PRE-FEASIBILITY REPORT (PFR)

FOR

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

For

Improvement and up-gradation of Package VI - Stretch of Palia Shahjahanpur via Hardoi - Lucknow (in principle declared National Highway) in the State of Uttar Pradesh

SUBMITTED BY

भा रा रा प्रा
NHAI
National Highways Authority of India

National Highways Authority of India

3/248, Near SRS MAll, Vishal Khand, Gomti Nagar, Lucknow, Uttar Pradesh 226010

1. Executive Summary

1.1 Preamble:

Ministry of Road Transport & Highways (MoRTH), an apex organization under the Central Government, is entrusted with the task of formulating and administering in consultation with other Central Ministries/Departments, State Governments/UT Administrations, organization and individuals, policies for Road Transport, National Highways and Transport Research with a view to increase the mobility and efficiency of the road transport system in the country.

Ministry of Road Transport and Highways through Superintending Engineer NH Circle, PWD, Lucknow has been designated the work of carrying out consultancy services for feasibility study and preparation of Detailed Project Report for an improvement and up-gradation of Stretch of Palia, Shahjahanpur via Hardoi-Lucknow length 266 Km (in principle declared National Highways) in the State of Uttar Pradesh Package VI to M/s Wadia Techno-Engineering Services Limited, Mumbai on 7th April 2017.National Highways Authority of India as implementing agency.

1.2 Project Description:

India is having the third largest road network in the world. The total length of road in the country comprising National Highways, State Highways, Major District Roads, Other District Roads and Village Roads is about 3.3 million kilometres. Out of the total road network, the length of National Highway is more more than 57,700 kms, which is less than 2.0 percent of total road length. National Highways are the primary arterial routes of India and cater to about 40 percent of the total road transport demand. This shows a clear imbalance between the requirement and the availability of the arterial roads particularly, National Highways in the country. Moreover, the growth rate of National Highways is very less, as against an annual average traffic growth rate of 8 to 10 percent. The existing National Highways are deficient, not only in terms of lengths, but also in terms of widths, riding quality and pavement structure.

Government of India has decided to take up the improvement and upgradation of state highways/ other roads in the state of Uttar Pradesh and has in principle declared the highways as National Highways. MoRTH has been assigned the work of feasibility study and preparation of Detailed Project Report for improvement and up-gradation of in principle declared National Highways in the state of Uttar Pradesh. In this context NHAI will be implementing agency. The project route has been described as Palia Shahjahanpur via Hardoi Lucknow under package RO/LKO/DPR/I.P.NH/Pkg-VI. Total length of route is 266.014 Km.

The project is passing through five districts of Uttar Pradesh. The details are as given below;

Sr. No	Stretch of the Road	Chainage (Km)		Length (Km)	Existing status	Proposed Development
		From	To			
1	Palia to Start of Proposed Shahajahanpur Bypass	0	89	89	Two Lane	Widening to Two Lane with Paved Shoulder for existing road and construction of two lanes with paved shoulder with provision of four laning for Bypasses.
2	Start of Proposed Shahajahanpur Bypass to end of Proposed Hardoi Bypass	89	174.641	85.641	Four lanes	Geometric Improvement where ever required for existing road and construction of four lanes with paved shoulder for Bypasses.
3	End of Proposed Hardoi Bypass to End of Hardoi District	174.641	229.07	54.429	Two lane	Widening to four lanes

Sr. No	Stretch of the Road	Chainage (Km)		Length (Km)	Existing status	Proposed Development
		From	To			
4	End of Hardoi District to Lucknow (Dubagga Chauraha)	229.07	266.014	36.944	Four laning is in Progress by PWD	Geometric Improvement where ever required for existing road and from chainage Km 257.212 provision of Service Roads on either side is also proposed where ever required.

The main objective of the project is to establish the technical, economical, and financial viability of the project and prepare detailed project reports for rehabilitation and upgrading of the existing road to 2/4 lane configuration. The viability of the project shall be established taking into account the requirements with regard to rehabilitation, upgrading and improvement based on highway design, pavement design, provision of service roads wherever necessary, type of intersections, rehabilitation and widening of existing and/or construction of new bridges and structures, road safety features, quantities of various items of works and cost estimates and economic analysis. The estimated cost for the entire stretch of the project is Rs. 4136 Crores. The proposed highway pass through approximately 5.51% of Forest Land. Also the project in forest area is under the jurisdiction of Kishanpur wildlife sanctuary. Separate clearance under forest act 1980 and wildlife protection act 1972 will be required from the Ministry of Environment, Forest and Climate Change (MoEF&CC), Government of India.

1.3 Importance of the Project:

- Technologies are available for construction of super infrastructure
- In terms of technology, viaducts the travel time will be reduced by 50%
- Quality of traffic forecasts
- Quality of project costs and their sequencing
- Associated VOC savings
- Benefits of time value savings
- The incidental benefit would be that it will create employment during construction phase and post development.
- It connects the major potential industrial hubs over the stretch of 266km.
- The incidental benefit would be that it will create employment during construction phase and post development. It will boost industrialization which will largely benefit the entire region.
- The project appraisal involves bypasses of the highways bypassing the congested areas of major cities thereby reducing the travel time and improving freight movement

1.4 Improvement and Up-Gradation of Stretch of Palia, Shahjahanpur Via Hardoi - Lucknow (In Principle Declared National Highways) in the State of Uttar Pradesh

This Pre-feasibility Report is for improvement and up-gradation of Stretch of Palia, Shahjahanpur via Hardoi - Lucknow (in principle declared National Highways) in the State of Uttar Pradesh having a stretch of 266.014km. The estimated total cost for this stretch of the project is 4136 Crores. The unit cost per km has been assessed as Rs.15.5crore/km.

