21570	31005	37745
2040-41	6125	9895	20735	20735	22620	32515	39585
2041-42	6425	10380	21750	21750	23725	34105	41520
2042-43	6740	10890	22815	22815	24890	35780	43560
2043-44	7075	11425	23940	23940	26115	37540	45700
2044-45	7420	11990	25120	25120	27405	39395	47955
2045-46	7790	12585	26365	26365	28760	41345	50330
2046-47	8175	13210	27675	27675	30190	43395	52830
2047-48	8585	13865	29050	29050	31690	45555	55460
2048-49	9010	14555	30500	30500	33275	47830	58230

Table 7-13 : Toll Rates for Monthly Pass @ Km 171.00

Year	Car	Minibus /LCV	Bus	Truck	3 - Axle	Multi axle	Oversized Vehicles
2026-27	4305	6960	14580	14580	15905	22860	27830
2027-28	4510	7285	15265	15265	16650	23935	29140
2028-29	4720	7625	15980	15980	17435	25060	30510
2029-30	4945	7985	16735	16735	18255	26245	31950
2030-31	5180	8365	17525	17525	19120	27485	33460
2031-32	5425	8760	18360	18360	20025	28790	35045
2032-33	5680	9180	19230	19230	20980	30155	36715
2033-34	5955	9615	20150	20150	21980	31595	38465
2034-35	6240	10075	21110	21110	23030	33110	40305
2035-36	6535	10560	22125	22125	24135	34695	42240
2036-37	6850	11070	23190	23190	25300	36370	44275
2037-38	7185	11605	24310	24310	26520	38125	46415
2038-39	7530	12165	25490	25490	27805	39970	48660
2039-40	7895	12755	26730	26730	29160	41915	51025
2040-41	8280	13380	28030	28030	30580	43960	53515
2041-42	8685	14035	29405	29405	32075	46110	56135
2042-43	9115	14720	30845	30845	33650	48370	58885
2043-44	9560	15445	32365	32365	35305	50750	61785
2044-45	10035	16210	33960	33960	37050	53260	64835
2045-46	10530	17010	35645	35645	38885	55895	68045
2046-47	11055	17855	37410	37410	40815	58670	71425
2047-48	11605	18745	39275	39275	42845	61590	74980
2048-49	12185	19680	41235	41235	44985	64665	78720

Table 7-14 : Toll Rates for Monthly Pass @ Km 212.00

Year	Car	Minibus /LCV	Bus	Truck	3 - Axle	Multi axle	Oversized Vehicles
2026-27	2495	4030	8450	8450	9215	13250	16130
2027-28	2615	4220	8845	8845	9650	13870	16885
2028-29	2735	4420	9260	9260	10105	14525	17680
2029-30	2865	4630	9700	9700	10580	15210	18515
2030-31	3000	4845	10155	10155	11080	15925	19390
2031-32	3145	5075	10640	10640	11605	16685	20310
2032-33	3295	5320	11145	11145	12155	17475	21275
2033-34	3450	5575	11675	11675	12735	18310	22290
2034-35	3615	5840	12235	12235	13345	19185	23355
2035-36	3790	6120	12820	12820	13990	20105	24480
2036-37	3970	6415	13440	13440	14660	21075	25655
2037-38	4165	6725	14090	14090	15370	22095	26895
2038-39	4365	7050	14770	14770	16115	23165	28200
2039-40	4575	7395	15490	15490	16895	24290	29570
2040-41	4800	7755	16245	16245	17720	25475	31010
2041-42	5035	8130	17040	17040	18590	26720	32530
2042-43	5280	8530	17875	17875	19500	28030	34125
2043-44	5540	8950	18755	18755	20460	29410	35805
2044-45	5815	9395	19680	19680	21470	30865	37570
2045-46	6105	9860	20655	20655	22535	32390	39430

Year	Car	Minibus /LCV	Bus	Truck	3 - Axle	Multi axle	Oversized Vehicles
2046-47	6405	10345	21680	21680	23650	34000	41390
2047-48	6725	10865	22760	22760	24830	35690	43450
2048-49	7060	11405	23895	23895	26070	37475	45620

7.4 Toll Revenue

As indicated earlier, toll revenue on the Project Road has been calculated in all three scenarios based on above rates and projected traffic. The estimates of toll revenue under ***Optimistic***, ***Pessimistic*** and ***Most Likely*** growth scenarios are presented in the following section.

7.5 Toll Revenue at all toll plazas under Scenarios

Toll Revenue estimates under all scenario at each of the toll plaza up to 2048-49 starting from the year 2025-26 are shown in tables below.

