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

IRB InvIT Fund

October 29, 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 September 30, 2026

Please find enclosed the Valuation Report dated October 29, 2026, issued by KPMG Valuation Services LLP (IBBI Reg. No. IBBI/RV-E/06/2020/115) as on September 30, 2026.

We are also enclosing herewith the traffic reports issued by 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 September 30, 2026:

Sr. No.	Particulars	Amount in millions
A	Assets	2,41,112.76
B	Liabilities	1,16,375.28
C	Net Assets	1,24,737.48
	Outstanding units	1,653.06
	NAV at Fair value per Unit (INR)	**75.46**

You are requested to take note of the same.

Thanking you.

Yours faithfully,

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

Swapna Nikhil Arya
Digitally signed by Swapna Nikhil Arya
Date: 2026.10.29 14:46:42 +05'30'

Swapna Arya
Company Secretary & Compliance Officer

Encl.: As above

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



KPMG

IRB InvIT Fund

Valuation of IRB InvIT Fund and its SPVs

Valuation Report

—

October 2026

KPMG

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

29 October 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 27 October 2026 ("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 11 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 30 September 2026 ("Valuation Date").

We hereby enclose our Valuation Report dated 29 October 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 75.46 per unit** as on 30 September 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
CGTL	CG Tollway Limited
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 11 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
SYTL	Solapur Yedeshi Tollway Limited
Valuation Date	30-Sep-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

Overview

Terms of the Engagement

- We have been appointed by IRB InvIT Fund to undertake Enterprise Valuation of 11 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 30 September 2026. This report has been prepared by KVSL pursuant to terms of LoE.
- As at 30 September 2026 IRB InvIT Fund assets comprised of the following 11 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”)
  - VK1 Expressway Limited (“VK1”)
  - VM7 Expressway Private Limited (“VM7”)
  - Kaithal Tollway Limited (“KTL”)
  - Kishangarh Gulabpura Tollway Limited (“KGTL”)
  - IRB Hapur Moradabad Tollway Limited (“IHMTL”)
  - Solapur Yedeshi Tollway Limited (“SYTL”)
  - CG Tollway Limited (“CGTL”)

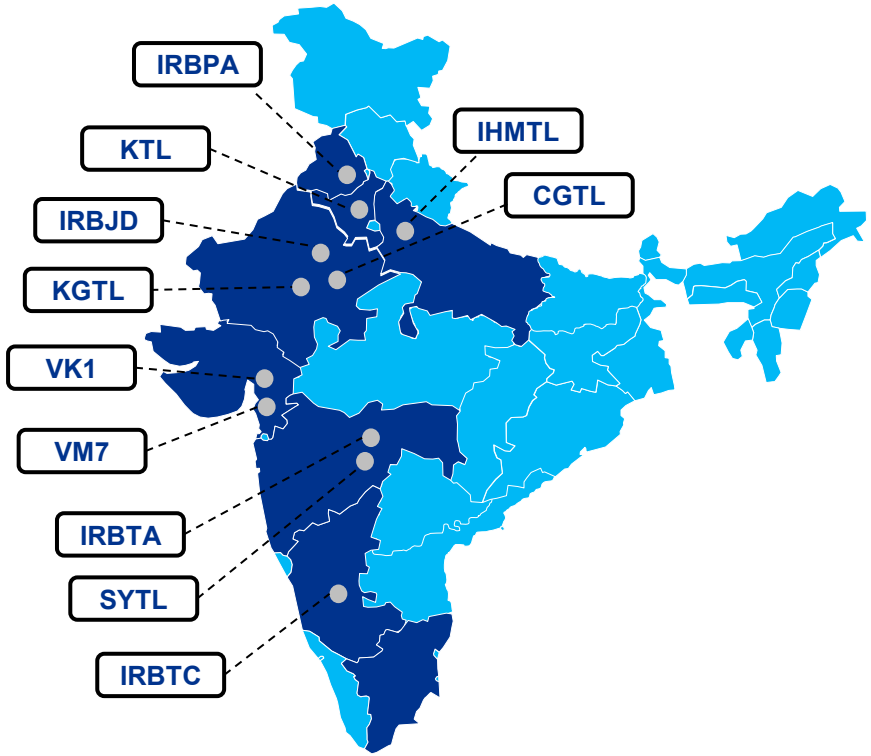
Valuation Approach and Methodology

Approach	Method
Income Approach	Discounted Cash Flow Method (DCF)

Source(s): Management information, KVSL analysis

SPV Overview

The Trust owns, operates and maintain a portfolio of 11 operational road assets that includes nine BOT assets and two HAM assets, in the Indian state(s) of Maharashtra, Gujarat, Rajasthan, Karnataka, Haryana, Uttar Pradesh and Punjab. These roads assets are operated and maintained pursuant to concessions granted by the National Highways Authority of India (NHAI).



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Valuation Conclusion

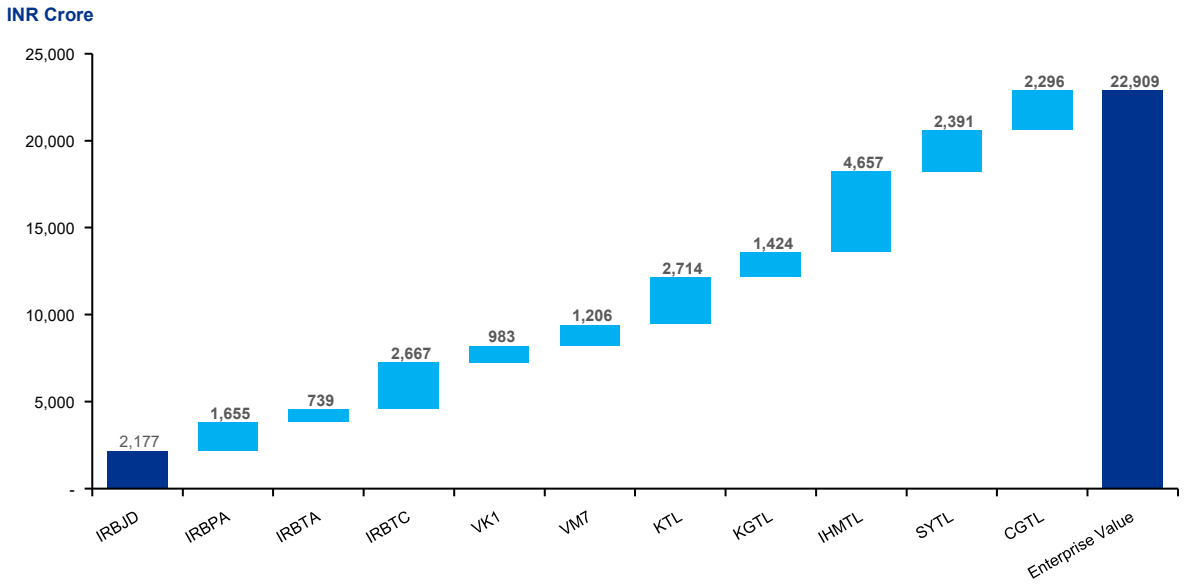
Valuation Conclusion (INR Crore)

Valuation Conclusion 30 September 2026	INR Crore
IRB Jaipur Deoli Tollway Limited	2,177
IRB Pathankot Amritsar Toll Road Limited	1,655
IRB Talegaon Amravati Tollway Limited	739
IRB Tumkur Chitradurga Tollway Limited	2,667
VK1 Expressway Limited	983
VM7 Expressway Private Limited	1,206
Kaithal Tollway Limited	2,714
Kishangarh Gulabpura Tollway Limited	1,424
IRB Hapur Moradabad Tollway Limited	4,657
Solapur Yedeshi Tollway Limited	2,391
CG Tollway Limited	2,296
Enterprise Value of the SPVs	**22,909**
Cash and cash Equivalents	343
PV of Investment manager fees	(254)
Surplus	570
Capital Creditors	(17)
Debt and Debt like items	(11,077)
Equity value of IRB InvIT Fund	**12,474**

NAV at fair value per unit as on 30 September 2026	
Equity Value of IRB InvIT Fund (INR Cr)	12,474
Units outstanding (No.)	1,653,060,316
NAV at fair value per unit (INR)	**75.46**

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

Enterprise Value of SPVs



The Enterprise Value of the SPVs is INR 22,909 crores and the 100% Equity Value of the IRB InvIT Fund is INR 12,474 crores as on 30 September 2026.

The NAV at fair value per unit of IRB InvIT Fund as on 30 September 2026 is INR 75.46 per unit.

Source(s): Management information, KVSL analysis

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2.

IRB InvIT Fund Overview

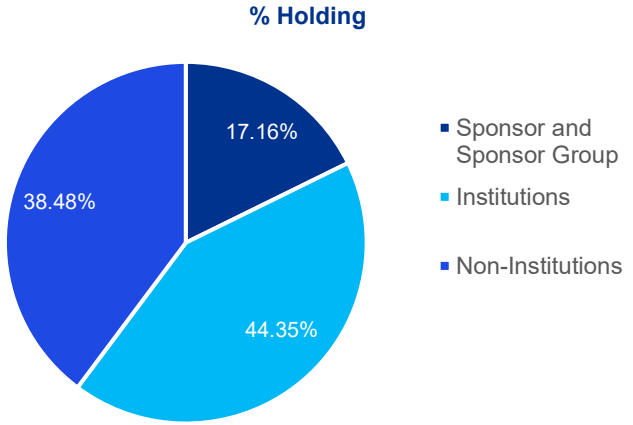
IRB InvIT Fund Overview

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 16 October 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.
- IRB InvIT Fund has acquired 100% equity share capital of CG Tollway Limited (“CGTL”) and Solapur Yedeshi Tollway Limited (“SYTL”) from IRB Infrastructure Trust with effect from 30 September 2026 in a related party transaction. To fund this acquisition, IRB InvIT raised INR 2,000 cr through issue of 317,460,316 units at price of INR 63 per unit in September 2026. Further, IRB InvIT Fund raised another 351 Cr through preferential allotment of 5,40,00,000 units each at INR 65.0 per unit in September 2026.

Source: Management Information, Company filings, Annual Report

Shareholding Pattern of IRB InvIT Fund as on 30 September 2026



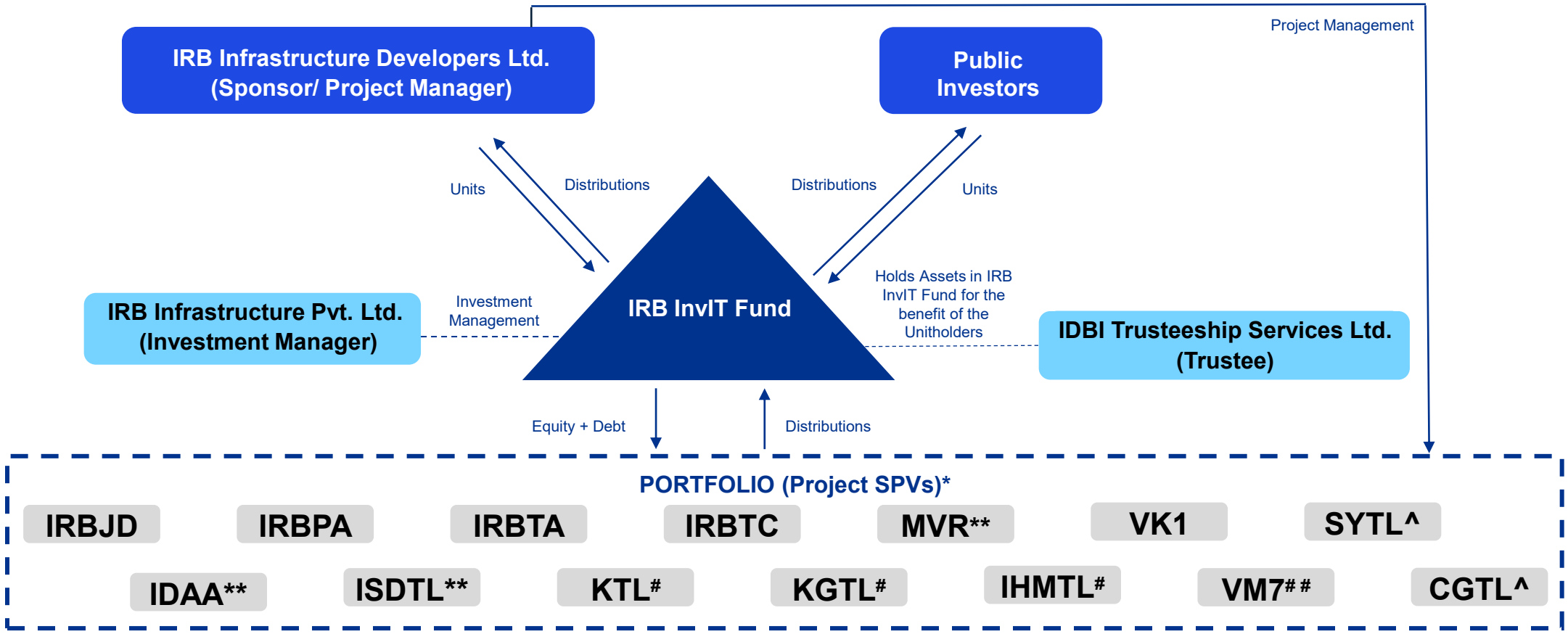
Key related parties of the IRB InvIT

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

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Structure of the IRB InvIT Fund



*100% of project SPV held by the IRB InvIT Fund.
** Concession period for IDAA, ISTDL and MVR ended on 31 March 2022, 25 May 2022 and 01 September 2026 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
^Acquired by the Fund on 30 September 2026
Source(s): IRB InvIT Fund Annual Report, Management

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3.

Industry Overview

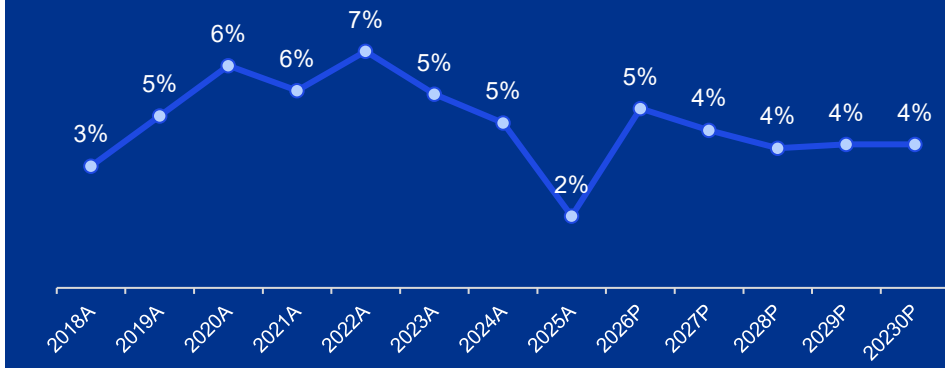
Indian Economy Outlook

The IMF, in its October 2026 World Economic Outlook Update, has projected that India's economy will grow at ~7% each year from 2026. With this, India will remain among the fastest-growing economy, and based on the calendar year, the IMF sees India's economy growing at 7.0% in 2026 and 2027.

Real GDP growth rate (%)



Annual percentage changes of average consumer prices (%)

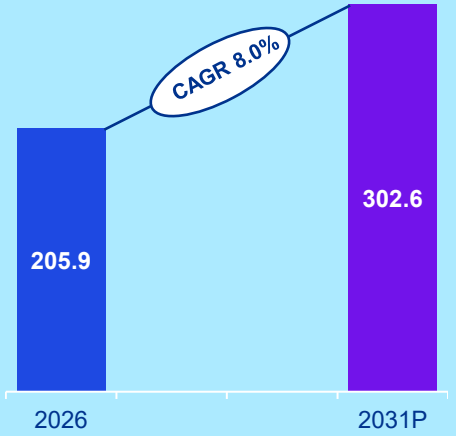


Infra Sector

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

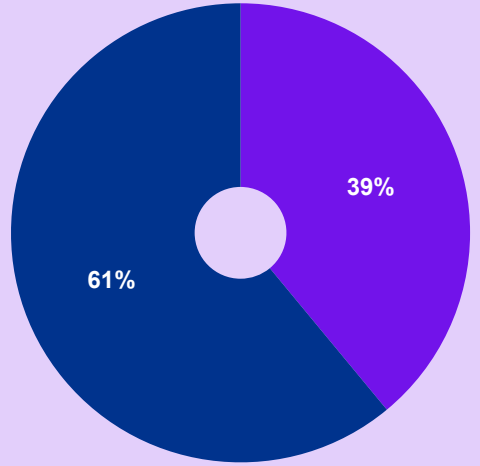
Capital investment outlay for infrastructure has been increased to Rs. 12.21 trillion in the FY2027 budget estimate (BE), compared to Rs 11.21 trillion in the FY2026 revised estimate (RE), marking a 10.0 per cent year-on-year growth; which would be 3.1% of the GDP.

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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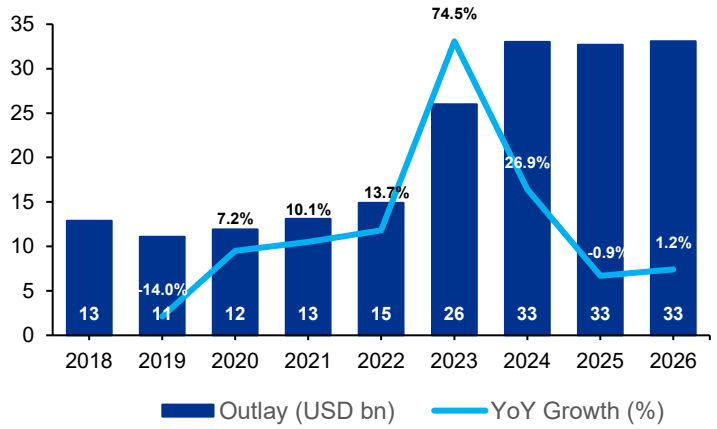
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Road Transport and Highways

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)

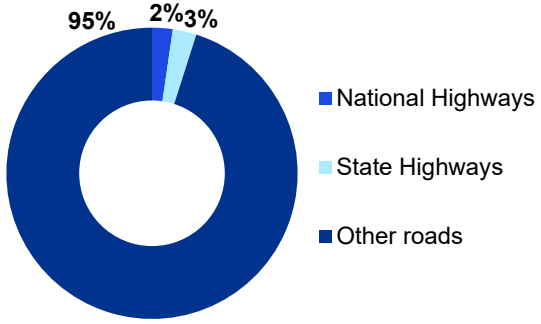


Source(s): MoRTH, IBEF, Invest India

2nd

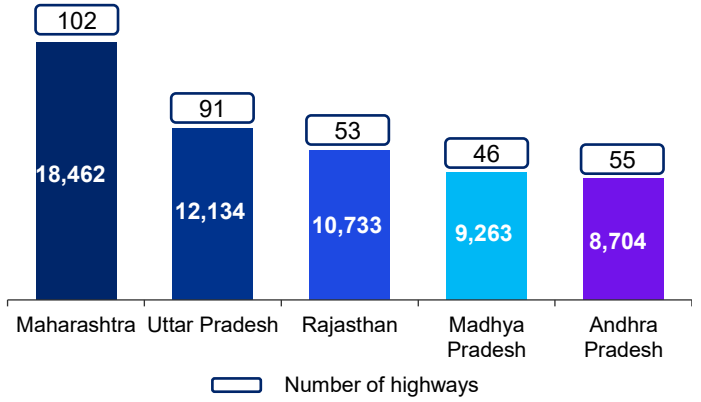
India has the second largest road network in the world of about 63.73 lakh km. This comprises National Highways, Expressways, State Highways, District Roads, Other District Roads and Village Roads.

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 (1,46,572 km) of the total road network of India (66,71,083 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 December 31, 2025, 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.

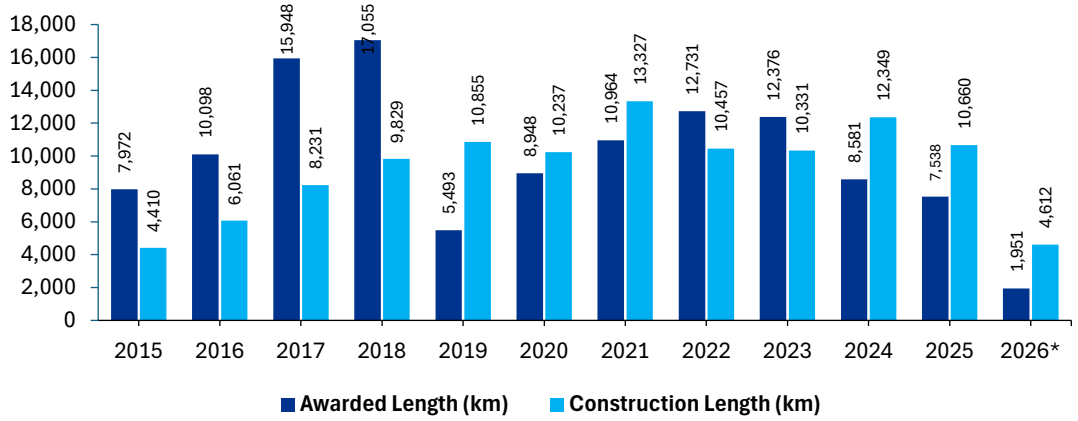
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Key drivers of the sector

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

1Tn (2030) — Estimated toll collection (in INR)

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

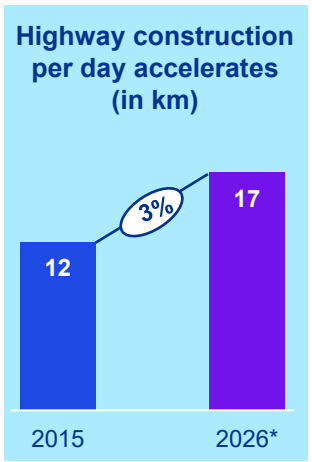
60 km — Estimated highways constructed per day to be achieved

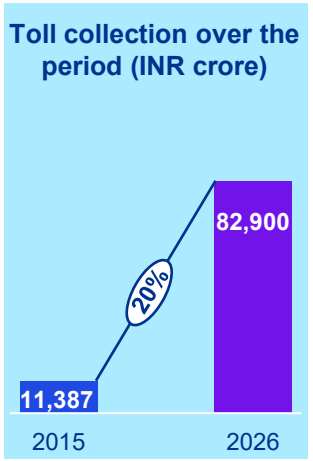
Source(s): MoRTH, Press Information Bureau ("PIB"), Money control

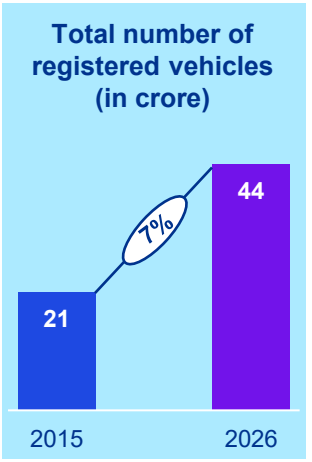
Toll operations efficiency increased due to adoption and growth of FASTag

12.2 Cr As of 31st March 2026, banks have issued over 12.2 crore FASTags.

188 Cr The average daily collection via FASTag on NH fee plaza is INR 188 crore thereby increasing efficiency in toll operations.







2026 data is as of November 2025*
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

33.9 Bn
Road InvIT Assets (USD)

14,563
Projects under NIP

2,613.7
Total Project Cost (USD billion)

50 Bn
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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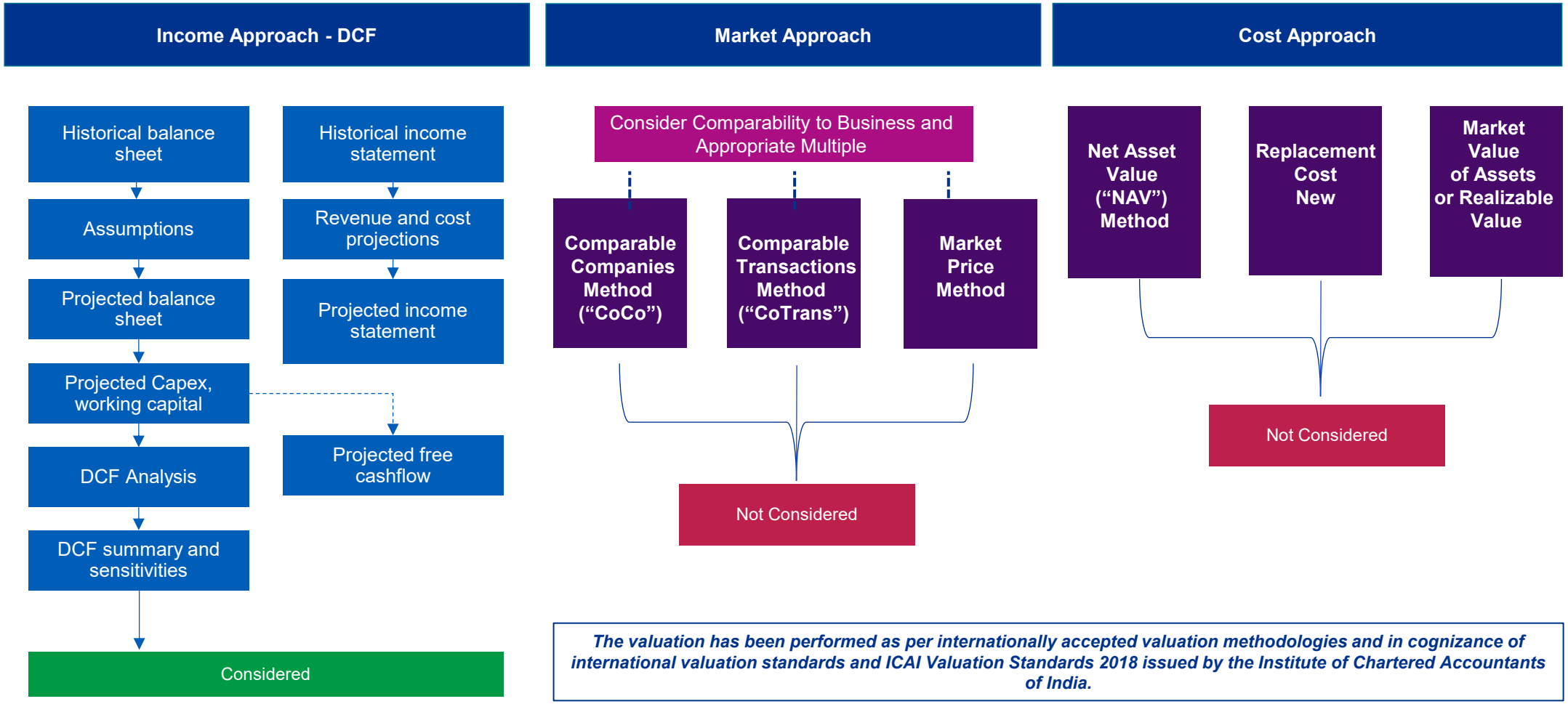
4.

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 7.0%.

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 7.0 per cent. We have considered ERP of 7.0 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 0.89 for BOT assets and 0.69 for HAM assets 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 per cent in IRBJD, IRBTA, KGTL, KTL, SYTL, CGTL and IHMTL. Whereas an alpha of 2 per cent has been considered in IRBTC and 3 per cent in IRBPA. No alpha has been considered in VK1, VM7.
- 1 per cent alpha premium has been factored in for the recently acquired entities to capture the risk arising from the continued impact of the geopolitical crisis, which resulted in softer toll collections for these assets in H1.

e. Cost of Debt

- As per the Management, the actual average cost of debt for IRB InvIT Fund as on Valuation date is 7.84%. 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 28.6% for the WACC..

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 10.5 per cent to 74.9 per cent of total capital with median of 50.6 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 50.6 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 7.6 per cent to 10.4 per cent. Refer subsequent slides for SPV wise Beta and WACC computation

Source(s): Management information

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Beta Computation – Toll Assets

Beta computation as on 30 Sep 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	234,928	200,271	85.2%	46.0%	1.21	25.17%	0.74	100.00%	28.60%	1.26
PNC Infratech Limited	44,200	51,699	117.0%	53.9%	1.15	25.17%	0.61	100.00%	28.60%	1.05
Capital Infra Trust	37,017	29,799	80.5%	44.6%	0.45	28.60%	0.28	100.00%	28.60%	0.49
Dilip Buildcon Limited	68,769	80,442	117.0%	53.9%	1.22	25.17%	0.65	100.00%	28.60%	1.12
Bharat Road Network Limited	1,457	4,343	298.0%	74.9%	0.89	25.17%	0.27	100.00%	28.60%	0.47
Raajmarg Infra Investment Trust	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
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
Citius TransNet Investment Trust	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cube Highways 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	168,121	213,591	127.0%	56.0%	0.44	28.60%	0.23	100.00%	28.60%	0.40
Powergrid Infrastructure Investment Trust	90,442	10,640	11.8%	10.5%	0.47	28.60%	0.43	100.00%	28.60%	0.75
IRB InvIT Fund	84,487	86,500	102.4%	50.6%	0.45	28.60%	0.26	100.00%	28.60%	0.44
G R Infraprojects Limited	83,926	48,718	58.0%	36.7%	0.96	25.17%	0.67	100.00%	28.60%	1.15
Median			**102.4%**	**50.6%**	**0.89**		**0.43**			**0.75**

Note:

a) Market capitalization of comparable companies has been considered based on volume weighted average share prices till 30 September 2026.

b) Debt of the comparable companies has been considered based on latest financials of 30 September 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) Raajmarg Infra Investment Trust, Citius TransNet Investment Trust and Cube Highways Trust which were listed in March 2026, April 2026 and July 2026 respectively, have been included in the Comparable Company set. However, these entities have been excluded from the beta analysis due to their relatively recent listings and the resulting limited trading history, which is insufficient to derive reliable beta estimates.

f) Market beta is unlevered using each company's tax rate and capital structure. (Beta/ 1+(1-tax rate)*Debt/Equity).

g) 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-Tax Rate)*Target's Debt Equity)).

h) 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 30 Sep 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	234,928	200,271	85.2%	46.0%	0.69	25.17%	0.42	233.33%	28.60%	1.12
PNC Infratech Limited	44,200	51,699	117.0%	53.9%	1.15	25.17%	0.61	233.33%	28.60%	1.63
Capital Infra Trust	37,017	29,799	80.5%	44.6%	0.44	28.60%	0.28	233.33%	28.60%	0.75
Dilip Buildcon Limited	68,769	80,442	117.0%	53.9%	0.94	25.17%	0.50	233.33%	28.60%	1.34
Bharat Road Network Limited	1,457	4,343	298.0%	74.9%	0.96	25.17%	0.30	233.33%	28.60%	0.79
Raajmarg Infra Investment Trust	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
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
Citius TransNet Investment Trust	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cube Highways 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	168,121	213,591	127.0%	56.0%	0.46	28.60%	0.24	233.33%	28.60%	0.64
Powergrid Infrastructure Investment Trust	90,442	10,640	11.8%	10.5%	0.42	28.60%	0.39	233.33%	28.60%	1.03
IRB InvIT Fund	84,487	86,500	102.4%	50.6%	0.40	28.60%	0.23	233.33%	28.60%	0.62
G R Infraprojects Limited	83,926	48,718	58.0%	36.7%	0.82	25.17%	0.57	233.33%	28.60%	1.53
Median			**102.4%**	**50.6%**	**0.69**		**0.39**			
Quartile 1										**0.75**

Note:

a) Market capitalization of comparable companies has been considered based on volume weighted average share prices till 30 September 2026.

b) Debt of the comparable companies has been considered based on latest financials of 30 September 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) Raajmarg Infra Investment Trust, Citius TransNet Investment Trust and Cube Highways Trust which were listed in March 2026, April 2026 and July 2026 respectively, have been included in the Comparable Company set. However, these entities have been excluded from the beta analysis due to their relatively recent listings and the resulting limited trading history, which is insufficient to derive reliable beta estimates.

f) Market beta is unlevered using each company's tax rate and capital structure. (Beta/ 1+(1-tax rate)*Debt/Equity).

g) 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-Tax rate)*Target's Debt Equity)).

h) 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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Summary - WACC

WACC calculation											
Name of SPV	**IRBJD**	**IRBPA**	**IRBTA**	**IRBTC**	**KTL**	**KGTL**	**IHMTL**	**SYTL**	**CGTL**	**VK1**	**VM7**
Risk free rate of return	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
Beta	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Equity risk premium	7.0%	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%	1.0%	1.0%	1.0%	1.0%	1.0%	0.0%	0.0%
Cost of Equity	**13.2%**	**15.2%**	**13.2%**	**14.2%**	**13.2%**	**13.2%**	**13.2%**	**13.2%**	**13.2%**	**12.3%**	**12.3%**
Cost of Debt	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%
Tax Rate	28.60%	28.6%	28.6%	28.6%	28.6%	28.6%	28.6%	28.6%	28.6%	28.6%	28.6%
After Tax Cost of Debt	**5.6%**	**5.6%**	**5.6%**	**5.6%**	**5.6%**	**5.6%**	**5.6%**	**5.6%**	**5.6%**	**5.6%**	**5.6%**
Debt to Capital %	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	70.0%	70.0%
Equity to Capital %	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%	30.0%	30.0%
Weighted Average Cost of Capital	**9.4%**	**10.4%**	**9.4%**	**9.9%**	**9.4%**	**9.4%**	**9.4%**	**9.4%**	**9.4%**	**7.6%**	**7.6%**

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		KTL	
Valuation date	31-Mar-26	30-Sep-26	31-Mar-26	30-Sep-26	31-Mar-26	30-Sep-26	31-Mar-26	30-Sep-26	31-Mar-26	30-Sep-26
Risk free rate of return	6.8%	7.0%	6.8%	7.0%	6.8%	7.0%	6.8%	7.0%	6.8%	7.0%
Beta	0.89	0.75	0.89	0.75	0.89	0.75	0.89	0.75	0.89	0.75
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%	1.0%
Cost of Equity	14.0%	13.2%	16.0%	15.2%	14.0%	13.2%	15.0%	14.2%	13.0%	13.2%
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%	28.6%	25.2%	28.6%	25.2%	28.6%	25.2%	28.6%	25.2%	28.6%
After Tax Cost of Debt	5.8%	5.6%	5.8%	5.6%	5.8%	5.6%	5.8%	5.6%	5.8%	5.6%
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%	9.4%	10.9%	10.4%	9.9%	9.4%	10.4%	9.9%	9.4%	9.4%

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 a decrease 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 increased from 7.75 per cent to 7.84 per cent primarily attributable to an increase in the average cost of borrowings, due to an increase in interest rate for existing assets on account of MCLR rate increase. However, the overall after-tax cost of debt has decreased due to an increase in the applicable tax rate from 25.17% to 28.60%, primarily resulting from the revision in the surcharge rate applicable to InvITs from 10 per cent to 25 per cent.
WACC	The cost of capital for IRBJD, IRBPA, IRBTA and IRBTC has declined, primarily due to a reduction in beta and the impact of the revised surcharge on the applicable income tax rate, which more than offsets the increase in the risk-free rate. In contrast, for KTL, the increase in alpha offsets the reduction arising from lower beta and cost of debt, resulting in a WACC broadly in line with the previous valuation cycle.

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WACC – Comparison between current and previous valuation

WACC Calculation								
Name of SPV	KGTL		IHMTL		VK1		VM7	
Valuation date	31-Mar-26	30-Sep-26	31-Mar-26	30-Sep-26	31-Mar-26	30-Sep-26	31-Mar-26	30-Sep-26
Risk free rate of return	6.8%	7.0%	6.8%	7.0%	6.8%	7.0%	6.8%	7.0%
Beta	0.89	0.75	0.89	0.75	0.77	0.75	0.77	0.75
Equity risk premium	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
Alpha	0.0%	1.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%
Cost of Equity	13.0%	13.2%	13.0%	13.2%	12.2%	12.3%	12.2%	12.3%
Cost of Debt	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%
Tax Rate	25.2%	28.6%	25.2%	28.6%	25.2%	28.6%	25.2%	28.6%
After Tax Cost of Debt	5.8%	5.6%	5.8%	5.6%	5.8%	5.6%	5.8%	5.6%
Debt to Capital %	50.0%	50.0%	50.0%	50.0%	70.0%	70.0%	70.0%	70.0%
Equity to Capital %	50.0%	50.0%	50.0%	50.0%	30.0%	30.0%	30.0%	30.0%
Weighted Average Cost of Capital	9.4%	9.4%	9.4%	9.4%	7.7%	7.6%	7.7%	7.6%

Please note, SYTL and CGTL have been acquired by the Trust on 30 September 2026. The valuation for this SPVs is being carried out for the first time hence comparison is not performed

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 a decrease 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 increased from 7.75 per cent to 7.84 per cent primarily attributable to an increase in the average cost of borrowings, due to an increase in interest rate for existing assets on account of MCLR rate increase. However, the overall after-tax cost of debt has decreased due to an increase in the applicable tax rate from 25.17% to 28.60%, primarily resulting from the revision in the surcharge rate applicable to InvITs from 10 per cent to 25 per cent
WACC	For KGTL and IHMTL; the increase in alpha offsets the reduction arising from lower beta and cost of debt, resulting in a WACC broadly in line with the previous valuation cycle. In the case of VK1 and VM7, the cost of capital has increased, primarily due to an increase in the risk-free rate. However, its offset by the increase in after tax cost of debt resulting a decrease in the overall WACC marginally.

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5.

Valuation of Individual SPVs

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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 30 September 2026

Particulars	Stake %
Equity stake	100%
Debt held by InvIT in IRBJD	INR 1,615 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 October 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 October 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 FY2021-25 is 4.74%. 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 October 2040, IRBJD has entered into a fixed price Project Implementation Agreement (“PIA”) for periodic and routine maintenance with IRB Infrastructure Developers Limited (“Project Manager”).
- 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

- Toll revenue has increased by ~3 per cent from the previous valuation cycle, driven by an upward revision in traffic forecasts as per the latest traffic study.
- Under the revised tax regime, the surcharge applicable to the SPV has increased from 10 per cent to 25 per cent, resulting in an increase in the effective corporate tax rate from 25.17 per cent to 28.60 per cent. The higher tax rate reduces the post-tax cash flows available to equity investors and, consequently, has a negative impact on the valuation of the asset.

Source(s): Management information

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Discounted Cash Flows (1/2)

Discounted Cash Flow									
INR crores		FY2027 6 months	FY2028 12 months	FY2029 12 months	FY2030 12 months	FY2031 12 months	FY2032 12 months	FY2033 12 months	FY2034 12 months
Revenue		121	253	275	302	332	363	397	430
y-o-y growth			*10.3%*	*9.0%*	*9.8%*	*9.8%*	*9.3%*	*9.5%*	*8.2%*
Routine O&M		(6)	(14)	(15)	(16)	(29)	(31)	(32)	(33)
y-o-y growth			*3.7%*	*3.7%*	*3.6%*	*84.7%*	*6.9%*	*4.4%*	*4.3%*
Other Operational expenses		(5)	(7)	(8)	(8)	(7)	(7)	(8)	(8)
Major maintenance O&M		(39)	(84)	(110)	(23)	-	-	(13)	(118)
EBITDA	**[A]**	72	147	142	256	297	325	344	270
EBITDA margin		59.2%	58.1%	51.7%	84.6%	89.4%	89.6%	86.7%	62.8%
Less: Depreciation		(23)	(48)	(52)	(57)	(63)	(69)	(75)	(82)
EBIT		49	99	90	198	234	256	269	188
EBIT margin		40%	39%	33%	66%	70%	71%	68%	44%
Less: Tax on EBIT	[B]	-	-	-	-	-	-	(18)	(58)
Change in working capital	[C]	-	-	-	-	-	-	-	-
Less : Capex	[D]	-	-	-	-	-	-	-	-
Free cash flows to the firm	**E = [A+B+C+D]**	**72**	**147**	**142**	**256**	**297**	**325**	**326**	**212**
Discounting period		0.25	1.00	2.00	3.00	4.00	5.00	6.00	7.00
Discount factor	[F]	0.98	0.91	0.84	0.76	0.70	0.64	0.58	0.53
Present value of cash flows	**[E*F]**	**70**	**134**	**119**	**195**	**207**	**207**	**190**	**113**

Source(s): Management information, KVSL analysis

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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		472	514	555	603	654	712	427
y-o-y growth		*9.9%*	*8.8%*	*8.1%*	*8.5%*	*8.6%*	*8.7%*	
Routine O&M		(35)	(36)	(38)	(40)	(41)	(43)	(25)
y-o-y growth		*4.3%*	*4.7%*	*4.3%*	*4.2%*	*4.2%*	*4.6%*	
Other Operational expenses		(9)	(9)	(10)	(11)	(12)	(13)	(8)
Major maintenance O&M		(75)	-	-	-	-	(21)	(19)
EBITDA	**[A]**	353	468	507	552	602	635	375
EBITDA margin		74.8%	91.1%	91.3%	91.6%	91.9%	89.2%	87.8%
Less: Depreciation		(90)	(98)	(106)	(114)	(124)	(135)	(81)
EBIT		264	370	402	438	477	500	294
EBIT margin		56%	72%	72%	73%	73%	70%	69%
Less: Tax on EBIT	[B]	(82)	(129)	(145)	(158)	(172)	(182)	(107)
Change in working capital	[C]	-	-	-	-	-	-	-
Less : Capex	[D]	-	-	-	-	-	-	-
Free cash flows to the firm	**E = [A+B+C+D]**	**272**	**339**	**362**	**394**	**429**	**453**	**268**
Discounting period		8.00	9.00	10.00	11.00	12.00	13.00	13.78
Discount factor	[F]	0.49	0.45	0.41	0.37	0.34	0.31	0.29
Present value of cash flows	**[E*F]**	**132**	**151**	**147**	**147**	**146**	**141**	**77**

Source(s): Management information, KVSL analysis

Valuation conclusion	
INR Crore	
Present value of cash flows	2,177
Present value of release of working capital	0
Enterprise Valuation	**2,177**
WACC	**9.4%**

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 to "Summary – WACC" for WACC breakup.

Basis the above and using a WACC of 9.4%, the Enterprise Value of IRBJD, as on 30 September 2026 is INR 2,177 crore.

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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 30 September 2026

Particulars	Stake %
Equity Stake	100%
Debt held by InvIT in IRBPA	INR 1,742 Crore

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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 October 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 October 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 FY2021-25 is 4.74%. 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 January 2038, IRBPA has entered into a fixed price Project Implementation Agreement for periodic and routine maintenance with IRB Infrastructure Developers Limited (“Project Manager”).
- Other operating expenses are estimated to increase by ~8 per cent in the forecast period except for FY31 where the same grows at 18 per cent.

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

- Toll revenue has increased by ~3 per cent from the previous valuation cycle, driven by an upward revision in traffic forecasts as per the latest traffic study.
- Under the revised tax regime, the surcharge applicable to the SPV has increased from 10 per cent to 25 per cent, resulting in an increase in the effective corporate tax rate from 25.17 per cent to 28.60 per cent. The higher tax rate reduces the post-tax cash flows available to equity investors and, consequently, has a negative impact on the valuation of the asset.

Source(s): Management information

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Discounted Cash Flows

Discounted Cash Flow													
INR crores		FY2027 6 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		98	206	224	253	285	315	341	370	402	439	477	429
y-o-y growth			*10.7%*	*9.1%*	*12.9%*	*12.5%*	*10.7%*	*8.3%*	*8.5%*	*8.4%*	*9.3%*	*8.6%*	
Routine O&M		(11)	(24)	(25)	(26)	(20)	(20)	(20)	(20)	(20)	(20)	(19)	(17)
y-o-y growth			*4.0%*	*4.6%*	*4.2%*	*-25.4%*	*0.3%*	*0.1%*	*-0.2%*	*-0.6%*	*3.3%*	*-5.2%*	
Other Operational expenses		(3)	(6)	(7)	(7)	(9)	(9)	(10)	(11)	(12)	(12)	(13)	(12)
Major maintenance O&M		(4)	-	(15)	(47)	-	-	-	(49)	(58)	-	-	-
EBITDA	**[A]**	80	175	177	172	256	286	311	291	313	406	444	400
EBITDA margin		82%	85%	79%	68%	90%	91%	91%	78%	78%	93%	93%	93%
Depreciation		(28)	(58)	(63)	(71)	(80)	(89)	(96)	(104)	(113)	(124)	(134)	(121)
EBIT		53	117	114	101	176	197	215	186	200	283	310	279
EBIT margin		53%	57%	51%	40%	62%	63%	63%	50%	50%	64%	65%	65%
Less: Tax on EBIT	[B]	-	-	-	-	-	-	-	-	(10)	(116)	(127)	(114)
Change in working capital	[C]	-	-	-	-	-	-	-	-	-	-	-	-
Less : Capex	[D]	-	-	-	-	-	-	-	-	-	-	-	-
Free cash flows to the firm	**E = [A+B+C+D]**	**80**	**175**	**177**	**172**	**256**	**286**	**311**	**291**	**303**	**290**	**317**	**286**
Discounting period		0.25	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00	10.92
Discount factor	[F]	0.98	0.91	0.82	0.74	0.67	0.61	0.55	0.50	0.45	0.41	0.37	0.34
Present value of cash flows	**[E*F]**	**78**	**158**	**145**	**128**	**173**	**174**	**172**	**145**	**137**	**119**	**118**	**97**

Source(s): Management information, KVSL analysis

Valuation conclusion	
INR Crore	
Present value of cash flows	1,645
Present value of release of working capital	10
Enterprise Valuation	**1,655**
WACC	**10.4%**

Present value of release in working capital represent working capital of INR 30 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 10.4%, the Enterprise Value of IRBPA, as on 30 September 2026 is INR 1,655 crore.

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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 30 September 2026

Particulars	Stake %
Equity Stake	100%
Debt held by InvIT in IRBTA	INR 523 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 October 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 October 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 FY2021-25 is 4.74%. 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 June 2037, 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

- Other operating expenses are estimated to increase by ~7 to 8 per cent in the forecast period except for FY31 where it degrows by 12 per cent.

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

- Toll revenue has decreased by ~3 per cent from the previous valuation cycle, driven by an downward revision in traffic forecasts as per the latest traffic study.
- Under the revised tax regime, the surcharge applicable to the SPV has increased from 10 per cent to 25 per cent, resulting in an increase in the effective corporate tax rate from 25.17 per cent to 28.60 per cent. The higher tax rate reduces the post-tax cash flows available to equity investors and, consequently, has a negative impact on the valuation of the asset.

Source(s): Management information

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Discounted Cash Flows (1/1)

Discounted Cash Flow													
INR crores		FY2027 6 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		55	114	126	139	153	169	184	203	224	245	268	51
y-o-y growth			*10.6%*	*9.8%*	*10.6%*	*9.8%*	*10.5%*	*9.4%*	*10.2%*	*10.1%*	*9.5%*	*9.6%*	
Routine O&M		(6)	(14)	(15)	(16)	(22)	(23)	(24)	(25)	(26)	(28)	(29)	(5)
y-o-y growth			*4.3%*	*4.2%*	*4.2%*	*41.4%*	*4.5%*	*4.5%*	*4.5%*	*4.5%*	*4.7%*	*4.4%*	
Other Operational expenses		(3)	(4)	(4)	(5)	(4)	(4)	(5)	(5)	(6)	(6)	(6)	
Major maintenance O&M		-	(34)	(42)	(5)	-	-	-	(49)	(58)	-	-	-
EBITDA	**[A]**	46	62	65	114	126	141	156	124	134	212	233	44
EBITDA margin		85%	55%	51%	82%	83%	84%	84%	61%	60%	86%	87%	87%
Depreciation		(14)	(29)	(32)	(36)	(39)	(43)	(47)	(52)	(57)	(63)	(69)	(13)
EBIT		32	33	32	78	87	98	108	72	77	149	164	31
EBIT margin		59%	29%	26%	56%	57%	58%	59%	35%	34%	61%	61%	62%
Less: Tax on EBIT	[B]	-	-	-	-	-	-	(18)	(35)	(38)	(60)	(67)	(13)
Change in working capital	[C]	-	-	-	-	-	-	-	-	-	-	-	-
Less : Capex	[D]	-	-	-	-	-	-	-	-	-	-	-	-
Free cash flows to the firm	**E = [A+B+C+D]**	**46**	**62**	**65**	**114**	**126**	**141**	**137**	**88**	**96**	**151**	**167**	**32**
Discounting period		0.25	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00	10.59
Discount factor	[F]	0.98	0.91	0.84	0.76	0.70	0.64	0.58	0.53	0.49	0.45	0.41	0.39
Present value of cash flows	**[E*F]**	**45**	**57**	**54**	**87**	**88**	**90**	**80**	**47**	**47**	**67**	**68**	**12**

Source(s): Management information, KVSL analysis

Valuation conclusion	
INR Crore	
Present value of cash flows	742
Present value of release of working capital	(3)
Enterprise Valuation	**739**
WACC	**9.4%**

Present value of release in working capital represent working capital of INR (8) 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 9.4%, the Enterprise Value of IRBTA, as on 30 September 2026 is INR 739 crore

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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.

Source(s): Management information

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 30 September 2026

Particulars	Stake %
Equity Stake	100%
Debt held by InvIT in IRBTC	INR 1,268 Crore

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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 October 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 October 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 FY2021-25 is 4.74%. 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. 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.

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 per cent for the forecast period.

Source(s): Management information

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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

- Under the revised tax regime, the surcharge applicable to the SPV has increased from 10 per cent to 25 per cent, resulting in an increase in the effective corporate tax rate from 25.17 per cent to 28.60 per cent. The higher tax rate reduces the post-tax cash flows available to equity investors and, consequently, has a negative impact on the valuation of the asset.

Source(s): Management information

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Discounted Cash Flows (1/2)

Discounted Cash Flow									
INR crores		FY2027 6 months	FY2028 12 months	FY2029 12 months	FY2030 12 months	FY2031 12 months	FY2032 12 months	FY2033 12 months	FY2034 12 months
Revenue		250	529	575	636	697	771	841	931
y-o-y growth			*10.9%*	*8.8%*	*10.5%*	*9.6%*	*10.6%*	*9.1%*	*10.7%*
Routine O&M		(1)	(3)	(3)	(3)	(18)	(19)	(20)	(21)
y-o-y growth			*4.1%*	*2.1%*	*-2.9%*	*445.5%*	*5.6%*	*5.3%*	*5.0%*
Other Operational expenses		(6)	(9)	(10)	(11)	-	-	-	-
Major maintenance O&M		-	-	-	(55)	-	-	-	-
EBITDA	**[A]**	242	516	562	566	679	752	821	910
EBITDA margin		97%	98%	98%	89%	97%	98%	98%	98%
Depreciation		(77)	(182)	(198)	(219)	(240)	(266)	(290)	(321)
EBIT		165	334	363	347	439	486	531	589
EBIT margin		66%	63%	63%	55%	63%	63%	63%	63%
Less: Tax on EBIT	[B]	-	-	-	-	-	-	-	-
Change in working capital	[C]	-	-	-	-	-	-	-	-
Less : Capex	[D]	-	-	-	-	-	-	-	-
Premium Payment to NHAI		(146)	(394)	(440)	(445)	(564)	(651)	(677)	(411)
Free cash flows to the firm F = [A+B+C+D+E]		**96**	**122**	**122**	**122**	**115**	**101**	**145**	**499**
Discounting period		0.25	1.00	2.00	3.00	4.00	5.00	6.00	7.00
Discount factor	[G]	0.98	0.91	0.83	0.75	0.69	0.62	0.57	0.52
Present value of cash flows	**[F*G]**	**94**	**111**	**101**	**92**	**79**	**63**	**82**	**258**

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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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		1,020	1,115	1,216	1,333	1,458	1,603	1,736	1,893	1,542
y-o-y growth		*9.5%*	*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]**	909	1,092	1,191	1,306	1,430	1,574	1,705	1,861	1,517
EBITDA margin		89%	98%	98%	98%	98%	98%	98%	98%	98%
Depreciation		(351)	(384)	(419)	(875)	(1,100)	(1,162)	(1,222)	(1,289)	(1,018)
EBIT		557	708	772	431	330	412	483	572	499
EBIT margin		55%	63%	63%	32%	23%	26%	28%	30%	32%
Less: Tax on EBIT	[B]	(115)	(169)	(191)	(228)	(259)	(293)	(322)	(359)	(297)
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]		**363**	**470**	**524**	**580**	**647**	**731**	**805**	**895**	**742**
Discounting period		8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	15.87
Discount factor	[G]	0.47	0.43	0.39	0.35	0.32	0.29	0.27	0.24	0.22
Present value of cash flows	**[F*G]**	**170**	**201**	**204**	**205**	**208**	**214**	**214**	**217**	**165**

- 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	2,678
Present value of release of working capital	(11)
Enterprise Valuation	**2,667**
WACC	**9.9%**

Present value of release in working capital represent working capital of negative INR 52 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 9.9%, the Enterprise Value of IRBTC, as on 30 September 2026 is INR 2,667 crore.

Source(s): Management information, KVSL analysis

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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 30 September 2026

Particulars	Stake %
Equity Stake	100%
Debt held by InvIT in VK1	INR 735 crore

Source(s): Management information

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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 9 annuity installments and 9th installment (including interest) was due on 29 September 2026 and considered due for the valuation exercise.
- Balance annuity of INR 1,018 cr (excluding GST) is forecast to be received over next 10.5 years in 21 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 8.75 per cent (5.75 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 increased from 8.5 per cent to 8.75 per cent due to increase in Bank Rate

Source: Management Information

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Discounted Cash Flows (1/2)

Discounted cash flow												
FYE 31 March		**2027**	**2028**	**2028**	**2029**	**2029**	**2030**	**2030**	**2031**	**2031**	**2032**	**2032**
Date		**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**	**31-Mar-32**
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		86	85	85	84	84	83	82	81	81	80	79
y-o-y growth		*(0.7)%*	*(0.7)%*	*(0.7)%*	*(0.7)%*	*(0.8)%*	*(0.9)%*	*(0.8)%*	*(0.9)%*	*(1.0)%*	*(0.9)%*	*(1.0)%*
O&M Expense		(9)	(7)	(7)	(6)	(6)	(6)	(6)	(6)	(6)	(8)	(8)
y-o-y growth		*-*	*(23.3)%*	*-*	*(12.7)%*	*-*	*3.5%*	*-*	*3.3%*	*-*	*22.4%*	*-*
EBITDA	**[A]**	**77**	**79**	**78**	**78**	**78**	**77**	**76**	**75**	**74**	**72**	**72**
EBITDA margin (%)		*89.9%*	*92.2%*	*92.2%*	*93.1%*	*93.1%*	*92.7%*	*92.7%*	*92.4%*	*92.3%*	*90.5%*	*90.4%*
Less: Depreciation		-	-	-	-	-	-	-	-	-	-	-
EBIT		**77**	**79**	**78**	**78**	**78**	**77**	**76**	**75**	**74**	**72**	**72**
EBIT margin (%)		*89.9%*	*92.2%*	*92.2%*	*93.1%*	*93.1%*	*92.7%*	*92.7%*	*92.4%*	*92.3%*	*90.5%*	*90.4%*
Less: Taxes on EBIT	[B]	-	-	-	-	-	(8.0)	(8.0)	(17.8)	(18)	(18)	(18)
(Increase)/decrease in net working capital	[C]	1	-	-	-	-	-	-	-	-	-	-
Less: Capital expenditure	[D]	-	-	-	-	-	-	-	-	-	-	-
Free cash flow to the firm [E] = [A] + [B] + [C] + [D]		**79**	**79**	**78**	**78**	**78**	**69**	**68**	**57**	**57**	**55**	**54**
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	0.90	0.86	0.83	0.80	0.77	0.75	0.72	0.693	0.67
Present value of cash flow to the firm [E] * [F]		**76**	**73**	**70**	**68**	**65**	**55**	**53**	**43**	**41**	**38**	**36**

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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Discounted Cash Flows (2/2)

Discounted cash flow											
FYE 31 March		**2033**	**2033**	**2034**	**2034**	**2035**	**2035**	**2036**	**2036**	**2037**	**2037**
Date		**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**
Revenue		78	77	77	76	74	71	71	72	70	67
y-o-y growth		*(1.1)%*	*(1.2)%*	*(1.1)%*	*(1.2)%*	*(2.2)%*	*(3.5)%*	*(0.2)%*	*1.1%*	*(3.3)%*	*(4.2)%*
O&M Expense		(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]**	**68**	**67**	**69**	**68**	**67**	**64**	**64**	**65**	**65**	**62**
EBITDA margin (%)		*86.8%*	*86.6%*	*89.5%*	*89.3%*	*90.5%*	*90.2%*	*89.9%*	*90.0%*	*93.8%*	*93.5%*
Less: Depreciation		-	-	-	-	-	-	-	-	-	-
EBIT		**68**	**67**	**69**	**68**	**67**	**64**	**64**	**65**	**65**	**62**
EBIT margin (%)		*86.8%*	*86.6%*	*89.5%*	*89.3%*	*90.5%*	*90.2%*	*89.9%*	*90.0%*	*93.8%*	*93.5%*
Less: Taxes on EBIT	[B]	(17)	(17)	(18)	(18)	(18)	(18)	(18)	(18)	(18)	(18)
(Increase)/decrease in net working capital	[C]	-	-	-	-	-	-	-	-	-	
Less: Capital expenditure	[D]	-	-	-	-	-	-	-	-	-	-
Free cash flow to the firm [E] = [A] + [B] + [C] + [D]		**51**	**50**	**51**	**50**	**49**	**47**	**47**	**47**	**48**	**45**
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
Discount factor - mid year discounting	[F]	0.644	0.621	0.599	0.577	0.557	0.536	0.517	0.499	0.481	0.463
Present value of cash flow to the firm [E] * [F]		**33**	**31**	**30**	**29**	**27**	**25**	**24**	**24**	**23**	**21**

Summary of value	
INR Crore	
Primary value	884
Annuity receivable - September 26	99
PV of Working Capital	0
Enterprise value	**983**

WACC	**7.6%**

Present value of release in working capital represent working capital of INR 0.9 Cr released at the end of the concession period.

Please refer "Summary – WACC" for WACC breakup.

Basis the above and using a WACC of 7.6%, the Enterprise Value of VK1, as on 30 September 2026 is INR 983 crore.

Source(s): Management information, KVSL analysis

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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 30 September 2026

Particulars	Stake %
Equity Stake	100%
Debt held by InvIT in VM7	INR 1,107 Cr

Source(s): Management information

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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 2 annuity installments and 2nd installment (including interest) was due on 31 May 2026 has been received in 6M-FY27.
- Balance annuity of INR 1,067 cr (excluding GST) is forecast to be received over next 14 years in 28 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 8.75 per cent (5.75 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

- Interest on Annuity has increased from 8.5 per cent to 8.75 per cent due to increase in Bank Rate

Source: Management Information

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Discounted Cash Flows (1/3)

Discounted cash flow											
FYE 31 March		**2027**	**2028**	**2028**	**2029**	**2029**	**2030**	**2030**	**2031**	**2031**	**2032**
Date		**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**
Revenue		78	78	78	77	77	76	76	75	75	74
y-o-y growth		*(0.5)%*	*(0.5)%*	*(0.5)%*	*(0.6)%*	*(0.6)%*	*(0.6)%*	*(0.6)%*	*(0.7)%*	*(0.7)%*	*(0.7)%*
O&M Expense		(9)	(2)	(9)	(2)	(10)	(2)	(12)	(2)	(10)	(2)
Other expense (Under recovery of GST expense)		(0)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
EBITDA	**[A]**	**69**	**76**	**68**	**75**	**67**	**74**	**63**	**72**	**64**	**72**
EBITDA margin (%)		*88.3%*	*97.1%*	*87.8%*	*97.0%*	*86.8%*	*96.7%*	*83.4%*	*96.0%*	*85.4%*	*96.4%*
Less: Depreciation		-	-	-	-	-	-	-	-	-	-
EBIT		**69**	**76**	**68**	**75**	**67**	**74**	**63**	**72**	**64**	**72**
EBIT margin (%)		*88.3%*	*97.1%*	*87.8%*	*97.0%*	*86.8%*	*96.7%*	*83.4%*	*96.0%*	*85.4%*	*96.4%*
Less: Taxes on EBIT	[B]	-	-	-	-	-	-	-	-	-	-
(Increase)/decrease in net working capital	[C]	12	14	12	14	12	13	11	13	11	10
Less: Capital expenditure	[D]	-	-	-	-	-	-	-	-	-	-
Free cash flow to the firm [E] = [A] + [B] + [C] + [D]		**82**	**89**	**80**	**88**	**78**	**87**	**74**	**85**	**75**	**81**
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
Discount factor - mid year discounting	[F]	0.99	0.95	0.92	0.89	0.85	0.82	0.79	0.76	0.74	0.71
Present value of cash flow to the firm [E] * [F]		**81**	**85**	**74**	**78**	**67**	**72**	**59**	**65**	**55**	**58**

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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Discounted Cash Flows (2/3)

Discounted cash flow										
FYE 31 March		**2032**	**2033**	**2033**	**2034**	**2034**	**2035**	**2035**	**2036**	**2036**
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**
INR Crore		**6 months**	**6 months**	**6 months**	**6 months**	**6 months**	**6 months**	**6 months**	**6 months**	**6 months**
Revenue		74	73	72	72	71	71	70	69	68
y-o-y growth		*(0.7)%*	*(0.8)%*	*(0.9)%*	*(0.8)%*	*(0.9)%*	*(1.0)%*	*(0.9)%*	*(1.0)%*	*(1.1)%*
O&M Expense		(10)	(2)	(11)	(2)	(11)	(2)	(12)	(2)	(14)
Other expense (Under recovery of GST expense)		(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
EBITDA	**[A]**	**63**	**70**	**61**	**69**	**60**	**68**	**58**	**66**	**53**
EBITDA margin (%)		*85.1%*	*96.2%*	*84.4%*	*96.0%*	*83.6%*	*95.8%*	*82.3%*	*95.5%*	*77.7%*
Less: Depreciation		-	-	-	-	-	-	-	-	-
EBIT		**63**	**70**	**61**	**69**	**60**	**68**	**58**	**66**	**53**
EBIT margin (%)		*85.1%*	*96.2%*	*84.4%*	*96.0%*	*83.6%*	*95.8%*	*82.3%*	*95.5%*	*77.7%*
Less: Taxes on EBIT	[B]	-	-	-	(11)	(11)	(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]		**63**	**70**	**61**	**58**	**49**	**52**	**42**	**51**	**38**
Period factor - mid year discounting		5.17	5.67	6.17	6.67	7.17	7.67	8.17	8.67	9.17
Discount factor - mid year discounting	[F]	0.685	0.660	0.637	0.614	0.592	0.570	0.550	0.530	0.51
Present value of cash flow to the firm [E] * [F]		**43**	**46**	**39**	**36**	**29**	**30**	**23**	**27**	**20**

Source(s): Management information, KVSL analysis

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Discounted Cash Flows (3/3)

Discounted cash flow										
FYE 31 March		**2037**	**2037**	**2038**	**2038**	**2039**	**2039**	**2040**	**2040**	**2041**
Date		**31-May-36**	**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**	**6 months**
Revenue		68	67	66	65	63	62	63	61	58
y-o-y growth		*(1.2)%*	*(1.1)%*	*(1.2)%*	*(2.1)%*	*(3.4)%*	*(0.3)%*	*0.9%*	*(3.2)%*	*(4.0)%*
O&M Expense		(3)	(12)	(2)	(12)	(2)	(13)	(3)	(12)	(2)
Other expense (Under recovery of GST expense)		(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
EBITDA	**[A]**	**64**	**54**	**63**	**51**	**59**	**49**	**59**	**48**	**55**
EBITDA margin (%)		*94.5%*	*80.3%*	*94.9%*	*79.6%*	*94.6%*	*78.2%*	*94.3%*	*78.7%*	*94.1%*
Less: Depreciation		-	-	-	-	-	-	-	-	-
EBIT		**64**	**54**	**63**	**51**	**59**	**49**	**59**	**48**	**55**
EBIT margin (%)		*94.5%*	*80.3%*	*94.9%*	*79.6%*	*94.6%*	*78.2%*	*94.3%*	*78.7%*	*94.1%*
Less: Taxes on EBIT	[B]	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(15)	(8)
(Increase)/decrease in net working capital	[C]	-		-		-		-		-
Less: Capital expenditure	[D]	-	-	-	-	-	-	-	-	-
Free cash flow to the firm [E] = [A] + [B] + [C] + [D]		**49**	**38**	**48**	**36**	**45**	**34**	**45**	**33**	**47**
Period factor - mid year discounting		9.67	10.17	10.67	11.17	11.67	12.17	12.67	13.17	13.67
Discount factor - mid year discounting	[F]	0.493	0.475	0.458	0.441	0.425	0.410	0.395	0.381	0.367
Present value of cash flow to the firm [E] * [F]		**24**	**18**	**22**	**16**	**19**	**14**	**18**	**13**	**17**

Summary of value	
INR Crore	
Primary value	1,147
PV of Working Capital	8
Surplus asset	14
Enterprise value	**1,206**

WACC	**7.6%**

Present value of release in working capital represent working capital of INR 22 Cr released at the end of the concession period.

Please refer "Summary – WACC" for WACC breakup.

Basis the above and using a WACC of 7.6%, the Enterprise Value of VM7, as on 30 September 2026 is INR 1,206 crore.

Source(s): Management information, KVSL analysis

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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 30 September 2026

Particulars	Stake %
Equity stake	100%
Debt held by InvIT in KTL	INR 2,549 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 October 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 October 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.
- The expansion of Rajiv Gandhi Thermal Power Plant (RGTPP) is in process which would 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 FY2021-25 is 4.74%. 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

- Under the revised tax regime, the surcharge applicable to the SPV has increased from 10 per cent to 25 per cent, resulting in an increase in the effective corporate tax rate from 25.17 per cent to 28.60 per cent. The higher tax rate reduces the post-tax cash flows available to equity investors and, consequently, has a negative impact on the valuation of the asset.

Source(s): Management information, External traffic study

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Discounted Cash Flows (1/3)

Discounted Cash Flow								
INR crores		FY2027 6 months	FY2028 12 months	FY2029 12 months	FY2030 12 months	FY2031 12 months	FY2032 12 months	FY2033 12 months
Revenue		84	174	193	217	240	268	295
y-o-y growth			*11.2%*	*11.3%*	*12.3%*	*10.8%*	*11.5%*	*10.1%*
Routine maintenance		(12)	(25)	(26)	(27)	(29)	(30)	(31)
y-o-y growth			*5.0%*	*4.9%*	*4.9%*	*5.3%*	*5.3%*	*4.5%*
Major maintenance expense		-	-	-	-	-	(128)	(134)
Other expenses		-	-	-	-	-	-	-
EBITDA	**[A]**	**72**	**149**	**167**	**190**	**212**	**110**	**130**
EBITDA margin		86.0%	85.8%	86.6%	87.5%	88.1%	41.1%	44.1%
Depreciation		(12)	(26)	(29)	(32)	(36)	(40)	(44)
EBIT		**60**	**123**	**139**	**158**	**176**	**70**	**86**
EBIT margin		71.1%	70.9%	71.8%	72.6%	73.3%	26.2%	29.2%
Less: Tax on EBIT	[B]	-	-	-	-	-	-	-
Change in working capital	[C]	-	-	-	-	-	-	-
Less : Capex	[D]	-	-	-	-	-	-	-
Free cash flows to the firm	**E = [A+B+C+D]**	**72**	**149**	**167**	**190**	**212**	**110**	**130**
Discounting period		0.25	1.00	2.00	3.00	4.00	5.00	6.00
Discount factor	[F]	0.98	0.91	0.84	0.76	0.70	0.64	0.58
Present value of cash flows	**[E*F]**	**71**	**136**	**140**	**145**	**148**	**70**	**76**

Source(s): Management information, KVSL analysis

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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		328	363	399	435	477	522	573	626
y-o-y growth		*11.2%*	*10.6%*	*9.9%*	*9.2%*	*9.6%*	*9.4%*	*9.8%*	*9.3%*
Routine maintenance		(33)	(35)	(36)	(38)	(40)	(42)	(44)	(46)
y-o-y growth		*5.1%*	*4.8%*	*5.3%*	*4.5%*	*5.0%*	*5.2%*	*5.2%*	*4.7%*
Major maintenance expense		(140)	-	-	-	-	-	(94)	(99)
Other expenses		-	-	-	-	-	-	-	-
EBITDA	**[A]**	**155**	**328**	**362**	**397**	**437**	**480**	**435**	**482**
EBITDA margin		47.1%	90.5%	90.9%	91.2%	91.6%	91.9%	75.9%	76.9%
Depreciation		(49)	(54)	(59)	(65)	(71)	(78)	(85)	(93)
EBIT		**106**	**274**	**303**	**333**	**366**	**402**	**350**	**389**
EBIT margin		32.3%	75.6%	76.0%	76.4%	76.8%	77.1%	61.0%	62.0%
Less: Tax on EBIT	[B]	-	-	-	(55)	(101)	(114)	(101)	(114)
Change in working capital	[C]	-	-	-	-	-	-	-	-
Less : Capex	[D]	-	-	-	-	-	-	-	-
Free cash flows to the firm	**E = [A+B+C+D]**	**155**	**328**	**362**	**342**	**336**	**366**	**334**	**368**
Discounting period		7.00	8.00	9.00	10.00	11.00	12.00	13.00	14.00
Discount factor	[F]	0.53	0.49	0.45	0.41	0.37	0.34	0.31	0.28
Present value of cash flows	**[E*F]**	**82**	**160**	**161**	**139**	**125**	**125**	**104**	**104**

Source(s): Management information, KVSL analysis

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Discounted Cash Flows (3/3)

Discounted Cash Flow									
INR crores		FY2042 12 months	FY2043 12 months	FY2044 12 months	FY2045 12 months	FY2046 12 months	FY2047 12 months	FY2048 12 months	FY2049 10.8 months
Revenue		686	751	821	899	982	1,072	1,173	1,162
y-o-y growth		*9.5%*	*9.5%*	*9.4%*	*9.4%*	*9.3%*	*9.2%*	*9.4%*	
Routine maintenance		(49)	(51)	(54)	(56)	(59)	(62)	(65)	(62)
y-o-y growth		*5.0%*	*5.0%*	*5.3%*	*4.7%*	*5.0%*	*5.0%*	*5.3%*	
Major maintenance expense		(104)	-	-	-	-	-	-	-
Other expenses		-	-	-	-	-	-	-	-
EBITDA	**[A]**	**534**	**700**	**768**	**842**	**923**	**1,010**	**1,107**	**1,099**
EBITDA margin		77.8%	93.2%	93.5%	93.7%	94.0%	94.2%	94.4%	94.7%
Depreciation		(102)	(112)	(122)	(134)	(146)	(159)	(174)	(173)
EBIT		**432**	**588**	**646**	**709**	**777**	**851**	**933**	**927**
EBIT margin		63.0%	78.3%	78.6%	78.9%	79.1%	79.4%	79.6%	79.8%
Less: Tax on EBIT	[B]	(129)	(194)	(220)	(241)	(264)	(289)	(317)	(314)
Change in working capital	[C]	-	-	-	-	-	-	-	-
Less : Capex	[D]	-	-	-	-	-	-	-	-
Free cash flows to the firm	**E = [A+B+C+D]**	**405**	**506**	**548**	**602**	**659**	**721**	**791**	**785**
Discounting period		15.00	16.00	17.00	18.00	19.00	20.00	21.00	21.95
Discount factor	[F]	0.26	0.24	0.22	0.20	0.18	0.17	0.15	0.14
Present value of cash flows	**[E*F]**	**105**	**120**	**119**	**119**	**119**	**119**	**120**	**109**

Valuation conclusion	
INR Crore	
Present value of cash flows	2,716
Present value of release of working capital	(2)
Enterprise Valuation	**2,714**
WACC	**9.4%**

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 9.4%, the Enterprise Value of KTL, as on 30 September 2026 is INR 2,714 crore.

Source(s): Management information, KVSL analysis

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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 Cr 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 30 September 2026

Particulars	Stake %
Equity stake	100%
Debt held by InvIT in KGTL	INR 1,786 Cr

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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 October 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 October 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 FY2021-25 is 4.74%. 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 has decreased by ~2 per cent from the previous valuation cycle, driven by an downward revision in traffic forecasts as per the latest traffic study.
- Under the revised tax regime, the surcharge applicable to the SPV has increased from 10 per cent to 25 per cent, resulting in an increase in the effective corporate tax rate from 25.17 per cent to 28.60 per cent. The higher tax rate reduces the post-tax cash flows available to equity investors and, consequently, has a negative impact on the valuation of the asset.