1.4.1 Components of the project:

The project alignment has been divided in to four construction packages.

i. Construction Pkg 1 – 0+000 Km to 89+000 Km
ii. Construction Pkg 2 – 89+000 Km to 174+641 Km
iii. Construction Pkg 3 – 174+641 Km to 229+070 Km
iv. Construction Pkg 4 –229+070 Km to 266+014 Km

Widening of Existing Corridor:

- For construction Package 1, the minimum ROW proposed for of the existing road widening is 20.00m & for the Built-up area sections minimum proposed ROW is 27.50m.
- For Construction Packages 2, 3 and 4, the minimum ROW proposed for the existing road widening is 30.00m & for the built-up sections minimum proposed ROW is 43.00m.
- For Bypasses & Realignments, ROW proposed is 45.00m.

The project will have bypasses at major congested areas identified at the project corridor as given below:

1) At Khutar (Chainage km. 41.105 to 45.833 – 4.728 km) – Two bypass alternative options are provided,
2) At Powayan (Chainage km. 64.236 to 72.061 - 7.825 km) – Two bypass alternative options are provided,
3) At Shahjahanpur (Chainage km. 89.000 to 107.885 – 18.885 km) – Three bypass alternative options are provided,
4) At Shahabad (Chainage km. 124.141 to 131.282 – 7.141 km) – One bypass is provided,
5) At Hardoi (Chainage Km. 159.263 to 174.591 – 15.328 km) – Two bypass alternative options are provided,

The proposal of bypasses aims at avoiding impact on existing public utilities and settlements, existing drainage systems, future planned developments and flood prone areas and agricultural lands. The finalization of the bypasses shall be based on various factors like length, economic viability, land acquisition, cost of utility shifting and connectivity with the upcoming infrastructure. The improvement of this corridor shall also improve lead to development of other supporting infrastructures like petrol pumps, police stations, hospitals, collages, food courts, public toilets etc.

Other planned activities include construction of intersections/junctions, culverts and drainage works and ancillary structures, temporary access, diversion roads and site location for Wet Mix Macadam Plant (WMM plant) and other road construction related plants and establishments. The offsite work includes, quarrying from nearby quarry sites, labour camps, material storage yard, earth from nearby burrow area and dumping of construction spoils at dumping sites.

2. Introduction of the project

2.1 Background information

i. Identification of project and project proponent.

Project: Consultancy Services for Feasibility Study and preparation of Detailed Project Report for Improvement and up-gradation of Package VI - Stretch of Palia Shahjahanpur via Hardoi - Lucknow (in principle declared National Highway) in the state of Uttar Pradesh.

Project proponent: National Highway Authority of India (NHAI)

Brief description of nature of the project:

The project intends to develop the highway with an intention of improving the traffic movement and connectivity to the exiting and the proposed infrastructure in the region. The proposed alignment passes through approximately 191 villages. The proposed highway will pass through 5 districts from Palia, Shahjahanpur, Hardoi, Unnao and Lucknow.

The design speed depends on the function of the road as well as terrain condition. It is the basic parameter which determines all other geometric design features. As per IRC: SP: 73-2015, for plain and rolling terrain ruling and minimum design speed are 100 km/h and 80 km/h respectively and the same has been considered for designing the proposed highway. Ruling design speed shall be the guiding criterion for correlating the various design features as far as possible. However, minimum design speed will be adopted in sections where site conditions, including costs, do not permit the above.

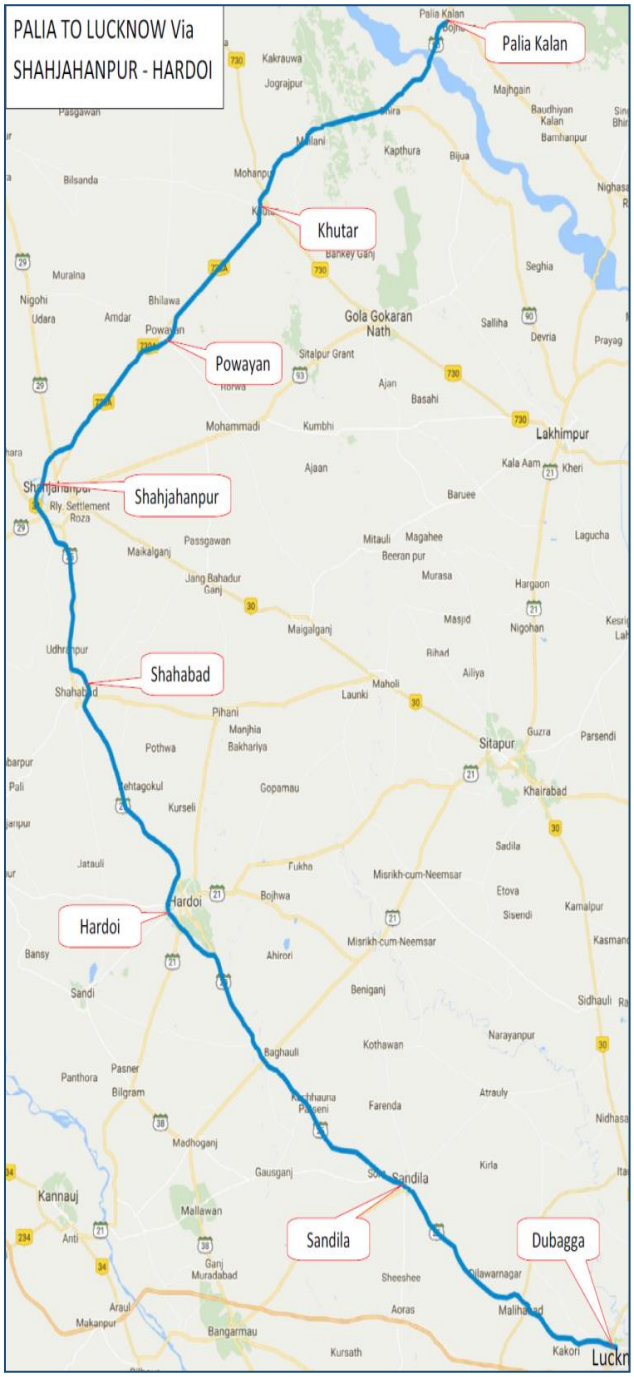
The major part of the up gradation of the highway shall involve two laning within the existing ROW which shall involve land acquisition for cross section improvement, geometrics improvement, realignment, junction and bypasses. For 2-Lane highway total roadway width of 14.0 m including 1.5 m paved and 2.0 m earthen shoulders on either side of the carriageway has been proposed. The proposed ROW for bypasses is aimed at 45mt.

