PRE – FEASIBILITY REPORT

Development of 8 lane (Greenfield Highway) from Etawa (Ch. 284.000 Km) to after Chambal River near Durjanpura village (Ch. 349.000 Km) Section of NH-148 N (Total length 65.0Km), Under BHARATMALA PRIYOJANA Lot-4/Pkg-4 in the state of Rajasthan.

June 2018

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1. EXECUTIVE SUMMARY

Government of India has decided to develop ~42,000 km of Economic Corridors, Inter Corridors and Feeder Routes to improve the efficiency of freight movement in India under the Bharatmala Pariyojana. One of the projects of the Bharatmala Pariyojana is Delhi-Mumbai Greenfield Highway via Jaipur and Vadodara. The project being discussed under this report concerns a section of the development of 8 lane (Greenfield Highway) from Etawa (Ch. 284.000 Km) to after Chambal River near Durjanpura village at (Ch. 349.000 Km) Section of NH-148 N (Total length 65.0 Km), Under BHARATMALA PRIYOJANA Lot-4/Pkg-4 in the state of Rajasthan. .

The project starts near Etawa Village of Sawai Madhopur District at Ch. 284.000 km (26° 1'57.36"N, 76°15'42.35"E) and traverses entirely through plain / rolling terrain in Rajasthan State and ends after Chambal River near Durjanpura village at Ch. 349.000 km (25°28'20.34"N, 76°12'41.81"E) in Kota district, Rajasthan. Total Length of the proposed project is about 65.000 km.

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

As per MoEFCC EIA Notification 2006, the proposed Project is covered under schedule '7f - 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 for the project of Lot-4/Pkg-4.

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 (MoRTH), 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

Government of India has decided to develop ~42,000 km of Economic Corridors, Inter Corridors and Feeder Routes to improve the efficiency of freight movement in India under the Bharatmala Pariyojana. Delhi-Mumbai Greenfield highway via Alwar, Sawai Madhopur, Kota and Vadodara is also covered under Bharatmal Pariyojana. The project being discussed under this report concerns a section of the Development of 8 lane (Greenfield Highway) from Etawa (Ch. 284.000 Km) to after Chambal River near Durjanpura village at (Ch. 349.000 Km) Section of NH-148 N (Total length 65.0 Km), Under BHARATMALA PRIYOJANA Lot-4/Pkg-4 in the state of Rajasthan..

The present project follows a complete Greenfield alignment and its start near to Etawa village in Sawai Madhopur district of Rajasthan State. The proposed alignment runs through the Sawai Madhopur, Tonk and Bundi and Kota districts before ending after Chambal River in Kota District at a total chainage length of ~65 km. Salient features of the project are as follows.

Table 1: Project Salient Features

Sl. No.	Particular	Details
1	Project Name	Development of 8 lane (Greenfield Highway) from Etawa (Ch. 284.000 Km) to after Chambal River near Durjanpura village at (Ch. 349.000 Km) Section of NH-148 N (Total length 65.0 Km), Under BHARATMALA PRIYOJANA Lot-4/Pkg-4 in the state of Rajasthan.
2	Nature of Project	8-lane, access-controlled greenfield Highway
3	Location of project stretch	Proposed project starts near Itawa village and ends after Chambal river after passing through Sawai Madhopur, Tonk, Bundi and Kota districts in Rajasthan state
4	Geographical Coordinates	26° 1'57.36"N, 76°15'42.35"E to 25°28'20.34"N, 76°12'41.81"E
5	Land details	Proposed highway follows partly plain, rolling and mountainous terrain. Some patches of forest (including Papdi Forest Block, buffer area of Ranthambore Tiger Reserve and National Chambal Sanctuary) and some settlement areas will also get affected due to proposed development.
6	Water demand	~3,395 ML water will be required during construction phase.
7	Sources of water	Tanker Supply
8	Nearest railway station	Lakheri Railway Station- 1 km (Ch. 329.800 Km)
9	Nearest state highway / National Highway	Proposed alignment is crossing SH-01, SH-33 and NH-116
10	Nearest airport	Kota Airport (not functional - 51.0 km) Nearest functional airport is Jaipur 105.0 km

Sl. No.	Particular	Details
11	Seismic Zone	Proposed alignment falls under Seismic Zone II. Zone - II is most stable and Zone - V is considered to be least stable. Proposed alignment is located in High Damage Risk Zone (Vb = 47 m/s) as per Wind and Cyclone Hazard Classification of India.