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 6 months	FY2028 12 months	FY2029 12 months	FY2030 12 months	FY2031 12 months	FY2032 12 months	FY2033 12 months	FY2034 12 months
Revenue		53	111	141	166	190	217	247	280
y-o-y growth			*30.7%*	*26.6%*	*17.7%*	*14.9%*	*13.9%*	*14.0%*	*13.6%*
Routine maintenance		(15)	(29)	(30)	(32)	(33)	(35)	(37)	(39)
y-o-y growth			*5.0%*	*4.9%*	*4.9%*	*5.3%*	*5.3%*	*4.5%*	*5.1%*
Major maintenance expense		(50)	-	-	-	-	-	(104)	(102)
CSR expenses		-	-	-	-	-	-	-	(1)
EBITDA	**[A]**	**(12)**	**82**	**110**	**134**	**157**	**181**	**106**	**139**
EBITDA margin		-23.1%	74.0%	78.5%	80.8%	82.4%	83.7%	42.8%	49.7%
Depreciation		(22)	(45)	(50)	(55)	(61)	(68)	(75)	(83)
EBIT		**(34)**	**38**	**61**	**78**	**95**	**114**	**31**	**57**
EBIT margin		-64.1%	33.8%	43.3%	47.4%	50.2%	52.4%	12.5%	20.2%
Less: Tax on EBIT	[B]	-	-	(10)	(13)	(16)	(19)	(5)	(9)
Change in working capital	[C]	-	-	-	-	-	-	-	-
Less : Capex	[D]	-	-	-	-	-	-	-	-
Free cash flows to the firm	**E = [A+B+C+D]**	**(12)**	**82**	**101**	**121**	**141**	**163**	**101**	**130**
Discounting period		0.25	1.00	2.00	3.00	4.00	5.00	6.00	7.00
Discount factor	[F]	0.98	0.91	0.84	0.76	0.70	0.64	0.58	0.53
Present value of cash flows	**[E*F]**	**(12)**	**75**	**84**	**92**	**98**	**104**	**59**	**69**

Source(s): Management information, KVSL analysis

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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		319	354	393	433	479	534	590	645	78
y-o-y growth		*13.9%*	*10.9%*	*11.1%*	*10.0%*	*10.7%*	*11.5%*	*10.5%*	*9.2%*	
Routine maintenance		(41)	(43)	(45)	(47)	(49)	(52)	(54)	(57)	(16)
y-o-y growth		*4.8%*	*5.3%*	*4.5%*	*5.0%*	*5.0%*	*5.3%*	*4.7%*	*5.0%*	
Major maintenance expense		(110)	-	-	-	-	-	-	-	-
CSR expenses		(1)	(1)	(2)	(4)	(6)	(7)	(9)	(10)	-
EBITDA	**[A]**	**168**	**311**	**346**	**382**	**424**	**475**	**528**	**578**	**62**
EBITDA margin		52.5%	87.7%	88.0%	88.2%	88.5%	89.0%	89.4%	89.6%	79.8%
Depreciation		(92)	(100)	(110)	(120)	(131)	(144)	(157)	(170)	(50)
EBIT		**76**	**210**	**237**	**262**	**293**	**332**	**371**	**407**	**13**
EBIT margin		23.8%	59.4%	60.1%	60.6%	61.2%	62.0%	62.8%	63.2%	16.3%
Less: Tax on EBIT	[B]	(13)	(34)	(39)	(110)	(123)	(138)	(153)	(168)	(18)
Change in working capital	[C]	-	-	-	-	-	-	-	-	-
Less : Capex	[D]	-	-	-	-	-	-	-	-	-
Free cash flows to the firm	**E = [A+B+C+D]**	**155**	**276**	**307**	**271**	**301**	**337**	**374**	**410**	**45**
Discounting period		8.00	9.00	10.00	11.00	12.00	13.00	14.00	15.00	15.63
Discount factor	[F]	0.49	0.45	0.41	0.37	0.34	0.31	0.28	0.26	0.25
Present value of cash flows	**[E*F]**	**76**	**123**	**125**	**101**	**102**	**105**	**106**	**106**	**11**

Valuation conclusion	
INR Crore	
Present value of cash flows	1,425
Present value of release of working capital	(1)
Enterprise Valuation	**1,424**

WACC	**9.4%**

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

Please refer WACC Summary for WACC breakup.

Basis the above and using a WACC of 9.4%, the Enterprise Value of KGTL, as on 30 September 2026 is INR 1,424 crore.

Source(s): Management information, KVSL analysis

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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 30 September 2026

Particulars	Stake %
Equity stake	100%
Debt held by InvIT in IHMTL	INR 2,905 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)	2.0
Original concession period	22 years
Revised concession period	24 years
Scheduled end date	31-May-41
New scheduled end date	**30-Sep-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 30 September 2043. Thus, the explicit period for the current valuation analysis exercise has been considered from 1 October 2026 to 30 September 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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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 FY2021-25 is 4.74%. 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

- Toll revenue has decreased by ~1 per cent to ~4 per cent from the previous valuation cycle, driven by a downward revision in traffic forecasts as per the latest traffic study.
- Under the revised tax regime, the surcharge applicable to the SPV has increased from 10 per cent to 25 per cent, resulting in an increase in the effective corporate tax rate from 25.17 per cent to 28.60 per cent. The higher tax rate reduces the post-tax cash flows available to equity investors and, consequently, has a negative impact on the valuation of the asset.

Source(s): Management information, External traffic study

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Discounted Cash Flows (1/2)

Discounted Cash Flow										
INR crores		FY2027 6 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		191	388	417	452	512	571	640	715	801
y-o-y growth			*9.5%*	*7.6%*	*8.4%*	*13.2%*	*11.6%*	*12.0%*	*11.7%*	*12.0%*
Routine maintenance		(7)	(10)	(10)	(11)	(11)	(12)	(12)	(12)	(13)
y-o-y growth			*3.9%*	*3.2%*	*3.3%*	*3.2%*	*3.4%*	*2.7%*	*2.9%*	*2.9%*
Major maintenance expense		(45)	(85)	-	(5)	(74)	(77)	(57)	(2)	-
CSR expenses		-	-	-	-	-	-	-	-	(0)
EBITDA	**[A]**	**139**	**293**	**407**	**436**	**427**	**483**	**571**	**700**	**788**
EBITDA margin		72.8%	75.4%	97.5%	96.4%	83.3%	84.6%	89.3%	97.9%	98.4%
Depreciation		(30)	(67)	(72)	(78)	(88)	(98)	(109)	(122)	(136)
EBIT		**109**	**226**	**335**	**358**	**339**	**386**	**462**	**579**	**652**
EBIT margin		57.0%	58.1%	80.3%	79.2%	66.2%	67.5%	72.2%	80.9%	81.4%
Less: Tax on EBIT	[B]	(1)	(37)	(55)	(58)	(55)	(63)	(75)	(185)	(225)
Change in working capital	[C]	-	-	-	-	-	-	-	-	-
Less : Capex	[D]	-	-	-	-	-	-	-	-	-
Free cash flows to the firm	**E = [A+B+C+D]**	**138**	**256**	**352**	**378**	**371**	**420**	**496**	**515**	**563**
Discounting period		0.25	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00
Discount factor	[F]	0.98	0.91	0.84	0.76	0.70	0.64	0.58	0.53	0.49
Present value of cash flows	**[E*F]**	**135**	**234**	**294**	**288**	**259**	**268**	**289**	**274**	**274**

Source(s): Management information, KVSL analysis

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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 6 months
Revenue		892	995	1,114	1,245	1,379	1,527	1,697	1,858	1,041
y-o-y growth		*11.3%*	*11.6%*	*11.9%*	*11.8%*	*10.8%*	*10.7%*	*11.1%*	*9.5%*	
Routine maintenance		(13)	(13)	(14)	(14)	(14)	(15)	(16)	(15)	(8)
y-o-y growth		*3.1%*	*2.4%*	*2.6%*	*2.6%*	*2.8%*	*4.7%*	*5.0%*	*-7.2%*	
Major maintenance expense		(212)	(229)	(238)	(7)	-	-	-	-	-
CSR expenses		(2)	(2)	(2)	(2)	(4)	(8)	(11)	(12)	-
EBITDA	**[A]**	**665**	**751**	**861**	**1,223**	**1,360**	**1,504**	**1,670**	1,831	**1,033**
EBITDA margin		74.6%	75.4%	77.3%	98.2%	98.6%	98.5%	98.4%	98.5%	99.3%
Depreciation		(151)	(168)	(188)	(209)	(232)	(256)	(284)	(311)	(174)
EBIT		**514**	**582**	**673**	**1,013**	**1,129**	**1,248**	**1,386**	**1,520**	**859**
EBIT margin		57.7%	58.5%	60.4%	81.4%	81.8%	81.8%	81.7%	81.8%	82.5%
Less: Tax on EBIT	[B]	(191)	(215)	(247)	(350)	(390)	(432)	(481)	(527)	(295)
Change in working capital	[C]	-	-	-	-	-	-	-	-	-
Less : Capex	[D]	-	-	-	-	-	-	-	-	-
Free cash flows to the firm	**E = [A+B+C+D]**	**474**	**535**	**614**	**872**	**970**	**1,072**	**1,189**	**1,304**	**738**
Discounting period		9.00	10.00	11.00	12.00	13.00	14.00	15.00	16.00	16.75
Discount factor	[F]	0.45	0.41	0.37	0.34	0.31	0.28	0.26	0.24	0.22
Present value of cash flows	**[E*F]**	**211**	**218**	**228**	**297**	**301**	**304**	**309**	**309**	**164**

Valuation conclusion	
INR Crore	
Present value of cash flows	4,657
Present value of release of working capital	**0**
Enterprise Valuation	**4,657**

WACC	**9.4%**

Present value of release in working capital represent working capital of negative INR 0.2 Cr released at the end of the concession period.

Please refer WACC Summary for WACC breakup.

Basis the above and using a WACC of 9.4%, the Enterprise Value of IHMTL, as on 30 September 2026 is INR 4,657 crore.

Source(s): Management information, KVSL analysis

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Solapur Yedeshi Tollway Limited

Overview

Project details

SYTL was engaged for four laning the existing two lane highway on DBFOT basis the project stretch is 98.7 kms long involving the Solapur to Yedeshi section of NH-211 from 0.00 kms to 100 kms in Maharashtra with 2 toll plazas.

Concession period

SYTL 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 29 years commencing from the appointed date.
Extension of concession period by 794 days is estimated according to article 29 of concession agreement. Refer next slide for details.

Premium

There is no premium clause in the concession agreement.

Source(s): Management information

Highlights

Particulars	Details
Project location	Solapur Yedeshi
Concessionaire	SYTL
State	Maharashtra
Tollable length (kms)	98.7
No. of toll plazas	2
Concession agreement date	3-Mar-14
Appointed date	21-Jan-15
Four laning completion certificate date	15-Oct-19
Scheduled end date	21-Jan-44
New scheduled end date	22-June-46

Interest held by Trust as at 30 September 2026

Particulars	Stake %
Equity stake	100%
Debt held by InvIT in SYTL	INR 751 Cr

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Key Assumptions

a. Modification in concession period

- As per Clause 29.1, of the concession agreement between NHAI and SYTL, *"In the event that the actual average traffic shall have fallen short of or exceeded the target traffic by more than 2.5%, the concession period shall be modified in accordance with Clause 29.2."*
- As per Clause 29.2 of the concession agreement between NHAI and SYTL, *"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 (As per Independent Engineer appointed by NHAI)	6.0%
1.5% increase for every 1% decrease. Subject to Maximum increase in concession period capped at 20%.	7.5%
Original concession period	29 years
Revised concession period	31.2 years
Scheduled end date as per concession	21-Jan-44
Scheduled end date as per last calculation	27-Mar-45
New scheduled end date (Post current estimates)	**22-Jun-46**

- The Management has confirmed to us to consider revised concession period till 22 June 2046. Thus, the explicit period for the current valuation analysis exercise has been considered from 1 July 2026 to 22 June 2046.
- Besides the extension mentioned in the agreement, Management represented that the concession period will be increased by further 115 days on account of covid-19. (included above).

Source(s): Management information, External traffic Study

b. Revenue

- Revenue for SYTL 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 October 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 SYTL, 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, traffic consultant has also taken into consideration the project corridor passes highest number of sugar factories in India and multiple MIDC clusters which indicates strong and sustained traffic growth along the project corridor.
- Further, we have been given to understand that a PIL was filed at Hon'ble Bombay High Court (Aurangabad bench) to augment the Autram Ghat section (between Chalisgaon and Aurangabad). The Hon'ble High Court has passed an interim order in August 2023 directing NHAI to submit a plan for augmentation of the road, and till then movement of commercial vehicles is restricted on corresponding section of the road. It has negatively impacted on traffic on SYTL. However, the matter is expected to be resolved during FY27, basis which it is anticipated that the diverted traffic would progressively come back on project stretch between FY27 and FY28. Management have assumed Autrum Ghat section to be completed by FY34 and upside/additional revenue related to the same has been considered from FY34 and onwards.
- Basis above factors, toll revenue is forecast to increase by 14 per cent in FY27 and 8-12 per cent annually thereafter.

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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 FY2021-25 is 4.74%, reflecting inflationary cycles across both high and low year. Hence, an annual escalation factor of 4.5% 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.
- SYTL 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 Finance Bill, 2026 (presented on 1 February 2026) reduces the MAT rate from 15% to 14% and disallows any further MAT credit accrual under both regimes. Under the old regime, MAT paid will be treated as final tax with no additional credit accumulation. Under the new regime, however, unutilized MAT credit carried forward from the old regime can still be utilized. Such set-off is restricted to a maximum of 25% of the tax liability for the relevant year.
- Management represented that SYTL has 80IA benefit from FY2026 to FY2034. However, 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 in WC in FY27 pertains to release in DSRA on refinancing / repayment of SPV debt. 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.

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

- Changes in assumption is not appliable for SYTL as the asset has been acquired on 30 September 2026 and is being valued for the first time since acquisition.

Source(s): Management information, External traffic Study

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Discounted Cash Flows (1/2)

Discounted Cash Flow											
INR crores		FY2027 6 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
Revenue		90	185	200	219	240	264	288	322	355	386
y-o-y growth			*9.0%*	*8.0%*	*9.2%*	*9.7%*	*9.9%*	*9.1%*	*12.0%*	*10.2%*	*8.8%*
Routine maintenance		12	23	24	25	26	28	29	30	32	34
y-o-y growth			*5.0%*	*4.9%*	*4.9%*	*5.3%*	*5.3%*	*4.5%*	*5.1%*	*4.8%*	*5.3%*
Major maintenance expense		11	-	-	-	-	-	64	68	71	-
Other expenses		0	0	0	0	0	0	0	0	0	0
EBITDA	**[A]**	**67**	**162**	**176**	**193**	**213**	**236**	**194**	**224**	**252**	**352**
EBITDA margin		*74.9%*	*87.6%*	*88.0%*	*88.4%*	*88.9%*	*89.4%*	*67.4%*	*69.5%*	*70.9%*	*91.2%*
Depreciation		(11)	(27)	(30)	(34)	(37)	(42)	(46)	(51)	(57)	(64)
EBIT		**57**	**135**	**146**	**160**	**176**	**194**	**148**	**172**	**195**	**289**
EBIT margin		*63.1%*	*73.0%*	*72.9%*	*73.1%*	*73.4%*	*73.5%*	*51.4%*	*53.5%*	*54.8%*	*74.8%*
Less: Tax on EBIT	[B]	-	-	-	-	-	-	(20)	(49)	(57)	(85)
Change in working capital	[C]	30	-	-	-	-	-	-	-	-	-
Less: Capex		-	-	-	-	-	-	-	-	-	-
Free cash flows to the firm	**E = [A+B+C+D]**	**97**	**162**	**176**	**193**	**213**	**236**	**174**	**175**	**195**	**267**
Discounting period		0.25	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00
Discount factor	[F]	0.98	0.91	0.84	0.76	0.70	0.64	0.58	0.53	0.49	0.45
Present value of cash flows	**[E*F]**	**95**	**148**	**147**	**148**	**149**	**150**	**102**	**93**	**95**	**119**

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Discounted Cash Flows (2/2)

Discounted Cash Flow												
INR crores		FY2037 12 months	FY2038 12 months	FY2039 12 months	FY2040 12 months	FY2041 12 months	FY2042 12 months	FY2043 12 months	FY2044 12 months	FY2045 12 months	FY2046 12 months	FY2047 3 months
Revenue		421	458	504	550	596	650	705	774	841	913	225
y-o-y growth		*8.9%*	*9.0%*	*9.9%*	*9.2%*	*8.4%*	*9.1%*	*8.4%*	*9.9%*	*8.6%*	*8.6%*	*-75.3%*
Routine maintenance		35	37	39	41	43	45	47	50	52	55	14
y-o-y growth		*4.5%*	*5.0%*	*5.2%*	*5.2%*	*4.7%*	*5.1%*	*4.9%*	*5.3%*	*4.8%*	*4.9%*	*-75.3%*
Major maintenance expense		-	-	-	-	-	44	47	49	-	-	-
Other expenses		1	3	4	5	6	8	9	10	12	14	4
EBITDA	**[A]**	**384**	**419**	**461**	**504**	**547**	**553**	**602**	**665**	**777**	**845**	**208**
EBITDA margin		*91.3%*	*91.3%*	*91.5%*	*91.6%*	*91.7%*	*85.1%*	*85.4%*	*85.9%*	*92.4%*	*92.5%*	*92.4%*
Depreciation		(70)	(78)	(87)	(97)	(107)	(119)	(132)	(147)	(20)	-	-
EBIT		**314**	**340**	**374**	**407**	**440**	**434**	**470**	**519**	**757**	**845**	**208**
EBIT margin		*74.6%*	*74.2%*	*74.2%*	*74.0%*	*73.8%*	*66.7%*	*66.7%*	*67.0%*	*90.1%*	*92.5%*	*92.4%*
Less: Tax on EBIT	[B]	(94)	(104)	(116)	(129)	(141)	(143)	(157)	(179)	(222)	(242)	(60)
Change in working capital	[C]	-	-	-	-	-	-	-	-	-	-	-
Less: Capex		-	-	-	-	-	-	-	-	-	-	-
Free cash flows to the firm	**E = [A+B+C+D]**	**289**	**314**	**344**	**375**	**406**	**410**	**445**	**487**	**555**	**603**	**149**
Discounting period		10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00	19.00	19.61
Discount factor	[F]	0.41	0.37	0.34	0.31	0.28	0.26	0.24	0.22	0.20	0.18	0.17
Present value of cash flows	**[E*F]**	**118**	**117**	**117**	**116**	**115**	**106**	**106**	**106**	**110**	**109**	**25**

Valuation conclusion	
INR Crore	
Present value of cash flows	2,391
Present value of release of working capital	(1)
Enterprise Valuation	**2,391**
WACC	**9.4%**

Present value of release in working capital represent negative working of 3 cr released at the end of the concession period.

Basis the above and using a WACC of 9.4%, the Enterprise Value of SYTL, as on 30 September 2026 is INR 2,391 crore.

Please refer WACC Summary for WACC breakup.

Source(s): Management information, KVSL analysis

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CG Tollway Limited

Overview

Project details

CGTL was engaged for six laning the existing four lane highway on DBFOT basis The project stretch is 124.87 kms long involving the Kishangarh Udaipur Ahmedabad section from 90 kms (near Gulabpara) to 214.87 kms (end of Chittorgarh Bypass) of NH-79 in Rajasthan with 2 toll plazas.

Concession period

CGTL 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.

Premium

CGTL was engaged on payment of premium of INR 228.6 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. CGTL 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	Gulabpura Chittorgarh
Concessionaire	CGTL
State	Rajasthan
Tollable length (kms)	124.87
No. of toll plazas	2
Concession agreement date	9-Dec-16
Appointed date	4-Nov-17
Six laning completion certificate date	14-Aug-21
Scheduled end date	3-Nov-37
New scheduled end date	27-Feb-42

Interest held by Trust as at 30 September 2026

Particulars	Stake %
Equity stake	100%
Debt held by InvIT in CGTL	INR 1,704 Cr

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Key Assumptions

a. Modification in concession period

- As per Clause 29.2 of the concession Agreement between NHAI and CGTL, *"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)	30%
1.5% increase for every 1% decrease	45%
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	3-Nov-37
New scheduled end date	**31-Jan-42**

- Besides the extension mentioned in the agreement, Management represented that the concession period will be increased by further 90 days on account of covid-19. (included above)
- The Management has confirmed to us to consider revised concession period till 31 January 2042. Thus, the explicit period for the current valuation analysis exercise has been considered from 1 October 2026 to 31 January 2042.

b. Revenue

- Revenue for CGTL 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 October 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 CGTL, 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 the growth, consultant has considered that the project corridor is supported by textile units, marble and granite industries, and the strong tourism and consumption base of Udaipur and major freight volumes through large cement plants in Chanderiya and Nimbahera, along with the Chanderiya lead-zinc smelter in Chittorgarh.
- Basis above factors, toll revenue is forecast to increase in range of 8 - 11 per cent annually in the forecast period.
- 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 FY2021-25 is 4.74%, reflecting inflationary cycles across both high and low year. Hence, an annual escalation factor of 4.5% has been considered for the remaining concession period.

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
- 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.
- CGTL 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

- The Finance Bill, 2026 (presented on 1 February 2026) reduces the MAT rate from 15% to 14% and disallows any further MAT credit accrual under both regimes. Under the old regime, MAT paid will be treated as final tax with no additional credit accumulation. Under the new regime, however, unutilized MAT credit carried forward from the old regime can still be utilized. Such set-off is restricted to a maximum of 25% of the tax liability for the relevant year.
- Management represented that CGTL has 35AD benefit for income tax. From an FCFF perspective, the new tax regime may appear to result in a lower effective tax outflow over the projection period once the unabsorbed depreciation and business losses are utilized in the old tax regime and hence, we have used the approach in our valuation analysis. However, Management is still evaluating the impact at this stage and therefore timing of the transition to new tax regime will remain Managements option.

g. Working capital

- The change in WC in FY28 pertains to release in DSRA on refinancing / repayment of SPV debt. 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

- Changes in assumption is not appliable for CGTL as the asset has been acquired on 30 September 2026 and is being valued for the first time since acquisition.

Source(s): Management information, External traffic study

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Discounted Cash Flows [1/2]

Discounted Cash Flow									
INR crores		FY2027 6 months	FY2028 12 months	FY2029 12 months	FY2030 12 months	FY2031 12 months	FY2032 12 months	FY2033 12 months	FY2034 12 months
Revenue		98	216	245	281	315	356	396	437
y-o-y growth			*22.1%*	*13.5%*	*14.9%*	*12.1%*	*12.9%*	*11.1%*	*10.4%*
Routine maintenance		23	44	46	48	51	53	56	59
y-o-y growth			*5.0%*	*4.9%*	*4.9%*	*5.3%*	*5.3%*	*4.5%*	*5.1%*
Major maintenance expense		16	-	-	-	91	95	100	-
Other expenses		4	4	4	4	4	4	4	4
EBITDA	**[A]**	**56**	**168**	**195**	**229**	**170**	**203**	**236**	**374**
EBITDA margin		*57.2%*	*78.1%*	*79.7%*	*81.5%*	*53.9%*	*57.1%*	*59.6%*	*85.6%*
Depreciation		(23)	(55)	(61)	(68)	(74)	(82)	(89)	(98)
EBIT		**33**	**113**	**134**	**161**	**96**	**122**	**146**	**276**
EBIT margin		*34.1%*	*52.4%*	*54.7%*	*57.4%*	*30.3%*	*34.1%*	*37.0%*	*63.2%*
Less: Tax on EBIT	[B]	-	(10)	(22)	(26)	(16)	(20)	(24)	(45)
Change in working capital	[C]	-	-	50	-	-	-	-	-
Less: Capex		-	-	-	-	-	-	-	-
Free cash flows to the firm	**E = [A+B+C+D]**	**56**	**158**	**223**	**203**	**155**	**183**	**212**	**329**
Discounting period		0.25	1.00	2.00	3.00	4.00	5.00	6.00	7.00
Discount factor	[F]	0.98	0.91	0.84	0.76	0.70	0.64	0.58	0.53
Present value of cash flows	**[E*F]**	**55**	**144**	**187**	**155**	**108**	**117**	**124**	**175**

Source(s): Management information, KVSL analysis

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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 10 months
Revenue		482	532	584	640	705	777	846	996
y-o-y growth		*10.5%*	*10.3%*	*9.6%*	*9.6%*	*10.2%*	*10.2%*	*8.9%*	
Routine maintenance		61	65	68	71	74	78	82	66
y-o-y growth		*4.8%*	*5.3%*	*4.5%*	*5.0%*	*5.0%*	*5.3%*	*4.7%*	
Major maintenance expense		9	49	51	54	-	-	97	86
Other expenses		4	6	8	9	10	12	14	16
EBITDA	**[A]**	**407**	**413**	**458**	**507**	**621**	**687**	**653**	**828**
EBITDA margin		*84.4%*	*77.6%*	*78.4%*	*79.2%*	*88.0%*	*88.4%*	*77.2%*	*83.1%*
Depreciation		(107)	(118)	(128)	(141)	(153)	(168)	(179)	(179)
EBIT		**300**	**295**	**329**	**366**	**467**	**519**	**571**	**722**
EBIT margin		*62.1%*	*55.5%*	*56.4%*	*57.2%*	*66.3%*	*66.8%*	*67.5%*	*72.5%*
Less: Tax on EBIT	[B]	(49)	(48)	(30)	(117)	(178)	(196)	(215)	(258)
Change in working capital	[C]	-	-	-	-	-	-	-	-
Less: Capex		-	-	-	-	-	-	-	-
Free cash flows to the firm	**E = [A+B+C+D]**	**358**	**365**	**428**	**390**	**443**	**490**	**439**	**570**
Discounting period		8.00	9.00	10.00	11.00	12.00	13.00	14.00	14.92
Discount factor	[F]	0.49	0.45	0.41	0.37	0.34	0.31	0.28	0.26
Present value of cash flows	**[E*F]**	**175**	**162**	**174**	**145**	**151**	**152**	**125**	**149**

Valuation conclusion	
INR Crore	
Present value of cash flows	2,297
Present value of release of working capital	(1)
Enterprise Valuation	**2,296**

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

WACC	**9.4%**

Basis the above and using a WACC of 9.4%, the Enterprise Value of CGTL, as on 30 September 2026 is INR 2,296 crore.

Please refer WACC Summary for WACC breakup.

Source(s): Management information, KVSL analysis

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6.

Valuation Conclusion

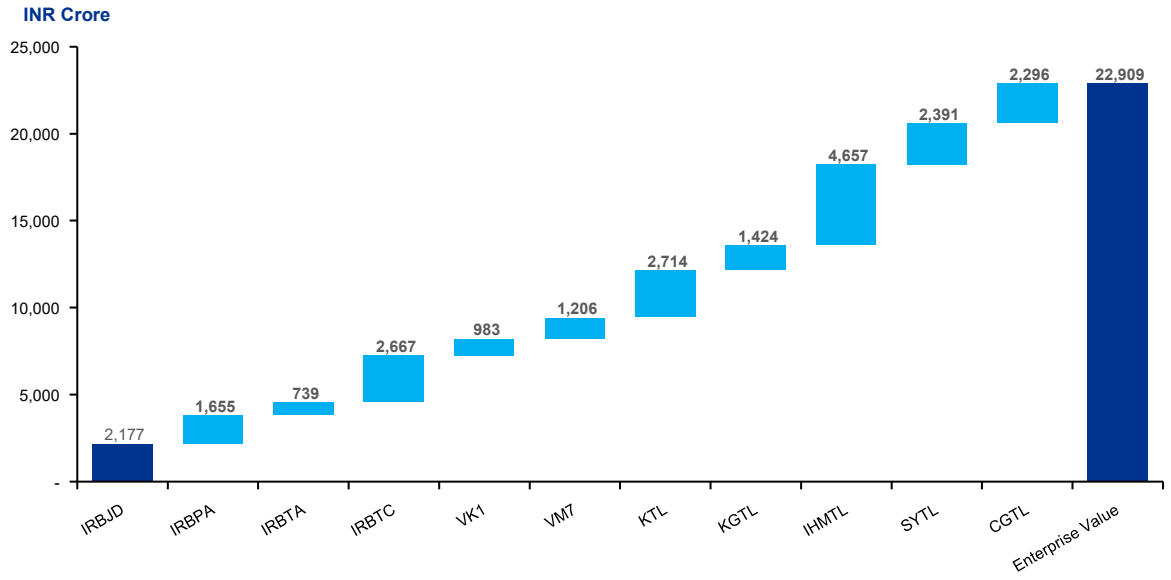
Valuation Conclusion (1/2)

Valuation Conclusion (INR Crore)

Valuation Conclusion 30 September 2026	INR Crore
IRB Jaipur Deoli Tollway Limited	2,177
IRB Pathankot Amritsar Toll Road Limited	1,655
IRB Talegaon Amravati Tollway Limited	739
IRB Tumkur Chitradurga Tollway Limited	2,667
VK1 Expressway Limited	983
VM7 Expressway Private Limited	1,206
Kaithal Tollway Limited	2,714
Kishangarh Gulabpura Tollway Limited	1,424
IRB Hapur Moradabad Tollway Limited	4,657
Solapur Yedeshi Tollway Limited	2,391
CG Tollway Limited	2,296
Enterprise Value of the SPVs	**22,909**
Cash and cash Equivalents	343
PV of Investment manager fees	(254)
Surplus	570
Capital Creditors	(17)
Debt and Debt like items	(11,077)
Equity value of IRB InvIT Fund	**12,474**

NAV at fair value per unit as on 30 September 2026	
Equity Value of IRB InvIT Fund (INR Cr)	12,474
Units outstanding (No.)	1,653,060,316
NAV at fair value per unit (INR)	**75.46**

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 22,909 crores and the 100% Equity Value of the IRB InvIT Fund is INR 12,474 crores as on 30 September 2026.

The NAV at fair value per unit of IRB InvIT Fund as on 30 September 2026 is INR 75.64 per unit.

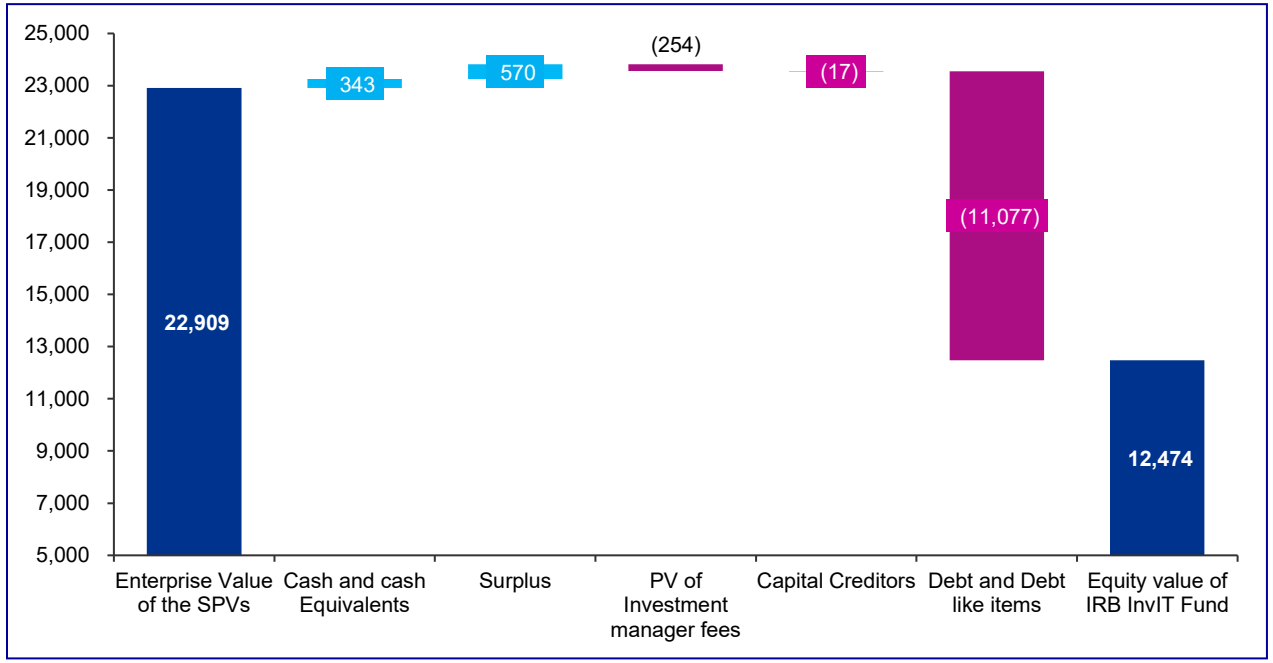
Source(s): Management information, KVSL analysis

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Valuation Conclusion (2/2)

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



The Enterprise Value of the SPVs is INR 22,909 crores and the 100% Equity Value of the IRB InvIT Fund is INR 12,473 crores as on 30 September 2026.

The NAV at fair value per unit of IRB InvIT Fund as on 30 September 2026 is INR 75.46 per unit.

1	Cash and cash equivalents comprise balance and deposits with banks (excluding balance held towards DSRA) as at 30 September 2026.
2	Surplus assets primarily comprise of investment in mutual funds and other non operating assets as at 30 September 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 11,383 Cr as at 30 September 2026. The debt and debt like items have been adjusted by INR 306 Cr, which represents the present value of the release of DSRA as at 30 September 2026. The release schedule of the DSRA along with applicable interest earned on the DSRA balance has been provided by the Management.

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, FY2025 and FY2026 for all the SPVs.
- Consolidated and Standalone audited financial statements for FY2022, FY2023, FY2024, FY2025 and FY2026 of IRB InvIT Fund.
- Provisional financial statements for the period ended 30 September 2026 for all the SPVs and IRB InvIT Fund (standalone and consolidated).
- Financial projections of SPV's, Investment Manager fee, DSRA requirement from 1 October 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 30 September 2026 and 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 October 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 FY2040 for IRBJD, FY2039 for IRBPA, FY 2038 for IRBTA, FY2030 for IRBTC, full concession period for CGTL and SYTL; 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.
- 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. However, we understand from the Management that the Fund has specific indemnity from IRB Infrastructure Trust for this matter for both CGTL and KGTL.
- 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.

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Annexure 1: Sources of Information (2/2)

- 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 IRBJD, IRBTA, IRBTC, IRBPA due to demonetization.
- Management has considered a 518-day extension in the concession period for IRBPA on account of delays in construction attributable to reasons beyond the control of IRBPA. Of the total extension claimed, 441 days have been approved by NHAI, while the balance period remains under dispute and is currently subject to litigation. Based on Management's representation, we have considered the full 518-day extension in the concession period in our analysis. Further, to account for the uncertainty associated with the extension period and the ongoing litigation, we have adopted a higher alpha for IRBPA.
- 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 30 September 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.
- We understand that CGTL 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 the SPVs 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.
- We understand that due to High Court Order, movement of commercial vehicles on certain sections of SYTL project roads have been restricted. Management expects the matter to be resolved in 2026 basis which it is anticipated that the diverted traffic would progressively come back on project stretch between FY27 and FY28.
- For SYTL, The Independent Engineer appointed by NHAI, through its letter dated 8 June 2026, has recommended an extension of the concession period by 2.18 years in accordance with the traffic variation clause of the concession agreement.
- 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	6 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	8.7	17.7	19.5	22.2	24.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
IM Expenses (including GST)	10.3	20.9	23.0	26.2	28.3	29.5	29.5	29.5	29.5	29.5	29.5	29.5
Discounting period	0.25	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00	9.00	10.00	11.00
Discount factor	0.98	0.91	0.84	0.76	0.70	0.64	0.58	0.53	0.49	0.45	0.41	0.37
Present value of cash flows	**10.1**	**19.1**	**19.3**	**20.0**	**19.7**	**18.8**	**17.2**	**15.7**	**14.4**	**13.1**	**12.0**	**11.0**

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	25.0	17.3	18.9	12.9	11.7	11.6
IM Expenses (including GST)	29.5	29.5	29.5	29.5	29.5	29.5	20.5	22.3	15.3	13.8	13.7
Discounting period	12.00	13.00	14.00	15.00	16.00	17.00	18.00	19.00	20.00	21.00	22.00
Discount factor	0.34	0.31	0.28	0.26	0.24	0.22	0.20	0.18	0.17	0.15	0.14
Present value of cash flows	**10.0**	**9.2**	**8.4**	**7.7**	**7.0**	**6.4**	**4.1**	**4.0**	**2.5**	**2.1**	**1.9**

Valuation conclusion	
INR Crore	
Present value of cash flows	**254**

WACC	***9.4%***

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 6 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	121	253	275	302	332	363	397	430	472	514	555	603	654
Less: premium payment to NHAI	-	-	-	-	-	-	-	-	-	-	-	-	-
Other operating income	-	-	-	-	-	-	-	-	-	-	-	-	-
Total revenue	**121**	**253**	**275**	**302**	**332**	**363**	**397**	**430**	**472**	**514**	**555**	**603**	**654**

Revenue Breakup		
INR crores	FY2040 12 months	FY2041 7 months
Toll Revenue	712	427
Less: premium payment to NHAI	-	-
Other operating income	-	-
Total revenue	**712**	**427**

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 6 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	98	206	224	253	285	315	341	370	402	439	477	429
Less: premium payment to NHAI	-	-	-	-	-	-	-	-	-	-	-	-
Other operating income	-	-	-	-	-	-	-	-	-	-	-	-
Total revenue	**98**	**206**	**224**	**253**	**285**	**315**	**341**	**370**	**402**	**439**	**477**	**429**

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 6 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	55	114	126	139	153	169	184	203	224	245	268	51
Less: premium payment to NHAI	-	-	-	-	-	-	-	-	-	-	-	-
Other operating income	-	-	-	-	-	-	-	-	-	-	-	-
Total revenue	**55**	**114**	**126**	**139**	**153**	**169**	**184**	**203**	**224**	**245**	**268**	**51**

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 6 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	250	529	575	636	697	771	841	931	1,020	1,115	1,216	1,333	1,458
Less: premium payment to NHAI	-	-	-	-	-	-	-	-	-	-	-	-	-
Other operating income	-	-	-	-	-	-	-	-	-	-	-	-	-
Total revenue	**250**	**529**	**575**	**636**	**697**	**771**	**841**	**931**	**1,020**	**1,115**	**1,216**	**1,333**	**1,458**

Revenue Breakup				
INR crores	FY2040 12 months	FY2041 12 months	FY2042 12 months	FY2043 9 months
Toll Revenue	1,603	1,736	1,893	1,542
Less: premium payment to NHAI	-	-	-	-
Other operating income	-	-	-	-
Total revenue	**1,603**	**1,736**	**1,893**	**1,542**

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 – VK1

Revenue Breakup												
INR crores	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	36	37	38	39	40	41	43	44	45	47	48	50
Interest on Annuity Receivable	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
Total revenue	**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	30-Nov-27 6 months	30-May-28 6 months	30-Nov-28 6 months	30-May-29 6 months	30-Nov-29 6 months	30-May-30 6 months	30-Nov-30 6 months	30-May-31 6 months	30-Nov-31 6 months	30-May-32 6 months	30-Nov-32 6 months	30-May-33 6 months	30-Nov-33 6 months
Annuity Receipt from NHAI	24	25	26	26	27	28	29	30	31	31	32	33	34
Interest on Annuity Receivable	49	48	47	46	44	43	41	40	39	37	35	34	32
O&M Support	5	5	5	5	5	5	5	5	5	5	5	5	5
Total revenue	**78**	**78**	**77**	**77**	**76**	**76**	**75**	**75**	**74**	**74**	**73**	**72**	**72**

Revenue breakup													
INR crores	30-May-34 6 months	30-Nov-34 6 months	30-May-35 6 months	30-Nov-35 6 months	30-May-36 6 months	30-Nov-36 6 months	30-May-37 6 months	30-Nov-37 6 months	30-May-38 6 months	30-Nov-38 6 months	30-May-39 6 months	30-Nov-39 6 months	30-May-40 6 months
Annuity Receipt from NHAI	35	36	38	39	40	41	42	44	44	44	46	49	49
Interest on Annuity Receivable	30	29	27	25	23	21	19	17	14	12	10	8	5
O&M Support	6	6	6	6	6	6	6	6	6	6	6	6	6
Total revenue	**71**	**71**	**70**	**69**	**68**	**68**	**67**	**66**	**65**	**63**	**62**	**63**	**61**

Source(s): Management Information, KVSL Analysis

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Annexure 2b: Revenue - KTL

Revenue Breakup													
	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
INR crores	6 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	84	173	193	217	240	267	294	327	362	398	434	476	521
Less: premium payment to NHAI	-	-	-	-	-	-	-	-	-	-	-	-	-
Other operating income	-	0	0	1	1	1	1	1	1	1	1	1	1
Total revenue	**84**	**174**	**193**	**217**	**240**	**268**	**295**	**328**	**363**	**399**	**435**	**477**	**522**

Revenue Breakup										
	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049
INR crores	12 months	12 months	12 months	12 months	12 months	12 months	12 months	12 months	12 months	11 months
Toll Revenue	572	625	685	749	820	897	980	1,070	1,170	1,159
Less: premium payment to NHAI	-	-	-	-	-	-	-	-	-	-
Other operating income	1	1	2	2	2	2	2	2	3	3
Total revenue	**573**	**626**	**686**	**751**	**821**	**899**	**982**	**1,072**	**1,173**	**1,162**

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	6 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	158	327	362	405	449	496	548	606	671	735	803	875	957
Less: premium payment to NHAI	(105)	(216)	(222)	(240)	(259)	(281)	(302)	(327)	(353)	(382)	(411)	(444)	(480)
Other operating income	(0)	1	1	1	1	1	1	1	1	2	2	2	2
Total revenue	**53**	**111**	**141**	**166**	**190**	**217**	**247**	**280**	**319**	**354**	**393**	**433**	**479**

Revenue Breakup				
	2040	2041	2042	2043
INR crores	12 months	12 months	12 months	3 months
Toll Revenue	1,052	1,148	1,247	364
Less: premium payment to NHAI	(520)	(560)	(605)	(286)
Other operating income	2	2	3	1
Total revenue	**534**	**590**	**645**	**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	6 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	209	424	454	492	555	618	690	769	859	954	1,063	1,187	1,324
Less: premium payment to NHAI	(18)	(37)	(38)	(41)	(44)	(47)	(51)	(55)	(60)	(65)	(70)	(75)	(81)
Other operating income		1	1	1	1	1	1	2	2	2	2	2	3
Total revenue	**191**	**388**	**417**	**452**	**512**	**571**	**640**	**715**	**801**	**892**	**995**	**1,114**	**1,245**

Revenue Breakup					
	2040	2041	2042	2043	2044
INR crores	12 months	12 months	12 months	12 months	6 months
Toll Revenue	1,464	1,618	1,795	1,965	1,101
Less: premium payment to NHAI	(88)	(95)	(102)	(110)	(60)
Other operating income	3	3	4	4	-
Total revenue	**1,379**	**1,527**	**1,697**	**1,858**	**1,041**

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 2b: Revenue - SYTL

Revenue Breakup													
	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
INR crores	6 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	90	185	200	219	240	264	288	322	355	386	421	458	504
Less: premium payment to NHAI	-	-	-	-	-	-	-	-	-	-	-	-	-
Other operating income	(0)	0	0	0	0	0	0	0	0	0	0	0	0
Total revenue	**90**	**185**	**200**	**219**	**240**	**264**	**288**	**322**	**355**	**386**	**421**	**458**	**504**

Revenue Breakup								
	2040	2041	2042	2043	2044	2045	2046	2047
INR crores	12 months	12 months	12 months	12 months	12 months	12 months	12 months	3 months
Toll Revenue	550	596	650	705	774	841	913	225
Less: premium payment to NHAI	-	-	-	-	-	-	-	-
Other operating income	0	0	0	0	0	0	0	(2)
Total revenue	**550**	**596**	**650**	**705**	**774**	**841**	**913**	**225**

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

Category / Year	FY 2026-27	FY 2028-30	FY 2031-35	FY 2036-40	FY 2041-45	FY 2046-50
Car/Jeep/Van	8.42%	6.67%	6.52%	6.22%	5.86%	5.14%
Bus	5.00%	3.25%	3.22%	3.16%	2.90%	2.58%
LCV	3.52%	1.77%	1.63%	1.36%	1.07%	0.79%
2-Axle	4.06%	2.31%	2.18%	1.90%	1.61%	1.06%
3-Axle	5.22%	3.47%	3.30%	2.95%	2.57%	1.86%
4 to 6 Axle	5.80%	4.05%	3.86%	3.47%	3.05%	2.26%
7 and Above Axle	5.80%	4.05%	3.86%	3.47%	3.05%	2.26%

Source(s): Management information

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Annexure 2b: Revenue - CGTL

Revenue Breakup													
	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039
INR crores	6 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	230	486	538	598	658	726	795	868	948	1,036	1,126	1,226	1,338
Less: premium payment to NHAI	(132)	(274)	(295)	(318)	(344)	(372)	(401)	(433)	(467)	(506)	(545)	(589)	(636)
Other operating income	0	4	1	1	1	2	2	2	2	2	3	3	3
Total revenue	**98**	**216**	**245**	**281**	**315**	**356**	**396**	**437**	**482**	**532**	**584**	**640**	**705**

Revenue Breakup			
	2040	2041	2042
INR crores	12 months	12 months	10 months
Toll Revenue	1,462	1,585	1,725
Less: premium payment to NHAI	(689)	(742)	(733)
Other operating income	3	4	4
Total revenue	**777**	**846**	**996**

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

Category / Year	FY 2027-2031	FY 2031-2036	FY 2036-2041	FY 2041-2046
Car/Jeep/Van	7.81%	6.51%	6.08%	5.83%
Bus	4.23%	3.27%	3.06%	2.91%
LCV	4.39%	3.33%	2.84%	2.58%
2-Axle	3.88%	3.80%	3.30%	3.03%
3-Axle	4.21%	3.80%	3.30%	3.03%
4 to 6 Axle	4.53%	3.80%	3.30%	3.03%
7 and Above Axle	4.21%	3.80%	3.30%	3.03%

Source(s): Management information

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Annexure 3: Other disclosures as required under SEBI InvIT Regulations

The following disclosures are as at 30 September 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 11 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 11 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	Mar-24	Sep-24	Mar-25	Sep-25	Nov-25	Mar-26
IRB Jaipur Deoli Tollway Limited	1,949	2,058	2,015	2,046	2,047	2,043
IRB Pathankot Amritsar Toll Road Limited	1,590	1,518	1,507	1,520	1,526	1,608
IRB Talegaon Amravati Tollway Limited	791	788	798	739	740	772
IRB Tumkur Chitradurga Tollway Limited	2,078	2,914	2,167	2,301	2,318	2,587
VK1 Expressway Limited	1,267	1,183	1,145	1,092	982	1,053
VM7 Expressway Private Limited	NA	NA	NA	NA	NA	1,238
Kaithal Tollway Limited	NA	NA	NA	NA	2,733	2,723
Kishangarh Gulabpura Highway Limited	NA	NA	NA	NA	1,493	1,436
IRB Hapur Moradabad Highway Limited	NA	NA	NA	NA	4,723	4,763
Solapur Yedeshi Tollway Limited	NA	NA	NA	NA	NA	NA
CG Tollway Limited	NA	NA	NA	NA	NA	NA

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.
SYTL and CGTL were acquired on 30 September 2026. Hence, valuation for these 2 SPVs 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	Remarks
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 31.03.2031	-
ii	Sonwa Toll Plaza	Sr.Electrical Inspector, Jaipur	Valid up to 31.03.2031	-
2	**WIM System**			
i	Inspection certificate for Barkheda -Chandlai Toll Plaza	Weigh and Measure Department, Jaipur	Stamping Certificate renewed upto (21.12.2026, & 22.12.2026).	-
ii	Inspection certificate for Sonwa Toll Plaza	Weigh and Measure Department, Tonk	Stamping Certificate renewed upto (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	-
4	**Other Government Approvals**			
i	Labour License	RLC, Jaipur	Valid up to 02.10.2026 (Expired) Under process for renewal	Under process for renewal
ii	HM Plant Pollution Certificate	Rajasthan Pollution Control Board	Valid up to 30.06.2027	-

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.) VC S no. PB/260317028WMV0723	Controller Legal Metrology, Punjab, Pathankot	19-Jun-27
3	Inspection Certificate, WIM at Ladpalwan Toll Plaza (5 Nos.) VC S no. PB/260317028WMV0724	Controller Legal Metrology, Punjab, Pathankot	19-Jun-27
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 (10 Nos.) VC S. No. PB/260301011WMV0537	Controller Legal Metrology, Punjab, Amritsar	3-Aug-27
6	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	**Under process for renewal**

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	

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
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-27
3	Inspection Certificate, Iron hexagon weight at Guilalu Toll Plaza and Receipt No. 2601115167, LCR No.-AC11046 Sl no. 91202601114563	Controller Legal Metrology, Karnataka	28-Jul-28
4	Inspection Certificate, Iron hexagon weight at karjeevanahally Toll Plaza and Receipt No. 261922693, LCR No.-AC179202401138 Sl no. 9120261922644	Controller Legal Metrology, Karnataka	7-Jul-28
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	28.09.2027
8	Inspection Certificate, Static weigh bridge towards Chitradurga at Guilalu Toll Plaza and Receipt No. 2601114887, LCR No.-AC11046 Sl no. 91202601114233	Controller Legal Metrology, Karnataka	23-Apr-27
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

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			
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. 261922692, LCR No.-AC179202401138 Sl no. 9120261922643	Controller Legal Metrology, Karnataka	7-Jul-27
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

Sr. No.	Description of the permits	Issuing Authority	Validity/ Current status	Remarks
CGTL				
1	License obtained pursuant to Contract Labour (Regulation and Abolition) Central Rules, 1971 for the branch office in Bhilwara, Rajasthan dated April 30, 2019, renewed on October 13, 2025.	-	Valid till 08.11.2026	Attached
2	CTO / CTE for HMP plant	-	Not stated	Attached

Sr. No.	Description of the permits	Issuing Authority	Validity/ Current status	Remarks
SYTL				
1	License under Contract Labour (Regulation and Abolition) Central Rules, 1971 for the branch office in Osmanabad dated March 17, 2015, renewed on February 23, 2026.	Assistant Labour Commissioner, Nagpur, Maharashtra	Renewed on 23.02.2026; expiry not stated	-
2	License under Contract Labour (Regulation and Abolition) Central Rules, 1971 for the branch office in Solapur dated May 24, 2015, renewed on March 30, 2026.	Regional Labour Commissioner, Pune, Maharashtra	Renewed on 30.03.2026; expiry not stated	-

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	Remarks
KGTL				
1	**Labour License under Contract Labour (Regulation and Abolition) Act, 1970 and Contract Labour (Regulation and Abolition) Contract Rules, 1971**			
i	Labour License No.AJ(L)/229/2017-ALC Dated:- 04.12.2017	Assistant Labour Commissioner (Central), Ajmer	Valid up to 03.12.2026	-
2	**BOCW Registration/Labour Welfare Cess Under Building And Other Construction Workers Act 1996**			
i	Regist. No AJ-24/2017/-BOCW/ALC Dated :- 04.12.2017 (amended on 14.10.2020)	Asst. Labour Commissioner (Central), Ajmer	Reg. Certificate Valid upto 20.02.2038	-
3	**Provisional permission for energization of Installation (DG) set/Captive power) under Rule 63 & 47 A of Indian Electricity Rules, 1956**			
i	Khedi Toll Plaza (02 Nos DG Set-250KVA,100KVA) Lic No.-AEI/PI/2024-25/157, Dated - 02.05.2024	Asst. Electrical Inspector, Ajmer	Valid up to 31.03.2029 (Renewed on 02.05.2024)	-
ii	Khedi Toll Plaza (Transformer 200KVA) Lic No. AEI/PI/2023-24/181 Dated - 18.04.2023	Asst. Electrical Inspector, Ajmer	Valid up to 31.03.2028 (Renewed on 18.04.2023)	-
4	**WIM System**			
i	Inspection certificate for Khedi Toll Plaza (22 Nos)	Weigh and Measurement Department Cum Legal Metrology Cell, Ajmer	All WIM Stamping Certificates renewed upto 24.06.2027	-
5	**Static Weigh Bridge**			
i	Inspection Certificate for Static Weight Bridge at Khedi Toll (02 nos)	Weigh and Measurement Department Cum Legal Metrology Cell, Ajmer	1.Stamping of WBE 434 (Kishangarh Side) - Renewed upto 22.02.2027 2. Stamping Certificate for WBE 459 (Bhilwara Side) Renewed upto 22.02.2027	-

Sr. No.	Description of the permits	Issuing Authority	Validity/ Current status	Remarks
VK1				
1	Clearing of Pollution Control Board	Gujarat Pollution control board	06-Dec-17 to 30-Sep-24 (Expired)	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 (Expired)	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 (6/7)

Sr. No.	Description of the permits	Issuing Authority	Validity/ Current status	Remarks
IRBHM				
1	Labour License for Contract Labours CLRA/ALCBAREILLYI20I9-L-45 dated 15.07.2019	Office of the Assist. Labour Commissioner, Bareilly UP	**Under renewal**	Process for Renewal of Labour License Pending with Principal Employer, NHAI,PIU Moradabad
2	Inspection Certificate, WIM at Joya Toll Plaza (1 Nos.) and Receipt No. 250061727, VC S no.250506048IMV0047	Controller Legal Metrology, Amroha, UP	**Under renewal**	-
3	Inspection Certificate, WIM at Joya Toll Plaza (1 Nos.) and Receipt No. 250091385, VC S no. 2505060481MV0150	Controller Legal Metrology, Amroha, UP	**Under renewal**	-
4	Inspection Certificate, WIM at Brijghat Toll Plaza (1 Nos.) VC S no.243571,243572, Fee Receipt WMU960031917	Controller Legal Metrology, Hapur, UP	4-May-27	-
5	Inspection Certificate, WIM at Brijghat Toll Plaza (1 Nos.) VCSno.243573,243574,243575,243576, Fee Receipt WMU960031917	Controller Legal Metrology, Hapur, UP	5-May-27	-
6	Inspection Certificate, WIM at Brijghat Toll Plaza (1 Nos.) VCSno.243577,243578, 243579,243580 Fee Receipt WMU960031917	Controller Legal Metrology, Hapur, UP	6-May-27	-
7	Inspection Certificate, WIM at Brijghat Toll Plaza (1 Nos.) VC Sno - 243581,243582,243583,243584,243585,243586,243587 Fee Receipt WMU960031917	Controller Legal Metrology, Hapur, UP	7-May-27	-
8	Inspection Certificate, WIM at Brijghat Toll Plaza (1 Nos.) VC Sno -243587 ,243588,243589,243590,Fee Receipt WMU960031917	Controller Legal Metrology, Hapur, UP	8-May-27	-

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
KTL (IRB Kaithal Tollway)			
1	Labour License for Contract Labours	Office of the Assist. Labour Commissioner, Karnal	Under Process for renewal
2	Inspection Certificate, WIM at Narwana Toll Plaza (12 Nos.) and Book No. 13823, Sr. No. 45	Inspector Legal Metrology,Jind, Haryana	25-Nov-26
3	Inspection Certificate, WIM at Badopatti Toll Plaza (06 Nos.) and Book No. 17195, Sr. No. 86	Inspector Legal Metrology, Hisar, Haryana	26-Nov-26
4	Inspection Certificate, WIM at Badopatti Toll Plaza (06 Nos.) and Book No. 17195, Sr. No. 87	Inspector Legal Metrology, Hisar, Haryana	26-Nov-26
5	Inspection Certificate, WIM at Chaudharywas Toll Plaza (06 Nos.) and Book No. 17195, Sr. No. 84	Inspector Legal Metrology, Hisar, Haryana	26-Nov-26
6	Inspection Certificate, WIM at Chaudharywas Toll Plaza (06 Nos.) and Book No. 17195, Sr. No. 85	Inspector Legal Metrology, Hisar, Haryana	26-Nov-26
7	Inspection Certificate, Static Weigh Bridge at Narwana Toll Plaza, Book No. 13739, Sr. No. 82	Inspector Legal Metrology,Jind, Haryana	10-Oct-27
8	Inspection Certificate, Static Weigh Bridge at Narwana Toll Plaza, Book No. 13739, Sr. No. 83	Inspector Legal Metrology,Jind, Haryana	10-Oct-27
9	Inspection Certificate, Static Weigh Bridge at Badopatti Toll Plaza, Book No. 13713, Sr. No. 90	Inspector Legal Metrology, Hisar, Haryana	27.Sep. 27
10	Inspection Certificate, Static Weigh Bridge at Badopatti Toll Plaza, Book No. 13713, Sr. No. 91	Inspector Legal Metrology, Hisar, Haryana	27.Sep. 27
11	Inspection Certificate, Static Weigh Bridge at Chaudharywas Toll Plaza, Book No. 13713, Sr. No. 92	Inspector Legal Metrology, Hisar, Haryana	27.Sep. 27
12	Inspection Certificate, Static Weigh Bridge at Chaudharywas Toll Plaza, Book No. 13713, Sr. No. 93	Inspector Legal Metrology, Hisar, Haryana	27.Sep. 27

Source(s): Management information

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Annexure 3c: Estimates of already carried as well as proposed major repairs and improvements (1/2)

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	29	30	33	-	-	-	-	78	84	110	23	-	-	13	118
IRB Pathankot Amritsar Toll Road Limited	26	28	24	-	-	32	29	8	-	15	47	-	-	-	49
IRB Talegaon Amravati Toll Road Limited	3	-	17	17	-	-	-	-	34	42	5	-	-	-	49
IRB Tumkur Chitradurga Tollway Limited	19	-	-	-	-	44	-	-	-	-	55	-	-	-	-
MVR Infrastructure and Tollways Limited	5	-	-	-	10	10	-	-	-	-	-	-	-	-	-
Kishangarh Gulabpura Tollway Limited	NA	NA	NA	NA	NA	NA	48	-	-	-	-	-	128	134	140
IRB Hapur Moradabad Tollway Limited	NA	NA	NA	NA	NA	NA	-	100	-	-	-	-	-	104	102
VM7 Expressway Private Limited	NA	NA	NA	NA	NA	NA	89	90	85	-	5	74	77	57	2
Solapur Yedeshi Tollway Limited	NA	NA	NA	NA	NA	NA	NA	20	-	-	-	-	-	61	64
Chittorgarh Gulabpura Tollway Limited	NA	NA	NA	NA	NA	NA	NA	30	-	-	-	86	-	95	-

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Annexure 3c: Estimates of already carried as well as proposed major repairs and improvements (2/2)

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	-	-	-	-	21	19	-	-	-	-	-	-	-	-
IRB Pathankot Amritsar Toll Road Limited	58	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IRB Talegaon Amravati Toll Road Limited	58	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IRB Tumkur Chitradurga Tollway Limited	89	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MVR Infrastructure and Tollways Limited	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kishangarh Gulabpura Tollway Limited	-	-	-	-	-	94	99	104	-	-	-	-	-	-	-
IRB Hapur Moradabad Tollway Limited	110	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VM7 Expressway Private Limited	-	212	229	238	7	-	-	-	-	-	-	-	-	-	-
Solapur Yedeshi Tollway Limited	67	-	-	-	-	-	-	42	44	46	-	-	-	-	-
Chittorgarh Gulabpura Tollway Limited	9	46	48	51	-	-	-	-	-	-	-	-	-	-	-

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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	8,436.0	100%
Kishangarh Gulabpura Tollway Limited		100%
IRB Hapur Moradabad Tollway Limited		100%
VM7 Expressway Private Limited	1,217.0	100%
Solapur Yedeshi Tollway Limited	4,605.0	100%
Chittorgarh Gulabpura Tollway Limited		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.
- IRB InvIT Fund has acquired 100% equity share capital of Solapur Yedeshi Tollway Limited and CG Tollway Limited from IRB Infrastructure Trust with effect from 30 September 2026 in a related party transaction for a consolidated Enterprise Value of INR 4,605 Cr.

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

Sr. No	Matter	Pending Before	Particulars	Amount Involved (INR Million)
IRBJD – IRB Jaipur Deoli Tollway Limited				
1	Civil Litigation (Writ Petition)	Rajasthan High Court	**Background of the case:** The project manager of IRBJD received summons dated 28 January 2016 to appear before the Rajasthan High Court in a writ petition filed under Article 226 of the Constitution of India by Jagannath University, seeking a direction to the Project Manager, Barkheda Chandlai Toll Plaza (operated by IRBJD), to issue monthly toll passes for its buses at Rs. 215 per vehicle in accordance with Clause 3 of the Government of Rajasthan Notification dated 8 April 2013, which provides concessional toll rates for non-commercial vehicles owned by recognised educational institutions. In its reply dated 12 May 2016, IRBJD denied the claim, stating that the vehicles were not proven to be non-commercial educational vehicles as required under the Notification, that tolls were charged in compliance with applicable rules, and that the writ petition was premature without exhausting alternate remedies. Jagannath University has also filed a stay application before the Jaipur bench of the Rajasthan High Court. **Current Status:** The matter is currently pending.	Not quantified
2	Direct Tax Matters	High Court	**Background of the case:** For Assessment Year 2012-13, IRBJD received an assessment order under Section 143(3) of the Income-tax Act, 1961, wherein the Department made additions aggregating to Rs. 47.1 million towards interest income on bank fixed deposits; the tax amount involved (including interest) aggregates to Rs. 27.19 million. The Company won the appeal before the CIT(A) and the ITAT. The Department has further filed an appeal before the High Court against the ITAT order. **Current Status:** The appeal is yet to come up for hearing before the High Court. The management believes that it has a strong case on merits.	27.19

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

Sr. No	Matter	Pending Before	Particulars	Amount Involved (INR Million)
IRBPA – IRB Pathankot Amritsar Toll Road Limited				
1	Civil Litigation (Writ Petition)	Punjab and Haryana High Court	**Background of the case:** A writ petition dated 5 April 2023 under Articles 226 and 227 of the Constitution of India has been filed before the Punjab and Haryana High Court by Avadh Bihari and Pawan Kumar, employees of NHAI, challenging (i) the order dated 20 June 2018 passed by the Divisional Officer, Canals, Gurdaspur and (ii) the subsequent order dated 29 July 2022 passed by the Superintendent Engineer, State Irrigation Department, Amritsar affirming the same. The orders imposed a penalty of Rs. 20,000 and directed restoration of an irrigation khal allegedly dismantled during toll plaza construction. The petitioners claim that the land was lawfully acquired by NHAI, that the khal was reconstructed as per the Irrigation Department's suggestions, and that the proceedings improperly fix personal liability on employees instead of the authority. **Current Status:** The matter is currently pending.	0.02
2	Civil Litigation (Arbitration with NHAI – Farmers' protest)	High Court (Section 34 petitions)	**Background of the case:** In September 2020, following the farm bills passed by Parliament, operations at toll plazas in Punjab were forcefully stopped ("Protest I"). IRBPA notified this as a force majeure event and submitted a claim of Rs. 1,212.8 million and a consequent extension of the concession period by 441 days. Arbitration was subsequently invoked but kept in abeyance and the matter was referred to conciliation. NHAI paid a partial amount of Rs. 360.3 million on 27 August 2022 and approved an extension of 436 days. Toll collection was again suspended due to farmers' protest against the State Government in November 2022 and between December 2022 and January 2023 ("Protest II"), and IRBPA re-invoked arbitration on 16 February 2023. IRBPA filed a consolidated statement of claim for Protest I and II of Rs. 924.4 million (Rs. 92.44 crore) and extension of the concession period by 473.28 days. **Current Status:** The interim award was pronounced on 13 January 2024 granting an extension of the concession period by 472 days, followed by the final award ("Award") dated 17 February 2024 awarding further compensation of Rs. 285.4 million (as on 17 February 2024) along with interest. NHAI has challenged the Award under Section 34 of the Arbitration and Conciliation Act, 1996. IRBPA has also filed a Section 34 application to the extent of reimbursement of force majeure costs towards interest payment on debt. Both matters are currently pending.	1,116.2 + interest & extension of 473.28 days

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

Sr. No	Matter	Pending Before	Particulars	Amount Involved (INR Million)
IRBTA – IRB Talegaon Amravati Tollway Limited				
1	Public Interest Litigation (PIL)	Bombay High Court, Nagpur Bench	**Background of the case:** A PIL was filed by Arun Rohidas Patil on 29 March 2019 before the Bombay High Court, Nagpur Bench, raising concerns over the non-completion and poor maintenance of National Highway No. 6 (now NH-53), particularly the stretches from Amravati to Malkapur and Wardha to Deulgaon Raja. NHAI filed affidavits detailing the status of construction, plantation statistics, safety measures such as crash barriers and signage, and practical challenges including grazing pressure and encroachments. Pursuant to the Court's direction dated 3 May 2024, IRBTA submitted a reply confirming that it had planted trees and stated that it had executed works such as flyovers and bypasses through third-party contractors under standalone projects. **Current Status:** The matter is currently pending.	Not quantified

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

Sr. No	Matter	Pending Before	Particulars	Amount Involved (INR Million)
IRBTC – IRB Tumkur Chitradurga Tollway Limited				
1	Civil Litigation (Arbitration with NHAI)	Court of competent jurisdiction (Section 34 petition)	**Background of the case:** Due to a dispute on the deferred premium calculation of previous years and revocation of deferment sanction between IRBTC and NHAI, IRBTC filed an appeal before the Delhi High Court against the Section 9 order dated 25 November 2019. As per the interim order of the Division Bench, withdrawals from the escrow account were not permitted till the final order. The matter was disposed of by the Division Bench and the dispute was referred to arbitration. The arbitral tribunal, by order dated 14 July 2022, directed NHAI to withdraw Rs. 978.49 million as interim relief and, by order dated 9 August 2022, lifted the embargo on the escrow account and directed NHAI to withdraw Rs. 4,539.10 million and IRBTC to withdraw Rs. 1,930.00 million. IRBTC filed a statement of claim on 20 September 2022 seeking consolidated compensation of Rs. 949.80 million and consolidated extension of the concession period by 138.03 days. **Current Status:** The arbitral award ("Award") was pronounced on 25 June 2026, directing IRBTC to pay the deferred premium along with applicable interest. NHAI is to determine the final amount within 12 weeks of the Award, after which IRBTC is to pay within the subsequent 12 weeks. The Award also grants certain reliefs in favour of IRBTC on specific claims. IRBTC challenged the Award under Section 34 of the Arbitration and Conciliation Act, 1996 on 22 September 2026, and the matter is pending.	949.8 (IRBTC claim) + interest; deferred premium payable under the Award to be determined by NHAI

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Annexure 3e: Pending litigations – VK1 (5/13)

Sr. No	Matter	Pending Before	Particulars	Amount Involved (INR Million)
VKEL – VK1 Expressway Limited				
1	Direct Tax Matters	ITAT	**Background of the case:** For Assessment Year 2023-24, VK1 received an assessment order under Section 143(3) of the Income-tax Act, 1961, wherein the Department made additions for non-deduction of TDS on interest paid to IRB InvIT Fund. The Department made additions of Rs. 2.71 crore under Section 40(a)(ia) (30% of total interest of Rs. 9.03 crore paid by VK1 to IRB InvIT Fund). The management believes that the interest is exempt under Section 194A r.w.s. 10(23FC) and 2(13A) of the Act. The Company filed an appeal before the CIT(A) and also applied for rectification under Section 154. During appellate proceedings, the CIT(A) deleted the addition on merits. VK1 has received a memo from the ITAT stating that the Income-tax Department has filed an appeal against the CIT(A) order. **Current Status:** The matter is yet to come up for hearing.	27.1

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

Sr. No	Matter	Pending Before	Particulars	Amount Involved (INR Million)
KGTL – Kishangarh Gulabpura Tollway Limited				
1	Civil Litigation (Arbitration with NHAI – Force majeure / delay claims)	Arbitral Tribunal; Delhi High Court (NHAI writ petitions)	**Background of the case:** KGTL, CG Tollway Limited ("CGTL") and Udaipur Tollway Limited ("UTL") notified NHAI by letters dated 24 March 2020 of a political force majeure event (Covid-19 restrictions and nationwide lockdown) causing loss of toll income, and on 31 July 2020 submitted claims under NHAI's Policy Guidelines dated 26 May 2020 seeking extension of the concession periods. NHAI by letter dated 10 August 2020 instructed commencement of premium payment from September 2020. The three companies filed a writ petition on 16 September 2020 before the Rajasthan High Court, Jaipur bench, challenging, inter alia, Rule 4(9) of the National Highways Fee Rules, 2008, the MoRTH office memorandum dated 18 May 2020 and the Guidelines, and seeking to maintain the six-month gap between revised completion date / toll tariff revision and commencement of premium, no coercive action, compensation and extension of concession periods. By interim order dated 18 September 2020 the High Court stayed payment of premium; by judgment dated 25 August 2021 (rectified 26 August 2021) it directed the parties to arbitration with interim protection. The Delhi High Court appointed an arbitrator (Section 11(6)); the Supreme Court dismissed the special leave petition against that order and appointed a presiding arbitrator on 17 February 2022. By judgement dated 16 March 2022 the Delhi High Court held that interim protection continues until a Section 17 application is heard by the tribunal. KGTL, CGTL and UTL filed statements of claim of approximately Rs. 8,689.6 million, Rs. 5,021.2 million and Rs. 9,060.8 million respectively, with extensions of 387.18, 241.37 and 214.99 days respectively. The tribunal's Section 17 order dated 10 September 2023 extended interim relief pending adjudication. NHAI's Section 16 application on jurisdiction was directed to be heard with the main case. **Current Status:** Arbitral proceedings are in progress. NHAI has filed writ petitions before the Delhi High Court for quashing the tribunal's order dated 6 August 2024 on the Section 16 applications in respect of KGTL, CGTL and UTL. The matters are pending.	8,689.6 + interest & extension of 387.18 days
2	Indirect Tax Matters (GST)	Appellate Authority	**Background of the case:** For FY 2019-20, the GST Department completed an audit under Section 65 of the CGST Act, 2017 and issued an order under Section 73 demanding tax, interest and penalty of Rs. 16.05 million, primarily on account of non-discharge of GST liability on COS/utility shifting work and reverse charge mechanism (RCM) liabilities. The Company has filed an appeal before the Appellate Authority. **Current Status:** The matter is pending for hearing and final disposal.	16.05

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Annexure 3e: Pending litigations - KTL (7/13)

Sr. No	Matter	Pending Before	Particulars	Amount Involved (INR Million)
KTL – Kaithal Tollway Limited				
1	Regulatory Action (Show cause notice)	District Town Planner, Jind	**Background of the case:** KTL received a show cause notice dated 16 October 2020 from the District Town Planner, Jind under Section 12(2) of the Punjab Scheduled Roads and Controlled Area Restriction of Unregulated Development Act, 1963, alleging unauthorised construction of the toll plaza and other commercial and official buildings on NH-52, in violation of Sections 3, 6 and 7(i) of the Act. KTL responded by letter dated 27 October 2020 refuting the allegations. KTL was awarded the project under a concession agreement with NHAI dated 23 June 2014 for 27 years and has submitted that there is no illegal construction and that it is entitled to collect toll as per the concession agreement. **Current Status:** The matter is currently pending.	Not quantified
2	Civil Litigation (Arbitration with NHAI)	Court of competent jurisdiction (Section 34); Delhi High Court (enforcement)	**Background of the case:** Due to farmers' strike/agitation/protest, operations at toll plazas in Haryana were forcefully stopped. KTL notified this as a force majeure event and submitted a force majeure cost claim with a request for extension of the concession period by 356 days. KTL further contended that NHAI was in material breach of its obligations, representations and warranties under the concession agreement. The matter was referred to arbitration, wherein KTL claimed compensation of Rs. 2,880.70 million and execution of a supplemental agreement recording an aggregate extension of the concession period by 582.77 days, based on delays in construction completion attributable to NHAI, the balance amount related to the farmers' protest and costs incurred due to Covid-19 restrictions. **Current Status:** The arbitral award ("Award") was pronounced on 27 February 2026 in favour of KTL, awarding Rs. 2,656.60 million along with applicable interest until realisation and an extension of the concession period by 582.77 days. NHAI has filed a Section 34 petition challenging the Award, while KTL has filed an enforcement application before the Delhi High Court. Both proceedings are pending.	2,656.6 + interest & extension of 582.77 days

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

Sr. No	Matter	Pending Before	Particulars	Amount Involved (INR Million)
IRB HMTL – IRB Hapur Moradabad Tollway Limited				
1	Stamp Duty Matter	Allahabad High Court	**Background of the case:** A concession agreement dated 25 May 2018 was executed between NHAI and IRB HMTL. On 18 October 2024, the Collector, Hapur issued a notice to the Project Director, NHAI, Moradabad under Section 73 of the Indian Stamp Act, 1899 directing submission of the Concession Agreement for payment of stamp duty. The Assistant Inspector General (Registration), Hapur submitted an ex-parte report dated 18 November 2024 observing a deficiency of stamp duty of Rs. 377.73 million (Rs. 37,77,26,920), and on this basis the Collector registered a case against IRB HMTL under Section 33 of the Act ("Stamp Case"). A show cause notice dated 6 December 2024 was issued, to which IRB HMTL replied on 16 December 2024. On 25 July 2025 IRB HMTL applied for the Stamp Case to be kept in abeyance as an identical matter is pending before the Allahabad High Court. By order dated 2 September 2025 ("Order"), the District Magistrate/Collector imposed the deficiency of Rs. 377.73 million and a penalty of Rs. 3.7 million (Rs. 37,00,000) together with interest at 1.5% per month on the stamp duty until deposit. Pursuant to the Order, the Assistant Commissioner (Stamp), Hapur issued a recovery citation dated 6 July 2026 and the Tehsildar, Garhmukteshwar issued a recovery certificate dated 5 August 2026. IRB HMTL applied on 20 August 2026 for recall of the recovery citation and has filed a writ petition before the Allahabad High Court challenging the Order. **Current Status:** The Allahabad High Court, by order dated 21 September 2026, has kept in abeyance the effect and operation of the Order, the recovery citation dated 6 July 2026 and the recovery certificate dated 5 August 2026 until the next date of listing. The matter is pending.	381.43
2	Direct Tax Matters	ITAT	**Background of the case:** For Assessment Year 2023-24, the Department completed the assessment under Section 143(3) of the Income-tax Act, 1961 and made an addition of Rs. 35.60 million on account of disallowance of notional interest on amounts invested in mutual funds. The Company filed an appeal before the CIT(A) on 15 April 2025. The CIT(A) passed the order in favour of the Department, and the Company has filed an appeal before the ITAT. **Current Status:** The matter is pending for final disposal. The management believes that it has a strong case on merits.	35.6

