



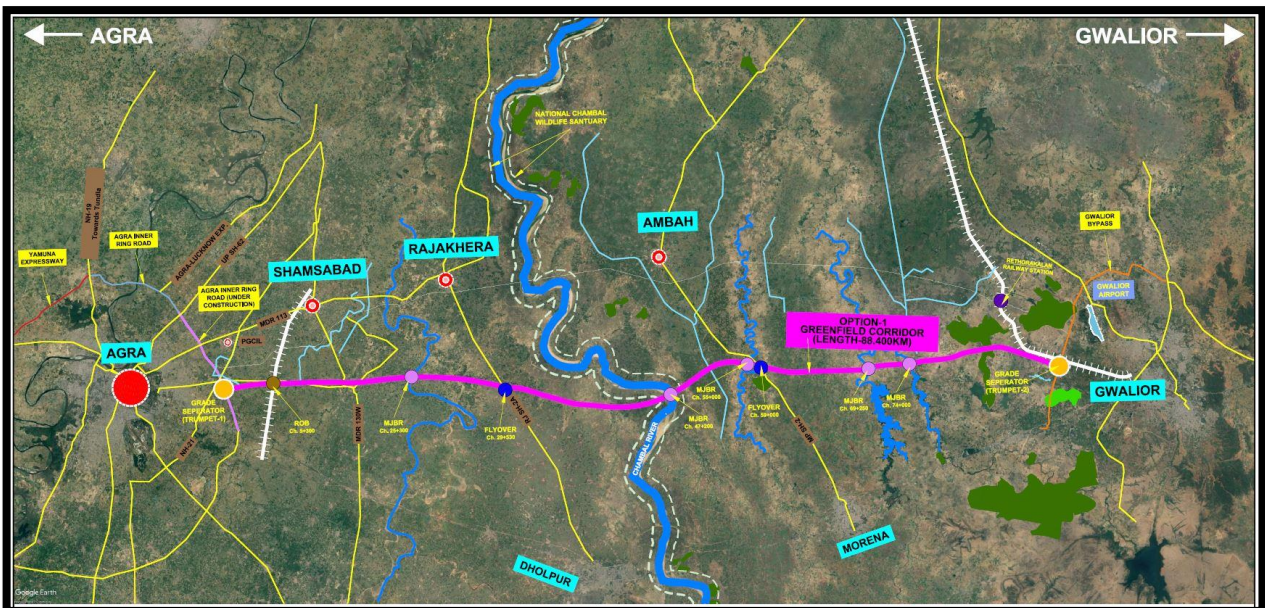
## Pre-feasibility Report (PFR)

for

Environmental Impact Assessment (EIA)

for

Construction of access controlled six lane Greenfield highway from Agra to Gwalior  
(From km 0.000 to km 88.400) in the State of Uttar Pradesh, Rajasthan & Madhya Pradesh.  
under  
Bharatmala Pariyojana



### Project Proponent

National Highway Authority of India



### DPR Consultant

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## 1. Executive Summary

The Bharatmala Pariyojana (BMP), is one of the biggest highway construction projects in India that focuses on optimizing efficiency of freight and passenger movement across the country by bridging critical infrastructure gaps through effective interventions like development of Economic Corridors, Inter Corridors and Feeder Routes, Coastal and Port connectivity roads and Greenfield expressways.

The NHAI has entrusted with the assignment of **Development of Economic Corridors, Inter-Corridors, Feeder Routes and Coastal Road primarily to improve efficiency of freight movement in India (Lot-1/Madhya Pradesh/Package-3)**. In pursuance of the above, Lea Associates South Asia Private Limited, New Delhi, India, have been appointed as consultants to carry out the study and prepare the DPR (Detailed Project Report).

The Competent Authority later approved additional scope for the preparation of DPR of Indore Ring Road and Agra-Gwalior section as variation under subject consultancy agreement vide its Letter No. NHAI/RO-MP/DPR/EC/2016/DPR/Indore Ring Road & Agra-Gwalior/2022 (E-104488)/46027 dated 07.03.2022.

National Highway 44 (Old NH-03), commonly referred to as the Mumbai-Agra National Highway, was a major Indian National Highway that ran through the states of Uttar Pradesh, Rajasthan, Madhya Pradesh and Maharashtra in India.

The project road consists of sections of New NH-44 (Old NH-03) also part of Asian Highway-43 (AH-43), traverses through the Agra district of Uttar Pradesh, Dholpur district of Rajasthan and Morena district of Madhya Pradesh.

*Table: Salient Features of the proposed project\**

S No	Item	Particulars
1.	Name of the project	Construction of six lane Greenfield Highway from Agra to Gwalior in the State of Uttar Pradesh, Rajasthan & Madhya Pradesh.
2.	Design speed	100 km/h
3.	Flexible/Rigid Pavement Road Length	88.430 km



## Access Controlled Agra-Gwalior Section

### Pre-Feasibility REPORT

Consultancy Services for Preparation of Detailed Project Report for Development of Economic Corridors, Inter Corridors, Feeder Routes and Coastal Roads to improve Efficiency of Freight Movement in India

(Lot-1/Madhya Pradesh/Package-3)