2.3 Project Need and Importance

The proposed project is a part of the proposed 8-lane access-controlled Greenfield Delhi-Mumbai highway corridor (~1,335 km) interlinking different State & National highways while connecting Delhi to Mumbai. The project is planned as an ambitious high-speed corridor which provides high speed connectivity between states of North India and states of West & South India, more importantly giving a reliable access to the country's prominent economic and social hubs like Mumbai, Delhi, Vadodara, Jaipur etc.

The proposed highway will provide better connectivity to several towns and cities viz. Gurgaon, Alwar, Dausa, Sawai Madhopur, Tonk, Bundi, Kota, Jaora, Ratlam etc. and give an infrastructure fillip to the states of Delhi, Haryana, Rajasthan, Gujarat, Madhya Pradesh and Maharashtra. The highway will be access-controlled and ensure high speed traffic movement from Delhi to Mumbai. The proposed alignment is selected so as to cover one of the most important North-South arterial connectivity in the country, further interspersed with feeder highways on its either sides.

At present, the connectivity between Delhi and Mumbai is either via NH-48 or via NH-19 & NH-47, which are 4/6 lane. The new proposed highway shall bring down the travel distance by approximately 95 Km (as compared to alternate routes) and result in time savings of over 2-3 hours. Moreover, the new 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.

