

PRE – FEASIBILITY REPORT

For

**ENVIRONMENTAL IMPACT ASSESSMENT (EIA) AND
ENVIRONMENTAL MANAGEMENT PLAN**

For

**Rehabilitation and Upgradation of National Highway-565 from
Km 133.922 to Km 154.900 (Length - 20.978 Km) of Guntur
and Prakasam Districts in the state of Andhra Pradesh**

DECEMBER 2018



**SUBMITTED BY
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It is, however, to be noted that this report has been prepared in best faith, with assumptions and estimates considered to be appropriate and reasonable but cannot be guaranteed. There might be inadvertent omissions/errors/aberrations owing to situations and conditions out of the control of MoRTH and DPR Consultant. Further, the report has been prepared on a best-effort basis, based on inputs considered appropriate as of the mentioned date of the report.

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1. EXECUTIVE SUMMARY

The Project road starts from Km 133+922 near Davupally in Guntur District with 16°16'21.626" N, 79°19'16.226" E and ends at Km 154+900 near Mallapalem Junction with 16°8'7.396"N, 79°20'3.498" E in the state of Andhra Pradesh.

The project completely transverse through plain and rolling terrain in Reserve Forest of about 20.978 Km.

The project proponent for the Project is National Highways Authority of India (NHAI).

As per MoEF&CC EIA Notification 2006, the proposed Project is covered under schedule '7 (f) - **Category A**', wherein submission of the Environment Impact Assessment Report to the Ministry of Environment, Forest and Climate Change (MoEF&CC), New Delhi is a pre-requisite to obtain Environmental Clearance.

This Pre-feasibility Report is a part of the application being made for the grant of Terms of Reference (TOR) for conducting the EIA studies.

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2. INTRODUCTION TO THE PROJECT

2.1 Project Proponent

National Highways Authority of India (NHAI), an autonomous agency of the Government of India, is responsible for management of a network of national highways across the country. It is a nodal agency of the Ministry of Road Transport and Highways (MoRT&H), Government of India. Its vision is to meet the nation's need for the provision and maintenance of national highways network to global standards and to meet user expectations in the most time-bound and cost-effective manner, within the strategic policy framework set by the Government of India and thus promoting economic well-being and quality of life of the people.

NHAI shall be the nodal authority/ proponent for the development of this Project.

2.2 Project Brief

Project alignment shall start near Davupally at Km 133+922. The alignment runs through the Guntur and Prakasam districts in the state of Andhra Pradesh. The existing road is of single lane with 3.5m BT width. Hence, the proposed project is to 2-lane with paved shoulder of 10m BT Width.

Salient features of the Project are as follows.

Table 1: Project Salient Features

S.No	PARTICULAR	DETAILS
1	Project Name	Rehabilitation and Upgradation of NH-565 from KM 133.922 to 154.900 to two lanes with paved shoulder in the State of Andhra Pradesh under NHDP IV.
2	Nature of Project	2-lane with paved shoulder Configuration NH-565 from 133.922 Km to 154.900 Km
3	Location of project stretch	It starts near Davupally and ends near Mallapalem Junction village. It passes through Guntur and Prakasam districts in the state of Andhra Pradesh.
4	Geographical Coordinates	16 ^o 16'21.626"N-79 ^o 19'16.226"E to 16 ^o 08'07.396"N-79 ^o 20'03.498"E
5	Land details	Proposed Highway follows partly plain, rolling and hilly terrain. Mutukuru RF and Markapur RF and settlement areas shall also get affected.
6	Water demand	250 KLD water will be required during construction phase.
7	Sources of water	Surface water near water body.
8	Nearest railway station	Donakonda Railway Station - 37.2 km
9	Nearest state highway / National Highway	Proposed alignment is crossing SH-88 / NH-5 connecting Vijayawada-Nellore
10	Nearest airport	Airport- Vijayawada Approx. 143 km
11	Seismic Zone	Proposed alignment falls under Seismic Zone III. Least Active

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2.3 Project Need and Importance

The Project is a proposed for 2 Lane with Paved Shoulder configuration interlinking different National Highways connecting Prakasam and Guntur Districts of Andhra Pradesh. The proposed National Highway will provide better connectivity to several towns and cities viz. Macherla, Markapuram and Yerragondapalem and give an infrastructure fillip to the states of Andhra Pradesh, Telangana and Tamil Nadu. The National Highway will be access-controlled and ensure high speed traffic movement from Prakasam District to Guntur District. The proposed alignment is selected so as to cover one of the most important south arterial connectivity in the country, further interspersed with feeder highways on its either sides.