4.	Starting point	Ch 0+000 (204770.40 m E, 2999431.77 m N) at Agra inner ring road at <del>Deo</del> Village, Agra district.						
5.	Ending point	Ch-88+400 (218211.15 m E, 2914469.53 m N). Proposed alignment end point is on Gwalior Bypass at Susera Village of Gwalior district.						
6.	Right of Way (ROW)	60.0 m						
7.	Width of carriage way	<ul style="list-style-type: none"> <li>Ch 0+000 to Ch 88+400: six lanes divided carriageway</li> </ul>						
8.	Type of Terrain	<table border="1"> <thead> <tr> <th>Terrain</th> <th>%</th> </tr> </thead> <tbody> <tr> <td>Plain</td> <td>90</td> </tr> <tr> <td>Rolling</td> <td>10</td> </tr> </tbody> </table>	Terrain	%	Plain	90	Rolling	10
Terrain	%							
Plain	90							
Rolling	10							
9.	Environment and Social aspects	<ul style="list-style-type: none"> <li>Land area requirement: 502.11 ha</li> <li>Forest land: 3.18 ha. (530 meter)</li> </ul>						
10.	Cost Estimates, based on LAC Approval	<ul style="list-style-type: none"> <li>Total Capital Cost including Land Acquisition: INR 2497.84 Cr</li> </ul>						
11.	Revenue divisions crossed	<ul style="list-style-type: none"> <li>No of Villages: 75</li> </ul>						

The proposed project is access controlled Greenfield alignment. Grade separated structures are proposed at all SH, NH, MDR, intersections including start & end locations.

The proposed highway would provide better infrastructure for freight and passenger movement, enhance economic development, provide employment opportunities to locals, ensure road safety and reduces the fuel consumption and pollution, in addition to decongesting the existing roads between Agra and Gwalior.



## 2. Introduction of the project/ Background Information

### **INTRODUCTION**

National Highways Authority of India (NHAI) under the Ministry of Road Transport & Highways (MoRT&H), Government of India has been entrusted with the Development of Economic Corridors, Inter-Corridors, Feeder Routes and Coastal Road primarily to improve the freight movement in the Country. In pursuance of the above, LEA Associates South Asia Private Limited have been appointed as Consultants by NHAI to carry out the **“Preparation of Detailed Project Report for Development of Economic Corridors, Inter-Corridors, Feeder Routes and Coastal Road primarily to improve efficiency of freight movement in India (Lot-1/Madhya Pradesh/Package-3).**

The project stretch is access controlled green field highway 6 lane which starts from Agra (Km 0+000) and terminates at Gwalior at chainage (Km 88+400). The proposed alignment traverses from 3 districts and three states of India. Proposed alignment Agra-Gwalior falls in Agra, Dholpur, Morena and Gwalior districts in the states of Uttar Pradesh, Rajasthan and Madhya Pradesh respectively from North-South direction. The proposed greenfield 6 lane highway falls in Agra district from km 0.000 to km 20.200 and in Dholpur district from km 20.200 to km 47.200 and in Morena district from km 47.200 to km 88.250 and Gwalior district from km 88.250 to km 88.400. Total length of the proposed stretch is 88+400 km. The project road name has not been assigned yet now.

### **Background of Existing Agra-Gwalior Section**

Currently, the existing stretch between Agra and Gwalior is four-lane. The stretch from Gwalior via Shivpuri, Guna, Maksi up to Dewas road is now four-lane. The existing Agra-Gwalior Section of NH-44 starts 650 meters before junction of Agra Outer Ring Road (NH-21) with NH-44 in Rohta, Agra (Km. 8+000). Then the road spans for over a length of about 95 kilometers traversing through three states of India: Uttar Pradesh (23.4 km), Rajasthan (28.25 km), Madhya Pradesh (43.35 Km). It terminates at few meters before start of Gwalior Bypass in Bamor, Madhya Pradesh (Km. 103+032).

National Highway 44 (Old NH-03), commonly referred to as the Mumbai-Agra National Highway, was a major Indian National Highway that ran through the states of Uttar Pradesh, Rajasthan, Madhya Pradesh and Maharashtra in India. Today, NH 44 covers the North-South Corridor of NHDP of which Agra-Gwalior section is a part is major North-South National Highway in India. It is the longest National Highway in India from Srinagar to Kanyakumari with its official running length listed over 3,745 kilometres.



## Importance of the Project corridor-Agra-Gwalior section

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The entire location of 95 km project road is in plain terrain except at locations near Chambal River where the project road faces undulating terrain and riverine of Chambal River. This region is characterized with soft soil material and requires high embankment for road construction.

The Project Road NH-44 is a part of North-South Corridor and is the longest highway of India providing connectivity from Srinagar in the North to Kanyakumari in the South. Along its route it connects numerous small villages and important industrial and business towns. The project road provides connectivity for Agra-Dholpur-Morena-Gwalior.

Agra is a major tourist destination, Dholpur and Gwalior are famous for their rich culture and old heritage, Morena is the entrance gate of Madhya Pradesh and is a major industrial area. Many villages along the way would get a chance to uplift their economy. There is a huge load of trucks carrying sandstone, aggregates, agriculture produce throughout the stretch. The traffic movement through major urban centres lowers the highway service quality hence becoming black spots for fatal accidents. The project corridor if developed will lead to better inter-state connectivity thus, helping in better freight volume and movement pattern on the highway. If widened it will significantly cause a reduction in the travel time and make travel smoother for its users.