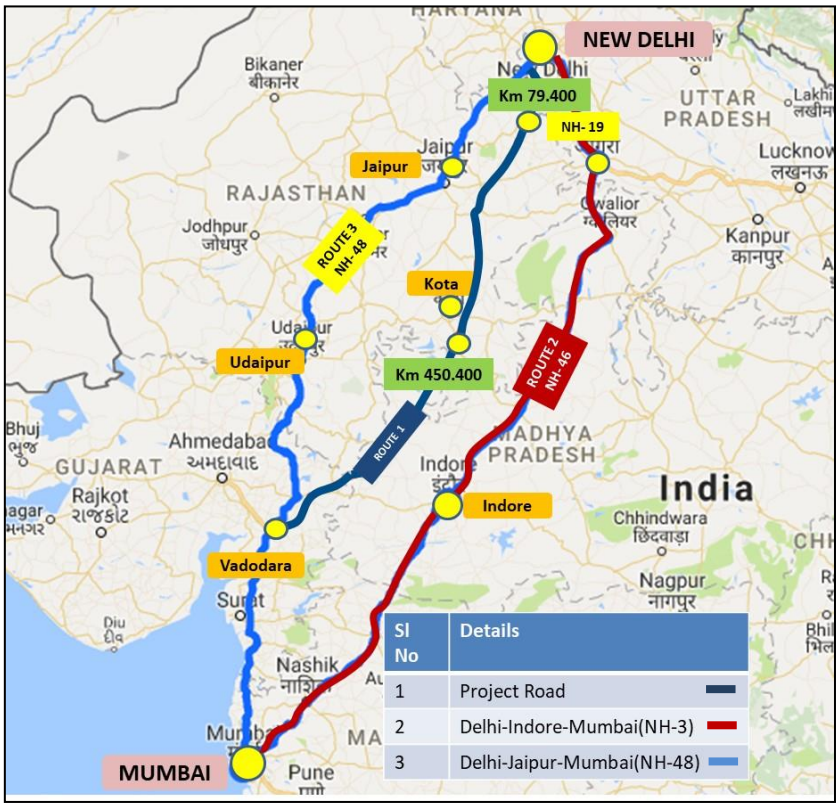

Figure 1: Route map of proposed Project vs. existing road network

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

- **High-speed connectivity and access:** The projected corridor is a proposed 8-lane, access-controlled highway. This will avoid traffic congestion and speed-up the freight movement. It is expected that overall, the proposed Delhi-Mumbai corridor will reduce the travel time between the two economic hubs by half.
- **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 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 county. Further, freight and passenger traffic on the highway will help promoting ancillary economy of these regions.
- **Decongestion of existing National and State Highways:** The proposed corridor will take away traffic pressures from existing SH and NH passing through various cities. Also, long-distance traffic will shift to the proposed highway, thereby leaving the NH and SH for regional and local usage.
- **Usage shift:** Long-distance traffic will shift from existing National Highways to the proposed 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 corridor 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 corridor as it traverses through Haryana, Rajasthan and Gujarat. These industries are expected to benefit from the highway.
- **Tourist**: Passenger traffic will be generated due to many places of tourist interest in the districts connected by the project corridor. Apart from places of historical importance such as forts and palaces, traffic would be augmented due to several famous religious places such as the Mehandipur Balaji Temple (Dausa) and wildlife parks and safari like Ranthambore National Park and Tiger Reserve.
- **Health and Education:** Faster connectivity and accessibility to Delhi NCR will help in higher flow of traffic from Rajasthan, 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.

2.4 Market Analysis

The proposed Project plans to link Delhi NCR to Jaipur, Kota, Vadodara and Mumbai. The strong regional connectivity proposed through the project will further increase regional trade and economic growth. The regions to be connected through the Project have their distinct economic profiles:

- Delhi NCR has industrial catchment focused on agri and processed food, automotive & auto ancillary, home consumables, metals and minerals etc.
- Sawai Madhopur district has 3 government designated industrial areas. Clusters of MSMEs producing leather footwear and Marble figurines attract commercial traffic in the district.

- Tonk district has about 8,400 registered industrial units. The area is a rich source of construction minerals. Textile, forest based and animal husbandry MSMEs also exist in the region. 6 additional industrial areas in addition to the existing 6 have been proposed.
- Bundi is a famous source of limestone, an input for the cement industry. Large scale cement and edible oil processing units are operational in the district.
- Kota have industrial profiles with focus on fertilizers & chemicals, stone polishing, engineering and cement. Kota is the second largest producer of stone in Rajasthan.
- Vadodara industrial belt is concentrated with industries like textiles, chemicals & petrochemicals, pharmaceuticals and bio-technology

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

The highway will also support the local businesses and economy along the proposed corridor. It will facilitate industries such as cement plants in Lakheri, leather footwear units in Sawai Madhopur *etc.* by streamlining transport of raw and finished material. Several allotted industrial areas in other connected districts stand to benefit by use of the highway, further contributing to traffic generation.

2.5 Demand & Supply Gap

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

Reduction in Route Congestion:

A traffic study has been conducted across various locations of the proposed highway and the alternate routes. It observed that the traffic along NH-48 (Delhi-Jaipur-Ajmer route) is ~30% higher than the IRC guidelines for highway ideal performance (Max. 60,000 PCUs) and currently over-crowded with below acceptable Level of Service performance. The route currently being the main connector between Delhi and Mumbai, there is a strong need for finding alternate access between the two cities to ease connectivity and travel time.

As an alternate, it has found that traffic on Alwar-Sawai Madhopur-Kota stretch (Average Annual Daily Traffic of less than 16,000 PCUs per day) within reasonable and accepted traffic standards. Hence it may be used as optimum alignment for the proposed Delhi-Vadodara-Mumbai highway.

Savings in Travel Time and Cost:

The proposed highway is expected to reduce the distance to be travelled between Delhi-Mumbai by ~95 km, leading to the following cost savings for users:

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

Initial estimates show savings of approximately INR 90 and INR 158 for car and heavy truck (MAV) respectively for the length of proposed project (~65 km) on each one-way trip.

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 the following average traffic will be generated. :

- Total number of vehicles per day – ~9,307

- Total PCUs per day – ~26,150

Growth and industrial development along the corridor will further induce more traffic in future.

2.6 Imports vs. Indigenous Production

No import requirement is expected as the Project is highway (road project) and doesn't involve any manufacturing and production. The construction material for the 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 between North and South India, thereby aiding faster movement and transit of EXIM traffic to and from the connected region. Further, enhanced connectivity between regions and to West Indian Ports & International Air Cargo Hubs will also help in promoting trade and boosting export market for regional goods.

2.8 Employment Generation (Direct and Indirect)

The highway project is expected to generate employment during construction phase. It is estimated that ~400 direct employees will be required per day during construction of the highway. Further, due to ecosystem development, the 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 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 project shall include the development of the connecting packages of Lot-4/Pkg-4: Haryana –Rajasthan Boarder to Kota Section. The details of the Interlinked and Interdependent project shall provide in EIA report.