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

Sr. No	Matter	Pending Before	Particulars	Amount Involved (INR Million)
SYTL – Solapur Yedeshi Tollway Limited				
1	Civil Litigation (Arbitration with NHAI)	Arbitral Tribunal	**Background of the case:** SYTL approached NHAI for settlement of claims arising from delays attributable to NHAI during construction and claims related to force majeure events. The consolidated claims amount to approximately Rs. 7,905.4 million and an extension of the concession period by 647.43 days. The parties could not settle through conciliation, and SYTL invoked arbitration under the concession agreement; NHAI has filed its counter claim. **Current Status:** The arbitration proceedings are in progress and the matter is currently pending.	7,905.4 + extension of 647.43 days
2	Public Interest Litigation (PIL)	Bombay High Court, Aurangabad Bench	**Background of the case:** SYTL and Yedeshi Aurangabad Tollway Limited ("YATL") filed an intervention application before the Bombay High Court, Aurangabad bench, in the PIL filed by Dnyaneshwar, Nilesh and Shrikrishna, seeking that the order dated 4 August 2023 be vacated insofar as it directs all heavy vehicles to ply the diversion from Daulatabad Tea Point via Deogaon Rangari–Shivoor–Wakla up to Pimparkhed and then to Malegaon, AB Road, or from Pimparkhed to Naydongri and Chalisgaon. The directions have resulted in authorities placing barriers near ingress/egress points or closing approach roads to the project highways operated by SYTL and YATL, diverting traffic and adversely affecting tollable traffic volumes. **Current Status:** The matter is pending.	Not quantified
3	Direct Tax Matters	CIT(A)	**Background of the case:** For Assessment Year 2023-24, the Department passed an assessment order under Section 143(3) of the Income-tax Act, 1961, rejecting the books of account and Statement of Profit and Loss and estimating income by applying a presumptive net profit rate of 8% on the declared turnover. The Company filed an appeal before the CIT(A) on 15 April 2025. **Current Status:** The matter is pending for final disposal.	Not quantified
4	Direct Tax Matters	High Court	**Background of the case:** For Assessment Year 2017-18, SYTL filed an appeal before the CIT(A) against the order of the Assessing Officer, National Faceless Assessment Centre, Delhi, who had initiated proceedings under Section 147 of the Income-tax Act, 1961 and made an addition of Rs. 84.66 million towards notional interest on mobilisation advance given to the EPC contractor. By order dated 11 April 2025, the CIT(A) deleted the addition on merits without adjudicating the technical ground on initiation of proceedings under Section 147. The Department's appeal before the ITAT has been dismissed. The Department has further filed an appeal before the High Court against the ITAT order. **Current Status:** The matter is yet to come up for hearing.	84.66

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Annexure 3e: Pending litigations – CGTL (10/13)

Sr. No	Matter	Pending Before	Particulars	Amount Involved (INR Million)
CGTL – CG Tollway Limited				
1	Criminal Litigation	Police Station, Gangrar, Chittorgarh, Rajasthan	**Background of the case:** Waman Rathod, Deputy General Toll Manager at a toll plaza on the road asset operated by CGTL, has filed two first information reports at Police Station Gangrar, Chittorgarh in relation to (i) misbehaviour of certain individuals when asked to pay toll and (ii) theft of Rs. 0.62 million from the cash room at the toll plaza. **Current Status:** The matters are currently pending.	0.62
2	Criminal Litigation	Raila Police Station, Bhilwara, Rajasthan	**Background of the case:** Rohit Sharma, a supervisor at a toll plaza on the road asset operated by CGTL, has filed a first information report at Raila Police Station, Bhilwara against the driver of a truck trailer in relation to a collision with the toll booth and injuries caused to the supervisor. **Current Status:** The matter is currently pending.	Not quantified
3	Indirect Tax Matters (GST) – FY 2017-18	Supreme Court (SLP)	**Background of the case:** The GST Department issued an order under Section 73 demanding Rs. 196.34 million towards tax, interest and penalty relating to GST applicability on works contract services. The Company challenged the order before the High Court of Jodhpur by way of writ petition. Pursuant to the Court's directions, the Appellate Authority disposed of the matter against the Company. The Company filed a further writ petition, which the High Court disposed of, upholding the tax demand on BOT contracts under works contract services. **Current Status:** The Company has filed a miscellaneous application before the High Court seeking clarification and has also filed a Special Leave Petition before the Supreme Court.	196.34
4	Indirect Tax Matters (GST) – FY 2018-19, 2019-20 and 2020-21	Rajasthan High Court (Jodhpur)	**Background of the case:** The GST Department issued orders under Section 73 demanding Rs. 913.58 million (FY 2018-19), Rs. 778.84 million (FY 2019-20) and Rs. 81.95 million (FY 2020-21) on similar grounds relating to non-discharge of GST on works contract services. The Company's appeals before the Appellate Authority were decided against the Company. **Current Status:** The Company has filed writ petitions before the High Court of Jodhpur. The matters are pending for hearing and final disposal.	1,774.37
5	Indirect Tax Matters (GST) – FY 2021-22	Appellate Authority	**Background of the case:** An order under Section 73 was issued demanding Rs. 156.77 million towards GST on works contract services. The Company has filed an appeal before the Appellate Authority. **Current Status:** The matter is pending for hearing and final disposal.	156.77

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

Sr. No	Matter	Pending Before	Particulars	Amount Involved (INR Million)
MVR – M.V.R. Infrastructure and Tollway Limited				
1	Arbitration with NHAI	Delhi High Court (review petition)	**Background of the case:** MVR entered into a contract with NHAI for design, construction, development, finance, operation and maintenance of a proposed flyover. A dispute arose on change in scope of work under the concession agreement; the claim was rejected by NHAI, leading to invocation of arbitration. MVR claimed Rs. 51.44 million towards positive change of scope (construction of additional arm of flyover) and Rs. 2.46 million towards negative change of scope (deletion of 19 hume pipe culverts). Pursuant to an award dated 17 February 2022, NHAI was directed to pay Rs. 48.97 million. NHAI's challenge under Section 34 of the Arbitration and Conciliation Act, 1996 was dismissed by the Delhi High Court. NHAI's further appeal under Section 37 was also dismissed by order dated 9 August 2023, with liberty granted to NHAI to file a review petition. **Current Status:** The review petition filed by NHAI is currently pending.	48.97 + interest @ 8% pa wef 17.02.2022
2	Indirect Tax Matters (GST)	Appellate Authority	**Background of the case:** For FY 2020-21 and 2021-22, the GST Department completed audits under Section 65 of the CGST Act, 2017 and issued orders under Section 73 imposing penalties aggregating to Rs. 0.10 million for non-disclosure of revenue shared with NHAI in Form GSTR-9C. The Company has filed appeals before the Appellate Authority. **Current Status:** The appeals are pending for hearing and final disposal.	0.1

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)
IRBSD – IRB Surat Dahisar Tollway Limited				
1	Civil Litigation	Bombay High Court	**Background of the case:** Vasantrai Harilal Gohil and Vijay Vasantrai Gohil (the "Plaintiffs") filed a special civil suit before the Civil Judge (Senior Division), Vasai against IRB Infrastructure Developers Limited (the "Sponsor"), IRBSD and others, alleging that on 5 January 2011 certain employees of the Sponsor acted violently towards them at the Khanivade toll plaza, Taluka Vasai, when they could not provide change, and that they were chased, threatened and beaten, resulting in serious injuries. The Plaintiffs seek payment of medical expenses of Rs. 0.5 million and damages of Rs. 50 million with interest, disclosure on oath of movable and immovable property of the Sponsor and directors, and a charge of Rs. 50.5 million over such property until the decretal amount is paid. The Plaintiffs applied to add IRBSD as a necessary party; IRBSD, its directors and employees filed replies. By order dated 9 July 2019, the Vasai Court directed the respondents, jointly and severally, to pay Rs. 5 million with interest at 9% p.a. to the Plaintiffs. **Current Status:** IRBSD has filed a writ petition in the Bombay High Court challenging the order. Separately, the Plaintiffs have also challenged the order before the Bombay High Court. Both matters are pending.	50.5 + interest
2	Public Interest Litigation (PIL)	Bombay High Court	**Background of the case:** Jimmy Gonsalves and another (the "Petitioners") filed a PIL before the Bombay High Court against MoRTH, NHAI, IRBSD, Ideal Road Builders Private Limited and others, alleging that commuters face hardship due to traffic at Varsova creek bridge and that IRBSD has denied its duty to build a new bridge. They seek a direction to MoRTH to take steps for construction of a third bridge on Varsova creek and exemption from toll for all vehicles travelling from Khaniwade toll on NH-8 and Ghodbunder Road toll on the state highway until completion of the new bridge. **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)
IDAA – IDAA Infrastructure Limited				
1	Indirect Tax Matters (VAT)	Gujarat Value Added Tax Tribunal, Ahmedabad	**Background of the case:** For FY 2008-09 and 2009-10, the Gujarat VAT Department issued a final order amounting to Rs. 9.37 million on account of alleged non-payment of VAT on the profit margin in works contract activities. The Company has filed an appeal before the Gujarat Value Added Tax Tribunal, Ahmedabad. **Current Status:** The matter is pending for final disposal.	9.37

Source(s): Management information

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Annexure 3f: Statement of assets as at 30 September 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	1,218	0	1,218	81
IRB Pathankot Amritsar Toll Road Limited	0	1,082	423	1,504	49
IRB Talegaon Amravati Toll Road Limited	0	495	-	495	41
IRB Tumkur Chitradurga Tollway Limited	0	6,681	0	6,681	80
MVR Infrastructure and Tollways Limited	(0)	-	-	(0)	122
VK1 Expressway Limited	-	-	979	979	167
Kaithal Tollway Limited	-	0	1,893	1,893	22
Kishangarh Gulabpura Tollway Limited	-	0	1,531	1,531	127
IRB Hapur Moradabad Tollway Limited	-	0	2,772	2,772	84
VM7 Expressway Private Limited	-	-	972	972	248
Solapur Yedeshi Tollway Limited	-	1,252	-	1,252	48
Chittorgarh Gulabpura Tollway Limited	0	1,940	-	1,940	259
IRB Surat Dahisar Tollway Limited	-	-	-	-	523
IDAA Infrastructure Limited	-	-	-	-	176

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









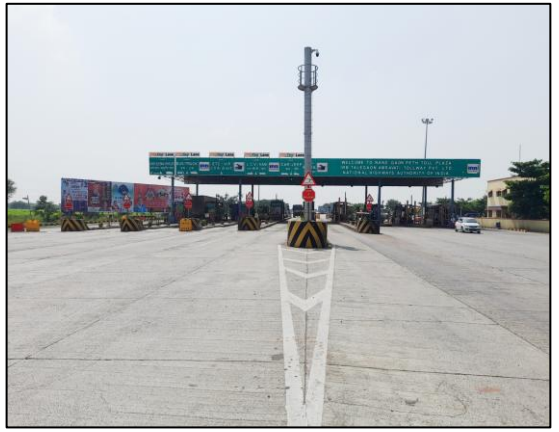
Source(s): Site visits conducted in March / April / May 2026

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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









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

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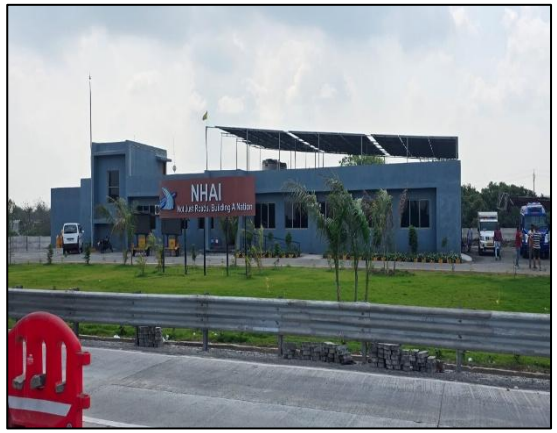
Annexure 3g: Site pictures – VK1



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

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Annexure 3g: Site pictures – VM7









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Annexure 3g: Site pictures - KTL









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

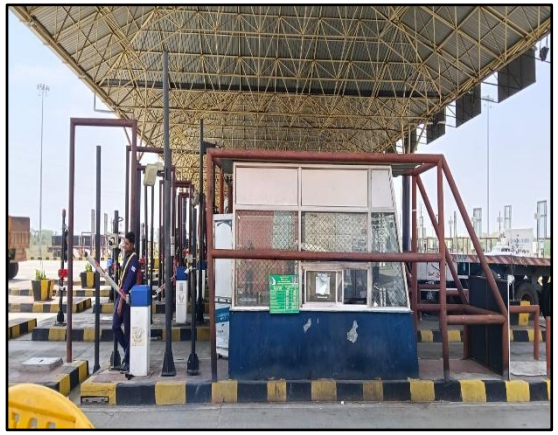
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Annexure 3g: Site pictures - KGTL





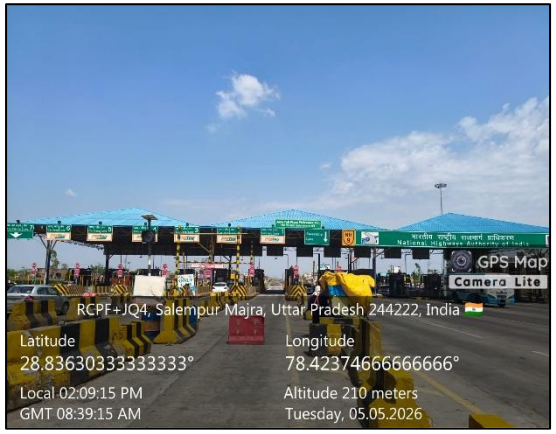




Source(s): Site visits conducted in March / April / May 2026

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Annexure 3g: Site pictures - IHMTL









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

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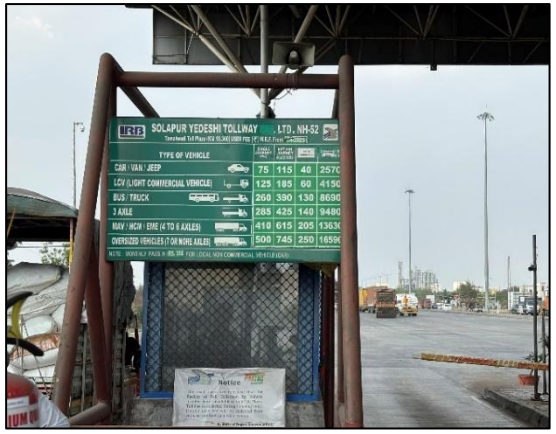
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Annexure 3g: Site pictures - SYTL









Source(s): Site visits conducted in December 2025 – April 2026.

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Annexure 3g: Site pictures - CGTL



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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 (1/3)

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.
Capital Infra Trust	Capital Infra Trust, an infrastructure investment trust, focuses on investing in infrastructure projects primarily national highways in India. The company was formerly known as National Infrastructure Trust and changed its name to Capital Infra Trust in October 2024. The company was founded in 2023 and is based in Gurugram, 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 & Others 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.
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 was set up by National Highways Authority of India (NHAI). The Trust was registered as an Infrastructure Investment Trust on 28th October 2020, under the Securities and Exchange Board of India (Infrastructure Investment Trusts) Regulations, 2014. The Investment objectives of the Trust are to carry on the activities of, and to make investments, as an Infrastructure Investment Trust, as permissible in terms of the applicable law.

Source: S&P Capital IQ

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Annexure 4: Comparable companies business description (2/3)

Company	Description
Energy Infrastructure Trust	Energy Infrastructure Trust, previously known as India Infrastructure Trust is an infrastructure investment trust, engaging 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.
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 (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 as an infrastructure investment trust under the Securities and Exchange Board of India (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
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.

Source: S&P Capital IQ

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Annexure 4: Comparable companies business description (2/3)

Company	Description
Raajmarg Infra Investment Trust	Raajmarg Infra Investment Trust operates as an infrastructure investment trust. Raajmarg Infra Investment Trust was founded in 2025 and is based in New Delhi, India.
Citius TransNet Investment Trust	Citius TransNet Investment Trust focuses on investing in transport infrastructure assets primarily in India. The company holds a portfolio of transport sector assets, including road assets highways. It also engages in the construction and operation of highways. The company was founded in 2025 and is based in Mumbai, India. Citius TransNet Investment Trust operates as a subsidiary of Epic TransNet Infrastructure Private Limited.
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 Kms 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.
Cube Highways Trust	Cube Highways Trust is an infrastructure investment trust focused on owning, operating and managing road and highway assets in India through the public-private partnership model. The Trust operates a portfolio of 27 road assets spanning an aggregate length of approximately 2,005 kilometers (8,754 lane kilometers) across 12 states and one union territory in India. Cube InvIT is registered with the Securities and Exchange Board of India under the InvIT Regulations

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%	1,615
IRB Pathankot Amritsar Toll Road Limited	100%	1,742
IRB Talegaon Amravati Tollway Limited	100%	523
IRB Tumkur Chitradurga Tollway Limited	100%	1,268
VK1 Expressway Limited	100%	735
VM7 Expressway Limited	100%	1,107
Kaithal Tollway Limited	100%	2,549
Kishangarh Gulabpura Tollway Limited	100%	1,786
IRB Hapur Moradabad Tollway Limited	100%	2,905
Solapur Yedeshi Tollway Limited	100%	751
Chittorgarh Gulabpura Tollway Limited	100%	1,704
Total		**16,685**

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 11 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 27 October 2026 ("LoE"). This letter of engagement is preceded by signed undertaking dated 16 October 2026 ("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 30 September 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 2026 and provisional financial statements of the SPVs for the period from 01 April 2026 to 30 September 2026. Additionally, our analysis is based on the business plan of the SPVs for the period from 1 October 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







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

GMD CONSULTANTS ★ NAVI MUMBAI ★

GMD Consultants
503, Mayuresh Chambers Premises, Sector 11,
Plot No 60, CBD Belapur, Navi Mumbai - 400614,
Maharashtra, India
T: +91-22-2756 5313 / +91-22-2756 4586.
Web : www.gmdconsultants.in

OCTOBER 2026

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)



OCTOBER 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, 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, more than 95% in both plazas. 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, April 2025 to February 2026 and now concessionaire has provided traffic data from April 2026 to August 2026, report is updated with this 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, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2023-24,2024-25,2025-26 and annual traffic data from April 2026 to August 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
		AADT for Five months from April 2026 to August 2026	Five months from April 2026 to August 2026	Five months from April 2026 to August 2026	Five months from April 2026 to August 2026	Five months from April 2026 to August 2026
		AADT for Year 2015-2016	For Year 2015-2016	For Year 2015-2016	For Year 2015-2016	For Year 2015-2016

SR. NO	LOCATION	CTV	Single Journey Traffic	Return Pass Traffic	Monthly Pass Traffic	Local Traffic
2	**Km 105.000 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	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
		AADT for Five months from April 2026 to August 2026	Five months from April 2026 to August 2026	Five months from April 2026 to August 2026	Five months from April 2026 to August 2026	Five months from April 2026 to August 2026

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

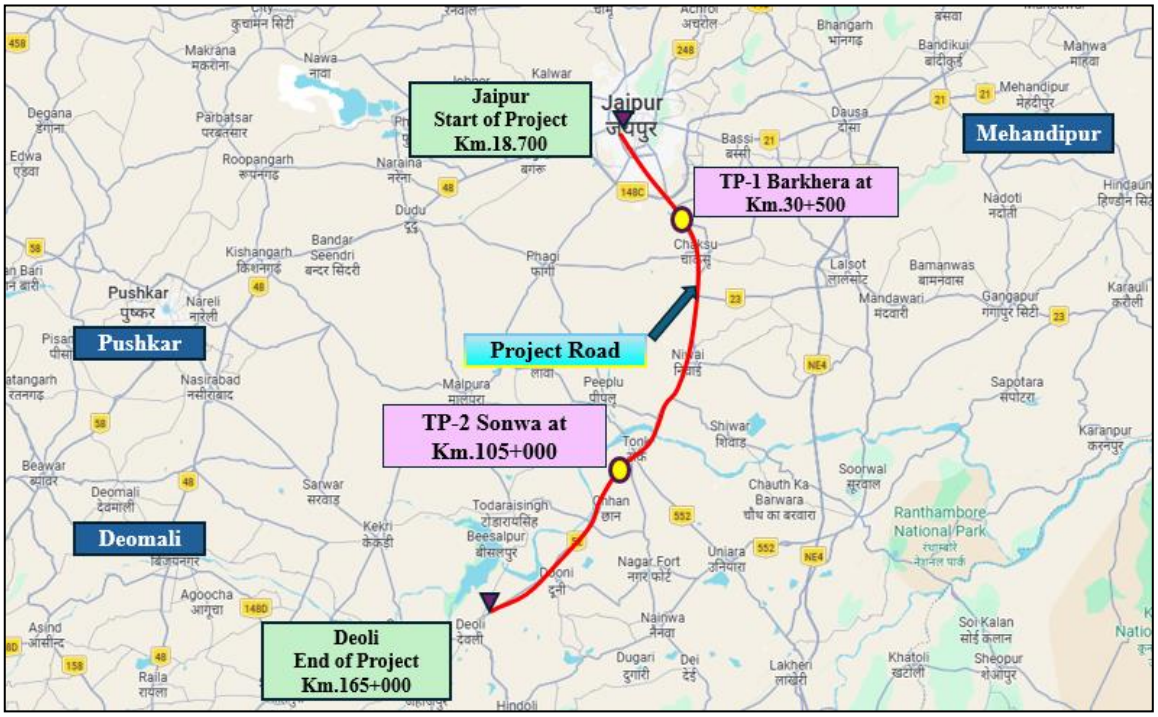


Figure 2-1: Toll Plaza Locations

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, 2025-26 & traffic data from April 2026 to August 2026.

Since the traffic data available for this update is for only Five months, from April 2026 to August 2026, it may not represent the whole year of traffic. Hence a seasonality factor for balance part of year has been applied to average traffic of the current Five months to arrive at Annual Average Daily Traffic of base year 2026-27. 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 2026-27.

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

Sr. No	Type of Vehicle	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	Annual Average Daily Traffic (Nos.) FY 2026-27
1	Car	9044	7684	8808	8880	9597	13334	15131
2	Minibus / LCV	1056	377	553	665	718	766	880
3	Truck / Bus	996	1178	1314	1266	1307	1321	1468
4	Multi Axle	1390	1616	2207	2362	2132	2092	2397
5	Oversized Vehicles	28	5	7	4	3	7	8
	Total	**12515**	**10860**	**12889**	**13176**	**13758**	**17520**	**19885**

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 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	Annual Average Daily Traffic (Nos.) FY 2026-27
1	Car	3736	3612	3918	4557	4454	5709	5388
2	Minibus/ LCV	573	235	363	497	514	486	432
3	Truck/Bus	767	913	914	1243	1316	1127	1019
4	Multi Axle	1556	2031	2203	2529	2872	3068	3196

Sr. No	Type of Vehicle	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	Annual Average Daily Traffic (Nos.) FY 2026-27
5	Oversized Vehicles	18	6	9	7	5	5	4
	Total	**6650**	**6798**	**7407**	**8832**	**9161**	**10394**	**10039**

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 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
	FY 2026-27	31679	1.59
105.000	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
	FY 2026-27	23493	2.34

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 54% of total traffic at toll plaza while multi axle and LCV are 32% and 4%. Truck/ Bus volume is 10% 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 ,2024-25,2025-26 and April 2026 to August 2026.

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

Sr. No	Type	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	Traffic Volume (Nos.) for FY 2026-27
1	Single Journey	6409	4900	5273	5325	5647	5693	4981
2	Return Journey	3676	5858	7502	7736	7982	7866	7764
3	Overweight vehicles	0	0	0	0	0	0	0
4	Monthly Pass	2430	102	114	115	129	140	89
5	Annual Pass car						3821	7051

A significant part of the traffic at KM 30.500 is return journey (39%) followed by single journey (25%), monthly passes which share 0% and Annual pass car is 36% 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 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	Traffic Volume (Nos.) for FY 2026-27
1	Single Journey	4475	3950	4082	5791	5912	5151	4002
2	Return Journey	1634	2816	3300	3018	3226	3488	3454
3	Overweight vehicles	0	0	0	0	0	0	0
4	Monthly Pass	541	32	25	23	23	28	23
5	Annual Pass car						1727	2560

Here single journey (40%) forms the highest portion of traffic followed by return journey (34%), monthly pass journey (0%) and Annual Pass car is (26%). 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.

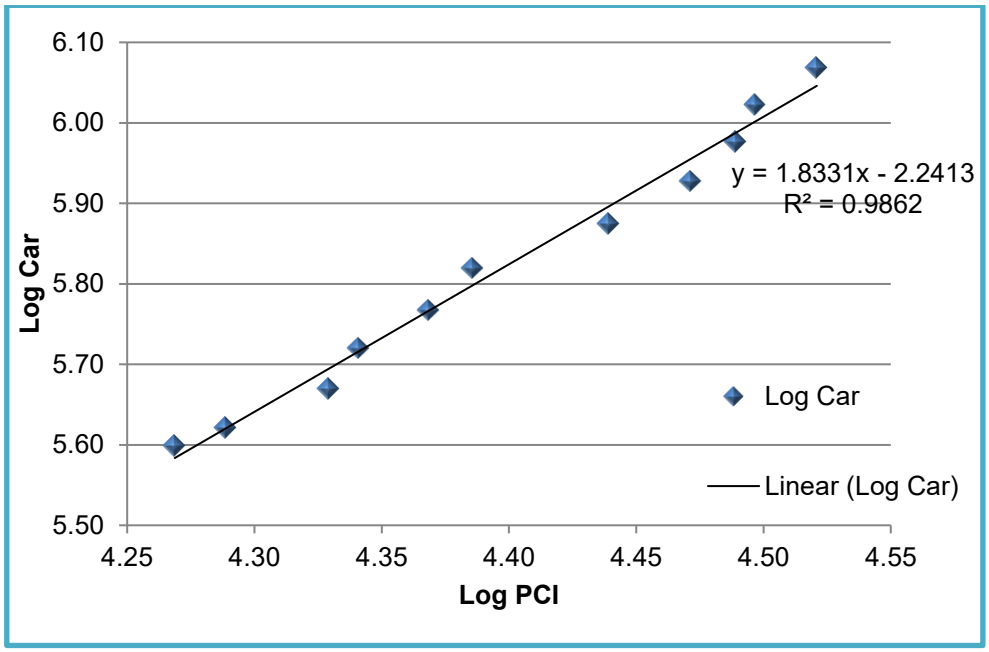


Figure 3-1: Regression and Elasticity PCI vs. Car-Extrapolation

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.

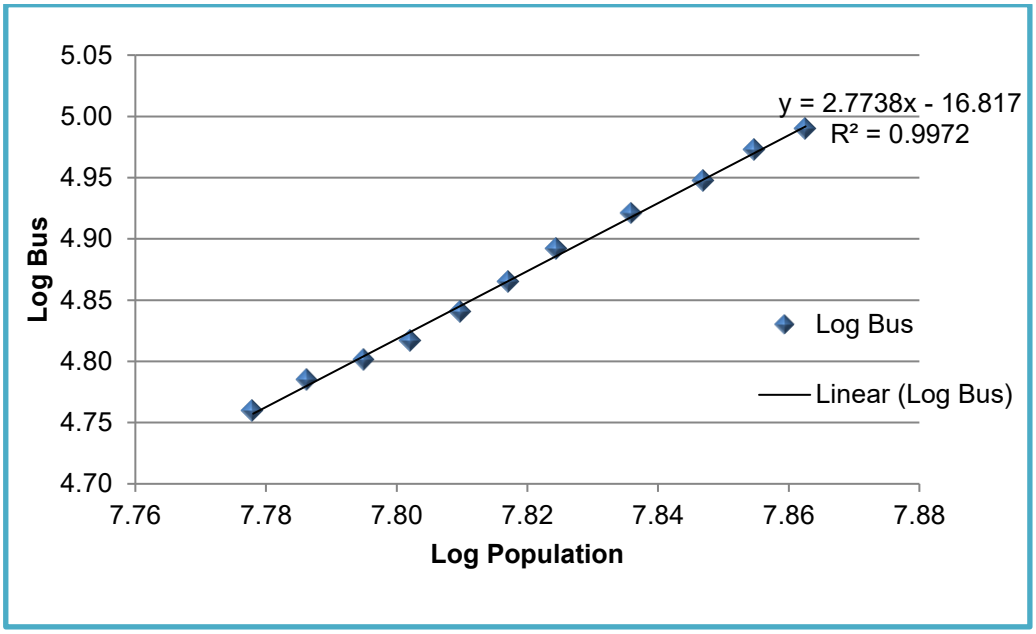


Figure 3-2: Regression and Elasticity Population vs. Bus – Extrapolation

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.

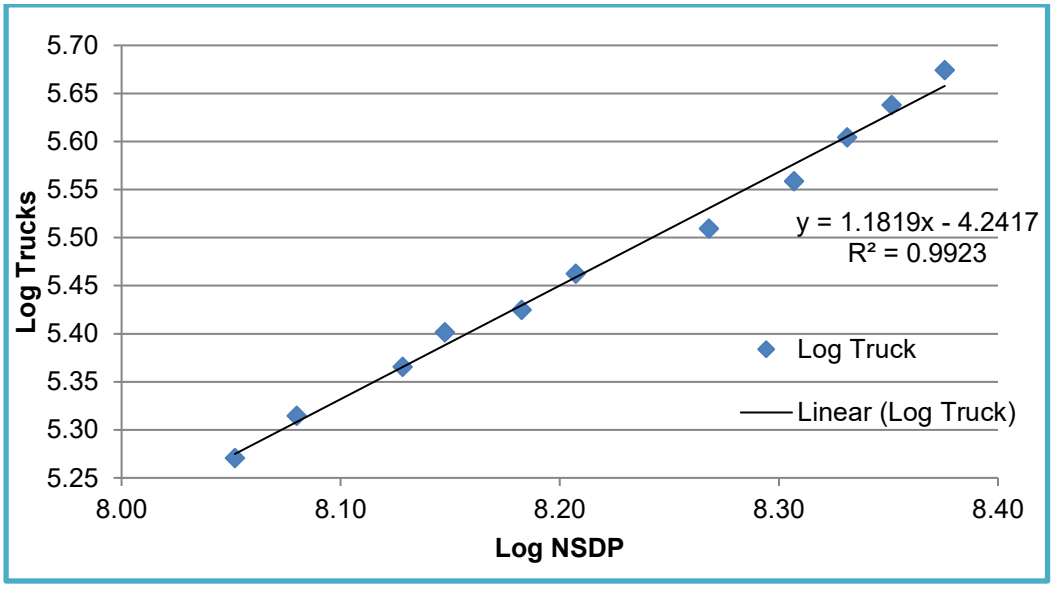


Figure 3-3: Regression and Elasticity NSDP vs. Goods Traffic – extrapolation.

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	R^2 = 0.9862	1.8331	6.03%	11.05%
	Bus	Population	y = 2.7738x - -16.8173	R^2 = 0.9972	2.7738	1.97%	5.46%
	Truck	NSDP	y = 1.1819x - -4.2417	R^2 = 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 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.

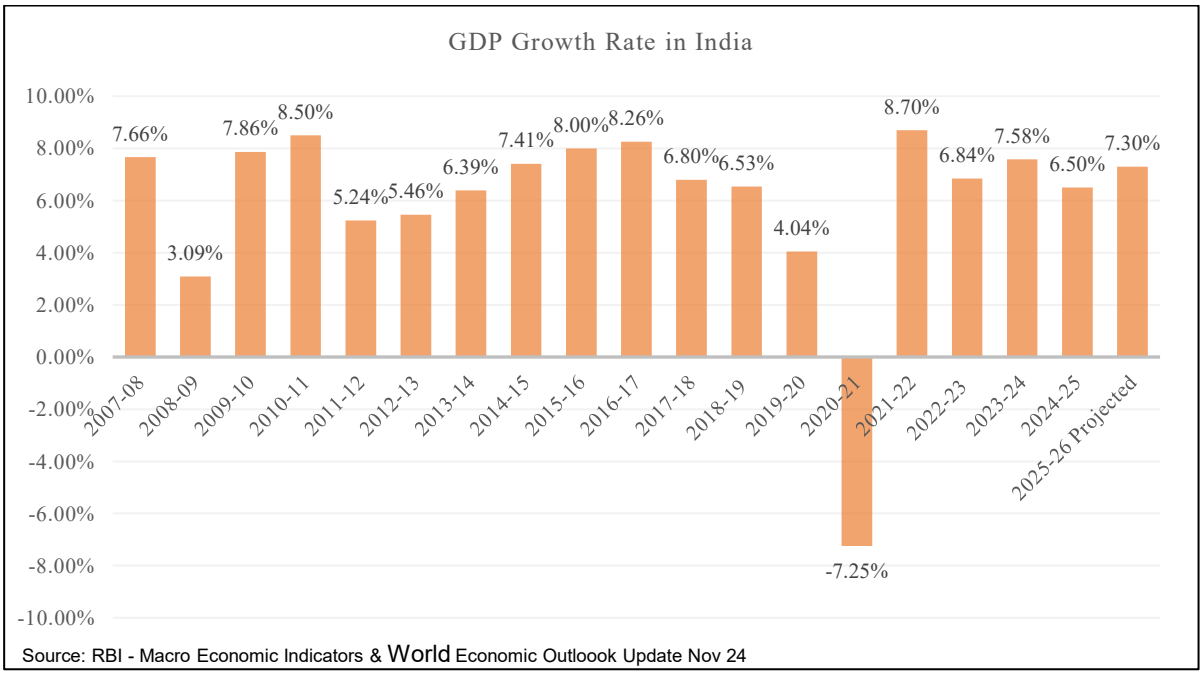


Figure 3-4 : Growth of GDP in India

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%

Year/ Vehicle Type	FY 2027-2030	FY 2031-2035	FY 2036-2040	FY 2041-2045
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	15131	880	1468	2397	8	**19885**	**31679**
2027-28	16273	925	1556	2520	8	**21282**	**33704**
2028-29	17500	973	1648	2647	8	**22776**	**35851**
2029-30	18820	1023	1746	2781	8	**24378**	**38143**
2030-31	20035	1068	1837	2903	8	**25851**	**40247**
2031-32	21329	1116	1932	3031	8	**27416**	**42474**
2032-33	22707	1166	2032	3164	8	**29077**	**44826**
2033-34	24173	1218	2138	3304	8	**30841**	**47318**
2034-35	25735	1273	2248	3449	8	**32713**	**49945**
2035-36	27137	1318	2348	3580	8	**34391**	**52304**
2036-37	28616	1365	2452	3716	8	**36157**	**54777**
2037-38	30174	1413	2561	3857	8	**38013**	**57369**
2038-39	31818	1463	2675	4004	8	**39968**	**60092**
2039-40	33552	1515	2795	4156	8	**42026**	**62947**
2040-41	35063	1556	2901	4291	8	**43819**	**65445**

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	5388	432	1019	3196	4	**10039**	**23493**
2027-28	5795	455	1079	3358	4	**10691**	**24844**
2028-29	6231	478	1143	3527	4	**11383**	**26266**
2029-30	6700	503	1212	3705	4	**12124**	**27781**
2030-31	7132	525	1275	3869	4	**12805**	**29173**
2031-32	7592	548	1341	4040	4	**13525**	**30635**
2032-33	8082	573	1410	4218	4	**14287**	**32170**
2033-34	8604	598	1483	4404	4	**15093**	**33786**
2034-35	9159	624	1560	4598	4	**15945**	**35484**
2035-36	9657	646	1629	4773	4	**16709**	**37010**
2036-37	10183	669	1702	4955	4	**17513**	**38608**
2037-38	10738	692	1778	5144	4	**18356**	**40276**
2038-39	11322	717	1857	5340	4	**19240**	**42016**
2039-40	11937	742	1940	5543	4	**20166**	**43832**
2040-41	12475	762	2014	5723	4	**20978**	**45431**

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	15131	880	1468	2397	8	**19885**	**31679**
2027-28	16121	916	1541	2494	8	**21080**	**33377**
2028-29	17176	954	1618	2595	8	**22351**	**35174**
2029-30	18299	994	1698	2700	8	**23699**	**37070**
2030-31	19298	1028	1769	2792	8	**24895**	**38747**
2031-32	20351	1064	1843	2887	8	**26153**	**40503**

Year	Car	Minibus /LCV	Truck/ Bus	Multi axle	Oversized Vehicles	Total No.	Total PCU
2032-33	21461	1100	1920	2985	8	**27474**	**42340**
2033-34	22633	1138	2000	3086	8	**28865**	**44263**
2034-35	23868	1178	2083	3191	8	**30328**	**46280**
2035-36	24929	1208	2156	3280	8	**31581**	**48005**
2036-37	26037	1239	2231	3372	8	**32887**	**49799**
2037-38	27195	1270	2308	3466	8	**34247**	**51657**
2038-39	28404	1303	2388	3564	8	**35667**	**53596**
2039-40	29666	1336	2471	3664	8	**37145**	**55607**
2040-41	30706	1358	2541	3747	8	**38360**	**57263**

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	5388	432	1019	3196	4	**10039**	**23493**
2027-28	5741	451	1070	3325	4	**10591**	**24608**
2028-29	6117	470	1123	3459	4	**11173**	**25774**
2029-30	6517	490	1179	3599	4	**11789**	**27002**
2030-31	6873	507	1228	3722	4	**12334**	**28084**
2031-32	7248	524	1279	3849	4	**12904**	**29210**
2032-33	7644	542	1332	3980	4	**13502**	**30381**
2033-34	8061	561	1388	4116	4	**14130**	**31607**
2034-35	8500	581	1446	4256	4	**14787**	**32880**
2035-36	8878	596	1496	4376	4	**15350**	**33970**
2036-37	9273	611	1547	4499	4	**15934**	**35094**
2037-38	9686	626	1600	4626	4	**16542**	**36260**
2038-39	10116	642	1655	4756	4	**17173**	**37464**

Year	Car	Minibus /LCV	Truck/ Bus	Multi axle	Oversized Vehicles	Total No.	Total PCU
2039-40	10566	659	1713	4890	4	**17832**	**38716**
2040-41	10937	670	1761	5001	4	**18373**	**39747**

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	15131	880	1468	2397	8	**19885**	**31679**
2027-28	16197	921	1548	2506	8	**21180**	**33536**
2028-29	17338	964	1633	2621	8	**22564**	**35513**
2029-30	18558	1009	1722	2741	8	**24038**	**37608**
2030-31	19663	1049	1802	2848	8	**25370**	**39495**
2031-32	20835	1090	1887	2959	8	**26779**	**41483**
2032-33	22076	1133	1975	3075	8	**28267**	**43574**
2033-34	23391	1178	2067	3195	8	**29839**	**45772**
2034-35	24784	1225	2164	3320	8	**31501**	**48090**
2035-36	26010	1263	2250	3429	8	**32960**	**50121**
2036-37	27297	1301	2339	3542	8	**34487**	**52241**
2037-38	28648	1341	2431	3659	8	**36087**	**54454**
2038-39	30065	1382	2528	3781	8	**37764**	**56773**
2039-40	31553	1424	2628	3906	8	**39519**	**59186**
2040-41	32816	1455	2714	4013	8	**41006**	**61235**

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	5388	432	1019	3196	4	**10039**	**23493**
2027-28	5768	453	1075	3342	4	**10642**	**24730**
2028-29	6174	474	1133	3495	4	**11280**	**26030**
2029-30	6609	496	1194	3654	4	**11957**	**27396**
2030-31	7002	516	1250	3797	4	**12569**	**28630**
2031-32	7419	536	1308	3945	4	**13212**	**29918**
2032-33	7861	557	1369	4100	4	**13891**	**31272**
2033-34	8329	579	1432	4260	4	**14604**	**32681**
2034-35	8825	602	1499	4426	4	**15356**	**34160**
2035-36	9260	620	1558	4572	4	**16014**	**35456**
2036-37	9718	639	1619	4723	4	**16703**	**36805**
2037-38	10198	659	1683	4880	4	**17424**	**38214**
2038-39	10703	679	1750	5042	4	**18178**	**39679**
2039-40	11233	699	1819	5208	4	**18963**	**41192**
2040-41	11683	714	1879	5352	4	**19632**	**42493**

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.

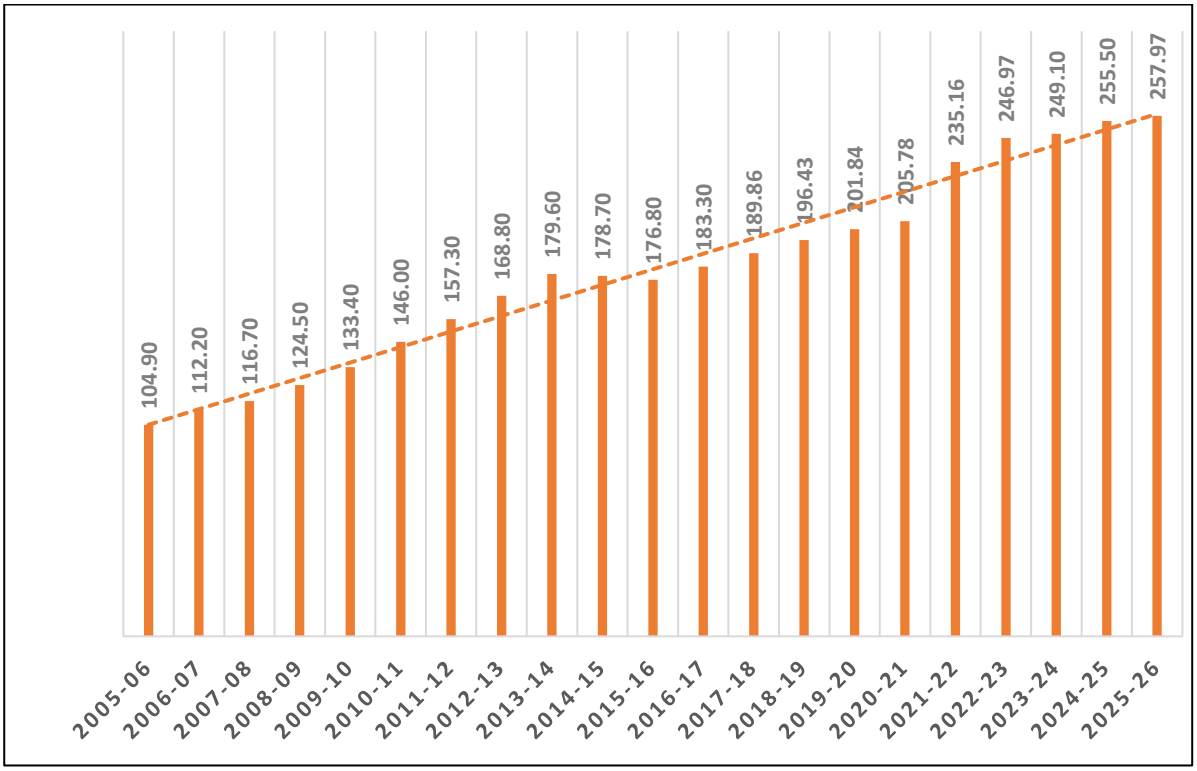


Figure 5-1 : Historical Rate of WPI Inflation in India

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	235.16	246.97	249.10	255.50	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
Bus or Truck (2 Axle)	2.2
Three Axle commercial vehicles	2.4

Type of Vehicle	Base Rate of Fee / Km (in Rs.)
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 vehicles 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	134.35	94.72	**229.07**
2027-28	149.82	105.15	**254.96**
2028-29	164.71	115.98	**280.69**
2029-30	182.81	128.38	**311.18**
2030-31	203.81	140.99	**344.80**
2031-32	224.98	155.37	**380.35**
2032-33	250.07	170.39	**420.46**

Year	Toll at Plaza 30.500	Toll at Plaza 105.000	Total
2033-34	272.64	186.79	**459.43**
2034-35	303.34	206.57	**509.91**
2035-36	334.28	225.61	**559.89**
2036-37	364.81	246.01	**610.82**
2037-38	401.14	268.10	**669.23**
2038-39	440.54	293.27	**733.82**
2039-40	483.20	322.34	**805.54**
2040-41	524.77	348.26	**873.03**

Table 5-19 : Toll Revenue Pessimistic Scenario

(Rs. Crores)

Year	Toll at Plaza 30.500	Toll at Plaza 105.000	Total
2026-27	134.35	94.72	**229.07**
2027-28	148.46	104.15	**252.62**
2028-29	161.71	113.76	**275.47**
2029-30	177.78	124.70	**302.48**
2030-31	196.31	135.71	**332.02**
2031-32	214.63	148.10	**362.73**
2032-33	236.29	160.82	**397.11**
2033-34	255.15	174.63	**429.78**
2034-35	281.21	191.23	**472.45**
2035-36	306.95	206.89	**513.84**
2036-37	331.80	223.49	**555.29**
2037-38	361.35	241.22	**602.57**
2038-39	393.14	261.35	**654.49**

Year	Toll at Plaza 30.500	Toll at Plaza 105.000	Total
2039-40	427.13	284.57	**711.70**
2040-41	459.49	304.50	**763.99**

Table 5-20 : Toll Revenue Most Likely Scenario

(Rs. Crores)

Year	Toll at Plaza 30.500	Toll at Plaza 105.000	Total
2026-27	134.35	94.72	**229.07**
2027-28	149.13	104.65	**253.78**
2028-29	163.22	114.91	**278.13**
2029-30	180.32	126.54	**306.86**
2030-31	200.05	138.34	**338.38**
2031-32	219.78	151.72	**371.50**
2032-33	243.14	165.56	**408.71**
2033-34	263.83	180.66	**444.49**
2034-35	292.19	198.84	**491.03**
2035-36	320.45	216.15	**536.60**
2036-37	348.09	234.60	**582.70**
2037-38	380.93	254.46	**635.39**
2038-39	416.42	277.06	**693.47**
2039-40	454.54	303.09	**757.63**
2040-41	491.26	325.91	**817.17**

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 cosst.

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	28.70	6.52	-	**36.01**
2031-32	30.67	7.01	-	**38.53**
2032-33	32.01	7.54	13.07	**53.52**
2033-34	33.39	8.11	118.29	**160.77**
2034-35	34.83	8.72	75.39	**119.99**
2035-36	36.45	9.38	-	**46.96**
2036-37	38.01	10.09	-	**49.31**
2037-38	39.61	10.86	-	**51.77**
2038-39	41.28	11.68	-	**54.36**
2039-40	43.16	12.57	21.23	**57.23**
2040-41	25.25	7.59	19.39	**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

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Figure 8-2 : General Condition



Figure 8-3 : General Condition



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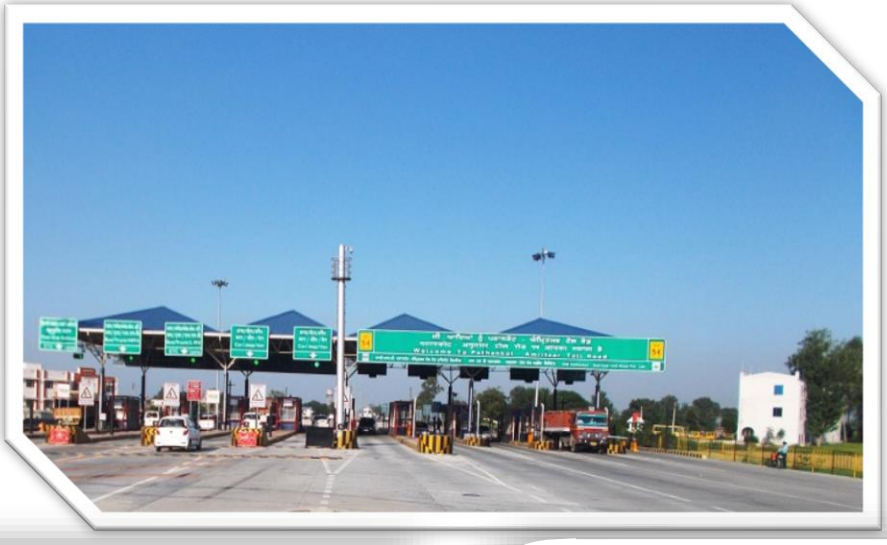
GMD Consultants
503, Mayuresh Chambers, Plot No. 60, Sector -11,
CBD Belapur, Navi Mumbai. 400 614. Maharashtra.
Phone : +91-22-2756 4586 / 2756 5313
Email : info@gmdconsultants.in
Web : www.gmdconsultants.in

IRB InvIT Fund

PATHANKOT TO AMRITSAR SECTION OF NH-15

(KM 6.082 TO 108.502)

IN THE STATE OF PUNJAB







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

GMD CONSULTANTS NAVI MUMBAI

GMD Consultants

503, Mayuresh Chambers, Plot No. 60, Sector -11,
CBD Belapur, Navi Mumbai. 400 614. Maharashtra.
Phone : +91-22-2756 4586 / 2756 5313
Email : info@gmdconsultants.in
Web : www.gmdconsultants.in

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OCTOBER 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	**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 was 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 and April 2025 to March 2026 was available, this report was updated taking this latest traffic data into consideration. Hence the data from April-2026 to August 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 2025-26 and now Annual traffic data from April 2026 to August 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 2023-24,2024-25,2025-26 and now Annual traffic data from April 2026 to August 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 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
		AADT for Year 2025-2026	For Year 2025-26	For Year 2025-2026	For Year 2025-2026	For Year 2025-2026
		AADT for Five months from April to August, 2026	AADT for Five months from April to August, 2026	AADT for Five months from April to August, 2026	AADT for Five months from April to August, 2026	AADT for Five months from April to August, 2026

SR. NO	LOCATION	CTV	Single Journey Traffic	Return Pass Traffic	Monthly Pass Traffic	Local Traffic
2	**Km 88.50 Toll Plaza**	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
		AADT for Year 2025-2026	For Year 2025-26	For Year 2025-2026	For Year 2025-2026	For Year 2025-2026
		AADT for Five months from April to August, 2026	AADT for Five months from April to August, 2026	AADT for Five months from April to August, 2026	AADT for Five months from April to August, 2026	AADT for Five months from April to August, 2026

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

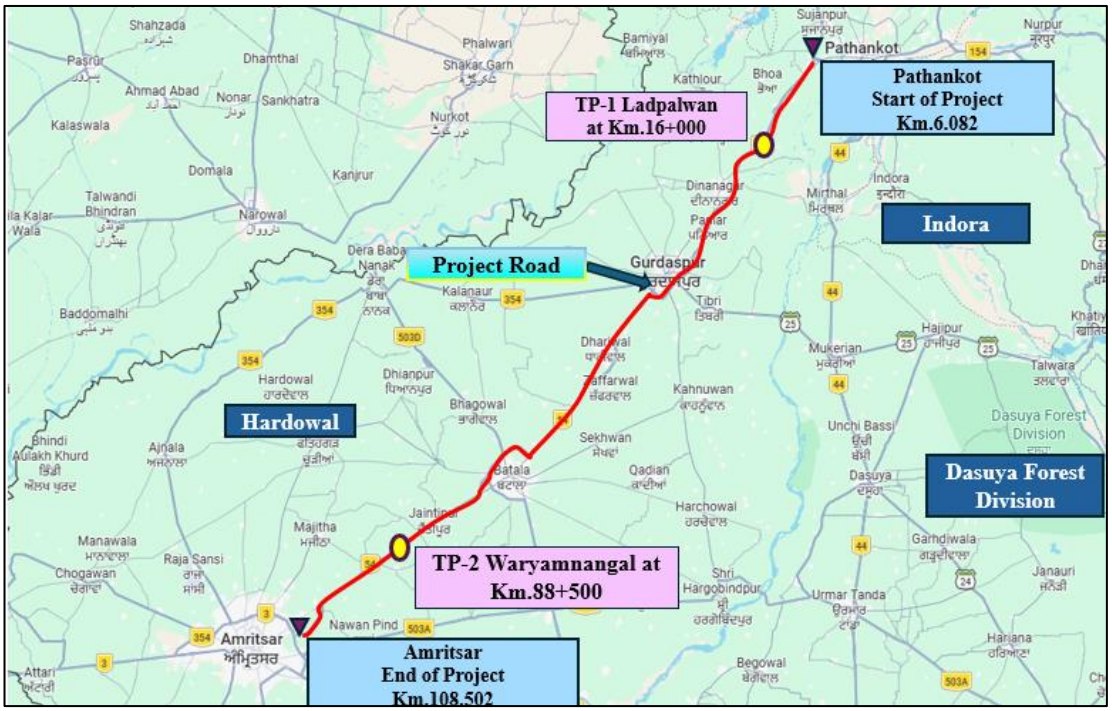


Figure 2-1: Toll Plaza Locations

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

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 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, 2025-26 & traffic data from April 2026 to August 2026.

Since the traffic data available for this update is for only Five months, from April 2026 to August 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 Five months to arrive at Annual Average Daily Traffic of base year 2026-27. Thus, annual derived 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 2026-27.

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

Sr. No	Type of Vehicle	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	Annual Average Daily Traffic (Nos.) 2026-27
1	Car	5404	5888	5808	5757	6890	7188
2	Minibus / LCV	660	383	306	269	246	248
3	Truck / Bus	738	1087	1116	1143	1125	1155
4	Multi Axle	2013	2134	1986	1843	1826	1996
5	Oversized Vehicles	16	10	6	5	5	3
	Total	**8831**	**9502**	**9222**	**9017**	**10092**	**10590**

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.) 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	Annual Average Daily Traffic (Nos.) 2026-27
1	Car	6284	8064	7714	7858	9592	8650

Sr. No	Type of Vehicle	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	Annual Average Daily Traffic (Nos.) 2026-27
2	Minibus/ LCV	496	248	189	181	172	168
3	Truck/Bus	395	892	954	1002	1051	1086
4	Multi Axle	1181	1498	1458	1490	1543	1885
5	Oversized Vehicles	62	8	4	5	14	5
	Total	**8418**	**10710**	**10318**	**10535**	**12371**	**11794**

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

Vehicle Type	PCUs
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
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
FY 2026-27	16.00	10590	20020	1.89
	88.50	11794	20664	1.75

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 19% of total traffic. 11% of traffic is Truck /Bus while LCV traffic forms the balance 2%. Overall, about 27% of traffic is commercial in nature.

At toll plaza location Km 88.50 car traffic forms 73% 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 22% 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.) 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	Traffic Volume (Nos.) 2026-27
1	Single Journey	3786	4674	4313	4165	3753	3558
2	Return Journey	1924	4676	4770	4698	4436	3920
3	Monthly Pass	3121	152	139	154	124	40

Sr. No	Type	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	Traffic Volume (Nos.) 2026-27
4	Annual Pass car					1779	3072

A significant part of the traffic at KM 16.00 is monthly and return journey, which is 0% and 37% respectively. The single journey component is 34%, and Annual Pass car is 29 %. 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 38% and 0% respectively. Single journey component is 30% and Annual Pass cars are 32%.

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

Sr. No	Type	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	Traffic Volume (Nos.) 2026-27
1	Single Journey	3406	5021	4458	4504	4139	3561
2	Return Journey	2332	5542	5740	5904	5692	4466
3	Monthly Pass	2680	149	120	127	107	52
4	Annual Pass car					2424	3715

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.

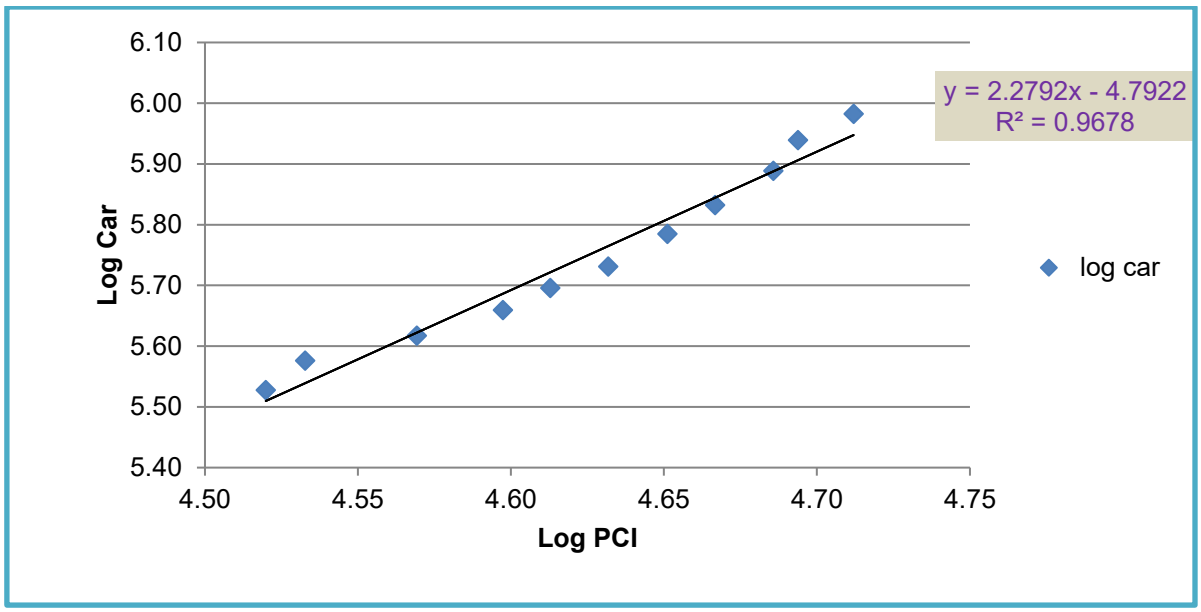


Figure 3-1: Regression and Elasticity PCI vs. Car-Extrapolation

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.

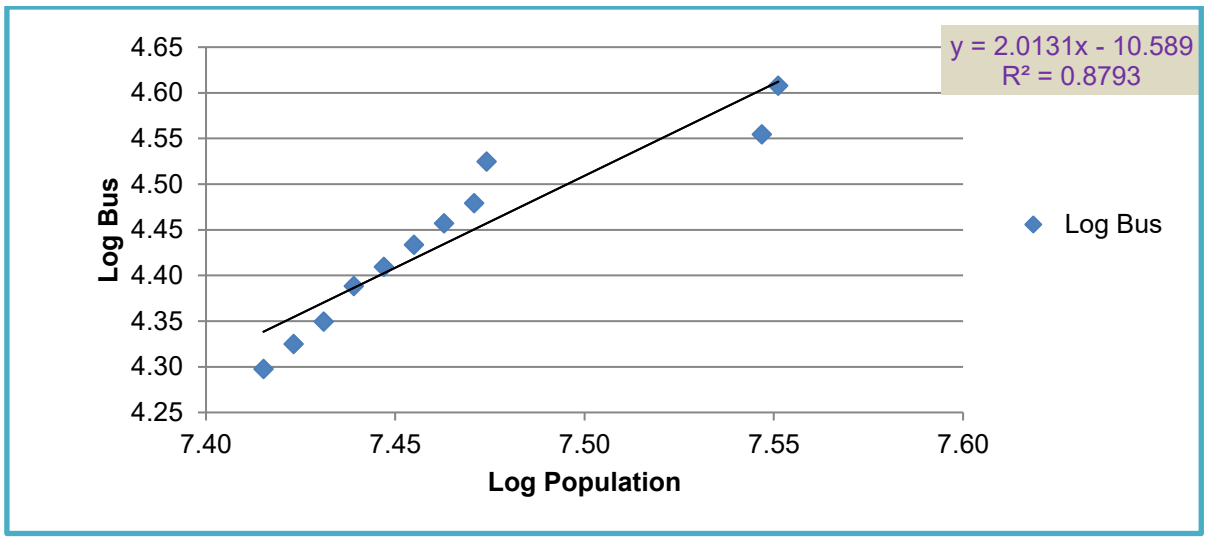


Figure 3-2: Regression and Elasticity Population vs. Bus – Extrapolation

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.

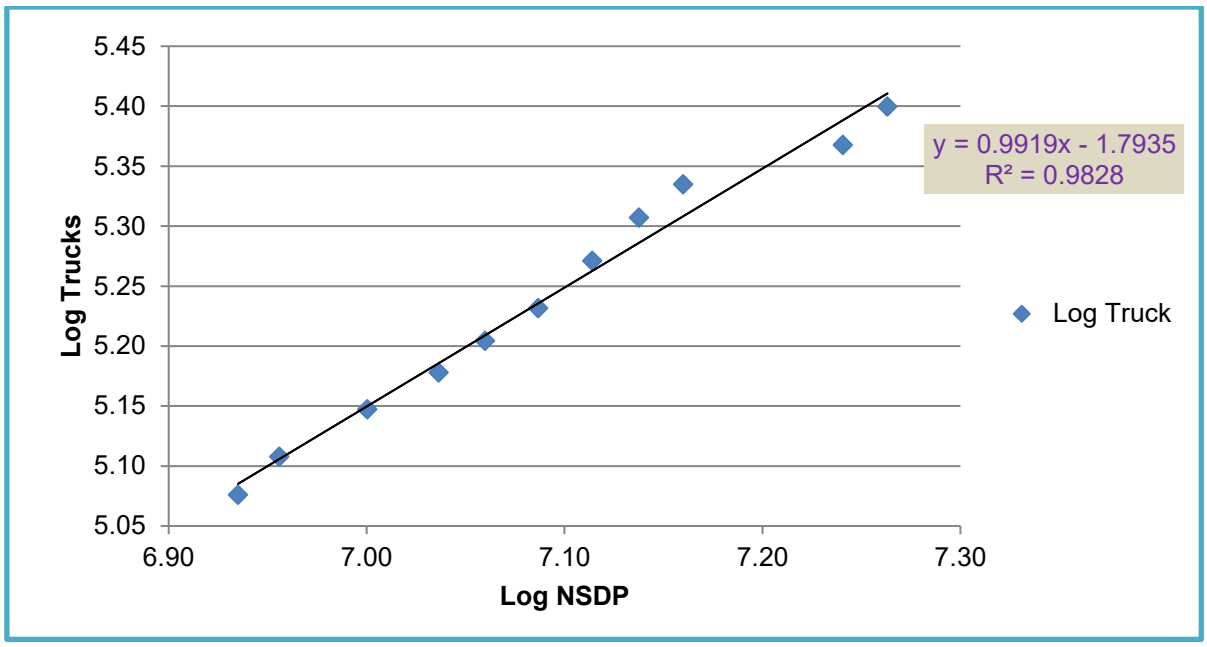


Figure 3-3: Regression and Elasticity NSDP vs. Goods Traffic – extrapolation.

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. 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.

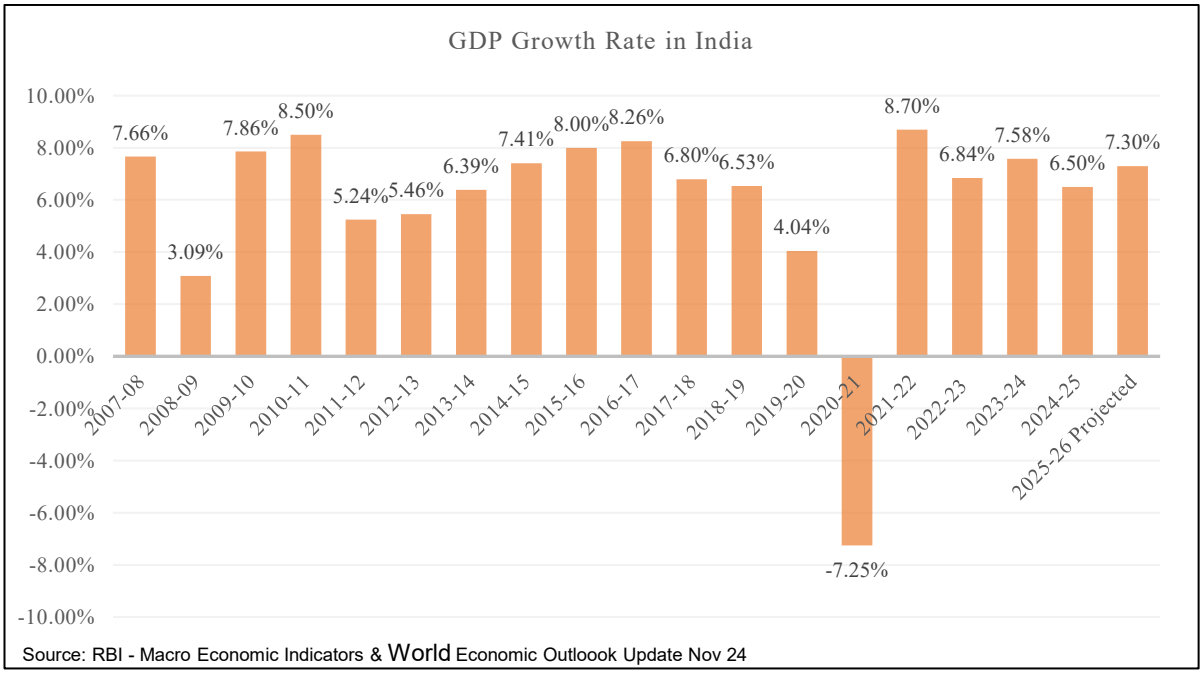


Figure 3-4 : Growth of GDP in India

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 J&K 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.

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.

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%

Year/ Vehicle Type	FY 2026-27	FY 2028-32	FY 2033-37	FY 2038-42
LCV	5.90%	4.90%	3.90%	3.65%
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	7188	0	248	639	516	1996	3	**10590**	**20020**
2027-28	7680	0	261	665	538	2123	3	**11270**	**21248**
2028-29	8206	0	275	692	560	2259	3	**11995**	**22554**
2029-30	9259	0	307	763	617	2538	3	**13487**	**25294**
2030-31	10448	0	343	841	679	2853	3	**15167**	**28374**
2031-32	11162	0	361	876	707	3035	3	**16144**	**30124**
2032-33	11814	0	376	903	729	3199	3	**17024**	**31683**
2033-34	12503	0	392	932	752	3372	3	**17954**	**33331**
2034-35	13233	0	409	961	775	3554	3	**18935**	**35061**
2035-36	14004	0	427	992	799	3746	3	**19971**	**36888**
2036-37	14822	0	445	1023	824	3948	3	**21065**	**38810**
2037-38	15613	0	463	1053	848	4152	3	**22132**	**40708**

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	8650	1	167	463	623	1885	5	**11794**	**20664**
2027-28	9242	1	176	482	649	2006	5	**12561**	**21950**
2028-29	9875	1	185	501	676	2135	5	**13378**	**23315**

Year	Car	Minibus	LCV	Truck	Bus	Multi axle	Oversized Vehicles	Total No.	Total PCU
2029-30	11142	1	206	552	744	2399	5	**15049**	**26159**
2030-31	12573	1	229	607	819	2696	5	**16930**	**29350**
2031-32	13433	1	241	631	853	2868	5	**18032**	**31176**
2032-33	14217	1	251	650	880	3023	5	**19027**	**32811**
2033-34	15047	1	261	670	907	3187	5	**20078**	**34535**
2034-35	15925	1	273	691	935	3358	5	**21188**	**36348**
2035-36	16854	1	285	712	964	3539	5	**22360**	**38259**
2036-37	17839	1	297	734	994	3730	5	**23600**	**40277**
2037-38	18792	1	309	755	1022	3922	5	**24806**	**42260**

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	7188	0	248	639	516	1996	3	**10590**	**20020**
2027-28	7572	0	257	656	529	2094	3	**11111**	**20949**
2028-29	7976	0	266	673	542	2196	3	**11656**	**21916**
2029-30	8881	0	292	731	588	2435	3	**12930**	**24247**
2030-31	9888	0	320	794	639	2700	3	**14344**	**26830**
2031-32	10416	0	333	815	656	2833	3	**15056**	**28090**
2032-33	10867	0	342	829	667	2944	3	**15652**	**29129**
2033-34	11338	0	351	843	678	3059	3	**16272**	**30206**
2034-35	11830	0	361	857	689	3178	3	**16918**	**31324**
2035-36	12345	0	372	871	700	3302	3	**17593**	**32489**
2036-37	12881	0	383	885	711	3432	3	**18295**	**33701**
2037-38	13377	0	393	897	721	3557	3	**18948**	**34840**

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	8650	1	167	463	623	1885	5	**11794**	**20664**
2027-28	9112	1	174	475	639	1977	5	**12383**	**21636**
2028-29	9600	1	181	488	655	2074	5	**13004**	**22657**
2029-30	10688	1	199	530	711	2300	5	**14434**	**25084**
2030-31	11900	1	219	576	772	2551	5	**16024**	**27776**
2031-32	12536	1	227	591	792	2676	5	**16828**	**29091**
2032-33	13081	1	234	601	805	2781	5	**17508**	**30188**
2033-34	13649	1	241	611	818	2890	5	**18215**	**31326**
2034-35	14241	1	248	621	831	3002	5	**18949**	**32502**
2035-36	14859	1	255	631	844	3118	5	**19713**	**33721**
2036-37	15504	1	262	641	858	3239	5	**20510**	**34994**
2037-38	16100	1	269	651	870	3358	5	**21254**	**36202**

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	7188	0	248	639	516	1996	3	**10590**	**20020**
2027-28	7643	0	259	662	534	2114	3	**11215**	**21146**
2028-29	8127	0	272	686	553	2238	3	**11879**	**22337**
2029-30	9129	0	302	752	606	2505	3	**13297**	**24942**
2030-31	10255	0	336	825	664	2802	3	**14885**	**27848**
2031-32	10905	0	352	856	688	2967	3	**15771**	**29430**
2032-33	11487	0	365	879	706	3112	3	**16552**	**30807**
2033-34	12100	0	379	902	724	3264	3	**17372**	**32248**
2034-35	12745	0	394	926	743	3424	3	**18235**	**33764**
2035-36	13425	0	409	950	762	3591	3	**19140**	**35347**
2036-37	14141	0	425	975	782	3768	3	**20094**	**37019**
2037-38	14827	0	440	998	800	3943	3	**21011**	**38638**

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	8650	1	167	463	623	1885	5	**11794**	**20664**
2027-28	9199	1	175	480	645	1996	5	**12501**	**21843**
2028-29	9783	1	183	497	668	2114	5	**13251**	**23089**
2029-30	10990	1	204	545	732	2365	5	**14842**	**25794**
2030-31	12347	1	227	598	802	2647	5	**16627**	**28823**
2031-32	13130	1	237	619	831	2803	5	**17626**	**30473**
2032-33	13830	1	246	636	853	2940	5	**18511**	**31920**
2033-34	14568	1	256	653	875	3085	5	**19443**	**33442**
2034-35	15345	1	266	670	898	3236	5	**20421**	**35034**
2035-36	16163	1	276	687	921	3395	5	**21448**	**36703**
2036-37	17026	1	286	705	946	3561	5	**22530**	**38456**
2037-38	17850	1	296	722	968	3727	5	**23569**	**40160**

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.