## Details of Employment generation (Direct and Indirect) -

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**Direct Employment:** During the construction of the road project around 800 persons would be employed temporarily for a period of 30 months. This will include skilled, semi-skilled and unskilled labours, Preference will be given to local people for employment. In the post construction phase, the project will provide social benefits to no. of people in terms of direct employment by way of better commercial and industrial development of the area.

**Indirect Employment:** Ancillary units will be set up due to project which will provide employment. Local vendors/traders etc. will be benefitted through employment generated during construction and operation phase.



### 3. Project Description

#### DESCRIPTION OF THE PROJECT CORRIDOR

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The proposed project road is part of existing section Agra-Gwalior 4 lane with paved shoulder. The existing project road stretch of Agra-Gwalior section of NH-44 is having a four-lane configuration throughout with service roads in urban sections. The project road mostly passes through plain terrain. It starts 650 metres before junction of Agra Outer Ring Road (NH-21) with NH-44 in Rohta, Agra. Then the road spans for over a length of about 95 kilometres traversing through three states of India: Uttar Pradesh, Rajasthan, Madhya Pradesh. It terminates at few metres before start of Gwalior Bypass in Bamor, Madhya Pradesh. The above project road stretch is a part of Lot-1/Madhya Pradesh/Package-3) ~ Variation for Preparation of DPR for Agra – Gwalior NH-44 Section.

National Highway 44 (Old NH-03)-existing Agra-Gwalior section, commonly referred to as the Mumbai-Agra National Highway, was a major Indian National Highway that ran through the states of Uttar Pradesh, Rajasthan, Madhya Pradesh and Maharashtra in India.

As per the Current scenario, the stretch between Agra and Gwalior is four-lane. The stretch from Gwalior via Shivpuri, Guna, Maksi up to Dewas road is now four-lane. The condition between Shivpuri and Maksi is good as it is newly being constructed. The road from Dewas to Indore is six lanes and it continues till Rau (Indore). The road from Rau (Indore) to Mumbai has four lanes but the highway passed through congested Nasik city. Now an elevated expressway of 25 km has been built to solve the problem of congestion. Stretch from Nashik to Mumbai is 4-lane Mumbai Nashik Expressway. The stretch from Pimpalgaon Bsawant - Nashik - Gondhe is 6 Lane expressways. The stretch from Padgha to Thane 8 lane is in progress.

Today, NH 44 covers the North-South Corridor of NHDP of which Agra-Gwalior section is a part is major North-South National Highway in India. It is the longest National Highway in India from Srinagar to Kanyakumari with its official running length listed over 3,745 kilometres.

The existing Agra-Gwalior Road traverses through the Agra district of Uttar Pradesh, Dholpur district of Rajasthan and Morena district of Madhya Pradesh from North-South direction. The project stretches traverses through built-up areas:

- ▶ Rohta, Nagal Makrol, Kakua, Bad, Usra, Tehra, Saiyan and Jajau in Agra, Uttar Pradesh.
- ▶ Shijroli, Baragaon, Ladampur, Mania, Edalpur, Dholpur in Dholpur, Rajasthan.



## Access Controlled Agra-Gwalior Section

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(Lot-1/Madhya Pradesh/Package-3)

- ▶ Masoodpur, Gopalpura, Sikrauda, Morena, Chonda, Naurabad, Bamor in Morena, Madhya Pradesh.

### Development Plan/Options

On preliminary reconnaissance study of the existing project corridor, it was observed that at the major settlement locations, the residential houses and buildings and commercial shops and business centres have been developed very close to the road edge and there is not enough space for the widening of the project road and improvement of geometry. Heavy traffic on project road **exceeding 45000 PCU** at present only, poor pedestrian discipline, high rate of accidents.

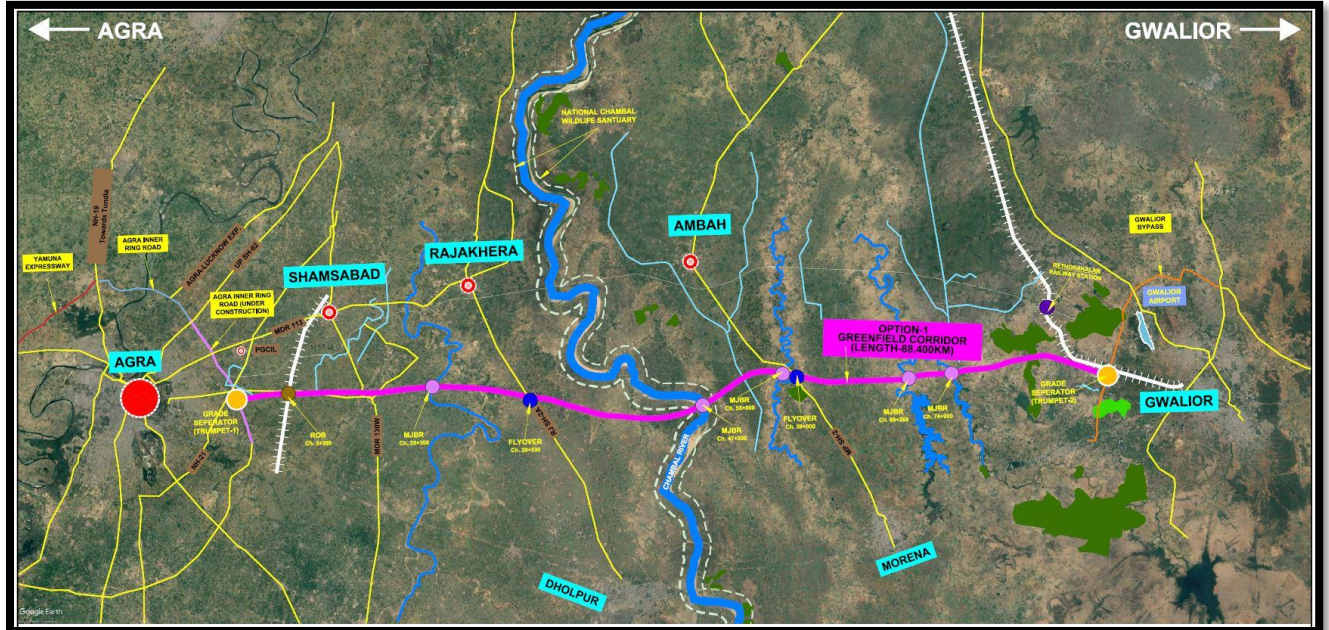
Therefore, Bypasses and Elevated options were proposed to avoid the congestion at built-up locations. Also, simultaneously a complete greenfield alignment parallel to existing alignment was also proposed for further study.