3.2 Project Location

The proposed alignment of project starts from Ch. 284.000 km near Etawa village in Sawai Madhopur district and ends after Chambal River near Durjanpura village at Ch. 349.000 km in Sawai Madhopur, Bundi and Kota district of Rajasthan state. Geo-graphical Coordinates of start and end points are given in table below.

Table 2: Project Coordinates

Description	Coordinates
Starting point	26° 01'57.36"N, 76°15'42.35"E
Terminating point	25°28'20.34"N, 76°12'41.81"E

Location of the Project stretch is shown in figure 2 below.

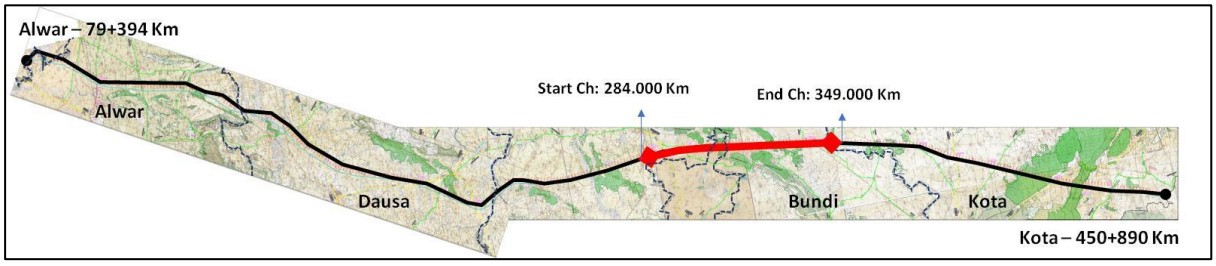

Figure 2: Location Map Proposed Project

3.3 Alternative Analysis

Three alignment options are considered in order to finalise the proposed alignment. All the three alignments are compared in terms of techno-commercial aspect consisting minimum tree felling, minimum exorbitant cost, comparatively lower land degradation and lesser environmental impacts. The detailed alternative analysis is uploaded under additional details of ToR application.

3.4 Size and Magnitude of Operation

The total length of the project is ~65.0 Km (Chainage: 284.000 Km to 349.000 Km) with 100 m RoW. This is a green-field project and the resultant impact area for this package is approximately 6.50 square Km.

3.5 Project Description

The Project entails 8 lane access-controlled green-field highway. The alignment under project starts near Etawa Village of Sawai Madhopur District at Chainage 284.000 km (26° 1'57.36"N, 76°15'42.35"E) and traverses entirely through plain / rolling terrain in Rajasthan state and ends after Chambal River near Durjanpura village at Chainage 349.000 km (25°28'20.34"N, 76°12'41.81"E) in Kota district, Rajasthan. Total Length of the project is about 65.0 km and 100 m Right of Way has been considered for proposed alignment.

3.6 Raw Materials

The Project entails development of highway and will require road construction materials like aggregates, sand, stone etc. This shall procure from nearby approved quarries. Separate environmental approval shall be sought

for any new quarry. Approximate Quantity of the construction material required for the proposed 8 lane Project (Length: ~65.000 km) is given in table below.

Table 3: RoW Material requirement

S. No.	Description	Unit	Quantity
1	Earthwork	Cum	11,235,891
2	GSB	Cum	651,091
3	WMM	Cum	568,470
4	DBM	MT	612,600
5	BC	MT	262,443
6	Bitumen	MT	39,158
7	Emulsion	MT	2,472
8	Cement	MT	64,615
9	10 mm	Cum	167,040
10	20 mm	Cum	191,611
11	40 mm	Cum	95,366
12	Dust	Cum	242,039
13	Sand	Cum	71,045
14	Filler	MT	11,308
15	Steel	MT	15,899

3.7 Resource Optimization / Recycling and Reuse

The Project will reuse the soil and material excavated for construction of bridge and other structures.

- Topsoil from the agriculture land shall store 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. However, Rajasthan receives much lower rainfall compared to the other parts of the country. 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.

