Intended for

L&T Infrastructure Development Projects Limited

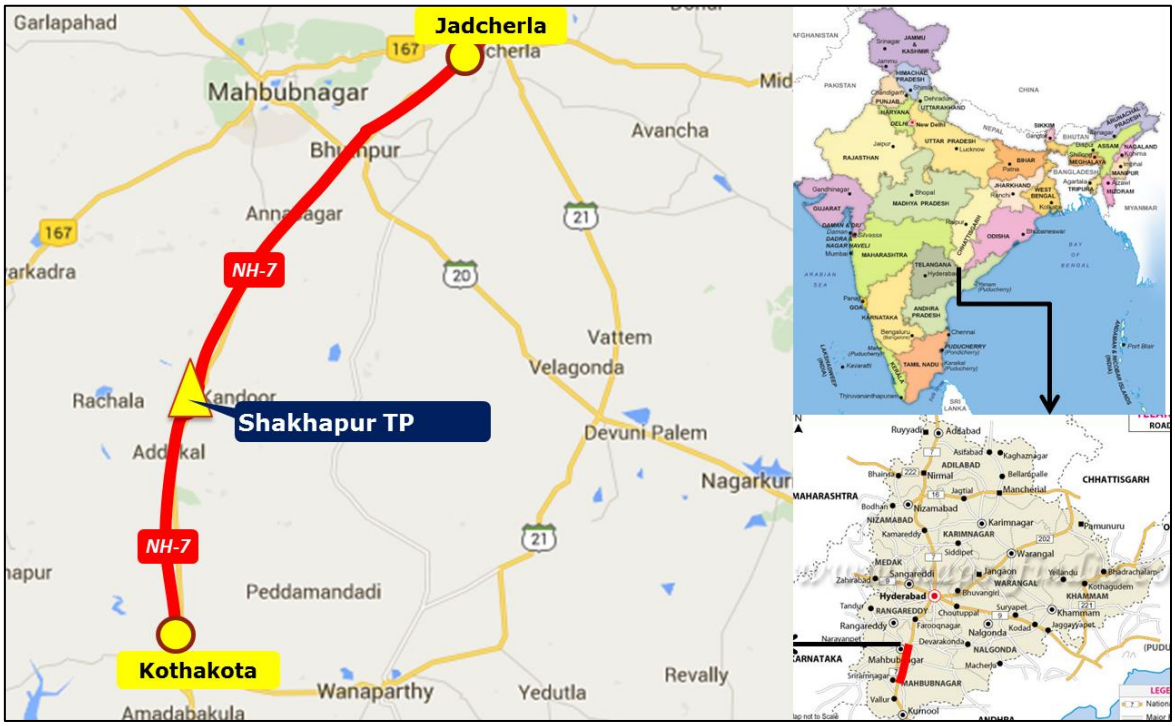
Document type

Final Traffic Report

Date

September, 2017

TRAFFIC STUDY FOR JADCHERLA - KOTHAKOTA SECTION OF NH-7 (WATL) IN THE STATE OF TELANGANA



RAMBOLL

TRAFFIC STUDY FOR JADCHERLA -KOTHAKOTA SECTION OF NH-7 (WATL) IN THE STATE OF TELANGANA

Revision	**00**
Date	**28/09/2017**
Made by	**Kishan/Harpreet**
Checked by	**Meenakshi Asija**
Approved by	**Srinivas Chekuri**
Description	**Final Traffic Report**

Ramboll
The Epitome
Building No.5, Tower–B
Floor-17
DLF Cyber Terrace Phase-III
Gurgaon-122 002
India
T +91 124 4611 999
F +91 124 4611 998
www.ramboll.in

DISCLAIMER

*In preparing this report, Ramboll India Private Limited relied, in whole or in part, on data and information provided by the **L&T IDPL**, which information has not been independently verified by Ramboll and which Ramboll has assumed to be accurate, complete, reliable, and current. Therefore, while Ramboll has utilized its best efforts in preparing this Report, Ramboll does not warrant or guarantee the conclusions set forth in this Report which are dependent or based upon data, information, or statements supplied by third parties or the client.*

This Report is intended for the Client's sole and exclusive use and is not for the benefit of any third party and may not be distributed to, disclosed in any form to, used by, or relied upon by, any third party, except as agreed between the Parties, without prior written consent of Ramboll, which consent may be withheld in its sole discretion.

Use of this Report or any information contained herein, if by any party other than the Client, shall be at the sole risk of such party and shall constitute a release and agreement by such party to defend and indemnify Ramboll and its officers, employees from and against any liability for direct, indirect, incidental, consequential or special loss or damage or other liability of any nature arising from its use of the Report or reliance upon any of its content. To the maximum extent permitted by law, such release from and indemnification against liability shall apply in contract, tort (including negligence), strict liability, or any other theory of liability.

CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDICES

1. INTRODUCTION

1.1 General

The Govt. of India (GoI) through the National Highways Authority of India (NHAI) has embarked on a programme of upgrading existing national highways to provide a safer, more comfortable and faster journey on the national road network. The NHAI has launched seven phases of National Highways Development Projects (NHDP), to upgrade, rehabilitate and widen major highways in India to a higher standard.

The National Highway No-7 is one of the major National Highways connecting the Northern and Southern states of India. It originates from Varanasi in Uttar Pradesh and ends at Kanyakumari in Tamil Nadu passing through the states of Uttar Pradesh, Madhya Pradesh, Maharashtra, Telangana, Andhra Pradesh, Karnataka and Tamil Nadu.

Figure 1-1 shows the alignment of the NH-7 along with major places.

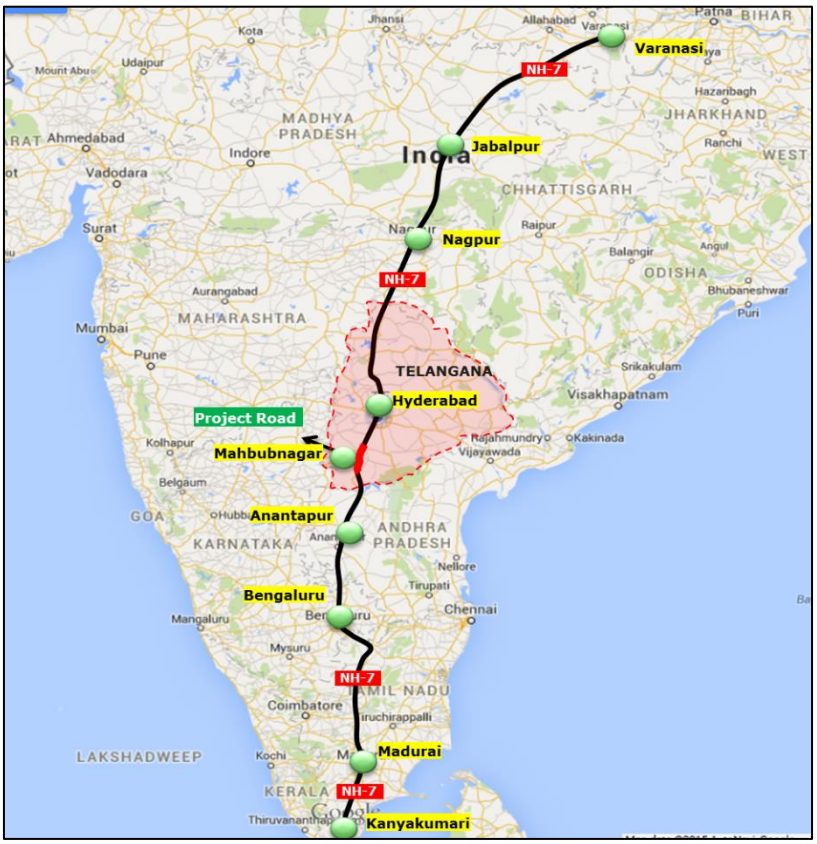


Figure 1-1: Alignment of NH-7 and major places

The project road, a segment of NH-7, starts at km 80.050 near Jadcherla and ends at km 135.469 near Kothakota with a length of 55.74 km. The four laning of the project road was awarded to M/s. L&T Infrastructure Development Projects Limited which in turn formed a SPV - M/s Western Andhra Tollways Limited (WATL) on Build, Operate and Transfer (BOT) basis for a concession period of 20 years including the construction period (2.5 years).

M/s. Ramboll India Private Ltd. has been appointed by M/s. L&T IDPL as traffic consultant to carry out a due diligence study for assessing the present traffic levels, travel pattern and revenue estimation for the project for the balance concession period, duly considering the network characteristics, future economic perspective in the influence area of the project and the provisions in the Concession Agreement of the project.

1.2 Objective and Scope of Work

The scope of services of this study is to:

- Review of past traffic studies, traffic data and other relevant reports as may be available to determine category wise volume of traffic for past years as well as for current year
- Estimation of the seasonality factors and estimation of base year AADT.
- Traffic and revenue projections with FY18 traffic as AADT
- To identify competing route and analyse the network conditions, road width, pavement condition, traffic characteristics & level of toll charged and the advantage/ disadvantage of the competing road and their impact of the alternative routes covering both existing and future possibilities – Analysis of traffic diversion to/ from the road
- Identification of Project Influence Area from analysis of travel pattern and carry out a study of past economic performance of influence area
- Identify factors which may have positive and negative impact on tollable traffic including potential risk in terms of competing facilities affecting the traffic in future
- Review future road and transportation network developments in the area of influence of the project and identify those schemes that may impact positively or negatively traffic on the toll road
- Upcoming developments and future development potential of the region would be assessed for the estimation of induced/newly generated traffic
- Estimation of traffic growth rates for different types of vehicles - conduct econometric regression analyses to identify relationships between class-wise traffic growth and relevant regional/ national socio-economic variables.

- Preparation of traffic projections based on analysis of macro-economic indicators related to forecasts of national/state GDP/WPI for the balance concession period
- Estimation of tollable traffic streams by toll category stipulated in the tolling schedule for the concession period – normal paying, return passes, monthly passes, local concession (personal cars and commercial vehicles)
- Estimation of toll revenue as per categories of traffic streams stipulated in the tolling schedule for the concession period

1.3 Structure of Report

The report is divided into four chapters, including this introduction chapter. Chapter 2 contains details pertaining to various traffic surveys conducted for data collection and its analysis to understand the base year traffic and travel characteristics in the Project Influence Area (PIA). Chapter 3 contains the details on the derivation of traffic growth rates used for traffic forecasting. Chapter 4 presents the details regarding tolling strategy, toll rates and the revenue projections for the duration of the concession.

2. TRAFFIC SURVEYS AND ANALYSIS

2.1 General

In order to understand the traffic characteristics, the volume of traffic and travel pattern of vehicles plying on the project road were collected through primary surveys. This chapter presents the details of the project road characteristics, traffic surveys carried out, their analysis and the salient findings. The results of the analysis will be utilized in assessing the traffic growth and estimation of traffic and revenue forecast on the project road for the remaining concession period.

2.2 Project Road Characteristics

The project road of Jadcherla-Kothakota of NH-7 starts at Jadcherla (km 80.050) and ends at Kothakota byepass (km 135.469). The project road section falls under jurisdiction of Mahbubnagar District in the State of Telangana passing through the villages viz., Bhuthpur, Annasagar, Kandoor and Addakal. There is one toll plaza on project road near Shakhapur at km 114.8 and toll collection started from March 2009. The alignment of project road and toll plaza location is shown in **Figure 2-1**.

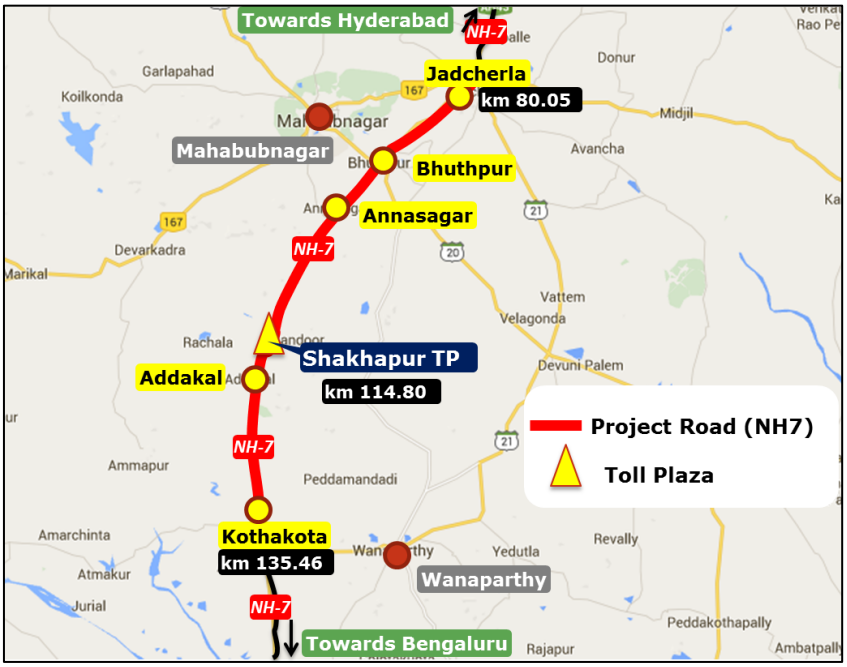


Figure 2-1: Project Road and Toll Plaza Location

The project road, in wider context, serves the long distance traffic which is majorly plying from Maharashtra/Hyderabad/ northern Telangana districts to Bengaluru, Mysuru and parts of Tamil Nadu & Kerala. Apart from long distance traffic, it also serves the short distance traffic which is mainly generated between Hyderabad/Shamshabad and Jadcherla/Mahbubnagar/Kurnool/Ananthapur areas.

2.3 Traffic Characteristics- Annual Average Daily Traffic (AADT)

The traffic plying on any road generally varies over different periods of the year depending on the cycle of different socio-economic activities in the region through which it passes. Therefore, in order to have a more realistic picture of the traffic on the project road, it is required to assess its seasonal variation to estimate the Annual average daily traffic (AADT).

For the present study, toll traffic data was provided for the last eight years of tolling operation since April 2009 (FY10-FY17 and six months of FY18). This dataset was analysed to understand the traffic characteristics of the project road. The month wise daily toll data along with the yearly average for all the operational years and adopted AADT is presented in **Appendix 2.1**.