The proposed project Stretch of Palia Shahjahanpur via Hardoi – Lucknow is one of the highways in the state of UP which (in principle declared highway) connects the major potential industrial hubs over a stretch of 266.014 km and is an undertaking of National Highway Authority of India. The project route starts from Palia Kalan –at intersection of SH-90, outskirt of Palia Kalan, Lakhimpur District (Chainage Km 000.000) and ends at Baroura Husen Badi village after Dubagga Chowk, Lucknow District. (Chainage Km. 266.014) as shown in **Figure 1**. The proposed expansion of the project involves strengthening, two laning, two laning with paved shoulder, four laning of the highway with divided carriage way according to traffic on the proposed highway based on the project feasibility and environmental compliances.

The salient features of the project stretch of Palia, Shahjahanpur via Hardoi - Lucknow are described as follows:

- Project stretch connects major towns/settlement, Palia Kalan, Mailani, Khutar, Powayan, Shahjahanpur, Shahabad, Hardoi, Sandila, and Lucknow.
- Total length of route: 266.014 km
- Land use is predominantly agriculture.
- Forest stretch is situated near Maliani (18 Km)
- Existing corridor has bituminous pavement.
- Existing road between Palia Kalan and Shahjahanpur is 2-Lane carriageway.
- Existing road between Shahjahanpur and Hardoi is 2-Lane and currently it is being developed to 4-Lane divided carriageway and stretch is nearing completion

Figure 1: Proposed Project Location



ii. Need for the project and its importance to the country and or region.

- In the present scenario industrial areas in Uttar Pradesh are confined to Bulandshahar, Mathura, Rai Bareily, Sultanpur, Faziabad and Kaushanbi regions due to the presence of infrastructure facilities and proximity to sate boundaries like M.P., Rajasthan and Delhi. The sate however has anumber of areas where industrial developments is yet to take place and are promising in terms of raw material availability, connectivity and labour like Shahjahanpur, Kanauj, Kanpur, Hamirpur etc. These areas also serve as the upcoming nerve centres in terms of real estate, education hubs and infrastructure development.
- The areas around the regions of Lakhimpur, Hardoi, Jalaun Auriyan also lack interest of various industries due to poor infrastructure facilities.
- These cities may be used as investment destinations for manufacturing, automobile, defence, textile and food processing industries with proper transport infrastructure to facilitate fast

implementation. The proposed project will set target as the new centres of industrial development, area development along with entertainment / tourism development throughout the corridor. Thus this planning will not only reduce time but also improve the state's economic growth.

- As a result of the improved road system, industrialisation and other economic activities will be able to spread more evenly throughout the state and more entrepreneurs may prefer to establish their business or production in areas with lower prices of land and with access to an available workforce. This in turn will bring in prosperity to rural areas.
- Development will emerge along the roads in terms of vehicle repair workshops, restaurants, hotels, etc. These businesses are known to give spin off in terms of petty trade gradually developing into larger businesses.
- The improved roads would reduce Vehicle Operating Cost (VOC), as the vehicles will be able to travel at a faster speed, which in turn would reduce time, transport cost and the wear and tear of the vehicles. Timely and effective delivery of both goods and passengers will increase effectiveness of agriculture, trade, etc.
- Increase in employment opportunities (direct and indirect, permanent and temporary, as well as for short and long term), access to various amenities, increase in business opportunities, improved traffic safety, increase in availability of passenger transport services are some of the other expected benefits.
- These cities will be projected as investment destinations for manufacturing, automobile, defence, aerospace, information technology, textile and food processing. The proposed project will set target as improvement in industrial belt, area development along with entertainment / tourism development throughout the corridor. Thus this planning will not only reduce time but also improve country's economic growth.

iii. Demand Supply Gap.

NA. Road Construction materials are easily available in nearby areas.

iv. Imports vs. Indigenous production.

NA

v. Export Possibility.

NA

vi. Domestic / export Markets.

NA

vii. Employment Generation (Direct and Indirect) due to the project.

Highway construction broadly encompasses the issues relevant to the process of construction and maintenance, including the design, contracting, implementation, supervision, and maintenance of highways and related structures, such as bridges and interchanges. The areas covered includes public works, private contracting of civil works, and labor-based construction techniques.