As per the Central Ground Water Board (CGWB), the normal annual rainfall of Rajasthan is 549.1 mm. However, during the period from 2005 -14, highest average annual rainfall of the State in the year 2011 and lowest in the year 2009. The rainfall of the year 2014 is 20.8% less as compared to 2013. The state receives 90 % rainfall from southwest monsoon from June to September. The amount infiltrating through the soil mass to contribute to ground water storage is of the order of 5% to 7% in areas underlain by hard rocks and 10% to 15% in alluvial areas. *(Source: Ground water Year Book 2014-2015).*

The Aravalli Hills Ranges form main water divide in Rajasthan. Luni is the only river west of Aravallis. In the remaining area of western Rajasthan comprising about 60% of the geographical area of the state, the drainage is internal, and the streams are lost in the desert sands after flowing for a short distance from the point of

origin. Luni itself essentially is an ephemeral stream with flood cycle of 16 years. Drainage in western Rajasthan is towards West and South-West.

The proposed project is falling in the east of Aravalli ranges the main drainage is towards North–East. The rivers of the Rajasthan are mostly seasonal with only two river basins (Chambal and Mahi) being perennial. The Chambal catchment occupies 23% of the total geographical area of the state. The proposed alignment is crossing the Canal coming from Galwania Dam, Laban distributary Canal, Chakan River, Mui River, Mej River, and Chambal River, which are the main sources of the surface water in the project area.

In addition to the Sub-Clause 111.8.3 of MoRTH Specifications, The Contractor shall source the requirement of water preferably from surface water bodies, rivers, canals and tanks in the project area. Only at locations where surface water sources are not available, the Contractor can contemplate extraction of ground water, after intimation and consent from the CGWB.

To avoid disruption/disturbance to other water users, the Contractor shall extract water from fixed locations. and consult the local people before finalizing the locations. The Contractor shall comply with the requirements of Rajasthan Ground Water Department and seek their approval for extraction of ground water.

Bore wells installed and used for the project shall be left in good operating condition for the use of local communities. The Contractor shall prevent any interference with the supply to or abstraction from, and prevent any pollution of, water resources as a result of the execution of the Works.

It is estimated that the Project will need ~3,395 ML water for construction phase. The water for the construction phase will be met by water tankers from approved vendors. Bore-well, if required, will be operated after approval from the competent authority.

Power, during construction, will be sourced from local distribution company. DG sets as alternative arrangement will also be arranged in construction camp.

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 under additional details of ToR application.

4. SITE ANALYSIS

4.1 Site Connectivity

The proposed route is well connected with the existing road infrastructure (including nearby National and State Highways) and accessible through SH-1, SH-33 and NH-116.

4.2 Land Form, Use & Ownership

The proposed project covers ~65.0 km of length. Land uses identified along the proposed corridor are:

- Agricultural Land
- Built-up Land
- Forest Land
- Barren Land

The details of the land-use pattern will be given in the detailed EIA report. For the development of proposed highway 650.0 ha of land will be acquired in Sawai Madhopur, Tonk, Bundi and Kota. Majority of the land ownership is with farmers and other private entities.

4.3 Forest & Wildlife Area

According to the **Forest Survey of India**, the recorded for area of the state is 32,737 SQM, which is 9.57 % of its geographical area. The Reserved, Protected and Unclassified forests are 38.11 %, 55.64 % and 6.25 % respectively of the recorded forest area. However, as the digitized boundary of recorded forest area from the state covers only an area of 23,105 SQM (State of Forest Report, 2017).

The proposed alignment passes through the buffer area of Ranthambore Tiger Reserve and National Chambal Sanctuary, whereas, Ranthambore National Park and Sawai Madhopur Wildlife Sanctuary are located at an approximate distance of about 12.9 km and 10.5 km respectively.

Best effort has made to keep the proposed alignment outside from the buffer Area of the Ranthambore Tiger Reserve. Affected buffer area of Ranthambore Tiger Reserve will be estimated after joint inspection with forest department. Project alignment is also passing through the Papdi protected Forest Block in Bindi division.

4.4 Topography

Sawai Madhopur lies at an elevation of 257 metres above mean sea level while Tonk and Bundi lie at 289 and 268 metres above sea level respectively. The proposed road 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 detail of the structures shall provide in the EIA report.

4.6 Soil Classification

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

4.7 Climatic Data

4.1.1 Sawai Madhopur District

The climate of the district can be classified as semi-humid. It is characterized by very hot summers and very cold winters with fairly good rainfall during south-west monsoon period. In May, the maximum temperature may sometimes reach up to 40.6°C. The normal annual rainfall of the district is 721 mm is slightly higher than average rainfall. Most of the rainfall is received (93.5%) during the monsoon months.