In order to estimate the AADT for FY17, a study of Month-on-Month (MoM) traffic data was carried out which indicates low traffic number in month of November, December and January due to demonetisation impact. Also, the month of August had an abnormal increase in traffic due to Cauvery dispute issue. Therefore, average of April – July, September-October and February - March was adopted to estimate the ADT for FY17. In order to convert ADT to AADT, the behaviour of these 8 months average to the average of the year for FY16 has been studied. The factor derived has been applied on ADT (average of April – July, September-October and February – March) of FY17 to get the AADT.

Based on the recent five months of toll data from April 18 to August 18, AADT estimation for the year FY18 has been done. In order to estimate the AADT for FY18, a factor based on the behaviour of these five months (April to August) to the yearly average as derived from the year FY17 has been used. The resultant AADT for FY18 at the toll plazas is presented in **Table 2-1**.

FY18	Car	Bus	LCV	2-A	MAV
Average of 5 months	7,867	993	1,403	1,113	3,718
5 months to 12 months factor	1.04	1.02	1.07	1.07	1.03
AADT	8,193	1,010	1,499	1,189	3,843

Table 2-1: Annual Average Daily Traffic (AADT) FY18 at the toll plaza

2.4 Travel Characteristics

2.4.1 Methodology

In order to understand the travel demand pattern in the region and tollable traffic streams, results of origin and destination (OD) survey carried out for one day, by roadside interview-method as described in IRC: 102-1988 have been used. Both passenger and commercial vehicles plying on the project road were stopped on a

random sampling basis and interviewed in order to gain a full appreciation of existing travel pattern and route choice on the regional network.

The travel characteristics obtained by OD survey facilitate the identification of:

- Local and through traffic on the project road.

Potential divertible traffic to the project road from various alternative routes if any.Trained enumerators under the supervision of transport planners collected the trip characteristics using survey forms designed for this purpose. The OD survey elicited the characteristics like origin, destination, frequency, purpose of trip for passenger vehicles and commodity being transported for goods vehicles. The information pertaining to origin and destination of trips collected during roadside interviews was analysed to obtain the trip distribution based on a zoning system suitably designed for the present study.

2.4.2 Traffic Zoning System

To understand the spatial dimensions and trip characteristics of the vehicles interviewed during the OD survey, a detailed zoning system was developed giving due consideration to the following factors:

- The road network catering to the traffic on the project road and its generating points
- Important towns, villages, factories and industrial centres around the project road area.
- Administrative boundaries of districts and states.
- Configuration of the project road in the regional road network with respect to other roads

Two major types of areas were identified for analysis purposes;

Immediate Influence Area (IIA)*:* It includes the cities/towns/villages and districts along the project road and adjacent to it which generates/attracts trips to the project road. In this study it consists of districts of Rangareddy, Mahbubnagar, Kurnool and Hyderabad in the state of Telangana.

Broad Influence Area (BIA)*:* It includes the remaining districts of Telangana and other neighbouring states such as Andhra Pradesh, Karnataka, Tamil Nadu, Maharashtra and remaining states of India.

The zoning system adopted for the present study is having 68 zones as presented in **Appendix 2.2***.* Based on the sample size of different categories of vehicles interviewed during the OD survey, direction-wise expansion factors were calculated based on AADT. The OD matrices for all vehicle categories were generated and a comparison was made in terms of regional distribution, travel pattern, commodity distribution and trip purpose for cars. The derived matrices are presented in **Appendix 2.3.** The top OD pairs as

derived from OD analysis for different modes of vehicles have been presented in **Appendix 2.4**.

2.4.3 Regional Distribution Based on the above OD matrix, the regional distribution of tollable vehicles at the toll plaza location has been calculated. **Table 2-2** presents the distribution indicating the attraction and generation zones for the traffic on the project road.

States	Cars	M Bus	Bus	M LCV	LCV	2A	3A	MAV
Telangana	71.1	79.3	62.4	71.2	55.9	54.3	44.8	38.8
Andhra Pradesh	21.7	15.1	28.3	19.6	23.9	23.1	16.9	17.2
Karnataka	6.2	5.6	8.3	5.4	10.1	9.8	11.8	15.1
Tamil Nadu	0.2	0.0	0.6	2.1	4.4	6.2	13.2	11.1
Kerala	0.2	0.0	0.0	0.0	0.7	0.8	1.5	3.6
Maharashtra	0.3	0.0	0.0	0.4	2.5	2.9	2.9	3.5
Rest of India	0.1	0.0	0.4	1.3	2.4	2.8	8.9	10.8
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Table 2-2 : Regional Distribution (%) observed at the toll plaza location

Passenger traffic:

- Car traffic at toll plaza location is mostly from Telangana state (about 71.1 percent) followed by Andhra Pradesh (about 21.7 percent). About 6.2 percent is from Karnataka.
- Within the state of Telangana, the major car traffic generation and attraction points on the project road are Hyderabad, Rangareddy, Mahabubnagar and Kurnool districts.
- In case of minibus/bus traffic, major share is from Telangana which is about 79.3 per cent and 62.4 percent respectively followed by Andhra Pradesh with 15.1 per cent and 28.3 percent respectively.
- For cars, the major interaction is observed between Hyderabad and Mahbubnagar/Jadcherla/Kurnool/Bangalore.
- For mini buses and buses, the top OD pairs observed at toll plaza location are Hyderabad/Shadnagar - Mahbubnagar/Kothakota/Wanaparti/Bengaluru.

Freight traffic:

- In case of major freight vehicles (2A/3A/MAV), Telangana contributes about 50 per cent followed by Andhra Pradesh which contributes 19.6 per cent, Karnataka contributes around 11 per cent, Tamil Nadu contributes around 8.5 per cent and Maharashtra contributes around 2.6 per cent.

- LCVs (including Mini LCVs), major traffic is contributed by Telangana with 62 per cent followed by Andhra Pradesh which contributes 22 per cent and Karnataka shares 8 per cent.

  For Mini LCV, the top OD pairs are found to be between Hyderabad- Mahbubnagar /Kurnool /Kothakota. In case of LCVs, traffic is majorly plying between Hyderabad-Kurnool / Bangalore / Mahbubnagar.

2.4.4 Travel Pattern

The travel pattern of the passenger and freight vehicles is presented in **Appendix 2.5**. Some of the main observations are:

Passenger traffic:

- A significant share of passenger traffic movement (about 98 per cent) has one trip end as Hyderabad/Northern Telangana.
- The interaction between Hyderabad and Southern Telangana (Jadcherla, Mahbubnagar) is prominent in car and bus traffic.
- The passenger traffic travelling between Northern Telangana and Southern Telangana passing the toll plaza is approximately 1,350 vehicles.
- Hyderabad/ Northern Telangana - Southern Andhra Pradesh stream crossing the toll plaza is also prominent with 3,200 passenger vehicles.
- A significant interaction is observed between Hyderabad and Bengaluru/Karnataka.

Freight traffic:

- Major share of the freight traffic, around 75 per cent is occupied by Hyderabad/ Northern Telangana stream.
- In MLCV and LCV the major interaction of around 913 and 1,198 vehicles respectively is observed between Hyderabad/Northern Telangana and south of TP.
- For Mini LCV, the top OD pairs are found to be between Hyderabad- Mahbubnagar /Kurnool /Kothakota. In case of LCVs, traffic is majorly plying between Hyderabad-Kurnool / Bangalore / Mahbubnagar.
- Most of the 3A & MAV trucks are found to be travelling between Hyderabad-Bangalore / Chennai / Kurnool.

2.4.5 Commodity Distribution

Analysis was also carried out to understand the different commercial vehicles being used to transport different commodities. **Table 2-3** presents the commodity-wise share of the total commercial traffic on the project road at the toll plaza.

Commodity Type	LCV	2 Axle	3 Axle	MAV
Food Grains and Cash Crops	4.1	3.0	2.8	3.4
Fruits & Vegetables	12.8	10.0	7.2	6.9
Building Materials and Cement	3.0	2.2	5.5	11.3
Iron & Steel Products	3.9	2.4	3.5	7.8
Petroleum Products, Chemicals and Gas	0.0	0.0	6.7	6.2
Automobile and Heavy Machinery	3.0	2.0	4.8	6.7
Industrial Products & Equipment	4.9	5.8	8.9	8.3
Plastic & Plastic Pipes	4.9	1.9	1.0	0.4
Consumer Items	12.0	10.9	12.8	10.1
Parcels	15.4	14.1	20.7	10.4
Miscellaneous Items (Medicines, Livestock, Forest products, Fertilizers, Milk, etc.)	19.5	25.8	17.5	20.3
Empty Vehicles	16.5	21.9	8.6	8.3
Total	**100.0**	**100.0**	**100.0**	**100.0**

Table 2-3 : Commodity Distribution of Tollable Traffic (%)

- Significant number of vegetable and fruits are being transported by almost all the modes of freight vehicles majorly between Hyderabad and Mahbubnagar/Kurnool/Ananthapur/Bengaluru.
- Miscellaneous items carrying medicines, Livestock, fertilizers etc. are observed across all the freight moving vehicles with the share of around 17-26 per cent, Hyderabad being the pharma hub.
- A considerable amount of food grains are being carried in 2A/3A & MAVs and minimal share is also observed in LCV.
- A substantial number of LCV/2A and 3A vehicles are observed to be carrying parcels between Hyderabad and Kurnool/Bengaluru/Kolar.
- A sizeable amount of Iron and Steel products are being carried in 2A/3A/MAV between Hyderabad and Kurnool/Bengaluru/Kolar.

2.4.6 Trip Purpose Distribution

An analysis was also carried out to assess the purpose of car trips on the project road. **Table 2-4** summarises the purpose-wise trip characteristics of the passenger cars at the O-D survey location.

Trip Purpose	TP-01
Work & Business	77.4
Education	7.9
Social	5.7
Shopping	1.8
Religious	2.5
Others	4.8
Total	**100.0**

Table 2-4: Purpose - Wise Car Trips on Project Road (%)

- The work and business trips account for 77.4 percent. Also, the education trips and socials trips amount to around 7.9 and 5.7 percent respectively.
- Shopping and religious trips account for around 2-3 per cent each.

2.5 Alternate Route Analysis

As the toll plaza on the project road section of Jadcherla - Kothakota is operational for more than 10 years; the travel pattern is well established. However, an alternate route measuring 68 km long via SH-21 which is connecting Jadcherla and Kothakota via Bijnapalli exists for the traffic plying between Hyderabad and beyond to Jadcherla and beyond. The route via project road measuring about 54 km (A-B-C) starts from Jadcherla via Bhuthpur and ends at Kothakota. The alternate route (A-D-C) starts from Jadcherla and reaches Kothakota via Devunipalem, which is a 2 lane configuration road. **Figure 2-2** shows the map of alternate road.

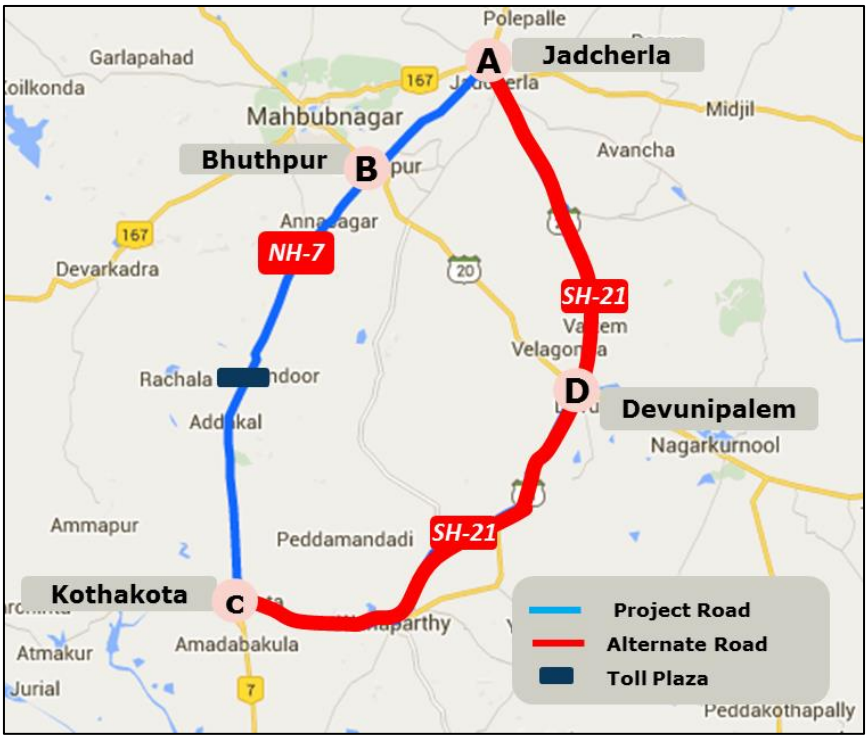


Figure 2-2: Route Choice Options

Since the travel distance via alternate route is 14 km longer than the route via project road and the alternate route is of 2 lane configuration, it does not pose a threat to the project road traffic. In addition, any plans of improvement for this alternate route are not available in public domain. Hence, no diversion analysis is carried out in this study.

3. TRAFFIC GROWTH RATE AND PROJECTIONS

3.1 General

As the project road has been executed on a DBFOT basis with a concession period of 20 years, an estimation of the traffic using the tolled highway and its future growth are important elements to assess the project's economics as they are generally the main/sole source of revenue for the project. This chapter details various aspects of the current traffic of the project road and its growth potential.

3.2 Project Road Traffic

The traffic that is likely to use the project road was estimated on the basis of the traffic and travel characteristics gathered through primary surveys as well as secondary sources. The traffic on the project road would normally consist of the following components:

- Normal Traffic
- Diverted Traffic
- Induced/Developmental Traffic

3.2.1 Normal Traffic

Normal traffic is the traffic which is already plying on the project road, which has been assessed on the basis of the past toll traffic data which is the total traffic captured on road including the exempted vehicles which do not pay toll at the toll plaza location.

3.2.2 Diverted Traffic

Diverted traffic is generally dictated by the presence of an alternative route at a cheaper generalised cost , which is in-turn defined by the road configuration and its condition, the type of vehicle and its operating costs, the average riding speed, the route distance and any tolling that may apply on a specific route.