At present, the connectivity between Macharla and Markapuram is either via SH-56 and SH-88 which is two lane with paved shoulder. The new proposed National Highway shall bring down the travel time distance. Moreover, the new National Highway facility is access controlled and hence will provide good riding quality, better safety, and a reliable infrastructure. All of these elements will result in cost savings and efficiency improvement.

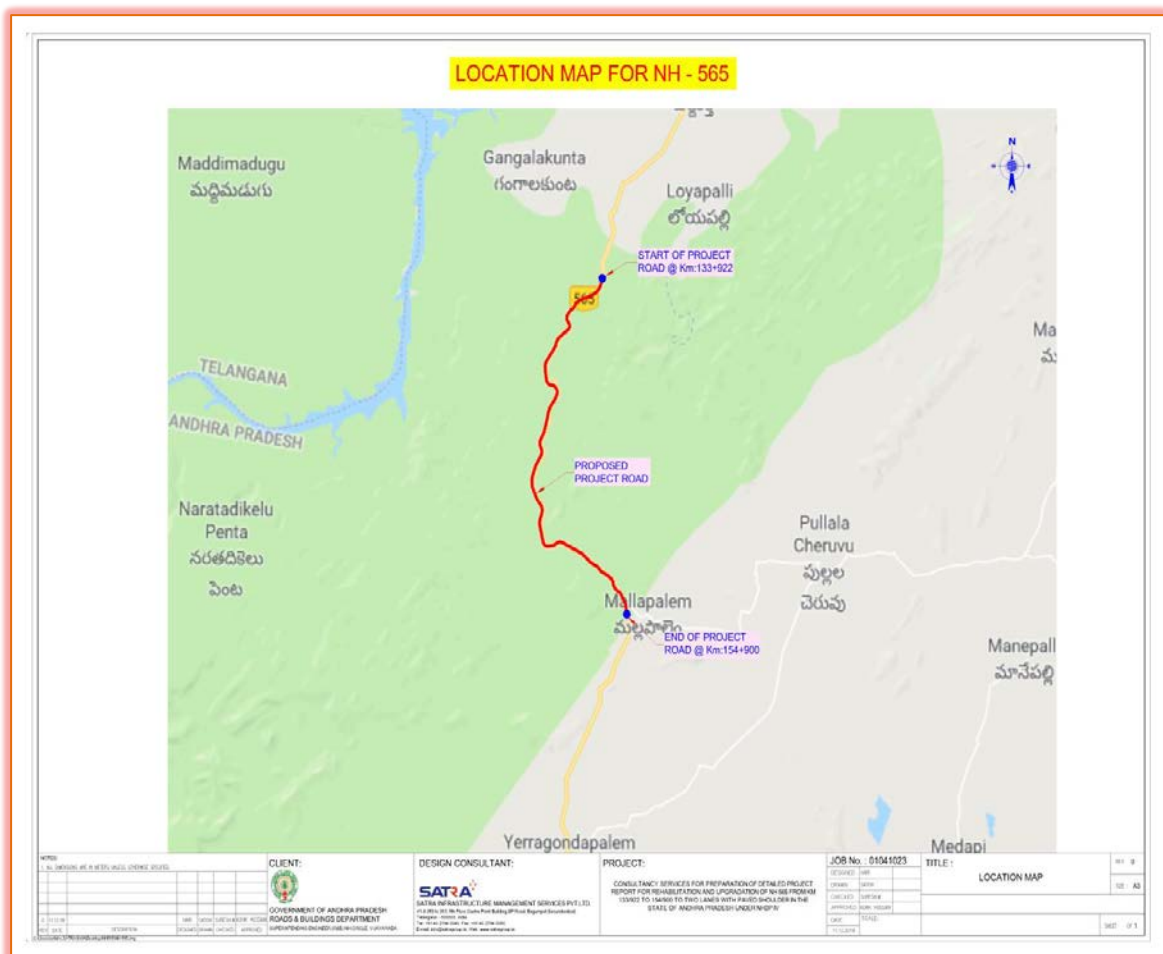


Figure 1: Route map of proposed Project vs. existing road Network (Google image)