A detailed comparison between existing alignment and complete greenfield alignment was carried out to finalize the alignment.

**Eventually, after detailed comparison between existing alignment and a complete green field alignment, it was found that the overall cost and the structure in existing alignment are coming high than complete greenfield alignment. Accordingly, it was observed that the complete greenfield alignment is best feasible alignment for better and smooth connectivity between Agra and Gwalior.**

**The total Proposed ROW of the project -Agra-Gwalior greenfield highway will be 60 meters.**





**Table -1: GPS Co-ordinates (in UTM) of Project Take-off & Terminal Point**

Start Chainage (Km)	End Chainage (Km)	GPS Co-Ordinate (UTM)	
		Start Point	End Point
Design Ch 0+000 at the junction of Agra inner ring road	Design 88+400 merged into Gwalior Bypass	44 R, 204770.40 m E, 2999431.77 m N	44 R, 218211.15 m E, 2914469.53 m N

**Start Point of the proposed greenfield alignment:**

The Project corridor is initiated from upcoming Agra inner ring road near village Deori with design km 0.000. The grade separator Trumpet has been proposed at the start point of the proposed Agra-Gwalior greenfield highway section.



**Terminate point of proposed greenfield alignment**

The Project corridor is terminated at Gwalior bypass near village-Susera with design km 87+630. The proposed Agra-Gwalior greenfield alignment is moving parallel to Bhind-Gwalior railway line from km 85.000 to km 88.400 (End point). Grade separated interchange is proposed to avoid any conflict in the existing traffic movement. As per the policy of highways under Bharatmala Pariyojana, consultant proposed single trumpet grade separated interchange at terminal point keeping in view the economy and conflict free traffic facilitation.





Proposed project road is passing through three tehsils viz. Agra, Fatehabad and Kheragarh in district Agra and one tehsil viz. Rajakhera in district Rajasthan and three tehsils viz. Ambah, Morena & Gwalior in the state of Madhya Pradesh.

**Details of the Villages involve in the project: -**

The Agra-Gwalior greenfield highway is traverses through villages like Deori, Salemabad, Kakrari, Karodhana, Phulpur, Nangla Patam, Loheta, Tor, Gohri, Babarpur, Sherpur, Sadupura, Pusenta, Darki, Mahdewa in **Agra district**, and Nagar, Ajeetpura, Beech ka Pura, Gainhendi, Nadoli, Dhodi ka Pura, Machariya, Pahadi, Hanumanpura, Basai Kare, Jugaipura, Farashpura, Bahari ka pura, Andwa va Purenii, Chandiyana ka Pura, Kamariyan ka Pura, Cheelpura, Bakspura in **Dholpur district** and Beelpur, Kuthiyana, Joha, Aisah, Lahar, Shyampur Khurd, Khurd, Dimni, Bhatahari, Sirmiti, Dongarpur Lodha, Ajnodha, Kheria Kalan, Basaiya, Kotwal, Naka, Basahari, Pilua, Biseta, Gulendra, Ranchauli, Khirawali, Ransu, Nayagaon, Gadajar, Bhakri, Pipersewa, Pinawali, Urahna, Daulsa in **Morena district** and Susere in the **Gwalior district**.





## 4. Site Analysis

### Connectivity

The proposed alignment starts from Ch 0+000 at Agra inner ring road near village- Deori in Agra District and ends at Ch 87+630 on Gwalior bypass near village-susera in Gwalior District. The list of roads which are being crossed by the proposed alignment and the respective chainages are given in Table 4.1.

*Table: Connectivity of the proposed alignment*

S No.	Item	Details
1	National Highways	Nil
2	State Highways	1. SH 2A- Dholpur-Rajakhera Road (Ch 29+000) 2. SH 2- Morena to Ambah Road (Ch 57+000)
3	Major roads	1. Saiyan to Shamsabad Road (MDR-130W) (Ch 12+400) 2. Taal-Semri-Devri Road (Ch 7+750)
4	Bus Stands	Nil
5	Railway Lines	1. Agra-Fatehabad Rail Line at (Ch5+225)
6	Nearest Airport	2. Kheria Airport (Agra: 9.8km), Indira Gandhi National airport, Delhi from Ch 186.79 km

### Land Form, Land use and Land ownership

The area falling under the proposed Right of Way (ROW) majorly passes through agricultural land except of area along the Chambal River, hence there will be permanent change in the land use from agricultural to non-agricultural land. For the built-up areas, the land use will change from private to Government land. Details of Land use breakup will be described in EIA.