In case of the Project Road, with tolling in operation since 2010, the travel pattern is well established. There are no competitive alternative routes available in the vicinity of the toll plaza location on the project road. Hence, no such threat is envisaged to the project road traffic.

3.2.3 Induced/ Dissuaded traffic

Developmental /new generated traffic is the one which would be generated, over and above normal growth, because of lowering of transport costs or new developments in the immediate influence area of the project road. In case of the project road, there is no such development known as of now which could generate traffic over and above the normal growth of the corridor. Therefore, induced traffic if any, has been factored in the general growth of the area.

3.3 Review of Past Traffic Data

The toll plaza data for the project road from the date of operation in April 2009 to August 17 was provided by the client. The monthly toll data has been converted into daily traffic and average for the different years has been derived. The growth trend analysis based on the yearly averages of traffic till FY16 along with the current estimates of FY17 is presented in **Table 3-1.**

FY/ Mode	Car	LCV	Bus	Truck	MAV (≥3A)
TP01					
2010	2,474	974	882	1,343	2,225
2011	3,370	1,171	1,074	1,263	2,461
2012	4,056	1,266	1,087	1,162	2,722
2013	4,613	1,392	1,118	1,042	2,684
2014	5,058	1,479	943	968	2,680
2015	5,419	1,507	953	869	2,925
2016	6,341	1,489	909	910	3,309
2017(E)	7,013	1,432	987	1,130	3,867
YOY Growth in %					
FY10 vs 11	36.2%	20.2%	21.8%	-6.0%	10.6%
FY11 vs 12	20.4%	8.1%	1.2%	-8.0%	10.6%
FY12 vs 13	13.7%	10.0%	2.8%	-10.3%	-1.4%
FY13 vs 14	9.7%	6.3%	-15.7%	-7.1%	-0.1%
FY14 vs 15	7.1%	1.9%	1.1%	-10.2%	9.1%
FY15 vs 16	17.0%	-1.2%	-4.7%	4.7%	13.1%
FY16 vs 17(E)	10.6%	-3.8%	8.6%	24.2%	16.9%
End Point Growth in %					
FY11 vs FY17	13.0%	3.4%	-1.4%	-1.8%	7.8%
FY12 vs FY17	11.6%	2.5%	-1.9%	-0.6%	7.3%
FY13 vs FY17	11.0%	0.7%	-3.1%	2.1%	9.6%
FY14 vs FY17	11.5%	-1.1%	1.5%	5.3%	13.0%
FY15 vs FY17(E)	13.8%	-2.5%	1.8%	14.0%	15.0%
Trend Line Growth in %					
FY11 to 17	12.3%	3.7%	-2.7%	-3.5%	6.8%
FY12 to 17	11.3%	2.4%	-3.1%	-1.8%	7.3%
FY13 to 17	11.2%	0.6%	-2.8%	1.0%	9.9%
FY14 to 17	12.0%	-1.1%	0.9%	5.2%	13.0%
FY15 to 17(E)	13.8%	-2.5%	1.8%	14.0%	15.0%

Table 3-1: Toll data comparison

The comparison of the toll data shows a consistent trend line growth of 11-13 percent in Cars at the toll plaza location over different years of comparison. The growth in this category has been in 7 percent range in FY14 vs FY15. It is worth mentioning here that the growth in FY16 vs FY15 comparison has been 17 percent.

The comparison of month on month data indicates a decline in traffic growth of LCV/Mini Bus and a gain in Truck category from Dec 15 which has resulted in abrupt

changes in traffic growth over these years of comparisons. LCV/Mini Bus category has been growing in the past with some year on year variations till FY15. Bus category has shown a varying trend over the years of comparison. The toll data for truck category shows that it has been on a continuous declining trend in the past and a 4.7 percent growth is seen FY15 vs FY16 comparison. Combined category of 3A/MAV category has grown around 6.8 percent from FY11 to FY17 (trendline growth).

3.4 Traffic Growth Rate Estimation

3.4.1 Methodology

Traffic growth for both passenger and freight vehicles has been estimated using the econometric approach as described in IRC-108, 1996. For freight traffic, due consideration has been given to the total tonnage transported and the shift in types of vehicles used for moving goods.

The econometric model applied, relates traffic growth to changes in state (or district) domestic product via an elasticity factor. According to IRC guidelines, elasticity based econometric model for highway projects should be derived in the following form:

Log e (P) = A0 + A1 Log e (EI)

Where:

P = traffic volume;

EI = Economic Indicator;

A0 = Regression constant;

A1 = Regression co-efficient (Elasticity Index).

In order to estimate traffic on the project road the methodology described below has been followed:

- Identify the influence area - From the analysis of travel patterns observed during the OD surveys, the project influencing states and districts, which are likely to impact the traffic growth on the project road, were identified.
- Review Past traffic Data – Based on data points available for the project corridor from different sources a review of past traffic and tonnage growth is carried out.
- Analysis of economic growth of the Project Influencing Area (PIA) - For each PIA state an economic profile describing past performance and future outlook was prepared. This also considers India’s past economic performance and its future outlook.
- Estimation of traffic elasticity to income – in order to translate economic growth into traffic growth, an elasticity factor was estimated.
- Derivation of traffic growth rates – On the basis of the traffic weighted PIA outlook and related traffic elasticity, traffic growth rates were estimated.

The methodology thus adopted incorporates, as basic data inputs, the perspective growth envisaged in the influence area and the changes in transport demand elasticities over a period of time. The traffic growth rates by vehicle type for the project road have been determined in line with the concession period of 20 years up to financial year FY2027.

3.4.1 Traffic Pattern and Influence Area

The travel pattern as derived from origin and destination survey analysis reveals the predominance of Telangana, Andhra Pradesh and Karnataka in both passenger and freight vehicles. Besides these two states, the states of Tamil Nadu and Maharashtra are contributing a major percentage to the project road freight traffic.

The travel pattern observed at the toll plaza location reveals that 71 percent of the Car traffic is from the state of Telangana and 21 percent is contributed by the state of Andhra Pradesh. Karnataka contributes around 6 percent in Car traffic. In case of buses, around 63 percent of buses are being generated from the state of Telangana and Andhra Pradesh has a share of 28 percent and around 9 percent is from Karnataka.

The share of freight traffic of 3A/MAV is around 42 percent from Telangana and Andhra Pradesh contributes around 17 percent in these trucks. In addition, the state of Karnataka has a share of 13 percent. Tamil Nadu has 12 percent share and around 3 percent being generated from Maharashtra.

The normalised shares of all the influencing states derived from the OD survey analysis of the toll plaza location are presented in **Table 3-2**.

Region/ Modes	Car	LCV/ M Bus	Bus	Truck	MAV (≥3A)
Telangana	72.1	59.2	63.0	56.3	47.9
Andhra Pradesh	21.7	24.1	28.6	24.0	19.4
Karnataka	6.2	10.1	8.4	10.2	15.2
Tamil Nadu	0.0	4.3	0.0	6.5	13.9
Maharashtra	0.0	2.4	0.0	3.0	3.6
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Table 3-2 : Normalised OD shares for the project road

Looking at the predominance of Telangana, Andhra Pradesh and Karnataka in Cars and Buses, these three states have been considered as the PIA states for these vehicles. The PIA states considered for LCV/MBus and freight traffic of 2A/3A/MAV are Telangana, Andhra Pradesh, Karnataka, Tamil Nadu and Maharashtra.

3.5 Past Economic Growth of PIA

Growth of traffic on the project road depends on existing development and future growth prospects of the connecting regions. A number of economic indicators for the PIA state, as published by Central Statistical Organisation (2004/05 prices), have been studied to assess their past performance.

Telangana

- Telangana's Gross State Domestic Product (GSDP) stood at Rs 2,174 billion in 2014-15 and has been growing at a compounded annual growth rate of 9.2 per cent since 2004-05.
- The state's growth in the recent years has been around 4-5 per cent since FY12.
- The services sector is the largest contributor to GSDP (63 percent), industry sector at 24 per cent and agriculture & allied activities sector at 13 percent of the GSDP in 2014-15.

The change of sectoral composition of GSDP over the years is presented in **Figure 3-1**.

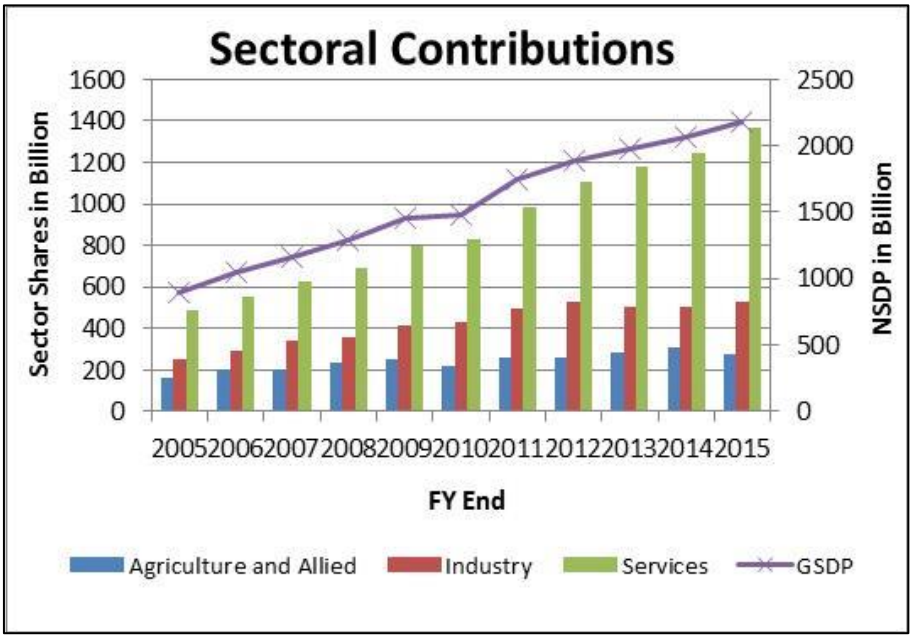


Figure 3-1: GSDP (in Rs billion) and its Sectoral Composition for Telangana

The performance of the state economy and its different sectors has been studied using time trend analysis. The average annual growth rates as obtained using regression analysis are presented in **Table 3-3**.

Particulars	2004/05 to 2007/08	2007/08 to 2014/15	2004/05 to 2014/15
GSDP	12.6	7.9	9.2
Agriculture and Allied	11.7	3.9	5.4
Industry	12.8	5.1	7.6
Services	12.7	10.2	11.0
Construction	14.9	1.1	4.8
Per Capita Income	10.7	6.2	7.5

Table 3-3 : Average Annual Growth Rates (%) of State Income for Telangana

The Information Technology (IT) and pharmaceuticals manufacturing sectors are expected to act as the backbones of the Telangana economy. The government has announced to offer special status to pharmaceuticals and IT industries in the state.

The state government is in talks with Steel Authority of India (SAIL) for setting up a steel factory involving an investment worth US$ 5 billion on the Khammam-Warangal border. The state targets setting up of industries across Telangana rather than confining them to any particular city.

Telangana is rich in mineral resources, which include granite, coal, lime stone, bauxite and mica. The state accounts for nearly 20 per cent of the country's coal deposits used for industrial purposes and in thermal power stations. Majority of the state's coal is spread across Adilabad, Karimnagar, Khammam and Warangal districts. The state is rich in limestone deposits, which cater to the various cement factories in the region.

Per Capita Income of Telangana is Rs 51,017 in the year 2014-15 and has been growing at 7.5 percent during 2004/05 to 2014/15. The growth in Per Capita Income is presented in **Figure 3-2**.

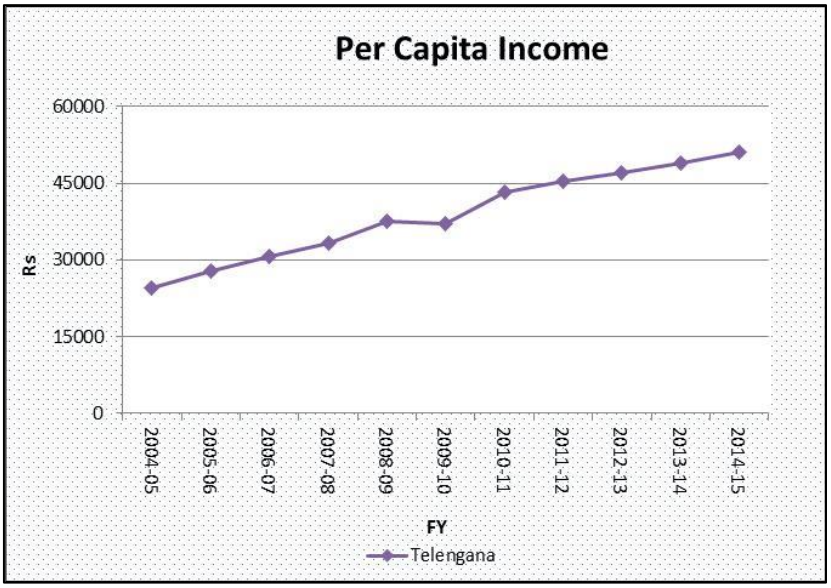


Figure 3-2: Per Capita Income of Telangana from 2004/05 to 2014/15

Other PIA states

The other major influencing states are Andhra Pradesh, Karnataka, Tamil Nadu and Maharashtra.

- Andhra Pradesh's GSDP stood at 2,645 billion in 2014-15 and has grown at 6.9 percent during FY05 to FY15. The growth had dipped to 4.0 percent range for the years of FY13.
- Karnataka's Gross State Domestic Product (GSDP) stood at Rs 3,441 billion in 2014-15 and has been growing at a compounded annual growth rate of 7.4 percent since

2004/05. Karnataka gets its maximum revenue from services sector with 59.1 percent share and agriculture being the lowest contributor with 15 percent. The industry sector contributes around 26 percent.

- Tamil Nadu's GSDP stood at Rs 5,154 billion in 2014-15 and is been growing at a compounded annual growth rate of 8.7 percent since 2004/05.
- Maharashtra's GSDP at Rs 9,475 billion in FY15 has grown at 8.3 percent since FY05 with maximum share coming from services sector (65 percent), Agriculture and Allied activities having a share of 7 percent and Industrial sector contributes 28 percent.