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The Project will further have following benefits at national and regional level:

- **High-speed connectivity and access:** The projected National Highway is a proposed for 2 lane with paved shoulder. This will avoid traffic congestion and speed-up the freight movement. It is expected that overall, the proposed National Highway will reduce the travel time.
- **Aiding economic growth:** The seamless connectivity will provide better access to vehicles as a link to the National Highways. The Project will reduce travel time and provide boost to trade and commerce linked to the regions connected through this National Highway.
- **Growth of backward areas:** The biggest strength of the alignment is that it plans to cover backward districts of Rajasthan. As a result of connectivity and access to other parts of the country, these backward areas will be aided to integrate with other part of India. Further, freight and passenger traffic on the National Highway will help promoting ancillary economy of these regions.
- **Decongestion of existing National and State Highways:** The proposed National Highway will take away traffic pressures from Roads. Also, long-distance traffic will shift to the proposed National Highway, thereby leaving the SH for regional and local usage.
- **Usage shift:** Long-distance traffic will shift from existing road to the proposed National Highway, resulting in lesser congestion on these highways
- **Improved safety:** Due to access control, the Roadway & Travel Safety of the traffic connecting the cities will be enhanced as there will be minimum distractions & conflict zones
- **Support to industry:** Different types of industries like Manufacturing, Tourism etc. along the proposed National highway will be facilitated in their business operation and reachability.

Following major types of traffic load is expected on the Project:

- **Commercial and Industrial:** Traffic on the existing roads is driven by local, commercial and industrial traffic. Industries such as cement, chemicals and minerals are present along and around the proposed National Highway. These industries are expected to benefit from the National Highway.
- **Tourist:** Passenger traffic will be generated due to many places of tourist interest in the districts connected by the National Highway. Apart from places of historical importance such as forts and palaces, traffic would be augmented due to several famous religious places such as the Srisailem and wildlife parks and safari like Amarabad Tiger Reserve.
- **Health and Education:** Faster connectivity and accessibility to AP will help in higher flow of traffic from Telangana state, especially for higher education, tertiary healthcare and specialized treatments. Reduction in travel time will allow patients to avail OPD / other medical services from the capital region.

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2.4 Market Analysis

The proposed Project plans to Andhra Pradesh to Telangana state. The strong regional connectivity proposed through the Project will further increase regional trade and economic growth.

Guntur district is having mining industries, MSME and SME. This new project will help to cater the existing road load.

These regions source their raw materials as well as transport their finished goods to various parts of the country. The National highway will provide efficient access to various markets by ensuring smooth flow of goods.

2.5 Demand & Supply Gap and Benefits

The demand for the proposed Project has been assessed across various parameters:

Savings in Travel Time and Cost:

The proposed High Way is expected to reduce the distance. The following cost savings for users:

- Vehicle Operation Cost (VOC)
- Travel Time (VOT)
- Toll costs

Future Traffic Estimations:

It is estimated that because of reduction in travel time and costs, more traffic will be diverted from other routes. Further, more traffic will be generated from surrounding regions to add to the expected traffic on the proposed Project. It is estimated that across various sections of the Sub-Package 1, the following traffic will be generated:

Table 2: Projected Traffic

Project road	2020	2025	2030	2035	2040	2045
Davupally to Mallapalem Jn	2313	3092	4057	5278	6872	8956

2.6 Imports vs. Indigenous Production

No import requirement is expected as the Project is a National Highway (road project) and doesn't involve any manufacturing and production. The construction material for the National Highway will be sourced domestically.

2.7 Export Market

The Project being a roadway project, there is no direct impact on exports. However, the connectivity improvements through the proposed Project shall have several indirect benefits. Proposed development will support freight traffic movement in South India part.

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2.8 Employment Generation (Direct and Indirect)

The National highway project is expected to generate employment during construction phase. It is estimated that 300 direct employees will be required per day during construction of the National Highway. Further, due to ecosystem development, the National highway will also create considerable indirect employment opportunities in form of transportation of construction materials, greenbelt development, ancillary facilities like canteens, dhabas etc.