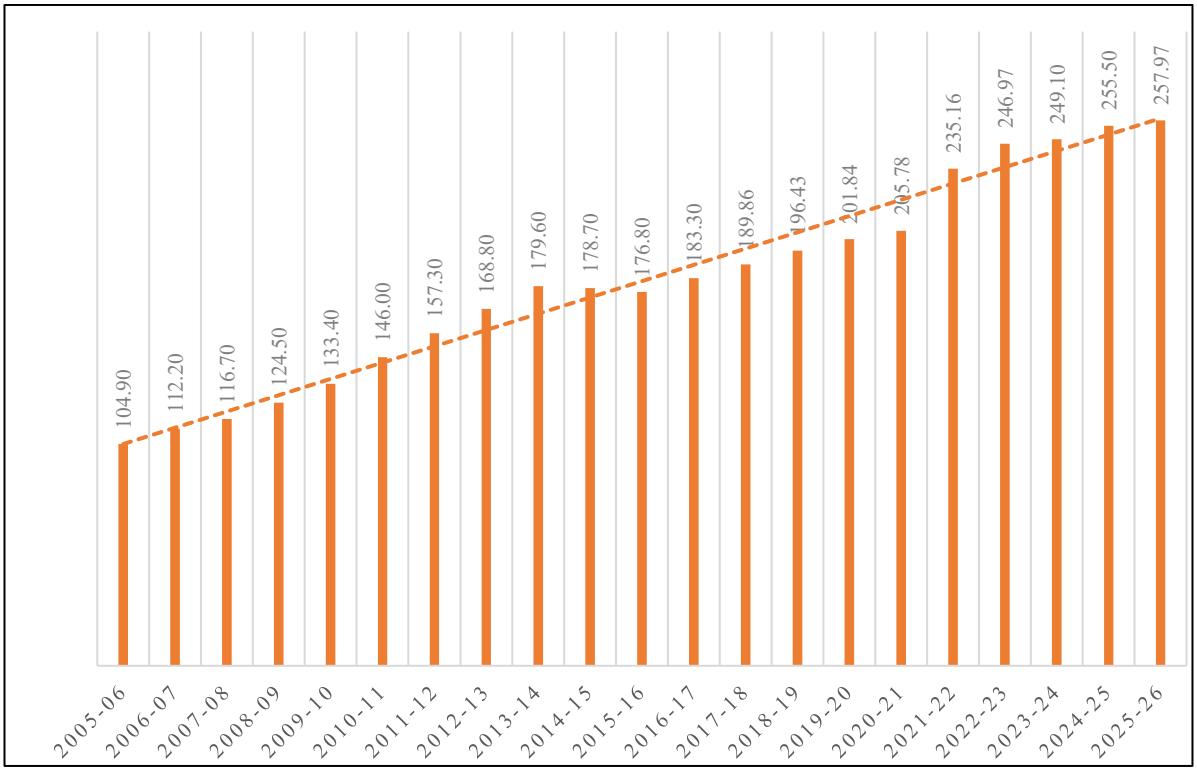


Figure 5-1 : Historical Rate of WPI Inflation in India

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	235.16	246.97	249.10	255.50	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, rates worked out 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

Year	Car
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 5-6 : 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
2035-36	6185	9615	19675	19675	30065	38455
2036-37	6485	10075	20625	20625	31515	40310

Year	Car/Jeep/Van	LCV	Truck	Bus	3 - Axle	Multi Axle
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 pessimistic, optimistic and 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	98.59	87.14	**185.74**
2027-28	108.97	96.58	**205.54**
2028-29	118.86	105.45	**224.31**
2029-30	138.35	114.80	**253.15**
2030-31	158.93	125.82	**284.75**
2031-32	175.62	139.54	**315.16**
2032-33	190.72	150.52	**341.24**
2033-34	206.62	163.70	**370.32**
2034-35	224.18	177.38	**401.56**
2035-36	244.63	194.35	**438.98**
2036-37	265.46	211.31	**476.76**
2037-38	286.50	228.58	**515.09**

Table 5-12 : Toll Revenue Optimistic Scenario

(Rs. Crores)

Year	Toll at Plaza 16.00	Toll at Plaza 88.50	Total
2026-27	98.59	87.14	**185.74**
2027-28	110.49	97.98	**208.47**
2028-29	122.25	108.51	**230.76**
2029-30	144.24	119.80	**264.05**
2030-31	168.00	133.18	**301.17**
2031-32	188.22	149.89	**338.12**
2032-33	207.31	163.99	**371.29**
2033-34	227.83	180.93	**408.76**
2034-35	250.81	198.92	**449.73**
2035-36	277.64	221.02	**498.67**
2036-37	305.53	243.71	**549.24**
2037-38	334.57	267.46	**602.03**

Table 5-13 : Toll Revenue Most Likely Scenario

(Rs. Crores)

Year	Toll at Plaza 16.00	Toll at Plaza 88.50	Total
2026-27	98.59	87.14	**185.74**
2027-28	109.99	97.49	**207.47**
2028-29	121.08	107.46	**228.54**
2029-30	142.24	118.08	**260.32**
2030-31	164.89	130.70	**295.59**
2031-32	183.86	146.35	**330.21**
2032-33	201.55	159.33	**360.87**
2033-34	220.45	174.91	**395.36**
2034-35	241.47	191.30	**432.77**
2035-36	265.96	211.58	**477.54**
2036-37	291.31	232.20	**523.50**
2037-38	317.42	253.64	**571.06**

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	-	30.58
2028-29	25.33	6.77	15.00	47.10
2029-30	26.40	7.31	47.37	81.08
2030-31	19.70	8.66	-	29.40
2031-32	19.77	9.31	-	30.20
2032-33	19.79	10.01	-	31.00
2033-34	19.74	10.77	49.27	31.80
2034-35	19.62	11.59	57.52	32.60
2035-36	20.27	12.47	-	34.23
2036-37	19.21	13.41	-	34.23
2037-38	16.61	12.06	-	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 developments 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

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)

GMD CONSULTANTS NAVI MUMBAI

GMD Consultants

503, Mayuresh Chambers, Plot No. 60, Sector -11,
CBD Belapur, Navi Mumbai. 400 614. Maharashtra.
Phone : +91-22-2756 4586 / 2756 5313
Email : info@gmdconsultants.in
Web : www.gmdconsultants.in

OCTOBER 2026

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)



OCTOBER 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, 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, April 2025 to February 2026 and now concessionaire has provided traffic data from April 2026 to August 2026, report is updated with this 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, 2025, 2025-26 and annual traffic data from April 2026 to August 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 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
		AADT For April to August, 2026	For April to August, 2026	For April to August, 2026	For April to August, 2026	For April to August, 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
	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, 2025-26 & traffic data from April 2026 to August 2026.

Since the traffic data available for this update is for only Five months, from April 2026 to August 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 Five months to arrive at Annual Average Daily Traffic of base year 2026-27. 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 2026-27.

Table 2-3 : Traffic Data at Toll Plaza at Km 142.800

Sr. No	Type of Vehicle	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	Annual Average Daily Traffic (Nos.) – FY 2026-27
1	Car	7090	5937	6173	6230	6903	8217	8263
2	Minibus/ LCV	1217	620	547	454	439	435	457
3	Truck/Bus	1374	1340	1661	1558	1587	1678	1757
4	Multi Axle	2297	2327	2239	1979	2055	1983	2013
5	Oversized Vehicles	4	7	9	9	7	7	4
	Total	**11981**	**10231**	**10629**	**10230**	**10991**	**12320**	**12495**

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

Period	Toll Plaza Location	Traffic No	PCU	PCU Index
FY 2020-21	142.800 (Nandgaon Peth)	11981	23389	1.95
FY 2021-22	142.800 (Nandgaon Peth)	10231	21390	2.09

Period	Toll Plaza Location	Traffic No	PCU	PCU Index
FY 2022-23	142.800 (Nandgaon Peth)	10629	22092	2.08
FY 2023-24	142.800 (Nandgaon Peth)	10230	20530	2.01
FY 2024-25	142.800 (Nandgaon Peth)	10991	21602	1.97
FY 2025-26	142.800 (Nandgaon Peth)	12320	22860	1.86
FY 2025-26	142.800 (Nandgaon Peth)	12495	23299	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 2026 to August 2026 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.

Table 2-6 : Journey Type Bifurcation of Traffic at KM 142.800

Sr. No	Type	Traffic Volume (Nos.) for FY 2023-24	Traffic Volume (Nos.) for FY 2024-25	Traffic Volume (Nos.) for FY 2025-26	Traffic Volume (Nos.) for FY 2026-27
1	Single Journey	5054	5217	4877	4593
2	Return Journey	5042	5632	6022	5382
3	Monthly Pass	134	142	140	122
4	Annual Pass Car			1281	2398

A significant part of the traffic at KM 142.800 is single journey 37% followed by return journey 43%, monthly passes which share 1% and Annual Pass car is 19% 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 Four - Laning of Talegaon - Amravati Section of NH-6from Km 100.000 to Km 166.725 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 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 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.

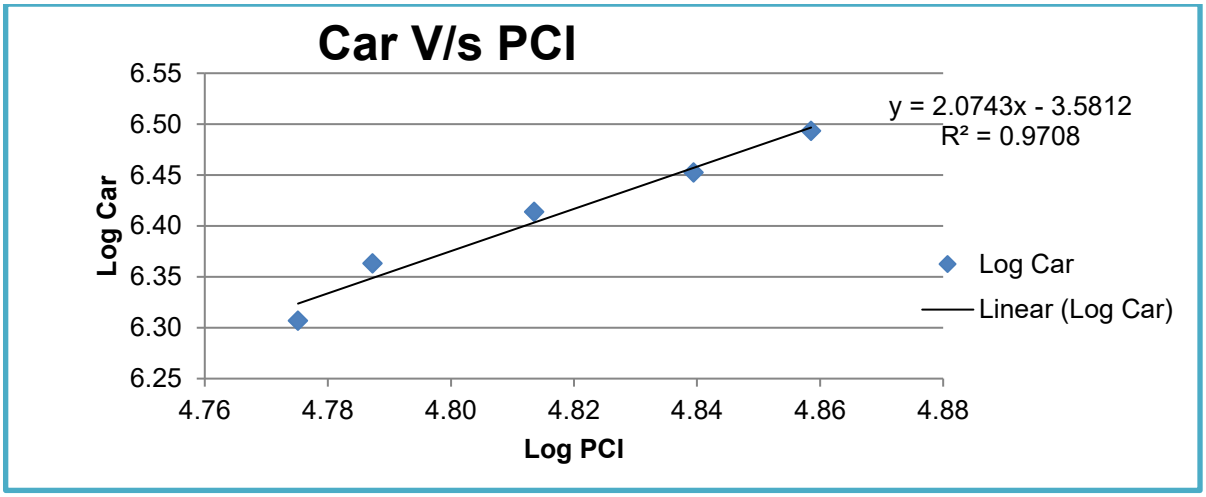


Figure 3-1: Regression and Elasticity PCI vs. Car–Extrapolation

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.

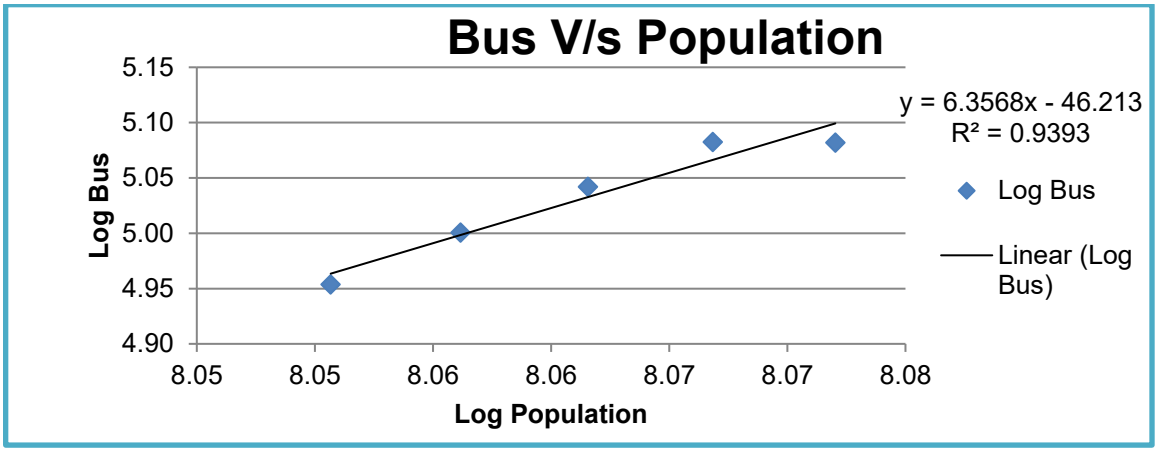


Figure 3-2: Regression and Elasticity Population vs. Bus – Extrapolation

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.

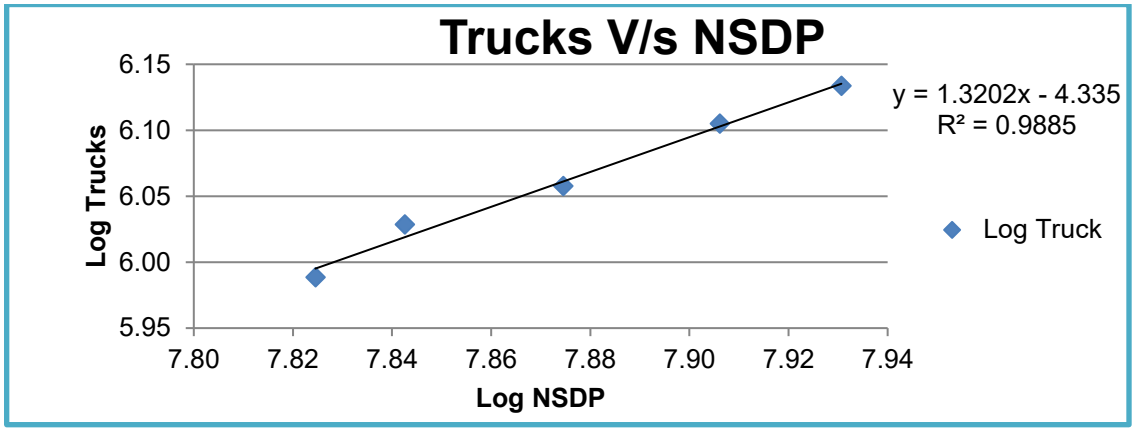


Figure 3-3: Regression and Elasticity NSDP vs. Goods Traffic – extrapolation.

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.

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.

Table 3-5 : Historic Traffic Data at Toll Plaza at Km 142.800

Sr. No	Type of Vehicle	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	Annual Average Daily Traffic (Nos.) – FY 2026-27
1	Car	7090	5937	6173	6230	6903	8217	8263
2	Minibus/ LCV	1217	620	547	454	439	435	457
3	Truck/Bus	1374	1340	1661	1558	1587	1678	1757
4	Multi Axle	2297	2327	2239	1979	2055	1983	2013
5	Oversized Vehicles	4	7	9	9	7	7	4
	Total	**11981**	**10231**	**10629**	**10230**	**10991**	**12320**	**12495**

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.

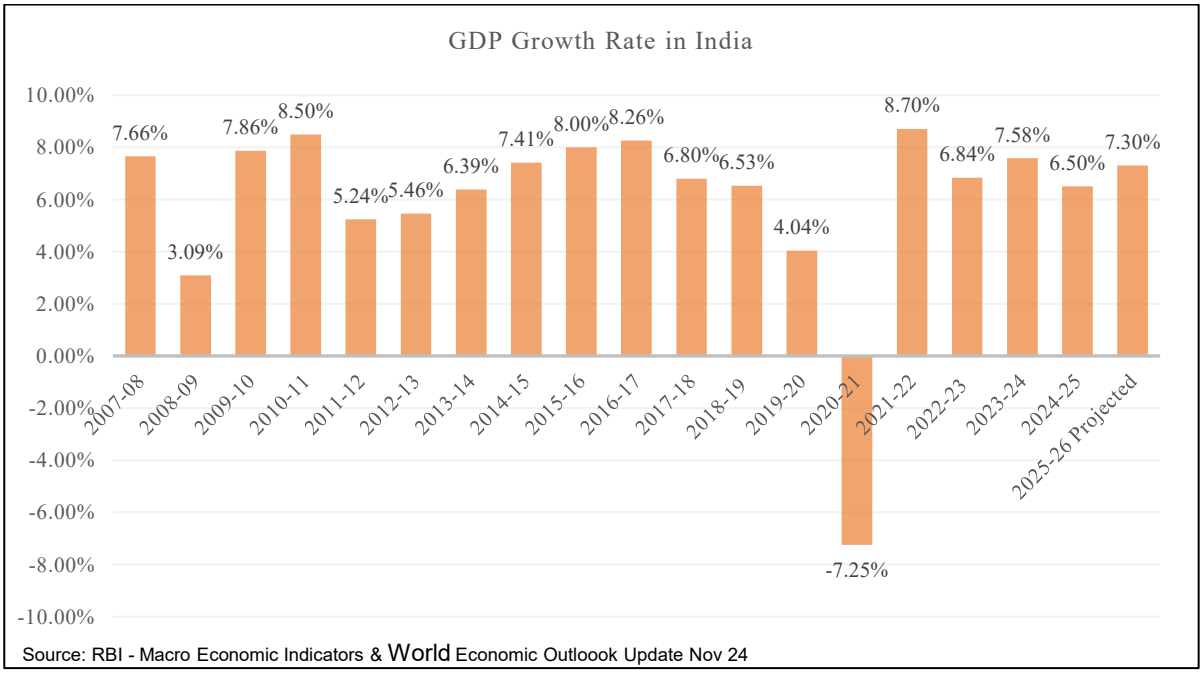


Figure 3-4 : Growth of GDP in India

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 3-6 : 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%
Multi Axle	5.84%	5.53%	4.96%
Oversized Vehicles	5.84%	5.53%	4.96%

Table 3-7 : 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 3-8 : Recommended Growth Rates Most Likely

Year/ Vehicle Type	FY 2027-2030	FY 2031-2035	FY 2036-2040
Car	5.86%	5.39%	4.97%

Year/ Vehicle Type	FY 2027-2030	FY 2031-2035	FY 2036-2040
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	8263	457	1757	2013	4	**12495**	**23299**
2027-28	8768	481	1860	2131	4	**13244**	**24677**
2028-29	9303	505	1969	2256	4	**14037**	**26138**
2029-30	9872	531	2084	2388	4	**14879**	**27684**
2030-31	10428	557	2199	2520	4	**15708**	**29219**
2031-32	11017	583	2321	2660	4	**16585**	**30842**
2032-33	11637	611	2449	2807	4	**17508**	**32550**
2033-34	12293	640	2584	2962	4	**18483**	**34352**
2034-35	12986	671	2726	3125	4	**19512**	**36251**
2035-36	13663	700	2861	3280	4	**20508**	**38074**
2036-37	14376	731	3003	3443	4	**21557**	**39993**
2037-38	15126	764	3152	3614	4	**22660**	**42009**

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	8263	457	1757	2013	4	**12495**	**23299**
2027-28	8727	479	1852	2121	4	**13183**	**24564**
2028-29	9216	501	1950	2234	4	**13905**	**25889**
2029-30	9733	523	2054	2353	4	**14667**	**27286**
2030-31	10233	545	2157	2471	4	**15410**	**28659**
2031-32	10759	568	2266	2596	4	**16193**	**30109**
2032-33	11312	592	2380	2727	4	**17015**	**31629**
2033-34	11892	617	2500	2864	4	**17877**	**33224**
2034-35	12503	643	2625	3008	4	**18783**	**34896**
2035-36	13092	669	2742	3143	4	**19650**	**36483**
2036-37	13710	695	2864	3283	4	**20556**	**38136**
2037-38	14356	722	2991	3429	4	**21502**	**39860**

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	8263	457	1757	2013	4	**12495**	**23299**
2027-28	8748	480	1856	2126	4	**13214**	**24621**
2028-29	9261	503	1959	2245	4	**13972**	**26013**
2029-30	9802	527	2068	2371	4	**14772**	**27484**
2030-31	10331	551	2177	2497	4	**15560**	**28943**
2031-32	10887	575	2292	2629	4	**16387**	**30474**

Year	Car	Minibus /LCV	Truck/ Bus	Multi axle	Oversized Vehicles	Total No.	Total PCU (Including Non-Paid Traffic)
2032-33	11474	601	2413	2768	4	**17260**	**32088**
2033-34	12091	628	2540	2914	4	**18177**	**33784**
2034-35	12741	656	2674	3068	4	**19143**	**35571**
2035-36	13374	683	2799	3213	4	**20073**	**37272**
2036-37	14038	712	2931	3365	4	**21050**	**39060**
2037-38	14736	741	3069	3523	4	**22073**	**40926**

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
Concession end date	2nd June, 2037

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.

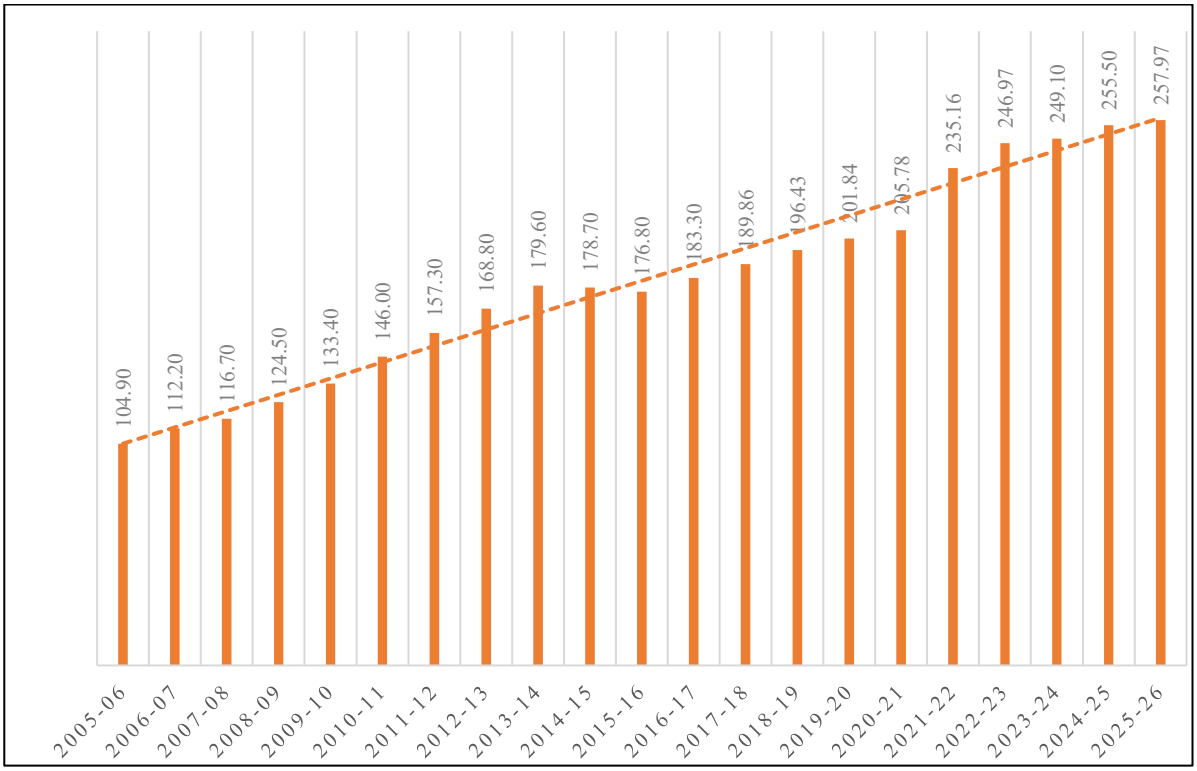


Figure 5-1 : Historical Rate of WPI Inflation in India

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	235.16	246.97	249.10	255.50	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 vehicles 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	103.41	**103.41**
2027-28	114.92	**114.92**
2028-29	126.82	**126.82**
2029-30	140.98	**140.98**
2030-31	155.55	**155.55**
2031-32	172.71	**172.71**
2032-33	189.80	**189.80**
2033-34	210.19	**210.19**
2034-35	232.42	**232.42**
2035-36	255.72	**255.72**
2036-37	281.49	**281.49**
2037-38	309.39	**309.39**

Table 5-8 : Toll Revenue Pessimistic Scenario

(Rs. Crores)

Year	Toll at Plaza 142.800	Total
2026-27	103.41	**103.41**
2027-28	114.38	**114.38**
2028-29	125.61	**125.61**
2029-30	138.95	**138.95**
2030-31	152.51	**152.51**
2031-32	168.58	**168.58**
2032-33	184.38	**184.38**
2033-34	203.23	**203.23**
2034-35	223.69	**223.69**
2035-36	244.97	**244.97**
2036-37	268.40	**268.40**
2037-38	293.56	**293.56**

Table 5-9 : Toll Revenue Most Likely Scenario

(Rs. Crores)

Year	Toll at Plaza 142.800	Total
2026-27	103.41	**103.41**
2027-28	114.63	**114.63**
2028-29	126.17	**126.17**
2029-30	139.90	**139.90**
2030-31	153.98	**153.98**
2031-32	170.62	**170.62**

Year	Toll at Plaza 142.800	Total
2032-33	187.05	**187.05**
2033-34	206.66	**206.66**
2034-35	228.00	**228.00**
2035-36	250.28	**250.28**
2036-37	274.83	**274.83**
2037-38	301.37	**301.37**

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	-	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	22.04	4.18	-	26.72
2031-32	23.04	4.48	-	28.06
2032-33	24.07	4.81	-	29.46
2033-34	25.15	5.16	49.27	80.20
2034-35	26.27	5.54	57.52	90.00
2035-36	27.51	5.95	-	34.17
2036-37	28.73	6.39	-	35.88
2037-38	5.26	1.20	-	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



GMD Consultants
503, Mayuresh Chambers, Plot No. 60, Sector -11,
CBD Belapur, Navi Mumbai. 400 614. Maharashtra.
Phone : +91-22-2756 4586 / 2756 5313
Email : info@gmdconsultants.in
Web : www.gmdconsultants.in

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)





OCTOBER 2026

GMD Consultants
503, Mayuresh Chambers, Plot No. 60, Sector -11,
CBD Belapur, Navi Mumbai. 400 614. Maharashtra.
Phone : +91-22-2756 4586 / 2756 5313
Email : info@gmdconsultants.in
Web : www.gmdconsultants.in

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OCTOBER 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. 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, April 2025 to February 2026 and now concessionaire has provided traffic data from April 2026 to August 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, 2021-22,2022-23,2023-24,2024-25,2025-26 and annual traffic data from April 2026 to August 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
		AADT for five months from April to August, 2026	AADT for five months from April to August, 2026	AADT for five months from April to August, 2026	AADT for five months from April to August, 2026	AADT for five months from April to August, 2026
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

Sr. No.	Location	CTV	Single Journey Traffic	Return Journey Traffic	Monthly Pass Traffic	Local Traffic
		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
		AADT for five months from April to August, 2026	AADT for five months from April to August, 2026	AADT for five months from April to August, 2026	AADT for five months from April to August, 2026	AADT for five months from April to August, 2026

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

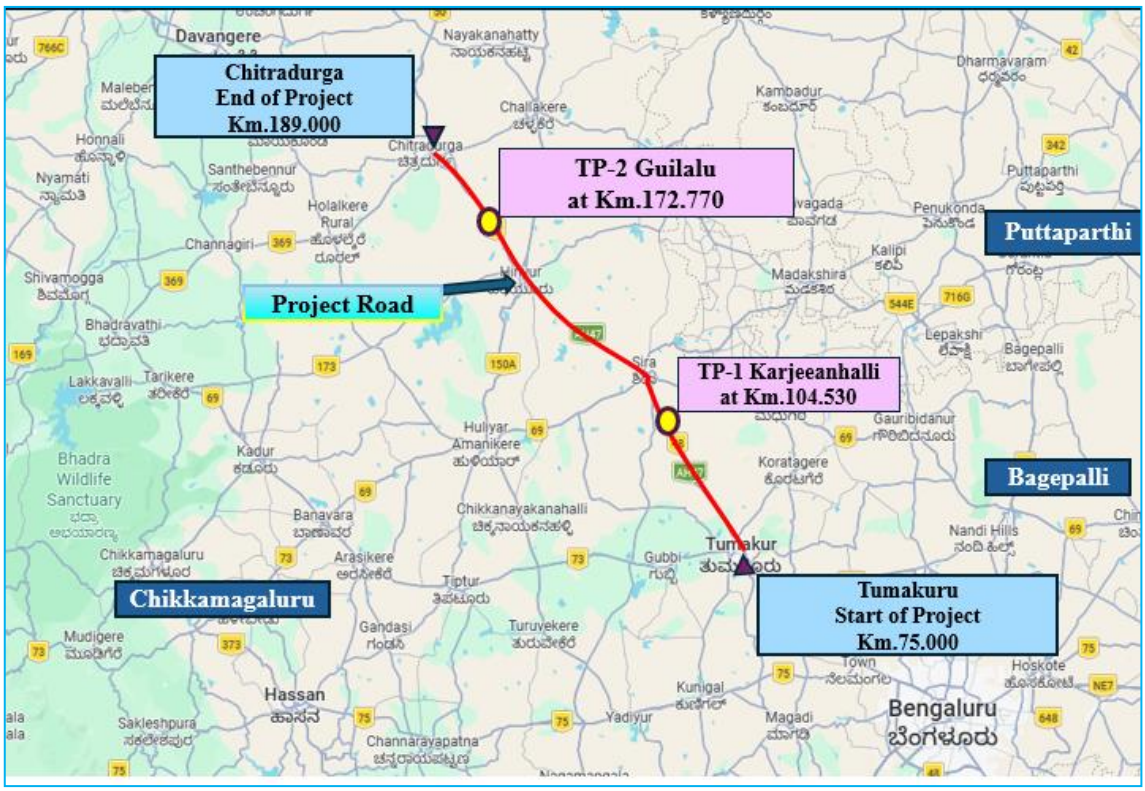


Figure 2-1: Traffic Survey Locations

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, 2023-24,2024-25,2025-26 & traffic data from April 2026 to August 2026.

Since the traffic data available for this update is for only Five months, from April 2026 to August 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 Five months to arrive at Annual Average Daily Traffic of base year 2026-27. 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 2026-27.

Table 2-3 : Traffic Data at Toll Plaza at Km 172.770

Sr. No	Type of Vehicle	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	Annual Average Daily Traffic (Nos.) FY 2026-27
1	Car	7633	11046	12943	13427	14196	19836	17437
2	LCV	2652	2006	2079	2206	2262	2875	2715
3	Truck/Bus	2631	3423	4395	5015	5216	5867	6443
4	HCM /EME/	4968	5831	6359	6293	6519	6599	6903

	MAV							
5	Oversized Vehicles	14	15	25	331	114	317	256
	Total	**17898**	**22322**	**25801**	**27272**	**28307**	**35493**	**33754**

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 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	Annual Average Daily Traffic (Nos.) FY 2026-27
1	Car	10224	8597	10272	11069	12065	14602	15151
2	LCV	3103	1803	1916	2030	2114	2334	2597
3	Truck/Bus	3133	3005	3912	4429	4788	5383	5818
4	HCM /EME/ MAV	5617	5305	5811	5774	6050	6205	6523
5	Oversized Vehicles	18	15	31	227	105	238	197
	Total	**22094**	**18725**	**21942**	**23528**	**25122**	**28761**	**30286**

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

Vehicle Type	PCUs
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 Toll Plazas

Toll Plaza Location	Period	Traffic No	PCU	PCU Index
172.770	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
	FY 2026-27	33754	73054	2.16
104.530	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
	FY 2026-27	30286	66740	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 52% of total traffic while HCM / EME / MAV comprises 20% of total traffic. Overall, about 36% of traffic is commercial in nature, and at Toll KM 104.530 Car traffic forms 50% 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 2026 to August 2026.

Table 2-7 : Journey Type Bifurcation of Traffic at KM 172.770

Sr. No	Type	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	Traffic Volume (Nos.) for FY 2026-27
1	Single Journey	14512	15558	18017	18741	19268	19274	18715
2	Return Journey	3074	6724	7740	8488	9002	8786	9192
3	Local Single Journey	150	18	22	23	19	25	27
4	Monthly Pass	162	22	22	20	18	22	6
5	Annual Pass car						3693	5814

A significant part of the traffic at KM 172.770 is single journey (56%) followed by return journey (27%) Annual Pass car is 17% 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 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	Traffic Volume (Nos.) for FY 2026-27
1	Single Journey	16990	13821	16220	17209	18162	18563	18005
2	Return Journey	4456	4782	5632	6242	6894	6880	7198
3	Local Single Journey	316	65	73	64	56	51	46
4	Monthly Pass	332	57	15	13	10	8	7
5	Annual Pass car						3259	5030

A significant part of the traffic at KM 104.530 is single journey (59%) followed by return journey (24%) Annual Pass car is 17% 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.

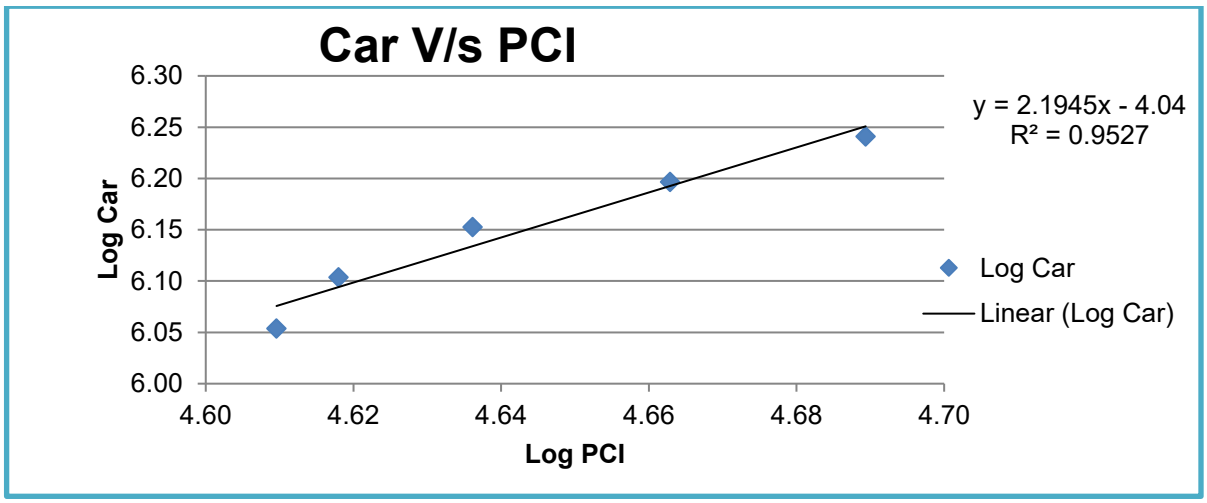


Figure 3-1: Regression and Elasticity PCI vs. Car–Extrapolation

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.

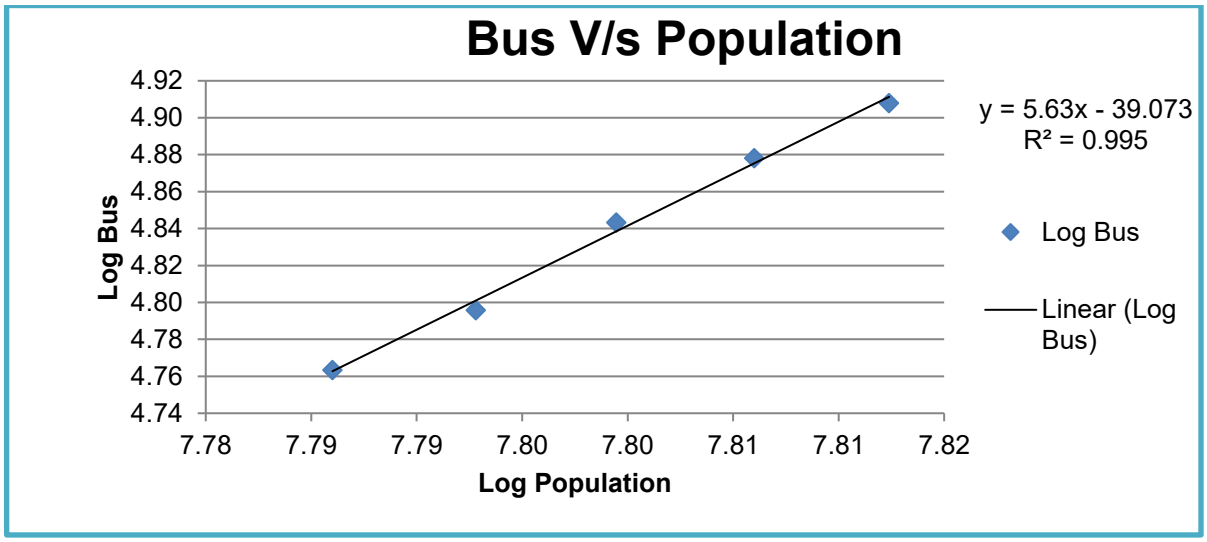


Figure 3-2: Regression and Elasticity Population vs. Bus – Extrapolation

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.

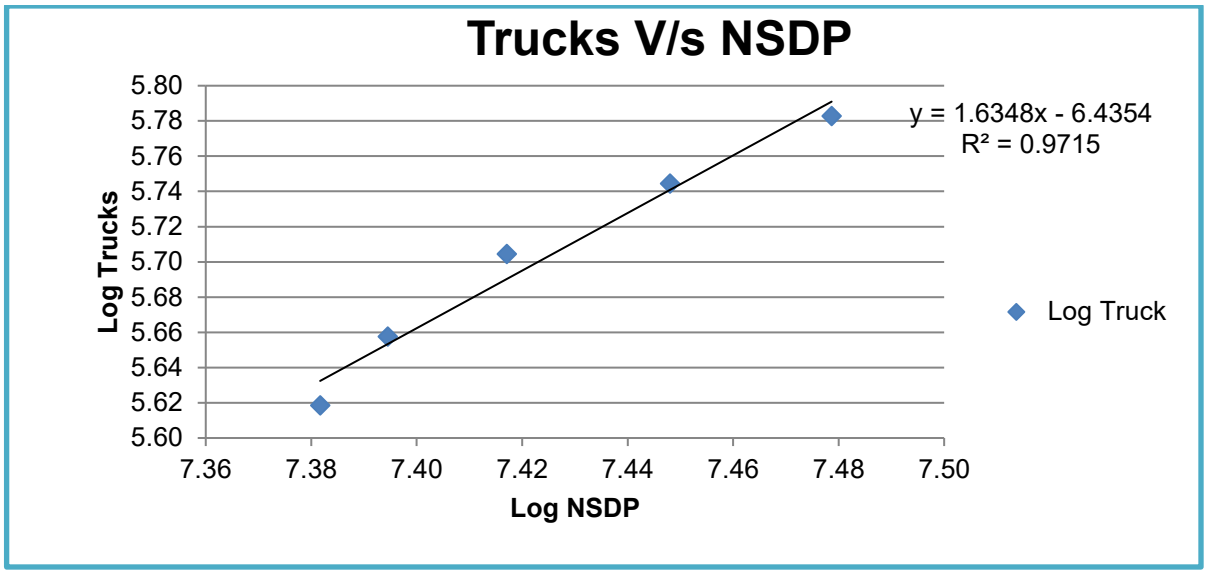


Figure 3-3: Regression and Elasticity NSDP vs. Goods Traffic – extrapolation.

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 August 2026

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	**2020-21**	**2021-22**	**2022-23**	**2023-24**	**2024-25**	**2025-26**	**2026-27**
Car	10224	8597	10272	11069	12065	14602	15151
LCV	3103	1803	1916	2030	2114	2334	2597
Truck/Bus	3133	3005	3912	4429	4788	5383	5818
HCM /EME/ MAV	5617	5305	5811	5774	6050	6205	6523
Oversized Vehicles	18	15	31	227	105	238	197
Total	**22094**	**18725**	**21942**	**23528**	**25122**	**28761**	**30286**

Table 3-6 : Historical Traffic Volume at Chitradurga

Location	Years						
At Chitradurga	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Car	7633	11046	12943	13427	14196	19836	17437
LCV	2652	2006	2079	2206	2262	2875	2715
Truck/Bus	2631	3423	4395	5015	5216	5867	6443
HCM /EME/ MAV	4968	5831	6359	6293	6519	6599	6903
Oversized Vehicles	14	15	25	331	114	317	256
Total	**17898**	**22322**	**25801**	**27272**	**28307**	**35493**	**33754**

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.

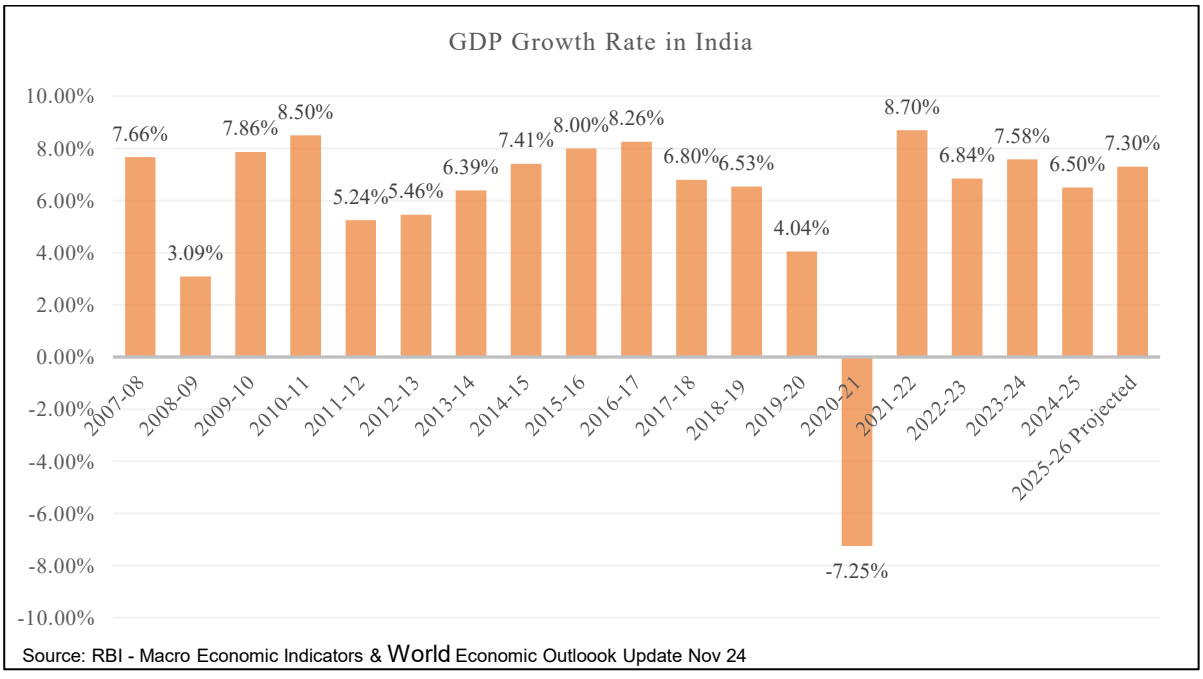


Figure 3-4 : Growth of GDP in India

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 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 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 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	17437	2715	6443	6903	256	**33754**	**73054**
2027-28	18424	2879	6781	7319	271	**35674**	**77240**
2028-29	19467	3053	7137	7760	287	**37704**	**81669**
2029-30	20568	3238	7512	8228	304	**39850**	**86355**
2030-31	21638	3419	7875	8685	321	**41938**	**90919**
2031-32	22765	3610	8257	9168	339	**44139**	**95733**
2032-33	23950	3812	8657	9677	358	**46454**	**100797**
2033-34	25197	4025	9076	10215	378	**48891**	**106131**
2034-35	26509	4250	9516	10783	399	**51457**	**111751**
2035-36	27731	4469	9938	11331	419	**53888**	**117124**
2036-37	29011	4700	10379	11907	440	**56437**	**122759**
2037-38	30349	4942	10840	12513	462	**59106**	**128670**
2038-39	31749	5196	11321	13150	485	**61901**	**134863**
2039-40	33213	5464	11825	13819	510	**64831**	**141365**
2040-41	34520	5727	12303	14458	534	**67542**	**147484**
2041-42	35878	6002	12800	15127	559	**70366**	**153868**
2042-43	37290	6290	13318	15827	585	**73310**	**160533**

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	15151	2597	5818	6523	197	**30286**	**66740**
2027-28	16010	2754	6123	6916	209	**32012**	**70572**
2028-29	16916	2920	6445	7332	221	**33834**	**74619**
2029-30	17873	3096	6783	7774	234	**35760**	**78902**
2030-31	18804	3269	7111	8206	247	**37637**	**83079**

Year	Car	LCV	Truck / Bus	HCM /EME/ MAV	Oversized Vehicles	Total No.	Total PCU
2031-32	19783	3452	7456	8661	261	**39613**	**87478**
2032-33	20813	3645	7817	9142	275	**41692**	**92108**
2033-34	21896	3848	8196	9650	290	**43880**	**96986**
2034-35	23037	4063	8593	10186	306	**46185**	**102124**
2035-36	24099	4273	8974	10704	321	**48371**	**107043**
2036-37	25210	4493	9373	11249	337	**50662**	**112205**
2037-38	26372	4724	9789	11821	354	**53060**	**117612**
2038-39	27587	4968	10224	12422	372	**55573**	**123284**
2039-40	28859	5224	10678	13054	391	**58206**	**129232**
2040-41	29995	5474	11110	13658	409	**60646**	**134838**
2041-42	31176	5737	11559	14290	428	**63190**	**140690**
2042-43	32403	6013	12027	14951	448	**65842**	**146799**

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	17437	2715	6443	6903	256	**33754**	**73054**
2027-28	18336	2865	6749	7285	270	**35505**	**76878**
2028-29	19281	3023	7070	7687	285	**37346**	**80900**
2029-30	20276	3191	7406	8112	301	**39286**	**85139**
2030-31	21231	3353	7727	8522	316	**41149**	**89212**
2031-32	22230	3524	8063	8953	332	**43102**	**93487**
2032-33	23276	3703	8413	9406	349	**45147**	**97967**
2033-34	24371	3892	8778	9882	367	**47290**	**102664**
2034-35	25519	4090	9159	10381	385	**49534**	**107578**
2035-36	26568	4280	9520	10857	403	**51628**	**112218**
2036-37	27660	4479	9895	11355	421	**53810**	**117055**
2037-38	28797	4687	10285	11876	440	**56085**	**122105**
2038-39	29981	4905	10690	12421	460	**58457**	**127373**
2039-40	31214	5133	11111	12991	481	**60930**	**132871**
2040-41	32287	5354	11505	13527	501	**63174**	**137959**
2041-42	33396	5584	11912	14086	522	**65500**	**143244**
2042-43	34544	5824	12334	14668	543	**67913**	**148731**

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	15151	2597	5818	6523	197	**30286**	**66740**
2027-28	15934	2741	6095	6883	208	**31861**	**70240**
2028-29	16756	2893	6385	7263	219	**33516**	**73919**
2029-30	17620	3053	6689	7664	231	**35257**	**77794**
2030-31	18449	3208	6980	8052	243	**36932**	**81529**

Year	Car	LCV	Truck / Bus	HCM /EME/ MAV	Oversized Vehicles	Total No.	Total PCU
2031-32	19316	3372	7283	8459	255	**38685**	**85436**
2032-33	20224	3544	7600	8887	268	**40523**	**89538**
2033-34	21176	3724	7930	9336	281	**42447**	**93829**
2034-35	22173	3913	8275	9808	295	**44464**	**98331**
2035-36	23084	4095	8601	10258	308	**46346**	**102577**
2036-37	24033	4286	8939	10729	322	**48309**	**107009**
2037-38	25022	4485	9292	11221	337	**50357**	**111636**
2038-39	26050	4693	9658	11736	352	**52489**	**116460**
2039-40	27121	4911	10039	12274	368	**54713**	**121493**
2040-41	28053	5122	10395	12780	383	**56733**	**126155**
2041-42	29018	5342	10763	13307	399	**58829**	**130997**
2042-43	30015	5572	11144	13856	415	**61002**	**136024**

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	17437	2715	6443	6903	256	**33754**	**73054**
2027-28	18380	2872	6766	7302	271	**35591**	**77065**
2028-29	19375	3039	7104	7724	287	**37529**	**81295**
2029-30	20424	3215	7459	8170	303	**39571**	**85752**
2030-31	21435	3387	7801	8603	319	**41545**	**90068**
2031-32	22498	3568	8160	9059	336	**43621**	**94607**
2032-33	23612	3758	8535	9539	354	**45798**	**99373**
2033-34	24783	3958	8927	10045	373	**48086**	**104382**
2034-35	26011	4169	9336	10577	393	**50486**	**109638**
2035-36	27146	4373	9727	11088	412	**52746**	**114636**
2036-37	28330	4587	10134	11625	432	**55108**	**119869**
2037-38	29566	4812	10558	12187	453	**57576**	**125338**
2038-39	30855	5048	11000	12777	475	**60155**	**131061**
2039-40	32201	5295	11461	13395	498	**62850**	**137045**
2040-41	33387	5535	11895	13981	520	**65318**	**142629**
2041-42	34618	5786	12346	14592	543	**67885**	**148442**
2042-43	35895	6049	12814	15231	567	**70556**	**154501**

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	15151	2597	5818	6523	197	**30286**	**66740**
2027-28	15971	2747	6109	6900	208	**31935**	**70405**
2028-29	16834	2906	6414	7299	220	**33673**	**74271**
2029-30	17745	3075	6735	7721	233	**35509**	**78355**
2030-31	18624	3239	7044	8131	245	**37283**	**82306**

Year	Car	LCV	Truck / Bus	HCM /EME/ MAV	Oversized Vehicles	Total No.	Total PCU
2031-32	19546	3412	7367	8562	258	**39145**	**86455**
2032-33	20515	3594	7705	9016	272	**41102**	**90817**
2033-34	21532	3786	8059	9494	286	**43157**	**95398**
2034-35	22599	3988	8430	9998	301	**45316**	**100216**
2035-36	23584	4184	8783	10482	315	**47348**	**104796**
2036-37	24613	4390	9151	10989	330	**49473**	**109586**
2037-38	25686	4605	9535	11520	346	**51692**	**114596**
2038-39	26807	4831	9934	12077	363	**54012**	**119835**
2039-40	27976	5068	10351	12661	380	**56436**	**125315**
2040-41	29007	5298	10743	13215	397	**58660**	**130437**
2041-42	30077	5539	11150	13793	414	**60973**	**135767**
2042-43	31186	5791	11573	14396	432	**63378**	**141317**

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 PCUs (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
Concession end date	29th December, 2042

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.

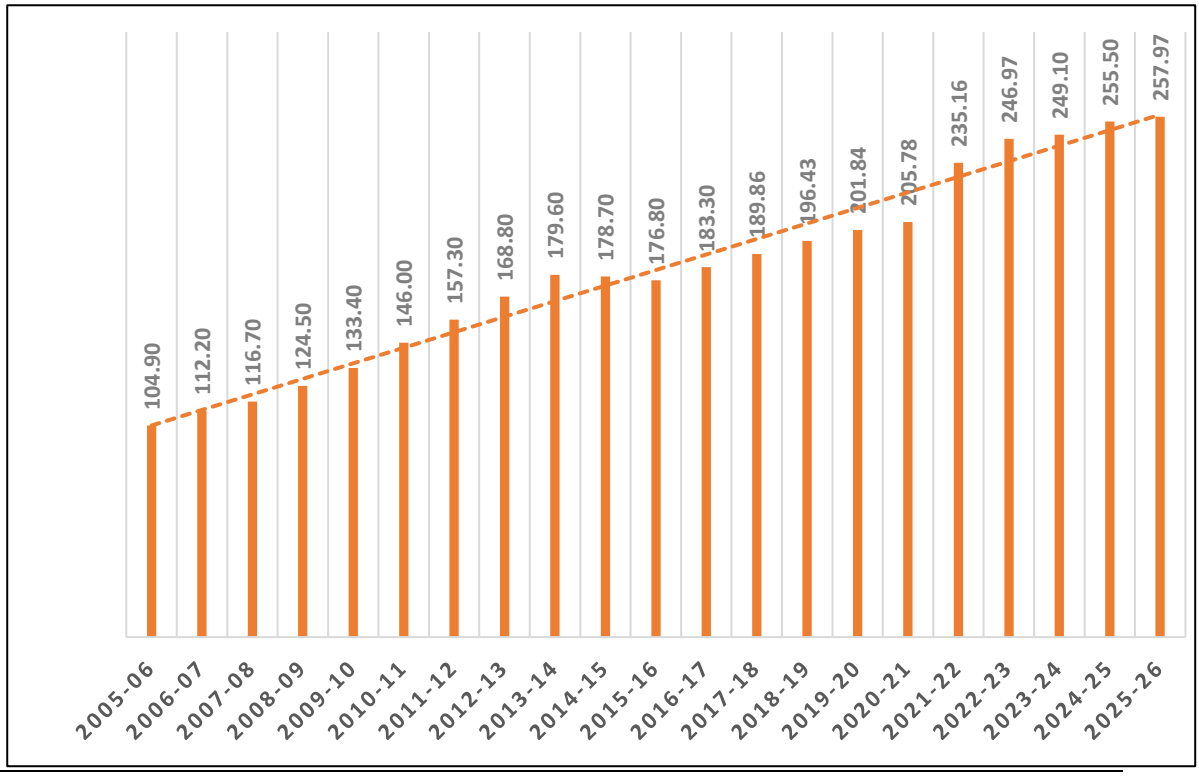


Figure 5-1 : Historical Rate of WPI Inflation in India

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	235.16	246.97	249.10	255.50	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	57.000
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

Year	Car	LCV	Truck / Bus	HCM /EME/ MAV	Oversized Vehicles
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
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
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	246.77	230.17	**476.94**
2027-28	274.96	256.53	**531.49**
2028-29	300.49	280.44	**580.93**
2029-30	333.54	311.30	**644.84**
2030-31	367.44	342.83	**710.27**
2031-32	408.27	381.03	**789.30**
2032-33	447.66	417.77	**865.43**
2033-34	497.92	464.48	**962.40**
2034-35	547.22	511.96	**1059.17**
2035-36	602.20	561.96	**1164.16**
2036-37	659.39	615.66	**1275.05**
2037-38	726.46	677.91	**1404.37**
2038-39	798.52	745.25	**1543.76**
2039-40	882.45	823.66	**1706.11**
2040-41	959.71	896.00	**1855.71**
2041-42	1050.65	982.83	**2033.48**
2042-43	1150.73	1074.38	**2225.11**

Table 5-11 : Toll Revenue Pessimistic Scenario

(Rs. Crores)

Year	Toll Plaza at 177.2	Toll Plaza at 104.53	Total
2026-27	246.77	230.17	**476.94**
2027-28	273.66	255.29	**528.96**
2028-29	297.64	277.77	**575.41**
2029-30	328.85	306.87	**635.73**
2030-31	360.57	336.38	**696.94**
2031-32	398.73	372.06	**770.80**
2032-33	435.12	406.00	**841.12**
2033-34	481.68	449.20	**930.88**

Year	Toll Plaza at 177.2	Toll Plaza at 104.53	Total
2034-35	526.79	492.76	**1019.56**
2035-36	576.95	538.28	**1115.24**
2036-37	628.72	586.89	**1215.60**
2037-38	689.38	643.18	**1332.57**
2038-39	754.17	703.64	**1457.81**
2039-40	829.44	773.91	**1603.35**
2040-41	897.77	837.81	**1735.58**
2041-42	978.13	914.59	**1892.72**
2042-43	1066.24	994.99	**2061.24**

Table 5-12 : Toll Revenue Most Likely Scenario (Rs. Crores)

Year	Toll Plaza at 177.2	Toll Plaza at 104.53	Total
2026-27	246.77	230.17	**476.94**
2027-28	274.33	255.90	**530.23**
2028-29	299.09	279.10	**578.19**
2029-30	331.22	309.12	**640.33**
2030-31	364.00	339.60	**703.60**
2031-32	403.49	376.51	**780.00**
2032-33	441.37	411.82	**853.19**
2033-34	489.74	456.78	**946.51**
2034-35	536.93	502.29	**1039.22**
2035-36	589.44	550.03	**1139.47**
2036-37	643.93	601.14	**1245.08**
2037-38	707.77	660.39	**1368.16**
2038-39	776.11	724.20	**1500.31**
2039-40	855.63	798.48	**1654.11**
2040-41	928.34	866.50	**1794.83**
2041-42	1013.85	948.15	**1962.01**
2042-43	1107.81	1034.05	**2141.86**

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 75.000 km to 189.000 km 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.



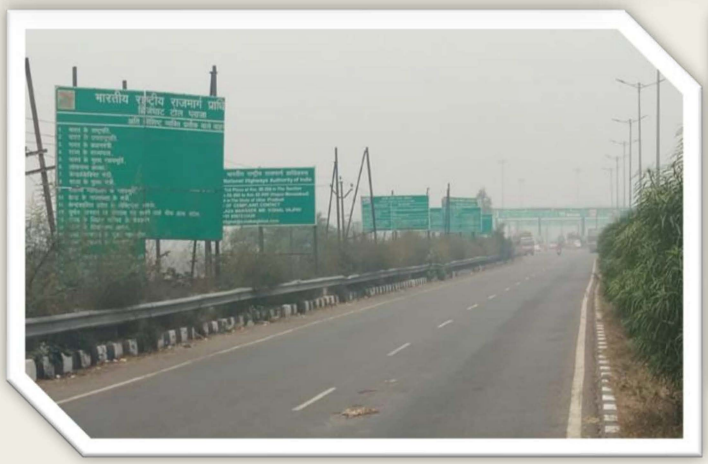
GMD Consultants
503, Mayuresh Chambers, Plot No. 60, Sector -11,
CBD Belapur, Navi Mumbai. 400 614. Maharashtra.
Phone : +91-22-2756 4586 / 2756 5313
Email : info@gmdconsultants.in
Web : www.gmdconsultants.in

IRB InvIT Fund

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)

OCTOBER 2026

GMD Consultants
503, Mayuresh Chambers, Plot No. 60, Sector -11,
CBD Belapur, Navi Mumbai. 400 614. Maharashtra.
Phone : +91-22-2756 4586 / 2756 5313
Email : info@gmdconsultants.in
Web : www.gmdconsultants.in

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OCTOBER 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 **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.

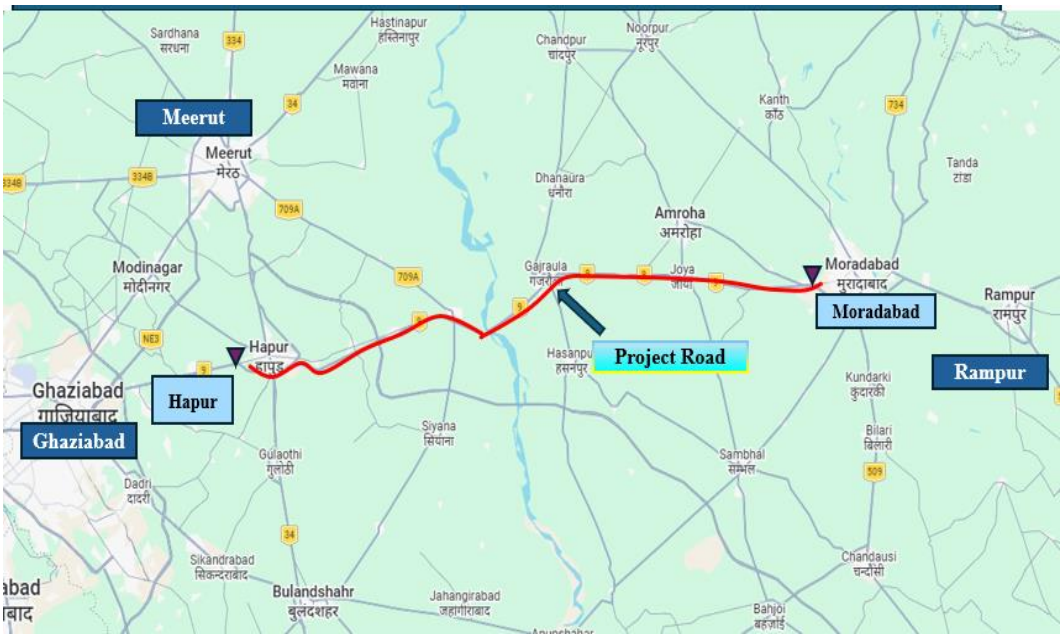


Figure 1-1: Alignment of Project Stretch

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.

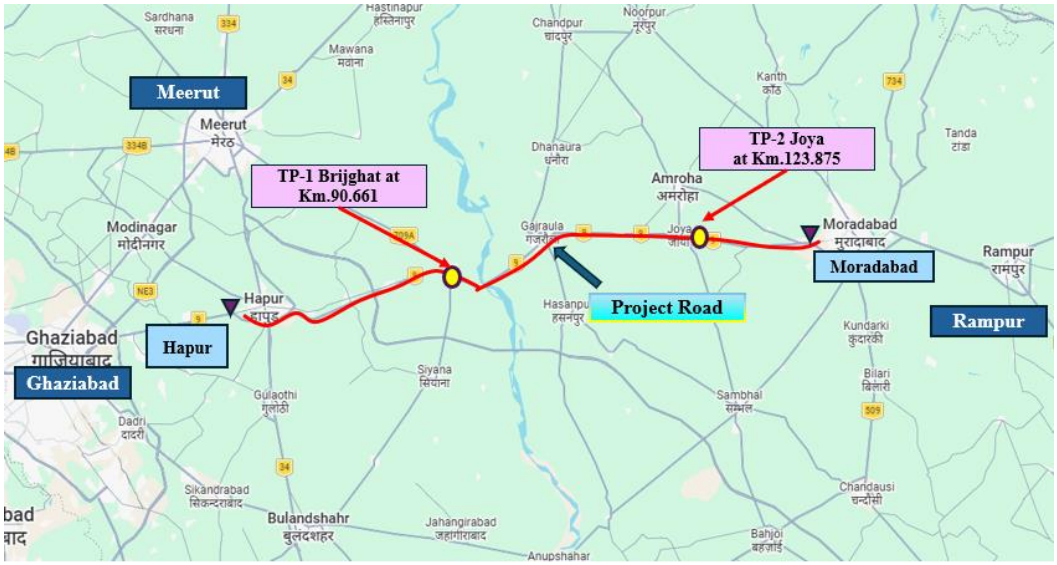


Figure 2-1: Project Alignment with Toll Plaza

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, 2025-26 and traffic data from April 2026 to August 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, 2024-25,2025-26	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-2023,2023-24, 2024-25,2025-26	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-2023,2023-24, 2024-25,2025-26	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-2023,2023-24, 2024-25,2025-26	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-2023,2023-24, 2024-25,2025-26

SR. NO	LOCATION	CTV	Single Journey Traffic	Daily Return Journey	Monthly Pass	Local Pass
		& Five months from April 2026 to August 2026	& Five months from April 2026 to August 2026	& Five months from April 2026 to August 2026	& Five months from April 2026 to August 2026	& Five months from April 2026 to August 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, 2024-25,2025-26 & Five months from April 2026 to August 2026	For Year For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-2023,2023-24, 2024-25,2025-26 & Five months from April 2026 to August 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-2023,2023-24, 2024-25,2025-26 & Five months from April 2026 to August 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-2023,2023-24, 2024-25,2025-26 & Five months from April 2026 to August 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-2023,2023-24, 2024-25,2025-26 & Five months from April 2026 to August 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- 25,2025-26 & traffic data from April 2026 to August 2026.
Since the traffic data available for this update is for only Five months, from April 2026 to August 2026, it may not represent the whole year of traffic. Hence a seasonality factor for balance part of year has been applied to average traffic of the current Five 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 2026-27.

Table 3-3 : Traffic Data at Garh (Brijghat) Toll Plaza at Km 90.661

Sr. No	Type of Vehicle	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	Annual Average Daily Traffic (Nos.)- 2026-27
1	Car	15865	21889	24088	27330	28110	32989	37013

Sr. No	Type of Vehicle	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	Annual Average Daily Traffic (Nos.)- 2026-27
2	Minibus/LCV	3119	1995	1730	1743	1688	2023	1890
3	Bus	1573	1862	2069	2303	2255	2667	2698
4	Truck	1354	1674	1972	2036	1647	1856	1461
5	3-Axle	1105	1112	1070	1075	819	928	739
6	Multi Axle	1635	1745	1962	2191	2027	2350	1810
7	Oversized Vehicle	6	6	9	7	5	5	5
	Total	**24657**	**30283**	**32899**	**36686**	**36550**	**42818**	**45616**

Table 3-4 : Traffic Data at Joya Toll Plaza at Km 123.875

Sr. No	Type of Vehicle	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	Annual Average Daily Traffic (Nos.)- 2026-27
1	Car	10526	13695	16037	18696	19856	23608	26493
2	Minibus/LCV	2259	1335	1181	1191	1297	1567	1495
3	Bus	1303	1485	1768	2008	1862	2165	2248
4	Truck	1040	1184	1436	1628	1687	2063	1781
5	3-Axle	1064	1081	1008	936	814	929	735
6	Multi Axle	1370	1458	1765	2017	2065	2394	1768
7	Oversize Vehicle	8	8	9	6	5	6	5
	Total	**17570**	**20246**	**23203**	**26481**	**27586**	**32731**	**34524**

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 2026-27

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
	2026-2027	45616	62709	1.37
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
	2026-2027	34524	51001	1.48

It can be observed from above that project traffic has PCU index in range of 1.3 to 1.5 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.

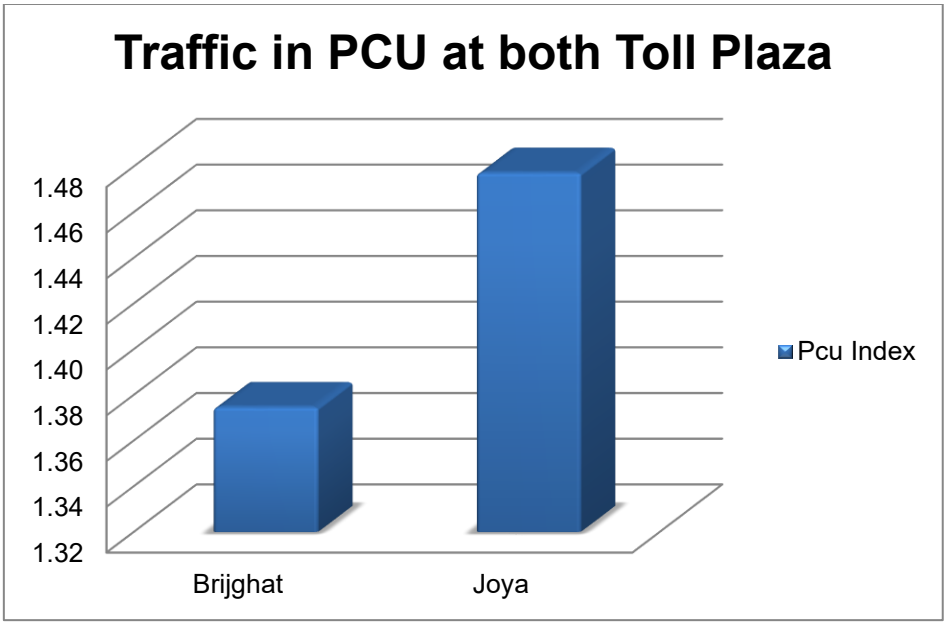


Figure 3-1: Comparison of PCU Index

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.

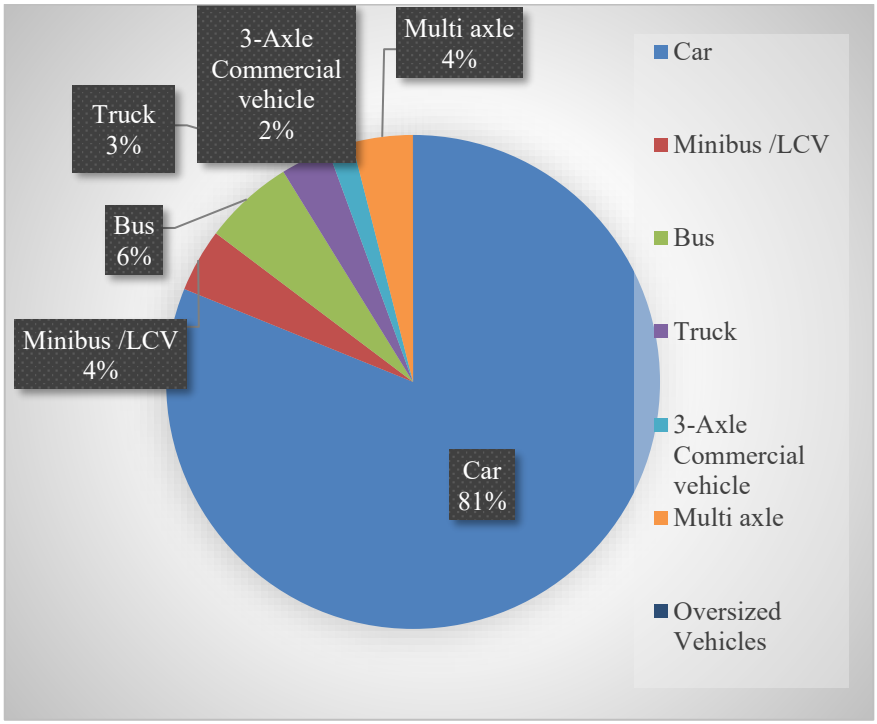


Figure 3-2: Model Split of Tollable Vehicle @TP-1

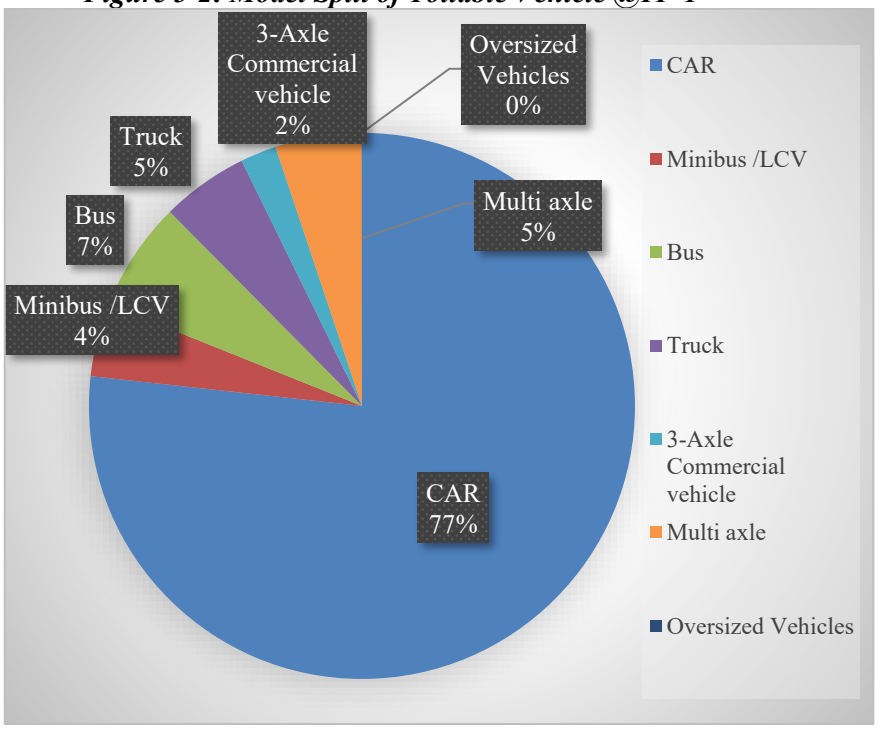


Figure 3-3: Model Split of Tollable Vehicle @TP-2

It is observed that car traffic forms about 77% - 81% of total traffic at toll plaza locations while multi axle commercial vehicles are about 4% -5% of total traffic. Truck / Bus and LCV share about 3% - 5% and 4% - 4% 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 2026-27

Table 3-7 : Journey Type Bifurcation of Traffic at GarhTP-1 KM 90.661

Sr. No	Type	Traffic Volume (Nos.) 2026-27
1	Single Journey	12314
2	Return Journey	15465
3	Local Commercial Single Journey	10
4	Monthly Pass Local	14
5	Monthly Pass	2
6	Annual Pass Car	17812

The dominant traffic category at the project stretch is Annual Pass traffic, followed by Return Journey traffic and Single Journey traffic. Annual Pass car trips account for 39% of the total traffic volume, making it the largest component. Return Journey traffic contributes 34%, while Single Journey car traffic accounts for 27%. 0% traffic was recorded under the Monthly Pass (Local) and Local Commercial Journey categories at the Brijghat toll plaza.

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.) 2026-27
1	Single Journey	11044
2	Return Journey	10417
3	Local Commercial Single Journey	39

Sr. No	Type	Traffic Volume (Nos.) 2026-27
4	Monthly Pass Local	7
5	Monthly Pass	2
6	Annual Pass Car	13015

It is observed that the project corridor demonstrates a similar pattern of Annual Pass traffic 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.

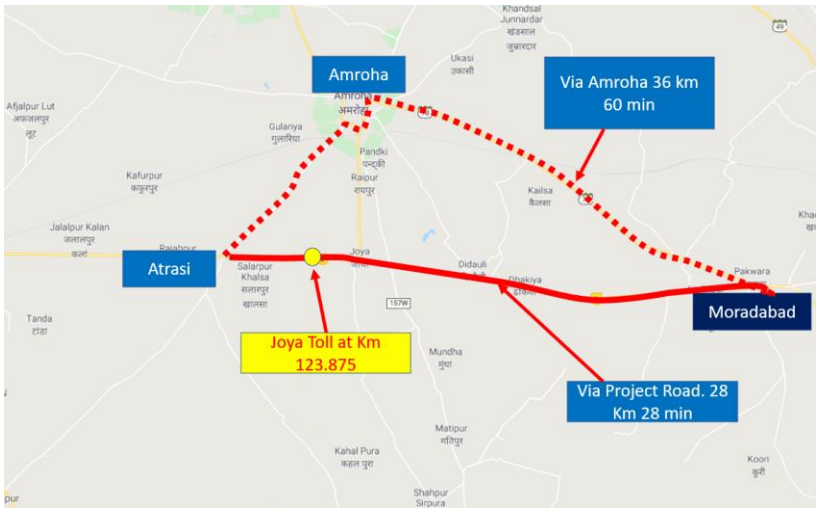


Figure 4-1: Alternate route at regional level

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.