## Topography of the Project –

The project road passes through plain terrain for most of the stretch. Existing profile obtained from satellite data for the project corridor from the three states have been shown in given below figure separately. The sudden rise and fall at the start and end of graph is due to the presence of Chambal River (Ch. 47.200) at the Raj. /M. P boundary. Also, few kilometres area above and below of the Chambal River has severely dissected ravines. Chambal ravines formation significantly increases soil loss from agricultural lands and severely impacts on agricultural productivity. This region is also known as Badlands topography. The Badlands topography is characterized by an undulating floodplain, gullies, and ravines. Road will be designed on high embankment on such location.

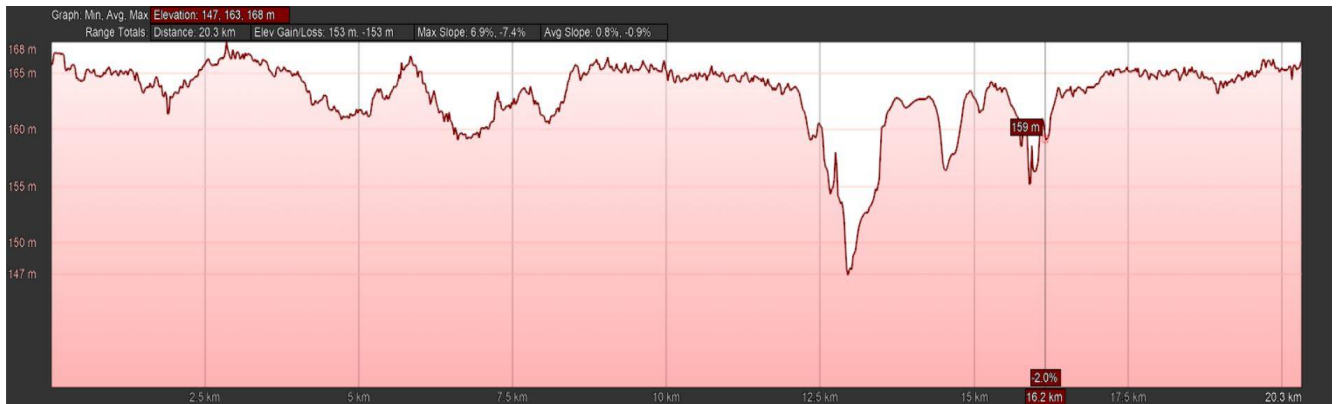


Figure: OGI for the Proposed Road for state of Uttar Pradesh

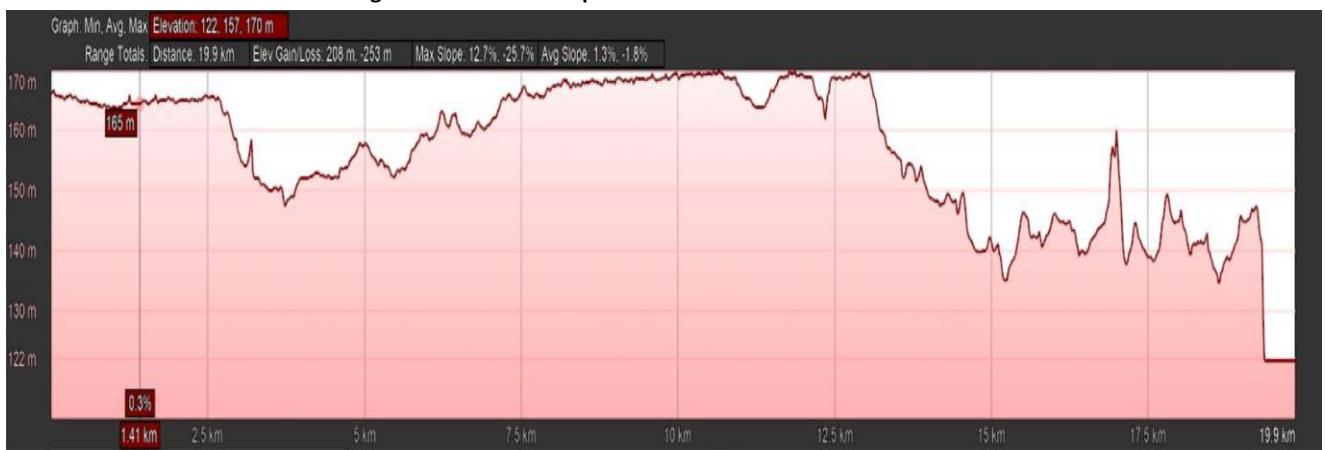


Figure: OGI for the Proposed Road for state of Rajasthan

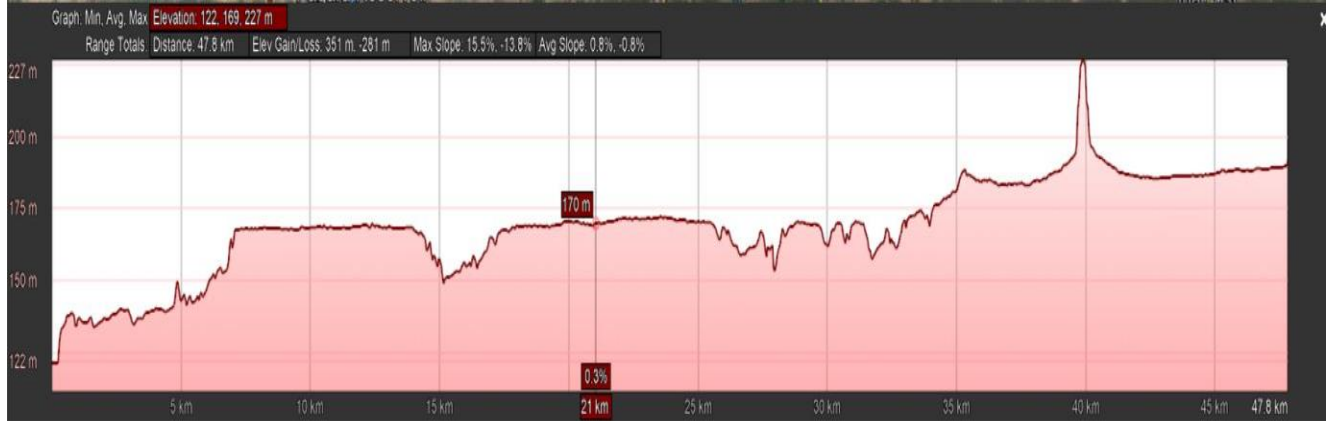


Figure: OGL for the Proposed Road for state of Madhya Pradesh

**Distances of the proposed alignment from ecologically sensitive areas**

S No	Item	Details
1	Water bodies	Crossing alignment 1. Iradatnagar distributory (Ch. 09+235) 2. Khari River at (Ch 12+900) 3. Chambal River at (Ch 47+200) 4. Kota Barrage RMC at (Ch 50+150) 5. Chambal Right Main Canal (Ch. 52+000) 6. Kunwari River at (Ch 55.900) 7. Asan River at (design Ch 68+600) 8. Sankh River at (Ch 72+350) 9. Bhind Main Canal (Ch. 73+700)
2	Areas under CRZ	• Nill
3	Eco-sensitive areas	The proposal alignment is passing through Eco-sensitive zone of the National Chambal Sanctuary. As discussed in concerned wildlife division, Sawai Madhopur, it is found that ESZ boundary is not declared for Chambal River in jurisdiction of Rajasthan Gov. while the proposed alignment is passing through Eco-sensitive zone from km 48.130 to km 50.130 in Morena district in jurisdiction of M.P Gov.



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4	Wildlife Sanctuary, National Park	The proposed Agra-Gwalior greenfield alignment is passing through National Chambal Sanctuary from design km 45.885 to km 47.305 in jurisdiction of Rajasthan and from design km 47.305 to km 48.130 in M.P jurisdiction.