Direct employment generation: During the construction phase of the project manpower will be needed to take the part in various project activities. About 6000 persons per day, which includes, skilled, semi-skilled and unskilled labours, will likely to get work. In the post construction phase the project will provide social benefits to about 600 people in terms of direct employment by way of better commercial and industrial development of the area.

The project shall also induce indirect employment generation for cleaners, guards, local vendors, operation and maintenance workers etc. Indirect employment will be both temporary and permanent.

Temporary indirect employment: Local vendors, construction material traders, electrician, plumbers etc. will be benefitted through employment generated during construction and maintenance phase.

Permanent indirect employment: Cleaners, guards, local vendors, kiosk stalls will be benefitted through employment generated during operation phase. The project will therefore provide employment to people from all walks of life i.e. Construction, Building materials, Engineering, Medicine, Hospitality, Education, Information Technology and Administration etc. The project will be beneficial for the local communities, as it will generate employment by way of construction and reduction in pollution with better communication. The project will benefit all the population groups and consequently not differentially or adversely affect any groups.

3. Project Description

i. Type of project including interlinked and interdependent projects, if any.

NA

ii. Location (map showing general location, specific location, and project boundary & project site layout) with coordinates.

Maps attached as **Annexure III**.

iii. Details of alternate sites considered and the basis of selecting the proposed site, particularly the environmental considerations gone into should be highlighted.

Detailed Alternative alignment analysis is carried out. This PFR is prepared as per selected alignment. Comparison and detailed report on alternative alignment analysis is presented in **Annexure I and II** and will be detailed out in EIA.

iv. Size or magnitude of operation

Sr. No.	District	Design Chainage Km.		Bypass/ Realignment (Green field)		Length of Widening Km	Remarks
		From	To	Name	Length Km.		
Construction Pkg 1							
1	Lakhimpur Kheri	0+000	34+402			19.402	
2	Shahjahanpur	34+402	89+000	Khutar	4.655	42.118	
				Powayan	7.825		
Construction Pkg 2							
3	Shahjahanpur	89+000	119+302	Shahjahanpur	15.313		Overlaying Proposed
				Sehramou Janubi	2.676		
4	Hardoi	119+302	174+614	Shahabad	7.141		
				Behta Gokul	2.840		
				Hardoi	15.741		
				Suketa Nalla	0.575		
Construction Pkg 3							
5	Hardoi	174+614	229+070	Sharda Canal	0.479	53.977	
Construction Pkg 4							
6	Unnao District	229+070	229+427			1.457	
		233+086	234+186				
7	Lucknow	229+427	233+086			5.000	Overlaying Proposed
		234+186	266+014				

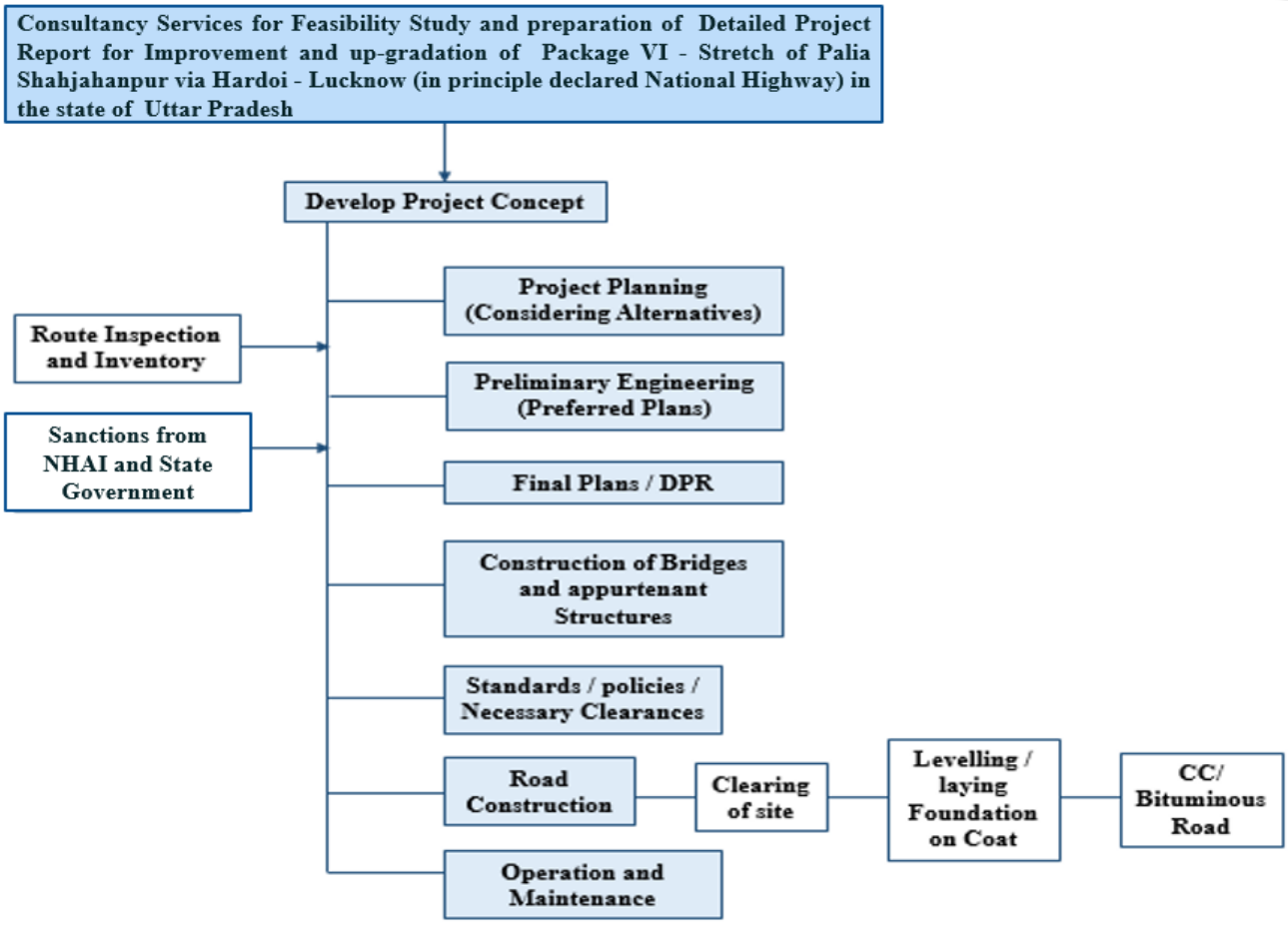
It is proposed to have grade separator over National highways, Underpass multispan, Underpass single span, Underpass twin cell, road overpasses (OP), agricultural vehicle underpass (AVUP), cattle crossings (CX), Pedestrian crossings (PX), and railway crossings are proposed along the stretch of highway wherever necessary. Also, some major and minor bridges are proposed along with culverts.