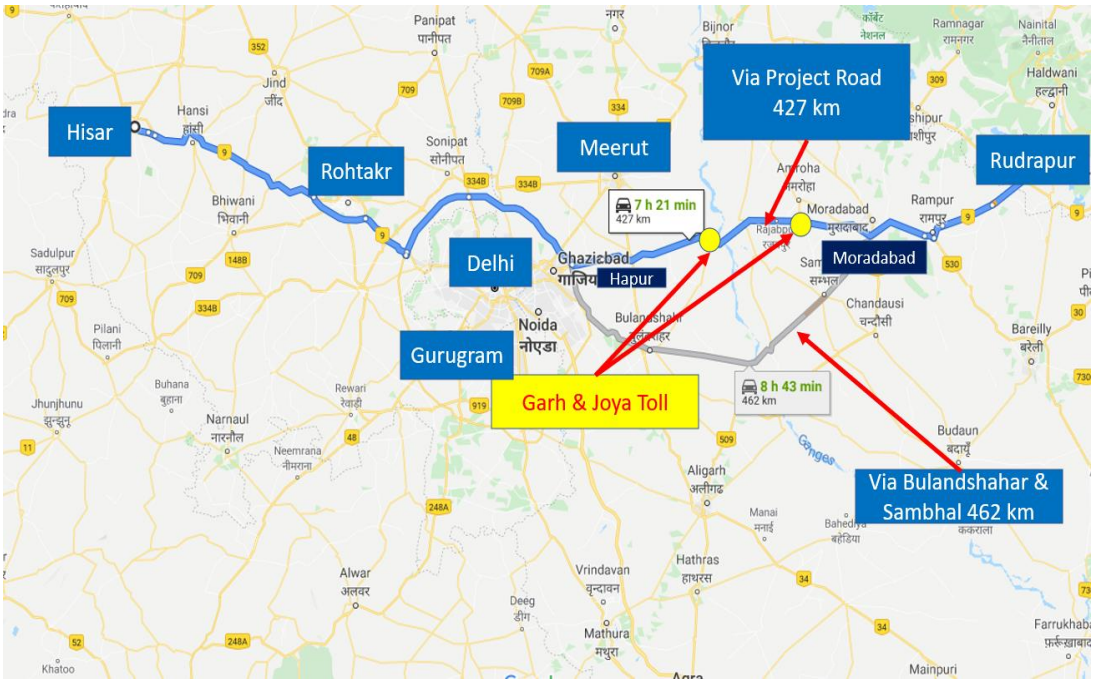


Figure 4-2: Alternate route at local level

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	22.0	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 Uttar pradesh. 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 Utttar pradesh 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%	

Year	PCI	Car	Log PCI	Log Car	PCI Growth	Average Growth
2014	34044	1423020	4.53	6.15	3%	
2015	34583	1572217	4.54	6.20	2%	
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.

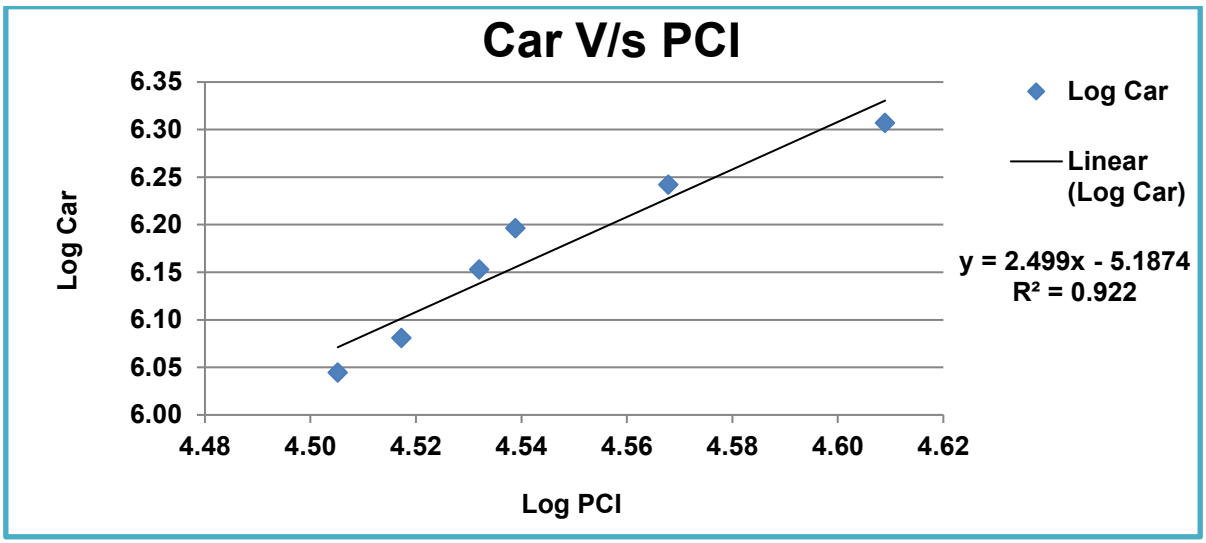


Figure 5-1: Regression and Elasticity PCI vs. Car–Extrapolation Uttar Pradesh

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.

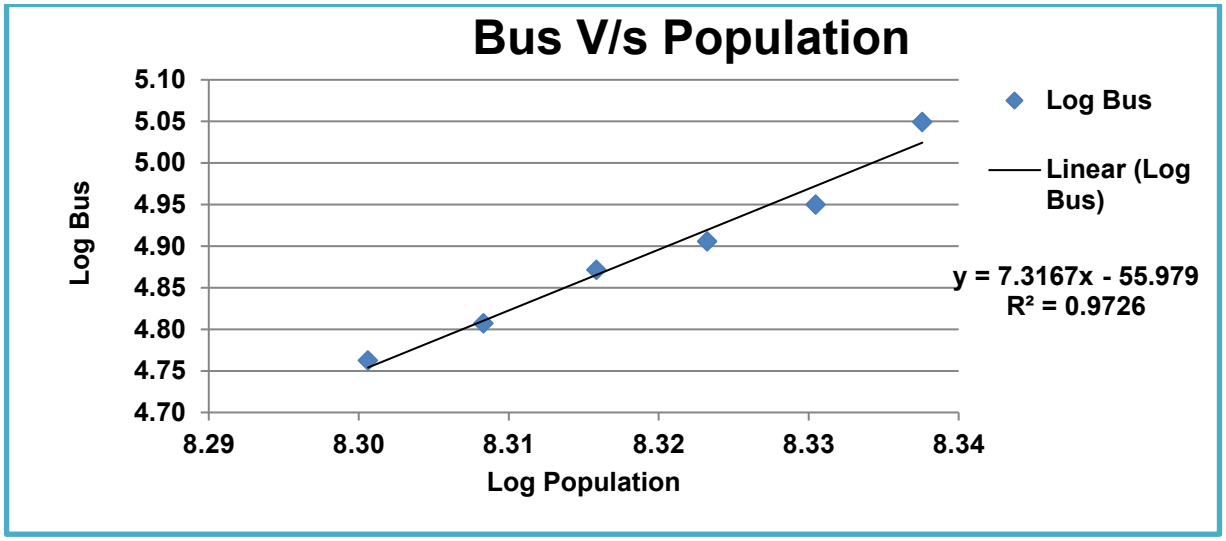


Figure 5-2: Regression and Elasticity Population vs. Bus – Extrapolation Uttar Pradesh

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.

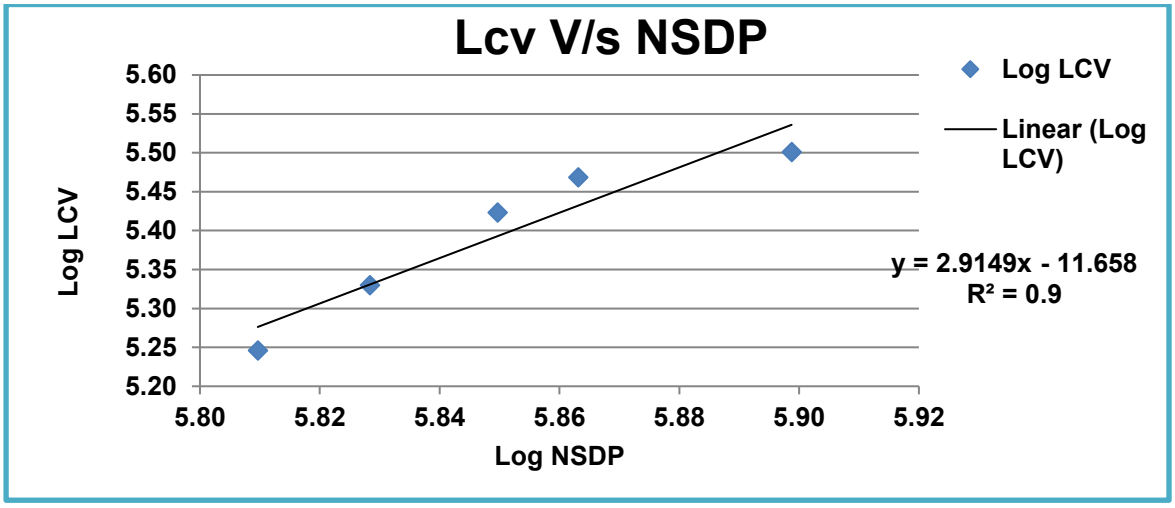


Figure 5-3: Regression and Elasticity NSDP vs. LCV Traffic – extrapolation Uttar Pradesh

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.

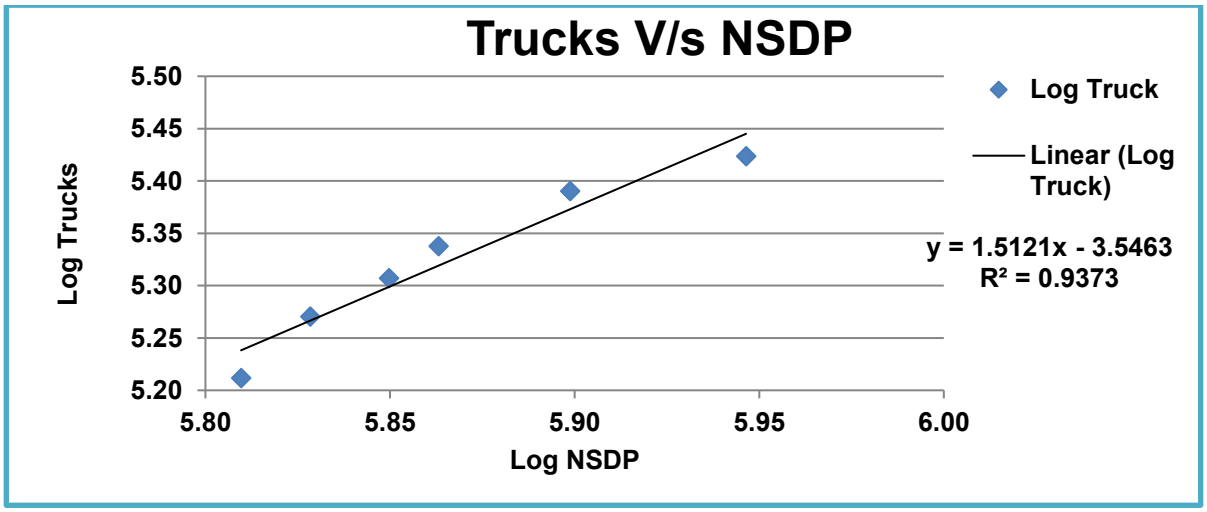


Figure 5-4: Regression and Elasticity NSDP vs. Truck Traffic – extrapolation Uttar Pradesh

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.

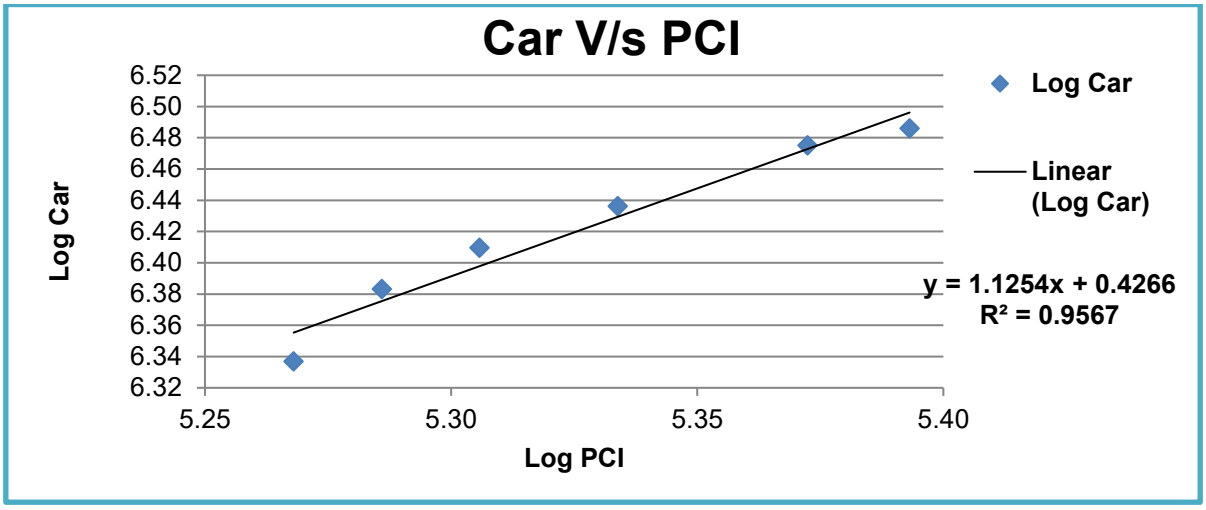


Figure 5-5: Regression and Elasticity PCI vs. Car–Extrapolation Delhi

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.

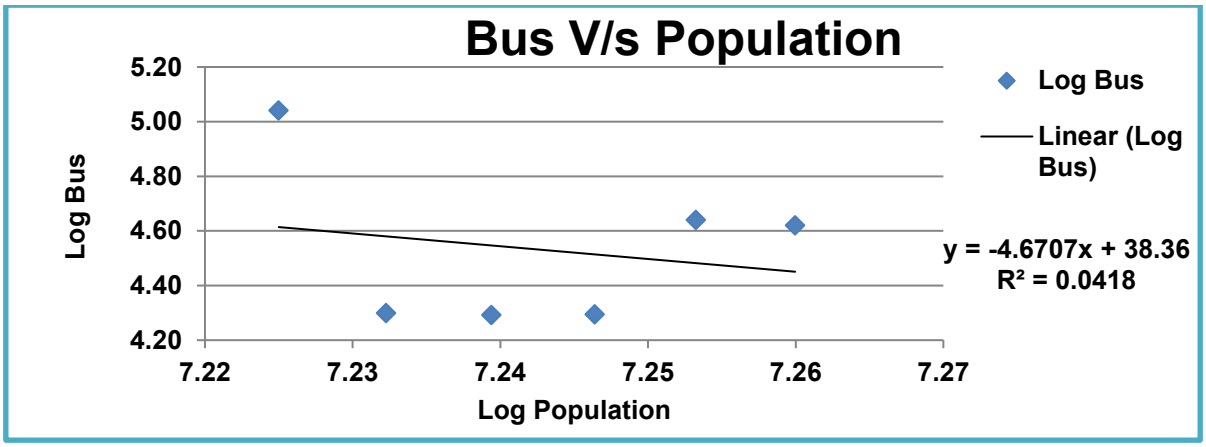


Figure 5-6: Regression and Elasticity Population vs. Bus – Extrapolation Delhi

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.

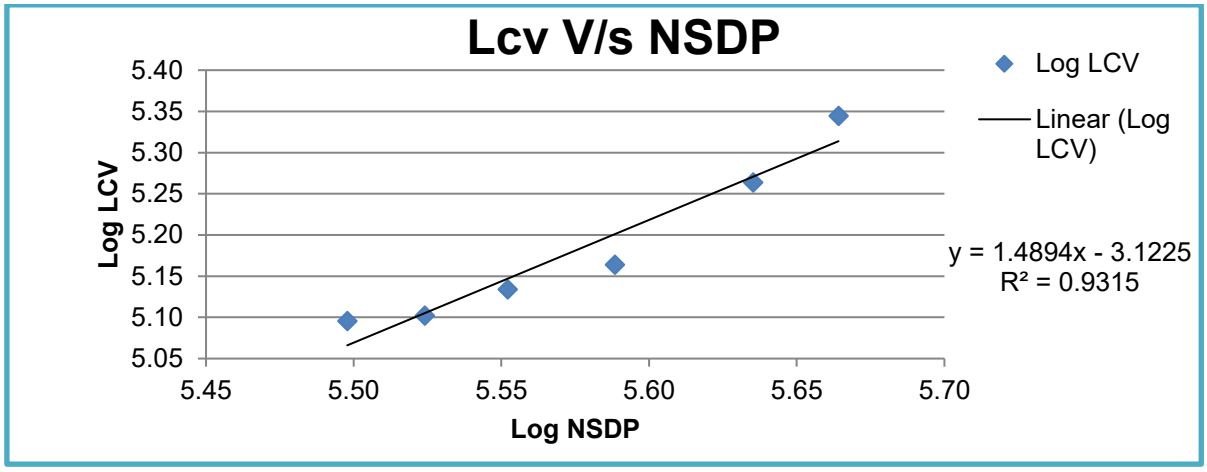


Figure 5-7: Regression and Elasticity NSDP vs. LCV Traffic – extrapolation Delhi

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.

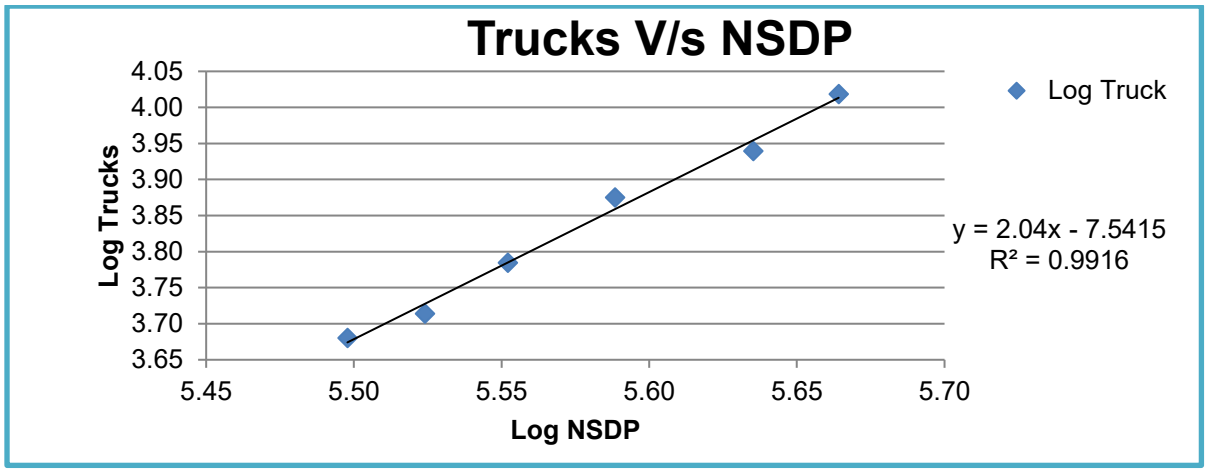


Figure 5-8: Regression and Elasticity NSDP vs. Truck Traffic – extrapolation Delhi

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	R² = 0.9567	1.1254	5.95%	6.69%
	Bus	Population	y = -4.6707x - 38.36	R² = 0.0418	-4.6707	1.62%	-7.58%
	LCV	NSDP	y = 1.4894x - -3.1225	R² = 0.9315	1.4894	7.98%	11.88%
	Truck	NSDP	y = 2.04x - -7.5415	R² = 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.

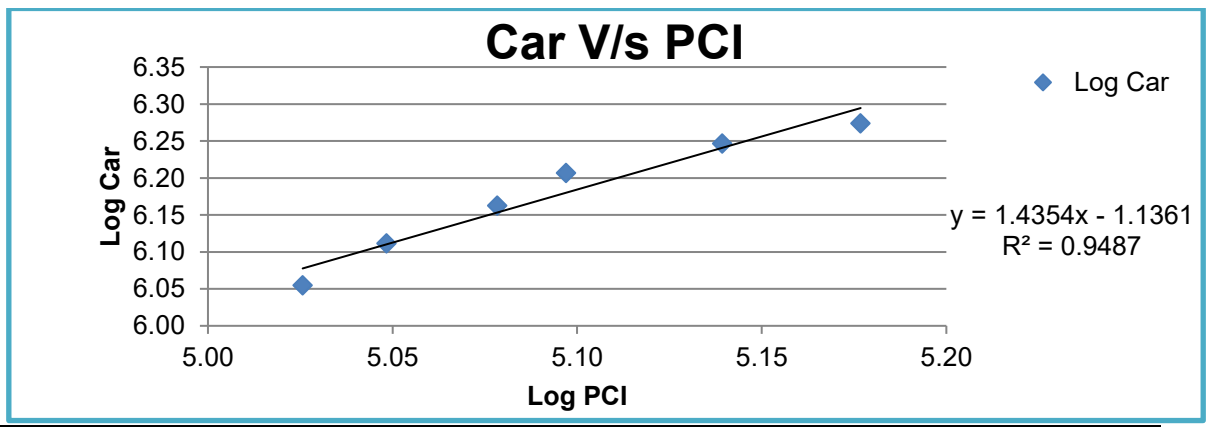


Figure 5-9: Regression and Elasticity PCI vs. Car–Extrapolation Haryana

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.

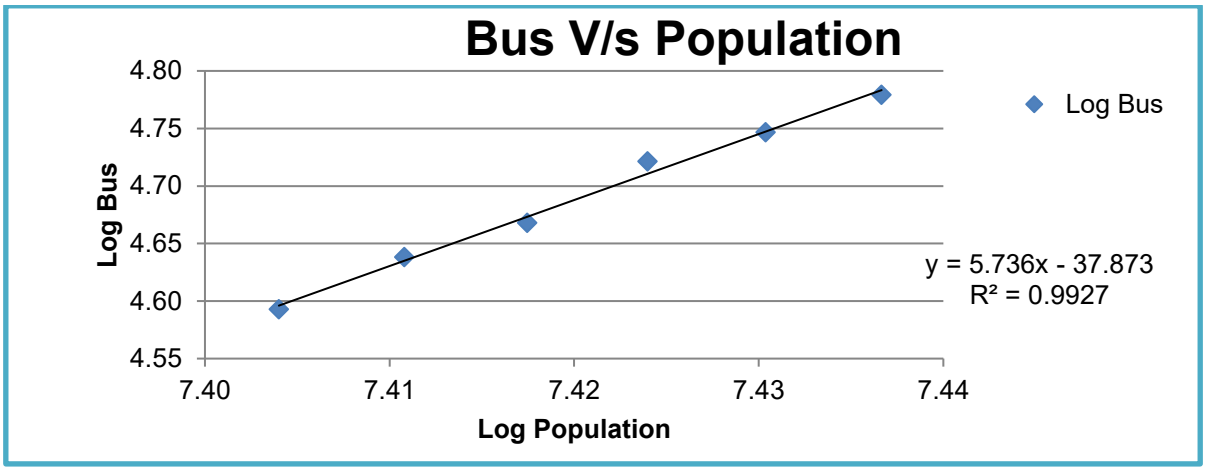


Figure 5-10: Regression and Elasticity Population vs. Bus – Extrapolation Haryana

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.

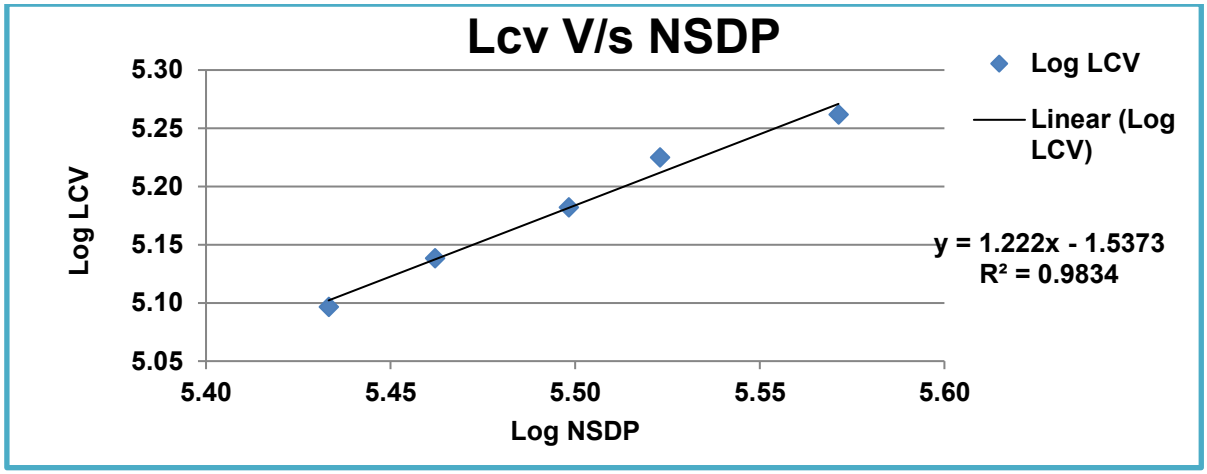


Figure 5-11: Regression and Elasticity NSDP vs. LCV Traffic – extrapolation Haryana

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.

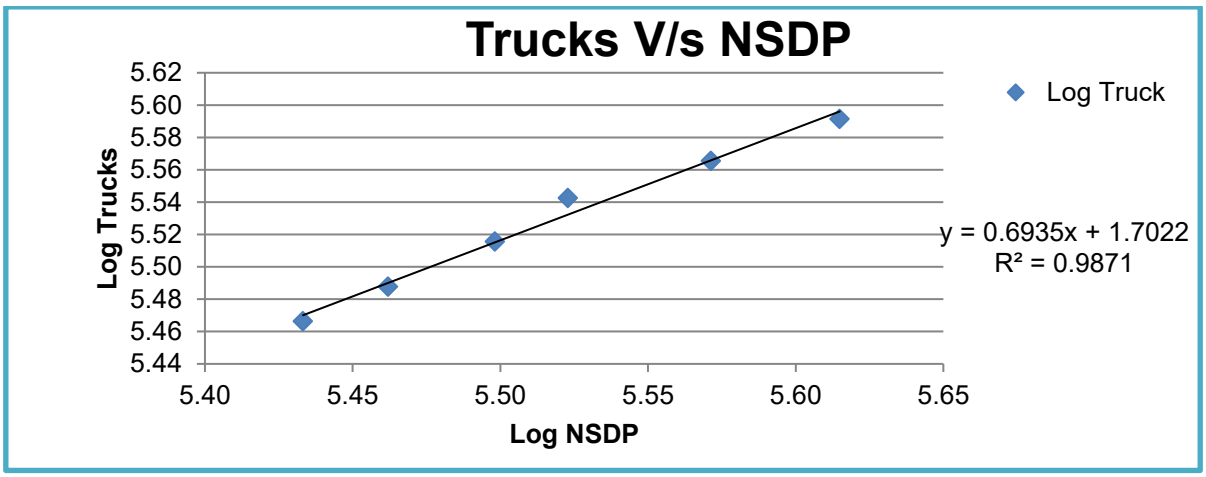


Figure 5-12: Regression and Elasticity NSDP vs. Truck Traffic – extrapolation Haryana

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.

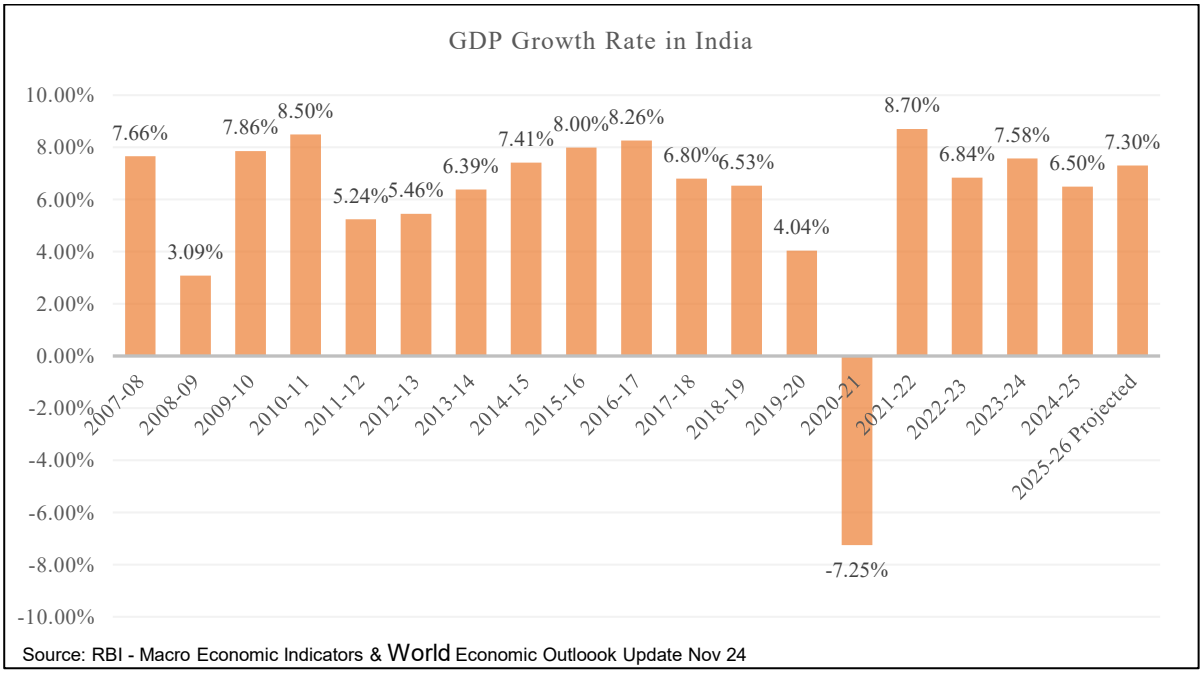


Figure 5-14: Growth of GDP in India

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.

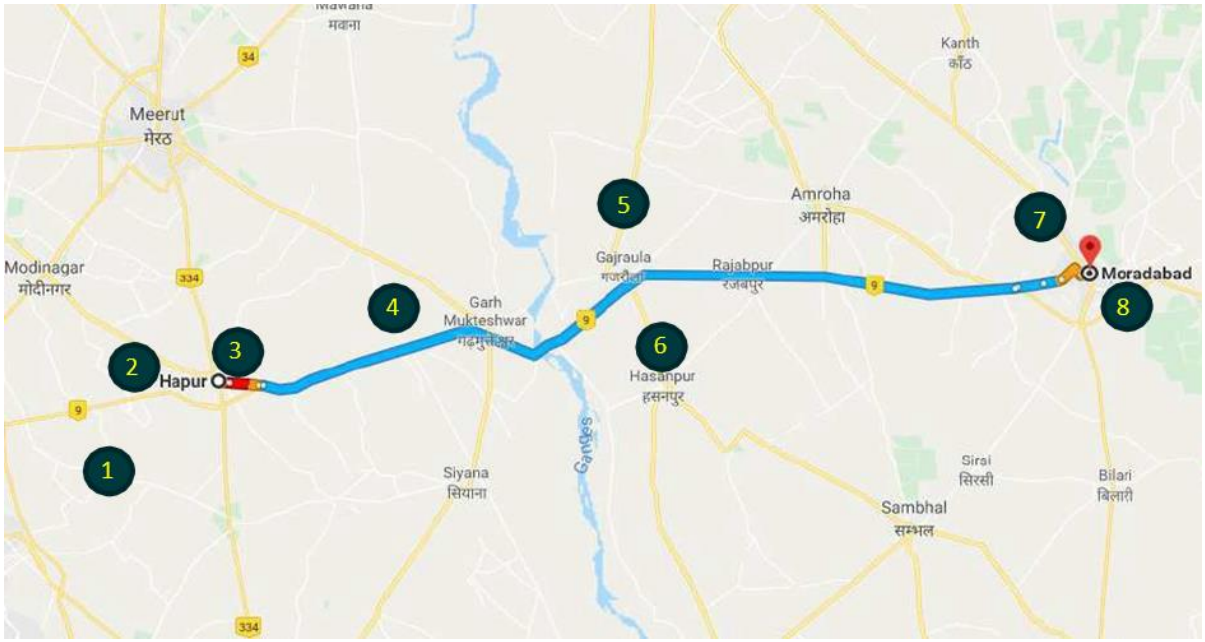


Figure 5-15: Industrial Units along project corridor

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%
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 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	37013	1890	2698	1461	739	1810	5	**45616**	**66367**
2027-28	38870	1948	2784	1492	755	1854	4	**47707**	**69016**
2028-29	40819	2008	2873	1524	771	1899	4	**49898**	**71781**
2029-30	42864	2069	2965	1556	787	1945	4	**52190**	**74667**
2030-31	46412	2172	3141	1644	832	2061	4	**56266**	**80082**
2031-32	50254	2280	3327	1737	879	2183	4	**60664**	**85902**
2032-33	54414	2393	3525	1835	929	2312	4	**65412**	**92157**
2033-34	58920	2512	3735	1939	981	2450	4	**70541**	**98881**
2034-35	63798	2637	3957	2048	1037	2595	4	**76076**	**106110**
2035-36	68177	2750	4165	2197	1113	2787	4	**81193**	**113219**
2036-37	72856	2867	4383	2357	1194	2993	4	**86654**	**120811**
2037-38	77855	2989	4613	2528	1281	3214	4	**92484**	**128918**
2038-39	83199	3116	4854	2712	1374	3452	4	**98711**	**137575**
2039-40	88908	3249	5108	2908	1473	3707	4	**105357**	**146821**
2040-41	94840	3382	5369	3027	1533	3862	4	**112017**	**155360**
2041-42	101167	3519	5644	3150	1595	4023	4	**119102**	**164415**
2042-43	107919	3662	5933	3278	1660	4192	4	**126648**	**174017**
2043-44	115119	3811	6237	3411	1727	4368	4	**134677**	**184201**

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	26493	1495	2248	1781	735	1768	5	**34524**	**52193**
2027-28	27821	1541	2319	1818	751	1810	4	**36064**	**54160**
2028-29	29215	1588	2393	1856	767	1854	4	**37677**	**56211**
2029-30	30680	1636	2470	1895	783	1898	4	**39366**	**58347**
2030-31	33221	1717	2617	2002	828	2010	4	**42399**	**62465**
2031-32	35971	1802	2773	2115	875	2129	4	**45669**	**66883**
2032-33	38949	1892	2938	2235	925	2255	4	**49198**	**71624**
2033-34	42173	1986	3112	2361	977	2389	4	**53002**	**76711**
2034-35	45666	2085	3296	2495	1033	2530	4	**57109**	**82171**
2035-36	48800	2173	3468	2676	1108	2717	4	**60946**	**87704**
2036-37	52149	2265	3649	2870	1188	2918	4	**65043**	**93614**
2037-38	55729	2362	3840	3078	1274	3134	4	**69421**	**99928**
2038-39	59554	2463	4040	3301	1366	3365	4	**74093**	**106673**
2039-40	63641	2567	4251	3541	1465	3614	4	**79083**	**113879**
2040-41	67888	2671	4469	3685	1524	3765	4	**84006**	**120274**
2041-42	72418	2780	4698	3835	1586	3923	4	**89244**	**127045**
2042-43	77250	2893	4939	3991	1650	4087	4	**94814**	**134213**
2043-44	82404	3011	5192	4153	1717	4258	4	**100739**	**141804**

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	37013	1890	2698	1461	739	1810	5	**45616**	**66044**
2027-28	38684	1939	2771	1484	751	1844	4	**47477**	**68350**
2028-29	40430	1989	2846	1508	763	1879	4	**49419**	**70747**
2029-30	42254	2040	2923	1532	775	1915	4	**51443**	**73237**
2030-31	45541	2131	3083	1611	815	2019	4	**55204**	**78183**
2031-32	49083	2226	3250	1695	857	2129	4	**59244**	**83474**
2032-33	52901	2325	3426	1782	902	2245	4	**63585**	**89136**
2033-34	57017	2428	3612	1874	949	2367	4	**68251**	**95194**
2034-35	61453	2537	3808	1971	999	2496	4	**73268**	**101678**
2035-36	65364	2632	3989	2104	1066	2668	4	**77827**	**107982**
2036-37	69523	2731	4178	2246	1138	2851	4	**82671**	**114682**
2037-38	73946	2834	4376	2398	1215	3047	4	**87820**	**121805**
2038-39	78652	2941	4584	2560	1297	3257	4	**93295**	**129376**
2039-40	83657	3052	4801	2733	1385	3481	4	**99113**	**137424**
2040-41	88820	3161	5023	2831	1435	3609	4	**104883**	**144731**
2041-42	94302	3274	5255	2932	1486	3742	4	**110995**	**152443**
2042-43	100122	3391	5498	3037	1539	3880	4	**117471**	**160585**
2043-44	106302	3512	5752	3145	1594	4022	4	**124331**	**169181**

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	26493	1495	2248	1781	735	1768	5	**34524**	**52193**
2027-28	27689	1534	2308	1809	747	1802	4	**35893**	**53899**
2028-29	28938	1573	2370	1838	759	1837	4	**37319**	**55670**
2029-30	30242	1613	2434	1868	771	1872	4	**38804**	**57508**
2030-31	32595	1685	2566	1964	811	1973	4	**41598**	**61280**
2031-32	35132	1760	2706	2066	853	2080	4	**44601**	**65307**
2032-33	37866	1839	2853	2173	897	2193	4	**47825**	**69610**
2033-34	40812	1921	3008	2285	943	2312	4	**51285**	**74206**
2034-35	43987	2007	3172	2403	992	2438	4	**55003**	**79117**
2035-36	46786	2083	3322	2565	1059	2606	4	**58425**	**84049**
2036-37	49764	2161	3479	2738	1131	2786	4	**62063**	**89293**
2037-38	52931	2242	3644	2923	1207	2978	4	**65929**	**94869**
2038-39	56299	2326	3816	3121	1288	3183	4	**70037**	**100798**
2039-40	59881	2414	3996	3332	1375	3402	4	**74404**	**107103**
2040-41	63578	2500	4181	3451	1425	3527	4	**78666**	**112583**
2041-42	67503	2590	4374	3574	1476	3657	4	**83178**	**118358**
2042-43	71669	2683	4576	3702	1528	3791	4	**87953**	**124446**
2043-44	76093	2778	4787	3834	1583	3931	4	**93010**	**130863**

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	37013	1890	2698	1461	739	1810	5	**45616**	**66206**
2027-28	38776	1943	2777	1488	753	1850	4	**47591**	**68683**
2028-29	40623	1997	2858	1515	767	1890	4	**49654**	**71263**
2029-30	42559	2053	2942	1543	781	1931	4	**51813**	**73949**
2030-31	45975	2150	3109	1627	823	2041	4	**55729**	**79128**
2031-32	49666	2251	3286	1715	868	2157	4	**59947**	**84681**
2032-33	53654	2357	3473	1808	915	2280	4	**64491**	**90636**
2033-34	57962	2468	3670	1906	965	2409	4	**69384**	**97022**
2034-35	62616	2585	3879	2009	1017	2546	4	**74656**	**103873**
2035-36	66757	2688	4072	2150	1088	2728	4	**79487**	**110572**
2036-37	71172	2795	4275	2300	1164	2923	4	**84633**	**117710**
2037-38	75878	2907	4488	2461	1246	3131	4	**90115**	**125315**
2038-39	80896	3024	4712	2633	1333	3354	4	**95956**	**133418**
2039-40	86246	3145	4947	2818	1426	3593	4	**102179**	**142051**
2040-41	91785	3265	5188	2926	1481	3734	4	**108383**	**149958**
2041-42	97681	3390	5441	3038	1538	3881	4	**114973**	**158323**
2042-43	103954	3519	5706	3154	1597	4034	4	**121968**	**167174**
2043-44	110630	3654	5984	3274	1658	4193	4	**129397**	**176540**

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	26493	1495	2248	1781	735	1768	5	**34524**	**52193**
2027-28	27755	1537	2314	1813	748	1806	4	**35977**	**54030**
2028-29	29076	1580	2382	1846	761	1845	4	**37494**	**55940**
2029-30	30460	1624	2452	1880	775	1885	4	**39080**	**57927**
2030-31	32906	1700	2592	1982	817	1992	4	**41993**	**61870**
2031-32	35548	1780	2740	2090	862	2105	4	**45129**	**66092**
2032-33	38402	1864	2896	2203	909	2224	4	**48502**	**70611**
2033-34	41486	1952	3061	2322	959	2350	4	**52134**	**75450**
2034-35	44816	2044	3235	2448	1011	2484	4	**56042**	**80631**
2035-36	47779	2125	3397	2619	1082	2661	4	**59667**	**85859**
2036-37	50939	2210	3567	2802	1158	2851	4	**63531**	**91430**
2037-38	54307	2298	3745	2998	1239	3054	4	**67645**	**97368**
2038-39	57900	2390	3932	3208	1326	3272	4	**72032**	**103697**
2039-40	61729	2485	4128	3433	1419	3506	4	**76704**	**110443**
2040-41	65694	2580	4329	3564	1473	3644	4	**81288**	**116370**
2041-42	69914	2679	4540	3700	1530	3788	4	**86155**	**122630**
2042-43	74404	2781	4761	3841	1588	3937	4	**91316**	**129243**
2043-44	79183	2887	4993	3988	1649	4092	4	**96796**	**136230**

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	63632	-6%	8%	8%	22	1.9

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	64030	-5%	8%	8%	22	1.7

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	63235	-6%	9%	9%	22	2.0

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 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.

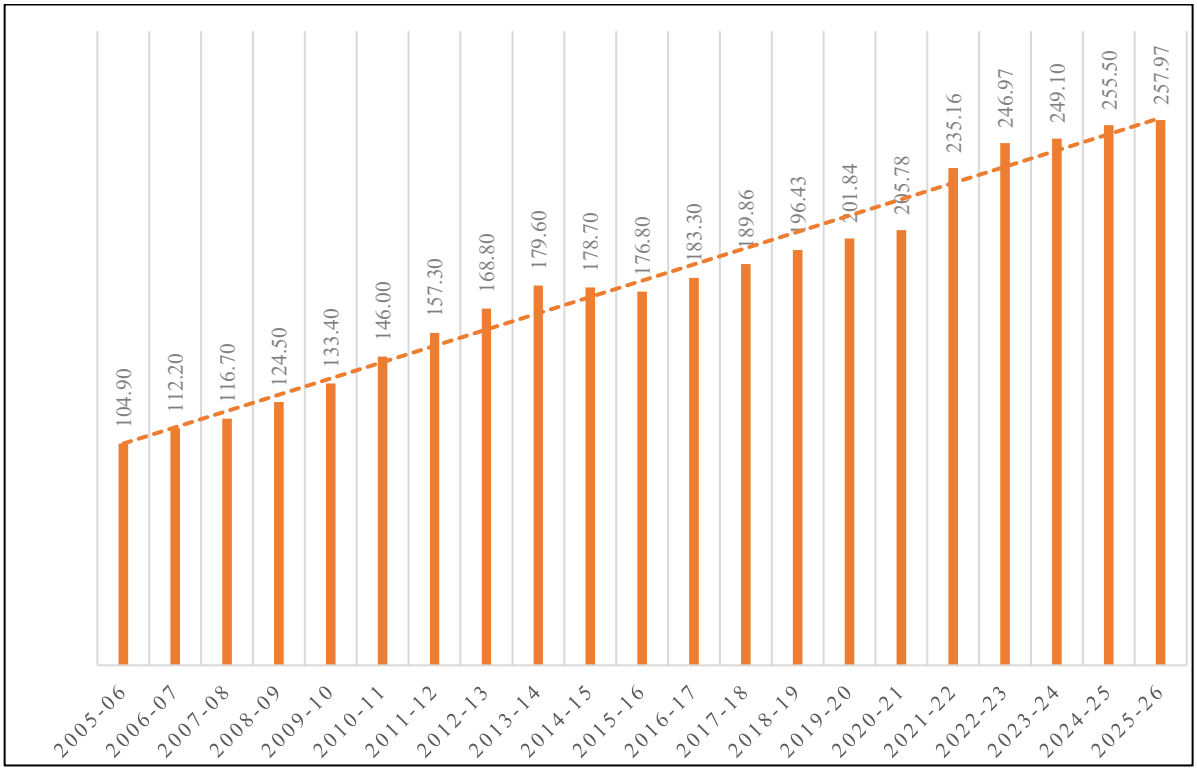


Figure 7-1 : Historical Rate of WPI Inflation in India

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	235.16	246.97	249.10	255.50	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
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	258.52	130.45	**388.97**
2027-28	282.16	143.49	**425.64**
2028-29	305.81	152.56	**458.37**
2029-30	331.42	167.65	**499.07**
2030-31	376.41	189.07	**565.48**
2031-32	419.27	213.11	**632.38**
2032-33	474.12	235.42	**709.55**
2033-34	528.91	265.56	**794.47**
2034-35	599.54	291.96	**891.50**
2035-36	660.49	335.02	**995.51**

Year	TP-1	TP2	Total
2036-37	740.78	372.95	**1113.73**
2037-38	832.07	417.33	**1249.40**
2038-39	933.43	466.74	**1400.16**
2039-40	1039.97	516.01	**1555.98**
2040-41	1150.44	577.60	**1728.03**
2041-42	1289.33	636.80	**1926.13**
2042-43	1417.31	701.52	**2118.84**
2043-44	1588.00	786.11	**2374.12**

Table 7-11 : Toll Revenue Pessimistic Scenario

(Rs. Crores)

Year	TP-1	TP2	Total
2026-27	258.52	130.45	**388.97**
2027-28	280.78	142.81	**423.59**
2028-29	302.82	151.13	**453.95**
2029-30	326.61	165.32	**491.93**
2030-31	369.26	185.56	**554.83**
2031-32	409.42	208.18	**617.60**
2032-33	460.81	228.92	**689.73**
2033-34	511.62	257.03	**768.65**
2034-35	577.32	281.26	**858.58**
2035-36	633.03	321.19	**954.22**
2036-37	706.70	355.90	**1062.60**
2037-38	790.14	396.40	**1186.54**
2038-39	882.25	441.28	**1323.53**
2039-40	978.40	485.57	**1463.97**
2040-41	1077.18	540.96	**1618.14**
2041-42	1201.49	593.62	**1795.10**
2042-43	1314.42	650.82	**1965.24**
2043-44	1465.65	725.83	**2191.48**

Table 7-12 : Toll Revenue Most Likely Scenario

(Rs. Crores)

Year	TP-1	TP2	Total
2026-27	258.52	130.45	**388.97**
2027-28	281.44	143.13	**424.57**
2028-29	304.22	151.82	**456.04**

Year	TP-1	TP2	Total
2029-30	328.93	166.50	**495.43**
2030-31	372.69	187.34	**560.03**
2031-32	414.11	210.67	**624.78**
2032-33	467.18	232.18	**699.36**
2033-34	519.96	261.28	**781.23**
2034-35	588.06	286.62	**874.68**
2035-36	646.35	328.12	**974.47**
2036-37	723.21	364.43	**1087.64**
2037-38	810.48	406.80	**1217.28**
2038-39	906.98	453.92	**1360.90**
2039-40	1008.15	500.61	**1508.77**
2040-41	1112.53	559.09	**1671.62**
2041-42	1243.86	614.98	**1858.83**
2042-43	1364.00	675.85	**2039.85**
2043-44	1524.64	755.60	**2280.24**

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 km to 148.277 is currently six lane highway. 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 -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.

IRB InvIT Fund

KISHANGARH TO GULABPURA SECTION OF NH-79 &NH-79A IN THE STATE OF RAJASTHAN (LENGTH 90 KM)







TRAFFIC STUDY & REVENUE PROJECTION REPORT (FINAL)

OCTOBER 2026

GMD CONSULTANTS NAVI MUMBAI

GMD Consultants

503, Mayuresh Chambers, Plot No. 60, Sector -11,
CBD Belapur, Navi Mumbai. 400 614. Maharashtra.
Phone : +91-22-2756 4586 / 2756 5313
Email : info@gmdconsultants.in
Web : www.gmdconsultants.in

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OCTOBER 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.

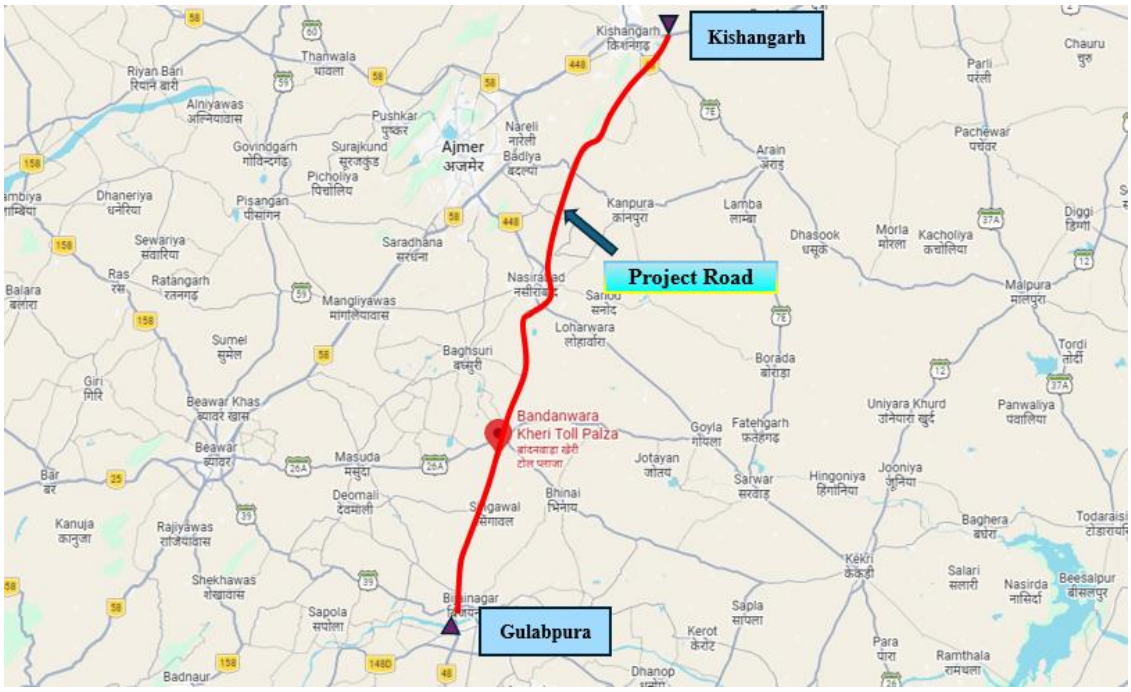


Figure 1-1 : Alignment of Project Stretch

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.

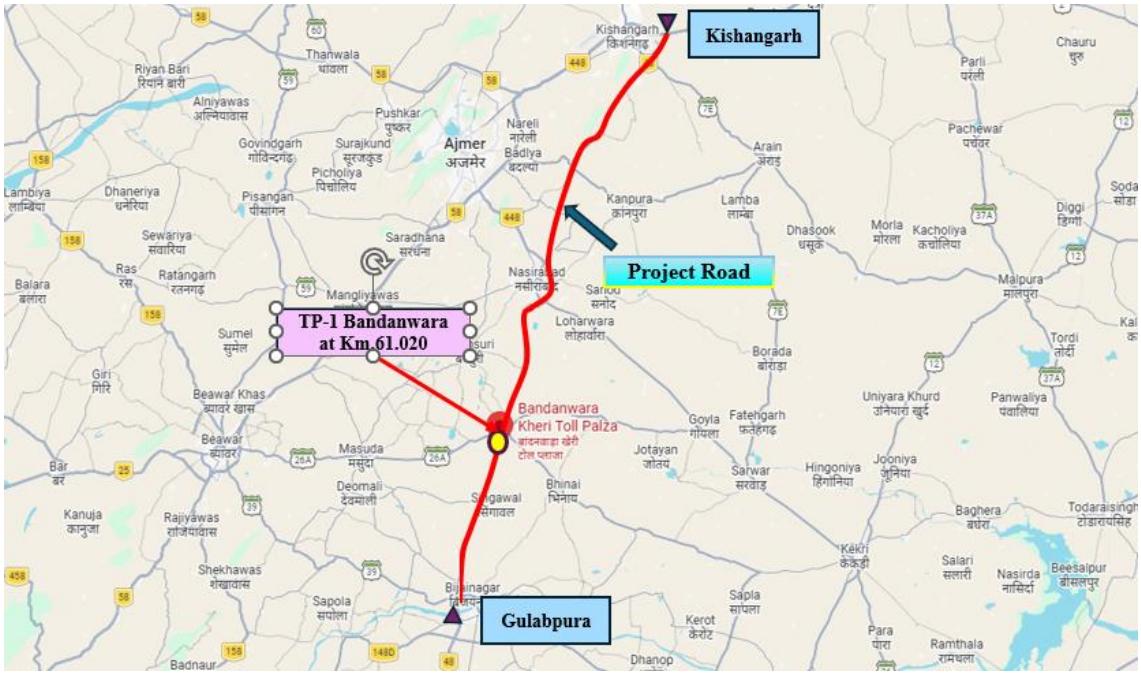


Figure 2-1 : Project Alignment with Toll Plaza

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 ,2025-26 and traffic data from April 2026 to August 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, 2024-25,2025-26 & Five months from April 2026 to August 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2024-25,2025-26 & Five months from April 2026 to August 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2024-25,2025-26 & Five months from April 2026 to August 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2024-25,2025-26 & Five months from April 2026 to August 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2024-25,2025-26 & Five months from April 2026 to August 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, 2025-26 & traffic data from April 2026 to August 2026.

Since the traffic data available for this update is for only Five Months, from April 2026 to August 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 Five months to arrive at Annual Average Daily Traffic of base year 2026-27. 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 2026-27.

Table 3-3 : Traffic Data at Bandanwara (Khedi)Toll Plaza at Km 61.020

Sr. No	Type of Vehicle	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	Annual Average Daily Traffic (Nos.)- 2026-27
1	Car	448	3827	5400	6428	6333	9499	9113
2	Minibus /LCV	326	522	736	868	664	847	887
3	Bus	38	337	486	624	163	487	592
4	Truck	264	1756	2375	2803	2206	2474	2417
5	3-Axle Commercial vehicle	318	1805	2045	2188	1654	1738	1786
6	Multi axle	748	4141	4709	5396	4444	5219	5472
7	Oversized Vehicle	70	319	296	463	473	11	10
Total		**2212**	**12707**	**16046**	**18770**	**15937**	**20276**	**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
	2026-27	20276	49495	2.44

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.

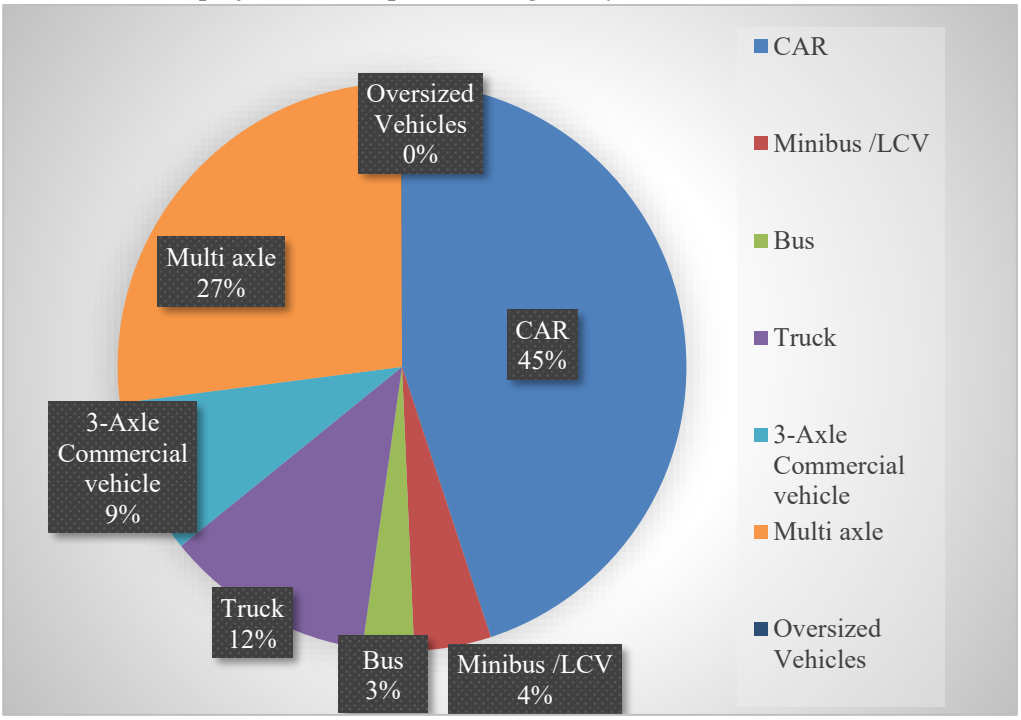


Figure 3-1 : Model Split of Tollable Vehicle

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 2026-27.

Table 3-6 : Journey Type Bifurcation of Traffic at Bandanwara TP KM 61.020

Sr. No	Type	Traffic Volume (Nos.) 2026-27
1	Single Journey	12246
2	Return Journey	3582
3	Local Commercial Single Journey	590
4	Monthly Pass Local	5
5	Monthly Pass	2
6	Annual Pass Car	3851

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 60%. Return journey component is 18%. The number of Local Commercial Single Journey is 3% and Monthly Pass Local 0% and Annual Pass Car is 19% 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.

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.

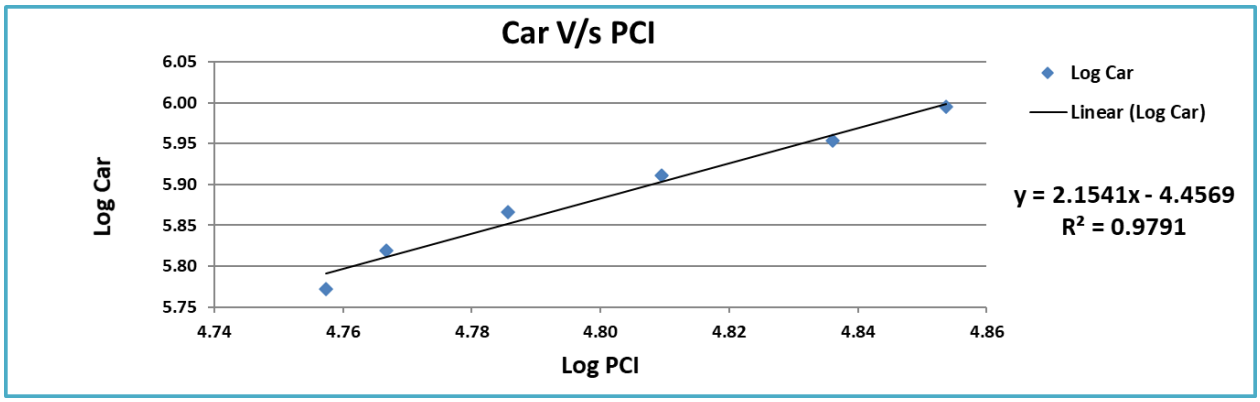


Figure 5-1 : Regression and Elasticity PCI vs. Car – Extrapolation Rajasthan

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.

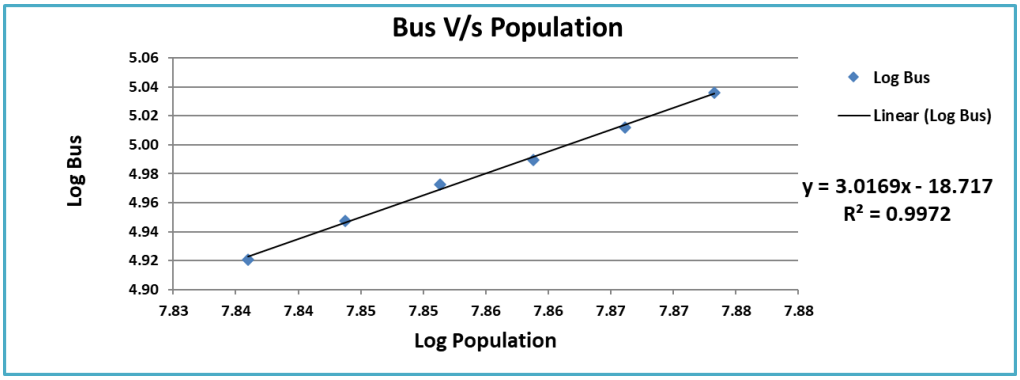


Figure 5-2 : Regression and Elasticity Population vs. Bus – Extrapolation Rajasthan

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.

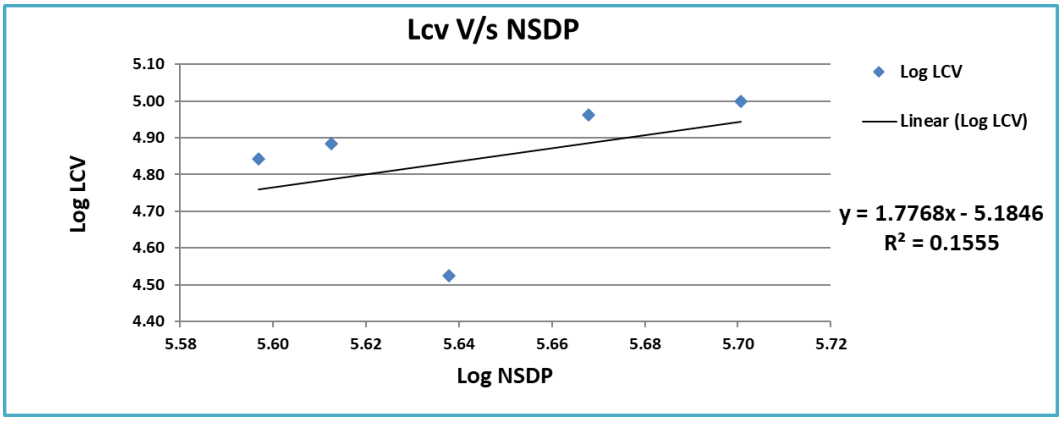


Figure 5-3 : Regression and Elasticity NSDP vs. LCV Traffic - extrapolation Rajasthan.

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%

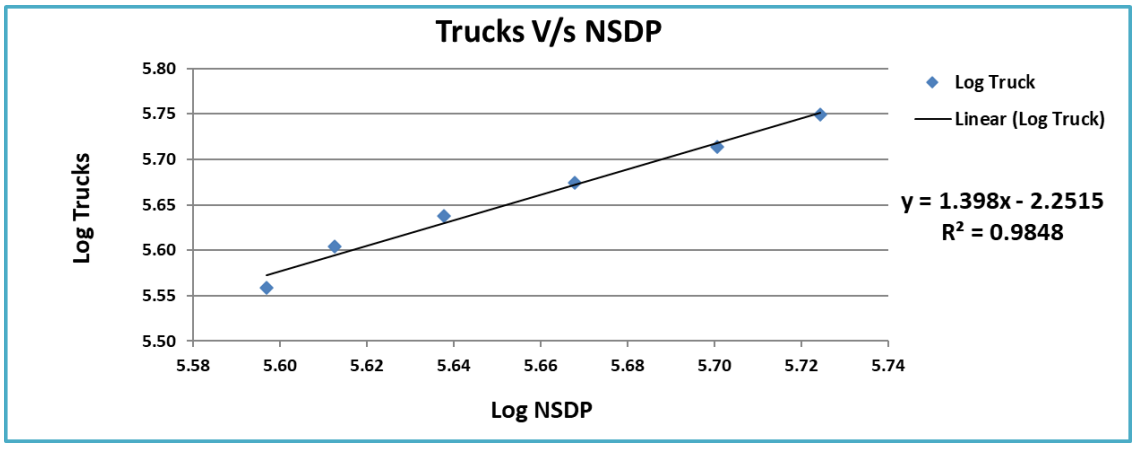


Figure 5-4 : Regression and Elasticity NSDP vs. Goods Traffic - extrapolation Rajasthan.

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.

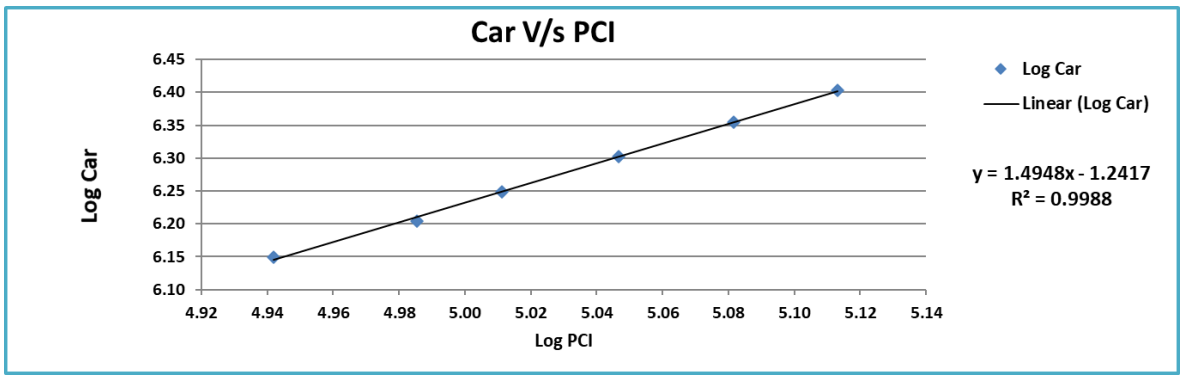


Figure 5-5 : Regression and Elasticity PCI vs. Car – Extrapolation Gujarat

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.

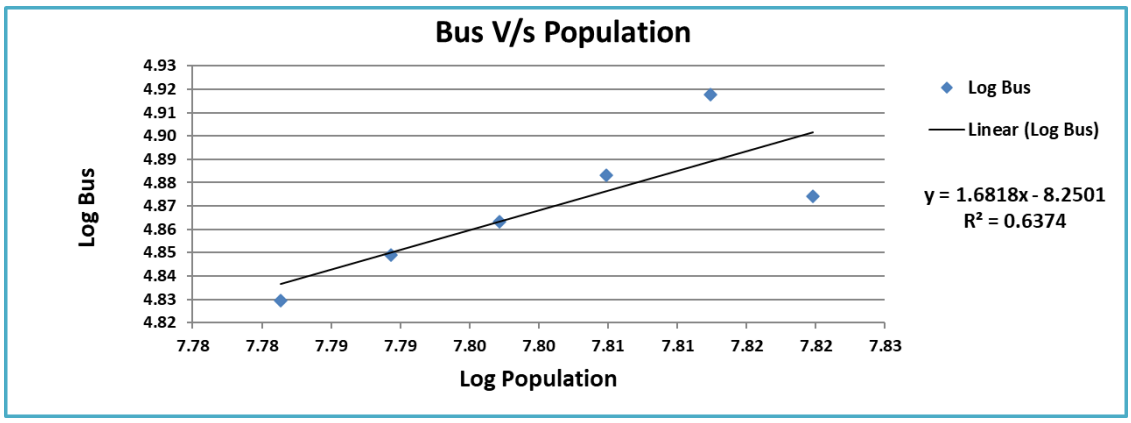


Figure 5-6 : Regression and Elasticity Population vs. Bus – Extrapolation Gujarat

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.

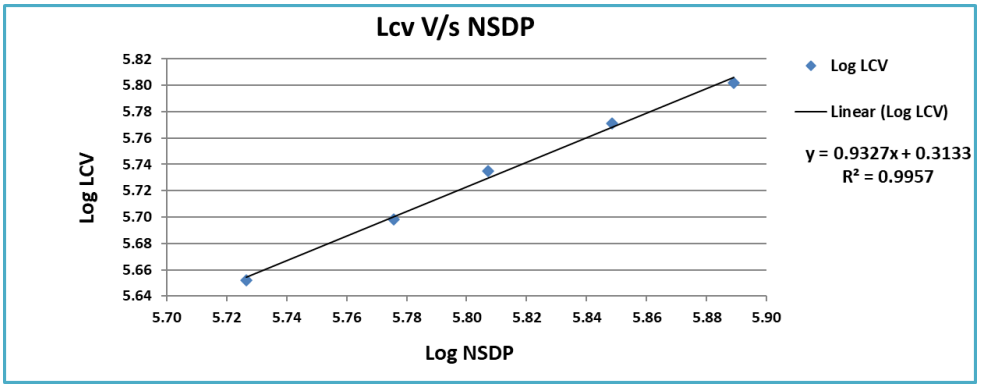


Figure 5-7 : Regression and Elasticity NSDP vs. LCV Traffic - extrapolation Gujarat.

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%

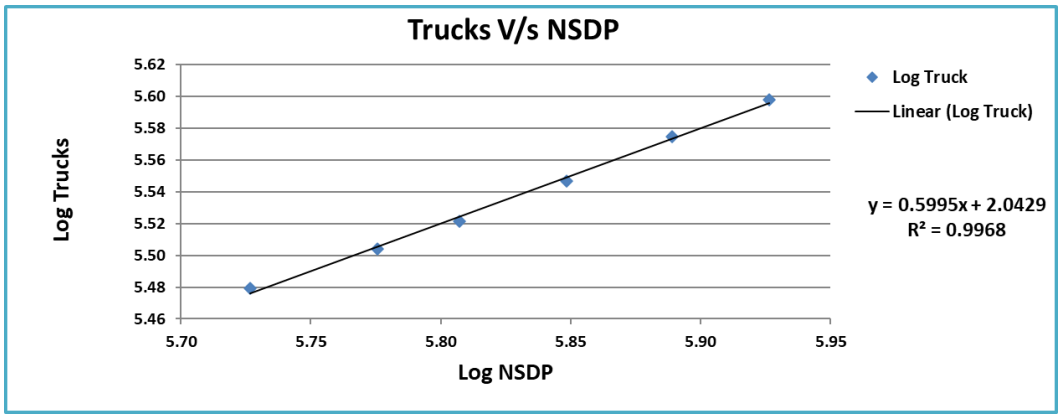


Figure 5-8 : Regression and Elasticity NSDP vs. Goods Traffic - extrapolation Gujarat.

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.

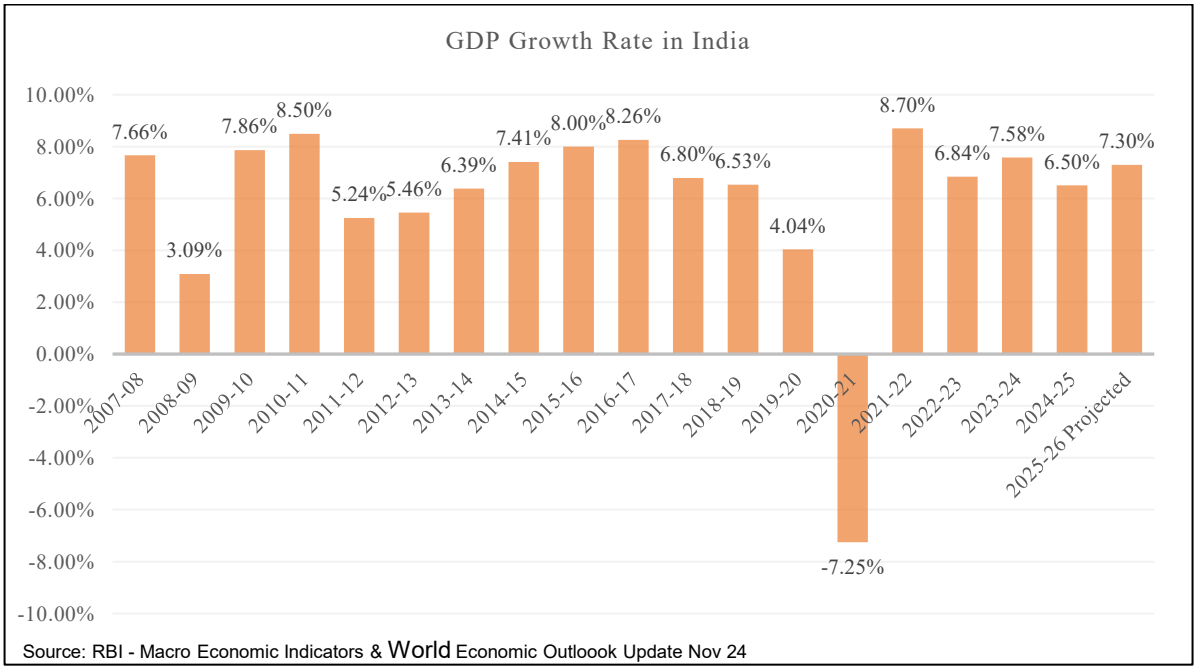


Figure 5-9 : Growth of GDP in India

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.

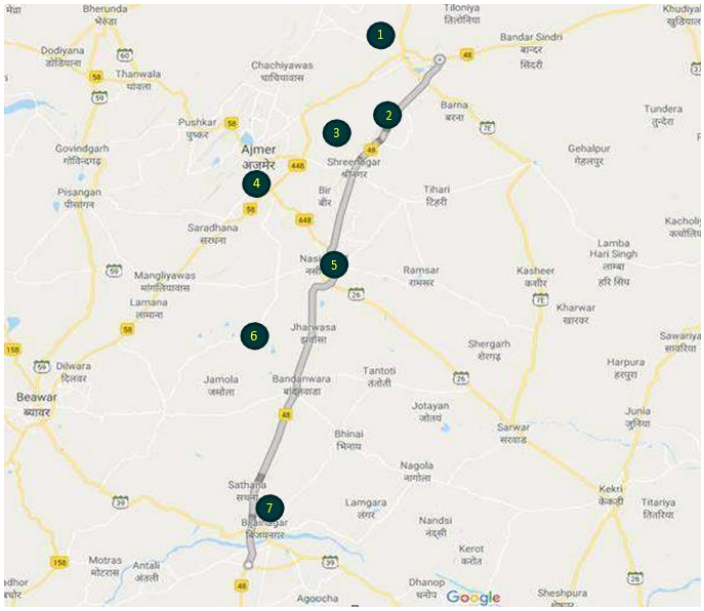


Figure 5-10 : Industrial Units along project corridor.

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.

The Jaipur Ring Road is a 147 km expressway encircling Jaipur, developed by the Jaipur Development Authority (JDA). It was conceived by the PWD in December 2000 on a BOT basis and is being executed in three phases. Phase I, a 47 km stretch in the southern part of the city connecting Ajmer Road, Tonk Road and Agra Road, is in place. Phase III is a 97.75 km northern segment linking Agra Road, Delhi Road, Sikar Road and Ajmer Road, and is yet to be constructed. As of August 2026, NHAI had identified the starting point near Bagru on Ajmer Road, and land demarcation had begun at several locations.