The average annual growth rates as obtained using regression analysis from 2004/05 till the latest year (FY15) is presented in **Table 3-4.**

Particular	Andhra Pradesh	Karnataka	Tamil Nadu	Maharashtra
GSDP	6.9	7.4	8.7	8.3
Agriculture and Allied	4.7	5.0	3.4	3.5
Industry	5.6	5.8	7.8	7.5
Services	8.5	9.1	10.0	9.4
Construction	5.5	7.4	8.6	10.7
Per Capita Income	5.4	5.9	8.0	6.8

Table 3-4 : Average Annual Growth Rates (%) of State Income for other PIA states from FY05 to FY15

The GSDP trends over the last few years for the other PIA states are presented in **Figure 3-3.**

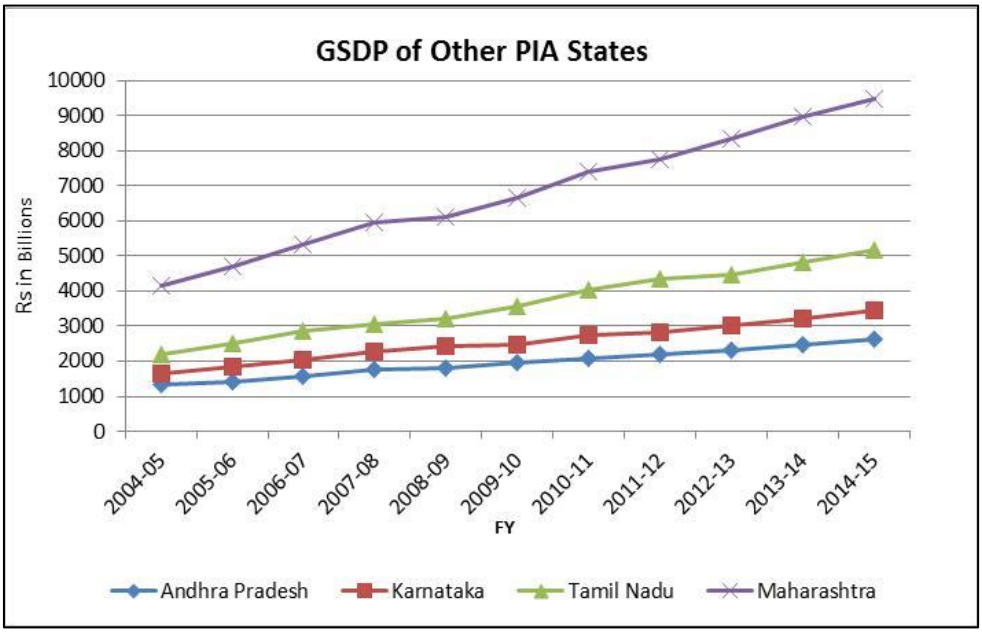


Figure 3-3: GSDP (in Rs billion) for other influencing states

3.6 PIA Outlook

3.6.1 India's past performance and outlook for future

India's GDP on 2004-05 series is available in public domain till 2011/12 and from FY12 to FY15 it is available on 2011-12 series. To analyse the data on one complete series, 2011/12 series has been converted into 2004-05 series.

Indian economy has grown at constant rate of 9.5 per cent during the years 2004/05 to 2007/08. After being hit by the global economic turmoil, the growth slipped to 6.7 per cent in 2008/09. The economy has revived in 2009/10 after achieving a growth of 8.6 per cent and 8.9 per cent in 2010/11.

In 2011/12, the GDP growth lowered to 6.7 per cent. FY 2012-13 has shown an average growth of 4.9 per cent. The results for 2013-14 revealed a grim economic growth of 6.6 per cent due to huge outflows by Foreign Institutional Investors (FIIs) and increasing fiscal deficit and current account deficit. The growth has been in the range of 7.5 percent for the year FY15. India's growth trend during the recent years has been presented in **Figure 3-4.**

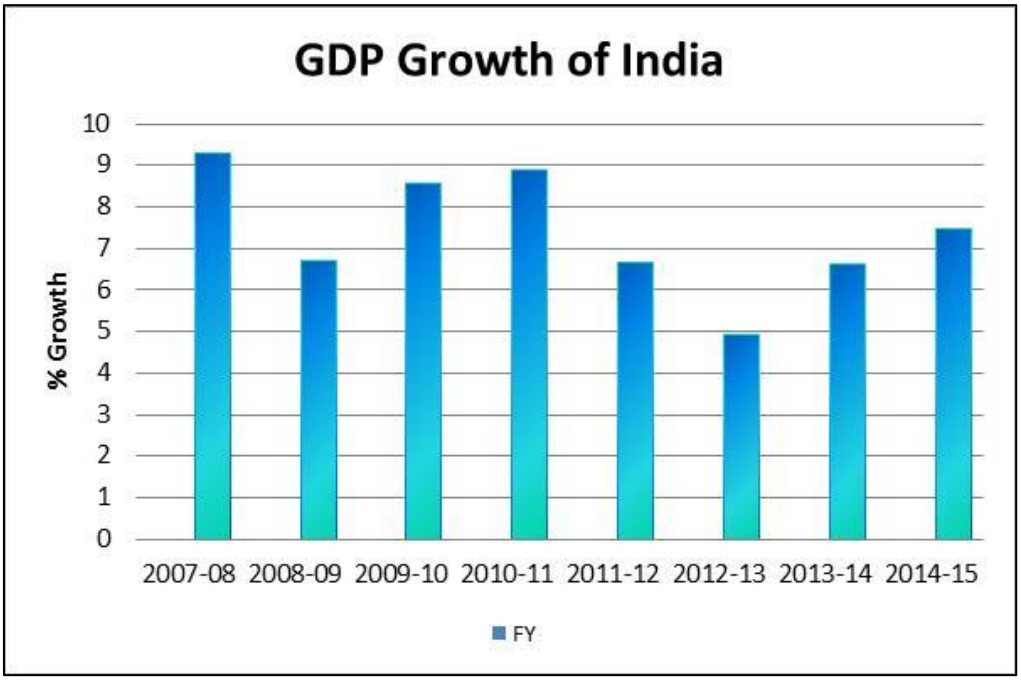


Figure 3-4: GDP growth in India

As per the recent update, the economy has grown at 7.1 per cent in 2016-17. The historical data for state GSDPs and national GDP from the NITI Aayog website (http://niti.gov.in/content/gsdp-constant2004-05prices-percent-growth-2004-05 to 2014-15) and computed the linear correlation between the growth rate of state GSDPs with the national GDP growth in the historical period (from 2005-06 to 2013-14). This linear correlation for individual states was then applied on the forecast national GDP growth rate to arrive at the forecast growth rates for the state GSDPs. National and State GSDPs of 2014-15 can't be used as the same is computed considering 2011-12 prices

as base. The year wise forecasts have been converted into five year slabs and used for further analysis. The outlook for India as well as PIA state has been presented in **Table 3-5**.

Period	India	Telangana	Andhra Pradesh	Karnataka	Tamil Nadu	Mahar ashtra
Outlook adopted for future in %						
Upto 2022	7.00	8.89	6.46	7.13	8.24	8.18
2022-2027	6.05	7.48	5.63	6.38	6.77	6.95

Table 3-5: Future outlook of PIA states and India

Based on the OD shares of the toll plaza location (Table 3-2) and the outlooks adopted for PIA states, the future weighted income for different vehicle types is presented in **Table 3-6**.

Indicators	Car	LCV/ M Bus	Bus	Truck	MAV (≥3A)
Upto 2022	8.13	7.98	7.92	7.98	7.97
2022-2027	6.93	6.80	6.77	6.79	6.77

Table 3-6 : Future Perspective of PIA Weighted Income

3.6.2 Transport Demand Elasticity

The econometric model applied for the project, relates traffic growth to changes in state domestic product via an elasticity factor according to IRC guidelines. The elasticity by vehicle types have been estimated based on the regression analysis of weighted income of PIA states with registered vehicles of PIA and actual traffic data.

A regression between GSDP and registered vehicles of PIA states with weights as shares in traffic based on results of OD survey was carried out. The derived registered vehicles elasticity has been 1.1 for cars and 1.0 for trucks. Vehicle registration data represents all vehicles registered in the state, but does not indicate actual number of vehicles plying on the road as it does not account for factors such vehicles taken off the road due to lack of road worthiness, those registered in a state but mostly used elsewhere, etc. Consequently, the elasticity values based on vehicle registration are somewhat different from those derived from actual traffic data.

The best measure of deriving traffic elasticity to income is long time series data of traffic on the road. In case of the project road, past traffic data is available since the year of operation of the toll plaza. The YOY mode wise traffic elasticity has been derived using rate of growth in the traffic vis a vis the rate of growth in income (weighted income derived from weighted OD shares). The elasticity runs for different time periods have been done using regression analysis with mode wise traffic as dependent variable and weighted income as independent variable. The income growth of PIA states observed in FY15 is assumed to continue for FY16 and FY17 also. The end-point/ trend

line actual elasticity between GSDP and traffic for the toll plaza is presented in **Table 3-7.**

Period/Modes	Car	LCV/ M Bus	Bus	Truck	MAV (≥3A)
YOY elasticity					
FY11 vs 12	2.67	1.16	0.17	-1.15	1.58
FY12 vs 13	3.21	2.18	0.66	-2.24	-0.30
FY13 vs 14	1.74	1.04	-2.72	-1.16	-0.02
FY14 vs 15	1.20	0.30	0.18	-1.64	1.43
FY15 vs 16	2.86	-0.19	-0.76	0.76	2.05
FY16 vs 17	1.78	-0.62	1.41	3.88	2.63
Trend line Elasticity					
FY11 to FY17	2.08	0.61	-0.48	-0.60	1.12
FY12 to FY17	1.96	0.40	-0.55	-0.29	1.20
FY14 to FY17	1.97	-0.18	0.15	0.85	1.97

Table 3-7 : Actual Traffic Elasticity

Cars

- Actual trend line elasticity for the period FY11 to FY17 has been 2.1 in the past. However, the comparison between FY16 vs FY17 has resulted in an elasticity value of 1.8.
- It is likely that the growth would slow down over time as the market becomes more mature and saturated, therefore elasticity to GSDP can be expected to decline over time. In view of this, Car elasticity has been considered as 1.4 for the period up to 2022.

Bus

- Over the years in India there has been a change in passenger's travel mode preferences with increasingly more people shifting from public transport systems towards personalised modes. This has resulted, in general, in elasticity of bus traffic/demand to GSDP lower than unity.
- For the project road, an elasticity of Bus traffic to GSDP of 0.2 has been adopted.

Trucks

- In India as a whole the freight vehicle mix has been changing in the last decade favouring MAV to 2 Axle/ 3Axle vehicles for long-distance traffic, given the operational efficiencies achievable with larger vehicles.
- At the same time Mini LCV have become more popular over LCVs for short distance traffic and more localised supply movements. Long term trend line elasticity for LCV/Mini Bus category has been around 0.7.

- Considering the ongoing technical advancements in automobile industry, some of the standard 2 Axle/ 3 Axle trucks would gradually be replaced by MAVs. 2Axle has been negative all through the years resulting in a negative elasticity. 3A/MAV combined category has shown an elasticity of 1.9 from FY14 to FY17. Immediate past (FY17 vs FY16) shows an elasticity of around 2.6.

It has been assumed that transport demand elasticity, for both freight and passenger traffic, would gradually decline over time, despite growth in per capita income, as regions becomes more mature, self-sufficient and with alternative mode of transport available to users. Due consideration has been given to the tonnage shifts happening in the market with Mini LCV gaining importance for short distance movements over LCVs and MAVs being preferred over 2A/3A for long distance movements due to better operational efficiencies. Thus, in this study higher elasticity values for Mini LCV and MAV have been considered as compared to LCV/2 Axle/ 3 Axle trucks.

Giving due consideration to the growth momentum being witnessed in the immediate past, higher elasticity values have been considered for the slab up to FY22 and further tapering has been done in the next slab. The recommended elasticity values adopted for all vehicle types in line with the past traffic data and changes in freight traffic pattern observed on the project road are presented **Table 3-8.**

Period/ Modes	Car	LCV/ M Bus	Bus	Truck	MAV (≥3A)
Upto 2021/22	1.4	0.4	0.2	-0.3	1.1
Beyond 2022	1.3	0.3	0.2	-0.3	1.0

Table 3-8 : Recommended Elasticity for Project Road

3.7 Projected Traffic Growth Rates

Based on the moderated perspective elasticity values and the projected growth rates of the income for PIA states, the future average annual compound traffic growth rates by vehicle type have been estimated for the project road by using the following relationship:

Tgr = (GSDPgr) x E

Where,

Tgr – Traffic growth rate for mode

GSDPgr – growth rate of GSDP

E – Elasticity value for mode

The estimated traffic growth rates for the project road in the base case have been presented in **Table 3-9.**

Period/ Modes	Car	LCV/ M Bus	Bus	Truck	MAV (≥3A)
Upto 2021/22	11.4	3.2	1.6	-2.4	8.8
Beyond 2022	9.0	2.0	1.4	-2.0	6.8

Table 3-9 : Projected Traffic Growth Rates under Base Case (%)

The above growth rates results in average annual car growth of 10.2 per cent. In derivation of above growth rates, the likely shift of buses to cars in case of passenger vehicles and the replacement/ tonnage shift of LCV/2A/3A trucks by Mini LCV for short distance and MAV for long distance in case of freight vehicles has been duly considered.

4. TOLL REVENUE PROJECTIONS

4.1 Tolling Strategy

Generally in BOT road projects, "Open System" of toll collection is specified. As the project road has been widened on existing alignment and there are several roads joining the highway, an open tolling system has been implemented on the project road. This enables the concessionaire to collect tolls from through traffic as well as from short distance one.

As mentioned earlier, there is one operational toll plaza at km 114 of NH7 charging toll for a tolling length of 55.74 km.

4.2 Schedule of User Fee

As per Schedule of User Fee for the project, the per km fee/toll rates as applicable from July, 1997 are provided. The Schedule also stipulates that these toll rates will be revised every year in the month of September based on WPI of March of the financial year preceding the fee revision date.

The concessions to the users of the project highway have been given in the form of rates as below:

Daily Pass

When the vehicle has to cross the tolled section more than once in a day, the user shall have the option to pay one and half times (1.5 times) of the fee for a single entry; this pass shall be valid for multiple entries within 24 hours of purchase.