SL. No	Salient Feature	Details
1.0	**Project Stretch**	The proposed project road is brownfield highway which starts at Palia Kalan –at intersection of SH-90, outskirt of Palia Kalan, Lakhimpur District and ends at Baroura Husen Badi village after Dubagga Chowk, Lucknow District.The total length is approximately 266.014 Km.
2.0	**Width of Road**	The existing alignment can be divided into four stretches based on the road width: 1) Palia to Start of Proposed Shahajahanpur Bypass (89km): Two Lane 6m 2) Start of Proposed Shahajahanpur Bypass to end of Proposed Hardoi Bypass (85.6km): Four Lane 12m 3) End of Proposed Hardoi Bypass to End of Hardoi District (54.4km): Two lane 6m 4) End of Hardoi District to Lucknow (Dubagga Chauraha) (36.9km): Four

<table>
<tr><th>SL. No</th><th>Salient Feature</th><th>Details</th></tr>
<tr><td></td><td></td><td>Lane 12m</td></tr>
<tr><td>3.0</td><td>Right of Way</td><td>For the proposed road alignment the ROW width that has been estimated is about 12m.</td></tr>
<tr><td>4.0</td><td>Land Use</td><td>
<table>
<tr><th>Types of Land</th><th>Percentage (%)</th></tr>
<tr><td>Built Up</td><td>6.27</td></tr>
<tr><td>Agricultural Land</td><td>78.25</td></tr>
<tr><td>Forest</td><td>5.51</td></tr>
<tr><td>Barren Land</td><td>8.09</td></tr>
<tr><td>Water Bodies</td><td>1.88</td></tr>
</table>
</td></tr>
<tr><td>5.0</td><td>Embankment height</td><td>The average embankment height is expected to be around 3 to 2.50 m at the Pedestrian Underpass locations and higher at the Vehicular Underpass locations. At the remaining stretches, the embankment height will be governed by the drainage considerations.</td></tr>
<tr><td>6.0</td><td>Major Bridge</td><td>There are about 3Major Bridges i.e. 1 in Hardoi bypass and 2 in Shahjahanpur bypass.</td></tr>
<tr><td>7.0</td><td>RUB/ROB</td><td>There are 01 Railway crossings. Hence 1 ROB are proposed along the alignment.</td></tr>
<tr><td>8.0</td><td>Bypass and Realignments</td><td>Alignment Passes through Congested Built up Area in following location, where Bypass will Be required:
1) Khutur
2) Powayan
3) Shahjahanpur
4) Shahabad
5) Hardoi
Apart from this, there are two major realignments at Sehramaujanubi and Behta Gokul</td></tr>
<tr><td>9.0</td><td>Vehicular overpass / underpass</td><td>There are about 20 Vehicular underpasses.
1) Khutur bypass-3nos
2) Powayan bypass -2nos
3) Shahajahanpur bypass- 5nos
4) Shahabad bypass- 3nos
5) Hardoi bypass- 3nos
6) Sehramou Janubi Realignment- 2nos
7) Behta Gokul Realignment- 2nos</td></tr>
<tr><td>10.0</td><td>Road Safety</td><td>Metal Beam Crash Barriers will be provided along the outer edges of the carriageway. Additional Safety features will be ensured by providing adequate Sight Distances while designing the highway. Retro reflective road signage will be provided for better night visibility.</td></tr>
<tr><td>11.0</td><td>Reserve forest / wildlife areas</td><td>The alignment passes through Reserved Forest / Kishanpur Wildlife Sanctuary. Total Length of highway passing through Wildlife Sanctuary is about 18 km.</td></tr>
<tr><td>12.0</td><td>Intersections</td><td>
<table>
<tr><td>Palia</td><td>MDR 2 C</td></tr>
<tr><td>Bhira</td><td>SH 90</td></tr>
<tr><td>Lalpur</td><td>SH 25</td></tr>
<tr><td>Lalpur</td><td>SH 26</td></tr>
<tr><td>Rujha Kala</td><td>SH 25</td></tr>
<tr><td>Dhara</td><td>SH 25</td></tr>
<tr><td>Powayan</td><td>Jankapur Rd</td></tr>
<tr><td>Mainari</td><td>SH 25</td></tr>
<tr><td>Paina Bujurg</td><td>SH 25</td></tr>
<tr><td>Shahjahanpur</td><td>SH 29</td></tr>
<tr><td>Shahjahanpur</td><td>NH 24</td></tr>
<tr><td>Shahjahanpur</td><td>SH 29</td></tr>
<tr><td>Shahjahanpur</td><td>NH 24</td></tr>
<tr><td>Chauthera</td><td>SH 25</td></tr>
<tr><td>Shahabad</td><td>SH 25</td></tr>
<tr><td>Shahabad</td><td>SH 29</td></tr>
<tr><td>Shahabad</td><td>SH 25</td></tr>
<tr><td>Hardoi</td><td>SH 25</td></tr>
</table>
</td></tr>
</table>