Construction of Phase III will require large volumes of cement for pavements, structures and interchanges. We expect this demand to be met largely by the Chittorgarh cement cluster. Jaipur-bound movement from this cluster runs along NH-48 through Bhilwara, Gulabpura and

Kishangarh, so it passes directly over the Kishangarh–Gulabpura stretch. This is expected to have a positive impact on the Asset through higher heavy commercial vehicles and bulk-tanker traffic.

Phase III is currently at the land-demarcation stage, and construction packages are yet to be awarded. Allowing for award and mobilization, we have factored in the impact over a three-year period from FY29 to FY31, during which construction is expected to be completed.

The positive impact on account of the above has been factored in 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	9113	887	592	2417	1786	5472	10	**20276**	**50183**
2027-28	9906	920	616	2513	1900	5872	10	**21737**	**53599**
2028-29	10767	954	641	2618	2026	6315	10	**23331**	**57357**
2029-30	11704	989	667	2728	2160	6791	10	**25049**	**61393**
2030-31	12658	1028	693	2830	2286	7243	10	**26748**	**65292**
2031-32	13690	1068	720	2929	2414	7706	10	**28537**	**69333**
2032-33	14806	1110	748	3031	2548	8199	10	**30452**	**73638**
2033-34	16012	1153	777	3138	2690	8724	10	**32504**	**78225**
2034-35	17318	1199	807	3248	2840	9282	10	**34704**	**83113**
2035-36	18638	1248	837	3348	2948	9701	10	**36730**	**87241**
2036-37	20059	1299	868	3451	3060	10137	10	**38884**	**91594**
2037-38	21587	1353	899	3558	3176	10593	10	**41176**	**96185**
2038-39	23232	1408	932	3668	3296	11070	10	**43616**	**101029**
2039-40	25003	1465	966	3781	3421	11568	10	**46214**	**106140**
2040-41	26898	1528	1000	3889	3547	12062	10	**48934**	**111366**
2041-42	28788	1595	1033	3982	3656	12494	10	**51558**	**116221**
2042-43	30810	1666	1067	4077	3768	12940	10	**54338**	**121319**

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	9113	887	592	2417	1786	5472	10	**20276**	**50183**
2027-28	9859	915	613	2500	1890	5845	10	**21632**	**53348**
2028-29	10667	945	635	2592	2005	6257	10	**23111**	**56822**
2029-30	11541	976	658	2687	2128	6698	10	**24698**	**60536**
2030-31	12423	1009	680	2775	2241	7110	10	**26248**	**64079**
2031-32	13376	1043	703	2858	2355	7530	10	**27875**	**67724**
2032-33	14400	1078	727	2944	2474	7974	10	**29607**	**71591**

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU (Including Exempted)
2033-34	15503	1115	752	3033	2600	8445	10	**31458**	**75693**
2034-35	16689	1153	777	3124	2732	8942	10	**33427**	**80045**
2035-36	17878	1194	802	3205	2822	9300	10	**35211**	**83621**
2036-37	19151	1237	827	3288	2915	9672	10	**37100**	**87375**
2037-38	20515	1282	853	3373	3011	10060	10	**39104**	**91319**
2038-39	21976	1328	880	3460	3110	10462	10	**41226**	**95462**
2039-40	23540	1376	908	3550	3212	10881	10	**43477**	**99815**
2040-41	25206	1427	936	3634	3313	11292	10	**45818**	**104232**
2041-42	26850	1483	963	3704	3398	11640	10	**48048**	**108257**
2042-43	28603	1541	990	3775	3485	11998	10	**50402**	**112466**

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	9113	887	592	2417	1786	5472	10	**20276**	**50183**
2027-28	9883	917	615	2506	1894	5858	10	**21683**	**53473**
2028-29	10718	949	639	2605	2014	6286	10	**23221**	**57090**
2029-30	11624	982	664	2707	2142	6745	10	**24874**	**60963**
2030-31	12542	1017	688	2802	2261	7177	10	**26497**	**64683**
2031-32	13533	1055	713	2893	2381	7619	10	**28204**	**68525**
2032-33	14603	1094	738	2987	2508	8088	10	**30028**	**72609**
2033-34	15757	1134	765	3085	2641	8585	10	**31977**	**76950**
2034-35	17001	1175	793	3186	2782	9113	10	**34060**	**81566**
2035-36	18254	1220	820	3276	2880	9501	10	**35961**	**85414**
2036-37	19599	1267	848	3369	2982	9905	10	**37980**	**89462**
2037-38	21043	1316	876	3464	3087	10327	10	**40123**	**93723**
2038-39	22594	1366	906	3562	3197	10767	10	**42402**	**98209**
2039-40	24259	1419	937	3663	3310	11225	10	**44823**	**102933**
2040-41	26036	1476	968	3758	3423	11677	10	**47348**	**107744**
2041-42	27800	1538	998	3839	3520	12066	10	**49771**	**112173**
2042-43	29683	1602	1029	3922	3619	12467	10	**52332**	**116814**

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 Kishangarh-Gulabpura 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	50333	-34%	51%	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	50375	-34%	51%	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	50291	-34%	51%	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.

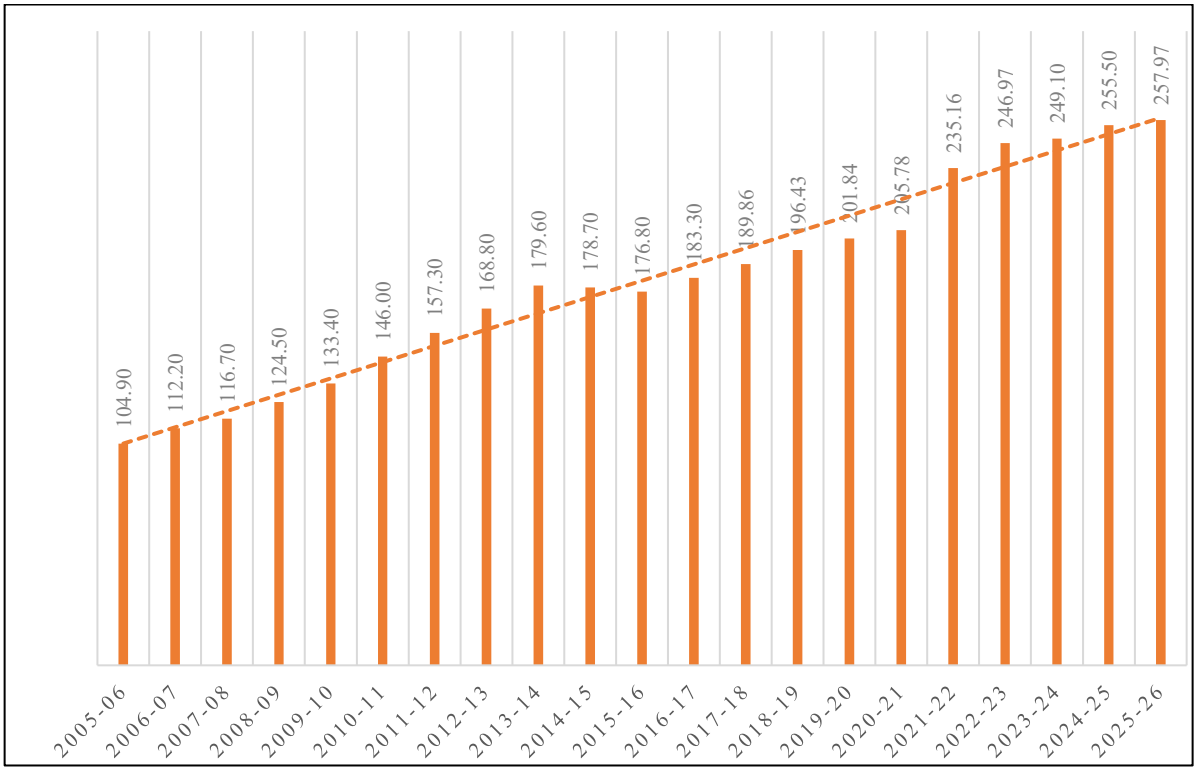


Figure 7-1 : Historical Rate of WPI Inflation in India

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	235.16	246.97	249.10	255.50	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	**293.91**
2027-28	**328.32**
2028-29	**365.63**
2029-30	**410.51**
2030-31	**457.02**
2031-32	**508.16**
2032-33	**563.83**
2033-34	**626.01**
2034-35	**696.50**
2035-36	**766.50**

Year	TP-1
2036-37	841.93
2037-38	922.03
2038-39	1012.94
2039-40	1118.55
2040-41	1226.37
2041-42	1338.34
2042-43	1462.88

Table 7-8 : Toll Revenue Pessimistic Scenario

(Rs. Crores)

Year	TP-1
2026-27	293.91
2027-28	326.81
2028-29	362.22
2029-30	404.76
2030-31	448.51
2031-32	496.34
2032-33	548.21
2033-34	605.83
2034-35	670.78
2035-36	734.68
2036-37	803.17
2037-38	875.41
2038-39	957.20
2039-40	1051.95
2040-41	1147.88
2041-42	1246.78
2042-43	1356.37

Table 7-9 : Toll Revenue Most Likely Scenario

(Rs. Crores)

Year	TP-1
2026-27	293.91
2027-28	327.55
2028-29	363.94
2029-30	407.69
2030-31	452.84
2031-32	502.31
2032-33	556.04
2033-34	615.89
2034-35	683.62
2035-36	750.58
2036-37	822.53
2037-38	898.58
2038-39	984.78
2039-40	1084.80

Year	TP-1
2040-41	1186.49
2041-42	1291.78
2042-43	1408.58

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.

IRB InvIT Fund

KAITHAL TO RAJASTHAN SECTION OF NH 152/65 (KM 33.250 TO KM 241.580) IN THE STATE OF HARYANA









TRAFFIC STUDY & REVENUE PROJECTION REPORT (FINAL)

OCTOBER 2026

GMD Consultants
503, Mayuresh Chambers, Plot No. 60, Sector -11,
CBD Belapur, Navi Mumbai. 400 614.
Maharashtra.
Phone : +91-22-2756 4586 / 2756 5313
Email : info@gmdconsultants.in
Web : www.gmdconsultants.in

KAITHAL TO RAJASTHAN SECTION OF NH-152/65

(KM 33.250 TO 241.580)

IN THE STATE OF HARYANA

TRAFFIC STUDY & REVENUE
PROJECTION REPORT
(FINAL)



OCTOBER 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 30.250 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.

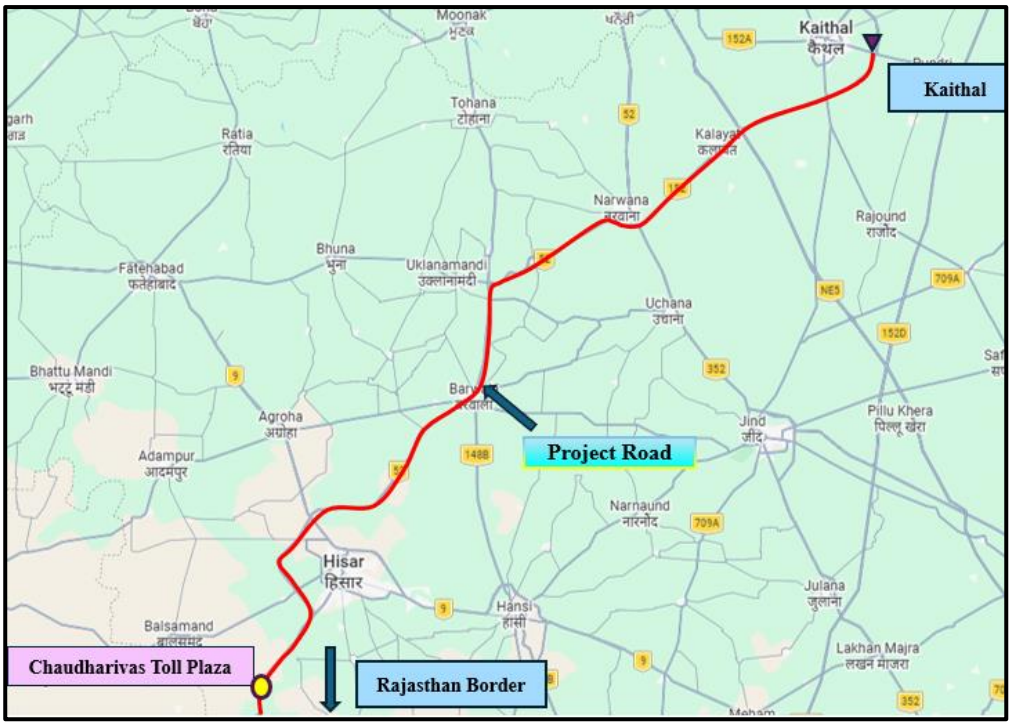


Figure 1-1 : Alignment of Project Stretch

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 30.250 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 Pradesh 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. This would improve the flow of traffic on project corridor to great extent.

Following figure show project alignment and toll plaza locations.

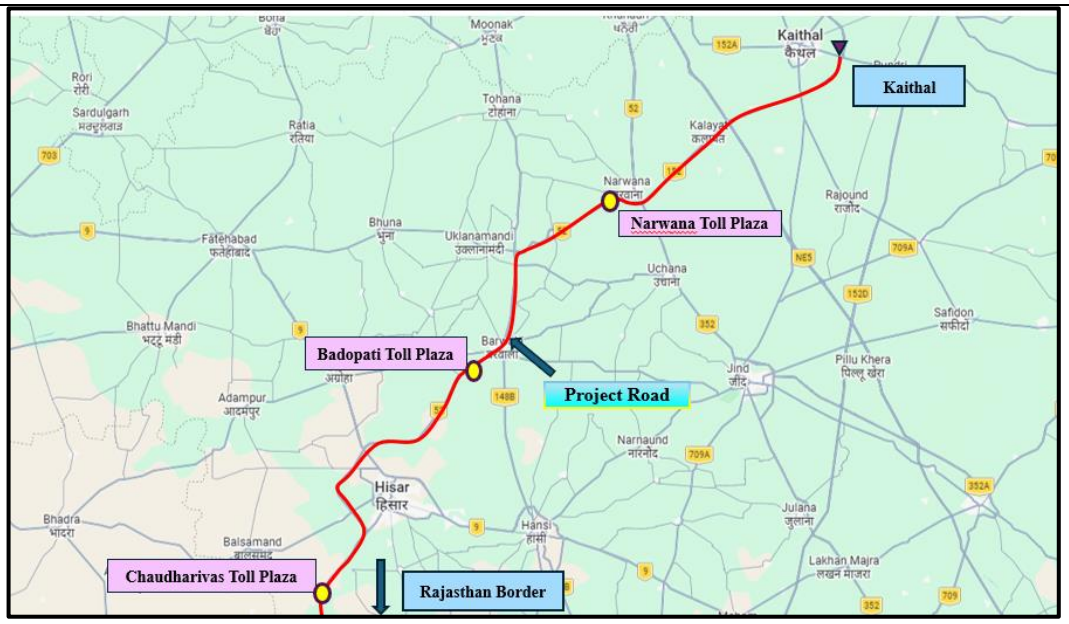


Figure 2-1 : Project Alignment with Toll Plaza

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 ,2025-26 and traffic data from April 2026 to August 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 ,2025-26 & Five months from April 2026 to August 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2024-25 ,2025-26 & Five months from April 2026 to August 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2024-25 ,2025-26 & Five months from April 2026 to August 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2024-25 ,2025-26 & Five months from April 2026 to August 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2024-25 ,2025-26 & Five months from April 2026 to August 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 ,2025-26 & Five months from April 2026 to August 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2024-25 ,2025-26 & Five months from April 2026 to August 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2024-25 ,2025-26 & Five months from April 2026 to August 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2024-25 ,2025-26 & Five months from April 2026 to August 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2024-25 ,2025-26 & Five months from April 2026 to August 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 ,2025-26 & Five months from April 2026 to August 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2024-25 ,2025-26 & Five months from April 2026 to August 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2024-25 ,2025-26 & Five months from April 2026 to August 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2024-25 ,2025-26 & Five months from April 2026 to August 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-23, 2024-25 ,2025-26 & Five months from April 2026 to August 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)

Vehicle Type	
	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 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- 25,2025-26 & traffic data from April 2026 to August 2026.

Since the traffic data available for this update is for only Five months, from April 2026 to August 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 Five months to arrive at Annual Average Daily Traffic of base year 2026-27. 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 2026-27.

Table 3-3 : Traffic Data at Narwana Toll Plaza at Km 125

Sr. No	Type of Vehicle	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	Annual Average Daily Traffic (Nos.)- 2026-27
1	Car	2657	4351	4094	4282	4025	5022	5652
2	Minibus/LCV	569	381	325	367	300	319	338
3	Bus	279	315	289	338	320	407	368
4	Truck	287	529	462	477	350	317	359
5	3-Axle	283	416	345	321	214	230	222
6	Multi Axle	694	1347	1343	1382	1026	990	952
7	Oversized Vehicles	5	20	47	48	32	48	37
	Total	**4774**	**7357**	**6905**	**7215**	**6267**	**7332**	**7928**

Table 3-4 : Traffic Data at Badopatti Toll Plaza at Km 171

Sr. No	Type of Vehicle	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	Annual Average Daily Traffic (Nos.)- 2026-27
1	Car	4850	4915	4591	4132	4075	5635	6502
2	Minibus/LCV	567	374	331	306	305	311	332
3	Bus	387	395	384	405	404	515	464
4	Truck	295	577	503	437	367	330	356
5	3-Axle	339	505	400	336	301	284	283
6	Multi Axle	831	1522	1326	1130	1012	1001	1027
7	Oversized Vehicles	3	16	46	55	59	74	60
	Total	**7272**	**8303**	**7581**	**6800**	**6523**	**8150**	**9025**

Table 3-5 : Traffic Data at Chaudhariwas Toll Plaza at Km 212

Sr. No	Type of Vehicle	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	Annual Average Daily Traffic (Nos.)- 2026-27
1	Car	2652	4371	4076	4167	3835	4774	4045
2	Minibus/LCV	532	335	335	356	347	330	242
3	Bus	147	181	159	164	164	409	185
4	Truck	331	629	522	497	468	444	327
5	3-Axle	423	630	537	452	373	313	288
6	Multi Axle	1257	2121	1812	1656	1481	1345	1241
7	Oversized Vehicles	5	29	65	65	72	73	66
	Total	**5347**	**8295**	**7506**	**7356**	**6740**	**7689**	**6395**

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

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 3-7 : Traffic in PCU at Project Stretch Base Year 2026-27

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

Year	Toll Plaza Location (Km)	Traffic No	PCU	PCU Index
	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
	Chaudhariwas Km 212.400	7689	15150	1.97
2026-27	Narwana Km 125.79	7928	13457	1.70
	Badopatti Km 171.58	9025	15204	1.68
	Chaudhariwas Km 212.400	6395	12692	1.98

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.

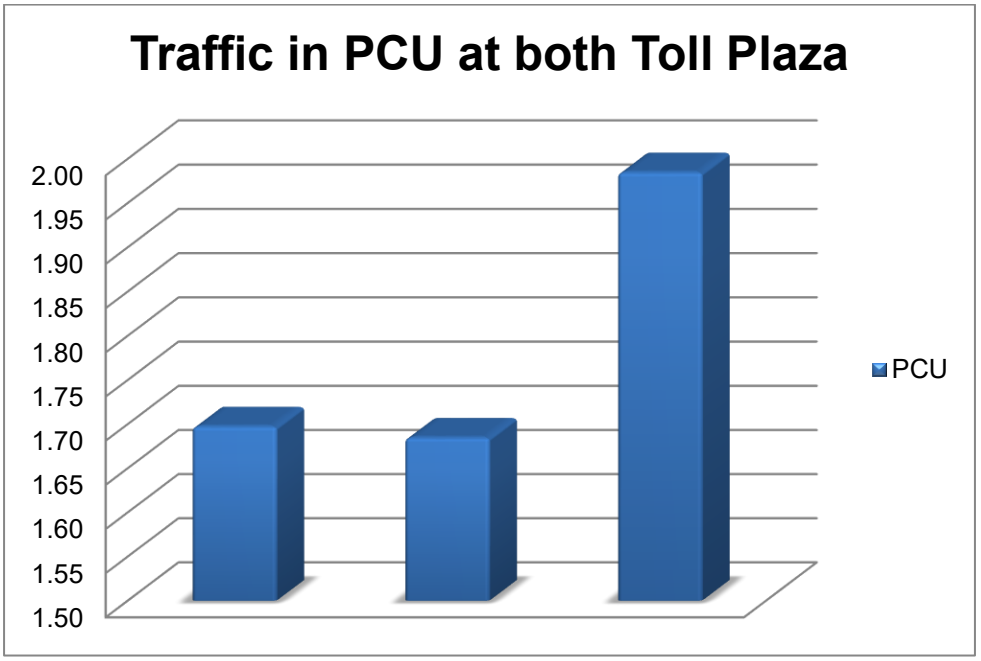


Figure 3-1 : Comparison of PCU Index

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.

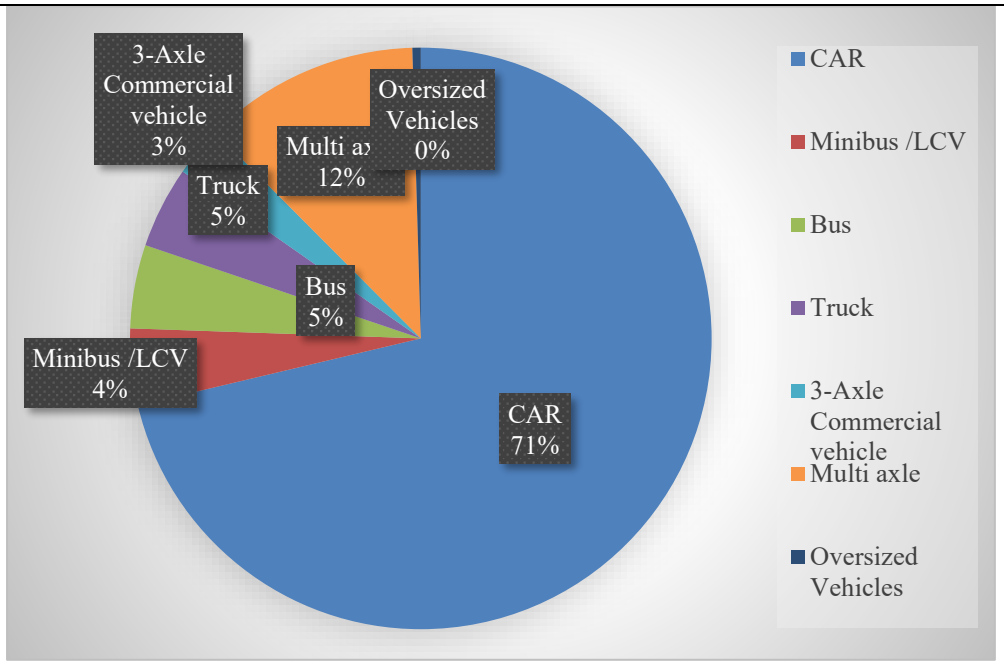


Figure 3-2 :Model Split of Tollable Vehicle-Km 125.79

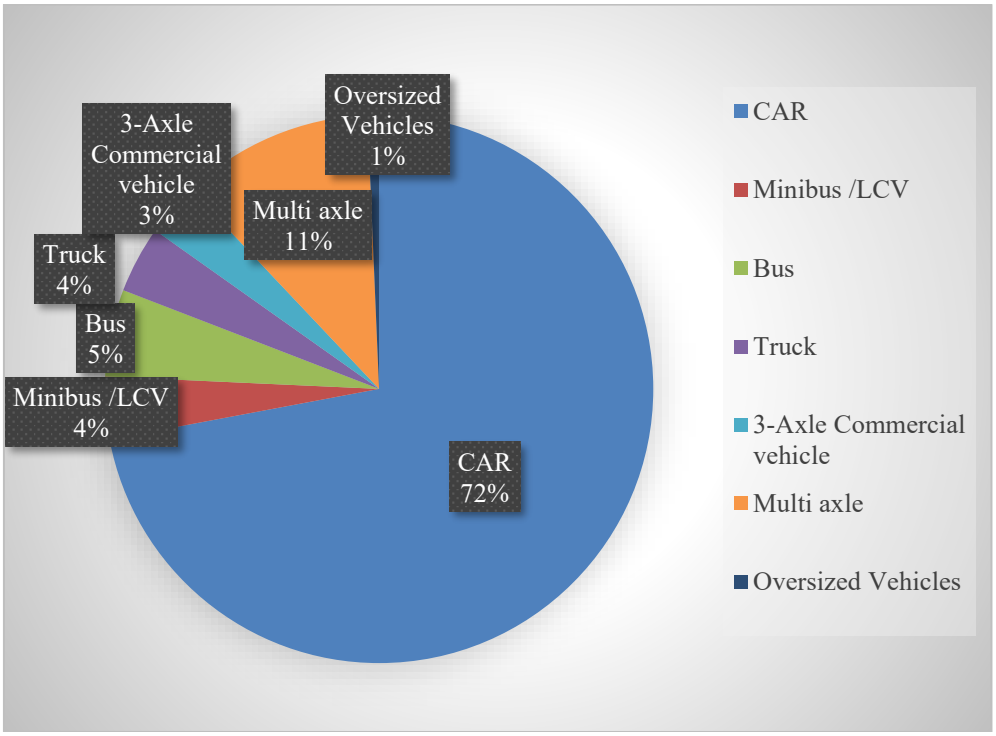


Figure 3-3 :Model Split of Tollable Vehicle-Km 171.58

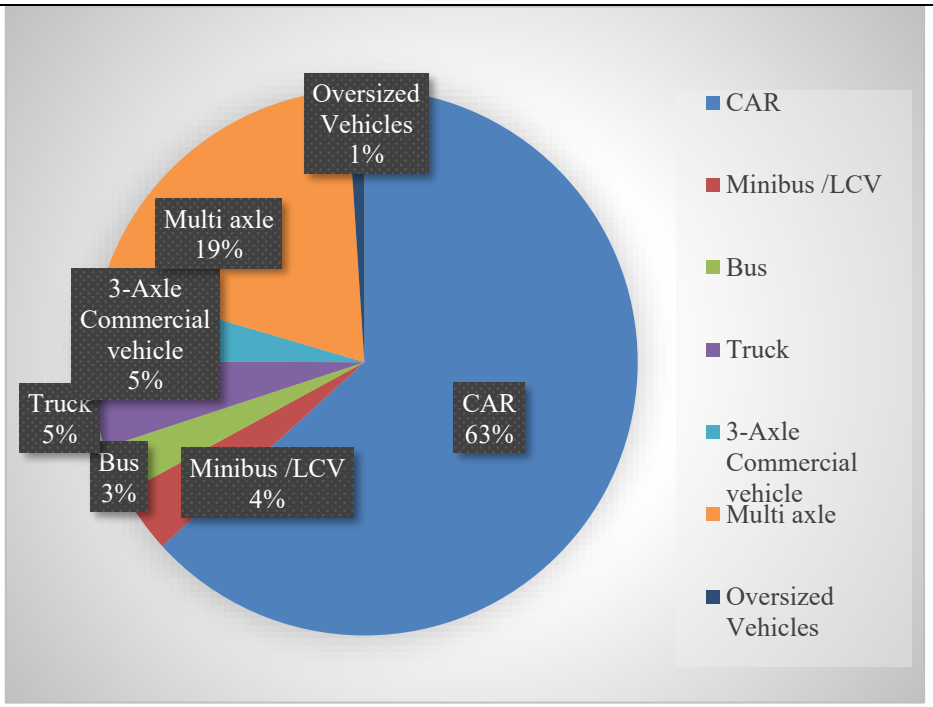


Figure 3-4 :Model Split of Tollable Vehicle-Km 212.400

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 2026-27.

Table 3-8 : Journey Type Bifurcation of Traffic at Narwana TP-1 KM 125

Sr. No	Type	Traffic Volume (Nos.) 2026-27
1	Single Journey	2547
2	Return Journey	1926
3	Local Commercial Single Journey	57
4	Monthly Pass Local	7
5	Monthly Pass	4

Sr. No	Type	Traffic Volume (Nos.) 2026-27
6	Annual Pass Car	3387

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 component in total traffic numbers is a high as 43% followed by Annual Pass, Single journey 32% and Return journey component is 32%. The number of monthly pass local is 0% and local commercial single Journey also 1% 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.) 2026-27
1	Single Journey	2669
2	Return Journey	1916
3	Local Commercial Single Journey	278
4	Monthly Pass Local	29
5	Monthly Pass	1
6	Annual Pass Car	4132

Table 3-10 : Journey Type Bifurcation of Traffic at Chaudhariwas TP KM 212

Sr. No	Type	Traffic Volume (Nos.) 2026-27
1	Single Journey	2954
2	Return Journey	821
3	Local Commercial Single Journey	129
4	Monthly Pass Local	10
5	Monthly Pass	1
6	Annual Pass Car	2480

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.

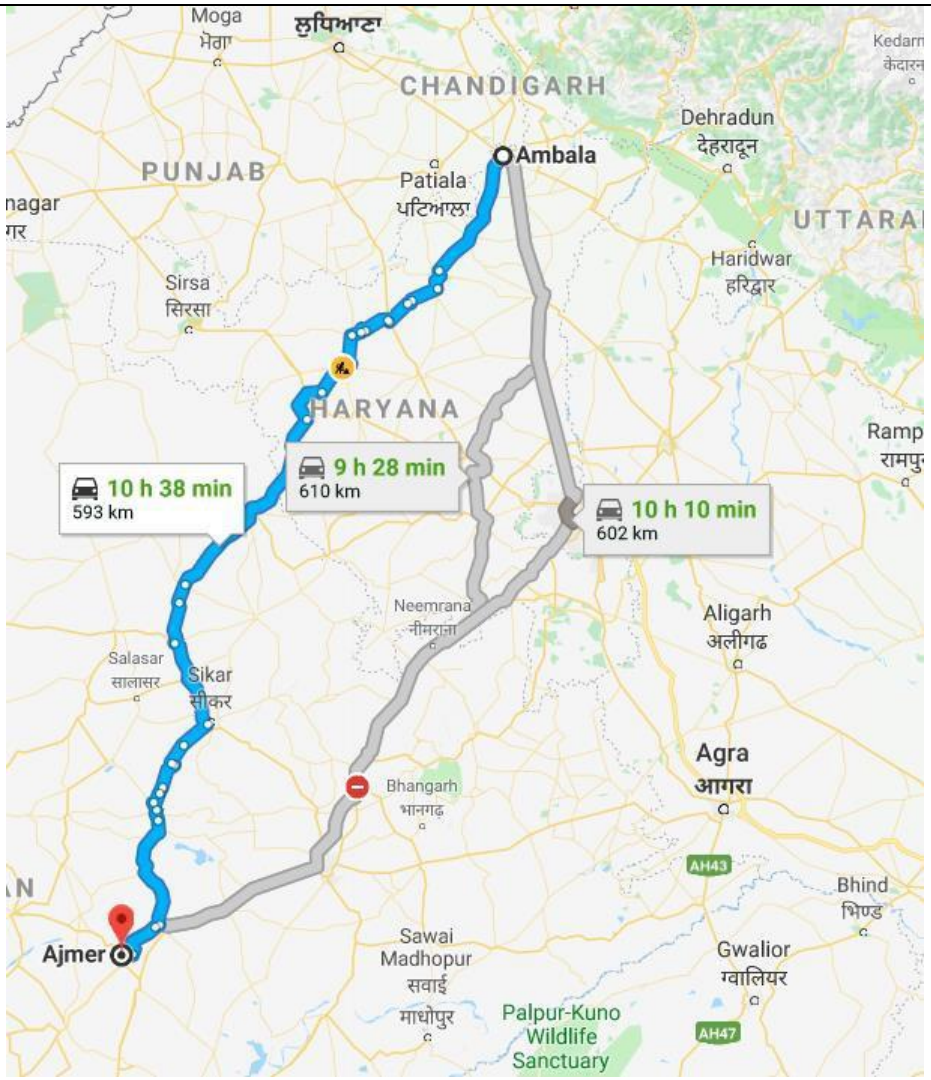


Figure 4-1 : Alternate route at regional level between Zones.

Above figure depicts alternate route between Ambala and Ajmer. Following figure shows alternate routes between Ludhiana and Ajmer

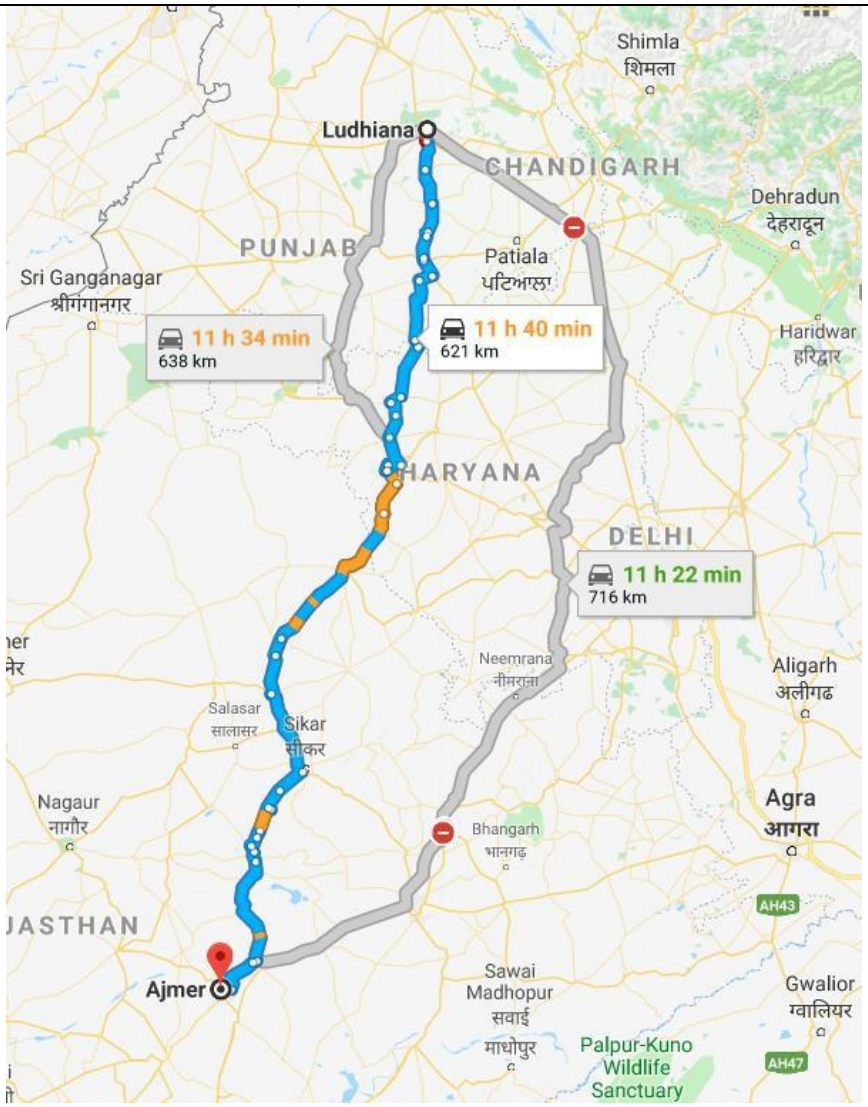


Figure 4-2 : Alternate route at regional level between Ludhiana & Ajmer

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.

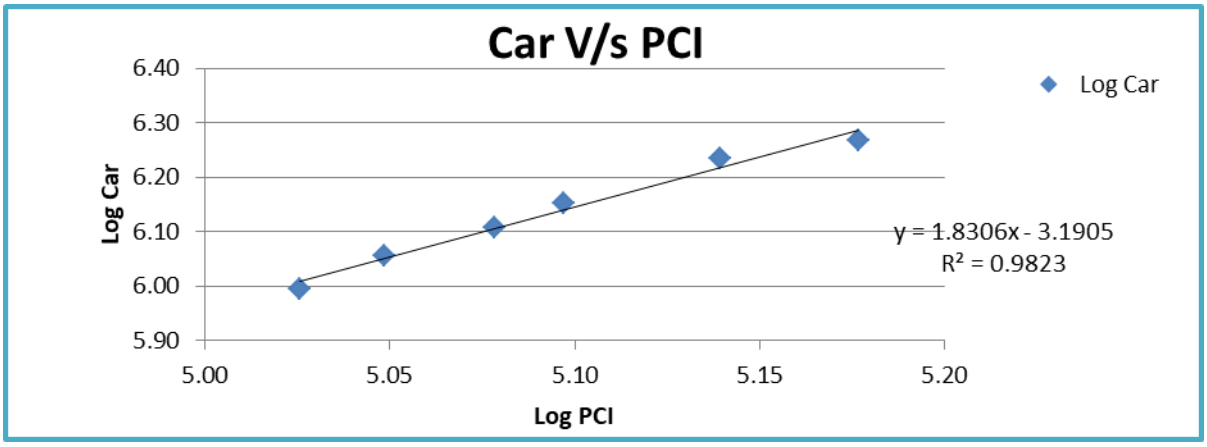


Figure 5-1 : Regression and Elasticity PCI vs. Car – Extrapolation Haryana

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.

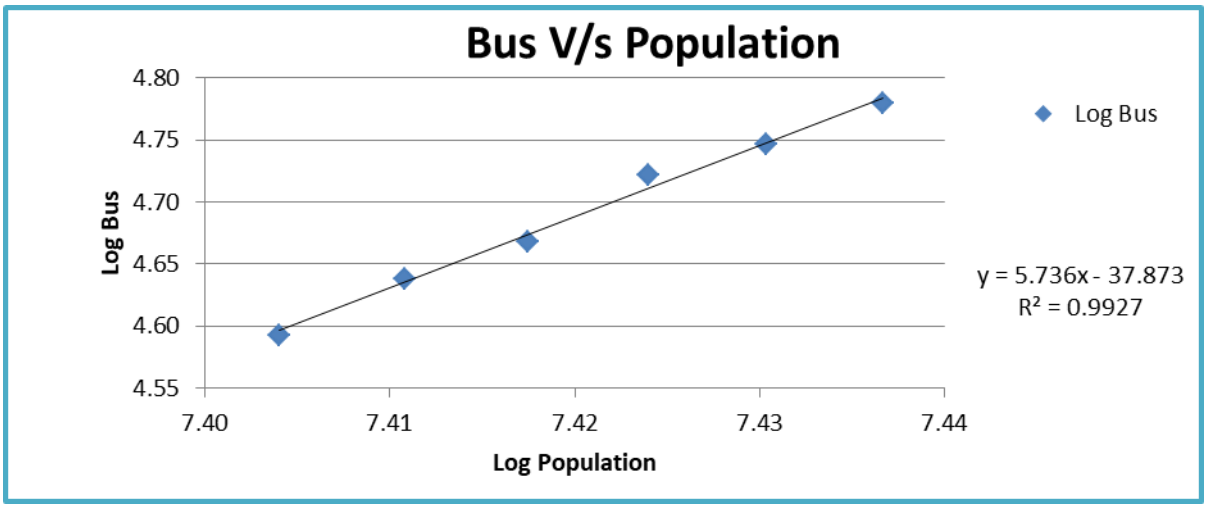


Figure 5-2 : Regression and Elasticity Population vs. Bus – Extrapolation Haryana

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.

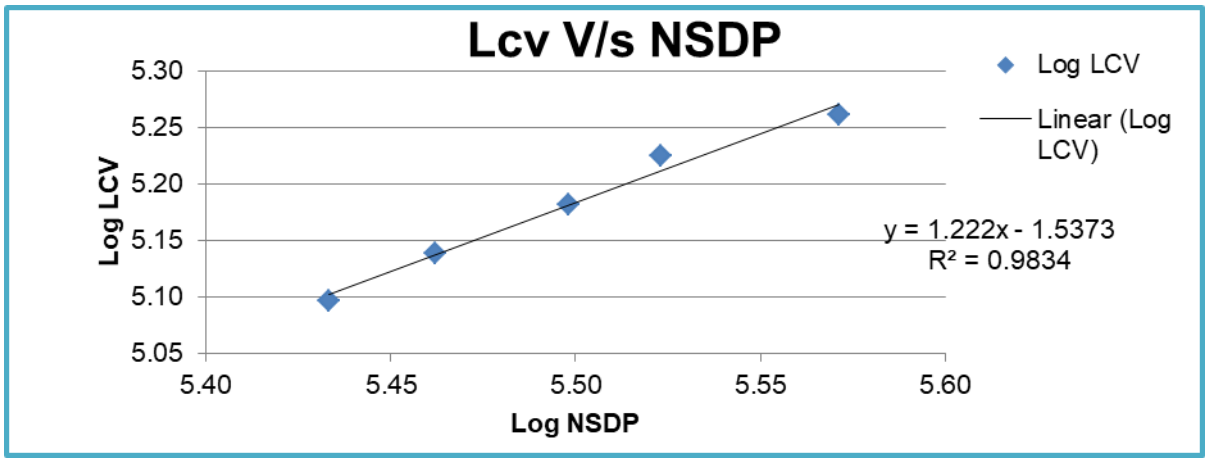


Figure 5-3 : Regression and Elasticity NSDP vs. LCV Traffic - extrapolation Haryana.

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.

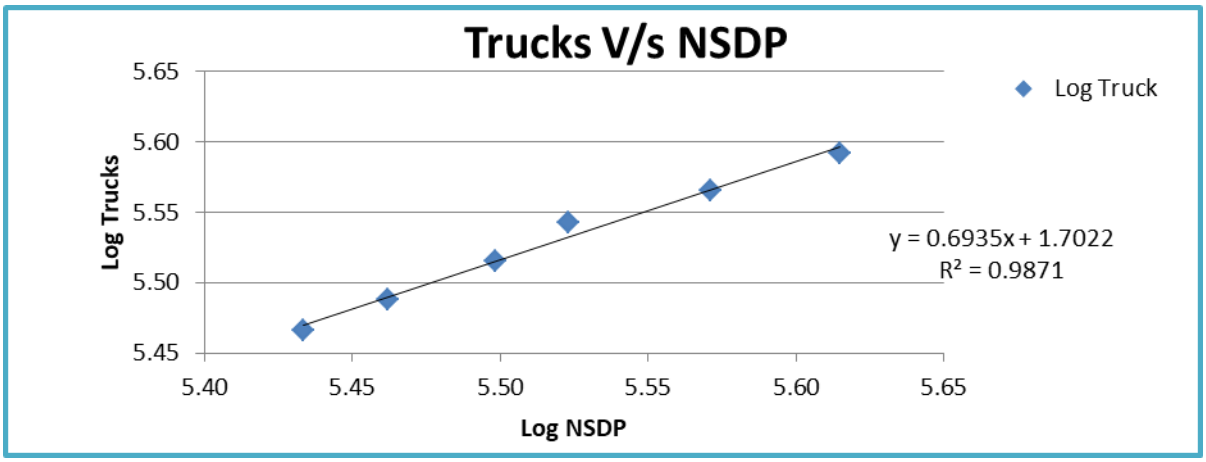


Figure 5-4 : Regression and Elasticity NSDP vs. Goods Traffic - extrapolation Haryana.

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.

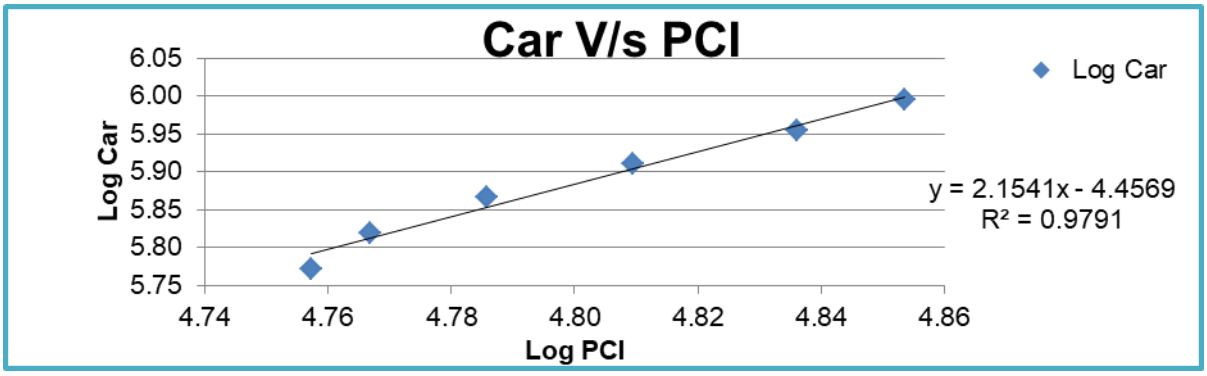


Figure 5-5 : Regression and Elasticity PCI vs. Car – Extrapolation Rajasthan

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.

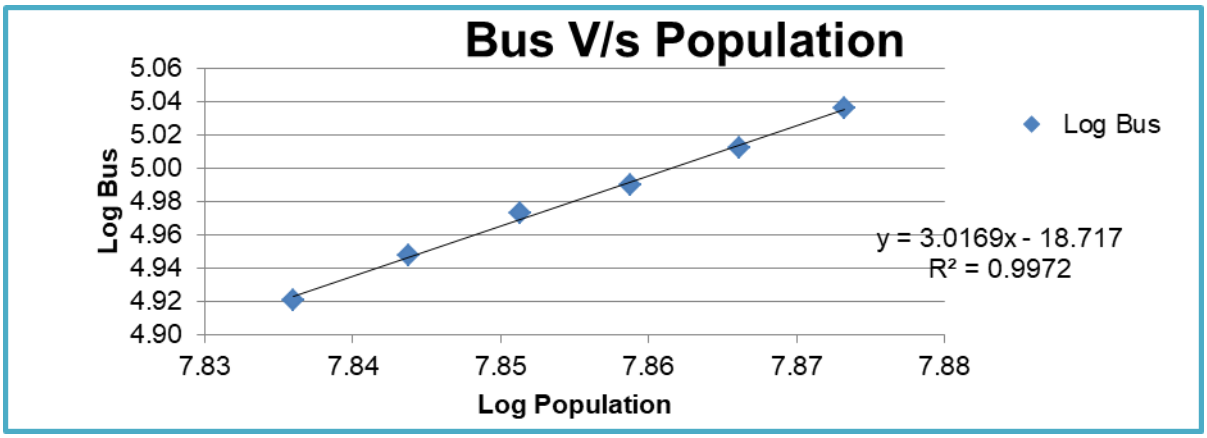


Figure 5-6 : Regression and Elasticity Population vs. Bus – Extrapolation Rajasthan

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.

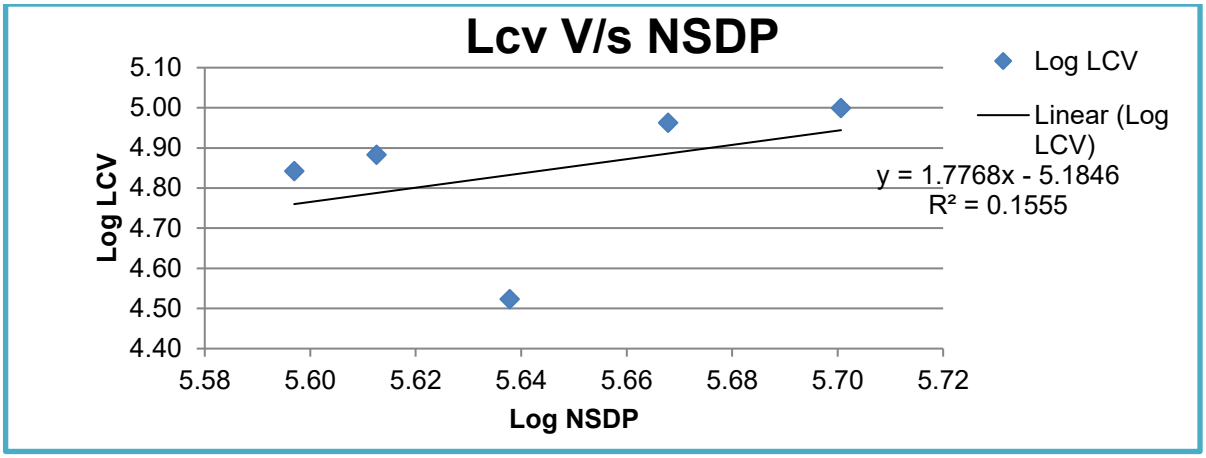


Figure 5-7 : Regression and Elasticity NSDP vs. LCV Traffic - extrapolation Rajasthan.

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.

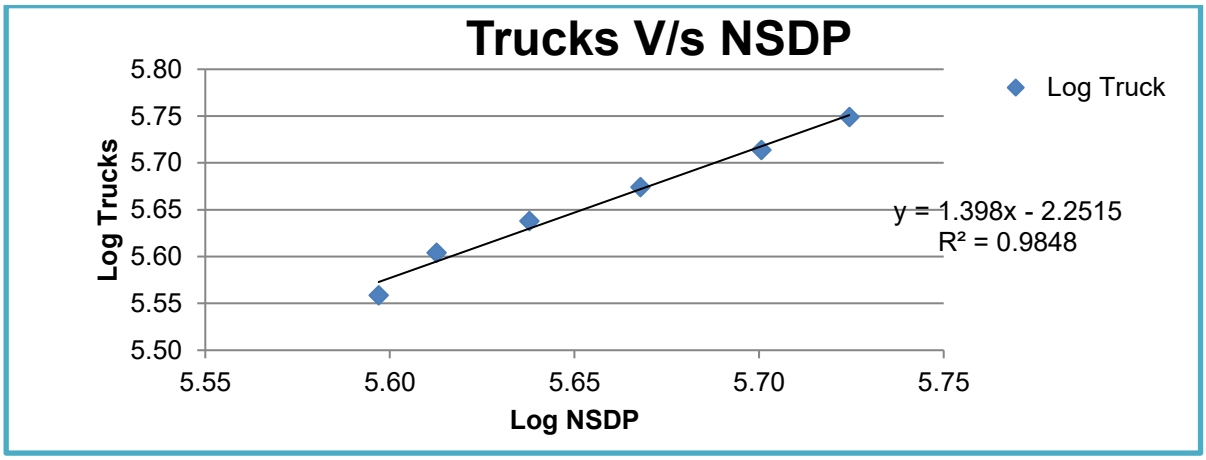


Figure 5-8 : Regression and Elasticity NSDP vs. Goods Traffic - extrapolation Rajasthan.

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
	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 Kaithal to Rajasthan border 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.

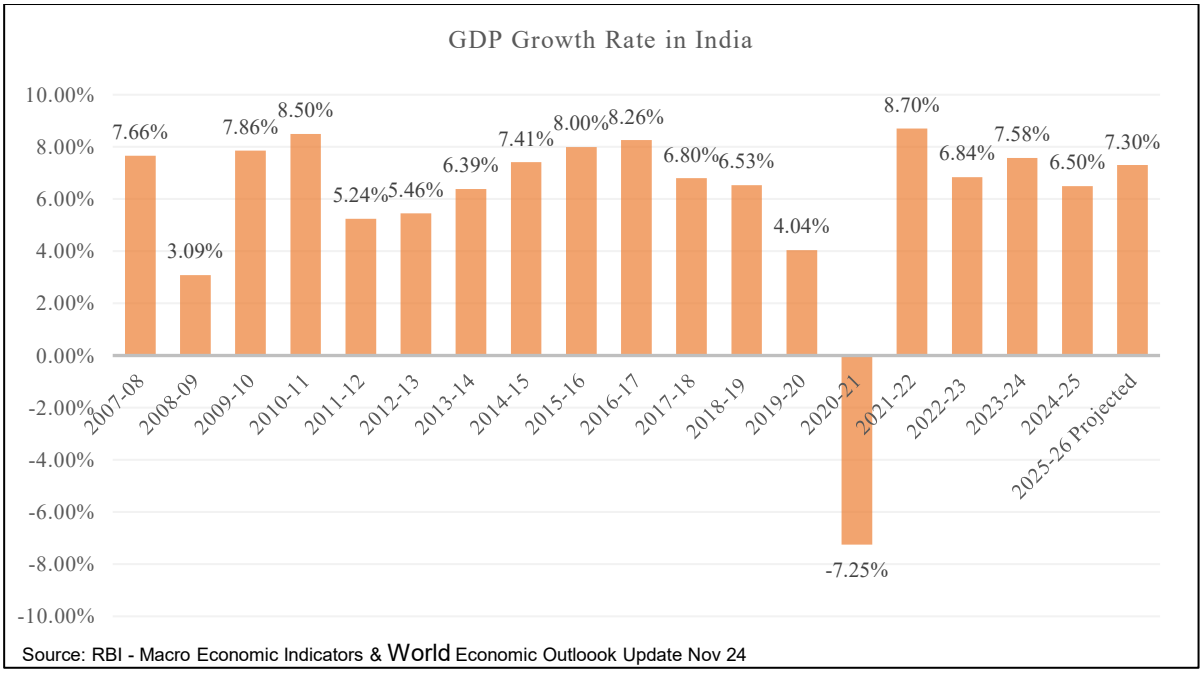


Figure 5-9 : Growth of GDP in India

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.

Rajiv Gandhi Thermal Power Plant (RGTPP) at Khedar, Hisar, with an installed capacity of 1,200 MW, is a major industrial node within the Project Influence Area of the Kaithal–Rajasthan corridor. Evacuation of **fly ash** from the plant generates a continuous stream of heavy commercial traffic, as the ash is carried by bulkers and multi-axle vehicles to cement plants, brick units and infrastructure project sites in Haryana and Rajasthan. This movement is supported by the MoEFCC notification mandating 100% utilisation of fly ash by thermal power plants.

In a submission before the National Green Tribunal, RGTPP has indicated a phased programme to utilise the ash stored in its operational dykes, with completion targeted by March 2034. The plant has noted that this timeline depends on market demand, infrastructure projects and statutory guidelines. The stored ash is to be lifted in addition to fresh ash generated by ongoing operations, and the plant has also announced a proposed 800 MW expansion unit at Khedar, which would add to ash generation once commissioned. Together, these factors indicate that fly ash evacuation will remain a steady and significant component of heavy commercial vehicle traffic on the corridor over the next several years.

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	5652	338	368	359	222	952	37	**7928**	**14398**
2027-28	5961	348	380	388	239	1028	39	**8383**	**15301**
2028-29	6284	359	392	423	260	1120	42	**8880**	**16331**
2029-30	6626	370	404	461	283	1220	46	**9410**	**17436**
2030-31	6972	380	415	494	303	1311	49	**9924**	**18480**
2031-32	7336	391	426	530	324	1409	53	**10469**	**19590**
2032-33	7718	402	438	568	348	1515	57	**11046**	**20771**
2033-34	8120	413	450	609	373	1629	61	**11655**	**22028**
2034-35	8543	424	462	653	400	1751	65	**12298**	**23365**
2035-36	8970	435	474	686	420	1845	68	**12898**	**24516**
2036-37	9418	446	486	721	441	1943	72	**13527**	**25724**
2037-38	9889	457	499	757	464	2046	76	**14188**	**26993**
2038-39	10383	468	512	795	488	2155	80	**14881**	**28326**
2039-40	10901	479	526	835	512	2270	84	**15607**	**29727**
2040-41	11422	490	539	876	537	2386	88	**16338**	**31137**
2041-42	11967	501	553	919	564	2508	92	**17104**	**32615**
2042-43	12539	512	567	963	592	2636	97	**17906**	**34165**
2043-44	13138	523	582	1009	621	2770	102	**18745**	**35790**
2044-45	13765	535	597	1058	652	2912	107	**19626**	**37493**
2045-46	14392	546	612	1107	683	3055	112	**20507**	**39204**
2046-47	15048	557	627	1158	715	3205	117	**21427**	**40994**
2047-48	15735	569	642	1212	748	3362	123	**22391**	**42867**
2048-49	16452	581	658	1268	783	3527	129	**23398**	**44827**

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	6502	332	464	356	283	1027	60	**9025**	**17081**
2027-28	6856	342	479	384	306	1109	65	**9541**	**18149**
2028-29	7231	353	494	418	334	1209	71	**10110**	**19363**
2029-30	7625	364	509	456	364	1317	77	**10712**	**20666**
2030-31	8024	374	523	488	391	1417	83	**11300**	**21899**
2031-32	8443	384	537	523	419	1524	89	**11919**	**23211**
2032-33	8883	394	552	561	449	1639	96	**12574**	**24605**
2033-34	9347	405	567	602	481	1762	103	**13267**	**26088**
2034-35	9835	416	582	645	516	1894	111	**13999**	**27665**
2035-36	10325	426	597	677	542	1995	117	**14679**	**29030**
2036-37	10841	437	612	711	569	2102	123	**15395**	**30464**
2037-38	11383	448	627	746	598	2214	129	**16145**	**31970**
2038-39	11951	459	643	784	628	2332	136	**16933**	**33551**
2039-40	12549	470	660	823	659	2456	143	**17760**	**35212**
2040-41	13149	481	677	862	691	2581	150	**18591**	**36885**
2041-42	13778	492	694	904	725	2713	158	**19464**	**38639**
2042-43	14436	503	711	948	760	2852	166	**20376**	**40478**
2043-44	15127	515	728	994	797	2998	174	**21333**	**42405**
2044-45	15850	527	746	1042	835	3151	183	**22334**	**44426**
2045-46	16572	538	763	1091	874	3306	192	**23336**	**46455**
2046-47	17328	549	781	1142	915	3468	201	**24384**	**48578**
2047-48	18120	561	799	1195	958	3638	211	**25482**	**50799**
2048-49	18947	573	818	1251	1003	3816	221	**26629**	**53124**

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	4045	242	185	327	288	1241	66	**6395**	**14929**
2027-28	4265	250	192	352	310	1340	71	**6780**	**15924**
2028-29	4498	258	198	383	338	1460	77	**7212**	**17078**
2029-30	4743	266	204	417	369	1591	84	**7674**	**18322**
2030-31	4991	274	210	447	396	1711	90	**8119**	**19487**
2031-32	5251	282	216	480	425	1840	97	**8591**	**20729**
2032-33	5525	290	222	515	456	1978	104	**9090**	**22054**
2033-34	5813	298	228	552	489	2127	112	**9619**	**23467**
2034-35	6116	306	234	591	524	2287	120	**10178**	**24976**
2035-36	6422	314	240	620	551	2408	126	**10681**	**26233**
2036-37	6743	322	246	651	579	2536	133	**11210**	**27555**
2037-38	7079	330	252	684	608	2671	140	**11764**	**28945**
2038-39	7433	338	259	719	639	2813	147	**12348**	**30405**
2039-40	7804	346	266	755	671	2962	155	**12959**	**31940**

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU (Including Exempted)
2040-41	8177	354	273	792	704	3113	163	**13576**	**33488**
2041-42	8568	362	280	830	738	3272	171	**14221**	**35112**
2042-43	8978	370	287	870	774	3439	180	**14898**	**36816**
2043-44	9407	379	294	913	811	3615	189	**15608**	**38603**
2044-45	9857	388	301	957	850	3800	199	**16352**	**40478**
2045-46	10307	396	308	1002	889	3987	209	**17098**	**42364**
2046-47	10778	404	315	1049	930	4183	219	**17878**	**44338**
2047-48	11269	413	322	1098	974	4389	230	**18695**	**46405**
2048-49	11784	422	329	1150	1020	4605	241	**19551**	**48570**

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	5652	338	368	359	222	952	37	**7928**	**14398**
2027-28	5933	348	378	386	238	1023	39	**8345**	**15229**
2028-29	6226	357	388	419	258	1109	42	**8799**	**16178**
2029-30	6533	366	399	455	279	1203	45	**9280**	**17192**
2030-31	6841	374	408	486	298	1287	48	**9742**	**18135**
2031-32	7164	382	417	519	318	1377	51	**10228**	**19134**
2032-33	7501	391	426	554	339	1474	54	**10739**	**20192**
2033-34	7855	400	435	592	362	1577	58	**11279**	**21313**
2034-35	8225	409	444	632	386	1687	62	**11845**	**22501**
2035-36	8595	417	453	660	403	1769	65	**12362**	**23496**
2036-37	8981	426	462	690	422	1854	68	**12903**	**24537**
2037-38	9384	435	471	721	441	1943	71	**13466**	**25625**
2038-39	9806	444	481	754	461	2037	74	**14057**	**26762**
2039-40	10248	453	491	788	482	2135	77	**14674**	**27951**
2040-41	10686	462	500	822	503	2233	80	**15286**	**29138**
2041-42	11143	471	510	858	524	2336	84	**15926**	**30376**
2042-43	11619	480	520	896	547	2444	88	**16594**	**31667**
2043-44	12115	489	530	935	571	2557	92	**17289**	**33015**
2044-45	12633	498	540	976	596	2675	96	**18014**	**34421**
2045-46	13146	506	550	1017	621	2793	100	**18733**	**35820**
2046-47	13680	515	560	1060	646	2917	104	**19482**	**37276**
2047-48	14235	524	570	1104	673	3045	109	**20260**	**38793**
2048-49	14813	533	580	1150	701	3179	114	**21070**	**40373**

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	6502	332	464	356	283	1027	60	**9025**	**17081**
2027-28	6823	340	476	383	305	1103	65	**9495**	**18063**
2028-29	7159	349	488	415	331	1196	70	**10008**	**19182**
2029-30	7513	358	501	450	359	1297	76	**10554**	**20377**
2030-31	7868	367	513	480	383	1389	81	**11081**	**21491**
2031-32	8240	376	525	512	409	1487	87	**11636**	**22670**
2032-33	8629	385	537	546	437	1592	93	**12219**	**23919**
2033-34	9037	394	549	582	466	1704	99	**12831**	**25241**
2034-35	9463	403	561	621	497	1824	106	**13475**	**26641**
2035-36	9889	412	573	649	519	1912	111	**14065**	**27823**
2036-37	10334	421	585	678	542	2004	116	**14680**	**29058**
2037-38	10799	430	597	709	566	2101	121	**15323**	**30349**
2038-39	11283	439	610	741	592	2202	127	**15994**	**31698**
2039-40	11790	448	623	775	619	2308	133	**16696**	**33109**
2040-41	12294	457	636	809	646	2415	139	**17396**	**34517**
2041-42	12821	466	649	844	674	2527	145	**18126**	**35986**
2042-43	13370	475	662	880	703	2643	152	**18885**	**37518**
2043-44	13942	484	675	918	733	2765	159	**19676**	**39117**
2044-45	14540	493	688	957	764	2893	166	**20501**	**40786**
2045-46	15132	502	701	996	795	3021	173	**21320**	**42445**
2046-47	15747	511	714	1038	829	3154	181	**22174**	**44172**
2047-48	16386	520	727	1081	864	3293	189	**23060**	**45972**
2048-49	17053	529	741	1126	900	3438	197	**23984**	**47846**

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	4045	242	185	327	288	1241	66	**6395**	**14929**
2027-28	4245	249	190	351	309	1333	71	**6748**	**15850**
2028-29	4454	255	194	380	335	1446	77	**7141**	**16919**
2029-30	4675	261	199	412	364	1568	83	**7562**	**18067**
2030-31	4895	267	203	440	388	1679	89	**7961**	**19125**
2031-32	5126	273	207	469	414	1797	95	**8381**	**20248**
2032-33	5367	279	211	500	441	1924	102	**8824**	**21441**
2033-34	5620	285	215	534	471	2059	109	**9293**	**22708**
2034-35	5886	291	219	570	503	2204	117	**9790**	**24055**
2035-36	6152	297	223	596	526	2310	123	**10227**	**25146**
2036-37	6427	303	227	623	550	2422	129	**10681**	**26287**
2037-38	6716	309	231	651	575	2539	135	**11156**	**27481**
2038-39	7017	315	235	680	601	2661	141	**11650**	**28731**
2039-40	7333	321	239	710	628	2790	148	**12169**	**30037**

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU (Including Exempted)
2040-41	7646	327	243	740	655	2919	155	**12685**	**31343**
2041-42	7973	333	247	773	683	3054	162	**13225**	**32707**
2042-43	8314	339	251	807	712	3195	169	**13787**	**34130**
2043-44	8669	345	255	842	743	3342	177	**14373**	**35617**
2044-45	9039	351	260	879	776	3497	185	**14987**	**37169**
2045-46	9406	357	264	916	809	3652	193	**15597**	**38714**
2046-47	9789	363	268	954	843	3813	201	**16231**	**40325**
2047-48	10187	369	273	993	878	3982	210	**16892**	**42004**
2048-49	10601	375	278	1035	915	4158	219	**17581**	**43753**

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	5652	338	368	359	222	952	37	**7928**	**14398**
2027-28	5947	348	379	387	239	1025	39	**8364**	**15265**
2028-29	6255	358	390	420	260	1114	42	**8839**	**16254**
2029-30	6579	369	401	456	283	1211	45	**9344**	**17313**
2030-31	6906	378	411	487	303	1299	48	**9832**	**18307**
2031-32	7249	387	422	521	324	1394	51	**10348**	**19361**
2032-33	7609	396	433	557	347	1495	55	**10892**	**20480**
2033-34	7986	405	444	596	371	1604	59	**11465**	**21668**
2034-35	8382	415	455	637	396	1721	63	**12069**	**22929**
2035-36	8780	424	466	668	415	1809	66	**12628**	**24001**
2036-37	9196	433	477	699	435	1900	69	**13209**	**25124**
2037-38	9633	443	488	732	456	1996	72	**13820**	**26301**
2038-39	10090	453	500	767	477	2097	76	**14460**	**27534**
2039-40	10568	464	512	803	500	2204	80	**15131**	**28826**
2040-41	11046	473	524	840	523	2311	84	**15801**	**30122**
2041-42	11547	483	536	879	547	2424	88	**16504**	**31477**
2042-43	12069	493	548	920	572	2542	92	**17236**	**32894**
2043-44	12615	504	560	962	599	2666	96	**18002**	**34376**
2044-45	13187	515	572	1006	627	2796	101	**18804**	**35926**
2045-46	13755	525	584	1050	655	2926	106	**19601**	**37476**
2046-47	14348	535	596	1096	684	3063	111	**20433**	**39093**
2047-48	14967	545	609	1145	715	3206	116	**21303**	**40782**
2048-49	15612	556	622	1196	747	3355	121	**22209**	**42544**

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	6502	332	464	356	283	1027	60	**9025**	**17081**
2027-28	6840	342	477	384	305	1107	65	**9520**	**18106**
2028-29	7195	352	491	417	332	1204	70	**10061**	**19272**
2029-30	7569	362	505	453	361	1309	76	**10635**	**20521**
2030-31	7946	371	518	484	386	1404	81	**11190**	**21694**
2031-32	8341	380	531	518	413	1506	87	**11776**	**22939**
2032-33	8755	389	544	554	442	1616	93	**12393**	**24260**
2033-34	9191	398	557	592	473	1733	100	**13044**	**25662**
2034-35	9647	408	571	633	506	1859	107	**13731**	**27149**
2035-36	10105	417	584	664	530	1953	112	**14365**	**28421**
2036-37	10585	426	598	696	555	2052	118	**15030**	**29753**
2037-38	11087	436	612	729	582	2156	124	**15726**	**31150**
2038-39	11614	446	627	764	610	2265	130	**16456**	**32613**
2039-40	12165	456	642	800	639	2380	136	**17218**	**34146**
2040-41	12717	465	657	836	668	2496	143	**17982**	**35683**
2041-42	13294	475	672	874	698	2618	150	**18781**	**37290**
2042-43	13897	485	687	914	730	2746	157	**19616**	**38972**
2043-44	14526	495	702	956	764	2879	165	**20487**	**40730**
2044-45	15184	505	717	999	799	3019	173	**21396**	**42569**
2045-46	15839	515	732	1044	834	3159	181	**22304**	**44407**
2046-47	16522	525	747	1090	871	3306	189	**23250**	**46325**
2047-48	17235	535	762	1138	909	3460	198	**24237**	**48328**
2048-49	17979	545	778	1188	950	3621	207	**25268**	**50419**

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	4045	242	185	327	288	1241	66	**6395**	**14929**
2027-28	4255	249	191	352	310	1336	71	**6764**	**15887**
2028-29	4476	257	197	382	337	1452	77	**7178**	**16999**
2029-30	4709	265	203	416	367	1579	84	**7623**	**18194**
2030-31	4944	271	208	445	392	1694	90	**8044**	**19305**
2031-32	5189	277	214	476	419	1817	96	**8488**	**20487**
2032-33	5446	283	220	510	449	1949	103	**8960**	**21746**
2033-34	5716	290	226	546	481	2091	110	**9460**	**23085**
2034-35	6000	298	232	584	515	2243	118	**9990**	**24511**
2035-36	6283	304	238	612	539	2357	124	**10457**	**25684**
2036-37	6582	310	244	641	564	2476	130	**10947**	**26915**
2037-38	6894	317	250	671	591	2602	137	**11462**	**28204**
2038-39	7221	325	256	703	619	2734	144	**12002**	**29557**
2039-40	7564	333	262	737	649	2872	151	**12568**	**30975**

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU (Including Exempted)
2040-41	7906	340	268	771	679	3012	158	**13134**	**32399**
2041-42	8264	347	274	807	711	3159	166	**13728**	**33889**
2042-43	8637	355	280	844	744	3313	174	**14347**	**35449**
2043-44	9028	363	286	883	778	3474	182	**14994**	**37082**
2044-45	9437	371	292	923	814	3643	191	**15671**	**38790**
2045-46	9845	378	298	963	850	3813	200	**16347**	**40500**
2046-47	10270	386	304	1006	888	3991	209	**17054**	**42286**
2047-48	10713	394	310	1051	927	4177	219	**17791**	**44152**
2048-49	11175	402	316	1097	968	4371	229	**18558**	**46102**

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.

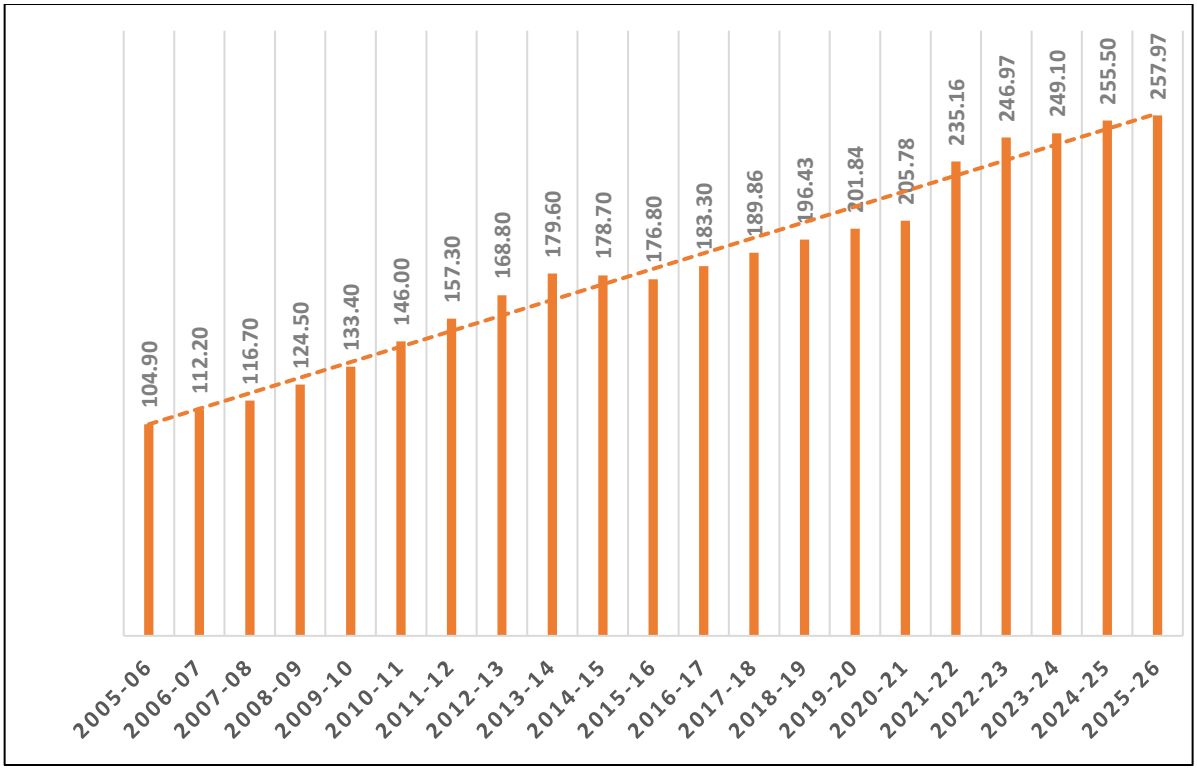


Figure 7-1 : Historical Rate of WPI Inflation in India

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	235.16	246.97	249.10	255.50	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

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

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
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

Year	Car	Minibus /LCV	Bus	Truck	3 - Axle	Multi axle	Oversized Vehicles
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	650	1365	1365	1485	2140	2605

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

Year	Car	Minibus /LCV	Bus	Truck	3 - Axle	Multi axle	Oversized Vehicles
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
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

Year	Car	Minibus /LCV
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 7-10 : 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
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

Year	Car	Minibus /LCV	Bus	Truck	3 - Axle	Multi axle	Oversized Vehicles
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

Year	Car	Minibus /LCV	Bus	Truck	3 - Axle	Multi axle	Oversized Vehicles
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
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 2026-27 are shown in tables below.