Monthly Pass

A user, who makes use of the project road frequently during a month, may opt to purchase a monthly pass upon payment of a charge equal to 30 times of the fee payable for single journey; this pass can be used unlimited journeys over the month of validity.

Local traffic

a) Car / Jeep / Vans – It has 2 category of traffic, viz.

- Category – I means and includes local users falling into any of the following categories
    - Residents of villages / towns / cities whose boundary falls within a radius of 10 km of the fee collection booths (toll plaza).
    - Establishments / industrial units located within a radius of 10 km of the fee collection booths (toll plaza).
    - Employees of Establishments / Industrial units located or which have their office, within a radius of 10 km of the fee collection booths (toll plaza); and

- Self-employed persons / businessmen having a place of work within a radius of 10 km of the fee collection booth (toll plaza).

- Category - II means and includes local users falling into any of the following categories

  - Residents of villages / towns / cities whose boundary falls within a radius of more than 10 km but upto 20 km of the fee collection booth (toll plaza).
  - Establishments / Industrial units located within a radius of more than 10 km but upto 20 km of the fee collection booth (toll plaza).
  - Employees of Establishments / Industrial units located or which have their office, within a radius of more than 10 km but upto 20 km of the fee collection booth (toll plaza); and
  - Self-employed persons / businessmen having a place of work within a radius of more than 10 km but upto 20 km of the fee collection booth (toll plaza).

  The discounted fee for the above two categories shall be as under:

  Category I : Monthly passes of Rs. 150.00

  Category II : Monthly passes of Rs. 300.00

b) School Buses

Monthly Passes for School buses, for school students, crossing the toll plaza at a monthly rate of Rs. 1000 (Rupees one thousand) after obtaining written request of the School Principal along with the recognition of the school and the registration of the bus.

c) LCV/ Trucks (Local Transport Operators)

Fee discounts to be given to Local Transport Operators on production of proof for plying within 20 km i.e. goods challan for origin and destination clearly specifying the return details of the vehicle. The fee for such transport would be Rs. 25 (Rupees twenty five) for trucks for each entry and Rs. 15 (Rupees fifteen) for LCV for each entry.

Thus the different categories of traffic purchasing different toll tickets are as follows:

(i) Traffic paying normal toll rates (single trip)

(ii) Traffic paying return journey rates

(iii) Traffic paying monthly pass rates

(iv) Traffic paying local concessional rates

4.3 Tolling Streams

The toll data giving the bifurcation of normal paying traffic and the traffic opting for concessions has been provided since the time of operation. In line with the categories of toll payments, a segmentation of total paying traffic was analysed from the toll data for all the past years. The tolling stream distribution for the recent month of April 2017 including the exempt vehicles has been adopted and the same is presented in **Table 4-1.**

Ticket Type/Modes	Car	LCV/ M Bus	Bus	Truck	MAV (≥3A)
Normal	45.75	73.59	35.14	85.92	91.02
Return Pass	44.21	24.95	45.87	13.03	5.62
Monthly Pass	0.08	0.00	16.10	0.00	0.42
Local Personal-Category I- 10 km	2.71	0.00		0.00	0.00
Local Personal-Category I- 20 km	0.00	0.00	0.00	0.00	0.00
School Bus Monthly pass			0.49		
Exempt	7.22	1.45	2.39	1.05	2.88
Violation	0.02	0.00	0.00	0.00	0.07
Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Table 4-1: Tolling Distribution (incl. exemptions and violations category) for the toll plaza location, April 2017

The concession agreement provides for a local concession to LCV and Trucks at a payment of Rs 15 and Rs 25 per entry respectively. However, the toll data analysis shows that such local concession is not being opted for. The tolling distribution presented in Table 4-1 is of the total traffic captured on road including the exempted vehicles which do not pay toll at the toll plaza location.

The normalised tolling stream distribution for the toll plaza excluding the exempt vehicles for April 2017 is presented in **Table 4-2.**

Ticket Type/Modes	Car	LCV/ M Bus	Bus	Truck	MAV (≥3A)
Normal	49.33	74.68	36.00	86.83	93.78
Monthly Pass	0.09	0.00	16.50	0.00	0.43
Return	47.66	25.32	47.00	13.17	5.79
Monthly Pass (L10)	2.92	0.00	0.00	0.00	0.00
Monthly Pass (L20)	0.00	0.00	0.00	0.00	0.00
School Bus Monthly pass			0.50		
Total	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Table 4-2: Tolling Distribution for the toll plaza location-April 2017

The normal toll paying traffic for cars is around 49.3 percent and around 47.7 percent of cars are opting for daily pass category. In case of Buses, 36 percent fall in the daily pass category and about 47 percent are opting for daily pass concession.

For LCV/M Bus category around 75 percent of this category is buying daily pass toll ticket due to their shorter lead of travel. The main interactions of LCV/ M Bus are found to be between Hyderabad/Mahbubnagar and Kurnool/Kothakota/Kadapa/Maidukur.

Normal toll paying percentage is high (87-94 percent) in larger axle vehicles which are more likely to ply on long distances.

Trip rate for monthly pass users is considered as derived from the toll data and varies between 1.9 (2 Axle truck/MAV) and 2.4 (LCV/Mini Bus). Trip rate for local personal categories works out to be around 1.1-1.2 trips per day. The mode wise trip rates derived from the toll plaza data is presented in **Table 4-3**.

FY End	Car	Mini Bus/LCV	Bus	2-axle Truck	3-axle Truck/MAV	School Bus
Monthly Pass	1.90	1.90	2.30	1.90	1.90	
Daily Pass	2.00	2.0	2.0	2.2	2.2	
Local Personal Category I	1.10					
Local Personal Category II	1.20					
School Bus Monthly pass						2.40

Table 4-3 : Trip rates under different concession categories

4.4 Toll Rates

This section presents details on the toll rates that are likely to be imposed on the users of the project road during the concession period. The toll rates (Rs/km) for the base year 1997 for different vehicle categories as per concession agreement are presented in **Table 4-4**.

Mode	Base rate per km (in Rs)
Car, Jeep, Van, LMV	0.40
LCV /Mini Bus	0.70
Bus/ 2 Axle Truck	1.40
3 Axle/ MAV/ Oversized	2.25

Table 4-4: Toll Rates in Rs/km for Different Vehicle Categories

The toll rates will be revised annually with effect from 1st September every year. The revised fee shall be computed as follows:

$$\text{Base fee X } \frac{WPI - B}{WPI - A}$$

Where

WPI-A=Wholesale Price Index as on June, 1997

WPI-B=Wholesale Price Index for the end of the FY (ending March 31) preceding the fee revision date

Per km toll rates for one-way trip for the project road are based on WPI for the month of June 1997 (i.e. 131.4). The present toll rates for one-way trip for the project road are based on WPI for the month of March 2016 (i.e. 328.34) and will be revised in July 17 based on WPI for the month of March 2017 (i.e. 348). The year on year forecast of WPI has been derived from Oxford WPI data and is presented in **Table 4-5**.

March	WPI forecast
2018	4.59
2019	5.67
2020	6.02
2021	5.73
2022	5.36
2023	5.16
2024	4.99
2025	4.48
2026	4.11
2027	4.00

Table 4-5: WPI Forecast

As being followed since the commercial operation date, the amount of passes for local concessions for personal cars and monthly pass for school buses are not being revised every year and will be constant all through the concession period.

The stream of toll rates to be charged at the toll plaza for different years is presented in **Table 4-6.** The toll fee for September 2016 has been rounded to nearest Rupee as per Schedule R of the concession agreement. However, as per the NHAI notification letter, for all years beyond September 2017 the toll fee has been rounded off to nearest five rupees.

September in FY	Car	LCV/ M Bus	Bus/Truck	MAV (≥3A)
2017	56	97	195	313
2018	60	105	205	330
2019	60	105	215	345
2020	65	110	220	355
2021	65	120	235	380
2022	70	125	250	400
2023	75	130	260	420
2024	80	140	275	445
2025	85	145	290	465
2026	85	150	300	485
2027	90	155	315	505

Table 4-6: Toll rates (in Rs)

The users purchasing monthly passes will pay 30 times the normal traffic toll rates and daily pass users will pay 1.5 times normal toll rates. All toll rates have been rounded to the nearest 1 Rupee in Spetember 2016 and to nearest five rupees thereafter.

4.5 Tollable Traffic Estimate and projections

The paying traffic for the year FY18 has been worked out by deducting the toll exempt percentage (exemptions/ violations) from total AADT and is presented in **Table 4-7.**

Toll Plaza/Mode	Car	M Bus/LCV	Bus	2A Truck	3A Truck/MAV
Base AADT including toll exempted vehicles	8,193	1,499	1,010	1,189	3,843
% of Exemptions/ Violations	7.2	1.5	2.4	1.0	2.9
Paying Traffic	7,599	1,477	986	1,177	3,730

Table 4-7: Toll Paying Traffic, FY18

Table 4-8 presents the projected total traffic based on the growth rates.

FY	Car	LCV/ M Bus	Bus	Truck	MAV (≥3A)
2018	8,193	1,499	1,010	1,189	3,843
2019	9,127	1,547	1,026	1,160	4,181
2020	10,167	1,596	1,043	1,132	4,549
2021	11,327	1,648	1,059	1,104	4,949
2022	12,618	1,700	1,076	1,077	5,385
2023	13,753	1,734	1,091	1,056	5,751
2024	14,991	1,769	1,107	1,034	6,142
2025	16,340	1,804	1,122	1,014	6,560
2026	17,811	1,840	1,138	994	7,006
2027	19,414	1,877	1,154	974	7,482

Table 4-8: Total traffic projections

Table 4-9 presents the projections of the paying traffic based on the growth rates.

FY	Car	LCV/ M Bus	Bus	Truck	MAV (≥3A)
2018	7,599	1,477	986	1,177	3,730
2019	8,466	1,524	1,002	1,148	4,058
2020	9,431	1,573	1,018	1,120	4,415
2021	10,506	1,624	1,034	1,092	4,804
2022	11,704	1,676	1,050	1,066	5,226
2023	12,757	1,709	1,065	1,045	5,582
2024	13,905	1,743	1,080	1,024	5,961
2025	15,157	1,778	1,095	1,003	6,367

FY	Car	LCV/ M Bus	Bus	Truck	MAV (≥3A)
2026	16,521	1,814	1,111	983	6,799
2027	18,008	1,850	1,126	963	7,262

Table 4-9: Paying traffic projections

4.6 Toll Revenue Estimates

The concession period for the project road is 20 years from the appointed date (the date financial close is achieved). Toll revenue streams have been calculated assuming that:

- Toll would be collected for all 365 days in a year;
- Tolling started in April 2009;
- Tolling would terminate at end of August 2026; revenues have been presented till FY27.

The total realised revenue in FY17 is Rs 66.88 crore as per the total collection data made available. In FY17, as part of demonetization exercise, GoI announced toll exemption for all vehicles across all toll plazas from 9th November till midnight of 2nd December 2016. The impact of demonetisation is evident in the month of November as the traffic was not observed to be normal due to which the revenues are also impacted. The revenue collection in November is Rs 1.56 crore as against the other month varying between Rs 5.4 and Rs 7.3 crores. Taking account of the number of days in which the toll was not being collected, the actual revenue for the year FY17 would have been around Rs 71.53 crores.

The toll revenue for the project road for the base case along with the concessions available is presented in **Table 4-10**. A mode wise breakdown of the revenue streams is also presented for the project in **Table 4-11**.

FY	Normal Toll	Monthly Passes	Return Passes	Local Concessions	Total
2018	633.8	6.2	119.0	0.4	759.4
2019	711.2	6.7	134.9	0.4	853.2
2020	803.5	7.3	152.8	0.5	964.0
2021	918.3	7.9	173.7	0.5	1,100.5
2022	1,047.9	8.6	197.2	0.6	1,254.3
2023	1,169.5	9.3	220.1	0.6	1,399.6
2024	1,301.9	10.1	245.7	0.7	1,558.4
2025	1,455.8	10.9	277.7	0.8	1,745.1
2026	1,621.2	11.7	311.8	0.8	1,945.5
2027	1,797.0	12.6	346.2	0.9	2,156.7

Table 4-10: Toll Revenue (in Rs million) by type of concession

FY	Car	LCV/ MBus	Bus	Truck	MAV (≥3A)	Total
2018	138.1	51.3	56.7	82.7	430.7	759.4
2019	160.4	56.0	60.6	84.7	491.5	853.2
2020	187.7	60.5	65.2	87.6	563.0	964.0
2021	223.1	65.4	70.0	90.2	651.8	1,100.5
2022	264.2	71.8	75.1	92.8	750.4	1,254.3
2023	298.3	77.4	80.4	96.3	847.1	1,399.6
2024	338.5	82.3	85.9	99.7	951.9	1,558.4
2025	393.0	88.8	91.6	102.9	1,068.8	1,745.1
2026	453.5	94.9	96.9	105.1	1,195.1	1,945.5
2027	518.4	100.2	102.5	107.3	1,328.3	2,156.7

Table 4-11: Toll Revenue (in Rs million) for Project Road by mode

For the project, vehicles paying normal tolls are around 83.4 percent of total toll revenues and around 15.9 percent of the traffic may opt for daily pass. Around 0.7 percent of the traffic may fall in monthly pass category.

Cars represent around 21.7 percent share in total revenue with Buses having a share of 5.7 percent only. Amongst the freight vehicles category, 3A/MAVs represent the highest share of around 60.3 per cent of total revenue. 2-axle trucks contribute 6.9 percent of total revenues over the life of the concession. Mini Bus/LCV has a share of 5.4 per cent.