5	Reserved / Protected areas / Other Forests	Project alignment is passing through Santchara Reserved Forest from km 80.230 to km 80.700 (Length=470 Meter) in district Morena in the state of Madhya Pradesh.

## Soil Classification

The District Survey Report (DSR 2018) for Minor Minerals prepared, as per EIA notification 2006 for Agra, DSR-2018 for Dholpur district DSR-2021 for Gwalior, by the Department of Mining and Geology.

In district-Agra, the soil mostly comes from the Indo-Gangetic plains and mostly consists of the quaternary sediment. The recent unconsolidated fluvial formations are a part of this soil and the soil also contains sand, silt and clay.

In district Dholpur, the soil is fertile with hills and broken grounds dotting the whole of its territory. The Chambal valley has crooked and high rocks that separate the highlands from land along the river. In the eastern parts, it has deep ravines while the western sides are characterized by flat small hills. The systematic studies and hydro geological surveys have revealed six soil types on this district. These are sandy soil and sandy loamy soil found towards west in Dholpur, clayey soil in eastern and north western parts, sandy clayey loam in central parts, and loamy sandy soil in western side of Bari town of Dholpur district. The most commonly found soil type in Dholpur is sandy clayey soil.

In Morena district, three types of texture of surface soils i.e., sandy loam, sandy clay loam and clayey were observed. Soil colour varies from brownish yellow to yellowish brown and light yellowish brown.



### Photographs of Road Side Soil:



Showing the natural stratum at km 20.000



Showing the natural stratum at km 35.800



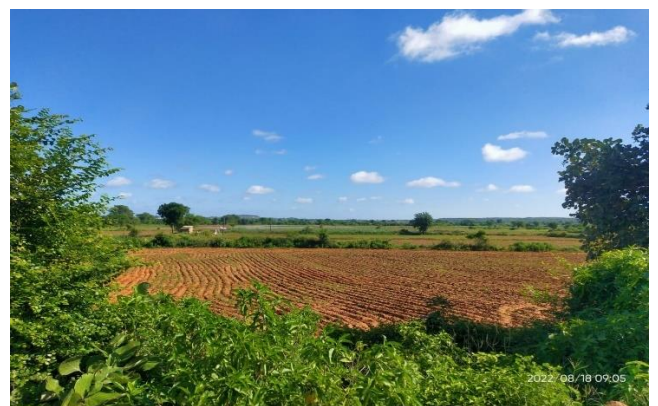
Showing the natural stratum at km 40.000



Showing the natural stratum at km 48.000



Showing the natural stratum at km 72.200



Showing the natural stratum at km 77.200



## Climatic data from secondary sources

The climatological data of the Agra, Dholpur, Morena & Gwalior districts is given in table.