Table 7-15 : Toll Revenue Optimistic Scenario

(Rs. Crores)

Year	TP-1	TP-2	TP-3	Total
2026-27	46.58	70.65	39.44	**156.67**
2027-28	51.53	78.30	44.22	**174.05**
2028-29	57.69	87.17	49.81	**194.66**
2029-30	64.79	98.61	56.23	**219.63**
2030-31	72.22	109.68	62.59	**244.48**
2031-32	80.62	123.16	70.19	**273.97**
2032-33	89.46	135.03	78.51	**303.01**
2033-34	99.43	151.34	87.73	**338.50**
2034-35	110.96	167.65	97.41	**376.02**
2035-36	122.03	185.41	107.75	**415.18**
2036-37	133.42	203.96	118.11	**455.49**
2037-38	147.92	223.53	130.30	**501.76**
2038-39	161.99	246.16	143.33	**551.47**
2039-40	178.75	271.41	158.21	**608.38**
2040-41	196.50	297.98	173.56	**668.04**
2041-42	216.73	326.98	191.35	**735.05**
2042-43	236.97	360.79	210.70	**808.47**
2043-44	261.50	395.36	231.84	**888.70**
2044-45	287.30	434.60	255.20	**977.09**
2045-46	315.28	477.69	280.00	**1072.96**
2046-47	345.88	522.73	308.09	**1176.70**
2047-48	378.31	577.19	337.91	**1293.42**
2048-49	416.43	631.21	371.83	**1419.47**

Table 7-16 : Toll Revenue Pessimistic Scenario

(Rs. Crores)

Year	TP-1	TP-2	TP-3	Total
2026-27	46.58	70.65	39.44	**156.67**
2027-28	51.28	77.94	44.00	**173.22**
2028-29	57.13	86.32	49.33	**192.78**
2029-30	63.90	97.23	55.40	**216.53**
2030-31	70.88	107.61	61.38	**239.87**
2031-32	78.73	120.28	68.46	**267.48**
2032-33	86.97	131.27	76.22	**294.46**
2033-34	96.25	146.37	84.76	**327.38**
2034-35	106.94	161.40	93.74	**362.07**
2035-36	117.05	177.68	103.22	**397.95**
2036-37	127.34	194.49	112.61	**434.44**
2037-38	140.42	212.14	123.64	**476.20**
2038-39	153.06	232.53	135.28	**520.86**
2039-40	168.11	255.17	148.63	**571.90**
2040-41	183.90	278.86	162.25	**625.01**
2041-42	201.93	304.52	178.05	**684.50**
2042-43	219.72	334.41	195.10	**749.23**
2043-44	241.32	364.65	213.64	**819.61**
2044-45	263.87	398.81	234.08	**896.76**
2045-46	288.21	436.08	255.65	**979.94**
2046-47	314.64	475.10	279.96	**1069.70**
2047-48	342.55	521.98	305.58	**1170.11**
2048-49	375.26	568.10	334.65	**1278.01**

Table 7-17 : Toll Revenue Most Likely Scenario

(Rs. Crores)

Year	TP-1	TP-2	TP-3	Total
2026-27	46.58	70.65	39.44	**156.67**
2027-28	51.43	78.11	44.10	**173.65**
2028-29	57.42	86.75	49.56	**193.74**
2029-30	64.35	97.95	55.85	**218.16**
2030-31	71.57	108.60	62.00	**242.17**
2031-32	79.74	121.68	69.31	**270.73**
2032-33	88.28	133.09	77.38	**298.75**
2033-34	97.90	148.84	86.28	**333.02**
2034-35	109.01	164.49	95.62	**369.12**
2035-36	119.56	181.48	105.53	**406.58**
2036-37	130.37	199.17	115.35	**444.89**
2037-38	144.15	217.92	126.99	**489.07**
2038-39	157.45	239.39	139.33	**536.18**
2039-40	173.33	263.29	153.44	**590.07**
2040-41	190.06	288.39	167.95	**646.40**
2041-42	209.13	315.74	184.80	**709.67**
2042-43	228.05	347.58	203.04	**778.68**
2043-44	251.06	380.03	222.85	**853.94**

Year	TP-1	TP-2	TP-3	Total
2044-45	275.27	416.67	244.71	**936.65**
2045-46	301.46	456.75	267.84	**1026.05**
2046-47	329.99	498.74	294.06	**1122.79**
2047-48	360.14	549.35	321.73	**1231.21**
2048-49	395.40	599.28	353.07	**1347.75**

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 30.250 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.



GMD Consultants
503, Mayuresh Chambers, Plot No. 60, Sector -11,
CBD Belapur, Navi Mumbai. 400 614. Maharashtra.
Phone : +91-22-2756 4586 / 2756 5313
Email : info@gmdconsultants.in
Web : www.gmdconsultants.in

IRB InvIT Fund

GULABPURA TO CHITTORGARH SECTION OF NH 79

(KM 90.000 TO KM 214.870)

IN THE STATE OF RAJASTHAN







TRAFFIC STUDY & REVENUE PROJECTION REPORT (FINAL)

GMD Consultants
503, Mayuresh Chambers, Plot No. 60, Sector -11,
CBD Belapur, Navi Mumbai. 400 614. Maharashtra.
Phone : +91-22-2756 4586 / 2756 5313
Email : info@gmdconsultants.in
Web : www.gmdconsultants.in

OCTOBER 2026

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OCTOBER 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 Gulabpura to Chittorgarh section of NH-79 from km 90.000 to km 214.870is one such road project NHAI intended to implement on a BOT basis in the DBFOT format. M/s CG Tollway Ltd. (Concessionaire) has been awarded the Project for a concession period of 20 years starting from 4th November 2017. The Project has been commissioned and is currently in the operation / maintenance phase for four laning. Six laning of project has also been completed in August 2021.

Length of project road is 124.870 Kms. The project road is section of NH-79, which connects Ajmer to Ghat Bilod. Project section of NH-79 passes through district of Bhiwara and Chittorgarh. Project road connects to Udaipur via NH-76.

Project road alignment passes through the towns/ built-up areas Fakirabad, Bhilwara, Gulabpura, & Chittorgarh. Following figure shows alignment of project road section from Gulabpura to Chittorgarh

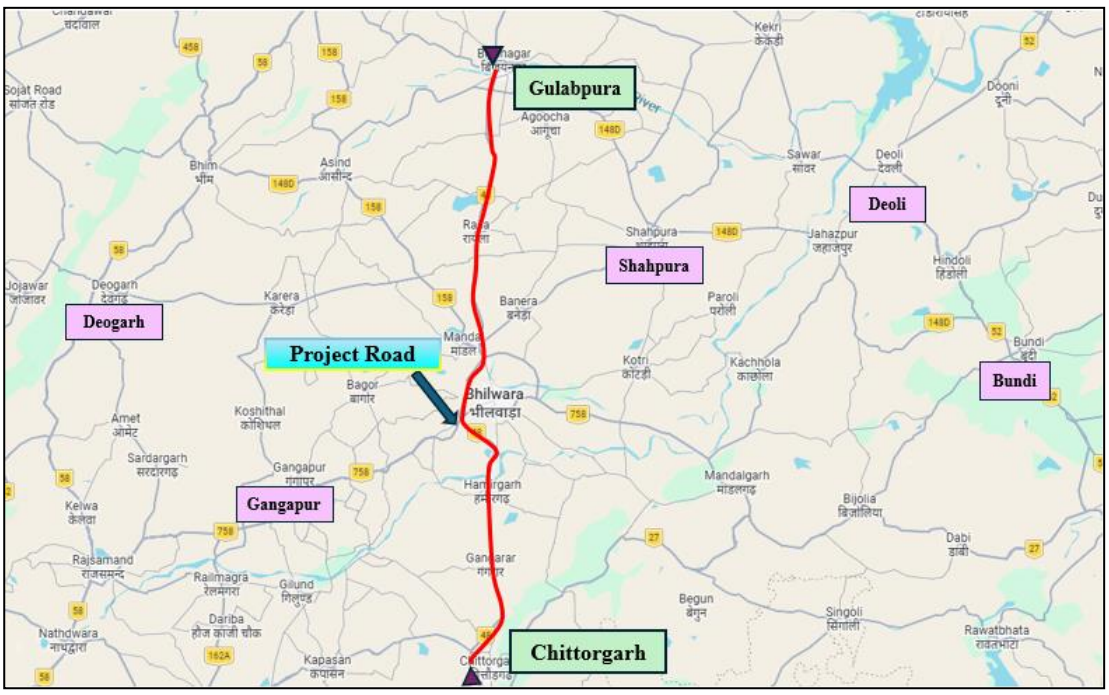


Figure 1-1: Alignment of Project Stretch

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.

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.

2.2 Project Stretch Description

Section of NH-79 from Gulabpura to Chittorgarh is part of major transportation link in the area connecting industrial / tourist cities of Jaipur, Bhilwara, Chitttorgar and Udaipur. Major mining industries of marble, Zink, felspar, quarts of Udaipur and textile industry of Bhiwara provide are major contributors of commercial traffic on project corridor. Additionally, 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 are two operative toll plazas at project stretch. First is at Lambia Kalan at Km 121.020 and second at Jojro ka Khera at Km 184.020. The following figures show project alignment and toll plaza locations.

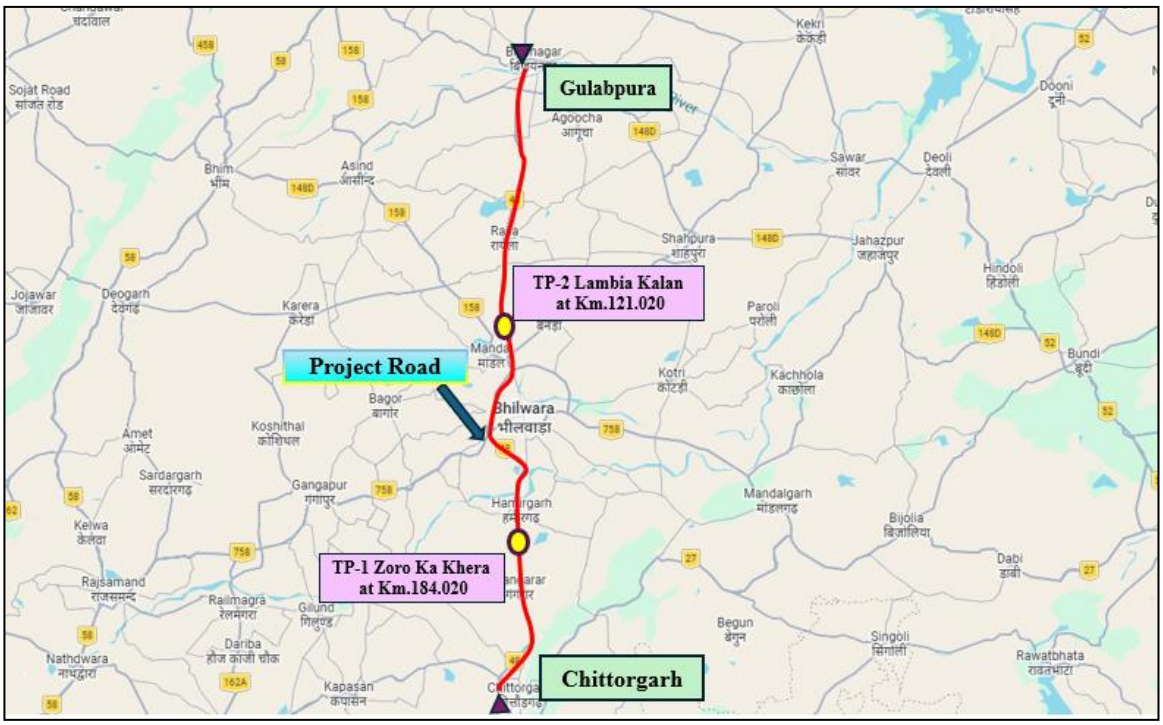


Figure 2-1: Project Alignment with Toll Plaza

2.3 Project Corridor Illustration

Six laning project stretches are in progress and soon will be completed. 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 the 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 Gulabpura-Chittorgarh section of NH-79 for years 2018-19,2019-20,2020-21,2021-22,2022-23,2023-24,2024-25,2025-26 and Five months traffic data from April 2026 to August 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 3-1below 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 121.020 Toll Plaza at Lambia Kalan**	AADT for Year 2017-18, 2018-19, 2019-20,2020-21 ,2021-22, 2022-23, 2023-24, 2024-25,2025-26 & Five months from April 2026 to August 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-2023,2023-24 2024-25,2025-26 & Five months from April 2026 to August 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-2023,2023-24 2024-25,2025-26 & Five months from April 2026 to	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-2023,2023-24 2024-25,2025-26 & Five months from April 2026 to August 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-2023,2023-24,2024-25,2025-26 & Five months from April 2026 to August

SR. NO	LOCATION	CTV	Single Journey Traffic	Daily Return Journey	Monthly Pass	Local Pass
				August 2026 2026		2026
2	**Km 184.020 Toll Plaza at Jojro ka Khera**	AADT for Year 2017-18, 2018-19, 2019-20,2020-21 ,2021-22, 2022-23, 2023-24, 2024-25,2025-26 & Five months from April 2026 to August 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-2023,2023-24 2024-25,2025-26 & Five months from April 2026 to August 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-2023,2023-24 2024-25,2025-26 & Five months from April 2026 to August 2026 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-2023,2023-24 2024-25,2025-26 & Five months from April 2026 to August 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-2023,2023-24,2024-25,2025-26 & Five months from April 2026 to August 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)

Vehicle Type	
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 ,2025-26& traffic data from April 2026 to August 2026.

Since the traffic data available for this update is for only Five months, from April 2026 to August 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 Five Month to arrive at Annual Average Daily Traffic of base year 2026-27. 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 2026-27.

Table 3-3 : Traffic Data at Lambial Kalan Toll Plaza at Km 121.020

Sr. No	Type of Vehicle	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	Annual Average Daily Traffic (Nos.)-2026-27
1	Car	3366	4812	6301	6851	6916	10431	9651
2	Minibus /LCV	933	585	768	754	759	857	891
3	Bus	270	376	446	455	409	501	666

Sr. No	Type of Vehicle	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	Annual Average Daily Traffic (Nos.)-2026-27
4	Truck	1321	1788	2455	2520	2296	2497	2343
5	3-Axle Commercial vehicle	1591	1771	2006	1869	1589	1737	1750
6	Multi axle	4011	4587	5086	5130	4877	5237	5370
7	Oversized Vehicle	19	30	11	12	10	12	9
Total		**11511**	**13949**	**17072**	**17590**	**16855**	**21272**	**20680**

Table 3-4 : Traffic Data at Jojro ka Khera Toll Plaza at Km 184.0200

Sr. No	Type of Vehicle	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	Annual Average Daily Traffic (Nos.)-2026-27
1	Car	3077	4440	5603	6077	6741	9441	9028
2	Minibus /LCV	824	549	716	777	800	847	885
3	Bus	265	347	408	435	391	441	553
4	Truck	1164	1634	2306	2613	2590	2599	2510
5	3-Axl Commercial vehicle	1344	1666	1950	2042	1909	1890	1899
6	Multi axle	4201	4934	5536	5971	5938	6128	6330
7	Oversized Vehicle	21	21	14	12	9	11	8
Total		**10896**	**13592**	**16532**	**17926**	**18377**	**21357**	**21214**

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

Year	Toll Plaza Location (Km)	Traffic No	PCU	PCU Index
2019-2020	Lambia Kalan Km 121.020	13612	38754	2.85
	Jojro ka Khera Km 184.020	11781	34208	2.90
2020-2021	Lambia Kalan Km 121.020	11511	32446	2.82
	Jojro ka Khera Km 184.020	10896	31630	2.90
2021-2022	Lambia Kalan Km 121.020	13949	38721	2.74

Year	Toll Plaza Location (Km)	Traffic No	PCU	PCU Index
	Jojro ka Khera Km 184.020	13592	38503	2.83
2022-23	Lambia Kalan Km 121.020	17072	45107	2.64
	Jojro ka Khera Km 184.020	16532	45642	2.76
2023-24	Lambia Kalan Km 121.020	17590	45650	2.60
	Jojro ka Khera Km 184.020	17926	49431	2.76
2024-25	Lambia Kalan Km 121.020	16855	42924	2.55
	Jojro ka Khera Km 184.020	18377	49368	2.69
2025-26	Lambia Kalan Km 121.020	21272	49541	2.33
	Jojro ka Khera Km 184.020	21357	53127	2.49
2026-27	Lambia Kalan Km 121.020	20680	49470	2.39
	Jojro ka Khera Km 184.020	21214	53765	2.53

It can be observed from above that project traffic has PCU index close to 3 which is an indicator of high proportion of commercial traffic in traffic mix in project corridor. The following figure illustrates variation of PCU index at four toll plaza locations.

It can be observed that PCU index is consistent at both toll plaza locations.

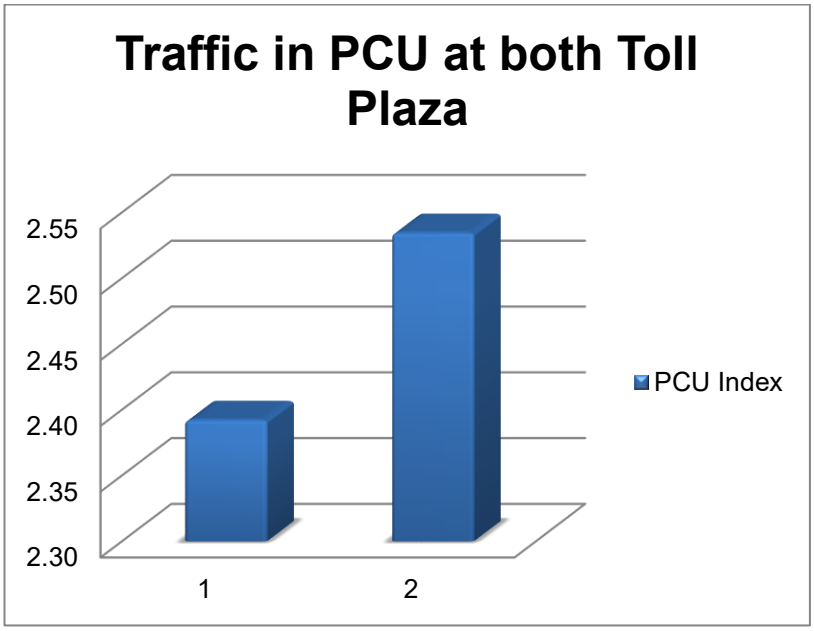


Figure 3-1: Comparison of PCU Index

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.

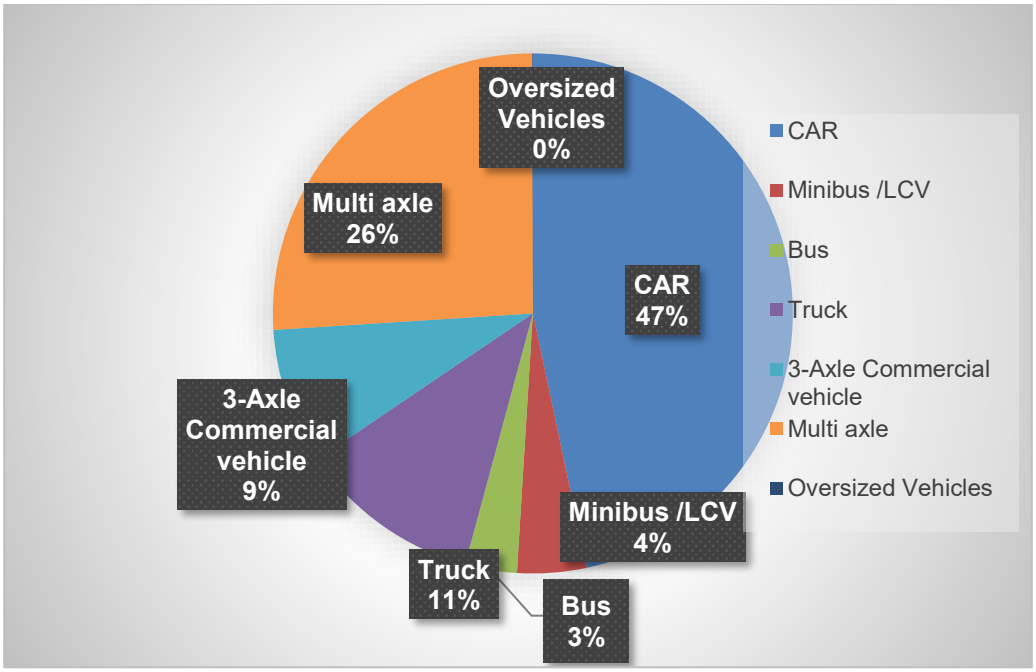


Figure 3-2 :Model Split of Tollable Vehicle-Km 121.020

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.

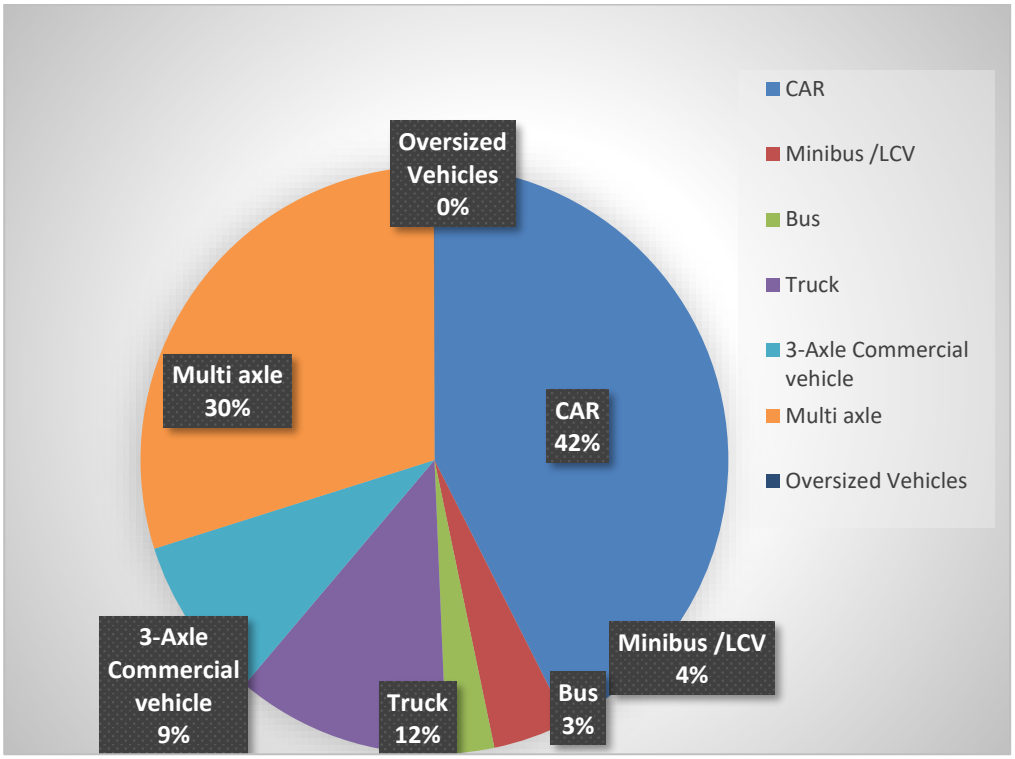


Figure 3-3 :Model Split of Tollable Vehicle- Km 184.020

It is observed that car traffic forms about 42% of total traffic at Toll Plaza locations while multi axle commercial vehicles are about 39% of total traffic. Truck / Bus and LCV share about 15% and 4% 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 for year 2026-27.

Table 3-7 : Journey Type Bifurcation of Traffic at Lambia Kalan TP KM 121.020

Sr. No	Type	Traffic Volume (Nos.)
		2026-27
1	Single Journey	11850

Sr. No	Type	Traffic Volume (Nos.)
		2026-27
2	Return Journey	4255
3	Local Commercial Single Journey	225
4	Monthly Pass Local	23
5	Monthly Pass	2
6	Annual Pass Car	4326

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 57%. Return journey component is 21%. The number of monthly Local passes is 0% and Local commercial Single Journey 1% and annual Pass Car is 21% at Lambia Kalan toll plaza.

The following tables give the details of journey distribution at Jojro ka Khera toll plaza at Km 184.020.

Table 3-8 : Journey Type Bifurcation of Traffic at Jojro ka Khera TP Km 184.020

Sr. No	Type	Traffic Volume (Nos.)
		2026-27
1	Single Journey	12666
2	Return Journey	4655
3	Local Commercial Single Journey	199
4	Monthly Pass Local	11
5	Monthly Pass	4
6	Annual Pass Car	3680

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.

The 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 two alternate routes at local level. One uses Ajmer Road to go from Kishangarh to Chittorgarh and the other on the east side via Shapur.

At regional level, there can be two alternates for Udaipur traffic after Kishangarh. One via project road (Kishangarh – Bhiwara- Chittorgarh- Udaipur)

The following maps show these routes in relation to project stretches at both local and regional level.



Figure 4-1: Alternate route at regional level.

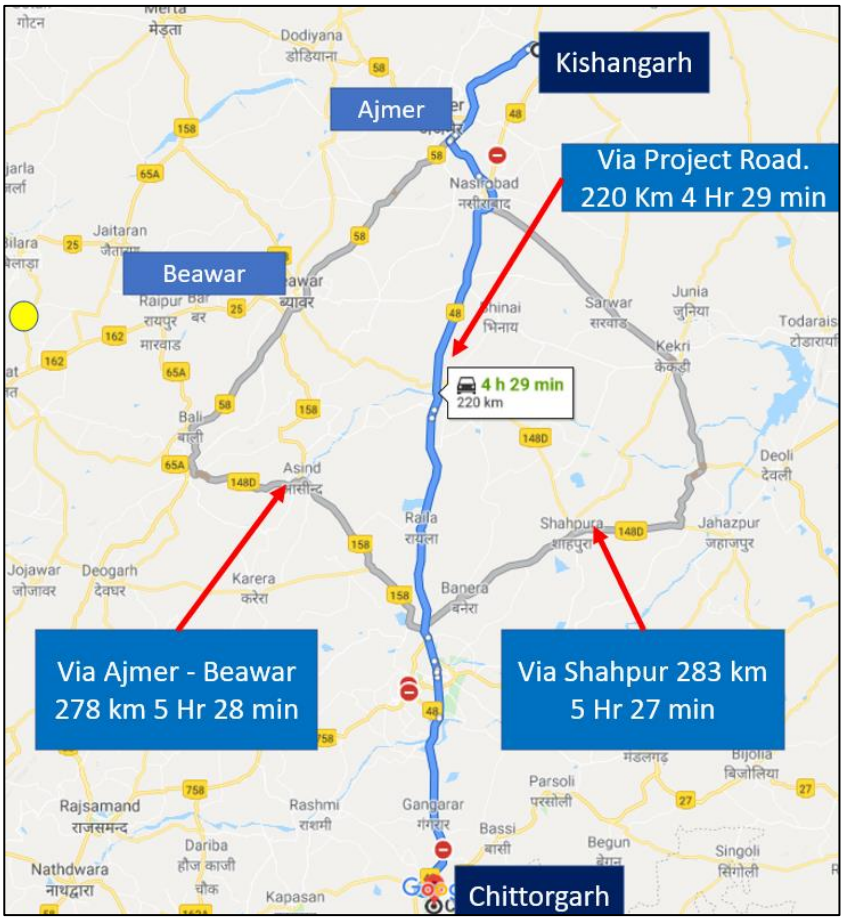


Figure 4-2: Alternate route at local level.

It can be observed that the project highway forms one of the main spines of the corridor between 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 a 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	Kishangarh – Ajmer-Udaipur	Alternate Route	299	58	5 Hr 8 Min	Alternate route has clear advantage for this pair of destination. Traffic Settled. No further diversion expected
	Kishangarh-Chittorgarh- Udaipur	Project Road	330	51	6 Hr 127 Min	
Local Level						
2	Kishangarh – Ajmer-Chittorgarh (West)	Alternate Route	278	50	5 Hr. 28 Min	Project Road has advantage. Alternate route running for years after toll on project road. Traffic Settled. No further diversion expected
	Kishangarh – Shahpur-Chittorgarh (East)	Alternate Route	283	51	5 Hr. 28 Min	
	Kishangarh – Bhilwara-Chittorgarh	Project Road	220	50	4 Hr. 29 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 Gulabpur- Chittorgarh section of NH-79has 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 vehicles 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:

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

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 project corridor spreads across the state of Rajasthan. Toll plazas at Lambia Kalan and Jojro ka Khera are in the state of Rajasthan. For elasticity calculations, working data from Rajasthan has been analyzed. Additionally, data of Gujarat is also analyzed as project corridor has close transportation link with Gujarat also.

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%	

Year	PCI	Car	Log PCI	Log Car	PCI Growth	Average Growth
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.

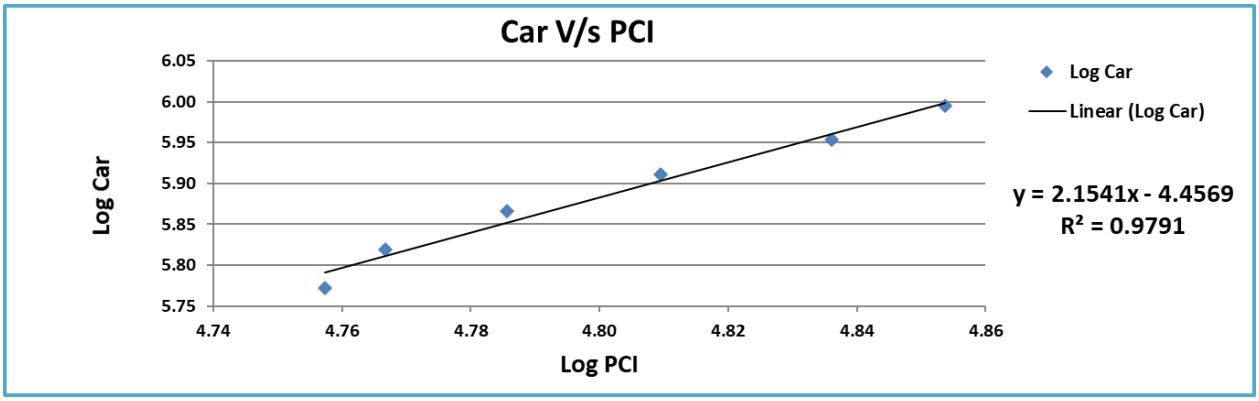


Figure 5-1: Regression and Elasticity PCI vs. Car – Extrapolation Rajasthan

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.

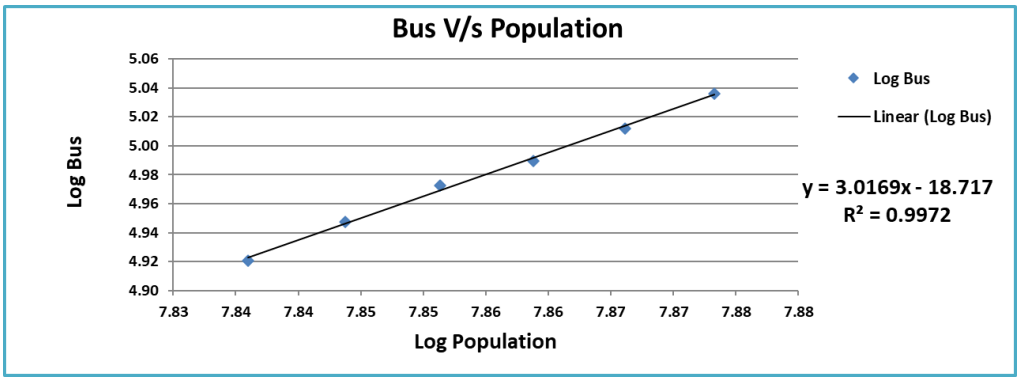


Figure 5-2: Regression and Elasticity Population vs. Bus – Extrapolation Rajasthan

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.

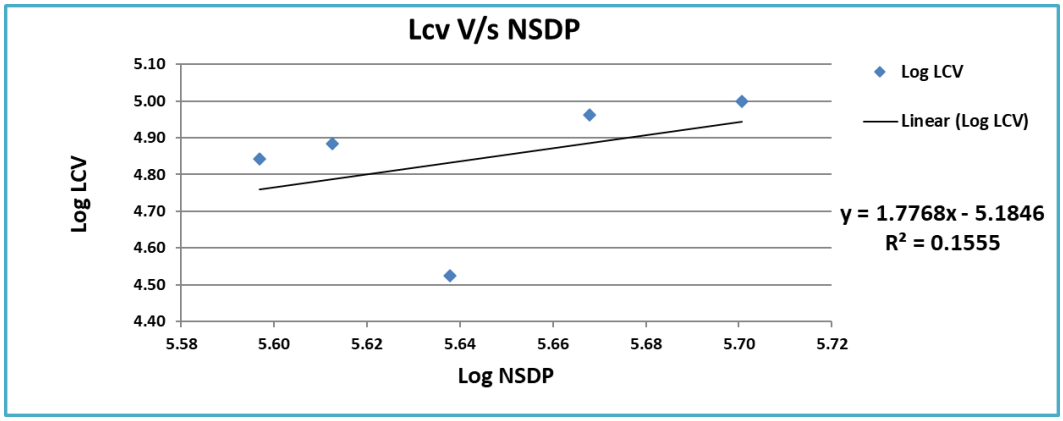


Figure 5-3: Regression and Elasticity NSDP vs. LCV Traffic - extrapolation Rajasthan.

The following figure depicts regression analysis and extrapolation.

Table 5-4 : Truck Traffic Vs NSDP Rajasthan

Year	NSDP	Trucks	Log NDSP	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%

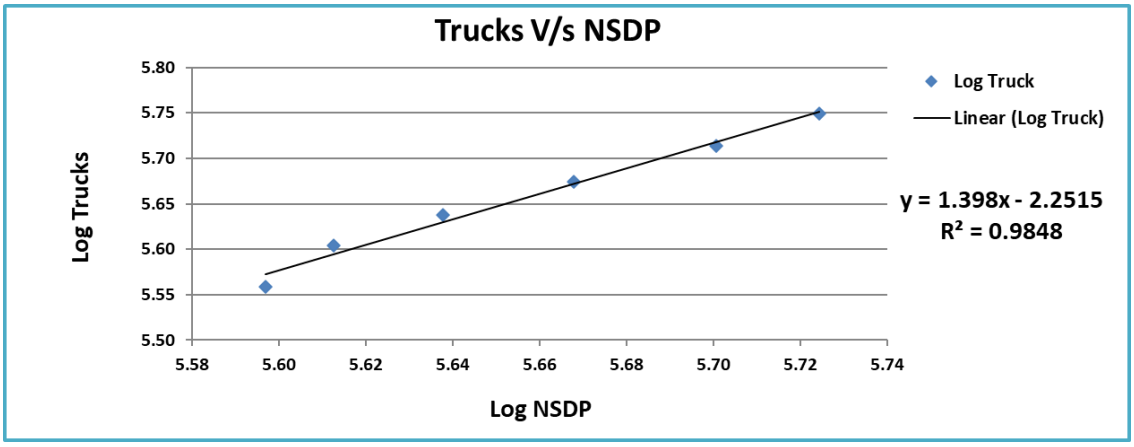


Figure 5-4: Regression and Elasticity NSDP vs. Truck Traffic - extrapolation Rajasthan.

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 R2 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%	

Year	PCI	Car	Log PCI	Log Car	PCI Growth	Average Growth
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.

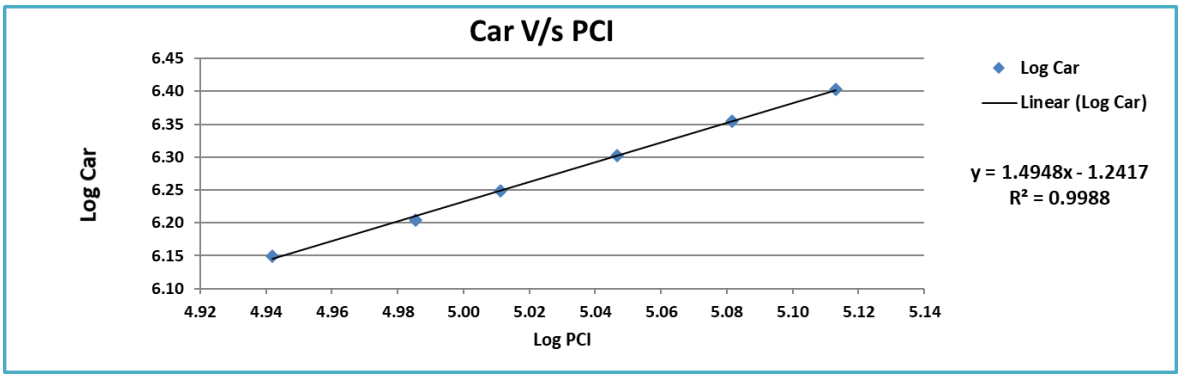


Figure 5-5: Regression and Elasticity PCI vs. Car – Extrapolation Gujarat

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.

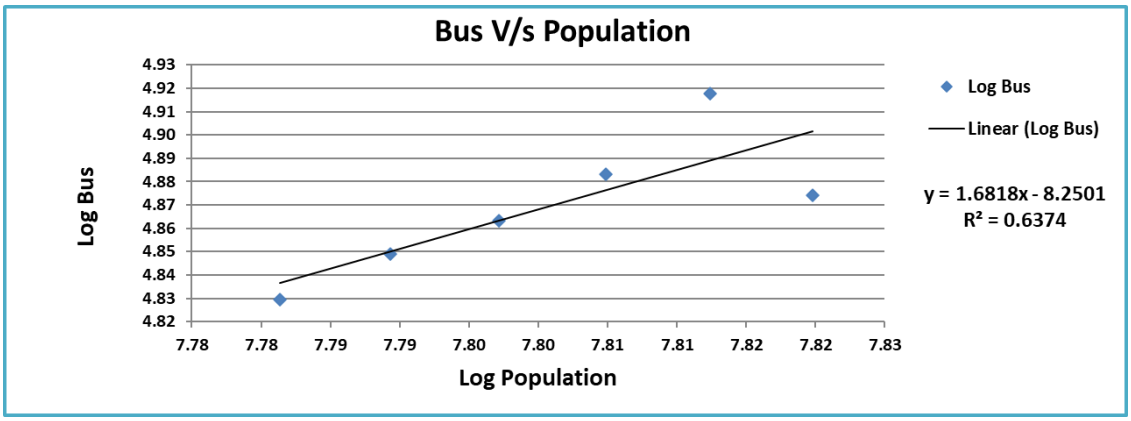


Figure 5-6: Regression and Elasticity Population vs. Bus – Extrapolation Gujarat

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 NDSP	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.

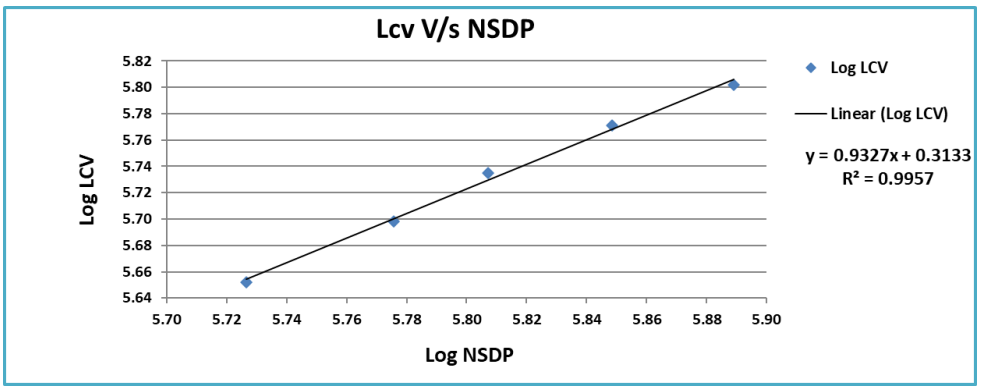


Figure 5-7: Regression and Elasticity NSDP vs. LCV Traffic - extrapolation Gujarat.

The following figure depicts regression analysis and extrapolation.

Table 5-9 : Truck Traffic Vs NSDP Gujarat

Year	NSDP	Trucks	Log NDSP	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%

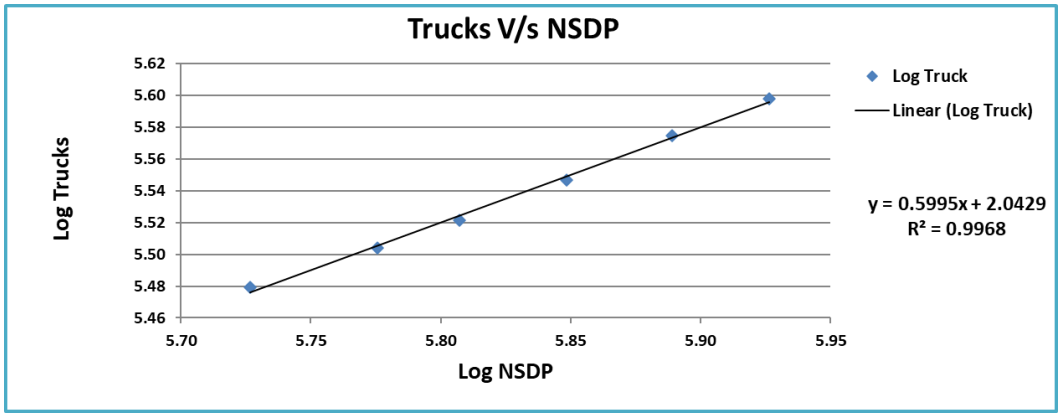


Figure 5-8: Regression and Elasticity NSDP vs. Truck Traffic - extrapolation Gujarat.

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, 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. Project stretch of Gulabpura to Chittorgarh is under tolling operation with current concessionaire with effect 30th September 2026. As traffic data available with the project concessionaire is of year two years and that too affected by COVI-19, 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' consistent 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 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.

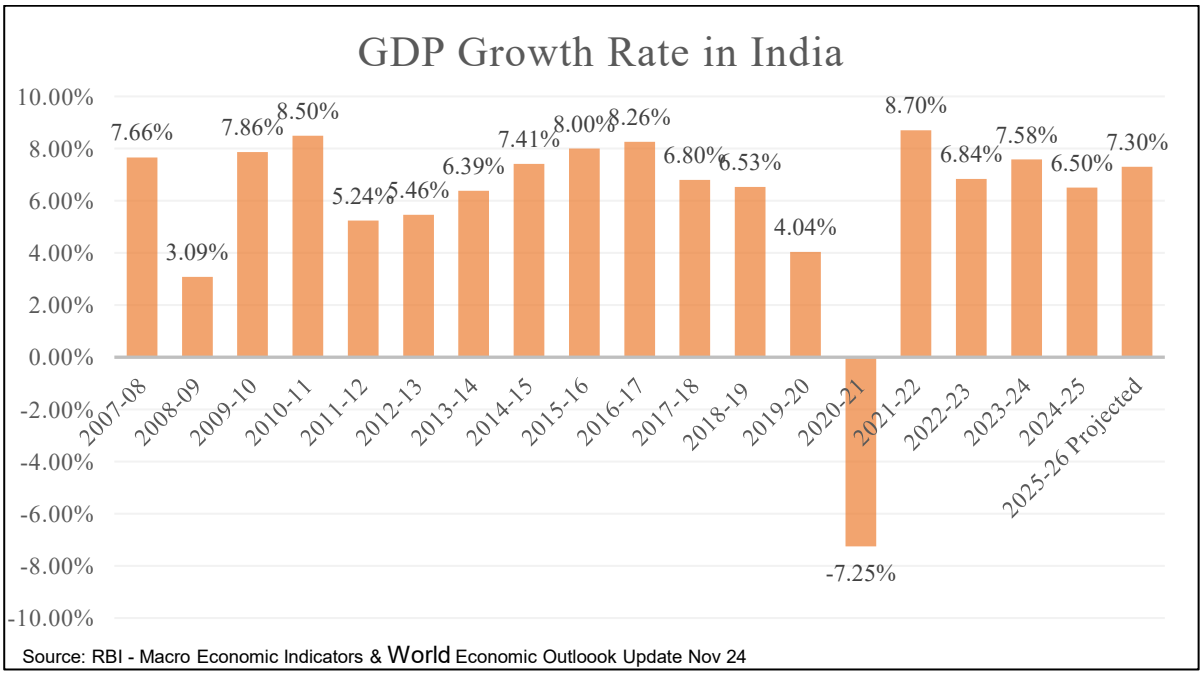


Figure 5-9 : Growth of GDP in India

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 Project Corridor & State

This 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 center 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 center in the country producing insulation bricks. Mining is another major sector for large scale mining of sandstone, soapstone feldspar, quartz, mica China clay and granite. Also, Iron Ore, Led, and Zinc are mined and processed in Bhilwara.

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 few years. Moreover, Rajasthan is also major 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.

5.6.1 Industrial Units along Project Corridor

Bhilwara district occupies an important place in the mineral map of Rajasthan. The main minerals are lead Zinc, Soap Stone, China Clay, Feldspar, Quartz, Mica, Asbestos and Garnet.

Besides being a major tourist attraction in India Chittorgarh has a very rich profile in industrial mineral extraction. Limestone (Cement Grade), Red Occur, Silica sand, China Clay and Quartz are major minerals which are in abundance. There are a large number of cement plants in the area. Chanderiya Lead-Zinc Smelter is one of the largest zinc-lead smelting complexes in the world.

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 from 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 2027-2031	FY 2031-2036	FY 2036-2041	FY 2041-2046
Car/Jeep/Van	8.31%	7.01%	6.58%	6.33%
Bus	4.73%	3.77%	3.56%	3.41%
LCV	4.89%	3.83%	3.34%	3.08%
2- Axle	4.38%	4.30%	3.80%	3.53%
3 – Axle	4.71%	4.30%	3.80%	3.53%
4 to 6 Axle	5.03%	4.30%	3.80%	3.53%
7 and Above Axle	4.71%	4.30%	3.80%	3.53%

Table 5-12 : Recommended Growth Rates Pessimistic

Category / Year	FY 2027-2031	FY 2031-2036	FY 2036-2041	FY 2041-2046
Car/Jeep/Van	7.81%	6.51%	6.08%	5.83%
Bus	4.23%	3.27%	3.06%	2.91%
LCV	4.39%	3.33%	2.84%	2.58%
2- Axle	3.88%	3.80%	3.30%	3.03%
3 – Axle	4.21%	3.80%	3.30%	3.03%
4 to 6 Axle	4.53%	3.80%	3.30%	3.03%
7 and Above Axle	4.21%	3.80%	3.30%	3.03%

Table 5-13 : Recommended Growth Rates Most Likely

Category / Year	FY 2027-2031	FY 2031-2036	FY 2036-2041	FY 2041-2046
Car/Jeep/Van	8.06%	6.76%	6.33%	6.08%
Bus	4.48%	3.52%	3.31%	3.16%
LCV	4.64%	3.58%	3.09%	2.83%
2- Axle	4.13%	4.05%	3.55%	3.28%
3 - Axle	4.46%	4.05%	3.55%	3.28%
4 to 6 Axle	4.78%	4.05%	3.55%	3.28%
7 and Above Axle	4.46%	4.05%	3.55%	3.28%

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.

The Jaipur Ring Road is a 147 km expressway encircling Jaipur, developed by the Jaipur Development Authority (JDA). It was conceived by the PWD in December 2000 on a BOT basis and is being executed in three phases. Phase I, a 47 km stretch in the southern part of the city connecting Ajmer Road, Tonk Road and Agra Road, is in place. Phase III is a 97.75 km northern segment linking Agra Road, Delhi Road, Sikar Road and Ajmer Road, and is yet to be constructed. As of August 2026, NHAI had identified the starting point near Bagru on Ajmer Road, and land demarcation had begun at several locations.

Construction of Phase III will require large volumes of cement for pavements, structures and interchanges. We expect this demand to be met largely by the Chittorgarh cement cluster. Jaipur-bound movement from this cluster runs along NH-48 through Bhilwara, Gulabpura and Kishangarh, so it passes directly over the Kishangarh–Gulabpura stretch. This is expected to have a positive impact on the Asset through higher heavy commercial vehicles and bulk-tanker traffic.

Phase III is currently at the land-demarcation stage, and construction packages are yet to be awarded. Allowing for award and mobilization, we have factored in the impact over a three-year period from FY29 to FY31, during which construction is expected to be completed.

The positive impact on account of the above has been factored in 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 the concession period.

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

Table 6-1 : Total Tollable Traffic @ Toll Plaza 1- Lambia Kalan121.020 KM (Optimistic Growth Scenario)

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU
2026-27	9651	891	666	2343	1750	5370	9	**20680**	**51066**
2027-28	10406	930	694	2467	1849	5694	9	**22049**	**54223**
2028-29	11217	971	724	2622	1973	6092	9	**23608**	**57951**
2029-30	12093	1013	755	2788	2104	6518	9	**25280**	**61939**
2030-31	12941	1052	784	2941	2220	6876	9	**26823**	**65494**
2031-32	13847	1092	814	3102	2343	7254	9	**28461**	**69256**
2032-33	14818	1133	845	3243	2450	7584	9	**30082**	**72767**
2033-34	15856	1177	877	3391	2562	7928	9	**31800**	**76465**
2034-35	16966	1222	910	3546	2679	8288	9	**33620**	**80358**
2035-36	18082	1263	942	3690	2787	8623	9	**35396**	**84078**
2036-37	19270	1305	976	3839	2900	8971	9	**37270**	**87979**
2037-38	20536	1349	1011	3994	3017	9333	9	**39249**	**92072**
2038-39	21887	1394	1047	4156	3140	9711	9	**41344**	**96367**
2039-40	23327	1440	1084	4324	3267	10103	9	**43554**	**100873**
2040-41	24804	1484	1121	4488	3391	10486	9	**45783**	**105348**
2041-42	26373	1530	1159	4658	3519	10882	9	**48130**	**110034**

Table 6-2 : Total Tollable Traffic @ Toll Plaza 2- Jojro ka Khera184.020 KM (Optimistic Growth Scenario)

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU
2026-27	9028	885	553	2510	1899	6330	8	**21214**	**56537**
2027-28	9734	925	576	2645	2007	6712	8	**22607**	**60015**
2028-29	10494	965	600	2812	2141	7181	8	**24201**	**64146**
2029-30	11313	1007	625	2990	2283	7682	8	**25908**	**68564**
2030-31	12105	1045	648	3154	2408	8105	8	**27473**	**72478**
2031-32	12953	1084	672	3327	2541	8551	8	**29136**	**76620**
2032-33	13860	1125	697	3479	2657	8939	8	**30765**	**80450**
2033-34	14830	1168	722	3638	2778	9347	8	**32491**	**84480**
2034-35	15868	1212	749	3803	2905	9772	8	**34317**	**88721**
2035-36	16911	1252	776	3957	3023	10167	8	**36094**	**92757**
2036-37	18022	1294	803	4117	3145	10579	8	**37968**	**96987**
2037-38	19206	1337	831	4283	3273	11007	8	**39945**	**101421**
2038-39	20469	1381	861	4456	3406	11452	8	**42033**	**106068**
2039-40	21815	1426	891	4636	3544	11916	8	**44236**	**110940**
2040-41	23196	1469	921	4811	3678	12367	8	**46450**	**115765**
2041-42	24663	1514	952	4993	3817	12835	8	**48782**	**120814**

Table 6-3 : Total Tollable Traffic @ Toll Plaza 1- Lambia Kalan121.020 KM (Pessimistic Growth Scenario)

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU
2026-27	9651	891	666	2343	1750	5370	9	**20680**	**51066**
2027-28	10406	930	694	2457	1841	5667	9	**22004**	**54040**
2028-29	11217	971	724	2599	1954	6035	9	**23509**	**57562**
2029-30	12093	1013	755	2751	2075	6427	9	**25123**	**61319**
2030-31	12878	1047	779	2887	2179	6749	9	**26528**	**64532**
2031-32	13715	1082	804	3030	2288	7086	9	**28014**	**67918**
2032-33	14607	1118	830	3152	2380	7374	9	**29470**	**71026**
2033-34	15558	1156	856	3279	2476	7673	9	**31007**	**74284**
2034-35	16570	1195	884	3410	2576	7984	9	**32628**	**77699**
2035-36	17576	1229	910	3530	2667	8268	9	**34189**	**80911**
2036-37	18644	1264	938	3654	2762	8562	9	**35833**	**84266**
2037-38	19776	1300	966	3783	2860	8866	9	**37560**	**87770**
2038-39	20977	1337	995	3917	2961	9180	9	**39376**	**91431**
2039-40	22252	1375	1025	4055	3066	9505	9	**41287**	**95256**
2040-41	23548	1410	1054	4187	3166	9817	9	**43191**	**99011**
2041-42	24921	1446	1084	4324	3270	10140	9	**45194**	**102928**

Table 6-4 : Total Tollable Traffic @Toll Plaza 2- Jojro ka Khera184.020 KM (Pessimistic Growth Scenario)

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU
2026-27	9028	885	553	2510	1899	6330	8	**21214**	**56537**
2027-28	9734	925	576	2633	1998	6681	8	**22555**	**59801**
2028-29	10494	965	600	2787	2121	7114	8	**24089**	**63691**
2029-30	11313	1007	625	2950	2252	7576	8	**25731**	**67838**
2030-31	12049	1041	645	3098	2365	7954	8	**27160**	**71373**
2031-32	12832	1076	666	3253	2484	8352	8	**28671**	**75096**
2032-33	13666	1112	688	3384	2585	8691	8	**30134**	**78479**
2033-34	14556	1149	710	3521	2690	9043	8	**31677**	**82022**
2034-35	15503	1187	733	3664	2800	9409	8	**33304**	**85733**
2035-36	16444	1221	755	3793	2900	9743	8	**34864**	**89209**
2036-37	17442	1256	777	3926	3003	10088	8	**36500**	**92836**
2037-38	18502	1292	801	4065	3109	10446	8	**38223**	**96621**
2038-39	19625	1328	825	4209	3220	10816	8	**40031**	**100571**
2039-40	20817	1365	850	4359	3335	11199	8	**41933**	**104694**
2040-41	22032	1400	874	4502	3445	11567	8	**43828**	**108731**
2041-42	23317	1436	899	4650	3559	11946	8	**45815**	**112937**

Traffic projections for Most Likely scenario is given as under

Table 6-5 : Total Tollable Traffic @ Toll Plaza 1- Lambia Kalan121.020 KM (Most Likely Growth Scenario)

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU
2026-27	9651	891	666	2343	1750	5370	9	**20680**	**51066**
2027-28	10406	930	694	2461	1845	5681	9	**22026**	**54131**
2028-29	11217	971	724	2610	1963	6064	9	**23558**	**57756**
2029-30	12093	1013	755	2769	2089	6473	9	**25201**	**61628**
2030-31	12908	1050	781	2914	2199	6813	9	**26674**	**65011**
2031-32	13780	1088	807	3067	2315	7171	9	**28237**	**68584**
2032-33	14711	1127	835	3197	2414	7479	9	**29772**	**71892**
2033-34	15705	1167	864	3333	2517	7801	9	**31396**	**75367**
2034-35	16764	1208	893	3476	2625	8136	9	**33111**	**79019**
2035-36	17824	1246	922	3607	2724	8446	9	**34778**	**82481**
2036-37	18952	1285	952	3743	2827	8766	9	**36534**	**86104**
2037-38	20150	1325	983	3883	2934	9098	9	**38382**	**89898**
2038-39	21424	1366	1015	4031	3045	9443	9	**40333**	**93869**
2039-40	22779	1408	1048	4185	3160	9801	9	**42390**	**98027**
2040-41	24165	1448	1081	4333	3271	10147	9	**44454**	**102134**
2041-42	25635	1489	1115	4487	3386	10505	9	**46626**	**106425**

Table 6-6 : Total Tollable Traffic @ Toll Plaza 2- Jojro ka Khera184.020 KM (Most Likely Growth Scenario)

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU
2026-27	9028	885	553	2510	1899	6330	8	**21214**	**56537**
2027-28	9734	925	576	2640	2002	6697	8	**22582**	**59908**
2028-29	10494	965	600	2801	2131	7148	8	**24147**	**63918**
2029-30	11313	1007	625	2972	2268	7630	8	**25823**	**68201**
2030-31	12077	1043	647	3128	2387	8030	8	**27320**	**71924**
2031-32	12892	1080	669	3292	2513	8453	8	**28907**	**75855**
2032-33	13763	1118	692	3434	2622	8816	8	**30453**	**79459**
2033-34	14694	1157	716	3582	2735	9194	8	**32086**	**83243**
2034-35	15685	1198	741	3736	2853	9589	8	**33810**	**87215**
2035-36	16677	1235	765	3878	2962	9953	8	**35478**	**90968**
2036-37	17731	1273	790	4026	3075	10330	8	**37233**	**94891**
2037-38	18853	1312	815	4179	3192	10721	8	**39080**	**98994**
2038-39	20045	1352	842	4338	3313	11128	8	**41026**	**103286**
2039-40	21313	1394	869	4502	3439	11551	8	**43076**	**107775**
2040-41	22610	1433	896	4661	3560	11959	8	**45127**	**112197**
2041-42	23985	1473	924	4825	3686	12382	8	**47283**	**116813**

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 June 2026

Target Traffic - 76316 in PCU

It was observed that as per traffic projections, average traffic volume falls short of target traffic in all scenarios. Probable extension of concession period is estimated according to article 29 of concession agreement which comes to about 3-4 years Traffic forecast and revenue projections are done for probable extended period accordingly.

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	76316	54292	-29%	43%	20%	20	4

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	76316	54325	-29%	43%	20%	20	4

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	76316	54259	-29%	43%	20%	20	4

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 Gulabpura-Chittorgarh section of NH-19 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. Additionally, concessionaire has announced special monthly passes for local commercial cars at Rs. 670.
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 LCV - Rs. 1525 per trip
    c) 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.

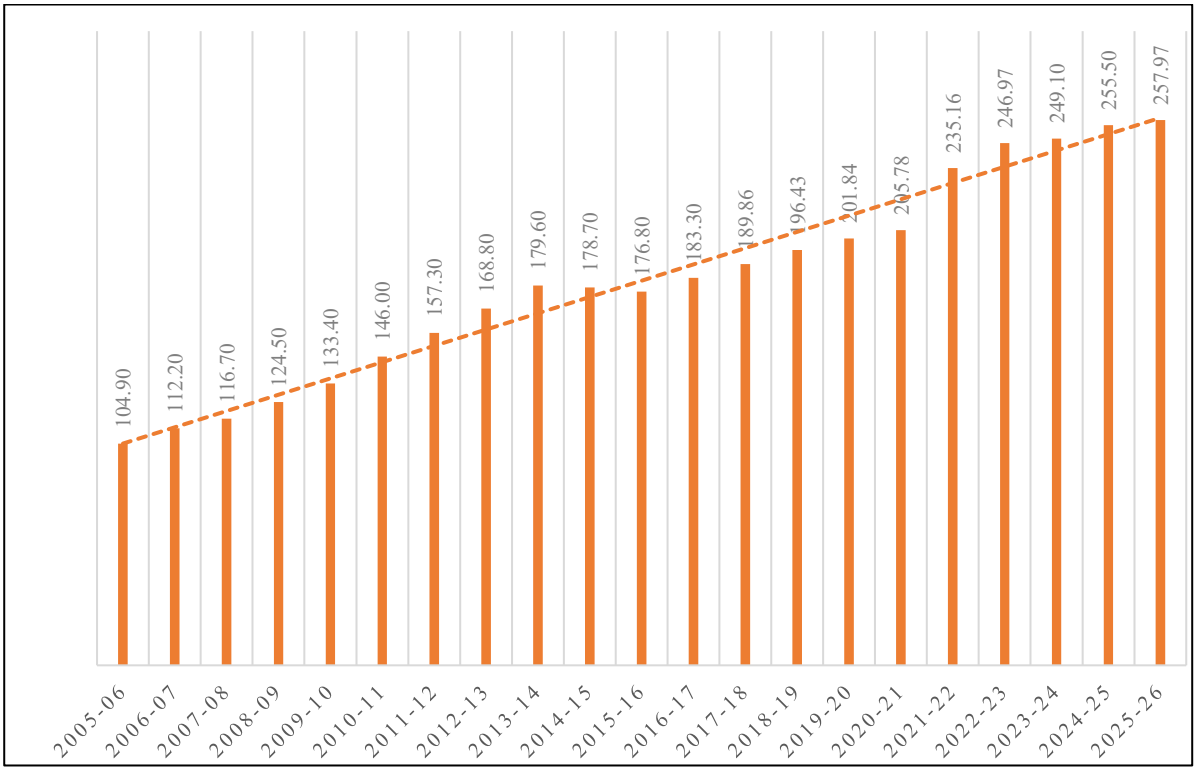


Figure 7-1 : Historical Rate of WPI Inflation in India

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

Table 7-1 : Historical 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
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, rates worked out for various categories of vehicle and discounts are given as under.

Table 7-3 : Toll Rates for Single Journey@ Km 121.020

Year	Car	Minibus /LCV	Bus	Truck	3-Axle	Multi axle	Oversized Vehicles
2026-27	105	170	355	355	385	555	675
2027-28	110	175	370	370	405	580	710
2028-29	115	185	390	390	425	610	740
2029-30	120	195	405	405	445	635	775
2030-31	125	205	425	425	465	665	815
2031-32	130	215	445	445	485	700	850
2032-33	140	225	465	465	510	730	890
2033-34	145	235	490	490	535	765	935
2034-35	150	245	515	515	560	805	980
2035-36	160	255	535	535	585	845	1025
2036-37	165	270	565	565	615	885	1075
2037-38	175	280	590	590	645	925	1125
2038-39	185	295	620	620	675	970	1180
2039-40	190	310	650	650	710	1020	1240
2040-41	200	325	680	680	745	1065	1300
2041-42	210	340	715	715	780	1120	1365

Table 7-4 : Toll Rates for Single Journey @ Km 184.020

Year	Car	Minibus /LCV	Bus	Truck	3-Axle	Multi axle	Oversized Vehicles
2026-27	110	175	365	365	400	575	700
2027-28	115	185	385	385	420	605	735
2028-29	120	190	400	400	440	630	770
2029-30	125	200	420	420	460	660	805
2030-31	130	210	440	440	480	690	845
2031-32	135	220	460	460	505	725	885
2032-33	145	230	485	485	530	760	925
2033-34	150	240	505	505	555	795	970
2034-35	155	255	530	530	580	835	1015
2035-36	165	265	555	555	610	875	1065
2036-37	175	280	585	585	635	915	1115
2037-38	180	290	610	610	670	960	1170
2038-39	190	305	640	640	700	1005	1225
2039-40	200	320	675	675	735	1055	1285
2040-41	210	335	705	705	770	1105	1350
2041-42	220	355	740	740	810	1160	1415

Table 7-5 : Toll Rates for Return Journey @ Km 121.02

Year	Car	Minibus /LCV	Bus	Truck	3-Axle	Multi axle	Oversized Vehicles
2026-27	155	255	530	530	580	835	1015
2027-28	165	265	555	555	605	870	1060
2028-29	170	280	580	580	635	915	1110
2029-30	180	290	610	610	665	955	1165
2030-31	190	305	640	640	695	1000	1220
2031-32	200	320	670	670	730	1050	1275
2032-33	205	335	700	700	765	1100	1335
2033-34	215	350	735	735	800	1150	1400
2034-35	225	365	770	770	840	1205	1470
2035-36	240	385	805	805	880	1265	1540
2036-37	250	405	845	845	920	1325	1615
2037-38	260	425	885	885	965	1390	1690
2038-39	275	445	930	930	1015	1455	1775
2039-40	290	465	975	975	1060	1525	1860
2040-41	300	485	1020	1020	1115	1600	1950
2041-42	315	510	1070	1070	1170	1680	2045

Table 7-6 : Toll Rates for Return Journey @ Km 184.020

Year	Car	Minibus /LCV	Bus	Truck	3-Axle	Multi axle	Oversized Vehicles
2026-27	165	265	550	550	600	865	1050
2027-28	170	275	575	575	630	905	1100
2028-29	180	290	605	605	660	945	1150
2029-30	185	300	630	630	690	990	1205
2030-31	195	315	660	660	720	1040	1265

Year	Car	Minibus /LCV	Bus	Truck	3-Axle	Multi axle	Oversized Vehicles
2031-32	205	330	695	695	755	1085	1325
2032-33	215	345	725	725	790	1140	1385
2033-34	225	365	760	760	830	1195	1455
2034-35	235	380	795	795	870	1250	1520
2035-36	245	400	835	835	910	1310	1595
2036-37	260	420	875	875	955	1375	1670
2037-38	270	440	920	920	1000	1440	1755
2038-39	285	460	965	965	1050	1510	1840
2039-40	300	480	1010	1010	1100	1585	1930
2040-41	315	505	1060	1060	1155	1660	2020
2041-42	330	530	1110	1110	1210	1740	2120

Table 7-7 : Toll Rates for Monthly Pass Local @ Km 121.020

Year	Car	Minibus /LCV
2026-27	360	1540
2027-28	375	1610
2028-29	395	1680
2029-30	415	1755
2030-31	430	1835
2031-32	455	1920
2032-33	475	2005
2033-34	495	2095
2034-35	520	2190
2035-36	545	2290
2036-37	570	2395
2037-38	600	2505
2038-39	630	2620
2039-40	660	2740
2040-41	690	2865
2041-42	725	2995

Table 7-8 : Toll Rates for Monthly Pass Local @ Km 184.020

Year	Car	Minibus /LCV
2026-27	360	1215
2027-28	375	1270
2028-29	395	1325
2029-30	415	1385
2030-31	430	1445
2031-32	455	1510
2032-33	475	1580
2033-34	495	1650
2034-35	520	1725
2035-36	545	1805
2036-37	570	1885
2037-38	600	1970
2038-39	630	2060

Year	Car	Minibus /LCV
2039-40	660	2155
2040-41	690	2250
2041-42	725	2350

Table 7-9 : Toll Rates for Monthly Pass @ Km 121.020

Year	Car	Minibus /LCV	Bus	Truck	3-Axle	Multi axle	Oversized Vehicles
2026-27	3485	5630	11800	11800	12875	18505	22530
2027-28	3650	5895	12355	12355	13480	19375	23585
2028-29	3820	6175	12935	12935	14110	20285	24695
2029-30	4000	6465	13545	13545	14775	21245	25860
2030-31	4190	6770	14185	14185	15475	22245	27085
2031-32	4390	7090	14860	14860	16210	23300	28370
2032-33	4600	7430	15565	15565	16980	24410	29715
2033-34	4820	7785	16310	16310	17790	25575	31135
2034-35	5050	8155	17090	17090	18645	26800	32625
2035-36	5290	8550	17910	17910	19540	28085	34190
2036-37	5545	8960	18770	18770	20480	29440	35840
2037-38	5815	9390	19680	19680	21470	30860	37570
2038-39	6095	9845	20630	20630	22510	32355	39390
2039-40	6390	10325	21635	21635	23600	33930	41305
2040-41	6705	10830	22690	22690	24755	35585	43320
2041-42	7030	11360	23800	23800	25965	37325	45435

Table 7-10 : Toll Rates for Monthly Pass @ Km 184.02

Year	Car	Minibus /LCV	Bus	Truck	3-Axle	Multi axle	Oversized Vehicles
2026-27	3615	5840	12240	12240	13350	19190	23365
2027-28	3785	6115	12810	12810	13975	20090	24460
2028-29	3965	6405	13415	13415	14635	21035	25610
2029-30	4150	6705	14050	14050	15325	22030	26820
2030-31	4345	7020	14710	14710	16050	23070	28085
2031-32	4555	7355	15410	15410	16810	24165	29420
2032-33	4770	7705	16145	16145	17610	25315	30820
2033-34	4995	8070	16915	16915	18450	26520	32290
2034-35	5235	8460	17720	17720	19335	27790	33835
2035-36	5485	8865	18575	18575	20260	29125	35455
2036-37	5750	9290	19465	19465	21235	30530	37165
2037-38	6030	9740	20410	20410	22265	32005	38960
2038-39	6320	10210	21395	21395	23340	33555	40850
2039-40	6630	10710	22435	22435	24475	35185	42835
2040-41	6950	11230	23530	23530	25670	36900	44920
2041-42	7290	11780	24680	24680	26925	38705	47120

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 most likely scenario at each of the toll plaza up to 2041-42 starting from the year 2026-27 are shown in tables below.

Table 7-11 : Toll Revenue Optimistic Scenario

(Rs. Crores)

Year	TP-1	TP2	Total
2026-27	205.53	232.49	**438.01**
2027-28	228.68	258.61	**487.29**
2028-29	255.00	286.88	**541.87**
2029-30	284.31	319.99	**604.30**
2030-31	314.61	352.97	**667.58**
2031-32	349.67	391.34	**741.01**
2032-33	383.81	430.37	**814.18**
2033-34	421.91	471.38	**893.29**
2034-35	464.25	516.35	**980.59**
2035-36	509.48	567.60	**1077.08**
2036-37	555.98	620.25	**1176.23**
2037-38	609.02	677.25	**1286.28**
2038-39	668.91	741.90	**1410.81**
2039-40	734.29	814.87	**1549.17**
2040-41	799.31	887.11	**1686.42**
2041-42	873.71	970.50	**1844.21**

Table 7-12 : Toll Revenue Pessimistic Scenario

(Rs. Crores)

Year	TP-1	TP2	Total
2026-27	205.53	232.49	**438.01**
2027-28	227.87	257.75	**485.61**
2028-29	253.11	284.99	**538.10**
2029-30	281.21	316.87	**598.09**
2030-31	309.66	347.88	**657.54**
2031-32	342.57	383.89	**726.45**
2032-33	374.29	420.26	**794.55**
2033-34	409.46	458.06	**867.53**
2034-35	448.39	499.37	**947.76**
2035-36	489.82	546.33	**1036.15**
2036-37	532.08	594.19	**1126.26**
2037-38	580.13	645.65	**1225.78**
2038-39	634.15	703.96	**1338.11**
2039-40	692.92	769.52	**1462.43**

Year	TP-1	TP2	Total
2040-41	750.65	833.86	**1584.52**
2041-42	816.72	908.03	**1724.75**

Table 7-13 : Toll Revenue Most Likely Scenario

(Rs. Crores)

Year	TP-1	TP2	Total
2026-27	205.53	232.49	**438.01**
2027-28	228.27	258.18	**486.44**
2028-29	254.02	285.93	**539.94**
2029-30	282.72	318.47	**601.20**
2030-31	312.10	350.43	**662.54**
2031-32	346.08	387.64	**733.72**
2032-33	378.97	425.30	**804.26**
2033-34	415.52	464.68	**880.19**
2034-35	456.04	507.76	**963.80**
2035-36	499.35	556.83	**1056.18**
2036-37	543.62	607.04	**1150.65**
2037-38	594.00	661.18	**1255.18**
2038-39	650.78	722.53	**1373.31**
2039-40	712.73	791.73	**1504.46**
2040-41	773.95	859.90	**1633.85**
2041-42	844.04	938.59	**1782.63**

CHAPTER 8

CONCLUSION & RECOMMENDATIONS

8.1 Conclusion & Recommendations

Project stretch of Gulabpura to Chittrorgarh section of NH-79 in state of Rajasthan from km 90.000 to km 214.870 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%+, 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 in near future post COVID-19 due to various developments 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.

IRB InvIT Fund

SOLAPUR TO YEDESHI SECTION OF NH 211 IN THE STATE OF MAHARASHTRA (KM 0.000 TO KM 100.000)









TRAFFIC STUDY & REVENUE PROJECTION REPORT (FINAL)

GMD CONSULTANTS ★ NAVI MUMBAI ★

OCTOBER 2026

GMD Consultants
Adding Value

GMD Consultants
503, Mayuresh Chambers, Plot No. 60, Sector -11,
CBD Belapur, Navi Mumbai. 400 614. Maharashtra.
Phone : +91-22-2756 4586 / 2756 5313
Email : info@gmdconsultants.in
Web : www.gmdconsultants.in

SOLAPUR TO YEDESHI SECTION OF NH 211

(KM 0.000 TO KM 100.000)

IN THE STATE OF MAHARASHTRA.

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OCTOBER 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 **Solapur** to **Yedeshi** section of NH-211 from km 0.000 to km 100.000 in the state of Maharashtrais, one such road project NHAI intended to implement on a BOT basis in the DBFOT format. *M/s Solapur Yedeshi Tollway Ltd*. (Concessionaire) has been awarded the Project for a concession period of 29 years starting from appointed date of 21st January2015.COD was achieved for part length of project on 15th October 2019 and Tolling Operation on Project started for full length.

Project road section from Solapur to Yedeshi is part of important north-south connectivity. It connects Karnataka, southern parts of Maharashtra and other southern states to Solapur, Aurangabad, Dhule and then northern parts of India.

The following figure shows the project road alignment.