During operations phase, the Project will largely have indirect employment benefits in form of highway amenities and through economic & social hubs developed around the National highway. Efficient reach and connectivity to distant markets will further enhance economy of the districts and create employment opportunities.

3. PROJECT DESCRIPTION

3.1 Interlinked and Interdependent Project

The interlinked projects to the proposed National highway NH 565 shall include the development of the project region. The details of the Interlinked and Interdependent project shall be provided in EIA report.

3.2 Project Location

The proposed alignment of Highway starts from Chainage Km 133+922 near Davupally village in Guntur District and end at Km 154+900 Mallapalem Junction in Prakasam district of Andhra Pradesh state. Geo-graphical Coordinates of start and end points are given in table below.

Table 3: Project Coordinates

Description	Coordinates
Start Point	16 ⁰ 16'21.626"N, 79 ⁰ 19'16.226"E
End Point	16 ⁰ 8'7.396"N, 79 ⁰ 20'3.498"E

Location of the Project stretch is shown in **Figure 1** above.

3.3 Alternative Analysis

No alternative analysis is carried out.

3.4 Size and Magnitude of Operation

The total length of the National Highway is ~20.978 Km (Chainage: 133+922 Km to 154+900 Km) and RoW is 30 m.

3.5 Project Description

The Project entails 2 lane paved shoulder configuration. The alignment starts near Davupally of Guntur district at chainage 133.922 km (16⁰16'21.626"N, 79⁰19'16.226"E) and ends near Mallapalem junction at Chainage 154.900 Km (16⁰8'7.396"N, 79⁰20'3.498"E) of Prakasam district. The Project road under present proposal covers 2 districts of Andhra Pradesh. Total length of the Project is 20.978 km and 30 m Right of Way has been considered for proposed alignment.

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3.6 Raw Materials

The Project entails development of a green-field road and will require road construction materials. Construction material like aggregates, sand, stone, etc. shall be procured from nearby approved quarries. Separate environmental approval shall be sought for any new quarry. Quantity of the construction material required for the proposed 2 lane Project (Length: ~20.978 km) is given in table below.

Table 4: RoW Material requirement

S. No.	Description	Unit	Quantity
1	Earthen Soil	Cum	286005
2	Granular sub base	Cum	61192
3	Bituminous	Cum	8738
4	DBM	Cum	6634
5	Concrete	Cum	12121
6	Excavated Material	Cum	156537

Note :- Cum is Cubic meter.

3.7 Resource Optimization / Recycling and Reuse

The Project will reuse the soil and material excavated for construction of Bridges and other structure.

- Topsoil from the agriculture land shall be stored separately for utilisation in avenue and median plantation. The earth material excavated from the high-rise area shall be used for backfilling of low laying area and embankment.
- Sewage shall be routed through portable STP or diverted into the soak pit. Treated water from STP will be used for sprinkling or gardening.
- Waste oil shall properly store in HDPE drums and to be sold to recycling vendor approved by State Pollution Control Board (SPCB).

3.8 Water and Energy- Source and Availability

Rainfall is the major source of ground water recharge in the state. Out of the total rainfall, a sizable portion in the beginning of the rainy season is used for building the soil moisture and is also lost to evaporation because of its arid conditions.

The average annual rainfall of the district is 798.6 mm, monthly rainfall ranges from Zero in March to 182.9 mm in October.

October is the wettest month of the year. Northeast and southwest monsoon both contributes significant rainfall in this district. The mean seasonal rainfall distribution is 384 mm in southwest monsoon (June-September), 331 mm in northeast monsoon (Oct-Dec), 17 mm rainfall in Winter (Jan-Feb) and 68 mm in summer (March – May).

The percentage distribution of rainfall, season - wise, is 48.06 % in southwest monsoon, 41.39 % in northeast monsoon, 2.08% in winter and 8.47 % in summer.

3.9 Waste Quantity and Management

Waste management shall be done as per Solid Waste Management Rules, 2016 and Construction and Demolition waste Management Rules, 2016.

3.10 Schematic Representations of the Feasibility Drawings

Typical Cross Section Drawings is uploaded in additional attachments under Section-IV of ToR application. Detail alignment drawing shall be provided in EIA report.

4. SITE ANALYSIS

4.1 Site Connectivity

The proposed route is well connected with the existing road infrastructure and is accessible through Nagarjunasagar & Srisaillam.