SL. No	Salient Feature	Details
		Hardoi – Sandi Rd Hardoi – SH 21 Hardoi – SH 25 Lodhi – Baghauli Rd Ashraf Tola – Sandila Rd Malihabad – NH 25 A Malihabad – NH 25 A DUBAGGA – IIM Rd DUBAGGA – BYPASS Rd

v. Project description with process details (a schematic diagram/ flowchart showing the project layout, components of the project etc. should be given)



vi. Raw material required along with estimated quantity, likely source, marketing area of final product/s, Mode of transport of raw Material and Finished Product.

The construction material requirement in broad view per kilometre is as below:

1. Earth work- 60,000 MT/ km
2. Stone ballast-8000 MT/ km
3. Grit- 6000 MT/ km
4. Cement Concrete- 50,000 MT/km

vii. Resource optimization/ recycling and reuse envisaged in the project, if any, should be briefly outlined.

NA

viii. Availability of water its source, Energy/ power requirement and source should be given.

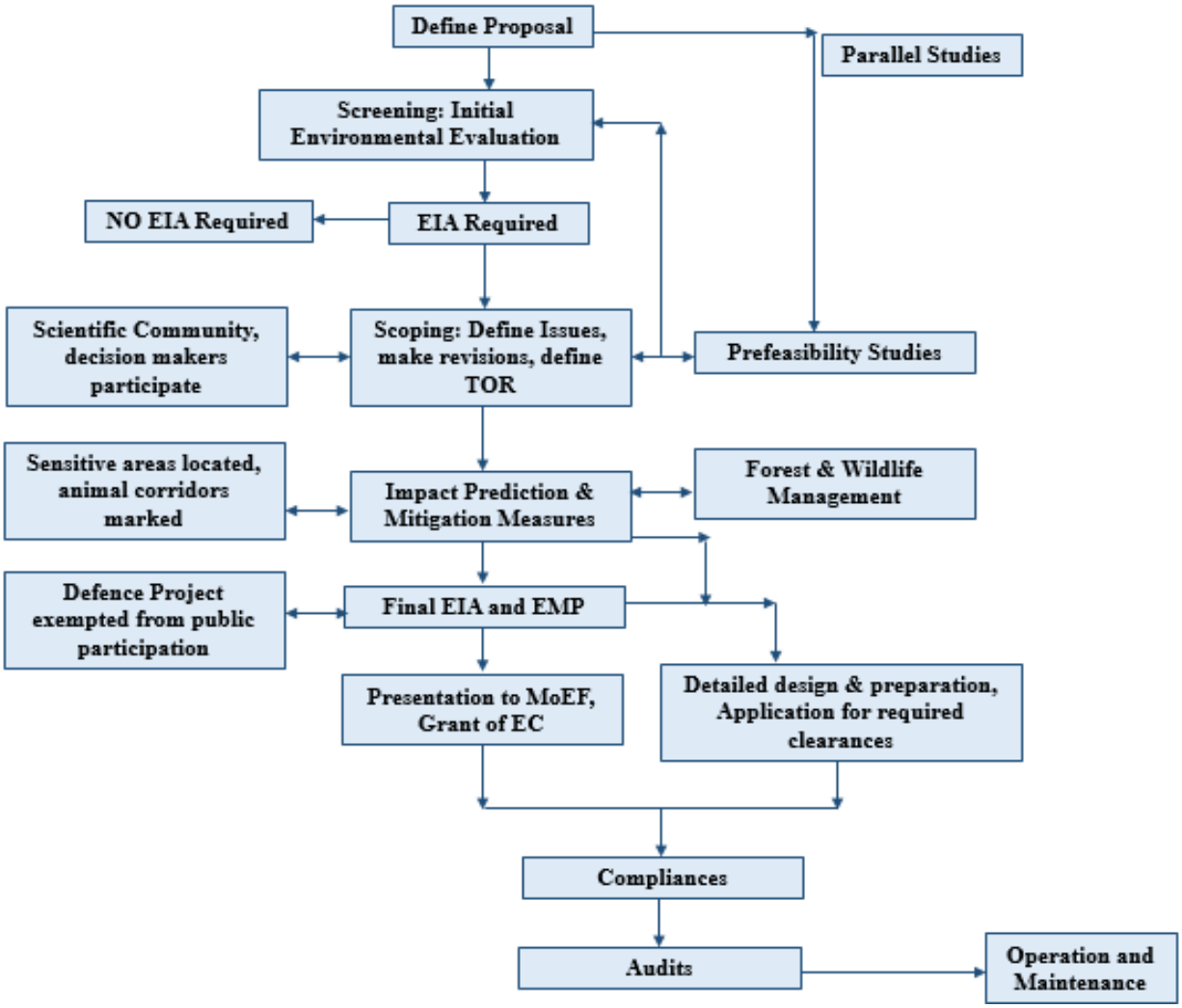
Water: 90 lpcd will be required for onsite workers, while water for highway construction and sprinkling for dust suppression will also be needed. Approximately 540 KL of water would be required for daily uses in labour camps. The water shall be obtained from nearby surface/ ground water with prior consent.