4.1.2 Tonk District

The climate of Tonk district is generally dry in short south-west monsoon season which starts from the month of June and continues till the middle of September, from September to November the post-monsoon season commences and between December and February is winter. In March, summer commences and extends till the middle of June. The maximum temperature of 22°C and minimum temperature of 8°C remains in winter, whereas in summer the maximum and minimum temperature is 45°C and 30°C respectively.

4.1.3 Bundi District

The area is generally dry except during the monsoon or winter rains. The normal annual rainfall is 72.41 cm. 98% of the rain fall is received during the monsoons. The rain fall during January and February is usually restricted to a few showers. The temperature stats to fall rapidly in November and falls to a minimum of 3°C in January. The mean daily temperature is above 25°C.

The Hottest month is May when the maximum temperature shoots up-to 46°C. Therefore, climatically the best period is from October to February. The average relative humidity is generally about 60 %.

4.1.4 Kota District

Kota district has a semi-arid climate. Summers are long, hot and dry, starting in late March and lasting till the end of June. The monsoons subside in October and temperatures rise again moderately. The brief but pleasant winter starts in late November and lasts until the last week of February. Temperatures hover between 26.7°C (max) to 12°C (min). The average annual rainfall in the Kota district is 707.7 mm. Most of the rainfall can be attributed to the southwest monsoon which has its beginning around the last week of June and may last till mid-September

Sawai Madhopur and Kota, Indian Meteorological Department observatories are falling in vicinity of proposed alignment..

The long-term climatological data has been collected for assessment of prevailing meteorological scenario of the project region. The details of long term climatological conditions are given in table below.

Table 4-1: 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			
Sawai Madhopur							
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	39.0	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	45.0	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

Month	Temp Monthly (°C)		Humidity (%)		Average Wind Speed (kmph)	Dominant Direction	Avg. Rainfall (mm)
	Max	Min	Morning	Evening			
December	29.1	4.8	74	47	1.3	N, NE	3.5
Total	46.4	3.5	63	42	2.4	W,NW	744.5
Kota							
January	28.8	7.9	64	38	4.3	E, NE, N	4.8
February	32.8	10.2	51	29	5.2	NE,E, N	5.9
March	39.2	14.6	36	18	6.1	NE,N,E	4.0
April	43.8	19.8	25	12	7.8	W,NW	3.4
May	45.6	24.0	31	15	10.6	W,NW	11.3
June	44.7	24.1	49	31	12	W,SW	53.32
July	39.3	23.5	72	59	11.5	W,SW	209.6
August	35.8	23.5	79	67	10	W,SW	201.2
September	37.6	23.0	68	51	8.3	W,NW	62.9
October	37.5	18.6	48	29	4.9	NE,E	18.1
November	33.8	13.1	51	31	3.6	NE,E	6.3
December	29.7	9.2	60	37	3.5	NE,E	5.2
Total	46.1	7.7	53	35	7.3	NE,N	585.9

4.8 Available Social Infrastructure

~27 villages are identified along the proposed alignment of project. There are number of commercial and residential structures falling within the proposed ROW. The details shall be provided in the EIA report.

5. PLANNING BRIEF

The proposed Project 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 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 finalised in consultation with stakeholders.

6.5 Connectivity

The proposed route is well connected with the existing road infrastructure (including nearby National and State Highways) and is accessible through SH-1, SH-33 and NH-116.

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 36 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.

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 Rajasthan 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 barren land. Along with this, the alignment of highway passes through forest land and undulating -hilly terrain. The land required for the construction ofhighway will be acquired by NHAI before the commencement of construction work.

Land acquisition shall undertake as per the provision of LARR, 2013 and NHAI Act 1988 (with its amendments). Rehabilitation and resettlement plan shall be prepared after detailed census survey during EIA Study.

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 works

The completion period of the construction is estimated to be about 30 months.

The estimated cost of the project is about 3,500 Cr. Detailed cost break-up and project schedule shall discuss in the EIA report.

9. ANALYSIS OF PROPOSAL

The benefits of the Project are multi-fold. It will substantially reduce the travel time between Delhi & Mumbai and the transit hubs falling on the alignment. 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

The proposed project is an integral part of the Delhi-Vadodara-Mumbai Greenfield highway Project. This shall boost socio-economical development in the entire western region of India.