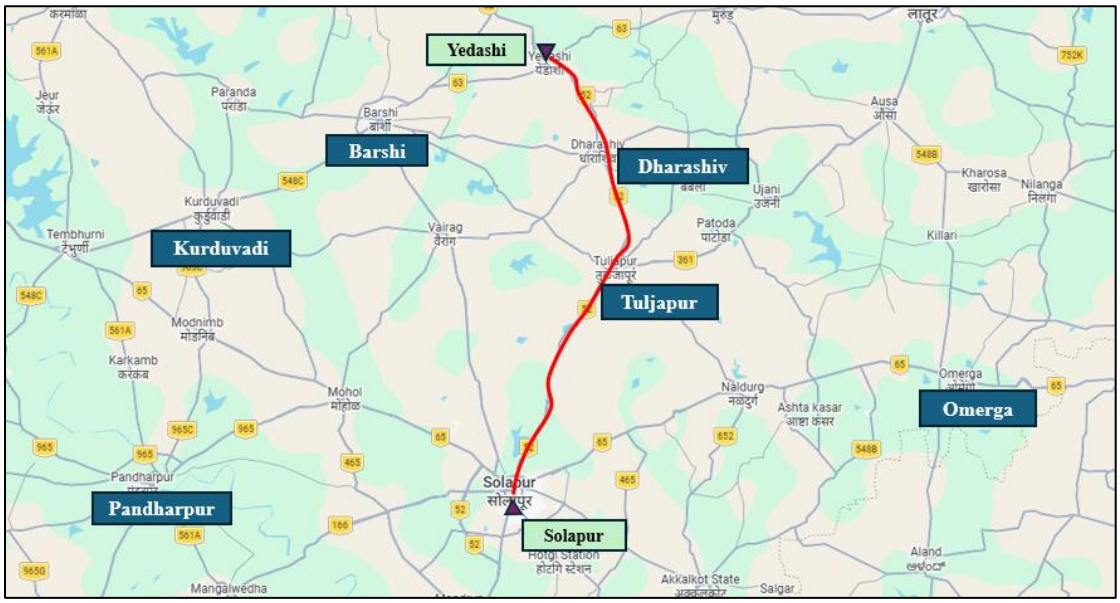


Figure 1-1: Alignment of Project Stretch

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

NH-211 is an important national highway of Maharashtra. It connects northern Karnataka to Marathwada region of Maharashtra.
Solapur, the textile and sugar belt of Maharashtra, Jalna, India's first dry port, Aurangabad fall in project corridor. Bidkin, Shendre areas which are coming up with mega green field Industrial smart city of 10000 acre at Bidkin and Shendra in Maharashtra also fall in influence zone of project corridor.

2.2 Project Stretch Description

The Project highway from Solapur to Yedeshi border from Km 0.000 to km 100.00 has been widened to four lanes as per schedules.

Project road forms part of very important transportation corridor which works as gateway to Karnataka and rest of south India for Marathwada region of Maharashtra. Though it connects Solapur – Dhule but forms important transportation link for traffic from Vijapur, Hubli and other parts of north Karnataka to Aurangabad, Jalna, Beed and other places in Marathwada region. Project has two toll plazas at Tamamwadi and Yedeshi.

The following figure shows project alignment and toll plaza locations.

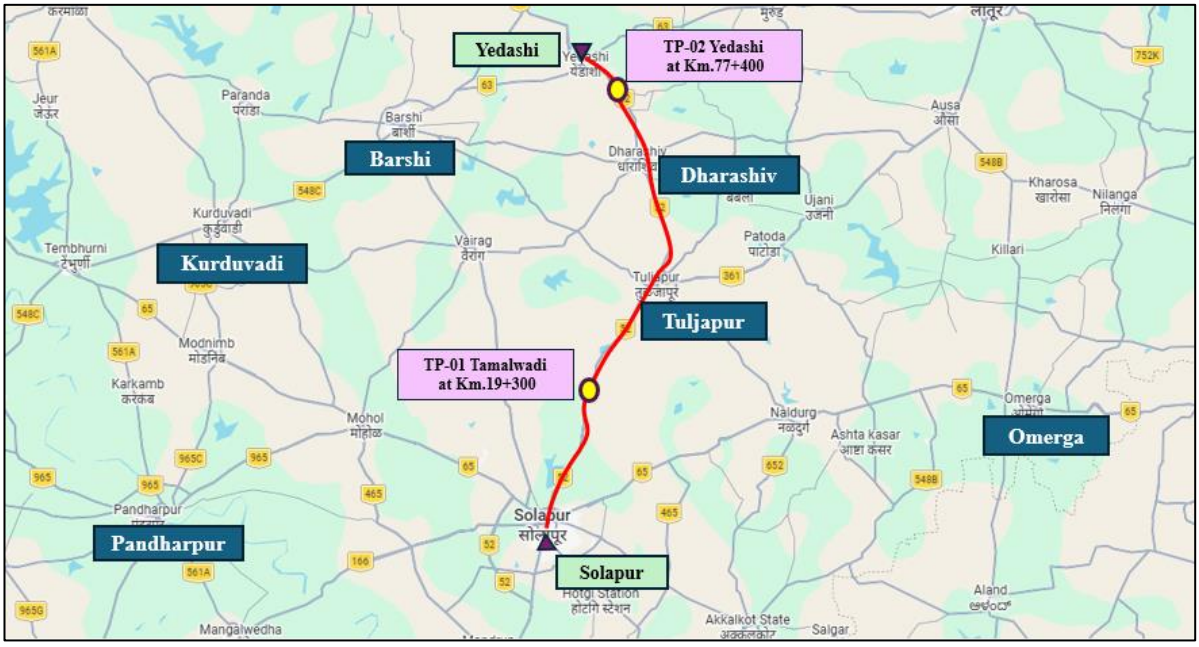


Figure 2-1: Project Alignment with Toll Plaza

2.3 Project Corridor Illustration

Four laning of project stretch is complete. 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 the 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 two toll plaza locations on Solapur- Yedeshi section of NH-211 for years 2017-18, 2018-19, 2019-20, 2020-21 ,2021-22,2022-23, 2023-24,2024-25,2025-26 and Annual traffic data from April 2026 to August 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 19.300 Toll Plaza at Tamalwadi**	AADT for Year 2017-18, 2018-19, 2019-20,2020-21 ,2021-22,	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22,	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22,	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22,	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22,

SR. No.	LOCATION	CTV	Single Journey Traffic	Daily Return Journey	Monthly Pass	Local Pass
		2022-23, 2024-25,2025-26 & Five months from April 2026 to August 2026	2022-2023, 2024-25 ,2025-26 & Five months from April 2026 to August 2026	2022-2023, 2024-25 ,2025-26 & Five months from April 2026 to August 2026	2022-2023, 2024-25 ,2025-26 & Five months from April 2026 to August 2026	2022-2023, 2024-25 ,2025-26 & Five months from April 2026 to August 2026
2	**Km 77.400 Toll Plaza at Yedeshi**	AADT for Year 2017-18, 2018-19, 2019-20,2020-21 ,2021-22, 2022-23, 2024-25,2025-26 & Five months from April 2026 to August 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-2023, 2024-25 ,2025-26 & Five months from April 2026 to August 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-2023, 2024-25 ,2025-26 & Five months from April 2026 to August 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-2023, 2024-25 ,2025-26 & Five months from April 2026 to August 2026	For Year 2017-18, 2018-19, 2019-20, 2020-21, 2021-22, 2022-2023, 2024-25 ,2025-26 & Five months from April 2026 to August 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

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 the category of tollable vehicles. The following are the types of vehicles as per concession agreement.

- Car / Jeep / van
- Minibus /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 ,2025-26 & traffic data from April 2026 to August 2026.

Since the traffic data available for this update is for only Five months, from April 2026 to August 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 Five months to arrive at Annual Average Daily Traffic of base year 2026-27. 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 2026-27.

Table 3-3 : Traffic Data at Tamalwadi Toll Plaza at Km 19.300

Sr. No	Type of Vehicle	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	Annual Average Daily Traffic (Nos.)- 2026-27
1	Car	3564	6308	7840	9084	9375	11573	12253
2	Minibus/LCV	782	362	442	420	491	560	626
3	Bus	304	343	678	812	872	993	1116
4	Truck	835	946	1149	1229	1294	1438	1595
5	3-Axle	783	823	953	903	889	978	996
6	Multi Axle	1074	1286	1889	1868	1568	1889	2002
7	Oversized Vehicles	1	1	6	11	11	36	51
Total		**7343**	**10070**	**12958**	**14326**	**14500**	**17468**	**18638**

Table 3-4 : Traffic Data at Yedeshi Toll Plaza at Km 77.400

Sr. No	Type of Vehicle	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	Annual Average Daily Traffic (Nos.)- 2026-27
1	Car	2132	3308	3647	4273	4537	6447	6462
2	Minibus/LCV	514	263	283	296	288	370	385
3	Bus	118	127	238	284	282	384	382
4	Truck	682	783	951	1042	1021	1204	1279
5	3-Axle	826	870	986	918	833	941	986
6	Multi Axle	1343	1615	2132	2026	1489	1800	1874
7	Oversized Vehicles	1	1	6	12	12	30	28
Total		**5616**	**6967**	**8245**	**8850**	**8461**	**11175**	**11395**

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 2026-27

Year	Toll Plaza Location (Km)	Traffic No	PCU	PCU Index
2019-20	Tamalwadi Km 19.300	9413	18116	1.92
	Yedeshi Km 77.400	6269	13859	2.21

Year	Toll Plaza Location (Km)	Traffic No	PCU	PCU Index
2020-21	Tamalwadi Km 19.300	7343	15339	2.09
	Yedeshi Km 77.400	5616	13829	2.46
2021-22	Tamalwadi Km 19.300	10070	18981	1.88
	Yedeshi Km 77.400	6967	16316	2.34
2022-23	Tamalwadi Km 19.300	12958	25377	1.96
	Yedeshi Km 77.400	8245	20222	2.45
2023-24	Tamalwadi Km 19.300	14326	27001	1.88
	Yedeshi Km 77.400	8850	20619	2.33
2024-25	Tamalwadi Km 19.300	14500	26382	1.82
	Yedeshi Km 77.400	8461	18128	2.14
2025-26	Tamalwadi Km 19.300	17468	31305	1.79
	Yedeshi Km 77.400	11175	22821	2.04
2026-27	Tamalwadi Km 19.300	18638	33547	1.80
	Yedeshi Km 77.400	11395	23536	2.07

It can be observed from above that project traffic has PCU index more than 2 which is an indicator of high proportion of commercial traffic in traffic mix in project corridors. The following figure illustrates variation of PCU index at two toll plaza locations.

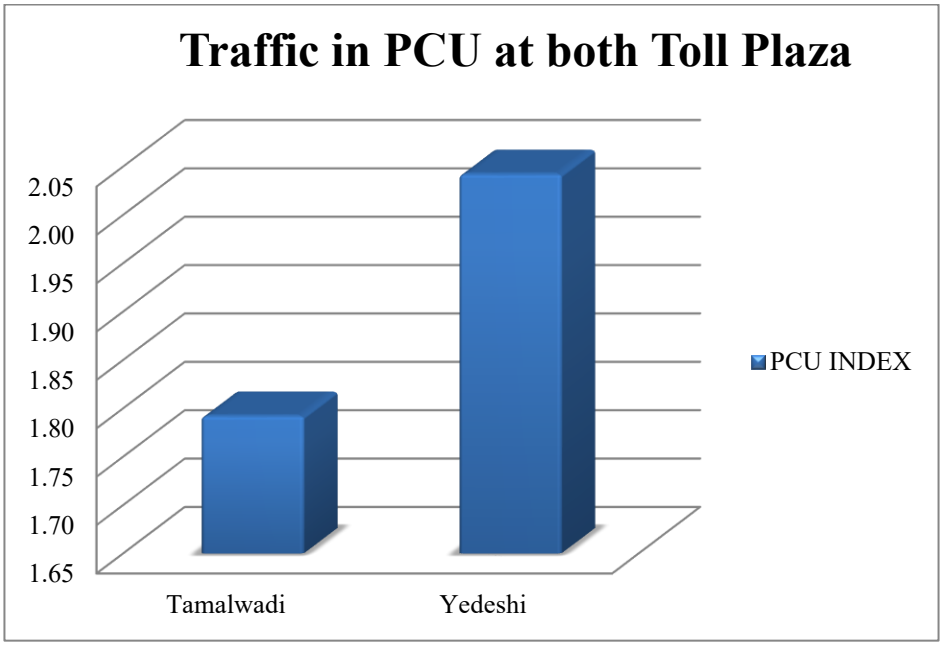


Figure 3-1: Comparison of PCU Index

It can be observed that PCU index is consistent at two toll plaza locations with commercial traffic slightly higher at Yedeshi toll plaza.

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.

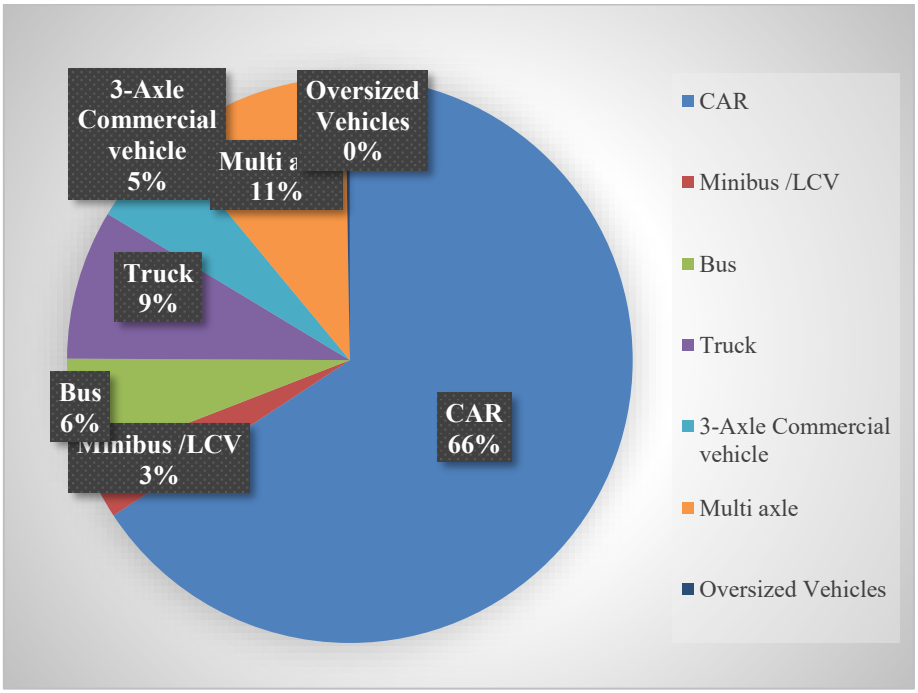


Figure 3-2: Model Split of Tollable Vehicle @TP-1

It is observed that car traffic forms about 66% of total traffic at toll plaza locations while multi axle commercial vehicles are about 16% of total traffic. Trucks / Bus and LCV share about 15% and 3% of traffic volume respectively.

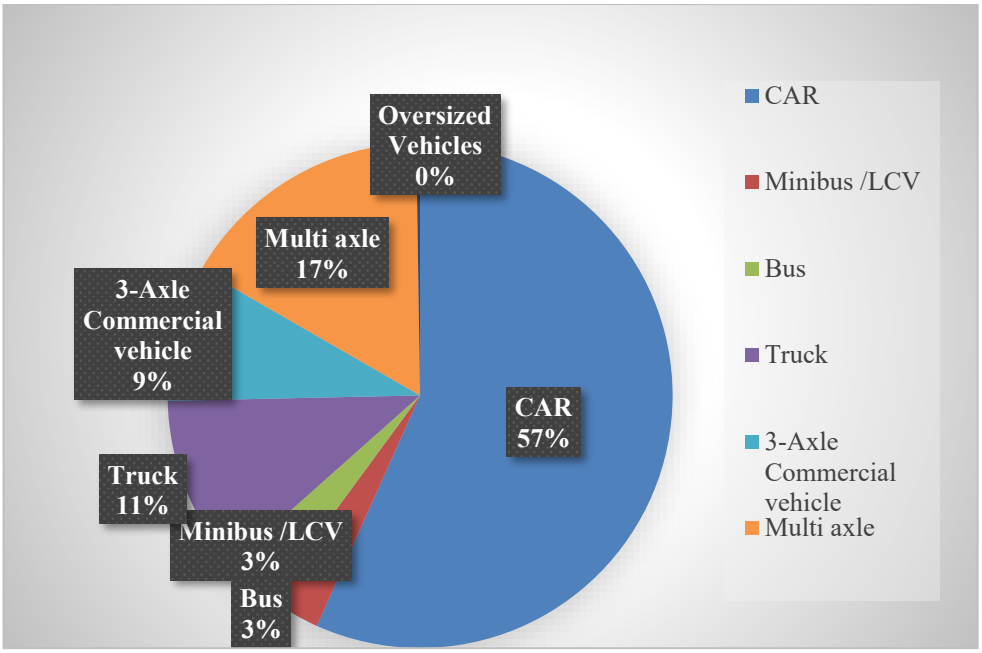


Figure 3-3: Model Split of Tollable Vehicle @TP-2

It is observed that car traffic forms about 57% of total traffic at toll plaza locations while multi axle commercial vehicles are about 26% of total traffic. Trucks / Bus and LCV share about 14% and 3% 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. Local Monthly Pass Commercial
7. Annual Pass Car

The following table provides numbers of vehicles falling in each of above categories on base year 2026-27

Table 3-7 : Journey Type Bifurcation of Traffic at Tamalwadi TP-1 KM 19.300

Sr. No	Type	Traffic Volume (Nos.) 2026-27
1	Single Journey	8136
2	Return Journey	6046
3	Local Commercial Single Journey	326
4	Monthly Pass Local	7
5	Monthly Pass	0
6	Local Monthly Pass Commercial	11
7	Annual Pass Car	4113

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 44%. Return journey component is 32%. The number of monthly pass local is 0% and Local commercial Single Journey 2% and annual pass is 22% at Tamalwadi toll plaza.

The following tables give the details of journey distribution at Yedeshi toll plaza at 77.400 Km.

Table 3-8 : Journey Type Bifurcation of Traffic at Yedashi TP-2 KM 77.400

Sr. No	Type	Traffic Volume (Nos.) 2026-27
1	Single Journey	6628
2	Return Journey	2633
3	Local Commercial Single Journey	139
4	Monthly Pass Local	7
5	Monthly Pass	0
6	Local Monthly Pass Commercial	1
7	Annual Pass Car	1987

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 road from Solapur to Yedashi is important transportation link between Solapur and Aurangabad. It can be observed that between Solapur and Yedashi all other roads cross or meet project road alignment radially. There is no important parallel road network which can be a competing link for project road traffic. At the local level there is no competing road.

At regional level also project road (NH-211) is preferred route for Solapur – Aurangabad traffic. Though there could be one alternate route via Ahmednager for Solapur-Aurangabad pair origin and destination.

The following figures show the layout of competing routes between both these Zones.



Figure 4-1: Alternate route at regional level.

With completion of Aurangabad – Yedashi stretch four laning last year project route has become more attractive for candidate traffic. The following table provides a summary of analysis of competing or alternate routes.

Sr. No	Route Details	Designation	Length (Km)	Avg. Speed (KMPH)	Time Taken (Min)	Observations
Regional Level						
1	Solapur-Ahmednagar-Aurangabad	Alternate Route	346	64	6 Hr 50 Min	Alternate route is longer and has higher travel time. Project road has clear advantage
	Solapur-Yedeshi-Aurangabad	Project Road	310	55	5 Hr 27 Min	

Table 4-1 : 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 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 Solapur–Yedeshi section of NH-211has 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:

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

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 project corridor is entirely in the state of Maharashtra but being at the border of Karnataka there is certain of Karnataka on project traffic. In such circumstances for elasticity calculations, working data from above Maharashtra and Karnataka states has been analyzed.

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 Maharashtra

Year	PCI	Car	Log PCI	Log Car	PCI Growth	Average Growth
2012	99564	2307841	5.00	6.36		

Year	PCI	Car	Log PCI	Log Car	PCI Growth	Average Growth
2013	103904	2592565	5.02	6.41	4%	
2014	109399	2834847	5.04	6.45	5%	
2015	114746	3113773	5.06	6.49	5%	
2016	122422	3406872	5.09	6.53	7%	
2017	132899	3715744	5.12	6.57	9%	5.96%

Regression analysis of same is given in figure below.

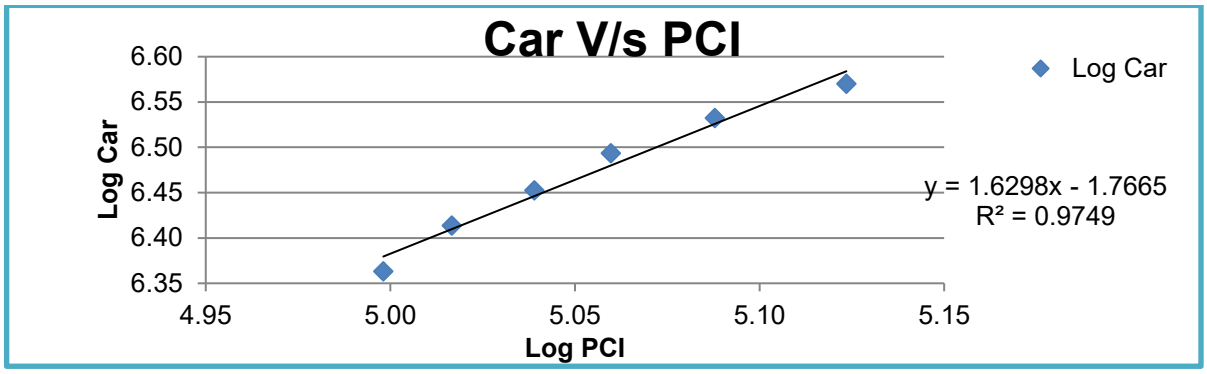


Figure 5-1: Regression and Elasticity PCI vs. Car–Extrapolation Maharashtra

Table 5-2 : Population Vs Bus Maharashtra

Year	Population	Buses	Log Pop	Log Bus	Pop Growth	Average Growth
2012	112374333	119298	8.05	5.08		
2013	113807248	129535	8.06	5.11	1%	
2014	115229410	140087	8.06	5.15	1%	
2015	116640546	140102	8.07	5.15	1%	
2016	118040394	150427	8.07	5.18	1%	
2017	119428710	160042	8.08	5.20	1%	1.23%

Regression analysis of same is given in figure below.

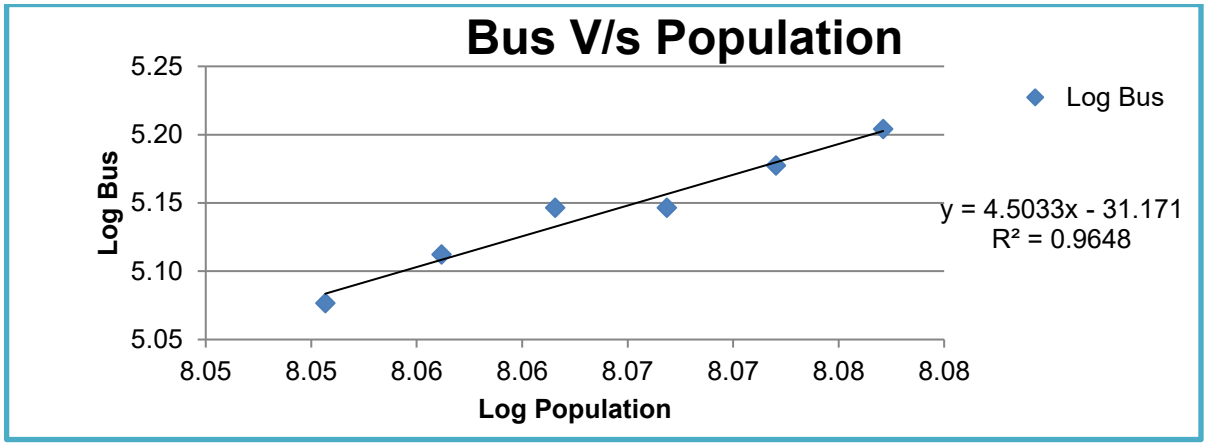


Figure 5-2: Regression and Elasticity Population vs. Bus – Extrapolation Maharashtra

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 Maharashtra

Year	NSDP	LCV	Log NDSP	Log Truck	NSDP Growth	Average Growth (5 Year)
2012	1126595	656407	6.05	5.82		
2013	1189711	739725	6.08	5.87	6%	
2014	1267551	803128	6.10	5.90	7%	
2015	1345341	868632	6.13	5.94	6%	
2016	1452439	927903	6.16	5.97	8%	6.56%

The following figure depicts regression analysis and extrapolation.

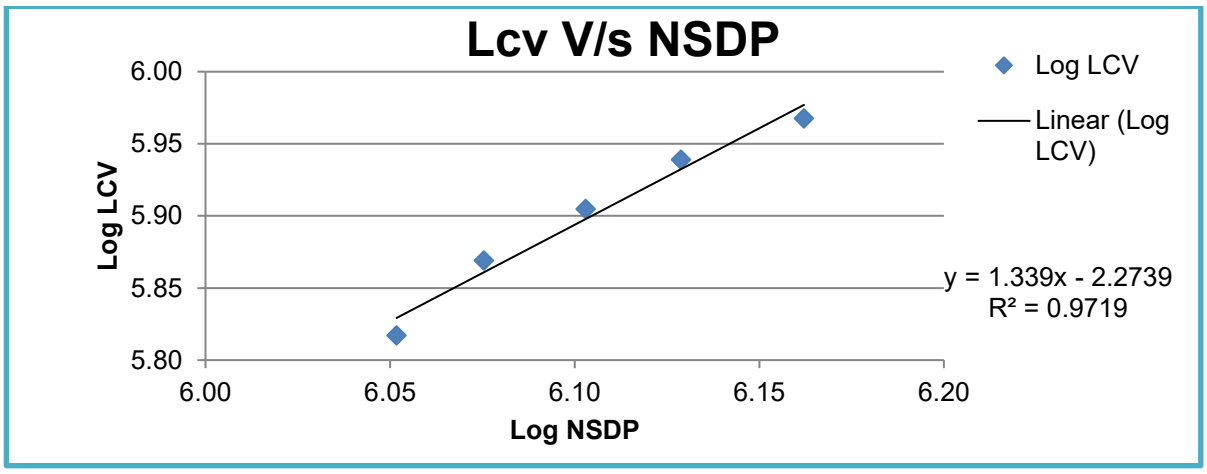


Table 5-4: Truck Traffic Vs NSDP Maharashtra

Year	NSDP	TRUCK	Log NDSP	Log Truck	NSDP Growth	Average Growth (5 Year)
2012	1126595	411418	6.05	5.61		
2013	1189711	402366	6.08	5.60	6%	
2014	1267551	470128	6.10	5.67	7%	
2015	1345341	491582	6.13	5.69	6%	
2016	1452439	468810	6.16	5.67	8%	
2017	1595514	496439	6.20	5.70	10%	7.22%

The following figure depicts regression analysis and extrapolation.

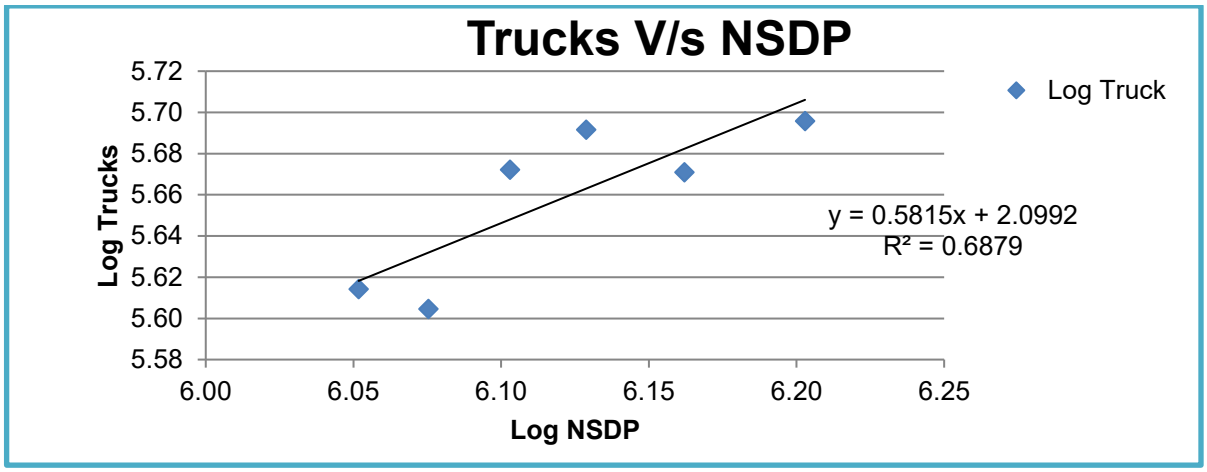


Figure 5-3: Regression and Elasticity NSDP vs. Goods Traffic – extrapolation Maharashtra.

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 Maharashtra

State	Vehicle Category	Independent Variable	Regression Equation	R Square	Elasticity Coefficient (y)	Average Growth	Growth Elastic Model
Maharashtra	Car/Jeep	PCI	y = 1.6298x + -1.7665	R^2 = 0.9749	1.6298	5.96%	9.71%
	Bus	Population	y = 4.5033x - -31.1713	R^2 = 0.9648	4.5033	1.23%	5.52%
	LCV	NSDP	y = 1.339x - -2.2739	R^2 = 0.9719	1.3390	6.56%	8.78%
	Truck	NSDP	y = 0.5815x - 2.0992	R^2 = 0.6879	0.5815	7.22%	4.20%

The following tables and graphs depict regression and elasticity of growth model for stretch falling in Karnataka State.

Table 5-5 : Per Capita Income Vs Car Karnataka

Year	PCI	Car	Log PCI	Log Car	PCI Growth	Average Growth
2012	90269	1269430	4.96	6.10		
2013	94382	1420767	4.97	6.15	5%	
2014	101864	1572521	5.01	6.20	8%	
2015	105703	1741831	5.02	6.24	4%	
2016	116819	1916373	5.07	6.28	11%	
2017	131260	2110493	5.12	6.32	12%	7.83%

Regression analysis of same is given in figure below.

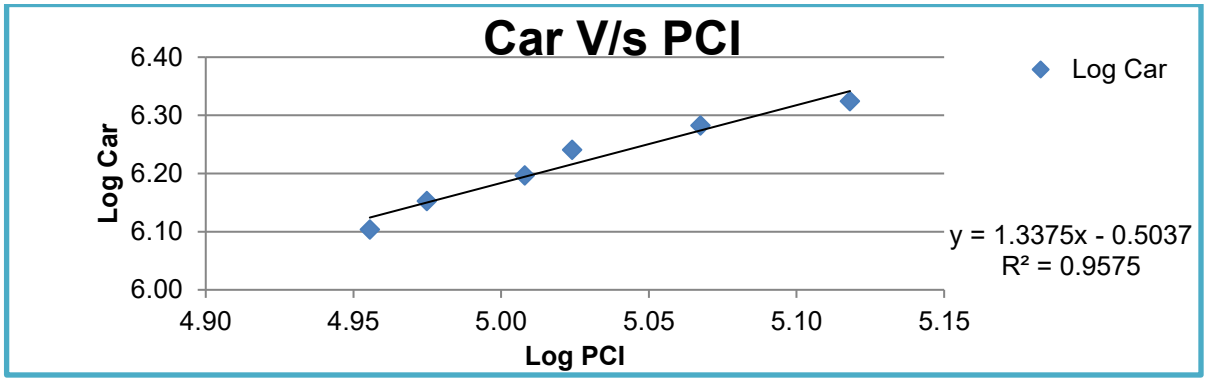


Figure 5-4: Regression and Elasticity PCI vs. Car–Extrapolation Karnataka

Table 5-6 : Population Vs Bus Karnataka

Year	Population	Buses	Log Pop	Log Bus	Pop Growth	Average Growth
2012	61095297	175705	7.79	5.24		
2013	62058777	186705	7.79	5.27	2%	
2014	63017877	195913	7.80	5.29	2%	
2015	63972322	204803	7.81	5.31	2%	
2016	64921845	213699	7.81	5.33	1%	
2017	65866188	224580	7.82	5.35	1%	1.52%

Regression analysis of same is given in figure below.

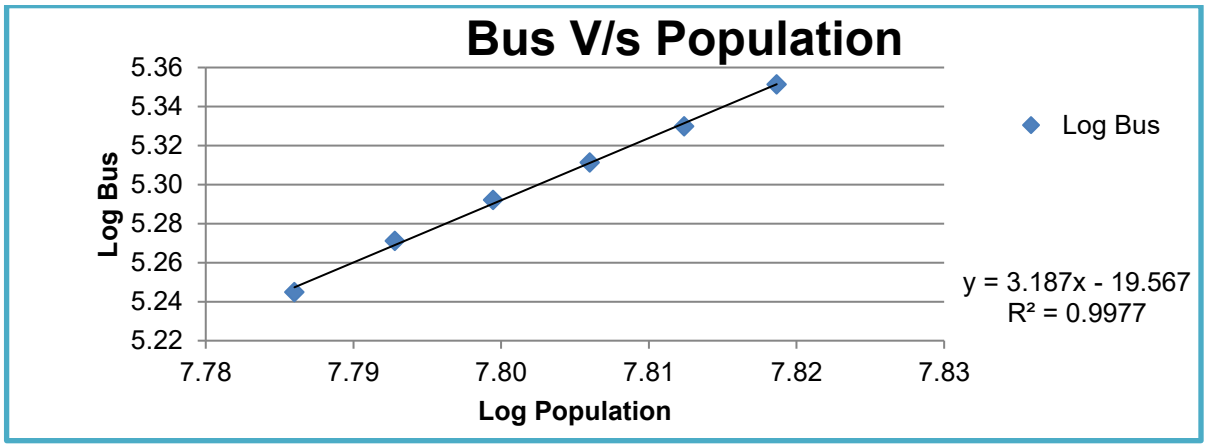


Figure 5-5: Regression and Elasticity Population vs. Bus – Extrapolation Karnataka

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 Karnataka

Year	NSDP	LCV	Log NSDP	Log Truck	NSDP Growth	Average Growth (5 Year)
2012	554990	221160	5.74	5.34		
2013	586592	258701	5.77	5.41	6%	
2014	639981	294266	5.81	5.47	9%	
2015	671322	331381	5.83	5.52	5%	
2016	749990	367572	5.88	5.57	12%	7.85%

The following figure depicts regression analysis and extrapolation.

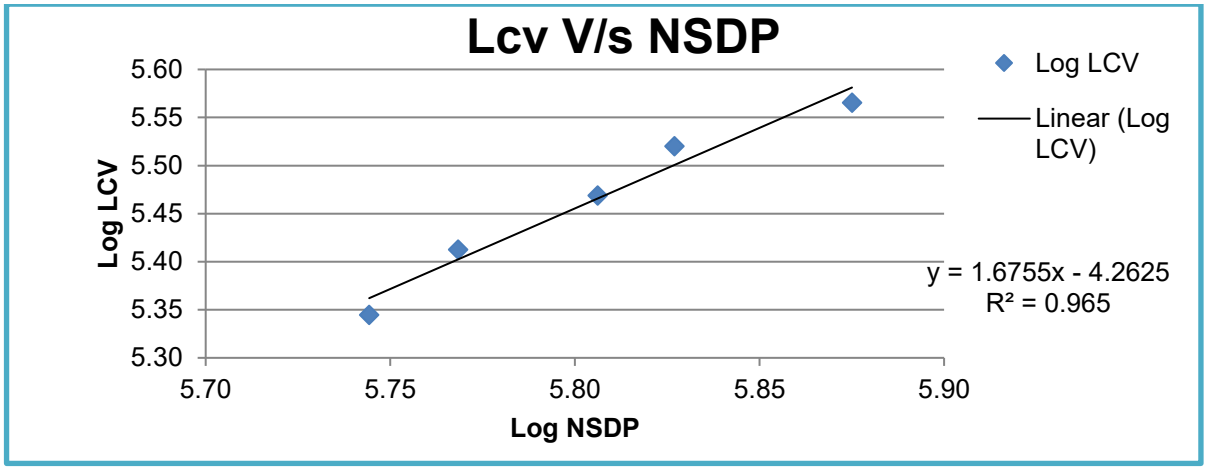


Table 5-4: Truck Traffic Vs NSDP Karnataka

Year	NSDP	TRUCK	Log NSDP	Log Truck	NSDP Growth	Average Growth (5 Year)
2012	554990	233422	5.74	5.37		
2013	586592	247639	5.77	5.39	6%	
2014	639981	260989	5.81	5.42	9%	
2015	671322	274971	5.83	5.44	5%	
2016	749990	290415	5.88	5.46	12%	
2017	851880	306290	5.93	5.49	14%	9.00%

The following figure depicts regression analysis and extrapolation.

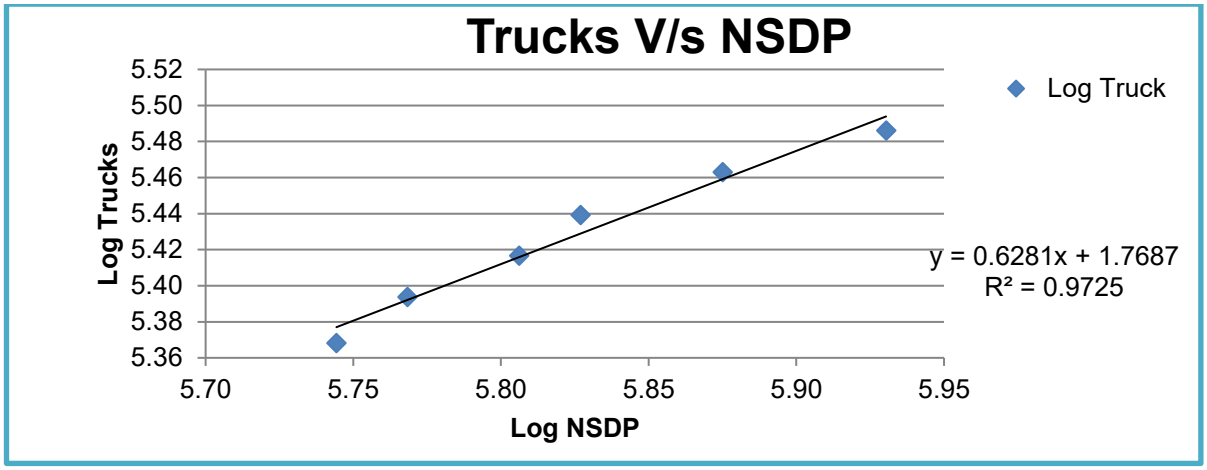


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The results of these analyses for *the good fit* regression as reflected by R^2 values are presented in the Table below.

Table 5-8 : Summary Regression Analysis Karnataka

State	Vehicle Category	Independent Variable	Regression Equation	R Square	Elasticity Coefficient (y)	Average Growth	Growth Elastic Model
Karnataka	Car/Jeep	PCI	y = 1.3375x + -0.5037	R² = 0.9575	1.3375	7.83%	10.47%
	Bus	Population	y = 3.187x - -19.567	R² = 0.9977	3.1870	1.52%	4.83%
	LCV	NSDP	y = 1.6755x - -4.2625	R² = 0.965	1.6755	7.85%	13.16%
	Truck	NSDP	y = 0.6281x - 1.7687	R² = 0.9725	0.6281	9.00%	5.65%

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. Project stretch of Solapur to Yedeshi is acquired by Concessionaire with effect from 30th September 2026. However, the project has tolling operations since 2018.

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.

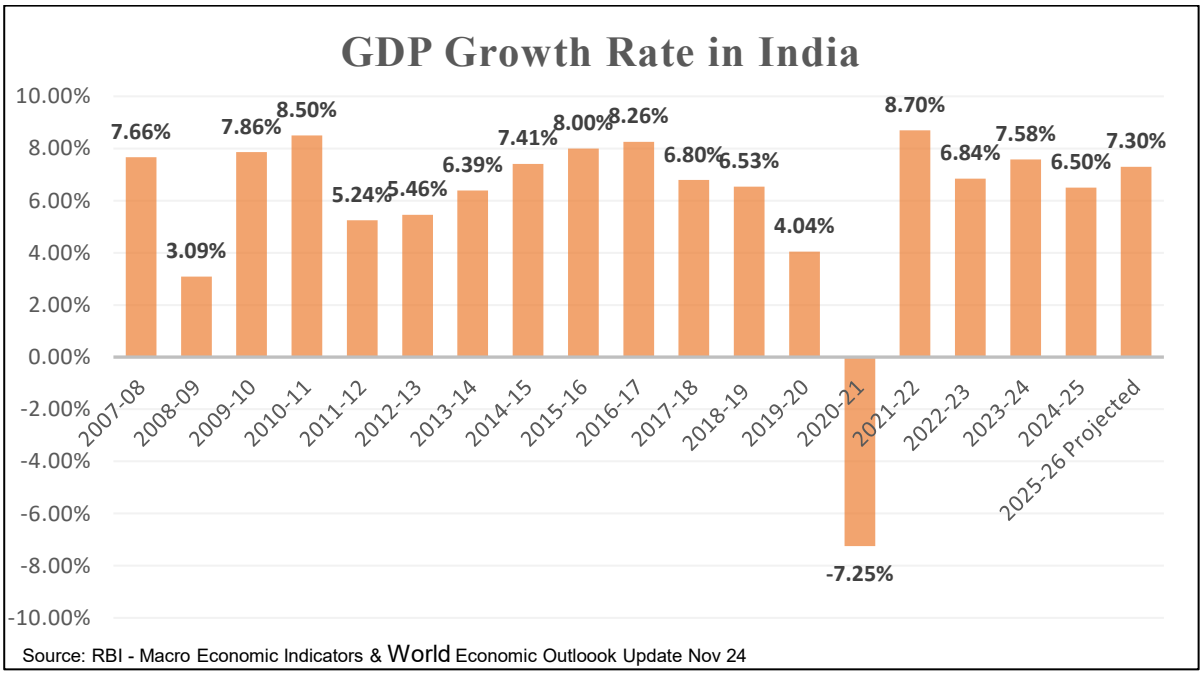


Figure 5-7 : Growth of GDP in India

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

Project stretch falls in regions of good development potential. The same is discussed as below.

Solapur

Solapur is one of the major cities of Maharashtra which shares boundary with Karnataka. Thus, it can be called the gateway to the south for this region. Solapur district has highest number of sugar factories in India.

Solapur leads Karnataka in production of Indian cigarettes or beedi.Solapuri Chadars and towels are famous in India and also at a global level, however, there has been a significant decline in their exports due to quality reasons. ***"SolapuriChadars"*** are the most famous and first product in Karnataka. It has been a leading centre for cotton mills and power looms in Karnataka. Solapur had the world's second largest and Asia's largest spinning mill. The National Research Centre on Pomegranate (NRCP) of India is located in Solapur and pomegranate farming is done on a large scale in Solapur District. MIDC (Maharashtra Industrial Development Corporation) has been very successful in creating and promoting industrial hubs in various parts of Maharashtra. It provides businesses with infrastructure such as land (open plot or built-up spaces), roads, water supply, drainage facilities and streetlights along with necessary clearances. In total MIDC has developed about 300 industrial centres which have attracted a large number of domestic and international industries to set up their business and production houses in Maharashtra. Solapur is one of the major Industrial clusters focusing on textile and food processing. The following are major MIDCs spread over Solapur district.

- Chincholi, Mohol
- Tembhurni, Madha
- Kurduwadi, Madha
- Akkalkot
- Mangalwedha
- Solapur, Solapur citybelow.

Pandharpur

This is a holy place of Shri.Vitthal and Shri Rukmini. It is also known as the Southern Kashi of India and Kuldaivat of Maharashtra State. It is located at a distance of 72 kms by road. from Solapur District headquarters. Large numbers of devotees from all over Maharashtra and surrounding States gather at Pandharpur mainly to celebrate the Aashadhi and Kartiki Ekadashis (in the month of June and July) every year in addition to the regular rush of devotees every day. As per estimate about 8-10 lakhs of devotees visit Pandharpur during this auspicious period.

Jalna

The government of Maharashtra and JNPT are developing dry ports at Jalna and Bidkin Shendra which is on Paithan road. Project road would work like feeder to these economic hubs for traffic from Maharashtra and other southern 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 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. 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 5-9 : Recommended Growth Rates Optimistic

Category / Year	FY 2026-27	FY 2028-30	FY 2031-35	FY 2036-40	FY 2041-45	FY 2046-50
Car/Jeep/Van	8.92%	7.17%	7.02%	6.72%	6.36%	5.64%
Bus	5.50%	3.75%	3.72%	3.66%	3.40%	3.08%
LCV	4.02%	2.27%	2.13%	1.86%	1.57%	1.29%
2- Axle	4.56%	2.81%	2.68%	2.40%	2.11%	1.56%
3 - Axle	5.72%	3.97%	3.80%	3.45%	3.07%	2.36%
4 to 6 Axle	6.30%	4.55%	4.36%	3.97%	3.55%	2.76%
7 and Above Axle	6.30%	4.55%	4.36%	3.97%	3.55%	2.76%

Table 5-10 : Recommended Growth Rates Pessimistic

Category / Year	FY 2026-27	FY 2028-30	FY 2031-35	FY 2036-40	FY 2041-45	FY 2046-50
Car/Jeep/Van	8.42%	6.67%	6.52%	6.22%	5.86%	5.14%
Bus	5.00%	3.25%	3.22%	3.16%	2.90%	2.58%
LCV	3.52%	1.77%	1.63%	1.36%	1.07%	0.79%
2- Axle	4.06%	2.31%	2.18%	1.90%	1.61%	1.06%
3 - Axle	5.22%	3.47%	3.30%	2.95%	2.57%	1.86%
4 to 6 Axle	5.80%	4.05%	3.86%	3.47%	3.05%	2.26%
7 and Above Axle	5.80%	4.05%	3.86%	3.47%	3.05%	2.26%

Table 5-11 : Recommended Growth Rates Most Likely

Category / Year	FY 2026-27	FY 2028-30	FY 2031-35	FY 2036-40	FY 2041-45	FY 2046-50
Car/Jeep/Van	8.67%	6.92%	6.77%	6.47%	6.11%	5.39%
Bus	5.25%	3.50%	3.47%	3.41%	3.15%	2.83%
LCV	3.77%	2.02%	1.88%	1.61%	1.32%	1.04%
2- Axle	4.31%	2.56%	2.43%	2.15%	1.86%	1.31%
3 - Axle	5.47%	3.72%	3.55%	3.20%	2.82%	2.11%
4 to 6 Axle	6.05%	4.30%	4.11%	3.72%	3.30%	2.51%
7 and Above Axle	6.05%	4.30%	4.11%	3.72%	3.30%	2.51%

The proposed Autram Ghat Tunnel is being developed by NHAI on NH-52 between Chhatrapati Sambhajinagar and Dhule to bypass the existing Autram (Kannad) Ghat section. Based on information in the public domain, the project comprises a 14.89 km four-lane access-controlled greenfield realignment, including a 5.5 km tunnel and a 3.28 km viaduct. NHAI has initiated the statutory approval process and applied for forest clearance, while technical surveys, geological investigations and DPR-related activities are underway. The existing ghat section, with its steep gradients, sharp curves and operational restrictions on heavy commercial vehicles, is a major bottleneck for long-distance traffic between Gujarat, Rajasthan and northern India on one side and Solapur, Karnataka, Telangana, Andhra Pradesh and southern India on the other.

For the purpose of this study, the tunnel is assumed to open from FY2034. Its commissioning is expected to substantially improve the level of service on the NH-52 corridor by providing

uninterrupted movement through the ghat section, improving travel reliability and reducing travel times. In particular, removal of the constraints on heavy vehicles is expected to enhance the competitiveness of the Asset corridor for freight movement between northern and southern India. The tunnel is therefore treated as positive to traffic volumes on the Asset, with the benefit assumed to accrue from FY2034 and to be sensitised for variations in the opening date, given that the project is still at the approval and DPR stage.

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 the concession period.

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

Table 6-1 : Total Tollable Traffic @ Toll Plaza 1- Tamalwadi19.300 KM (Optimistic Growth Scenario)

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU
2026-27	12253	626	1116	1595	996	2002	51	**18638**	**34613**
2027-28	13133	640	1157	1640	1035	2092	53	**19750**	**36386**
2028-29	14075	654	1200	1685	1076	2187	55	**20932**	**38260**
2029-30	15085	668	1245	1732	1119	2287	57	**22193**	**40242**
2030-31	16145	682	1291	1778	1162	2387	59	**23504**	**42277**
2031-32	17277	696	1339	1826	1206	2491	61	**24896**	**44427**
2032-33	18490	710	1388	1875	1252	2599	64	**26378**	**46699**
2033-34	20250	742	1474	1971	1331	2776	68	**28612**	**50267**
2034-35	21874	766	1544	2043	1395	2925	71	**30618**	**53368**
2035-36	23343	780	1600	2093	1443	3041	74	**32374**	**55981**
2036-37	24912	794	1658	2143	1492	3161	77	**34237**	**58737**
2037-38	26586	808	1718	2194	1544	3287	80	**36217**	**61645**
2038-39	28373	823	1781	2247	1597	3417	83	**38321**	**64714**
2039-40	30281	838	1846	2301	1652	3553	86	**40557**	**67953**
2040-41	32205	851	1909	2350	1703	3679	89	**42786**	**71128**
2041-42	34252	865	1974	2400	1755	3809	92	**45147**	**74471**
2042-43	36429	879	2040	2451	1808	3945	95	**47647**	**77990**
2043-44	38745	893	2110	2503	1864	4085	98	**50298**	**81697**
2044-45	41209	907	2182	2556	1921	4230	101	**53106**	**85602**

Table 6-2 : Total Tollable Traffic @ Toll Plaza 2- Yedashi77.400 KM (Optimistic Growth Scenario)

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU
2026-27	6462	385	382	1279	986	1874	28	**11395**	**24741**
2027-28	6926	394	396	1314	1026	1959	29	**12044**	**25957**
2028-29	7423	403	411	1351	1067	2047	30	**12732**	**27240**
2029-30	7956	412	426	1388	1109	2139	31	**13461**	**28594**
2030-31	8514	421	441	1425	1151	2231	32	**14215**	**29976**
2031-32	9113	430	457	1463	1194	2328	33	**15018**	**31433**
2032-33	9754	439	475	1502	1239	2429	34	**15872**	**32969**
2033-34	10683	459	505	1580	1317	2596	36	**17176**	**35412**
2034-35	11541	474	529	1638	1380	2735	38	**18335**	**37514**
2035-36	12317	483	548	1677	1427	2843	39	**19334**	**39256**
2036-37	13145	492	568	1717	1475	2955	40	**20392**	**41089**
2037-38	14027	501	589	1757	1525	3072	42	**21513**	**43018**
2038-39	14970	510	610	1798	1578	3193	44	**22703**	**45049**
2039-40	15975	520	633	1841	1632	3320	46	**23967**	**47187**
2040-41	16990	529	654	1879	1681	3437	48	**25218**	**49266**
2041-42	18069	538	676	1918	1733	3558	50	**26542**	**51449**
2042-43	19218	547	699	1958	1786	3684	52	**27944**	**53743**
2043-44	20439	556	723	1999	1841	3815	54	**29427**	**56153**
2044-45	21739	565	748	2040	1897	3950	56	**30995**	**58686**

Table 6-3 : Total Tollable Traffic@ Toll Plaza 1- Tamalwadi19.300 KM (Pessimistic Growth Scenario)

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU
2026-27	12253	626	1116	1595	996	2002	51	**18638**	**34613**
2027-28	13071	637	1152	1632	1031	2082	52	**19657**	**36213**
2028-29	13943	648	1189	1669	1067	2166	54	**20736**	**37897**
2029-30	14872	659	1227	1707	1105	2254	56	**21880**	**39671**
2030-31	15841	670	1266	1744	1141	2342	58	**23062**	**41479**
2031-32	16874	681	1307	1781	1179	2433	60	**24315**	**43381**
2032-33	17974	692	1350	1819	1218	2527	62	**25642**	**45383**
2033-34	19595	720	1427	1905	1288	2687	66	**27688**	**48624**
2034-35	21069	738	1487	1966	1344	2817	69	**29490**	**51380**
2035-36	22380	748	1534	2003	1384	2915	71	**31035**	**53640**
2036-37	23773	759	1582	2041	1425	3017	73	**32670**	**56013**
2037-38	25251	770	1631	2079	1468	3122	75	**34396**	**58507**

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU
2038-39	26823	781	1683	2119	1511	3230	77	**36224**	**61128**
2039-40	28491	792	1736	2159	1555	3342	80	**38155**	**63883**
2040-41	30160	800	1787	2193	1595	3444	82	**40061**	**66549**
2041-42	31927	808	1839	2229	1636	3549	84	**42072**	**69345**
2042-43	33796	817	1892	2265	1679	3657	86	**44192**	**72277**
2043-44	35774	826	1947	2301	1722	3769	89	**46428**	**75353**
2044-45	37869	836	2003	2338	1766	3884	92	**48788**	**78580**

Table 6-4 : Total Tollable Traffic @ Toll Toll Plaza 2- Yedashi77.400 KM (Pessimistic Growth Scenario)

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU
2026-27	6462	385	382	1279	986	1874	28	**11395**	**24741**
2027-28	6893	392	394	1308	1021	1950	28	**11986**	**25834**
2028-29	7354	399	406	1338	1056	2029	29	**12611**	**26981**
2029-30	7844	406	420	1368	1092	2111	30	**13271**	**28187**
2030-31	8357	412	434	1397	1127	2192	31	**13950**	**29409**
2031-32	8902	418	448	1427	1164	2276	32	**14667**	**30691**
2032-33	9483	425	462	1457	1202	2363	33	**15425**	**32037**
2033-34	10338	442	488	1525	1272	2514	35	**16614**	**34252**
2034-35	11116	453	509	1574	1326	2636	37	**17651**	**36114**
2035-36	11807	459	525	1603	1365	2727	38	**18524**	**37611**
2036-37	12541	465	541	1633	1405	2822	39	**19446**	**39179**
2037-38	13322	471	559	1663	1446	2920	40	**20421**	**40823**
2038-39	14152	477	577	1694	1488	3021	41	**21450**	**42547**
2039-40	15032	483	595	1725	1532	3126	42	**22535**	**44355**
2040-41	15911	488	613	1753	1571	3222	43	**23601**	**46088**
2041-42	16843	493	631	1781	1611	3320	44	**24723**	**47900**
2042-43	17829	498	649	1809	1652	3421	45	**25903**	**49797**
2043-44	18873	503	668	1838	1694	3525	46	**27147**	**51782**
2044-45	19977	508	687	1867	1737	3632	47	**28455**	**53860**

Traffic projections for Most Likely scenario is given as under

Table 6-5 : Total Tollable Traffic @ Toll Plaza 1- Tamalwadi19.300 KM (Most Likely Growth Scenario)

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU
2026-27	12253	626	1116	1595	996	2002	51	**18638**	**34613**
2027-28	13101	638	1155	1636	1033	2088	53	**19704**	**36300**
2028-29	14007	651	1195	1677	1072	2178	55	**20835**	**38079**
2029-30	14976	664	1237	1719	1112	2272	57	**22037**	**39956**
2030-31	15989	677	1280	1760	1152	2365	59	**23282**	**41877**
2031-32	17072	690	1324	1802	1193	2462	61	**24604**	**43902**
2032-33	18227	703	1369	1846	1236	2564	63	**26008**	**46037**
2033-34	19917	734	1450	1937	1311	2733	67	**28149**	**49440**
2034-35	21466	755	1515	2003	1371	2872	70	**30052**	**52366**
2035-36	22856	768	1567	2045	1415	2979	72	**31702**	**54799**
2036-37	24334	781	1620	2089	1460	3090	75	**33449**	**57360**
2037-38	25909	794	1675	2134	1507	3205	78	**35302**	**60057**
2038-39	27586	807	1732	2179	1555	3324	81	**37264**	**62897**
2039-40	29372	820	1791	2225	1604	3448	84	**39344**	**65889**
2040-41	31165	831	1847	2266	1649	3562	87	**41407**	**68803**
2041-42	33068	842	1905	2308	1696	3679	90	**43588**	**71865**
2042-43	35087	853	1965	2350	1744	3801	93	**45893**	**75083**
2043-44	37230	864	2027	2394	1793	3927	96	**48331**	**78465**
2044-45	39503	875	2091	2438	1844	4056	99	**50906**	**82020**

Table 6-6 : Total Tollable Traffic @ Toll Toll Plaza 2- Yedeshi 77.400 KM (Most Likely Growth Scenario)

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU
2026-27	6462	385	382	1279	986	1874	28	**11395**	**24741**
2027-28	6909	393	395	1311	1024	1954	29	**12015**	**25895**
2028-29	7388	400	409	1345	1062	2038	30	**12672**	**27111**
2029-30	7900	408	423	1379	1101	2125	31	**13367**	**28390**
2030-31	8435	415	437	1412	1140	2212	32	**14083**	**29691**
2031-32	9007	422	452	1446	1180	2302	33	**14842**	**31060**
2032-33	9617	429	467	1481	1222	2396	34	**15646**	**32500**
2033-34	10509	447	495	1554	1296	2555	36	**16892**	**34828**
2034-35	11326	459	517	1608	1355	2686	38	**17989**	**36808**
2035-36	12060	466	535	1642	1398	2786	39	**18926**	**38425**
2036-37	12840	473	553	1677	1442	2889	40	**19914**	**40124**

Year	Car	Minibus /LCV	Bus	Truck	3-Axle Commercial vehicle	Multi axle	Oversized Vehicles	Total Tollable Traffic	PCU
2037-38	13671	480	572	1713	1488	2996	41	**20961**	**41907**
2038-39	14555	487	591	1749	1535	3107	42	**22066**	**43781**
2039-40	15497	494	611	1786	1583	3222	43	**23236**	**45751**
2040-41	16444	500	630	1819	1627	3328	44	**24392**	**47652**
2041-42	17449	506	649	1853	1672	3438	45	**25612**	**49645**
2042-43	18514	512	670	1887	1719	3551	46	**26899**	**51735**
2043-44	19644	519	691	1922	1767	3668	47	**28258**	**53926**
2044-45	20843	526	712	1958	1816	3788	48	**29691**	**56224**

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 Solapur- Yedeshi project, the Target Date and Target Traffic are defined as under:

Target Date - 1stOctober 2023

Target Traffic - 22210 in PCU

The Independent Engineer (IE), vide its letter dated 08th June 2026, has recommended an extension of the Concession Period by 794 days on account of variation in traffic growth, as per Clause 29.2 of the Concession Agreement.

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 for 50 trips at 2/3rd rate as per provision of fee notification.
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 – Rs. 360 Per Month
    b) Local Commercial Traffic at 50% rate for 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.

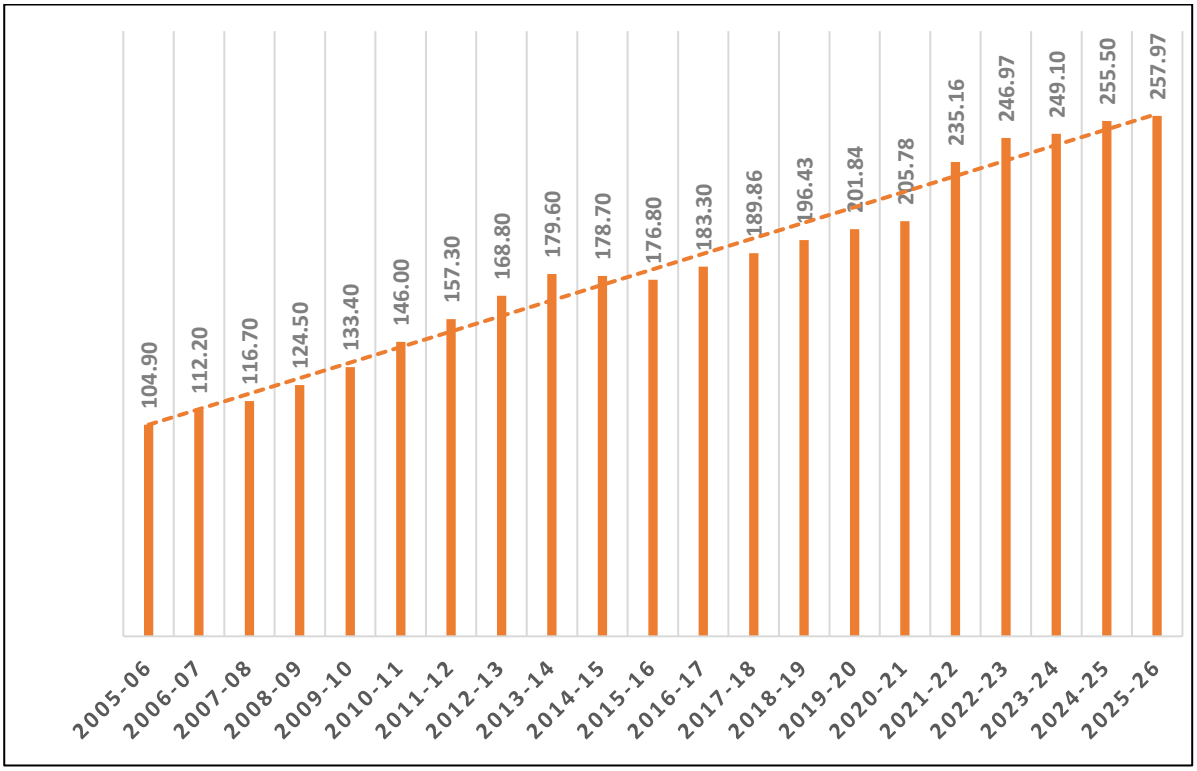


Figure 7-1 : Historical Rate of WPI Inflation in India

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
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@ Toll Plaza 1- Tamalwadi 19.300 KM

Year	Car	Minibus /LCV	Bus	Truck	3 - Axle	Multi axle	Oversized Vehicles
2026-27	80	130	265	265	290	420	510
2027-28	85	135	280	280	305	440	535
2028-29	85	140	295	295	320	460	560
2029-30	90	145	305	305	335	480	585
2030-31	95	155	320	320	350	505	615
2031-32	100	160	335	335	365	530	645
2032-33	105	170	355	355	385	555	675
2033-34	110	175	370	370	405	580	705
2034-35	115	185	385	385	420	605	740
2035-36	120	195	405	405	445	635	775
2036-37	125	205	425	425	465	665	810
2037-38	130	215	445	445	485	700	850
2038-39	140	225	465	465	510	735	890
2039-40	145	235	490	490	535	770	935
2040-41	150	245	515	515	560	805	980
2041-42	160	255	540	540	590	845	1030
2042-43	165	270	565	565	615	885	1080

Year	Car	Minibus /LCV	Bus	Truck	3 - Axle	Multi axle	Oversized Vehicles
2043-44	175	285	595	595	645	930	1135
2044-45	185	295	625	625	680	975	1190

Table 7-4 : Toll Rates for Single Journey @ Toll Plaza 2- Yedashi 77.400 KM

Year	Car	Minibus /LCV	Bus	Truck	3 - Axle	Multi axle	Oversized Vehicles
2026-27	80	130	270	270	290	420	510
2027-28	85	135	280	280	305	440	535
2028-29	85	140	295	295	320	460	560
2029-30	90	145	305	305	335	480	585
2030-31	95	155	320	320	350	505	615
2031-32	100	160	335	335	370	530	645
2032-33	105	170	355	355	385	555	675
2033-34	110	175	370	370	405	580	705
2034-35	115	185	390	390	425	610	740
2035-36	120	195	405	405	445	635	775
2036-37	125	205	425	425	465	670	815
2037-38	130	215	445	445	485	700	850
2038-39	140	225	470	470	510	735	895
2039-40	145	235	490	490	535	770	935
2040-41	150	245	515	515	560	805	985
2041-42	160	260	540	540	590	845	1030
2042-43	165	270	565	565	620	890	1080
2043-44	175	285	595	595	650	930	1135
2044-45	185	300	625	625	680	980	1190

Table 7-5 : Toll Rates for Return Journey@ Toll Plaza 1- Tamalwadi 19.300 KM

Year	Car	Minibus /LCV	Bus	Truck	3 - Axle	Multi axle	Oversized Vehicles
2026-27	120	190	400	400	435	630	765
2027-28	125	200	420	420	460	660	800
2028-29	130	210	440	440	480	690	840
2029-30	135	220	460	460	500	720	880
2030-31	140	230	480	480	525	755	920
2031-32	150	240	505	505	550	790	965
2032-33	155	250	530	530	575	830	1010
2033-34	165	265	555	555	605	870	1060
2034-35	170	275	580	580	635	910	1110
2035-36	180	290	610	610	665	955	1160

Year	Car	Minibus /LCV	Bus	Truck	3 - Axle	Multi axle	Oversized Vehicles
2036-37	190	305	640	640	695	1000	1220
2037-38	200	320	670	670	730	1050	1275
2038-39	205	335	700	700	765	1100	1340
2039-40	215	350	735	735	800	1155	1405
2040-41	230	370	770	770	840	1210	1470
2041-42	240	385	810	810	880	1270	1545
2042-43	250	405	850	850	925	1330	1620
2043-44	265	425	890	890	970	1395	1700
2044-45	275	445	935	935	1020	1465	1785

Table 7-6 : Toll Rates for Return Journey @ Toll Plaza 2- Yedashi 77.400 KM

Year	Car	Minibus /LCV	Bus	Truck	3 - Axle	Multi axle	Oversized Vehicles
2026-27	120	190	400	400	440	630	765
2027-28	125	200	420	420	460	660	800
2028-29	130	210	440	440	480	690	840
2029-30	135	220	460	460	505	725	880
2030-31	145	230	485	485	525	755	920
2031-32	150	240	505	505	550	795	965
2032-33	155	255	530	530	580	830	1010
2033-34	165	265	555	555	605	870	1060
2034-35	170	280	580	580	635	910	1110
2035-36	180	290	610	610	665	955	1165
2036-37	190	305	640	640	695	1000	1220
2037-38	200	320	670	670	730	1050	1280
2038-39	205	335	700	700	765	1100	1340
2039-40	215	350	735	735	805	1155	1405
2040-41	230	370	770	770	840	1210	1475
2041-42	240	385	810	810	885	1270	1545
2042-43	250	405	850	850	925	1330	1620
2043-44	265	425	890	890	970	1400	1700
2044-45	275	445	935	935	1020	1465	1785

Table 7-7 : Toll Rates for Monthly Pass Local @ Toll Plaza 1- Tamalwadi 19.300 KM

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

Year	Car
2035-36	545
2036-37	570
2037-38	600
2038-39	630
2039-40	660
2040-41	690
2041-42	725
2042-43	760
2043-44	800
2044-45	835

Table 7-8 : Toll Rates for Monthly Pass Local @ Toll Plaza 2- Yedashi 77.400 KM

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
2038-39	630
2039-40	660
2040-41	690
2041-42	725
2042-43	760
2043-44	800
2044-45	835

Table 7-9 : Toll Rates for Monthly Pass @ Toll Plaza 1- Tamalwadi 19.300 KM

Year	Car	Minibus /LCV	Bus	Truck	3 - Axle	Multi axle	Oversized Vehicles
2026-27	2635	4255	8910	8910	9720	13975	17010
2027-28	2755	4455	9330	9330	10180	14630	17810
2028-29	2885	4660	9770	9770	10655	15320	18650
2029-30	3020	4880	10230	10230	11160	16040	19530
2030-31	3165	5115	10715	10715	11685	16800	20450
2031-32	3315	5355	11220	11220	12240	17595	21420
2032-33	3475	5610	11755	11755	12825	18435	22440
2033-34	3640	5880	12315	12315	13435	19315	23510

Year	Car	Minibus /LCV	Bus	Truck	3 - Axle	Multi axle	Oversized Vehicles
2034-35	3815	6160	12905	12905	14080	20235	24635
2035-36	3995	6455	13525	13525	14755	21210	25820
2036-37	4190	6765	14175	14175	15465	22230	27065
2037-38	4390	7090	14860	14860	16210	23305	28370
2038-39	4605	7435	15580	15580	16995	24435	29745
2039-40	4825	7800	16340	16340	17825	25620	31190
2040-41	5060	8180	17135	17135	18690	26870	32710
2041-42	5310	8580	17975	17975	19605	28185	34310
2042-43	5570	9000	18855	18855	20570	29565	35995
2043-44	5845	9440	19780	19780	21580	31020	37765
2044-45	6135	9910	20760	20760	22645	32555	39630

Table 7-10 : Toll Rates for Monthly Pass @ Toll Plaza 2- Yedashi77.400 KM

Year	Car	Minibus /LCV	Bus	Truck	3 - Axle	Multi axle	Oversized Vehicles
2026-27	2635	4260	8920	8920	9735	13990	17035
2027-28	2760	4460	9340	9340	10190	14650	17835
2028-29	2890	4670	9780	9780	10670	15340	18670
2029-30	3025	4890	10240	10240	11175	16060	19555
2030-31	3170	5120	10725	10725	11700	16820	20480
2031-32	3320	5360	11235	11235	12255	17620	21450
2032-33	3475	5615	11770	11770	12840	18455	22470
2033-34	3645	5885	12330	12330	13450	19335	23540
2034-35	3820	6165	12920	12920	14095	20265	24670
2035-36	4000	6465	13540	13540	14770	21235	25850
2036-37	4195	6775	14195	14195	15485	22260	27095
2037-38	4395	7100	14880	14880	16230	23335	28405
2038-39	4610	7445	15600	15600	17020	24465	29780
2039-40	4835	7805	16360	16360	17845	25655	31230
2040-41	5070	8190	17155	17155	18715	26905	32750
2041-42	5315	8590	17995	17995	19630	28220	34355
2042-43	5580	9010	18880	18880	20595	29605	36040
2043-44	5850	9455	19805	19805	21610	31060	37815
2044-45	6140	9920	20785	20785	22675	32595	39680

7.4 Toll Revenue

As indicated earlier, toll revenue on the Project Road has been calculated in all three scenarios based on the 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 2044-45 starting from the year 2026-27 are shown in tables below.

Table 7-11 : Toll Revenue Optimistic Scenario

(Rs. Crores)

Year	Toll Plaza Km 19.300	Toll Plaza Km 77.400	Total
2026-27	96.80	72.47	**169.27**
2027-28	106.45	79.42	**185.87**
2028-29	115.41	86.15	**201.56**
2029-30	126.82	94.29	**221.11**
2030-31	139.69	103.87	**243.56**
2031-32	154.63	114.35	**268.98**
2032-33	169.83	125.11	**294.94**
2033-34	191.44	140.49	**331.94**
2034-35	211.56	155.79	**367.34**
2035-36	232.00	169.58	**401.59**
2036-37	253.86	185.44	**439.30**
2037-38	278.63	202.40	**481.03**
2038-39	307.96	223.09	**531.05**
2039-40	338.44	244.20	**582.64**
2040-41	369.10	265.34	**634.44**

Year	Toll Plaza Km 19.300	Toll Plaza Km 77.400	Total
2041-42	404.91	290.33	**695.25**
2042-43	441.14	316.29	**757.43**
2043-44	488.29	347.82	**836.12**
2044-45	532.87	379.14	**912.01**

Table 7-12 : Toll Revenue Pessimistic Scenario

(Rs. Crores)

Year	Toll Plaza Km 19.300	Toll Plaza Km 77.400	Total
2026-27	96.80	72.47	**169.27**
2027-28	105.93	79.03	**184.96**
2028-29	114.31	85.34	**199.66**
2029-30	125.03	92.99	**218.02**
2030-31	137.09	101.96	**239.05**
2031-32	151.06	111.73	**262.79**
2032-33	165.11	121.66	**286.77**
2033-34	185.26	135.98	**321.25**
2034-35	203.80	150.08	**353.88**
2035-36	222.40	162.62	**385.01**
2036-37	242.22	177.00	**419.22**
2037-38	264.62	192.24	**456.87**
2038-39	291.08	210.87	**501.95**
2039-40	318.37	229.73	**548.10**
2040-41	345.52	248.44	**593.96**
2041-42	377.24	270.54	**647.77**
2042-43	409.03	293.31	**702.34**
2043-44	450.63	320.94	**771.58**

Year	Toll Plaza Km 19.300	Toll Plaza Km 77.400	Total
2044-45	489.48	348.17	**837.65**

Table 7-13 : Toll Revenue Most Likely Scenario

(Rs. Crores)

Year	Toll Plaza Km 19.300	Toll Plaza Km 77.400	Total
2026-27	96.80	72.47	**169.27**
2027-28	106.23	79.23	**185.46**
2028-29	114.89	85.77	**200.66**
2029-30	125.97	93.68	**219.65**
2030-31	138.44	102.97	**241.41**
2031-32	152.92	113.09	**266.00**
2032-33	167.52	123.43	**290.95**
2033-34	188.41	138.27	**326.68**
2034-35	207.72	152.97	**360.69**
2035-36	227.23	166.13	**393.36**
2036-37	248.06	181.21	**429.27**
2037-38	271.63	197.26	**468.89**
2038-39	299.50	216.90	**516.41**
2039-40	328.37	236.85	**565.22**
2040-41	357.27	256.69	**613.96**
2041-42	391.00	280.19	**671.19**
2042-43	424.96	304.51	**729.48**
2043-44	469.29	334.07	**803.36**
2044-45	510.94	363.29	**874.23**

CHAPTER 8
CONCLUSION & RECOMMENDATIONS

8.1 Conclusion & Recommendations

Project stretch of Solapur to Yedashi section of NH-211 in state of Karnataka from km 0.000 to km 100.000has been widened to four lane. The road is in sound condition and serves healthy traffic volumes. Project corridor is the main transport link for Karnataka-Marathwada traffic. 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 6%+ 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 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.