Power: LSD D.G sets shall be used for power for onsite construction and labour camps, wherever grid power supply is not available.

ix. Quantity of wastes to be generated (liquid and solid) and scheme for their Management/disposal.

Wastes generated within the site would be of food items, paints, cement, grit, bitumen, tar, cement, concrete, oil & grease etc. Waste shall be segregated and collected in separate bins and disposed off according to MoEF&CC regulations.

x. Schematic representations of the feasibility drawing which give information of EIA purpose.



4. Site Analysis

The latitude and longitude are 28°25'37.55"N latitude, 80°34'53.93"E longitude at Palia District and 26°52'23.55"N latitude, 80°52'15.17"E longitude at Hardoi District. Major Part of the stretch will be through the urban section. Alignment is mostly passing through agricultural land and built up areas. A few stretch runs through forest and barren land.

i. Connectivity and Intersections

The proposed route is connected and approached through State highways. It intends in the improvement of the SH25 to a National Highway. The alignment starts at Intersection of SH-90, outskirt of Palia Kalan, Lakhimpur District (Chainage Km 000.000) and ends at Baroura Husen Badi village after Dubagga Chowk, Lucknow District (Chainage Km. 266.014). Further it is connected to NH24 in Hardoi Lucknow and NH25 in Malihabad. The project is also connected to NH24 at Shahjahanpur bypass and provides connectivity to various prestigious industrial projects. This route is connected to National Highway NH – 730 at Khutar bypass. The proposed route is connected and approached through State highways and National Highways. The cross road details are as follows;

Sr. No.	Chainage	Location	Cross Road Details
1	0.331	Palia	MDR 2 C
2	15.480	Bhira	SH 90
3	41.106	Lalpur	SH 25
4	41.745	Lalpur	SH 26
5	45.798	Rujha Kala	SH 25
6	64.254	Dhara	SH 25
7	67.458	Powayan	Jankapur Rd
8	72.061	Mainari	SH 25
9	89.000	Paina Bujurg	SH 25
10	93.090	Shahjahanpur	SH 29
11	100.484	Shahjahanpur	NH 24
12	101.743	Shahjahanpur	SH 29
13	102.550	Shahjahanpur	NH 24
14	107.887	Chauthera	SH 25
15	124.175	Shahabad	SH 25
16	128.417	Shahabad	SH 29
17	131.285	Shahabad	SH 25
18	159.291	Hardoi	SH 25
19	164.942	Hardoi	Sandi Rd
20	167.118	Hardoi	SH 21
21	174.584	Hardoi	SH 25
22	191.028	Lodhi	Baghauli Rd
23	221.479	Ashraf Tola	Sandila Rd
24	247.879	Malihabad	NH 25 A
25	249.658	Malihabad	NH 25 A
26	264.386	DUBAGGA	IIM Rd
27	265.384	DUBAGGA	BYPASS Rd

ii. Land Form, Land use and Land ownership.

Project stretch connects major towns/settlement, Palia Kalan, Mailani, Khutar, Powayan , Shahjahanpur, Shahabad, Hardoi, Sandila and Lucknow. The development of highway in the area shall possibly bring substantial changes in the existing land use pattern. The land acquired for the purpose is predominantly agriculture.

LULC	Area In Mt	Area In Ha	Percentage (%)
Agriculture	4037264.37	403.73	92.14
Build Up	214068.83	21.41	4.89
Water Bodies	65924.61	6.59	1.50
Barren	62254.08	6.23	1.42
Forest	1970.78	0.20	0.04
Grand Total	**4381482.67**	**438.15**	**100.00**

Hence there is need of diversion of agriculture/forest or other land use to Highway construction. The project alignment will pass through forest land. The details will be presented in EIA.

Soil Profile of the state:

Much of the area of Uttar Pradesh is covered by a deep layer of alluvium spread by the slow-moving rivers of the Ganges system. Those extremely fertile alluvial soils range from sandy to clayey loam. The soils in the southern part of the state are generally mixed red and black or red-to-yellow.

General elevation varies from 103 m to 130 metres above mean sea level. The general slope of the is south-east. Geomorphologically the state is divided into two geomorphic units (i) Older flood plains & (ii) Active flood plain. Older flood plains 9 are represented by two level of terraces viz Erosional terrace (Te) occupying at higher level and Depositional terrace (Td) at lower depressions. The newer alluvium comprises of light Khaki grey silt, clay and fine to medium and coarse-grained grey sand which is micaceous in nature. Soils exhibit a wide variation in composition texture and appearance. The major position is occupied by soils locally known as "Bhur" or "Silty Sand" on the ridges. "Matiyar" or "Clay Soils" occurs along topographic lows and "Dumat or Loamy soils" in the level lands. Clay is dominant in the areas where "Reh" (Usar) prevails. Along the river valleys, a very fertile soil called "Dumat" is prevalent which is youngest.

Topography:

The alignment of the proposed highway passes through plain terrain and passes through agricultural area. The terrains and the highway alignment are moderate with flat gradients. The project site is bounded by surface water reservoirs at certain places. The project area along the road generally slopes from north to south and north-west to East or south east and is evident from the drainage pattern of the region.

iii. Existing land use pattern (agriculture, non-agriculture, forest, water bodies (including area under CRZ)), shortest distances from the periphery of the project to periphery of the forests, national park, wildlife sanctuary, eco-sensitive areas, water bodies (distance from the HFL of the river), CRZ. In case of notified industrial area, a copy of the Gazette notification should be given.