Climatological data of district Agra, Dholpur, Morena							
District	Temperature (°C)		Relative Humidity (%)		Rainfall (mm)	Wind Speed (mph)	Wind Direction
	Maximum	Minimum	Maximum	Minimum	Annual average	Monthly Mean	Monthly Mean
Agra	50.0	46.0	73.0	35.0	628.6	6.7	NE, SE SW & NW
Dholpur	65.0	30.0	55.0	17.0	281.15	2.0	SW
Morena	40.0	22.0	68.4	15.0	501.1	6.0	SW & NE

## 5. Planning Brief

The existing Agra-Gwalior Section of NH-44 starts 650 metres before junction of Agra Outer Ring Road (NH-21) with NH-44 in Rohta, Agra (Km. 8+000). NH 44 covers the North-South Corridor of NHDP of which Agra-Gwalior section is a part is major North-South National Highway in India. The project road consists of sections of New NH-44 (Old NH-03) also part of Asian Highway-43 (AH-43), traverses through the Agra district of Uttar Pradesh, Dholpur district of Rajasthan and Morena district of Madhya Pradesh.

The above project road stretch is a part of Lot-1/Madhya Pradesh/Package-3) ~ Variation for Preparation of DPR for Agra – Gwalior NH-44 Section.

After preliminary scrutiny of the existing Agra-Gwalior section, it was observed that that at the major settlement locations, the residential houses and buildings and commercial shops and business centres has been developed very close to the road edge and there is not enough space for the widening of the project road and improvement of geometry. Hence in these locations, Bypasses and Elevated options to avoid the congested built-up locations was proposed and simultaneously their comparative cost analysis was also presented.



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(Lot-1/Madhya Pradesh/Package-3)

In the same manner, a new greenfield Agra-Gwalior parallel to the existing Agra-Gwalior section (NH-44) also prepared and simultaneously its cost analysis was also done.

Accordingly, a detailed comparison between existing alignment with bypasses and elevated structures and complete greenfield alignment was carried out to finalize the alignment for construction of new 6 lane Agra-Gwalior section.

**Eventually, after detailed comparison between existing alignment and a complete green field alignment, it was found that the overall cost and the structures in existing alignment are coming high than complete greenfield alignment. Therefore, it was decided that the complete greenfield alignment is best feasible alignment for better and smooth connectivity between Agra and Gwalior.**

### **Land use planning (breakup along with green belt etc).**

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The proposal is for the development of six lane Greenfield highway with 60 m RoW. Agro-climatically suitable species will be recommended for plantations along the highway alignment, including the medians, as per the IRC: SP: 21-2009 (Guidelines on Landscaping and Tree Plantation) during the construction and operation phase. Details will be provided in the EIA report.

### **Assessment of Infrastructure Demand (Physical & Social)**

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Only basic infrastructure facilities are available in the vicinity of in the study area. The proposed road is essential for improving faster and economical transportation facilities between Uttar Pradesh and Madhya Pradesh.

### **Design Standards and Specifications**

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The provisions of “Manual of Specifications and Standards for six laning of Highways” (IRC: SP: 87-2019), “Manual on Road Safety Audit” (IRC: SP: 88) and various relevant standards published by Indian Road Congress, shall be followed wherever required in the project preparation activities. All laboratory and field tests for soil and other materials, etc. shall be performed in accordance with the relevant IRC, MORT&H Specifications and BIS Codes.



## **Amenities/Facilities.**

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The following amenities/facilities are proposed along the alignment.

- Proper site services such as First Aid, Rest Shelter, toilet with soak pits & drinking water will be provided to the workers in the construction stage.
- Necessary numbers of wayside amenities with facilities like First Aid, Rest Shelter, toilet with soak pits & drinking water etc will be provided to the road users during the operation phase.
- Other project facilities like bus bays/bus shelters, truck lay-by-bays etc will be constructed on the proposed highway.
- There will be 24x7 services like ambulance, cranes, highway patrolling vehicles etc on the proposed highway
- Toll Plaza will be provided with facilities like First Aid, Rest Shelter, drinking water & toilet with soak pits etc.

## **6. Proposed Infrastructure**

### **Industrial Area (Processing Area)**

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There are no industries located along the proposed Greenfield Highway project.

### **Residential Area (Non-Processing Area)**

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The project alignment will be crossing agricultural lands and near from the built-up areas with some residential areas. The residential areas are expected to have better economic growth due to improved infrastructure.

### **Green Belt**

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Agro-climatically suitable species will be recommended for plantations along the highway alignments, including medians, as per the IRC: SP: 21-2009 (Guidelines on Landscaping and Tree Plantation). Detailed plantation scheme will be provided in the EIA report.

### **Social Infrastructure**

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The project envisages development of better road connectivity.



## **Connectivity (Traffic and Transportation Road/ Rail/ Waterways etc)**

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The project road connects Agra, Iradatnagar, Gwalior cities, and is expected to improve the connectivity between major cities and proposed Gwalior airport and will provide fast and smooth connectivity between Agra and Gwalior. As Morena is the gateway of Madhya Pradesh, therefore this project will play a significant role for North-South fastest connectivity. It will improve the connectivity of the 64 villages alongside.