APPENDIX 2.1
MONTHWISE TOLL DATA

TRAFFIC STUDY FOR JADCHERLA-KOTHAKOTA SECTION OF NH-7 (WATL) IN THE STATE OF TELANGANA

2009 - 10					
Month	**CJV**	**Bus**	**LCV**	**Truck 2 axle**	**MAV**
Apr	1977	841	845	1302	2143
May	2569	823	865	1346	2170
Jun	2431	719	943	1465	2184
Jul	2107	726	1022	1463	2189
Aug	2449	1010	1002	1355	2365
Sep	2288	975	960	1291	2267
Oct	2564	869	1080	1144	2013
Nov	2693	998	977	1335	2334
Dec	2510	695	949	1279	1973
Jan	2785	946	951	1285	2231
Feb	2637	970	1040	1474	2443
Mar	2678	1011	1052	1382	2393
Average	2474	882	974	1343	2225

2010-11					
Month	**CJV**	**Bus**	**LCV**	**Truck 2 axle**	**MAV**
Apr	3003	1013	1129	1295	2189
May	3476	1074	1059	1231	2201
Jun	3450	1105	1102	1251	2228
Jul	2803	1037	1114	1245	2352
Aug	3137	1035	1223	1288	2410
Sep	2960	1051	1260	1287	2578
Oct	3345	1098	1337	1313	2630
Nov	3553	1077	1233	1175	2366
Dec	3845	1111	1174	1253	2581
Jan	3705	1133	1096	1194	2573
Feb	3724	1056	1168	1328	2740
Mar	3433	1096	1153	1292	2684
Average	3370	1074	1171	1263	2461

2011-12					
Month	**CJV**	**Bus**	**LCV**	**Truck 2 axle**	**MAV**
Apr	3713	1104	1166	1117	2544
May	4483	1193	1178	1147	2625
Jun	4301	1172	1280	1193	3187
Jul	3487	1024	1308	1196	3409
Aug	3640	1172	1272	1066	2652
Sep	3666	771	1291	1109	2648
Oct	4474	792	1281	1066	2394
Nov	4136	1165	1286	1151	2436
Dec	4148	1151	1301	1284	2480
Jan	4254	1188	1230	1255	2546
Feb	4290	1159	1286	1202	2861
Mar	4084	1152	1312	1156	2882
Average	4056	1087	1266	1162	2722

2012-13					
Month	**CJV**	**Bus**	**LCV**	**Truck 2 axle**	**MAV**
Apr	4461	1158	1317	1057	2618
May	4557	1149	1371	1051	2605
Jun	4531	1134	1483	1074	2944
Jul	4305	1093	1441	1043	3032
Aug	4726	1141	1373	953	2662
Sep	4148	1102	1407	981	2565
Oct	4624	1138	1442	1007	2422
Nov	4726	1117	1372	1004	2357
Dec	5066	1100	1388	1089	2609
Jan	4962	1133	1286	1084	2582
Feb	4819	1096	1374	1063	2892
Mar	4429	1054	1452	1095	2917
Average	4613	1118	1392	1042	2684

2013-14					
Month	**CJV**	**Bus**	**LCV**	**Truck 2 axle**	**MAV**
Apr	4677	1085	1302	913	2705
May	5873	1177	1335	937	2880
Jun	5154	1101	1422	910	2913
Jul	4228	1025	1457	875	2618
Aug	5060	662	1484	861	2523
Sep	4623	597	1487	918	2568
Oct	5070	940	1488	952	2429
Nov	5105	957	1557	1008	2394
Dec	5322	944	1597	1104	2674
Jan	5304	934	1481	1038	2686
Feb	5398	938	1590	1104	2925
Mar	4886	951	1551	995	2843
Average	5058	943	1479	968	2680

2014-15					
Month	**CJV**	**Bus**	**LCV**	**Truck 2 axle**	**MAV**
Apr	5002	989	1452	869	2806
May	5943	1083	1456	814	2731
Jun	5533	1024	1452	839	3092
Jul	4522	931	1421	782	3091
Aug	5606	962	1400	782	2884
Sep	4847	905	1572	859	3075
Oct	5458	931	1541	827	2711
Nov	5143	869	1616	952	2917
Dec	6005	940	1606	1039	2902
Jan	6010	954	1487	923	2827
Feb	5633	928	1571	884	2999
Mar	5323	922	1507	858	3063
Average	5419	953	1507	869	2925

2015-16					
Month	**CJV**	**Bus**	**LCV**	**Truck 2 axle**	**MAV**
Apr	5782	911	1498	792	2985
May	7388	845	1408	756	3052
Jun	6101	955	1452	760	3174
Jul	5528	847	1464	745	3379
Aug	5644	908	1593	758	3415
Sep	5570	885	1666	769	3265
Oct	6722	917	1747	801	3197
Nov	6376	881	1526	891	3106
Dec	7075	923	1385	1127	3541
Jan	6772	954	1290	1096	3422
Feb	6699	931	1396	1196	3618
Mar	6433	946	1441	1230	3550
Average	6341	909	1489	910	3309

2016 -17					
Month	**CJV**	**Bus**	**LCV**	**Truck 2 axle**	**MAV**
Apr	7267	1000	1346	1087	3390
May	7149	1014	1295	1044	3577
Jun	6816	1022	1415	1090	3775
Jul	6900	1065	1518	1119	4192
Aug	13027	1245	1661	1127	4184
Sep	6088	921	1453	1120	4006
Oct	7470	882	1562	1158	3515
Nov	7661	913	1645	1058	3463
Dec	7404	954	1406	1013	3428
Jan	7377	979	1265	1035	3448
Feb	7155	979	1400	1192	4114
Mar	6701	975	1423	1199	4074
Average (April-July,Sept-Oct,Feb-March)	6943	982	1426	1126	3830

APPENDIX 2.2
TRAFFIC ZONING SYSTEM

TRAFFIC STUDY FOR JADCHERLA-KOTHAKOTA SECTION OF NH-7 (WATL) IN THE STATE OF TELANGANA

Traffic Zoning System

Zone	Place/Region	District/ State	State
1	Jadcherla	Project Road_Mahbubnagar	Telangana
2	Bhuthpur		
3	Pothulamadugu/Annasagar		
4	Janampeta/Moosapet/Sankalamaddi/Komreddypally		
5	Shakapur		
6	Katavaram/Addakal		
7	Kothakota		
8	Kothur/Timmapur/Thondapalli	Rest of Rangareddy	
9	Shadnagar/Farukhnagar		
10	Chilkamari/ Solipur/ Chattan Pally/Raikal		
11	Balanagar/ Rangareddy guda/Rajapur/ Gollapally		
12	Mahbubnagar		
13	Kalwakurty, Amangal,Devarakonda		
14	Nagarkurnool, Achampet, Mallapur, Velagonda		
15	Wanaparthi		
16	Atmakur		
17	Gadwal, Pebbair		
18	Narayanapet, Devarakadra, Patherched (West)		
19	Hyderabad	Hyderabad	
20	Medchal, Shamirpet, Ghatkesar, Ibrahimpatnam, Yacharam (East)	Rest of Rangareddy	
21	Chilkur/ Chevella (Center)		
22	Vikarabad/ Tandur (West)		
23	Yadagirigutta, Bhongir, Aler (North)	Nalgonda	
24	Nalgonda, Suryapet, Kodad, Miryalaguda (Center)		
25	Devarakonda, Nagarjunasagar (South)		
26	Medak- Sangareddi, Siddipet	Northern Telangana	
27	Nizamabad, Adilabad		
28	Warangal, Karimnagar		
29	Khammam	Eastern Telangana	
30	Kurnool	Kurnool	Andhra Pradesh
31	Srisailam		
32	Nandyala, Banganpalli, Atmakur (East)		
33	Kodumur, Veldurthi, Dhone (South)		
34	Adoni, Pattikonda (West)		
35	Ananthapur, Gooty, Guntakal, Kadiri	Anathapur	
36	Kadapa, Maidukur, Rayachoti, Pulivendula, Tadipatri, Podhuturu	Kadapa	
37	Chittoor, Tirupati	Chittoor	
38	Prakasam- Ongole, Markapur	Prakasam	
39	Nellore	Nellore	
40	Guntur, Vijayawada	Central Andhra	
41	West Godavari/ East Godavari/ Visakhapatnam/ Vizianagaram/ Srikakulam	Coastal Andhra	
42	Uttar Kannad, Shimoga, Udipi	Western Karnataka	Karnataka
43	Raichur, Deosagar	Raichur	
44	Bagalkot, Bidar, Bijapur, Gulbarga	Northern Karnataka	
45	Hospet , Bellary, Koppal	Eastern Karnataka	
46	Chitradurga	Central Karnataka	
47	Tumkur ,Nelamangala	Southern Karnataka	
48	Chamrajnagar, Mandya, Mysore		
49	Bangalore North (Hoskote, White field)	Bangalore	
50	Bangalore south (electronic City,Attibele)	Bangalore	
51	Kolar	Southern Karnataka	
52	Chennai, Tiruvallur, Kanchipuram,	Chennai Region	Tamilnadu
53	Vellore/ Krishnagiri/ Madurai / Coimbatore / Kanyakumari	Rest of Tamilnadu	
54	Kerala / Tiruvananthapur / Kochi / Kollam	Kerala	Kerala
55	Nagpur/Akola/Amravati/Washim/Yavatmal/Wardha/Chandanpur/Bandara/Gondiya/Gadchiroli	Northeastern MH	Maharashtra
56	Mumbai/Thane/Nashik/Pune/Raigarh/Solapur/ Osmanabad/Latur	Western MH	
57	Dhule/Nandurbar/Jalgaon/Buldhona/Ahmednagar/Aurangabad/Jalna/Beed/Parbhani/Hingoli/Nanded	North & Central MH	
58	Ratnagiri/Kolhapur/Satara/ Sangli/Sindhudurg/Goa	Southern MH/ Goa	
59	Gujarat	Western India	Rest of India
60	Madhya Pradesh	Centren India	
61	Uttarpradesh	Northern India	
62	Delhi		
63	Haryana		
64	Rajasthan		
65	Punjab / Uttaranchal / Himachal Pradesh/ Jammu&Kashmir		
66	Chhattisgarh / Odisha	Eastern India	
67	Jharkhand / Bihar/ West Bengal		
68	Assam/Sikkim/Megalaya/Nagaland/Tripura/Manipur/Mizoram	North East India	

APPENDIX 2.3
OD MATRICES OF VEHICLES IN THE STUDY AREA

TRAFFIC STUDY FOR JADCHERLA-KOTHAKOTA SECTION OF NH-7 (WATL) IN THE STATE OF TELANGANA-FY17

Mode **Car**

O\D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	Grand Total
1						5	68								16		25													44		3		3	14	14	3								5				16	16			3																235
2						8	85								33		3													19		3	3		3	3													3																				161
3						3	8								5															3																																						19
4						14	14																																																												27
5							5								3																																																			8
6		3	3	3						3		26							35																																																	74
7	67	29	3	16	3				3			100	6	3					238			3																																													472
8																																																																			0
9							8								5															11						3														3																			30
10						3																																																														3
11															3															3																																						5
12						16	199								44	8	63													85		11		3	5	11	11								3				8	3																			469
13															3																																																				3
14							5								11		11													19				3																3																			52
15	29	19	6									109		10					241										3																																									417
16																			10																																																	10
17	6											55		3					218																																																	283
18							3								3																			3	5																																		14
19						20	290								150		196													606	11	41	3	8	115	109	65						3		14			3	65	169	3	5	3	8																1886
20															5		3													3		5																																						16
21															3															3																																						5
22							5								8		3															3																																					19
23																																																																			0
24																																																	3																			3
25																																																																			0
26																																				3	3																																5
27																														3						5	5																																14
28							3										3															3				3	5																																16
29																																																																			0
30	55	16	3						3			64		3					764					10																															3							3				3		928
31												3							6																																																	10
32		3										6							51																																																	61
33																			13																																																	13
34																			13																																																	13
35	6																		67																																																	74
36	6	3																	103																																																	112
37	3																		103																																				10														116
38																																																																			0
39																			19																																																	19
40																																																																			0
41																																																																			0
42																			6																																																	6
43																																																																			0
44							3																							5																		8																				16
45																			19																																																	19
46																																																																			0
47																			3																																																	3
48																																																																			0
49	13											6							109																																																	128
50	6											22							196									3																												3												231
51																																																																			0
52																			3										3																																								6
53																			3																																												3				6
54																			19																																																	19
55																	3													3						5	3															3																	16
56																																																																			0
57																													3																				3																			5
58																																																																			0
59																																																																			0
60																																																																			0
61																																																																			0
62																																																	3																			3
63																																																																			0
64																																																																			0
65																																																																			0
66																																																																			0
67																																																																			0
68																																				3																																		3
Total	193	74	16	19	3	69	696	0	6	3	0	392	6	19	292	8	308	0	2241	0	0	3	0	10	0	0	0	3	6	808	11	68	5	16	139	164	95	0	0	0	0	0	3	0	22	0	0	3	101	202	3	8	5	8	10	3	3	0	0	0	0	0	3	0	3	0	3	0	6056

TRAFFIC STUDY FOR JADCHERLA-KOTHAKOTA SECTION OF NH-7 (WATL) IN THE STATE OF TELANGANA-FY17

Mode **Mini Bus**

O\D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	Grand Total
1																																																																					0
2																																																																					0
3																																																																					0
4															4																																																						4
5																																																																					0
6																			3																																																		3
7	3	6																	6																																																		14
8																																																																					0
9																																																																					0
10																																																																					0
11																																																																					0
12																																																																					0
13																																																																					0
14																																																																					0
15	6			3								3																																																									11
16																																																																					0
17																																																																					0
18																																																																					0
19							12										12													4							8											4		4																			44
20																																																																					0
21																																																																					0
22																																																																					0
23																																																																					0
24																																																																					0
25																																																																					0
26																																																																					0
27																																																																					0
28																																																																					0
29																																																																					0
30																			8																																																		8
31																																																																					0
32																			3																																																		3
33																																																																					0
34																																																																					0
35																																																																					0
36																																																																					0
37																			6																																																		6
38																																																																					0
39																																																																					0
40																																																																					0
41																																																																					0
42																																																																					0
43																																																																					0
44																																																																					0
45																																																																					0
46																																																																					0
47																																																																					0
48																																																																					0
49																			3																																																		3
50																																																																					0
51																																																																					0
52																																																																					0
53																																																																					0
54																																																																					0
55																																																																					0
56																																																																					0
57																																																																					0
58																																																																					0
59																																																																					0
60																																																																					0
61																																																																					0
62																																																																					0
63																																																																					0
64																																																																					0
65																																																																					0
66																																																																					0
67																																																																					0
68																																																																					0
Total	8	6	0	3	0	0	12	0	0	0	0	3	0	0	4	0	12	0	28	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	95