4.2 Land Form, Use & Ownership

Total length of the proposed Project is 20.978 Km. Land uses identified along the proposed corridor are :-

- Forest Land
- Barren Land
- Agricultural land

The details of the land-use pattern will be given in the detailed EIA report. As per, Forest DGPS Survey of proposed NH-565 an area of 54.00 Ha. of forest land is to be diverted. Majority of the land ownership is with Forest and private entities.

4.3 Forest & Wildlife Area

According to the Forest Survey of India, the recorded for area of the state is 37258 Sqm. which is 22.86% of its geographical area. The Reserved, Protected and Unclassified forests are 85.78%, 13.60% and 0.62% respectively of the recorded forest area. As per DGPS Survey, along with forest officials it is observed that about 54.00 Ha of forest land to be diverted. Also, Nagarjunasagar Srisaillam Tiger Zone is located within 10 Km radius of the proposed alignment.

4.4 Topography

The proposed project lies between at an elevation of 198 mts. and 345 mts above mean sea level. The alignment follows flat and undulating terrain. Detailed topographic map will be provided at EIA stage.

4.5 Existing Infrastructure

A number of commercial and residential structures fall in the proposed stretch. The details of the structures shall be provided in the Resettlement Action Plan report.

4.6 Soil Classification

Black, alluvial and brown soils are commonly found in this area. The soil is clay to sandy loam in texture. Black soil is the major variety found in the area.

4.7 Climatic Data

4.1.1 Guntur District

The climate of Guntur is tropical. During summer, the temperature rise up to 39.3 °C. The average annual temperature is 28.5 °C and annual rain fall is about 905 mm.

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4.1.2 Prakasam District

The climate of the districts can be classified as semi-arid. It is characterized by very hot summers and very cold winters with fairly good rainfall during southwest monsoon period. The mean annual rainfall of the district based on 37 years data (1977-2013) works out to be 658 mm.

May and June are the hottest months; the maximum temperature may sometimes go up to 48°C.

Table 5: Long-term (1981-2000) Climatological Conditions at IMD Observatories

Month	Temp Monthly (°C)		Humidity (%)		Average Wind Speed (kmph)	Dominant Direction	Avg. Rainfall (mm)
	Max	Min	Morning	Evening			
January	28.3	3.6	77	55	1.4	N,NE	7.2
February	32.9	5.9	66	34	1.9	N,NW	6.6
March	39	11.5	51	27	2.4	NW,W	4.2
April	43.6	11.5	38	22	2.9	W,NW	7.3
May	45.8	21.9	40	23	3.5	W,NW	11.8
June	45	21.6	54	36	4.6	W,NW	61.5
July	39.9	21.6	76	62	3.5	W,SW	236.7
August	36.2	21.1	81	68	2.6	W,SW	263.4
September	37.9	20.4	74	55	2.3	W,SW	101.5
October	37.6	13.9	62	41	1.4	W,SW	29.5
November	34.3	9.3	65	42	1.1	W,SW	11.4
December	29.1	4.8	74	47	1.3	N,NE	3.5
Avg	37.46	13.92	63	42	2.4	W,NW	744.6

4.8 Available Social Infrastructure

There are number of commercial and residential structures falling in the Package. The details shall be provided in social impact assessment (SIA and RAP) report.

5. PLANNING BRIEF

The proposed Highway is in feasibility study stage. After having undertaken the feasibility study and the grant of Terms of Reference (ToR), Detailed Project Report (DPR) shall be completed.

The DPR shall comprise of the planning brief including planning concept, land use planning, assessment of infrastructure demand and amenities/facilities.

6. PROPOSED INFRASTRUCTURE

6.1 Industrial Area

Not applicable

6.2 Residential Area

Not applicable

6.3 Green Belt

Greenbelt will be developed on both sides of the National highway. Compensatory afforestation and avenue plantation will be undertaken on both sides of the highway for landscape improvement and increasing the aesthetic quality. It shall be ensured that the plant species are local, and no alien species will be introduced. Detailed plantation scheme shall be provided in EIA report.

6.4 Social Infrastructure

Bus & truck lay Bye and rest areas with toilet facilities shall be developed along the proposed Project. Location of these facilities will be finalized in consultation with stakeholders.