## **Drinking Water Management (Source & Supply of water)**

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Water requirement for construction activities (2,679,452 kLD) will be sourced from surface water bodies through water tankers after obtaining necessary approvals. The drinking water required for the construction workers will be sourced from nearby drinking water suppliers. Ground water will not be extracted. Drinking water facilities will be provided at Toll Plaza and way side amenities during the operation phase.

## **Sewerage System**

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During construction phase sewage will be generated from labor camps. However, these will be provided with septic tank and soak pit. Other effluents from site will be collected in sedimentation tank and proposed to be reused after checking parameters.

In the operation phase, soak pits shall be provided at project facilities such as wayside amenities, Toll Plaza etc where toilet and washrooms facilities are proposed.

Toilet block shall also provide near the bus shelters.

## **Solid Waste Management**

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Construction and Demolition wastes will be managed as per Construction and Demolition Wastes Management Rules, 2016 and other Solid Wastes will be managed as per the Solid Waste Management Rules, 2016 by Concessionaire/Contractor.

## **Power Requirement & Supply / source**

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D.G. sets and temporary electric connections from Kerala State Electricity Board will be used to meet the power requirement of construction activities. Power requirement at labour camps will be arranged by prospective contractor. Fuels (Diesel) for vehicles will be obtained from local fuel Depots.



## BRIEF DETAIL OF STRUCTURES

Summary of proposals for improvement of existing bridges and new proposed bridges / structures is given below.

S no.	Particulars	Total
1	Culverts	47
2	Minor Bridges	4
3	Major Bridges	5
4	ROB	1
5	Trumpet	2
6	Flyover	2
7	Toll Plaza	1
<b>Summation</b>		<b>70</b>

## 7. Environmental Impacts and preliminary study

### DETAILS OF AFFECTED FOREST AND WILD LIFE ZONES -

- The proposed Agra-Gwalior greenfield highway is passing from National Chambal wildlife sanctuary in district Dholpur (Rajasthan) and district Morena (Madhya Pradesh) at km 47.200.

National Chambal Sanctuary is located in one of the cleanest rivers of India. It lies across Sheopur, Morena and Bhind districts of Madhya Pradesh.

It is home of naturally living population of 75% of the critically endangered species of Gharial. The sanctuary also harbours national aquatic animal –the fresh water Gangetic dolphins, nine species of fresh water turtles and more the 180 species of migratory birds.

- The Proposed project road is also passing from Santchara Reserved Forest in district Morena in the state of Madhya Pradesh and approx. 2.82 ha. Forest land is affected due to the proposed Agra-Gwalior greenfield highway from km 80.230 to 80.700 (Length=470 meter).



## DETAILS OF LAND FOR ACQUISITION WITH IN THE PROPOSED PROJECT -

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Total 502.11 ha. Land is required for acquisition in the entire project-Agra-Gwalior greenfield highway. Out of 502.11 ha., 110.97 ha. Land is required in district Agra, 114.57 ha. Land is required in district Dholpur, 275.49 ha. Land is required in district Morena and 1.08 ha. Land will be required in district Gwalior for Acquisition.

### Statutory Clearances in the proposed project

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**Environment Clearance:** - The proposed project is a complete greenfield alignment from design chainage km 0.000 to km 88.400. The proposed greenfield alignment is also passing from three state (Uttar Pradesh, Rajasthan, Madhya Pradesh).

Therefore, as per Environment Impact Assessment 2006 and its amendment, Environment Clearance will be applicable in case of new greenfield national highway.

**Forest Clearance:** - The Proposed project road is also traverse from Santchara Reserved Forest in district Morena in the state of Madhya Pradesh and approx. **2.82 ha. Forest land** is affected due to the proposed Agra-Gwalior greenfield highway from km 80.230 to km 80.700 (length-470 meter). Some notified forest area may be get affected due to the proposed project in district Agra in the state of Uttar Pradesh which will be clarified after joint site visit with concerned Forest department. Therefore, as per Forest Conservation act, 1980, Forest clearance will be applicable in case of this project. The forest proposal shall be prepared after consultation with concerned forest officer.

**Wildlife Clearance:** - The proposed Agra-Gwalior greenfield highway is passing from National Chambal wildlife sanctuary in district Dholpur (Rajasthan) and district Morena (Madhya Pradesh) at design km 47.200.

Therefore, as per the Wildlife conservation act, 1972, Wildlife clearance will also be applicable in case of the proposed greenfield highway.



## **8. Project Schedule and Cost Estimates**

### **Likely date of start of construction and likely date of completion**

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The construction work will start after approval of DPR and Environmental Clearance from MoEF&CC which is likely to start by June 2022. The completion period is estimated of about 30 months from the start of construction.

### **Estimated project cost along with analysis in terms of economic viability of the project.**

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- The Estimated Civil Cost Including Centages: Rs 2245.84 Cr
- Estimated Land Acquisition Cost: Rs. 158 Cr
- Other Pre-Construction Cost: Rs. 94 Cr
- Total Estimated Capital Cost: Rs **2497.84 Cr**
- Civil Construction Cost (in Rs. Crores/km): Rs 25.80 Cr / km
- Land Acquisition Cost (Rs. Crores/km): Rs 1.81 Cr / km
- Total capital cost, including the pre-construction cost (Rs. Crores/km): Rs 28.70 Cr /km