TRAFFIC STUDY FOR JADCHERLA-KOTHAKOTA SECTION OF NH-7 (WATL) IN THE STATE OF TELANGANA-FY17

Mode **Bus**

O\D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	Grand Total
1																																																																					0
2																																																																					0
3																																																																					0
4																																																																					0
5																																																																					0
6																			16																																																				16
7												26							31																																																				58
8																																																																					0
9																																																																					0
10																																																																					0
11																																																																					0
12							12								12		4													4																																									32
13																																																																					0
14																																																																					0
15												27						4	38																																																				69
16																			4																																																				4
17												4							31																																																				34
18							4																																																														4
19							20										8													49		12		4	8	4	20												12	24		4																	166
20																																																																					0
21																																																																					0
22																																																																					0
23																																																																					0
24																																																																					0
25																																																																					0
26																																																																					0
27															4																																																								4
28																8																4		4																																					16
29																																																																					0
30												12							226																																																				238
31																			16																																																				16
32												4							50																																															8			62
33																			66																																																				66
34																			15																																																				15
35																			11																																																				11
36																			23																																																				23
37																			19																																																				19
38																																																																					0
39																																																																					0
40																																																																					0
41																																																																					0
42																																																																					0
43																																																																					0
44																																																																					0
45																			4																																																				4
46																																																																					0
47																																																																					0
48																																																																					0
49	8																		89																																																				96
50																			27																																																				27
51																																																																					0
52																																																																					0
53																			8																																																				8
54																																																																					0
55																																																																					0
56																																																																					0
57																																																																					0
58																																																																					0
59																																																																					0
60																																																																					0
61																																																																					0
62																																																																					0
63																																																																					0
64																																																																					0
65																																																																					0
66																																																																					0
67																																																																					0
68																																																																					0
Total	8	0	0	0	0	0	36	0	0	0	0	73	0	0	16	8	12	4	672	0	0	0	0	0	0	0	0	0	0	53	0	16	0	8	8	4	20	0	0	0	0	0	0	0	0	0	0	0	12	24	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	987

TRAFFIC STUDY FOR JADCHERLA-KOTHAKOTA SECTION OF NH-7 (WATL) IN THE STATE OF TELANGANA-FY17

Mode **LCV**

O\D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	Grand Total
1							13																							5																		3		5																			25
2							10																							3																																							13
3																																																																					0
4																																																		3																			3
5																																																																					0
6												3																																																									3
7	12	12							3			32							18			3						3																												3					3								88
8																																																																					0
9							3																							5												3																											10
10																																																																					0
11																																																																					0
12						3	33										8													8					5																	5																	61
13																																																																					0
14																																																																					0
15																			6			3																																															9
16	3																																																																				3
17	3											9							38					3			6																												3														62
18																																																																					0
19							15								5		23													109	8	25	3	3	33	51	13								3				3	106	5	28	5	8															443
20																																																																					0
21																																																																					0
22							3								3																																																						5
23																																																																					0
24																	3																			5														3																			10
25																																																																					0
26																																																				5																	5
27																	5																			3														5																			13
28							3																													8																																	10
29																																																																					0
30	6	3							6			15							138																									3											6	3							3	3					185
31																			6																																																		6
32												3							15					3																																							3						23
33																																																																					0
34																			3																																											3							6
35												9							29							3																																											41
36	3																		38					3			3	9																											3														59
37																			12																																																		12
38																																																																					0
39																																																																					0
40																																																																					0
41																																																																					0
42									3																																																												3
43																																																																					0
44																														3					3																																		5
45																			3																																																		3
46																																																																					0
47	3																																																																				3
48	3																																																																				3
49																			3					3																																													6
50	6			3															67					3			3																												6		3												91
51																			3																																																		3
52												6							17							6																													3	5			3		3	3							46
53																			6																																																		6
54																			3																																											3		3					9
55																														3																				8		3																	13
56							3																							3																						8																	13
57																																																		5																			5
58																																																																					0
59																																																				5																	5
60																																																		3																			3
61							3																																													3																	5
62																														3				3																		3		3															10
63																														3		3																																					5
64																														3					3																	3																	8
65																																																																					0
66																																																																					0
67																																																																					0
68																																																																					0
Total	38	15	0	3	0	3	84	0	12	0	0	76	0	0	8	0	38	0	404	0	0	6	0	15	0	9	12	12	0	144	8	28	3	5	43	66	13	0	0	0	0	3	0	3	3	0	0	3	3	137	5	62	5	10	21	11	3	0	3	0	6	9	6	6	0	0	0	0	1336

TRAFFIC STUDY FOR JADCHERLA-KOTHAKOTA SECTION OF NH-7 (WATL) IN THE STATE OF TELANGANA-FY17

Mode 2 Axle

O\D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	Grand Total
1					2	5											9												14		2			2	2							2						2	9			2																54
2																																																							2																2
3																																																																					0
4					2																									2																2																								7
5					2	2																																																											5
6	2	2		2	2														4																																						4															15
7	6	4	2		2							14						30									2																																										59
8																																																																					0
9																	2													2						2																																	7
10																																																																					0
11																																																																					0
12						16										2													5			2			5							2									5																		37
13																																																																					0
14																																																		2																				2
15																			6																																																			6
16																																																																					0
17	9	2							2				2	2						24																																				2														43
18																																																																					0
19						5	19									5		28														133		24	2	5	17	17	7									5	2		2		45		24	14	12																366
20																																																																					0
21																																																																					0
22																																																																					0
23																																																																					0
24																														2																						2																		5
25																																																																					0
26																																																				5																		5
27																																																																					0
28																																																																					0
29																														2																																						2
30	15			2					2										133			2		4					2																	2												2	2														165
31	2												2						4																																																		8
32	2																		19																																																		21
33													2						2																																				2															6
34																			2																																																				2
35	2												2						19																																																		23
36	2								2				6						17																																				4															30
37																			13																																													2					15
38																																																																					0
39																																																																					0
40																																																																					0
41																																																																					0
42																									2																																														2
43	2												2																																																								4
44																														2																																						2
45																			4																																																				4
46				2														2																																																				4
47																																																								2													2
48																			2																																					2													4
49	2												2						28																																				8											2			41
50	6													2					30																																				2						6	2	2						49
51																																																																					0
52													4						23							2																												2	6			6		2	2						45
53	2	2																	9																																				2													15
54																			6																																																				6
55						5																																												7																				12
56																		2																														2	2				7	2																17
57																																																																					0
58																																																																					0
59																																																				7																		7
60																																																				2																		2
61																																																		9		2																		12
62																																																		2		2																		5
63																																				2														5																				7
64																																																		2																				2
65																																																		2		2																		5
66																																																																					0
67																																																																					0
68																																																																					0
Total	51	9	2	6	4	17	42	0	6	0	0	34	2	2	5	0	45	0	376	0	0	2	0	6	0	2	0	2	2	164	0	26	5	5	19	28	7	0	0	0	0	0	5	2	5	5	2	5	2	85	0	59	21	12	23	15	0	0	6	0	8	4	2	2	0	2	0	0	1130

TRAFFIC STUDY FOR JADCHERLA-KOTHAKOTA SECTION OF NH-7 (WATL) IN THE STATE OF TELANGANA-FY17

Mode **3 Axle**

O\D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	Grand Total
1						5	5								3		3													5			3		5	5	3									3				5				3															49
2						3	3																							5																																							11
3																																																																					0
4							3																														3												5																				11
5																																							3																														3
6	5	2							2					2					7																																																		19
7	10	2		2					7			7							53			2							2															2																									89
8																																																																					0
9						5	8																							3							3																																19
10																																																																					0
11															3																																																						3
12							8										3													16					5		3		3										3			8	3																52
13																																																																					0
14						3																								3																																							5
15	2										2								17																									2																									24
16																																																																					0
17	2				2							2							14					2																																			2										27
18																																																																					0
19						8	38								19		19													115	5	11	5	3	33	22	5		5						14	5	3		8	85		101	25	14															545
20																																																																					0
21																														3																																							3
22							3																							3					5	3														3		3																	19
23																																																																					0
24																																																3		3																			5
25																																																																					0
26																																																		5			3																8
27																																																																					0
28																																3														3																							5
29							3																																											5		3																	11
30	8	5			2				2			17		2					138		2	5					2																												2	5			10	5		2	2		2				213
31																			5																																									2									7
32																			12									5																											2	2						5							27
33	2																		7																																						2												12
34																			5																																													2					7
35	5																		27			2																																	2						2								39
36	5																		24			2						2																																	2								36
37	2			2					2			2							7					2				2																																		2							24
38																																																																					0
39					2							2							2			5																																															12
40																																																																					0
41																																																																					0
42																																												3																									3
43																																																																					0
44															3																											2								8		2																	16
45																			10																																												2						12
46	2																		7									2																																									12
47																			2																																																		2
48																			5			2		2																																													10
49				2								2							36																																				7	2					2				2				56
50	5			3								2							75			2		2		5			5															7											2	5				5		2	5		2				128
51																																																																					0
52												2							89			2							2															3											2	10			7	5	5	53	12	2	5				201
53												2							31							2																													2				2	2	2			2					48
54	5																		24																																						2										2		34
55																																					3													5		11	3	3															25
56																														3		3							3											8		14																	30
57																														3			3						3													3		3															14
58																																																																					0
59																														11									3											3		11	3	3															33
60																														8	3																			5		5	3																25
61																																			3	3													3			8	3																19
62																														3		3					5													3		63	3																79
63																																													3					5		11																	19
64																																		3		3																5	3																14
65																														3																				5		5																	14
66																																																																					0
67																																																						3															3
68																																																																					0
Total	53	10	0	10	7	25	71	0	14	0	2	41	0	5	27	0	25	0	599	0	2	24	0	10	0	7	2	12	10	183	8	19	11	5	52	36	25	0	19	0	0	2	0	18	16	11	3	3	19	151	0	254	47	27	22	24	5	0	22	19	15	65	22	7	12	0	2	0	2082

TRAFFIC STUDY FOR JADCHERLA-KOTHAKOTA SECTION OF NH-7 (WATL) IN THE STATE OF TELANGANA-FY17

Mode **MAV**

O\D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	Grand Total
1																	3																				3		3											7			3	3															24
2																	3																																				3																7
3																																																																					0
4							3																																											3																			7
5						3																																																															3
6					3																																																																3
7				3								12							29					3																																													47
8																																																																					0
9																																																						3															3
10																																																																					0
11																																																																					0
12							10																							7																				3		10		3															34
13																																																																					0
14																																							3																														3
15																			3																																																		3
16																																																																					0
17	3	3																	17									3																																									26
18																																																																					0
19							14										14													100	10	31	3	3	14	31	7								14					103		41	14	38															438
20																																				3																																	3
21																																																																					0
22																																3	3	3											7							10																	28
23																																																																					0
24																														7																																							7
25																																																																					0
26																																																		3																			3
27																																																		3																			3
28																	3																																	7																			10
29																																																		14				7															21
30												6							131					6			3																												12	3			3		12	3							177
31																			6			3																																															9
32																			26			3																																															29
33																			6			3																																	3							3							15
34																			6			3																																								3							12
35																			15																																					3													17
36																			17	3				3	3																															6			3			3			3				41
37	3																		6																																													6					15
38												3																																																									3
39	3													3					3			12																																								3							23
40																																																																					0
41																																																																					0
42																																																																					0
43																																																									7												7
44																														6																						10		3															20
45																			15			6																																								3							23
46																																																																	3					3
47																											3																																3										6
48																																																																					0
49																			12			6																																	3	3						9	3						35
50	3			3															76							6	3	6	12																										6	3	3			3	17	12		9	3				163
51																																																																					0
52											3	9							52			15				3																														12			9	6	15	9							131
53	3	3																	23			3																																	6						3	6		6			3		55
54	3								3			3							26										6															3											3				6			3							55
55																																					3													7		3	3	3															21
56																																				7																17																	24
57																																																		3		7																	10
58																																																																					0
59																														7					3	3																24		7															45
60																																																		3		7	3																14
61																														14																				24		21	3																62
62																														3						3									3				7	14		10	7	3															52
63																																																	3																				3
64																														7							7									3				3	3		3																28
65																																				3														3																			7
66																																																					3																	3
67																																																					3																	3
68																																																																					0
Total	17	6	0	6	3	3	28	0	3	0	3	32	0	3	0	0	24	0	468	3	0	52	0	12	3	9	9	9	17	151	10	34	7	7	17	52	21	0	7	0	0	0	0	3	24	3	0	0	10	203	3	162	48	72	32	29	10	0	23	9	47	55	3	23	6	0	3	0	1785

TRAFFIC STUDY FOR JADCHERLA-KOTHAKOTA SECTION OF NH-7 (WATL) IN THE STATE OF TELANGANA-FY17

Mode MLCV

O\D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	Grand Total
1							7										3														3								3																																		17
2							3										10																																																												14
3																																																																					0
4							10																																																														10
5							3																																																														3
6																																																																					0
7	7	4		11	4				4		4	60						64																																																				157
8																																																																					0
9							3																																																														3
10																																																																					0
11							3																																																														3
12							49								7		17														14						7	3																																		98
13																																																																					0
14																	3																																																						3
15												7							4																																																				11
16																																																																					0
17	4	11											15		4					30	4																																																		67
18																																																																					0
19							59								3		24														70				3	38	21	10													3	38		14	3																290
20																	3																																																						3
21																																																																					0
22																																																																					0
23																																																																					0
24																																																																					0
25																																																																					0
26																																																																					0
27																																																																					0
28																																			3																																		3
29																																																																					0
30	4												15							82			4																																																		105
31																																																																					0
32																			4																																																				4
33																																																																					0
34																			4																																																				4
35												4							30								4																4																												41
36												4							15																																																				19
37	4																		7																																																				11
38																																																																					0
39																																																																					0
40																																																																					0
41																																																																					0
42																																																																					0
43																																																																					0
44																																			7																																		7
45																																																																					0
46																																																																					0
47																																																																					0
48																																																																					0
49																			4								4																																												7
50																			22																																										11							34
51																																																																					0
52																			15																																																				15
53																			4																																																				4
54																																																																					0
55																																																																					0
56																														7																																								7
57																																																																					0
58																																																																					0
59																																																																					0
60																																																					3																		3
61																																																																					0
62																																																			10																				10
63																																																																					0
64																																																																					0
65																																																																					0
66																																																																					0
67																																																																					0
68																																																																					0
Total	19	15	0	11	4	0	140	0	4	0	4	105	0	4	10	0	63	0	284	4	0	4	0	0	0	0	4	4	0	94	0	0	0	3	56	24	14	0	0	0	0	0	0	4	0	0	0	0	3	49	0	17	3	0	0	0	0	0	0	0	0	11	0	0	0	0	0	0	956