6.5 Connectivity

The proposed route is well connected with the existing road infrastructure.

6.6 Drinking Water Management

No permanent installation of drinking water facilities is being planned for the project. Drinking water at a rate of 70 – 90 LPCD for labourers shall be arranged from local vendors / water tankers with prior consent. It is estimated that a total of approximately 150 KLD water will be required for consumption of construction workers.

6.7 Sewerage System

Portable bio-toilets or septic tanks shall be provided for construction and operational workers. During operations phase, the waste water management system like proper sewerage system and STPs will be provided.

6.8 Industrial Waste Management

Defunct machineries or parts of the mixing plants shall be stored at designated place before selling the scrap to an approved vendor.

6.9 Solid Waste Management

Waste management shall be done as per Solid Waste Management Rules, 2016 & and Construction and demolition waste Management Rules 2016.

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In addition to the Sub-Clause 111.4 of MoRTH Specifications, The Contractor shall adopt the following Mitigation Measures.

- Control of Soil Erosion and sedimentation (Clause 306.3)
- Control of Water Pollution

The Contractor shall avoid construction works close to the streams or water bodies during monsoon. All precautionary measures shall be taken to prevent the wastewater that is generated during construction from entering into streams, water bodies or the irrigation channels. Oil interceptors shall be provided for vehicle parking, wash down and refuelling areas.

The Contractor shall adopt the following rules and regulations for effective Control of Solid and Liquid water Management

- Schedule VI - General Standards for Discharge of Environmental Pollutants, CPCB
- The Environment (Protection) Rules, 1986 and Water Act, 1974.
- Petroleum Act, 1934 and subsequent amendments
- Rules and Environment (Protection) Rules, 1986 (Standards for Emission or Discharge of Environmental Pollutants Schedule – I)
- Annexure 'A' to Clause 501 (Protection of Environment) of MoRTH Specification
- Construction and Demolition Waste Management Rule 2016
- Municipal Solid Waste Management Rule 2016

The Contractor is to ensure that there is good drainage at all construction areas, to avoid creation of stagnant water bodies especially in urban/industrial areas, including water in old types.

6.10 Power Requirement—Supply & Source

Required power will be sourced through the local distribution company of AP State Electricity Board and DG sets will also be installed as power backup source.

7. REHABILITATION AND RESETTLEMENT PLAN

Most of the land coming under the Project area is agricultural and built-up land. Along with this, the alignment of National Highway passes through forest land and barren land. The land required for the construction of National Highway will be acquired by NHAI before the commencement of construction work.

Land acquisition shall be undertaken as per the provision of LARR, 2013 and NHAI Act 1988 (with its amendments).

Rehabilitation and resettlement plan will be prepared separately and the details are included in EIA Report also.

8. PROJECT SCHEDULE AND COST ESTIMATES

The Project shall start its construction work after fulfilment of the following activities:

- Finalization and approval of Detailed Project Report
- Receipt of Environmental clearance from MoEF & CC and State Government
- Selection and on-boarding of Contractor for implementation

The completion period of the construction is estimated to be about 18 months. The estimated cost of the proposed project is about INR 191.5 Cr. Detailed cost break-up and Project schedule shall be discussed in the EIA report.

9. ANALYSIS OF PROPOSAL

The benefits of the Project are multi-fold. It will substantially reduce the travel time between Telangana and Andhra Pradesh. In addition to the improved connectivity, it will also provide a boost to the economic status of the villages / towns falling in the dedicated Project area.

Overall improvement will be expected in local area in terms of:

- Better connectivity to economic, social and political hubs of the country
- Faster growth and outreach to better and improved facilities
- Fast and safe connectivity resulting in savings in fuel, travel time and total transportation cost
- Reduction in accidents
- Better approach to medical & educational services
- Faster transportation of perishable goods like fruits, vegetables, and dairy products
- Better opportunities for transporting, processing and marketing of agricultural products
- Development of local agriculture and handicrafts
- Development of tourism and pilgrimage
- Opening up of opportunities for new occupations and trade on the route
- Indirect and direct employment opportunity to people from all skilled, semi-skilled and unskilled streams
- Improved quality of life for people and so on
- Development of backward areas through rapid industrialization and access to distant markets
- Creation of ancillary ecosystem through highway amenities, support services and industrial / manufacturing areas