Table 7-15 : Toll Revenue Optimistic Scenario

(Rs. Crores)

Year	TP-1	TP-2	TP-3	Total
2026-27	48.08	70.90	45.04	**164.03**
2027-28	53.18	78.50	50.34	**182.02**
2028-29	59.17	86.83	56.12	**202.12**
2029-30	66.14	97.46	62.72	**226.32**
2030-31	73.29	107.88	69.45	**250.63**
2031-32	81.35	120.23	77.18	**278.77**
2032-33	89.77	131.45	85.67	**306.90**
2033-34	99.24	146.35	94.87	**340.46**
2034-35	110.36	161.19	104.86	**376.40**
2035-36	121.30	178.05	115.82	**415.18**
2036-37	132.56	195.62	126.85	**455.03**
2037-38	146.69	214.68	139.70	**501.07**
2038-39	160.67	236.10	153.52	**550.30**
2039-40	177.55	260.11	169.32	**606.98**
2040-41	194.81	285.77	185.71	**666.29**
2041-42	214.70	313.42	204.20	**732.32**
2042-43	234.83	345.38	224.97	**805.17**
2043-44	258.89	379.12	247.45	**885.46**
2044-45	284.49	416.26	271.83	**972.58**
2045-46	312.10	457.08	298.44	**1067.63**
2046-47	342.30	500.61	327.84	**1170.75**
2047-48	374.93	551.85	359.70	**1286.48**
2048-49	412.18	604.13	395.24	**1411.55**

Table 7-16 : Toll Revenue Pessimistic Scenario

(Rs. Crores)

Year	TP-1	TP-2	TP-3	Total

Year	TP-1	TP-2	TP-3	Total
2026-27	47.85	70.57	44.82	**163.24**
2027-28	52.66	77.79	49.85	**180.30**
2028-29	58.30	85.68	55.34	**199.32**
2029-30	64.86	95.73	61.53	**222.12**
2030-31	71.54	105.43	67.83	**244.80**
2031-32	79.07	116.98	75.02	**271.07**
2032-33	86.87	127.30	82.87	**297.04**
2033-34	95.52	141.02	91.35	**327.89**
2034-35	105.73	154.63	100.47	**360.83**
2035-36	115.63	170.04	110.46	**396.14**
2036-37	125.76	185.89	120.42	**432.07**
2037-38	138.46	203.03	132.01	**473.50**
2038-39	150.84	222.24	144.37	**517.45**
2039-40	165.95	243.63	158.45	**568.03**
2040-41	181.26	266.30	172.92	**620.48**
2041-42	198.83	290.55	189.26	**678.65**
2042-43	216.47	318.57	207.56	**742.60**
2043-44	237.57	347.96	227.21	**812.75**
2044-45	259.84	380.24	248.41	**888.48**
2045-46	283.68	415.53	271.44	**970.65**
2046-47	309.75	452.94	296.68	**1059.37**
2047-48	337.67	497.13	323.98	**1158.78**
2048-49	369.51	541.67	354.25	**1265.43**

Table 7-17 : Toll Revenue Most Likely Scenario

(Rs. Crores)

Year	TP-1	TP-2	TP-3	Total
2026-27	47.96	70.74	44.93	**163.62**
2027-28	52.91	78.16	50.09	**181.16**
2028-29	58.74	86.30	55.74	**200.78**
2029-30	65.47	96.62	62.18	**224.28**
2030-31	72.40	106.68	68.70	**247.78**
2031-32	80.21	118.63	76.15	**274.99**
2032-33	88.34	129.41	84.36	**302.11**
2033-34	97.48	143.77	93.21	**334.45**
2034-35	108.16	158.00	102.78	**368.95**
2035-36	118.60	174.08	113.26	**405.94**
2036-37	129.27	190.76	123.80	**443.83**
2037-38	142.69	208.92	136.01	**487.62**
2038-39	155.90	229.26	149.13	**534.29**
2039-40	171.87	251.91	164.11	**587.88**
2040-41	188.14	276.01	179.58	**643.74**
2041-42	206.81	301.99	197.05	**705.84**
2042-43	225.64	331.96	216.62	**774.22**
2043-44	248.22	363.42	237.70	**849.33**
2044-45	272.07	398.07	260.39	**930.54**
2045-46	297.64	436.09	285.22	**1018.95**
2046-47	325.64	476.40	312.58	**1114.61**

Year	TP-1	TP-2	TP-3	Total
2047-48	355.92	523.96	342.23	**1222.11**
2048-49	390.41	572.34	375.18	**1337.93**

CHAPTER 8

CONCLUSION & RECOMMENDATIONS

8.1 Conclusion & Recommendations

Project stretch of Kaithal to Rajasthan Border section of NH-152/65 in state of Haryana from km 33.250 to km 241.580 has been widened to four lanes. The road is in sound condition and serves healthy traffic volumes. Project corridor has potential to develop as main link for traffic from Punjab, Haryana, and parts of Himachal to Rajasthan and south. There are large number of townships, industrial corridors and other business establishment coming up along project corridor. As Indian economy is poised to grow at 7%+ post COVID-19, the project corridor is expected to pick up the same trend in terms of traffic flow. All these developments have potential to give positive impact to traffic flow on project. The following can be considered as major outcomes of the study.

a) There is good amount of tollable traffic running on project.

b) Project corridor has potential to witness traffic growth @ 6-8% annually in near future due to various development in area and overall development of economy.

c) Project corridor has committed traffic as long route traffic and does not run a risk of traffic leakage due to quality competing road.

Based on above it can be considered a stable healthy project from traffic and revenue point of view.



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