APPENDIX 2.4
TOP 20 OD PAIRS

TRAFFIC STUDY FOR JADCHERLA-KOTHAKOTA SECTION OF NH-7 (WATL) IN THE STATE OF TELANGANA

TOP 20 Origin Destination Pairs

Car

S.No.	Origin	Destination	% of total
1	Hyderabad	Kurnool	23%
2	Kothakota	Hyderabad	9%
3	Gadwal, Pebbair	Hyderabad	7%
4	Wanaparthi	Hyderabad	6%
5	Hyderabad	Bangalore south (electronic City,Attibele)	6%
6	Kothakota	Mahbubnagar	5%
7	Hyderabad	Kadapa, Maidukur, Rayachoti, Pulivendula, Tadipatri, Podhuturu	3%
8	Hyderabad	Ananthapur, Gooty, Guntakal, Kadiri	3%
9	Hyderabad	Bangalore North (Hoskote, White field)	3%
10	Hyderabad	Chittoor, Tirupati	3%
11	Mahbubnagar	Wanaparthi	3%
12	Mahbubnagar	Kurnool	2%
13	Jadcherla	Kothakota	2%
14	Mahbubnagar	Gadwal, Pebbair	2%
15	Bhuthpur	Kothakota	2%
16	Jadcherla	Kurnool	2%
17	Hyderabad	Nandyala, Banganpalli, Atmakur (East)	2%
18	Katavaram/Addakal	Hyderabad	1%
19	Bhuthpur	Wanaparthi	1%
20	Jadcherla	Wanaparthi	1%
		Total	**84%**

Mini Bus

S.No.	Origin	Destination	% of total
1	Kothakota	Hyderabad	18%
2	Hyderabad	Chittoor, Tirupati	14%
3	Hyderabad	Kurnool	13%
4	Gadwal, Pebbair	Hyderabad	13%
5	Janampeta/Moosapet/Sankalamaddi/Komreddypally	Wanaparthi	7%
6	Jadcherla	Wanaparthi	6%
7	Bhuthpur	Kothakota	6%
8	Hyderabad	Chamrajnagar, Mandya, Mysore	4%
9	Hyderabad	Bangalore south (electronic City,Attibele)	4%
10	Jadcherla	Kothakota	3%
11	Katavaram/Addakal	Hyderabad	3%
12	Mahbubnagar	Wanaparthi	3%
13	Hyderabad	Nandyala, Banganpalli, Atmakur (East)	3%
14	Hyderabad	Bangalore North (Hoskote, White field)	3%
		Total	**100%**

Bus

S.No.	Origin	Destination	% of total
1	Hyderabad	Kurnool	28%
2	Hyderabad	Bangalore North (Hoskote, White field)	10%
3	Hyderabad	Kodumur, Veldurthi, Dhone (South)	7%
4	Hyderabad	Nandyala, Banganpalli, Atmakur (East)	6%
5	Kothakota	Hyderabad	5%
6	Hyderabad	Bangalore south (electronic City,Attibele)	5%
7	Mahbubnagar	Wanaparthi	4%
8	Hyderabad	Chittoor, Tirupati	4%
9	Kothakota	Mahbubnagar	4%
10	Wanaparthi	Hyderabad	4%
11	Hyderabad	Kadapa, Maidukur, Rayachoti, Pulivendula, Tadipatri, Podhuturu	3%
12	Hyderabad	Adoni, Pattikonda (West)	2%
13	Hyderabad	Ananthapur, Gooty, Guntakal, Kadiri	2%
14	Katavaram/Addakal	Hyderabad	2%
15	Hyderabad	Srisailam	2%
16	Mahbubnagar	Kurnool	2%
17	Jadcherla	Bangalore North (Hoskote, White field)	1%
18	Mahbubnagar	Gadwal, Pebbair	1%
19	Hyderabad	Vellore/ Krishnagiri/ Madurai / Coimbatore / Kanyakumari	1%
20	Nandyala, Banganpalli, Atmakur (East)	Chhattisgarh / Odisha	1%
		Total	**92%**

LCV

S.No.	Origin	Destination	% of total
1	Hyderabad	Kurnool	18%
2	Hyderabad	Bangalore south (electronic City,Attibele)	13%
3	Hyderabad	Kadapa, Maidukur, Rayachoti, Pulivendula, Tadipatri, Podhuturu	7%
4	Kothakota	Mahbubnagar	5%
5	Hyderabad	Ananthapur, Gooty, Guntakal, Kadiri	5%
6	Gadwal, Pebbair	Hyderabad	5%
7	Hyderabad	Chennai, Tiruvallur, Kanchipuram,	3%
8	Hyderabad	Nandyala, Banganpalli, Atmakur (East)	3%
9	Kothakota	Hyderabad	2%
10	Jadcherla	Kothakota	2%
11	Hyderabad	Chittoor, Tirupati	2%
12	Mahbubnagar	Kurnool	2%
13	Bhuthpur	Kothakota	2%
14	Mahbubnagar	Gadwal, Pebbair	1%
15	Warangal, Karimnagar	Kadapa, Maidukur, Rayachoti, Pulivendula, Tadipatri, Podhuturu	1%
16	Mahbubnagar	Ananthapur, Gooty, Guntakal, Kadiri	1%
17	Hyderabad	Srisailam	1%
18	Bangalore south (electronic City,Attibele)	Nagpur/Akola/Amravati/Washim/Yavatmal/Wardha/Chandanpur/Bandara/Gondiya/Gadchiroli	1%
19	Jadcherla	Kurnool	1%
20	Jadcherla	Bangalore south (electronic City,Attibele)	1%
		Total	**75%**

2 Axle

S.No.	Origin	Destination	% of total
1	Hyderabad	Kurnool	24%
2	Hyderabad	Bangalore south (electronic City,Attibele)	7%
3	Gadwal, Pebbair	Hyderabad	5%
4	Kothakota	Hyderabad	4%
5	Hyderabad	Chennai, Tiruvallur, Kanchipuram,	4%
6	Hyderabad	Nandyala, Banganpalli, Atmakur (East)	4%
7	Hyderabad	Ananthapur, Gooty, Guntakal, Kadiri	3%
8	Hyderabad	Kadapa, Maidukur, Rayachoti, Pulivendula, Tadipatri, Podhuturu	3%
9	Kothakota	Mahbubnagar	3%
10	Jadcherla	Kurnool	3%
11	Hyderabad	Bangalore North (Hoskote, White field)	2%
12	Hyderabad	Vellore/ Krishnagiri/ Madurai / Coimbatore / Kanyakumari	2%
13	Hyderabad	Chittoor, Tirupati	2%
14	Jadcherla	Gadwal, Pebbair	2%
15	Hyderabad	Kerala / Tiruvananthapur / Kochi / Kollam	2%
16	Jadcherla	Bangalore south (electronic City,Attibele)	1%
17	Bangalore south (electronic City,Attibele)	Uttarpradesh	1%
18	Chennai, Tiruvallur, Kanchipuram,	Mumbai/Thane/Nashik/Pune/Raigarh/Solapur/ Osmanabad/Latur	1%
19	Jadcherla	Kothakota	1%
20	Mahbubnagar	Kadapa, Maidukur, Rayachoti, Pulivendula, Tadipatri, Podhuturu	1%
		Total	**74%**

TRAFFIC STUDY FOR JADCHERLA-KOTHAKOTA SECTION OF NH-7 (WATL) IN THE STATE OF TELANGANA

TOP 20 Origin Destination Pairs

3 Axle

S.No.	Origin	Destination	% of total
1	Hyderabad	Kurnool	12%
2	Hyderabad	Chennai, Tiruvallur, Kanchipuram,	9%
3	Hyderabad	Bangalore south (electronic City,Attibele)	8%
4	Chennai, Tiruvallur, Kanchipuram,	Delhi	6%
5	Kothakota	Hyderabad	4%
6	Hyderabad	Ananthapur, Gooty, Guntakal, Kadiri	3%
7	Hyderabad	Vellore/ Krishnagiri/ Madurai / Coimbatore / Kanyakumari	3%
8	Hyderabad	Kadapa, Maidukur, Rayachoti, Pulivendula, Tadipatri, Podhuturu	2%
9	Hyderabad	Bangalore North (Hoskote, White field)	2%
10	Hyderabad	Kerala / Tiruvananthapur / Kochi / Kollam	2%
11	Wanaparthi	Hyderabad	2%
12	Gadwal, Pebbair	Hyderabad	2%
13	Mahbubnagar	Kurnool	2%
14	Hyderabad	Hospet , Bellary, Koppal	1%
15	Chennai, Tiruvallur, Kanchipuram,	Mumbai/Thane/Nashik/Pune/Raigarh/Solapur/ Osmanabad/Latur	1%
16	Hyderabad	Nandyala, Banganpalli, Atmakur (East)	1%
17	Chennai, Tiruvallur, Kanchipuram,	Haryana	1%
18	Kurnool	Gujarat	1%
19	Chennai, Tiruvallur, Kanchipuram,	Gujarat	1%
20	Katavaram/Addakal	Hyderabad	1%
		Total	**63%**

MAV

S.No.	Origin	Destination	% of total
1	Hyderabad	Kurnool	13%
2	Hyderabad	Bangalore south (electronic City,Attibele)	10%
3	Hyderabad	Chennai, Tiruvallur, Kanchipuram,	5%
4	Hyderabad	Kerala / Tiruvananthapur / Kochi / Kollam	4%
5	Hyderabad	Nandyala, Banganpalli, Atmakur (East)	3%
6	Hyderabad	Kadapa, Maidukur, Rayachoti, Pulivendula, Tadipatri, Podhuturu	3%
7	Kothakota	Hyderabad	2%
8	Bangalore south (electronic City,Attibele)	Uttarpradesh	2%
9	Hyderabad	Vellore/ Krishnagiri/ Madurai / Coimbatore / Kanyakumari	2%
10	Chennai, Tiruvallur, Kanchipuram,	Uttarpradesh	2%
11	Chennai, Tiruvallur, Kanchipuram,	Gujarat	2%
12	Gadwal, Pebbair	Hyderabad	2%
13	Chennai, Tiruvallur, Kanchipuram,	Mumbai/Thane/Nashik/Pune/Raigarh/Solapur/ Osmanabad/Latur	2%
14	Hyderabad	Hospet , Bellary, Koppal	2%
15	Khammam	Bangalore south (electronic City,Attibele)	1%
16	Kurnool	Uttarpradesh	1%
17	Bangalore south (electronic City,Attibele)	Delhi	1%
18	Vikarabad/ Tandur (West)	Chennai, Tiruvallur, Kanchipuram,	1%
19	Kothakota	Mahbubnagar	1%
20	Mahbubnagar	Chennai, Tiruvallur, Kanchipuram,	1%
		Total	**61%**

MLCV

S.No.	Origin	Destination	% of total
1	Hyderabad	Kurnool	16%
2	Kothakota	Hyderabad	13%
3	Kothakota	Mahbubnagar	11%
4	Hyderabad	Ananthapur, Gooty, Guntakal, Kadiri	7%
5	Hyderabad	Bangalore south (electronic City,Attibele)	6%
6	Gadwal, Pebbair	Hyderabad	6%
7	Hyderabad	Kadapa, Maidukur, Rayachoti, Pulivendula, Tadipatri, Podhuturu	4%
8	Mahbubnagar	Gadwal, Pebbair	3%
9	Mahbubnagar	Kurnool	3%
10	Hyderabad	Chennai, Tiruvallur, Kanchipuram,	3%
11	Bhuthpur	Gadwal, Pebbair	2%
12	Janampeta/Moosapet/Sankalamaddi/Komreddypally	Kothakota	2%
13	Bangalore south (electronic City,Attibele)	Delhi	2%
14	Hyderabad	Chittoor, Tirupati	2%
15	Jadcherla	Kothakota	2%
16	Mahbubnagar	Wanaparthi	2%
17	Mahbubnagar	Ananthapur, Gooty, Guntakal, Kadiri	1%
18	Ananthapur, Gooty, Guntakal, Kadiri	Bagalkot, Bidar, Bijapur, Gulbarga	1%
19	Jadcherla	Gadwal, Pebbair	1%
20	Jadcherla	Kurnool	1%
		Total	**88%**

APPENDIX 2.5
TRAVEL PATTERN OF VEHICLES

TRAFFIC STUDY FOR JADCHERLA-KOTHAKOTA SECTION OF NH-7 (WATL) IN THE STATE OF TELANGANA

Travel Pattern of Vehicles- FY17

Summary of Major OD Streams	Cars	M Bus	Bus	M LCV	LCV	2A	3A	MAV
Hyderabad - Southern Telangana	1,398	32	147	184	105	121	177	77
Northern Telangana - Southern Telangana	1,226	24	106	264	177	98	121	57
Hyderabad/ Northern Telangana - Southern Andhra Prad	2,611	29	551	357	588	505	612	511
Hyderabad/ Northern Telangana - Bengaluru & Karnatak	705	11	163	72	239	160	327	314
Hyderabad/ Northern Telangana - Tamilnadu/ Kerala	48	-	12	36	89	113	323	292
Bidar/Maharashtra/ Rest of India - Southern Telangana	5	-	-	-	14	13	10	-
Bidar/Maharashtra/ Rest of India - Southern Andhra Pra	41	-	8	18	52	18	124	135
Bidar/Maharashtra/ Rest of India - Bengaluru & Karnatal	17	-	-	22	24	49	95	161
Bidar/Maharashtra/ Rest of India - Tamilnadu/ Kerala	6	-	-	3	49	53	293	239
Total	**6,056**	**95**	**987**	**956**	**1,336**	**1,130**	**2,082**	**1,785**