The land use will be changed to Highway construction from agriculture, forest and settlement. About 92.14% length of the proposed highway passes through cultivated land i.e. 403.73Ha of agricultural land and remaining 7.86% length traverse through forest (0.04Ha of Forest land), barren (1.42 Ha) and inhabited area (4.89 Ha).

The list of villages though which concluded alignment is passing is as below;

Sr. No.	Village	Tehasil
Kheri District		
1	Mailani	Gola Gokaran Nath
2	Jungal area	Gola Gokaran Nath

Lakhimpur Kheri District		
1	Badagaon	Palia
2	Atareya	Palia
3	Bhira	Palia
4	Daulata Pur	Palia
5	Majhoura	Palia
6	Mataihiya	Palia
7	Palia Kalan	Palia
8	Palia Khurd	Palia
9	Patwara	Palia
Shahjahanpur District		
1	Dhansinghpur	Powayan
2	Heerpur	Powayan
3	Kadhaeya Mai Chak nadautha	Powayan
4	Nadautha Devidas	Powayan
5	Bara Urf Salnaha	Powayan
6	Lalpur	Powayan
7	Bhujia	Powayan
7	Kushmaha	Powayan
8	Nagra	Powayan
9	Narayanpur Vikarampur	Powayan
10	Khutar Khas	Powayan
11	SeerChak	Powayan
12	Rujha Kalan	Powayan
13	Rautapur Kalan	Powayan
14	Siklapur Mastapur	Powayan
15	Rampur Kalan	Powayan
16	Dhaka khurd Wa Kalan	Powayan
17	Lakshmipur	Powayan
18	Gutaiya Jn Natthapur	Powayan
19	Bahadurpur	Powayan
20	Gangsara	Powayan
21	Inayatpur	Powayan
22	Madanapur	Powayan
23	Motipur	Powayan
24	Karnapur Jn Bitauni	Powayan
25	Sakrapur	Powayan
26	Bitaunij Jn Karanpur	Powayan
27	Dhara	Powayan
28	Anandpur	Powayan
29	Powayan	Powayan
30	Jankapur	Powayan
31	Navalpur	Powayan

32	Bhatpura Chandu	Powayan
33	Majeedpur	Powayan
34	Badagaon	Powayan
35	Mainari	Powayan
36	Piru	Powayan
37	Mahua Pathak	Powayan
38	Buletu	Powayan
39	Konro Kuinyan	Powayan
40	Baruara	Powayan
41	Gandharpur	Powayan
42	Mahanandpur	Powayan
43	Chak Kanhu	Powayan
44	Dhakiya Hameed nagar	Powayan
45	Ilra	Powayan
46	Singhauli	Powayan
47	Barapur	Shahjahanpur
48	Murcha	Shahjahanpur
49	Ladhauli	Shahjahanpur
50	Adampur	Shahjahanpur
51	Paina Bujurg	Shahjahanpur
52	Nagriya Bahav	Shahjahanpur
53	Paina Khurd	Shahjahanpur
54	Chinaur	Shahjahanpur
55	Bahadurpur barah	Shahjahanpur
56	Satwan Bujurg	Shahjahanpur
57	Shahabaz Nagar Bangar	Shahjahanpur
58	Jalalnagar Bahar Chungi	Shahjahanpur
59	Kakara Kakar Kund	Shahjahanpur
60	Shahvegpur	Shahjahanpur
61	Mauzampur	Shahjahanpur
62	Madha	Shahjahanpur
63	Nabada Indepur	Shahjahanpur
64	Rausar	Shahjahanpur
65	Ghughariya	Shahjahanpur
66	Dinapur	Shahjahanpur
67	Chaudera Muhal Khadar	Shahjahanpur
68	Chaudera Bangar	Shahjahanpur
69	Gunwari	Shahjahanpur
70	Kaneg	Shahjahanpur
71	Jalalpur Talluque Badshahnagar	Shahjahanpur
72	Dilawarpur	Shahjahanpur
73	Ainthapur	Shahjahanpur
74	Bibipur	Shahjahanpur
75	Miragpur	Shahjahanpur
76	Sehra Mau South	Shahjahanpur

77	Lakhmanpur	Shahjahanpur
78	Mahmoodpur ilaka Sehjapur	Shahjahanpur
79	Chandgoi	Shahjahanpur
Hardoi District		
1	Sardar nagar	Shahabad
2	Udhranpur	Shahabad
3	Shahabad	Shahabad
4	Karmullapur	Shahabad
5	Daulatpur Gangadas	Shahabad
6	Naurojpur	Shahabad
7	Kakrahi	Shahabad
8	Mirpur Gannu	Shahabad
9	Kakarghata	Shahabad
10	Bilhari	Shahabad
11	Huseypur Lukman	Shahabad
12	Miyanpur	Shahabad
13	Baraunia	Shahabad
14	Kapoorpur Bahorun	Shahabad
15	Saidpur	Shahabad
16	Behta Gokul	Hardoi
17	Behta Dheera	Hardoi
18	Tulwan Aatdanpur	Hardoi
19	Kalwari Grant	Hardoi
20	Atwa Asigaon	Hardoi
21	Gulamau	Hardoi
22	Kaudha	Hardoi
23	Kakawahi	Hardoi
24	Kuraya	Hardoi
25	Behta Saghai	Hardoi
26	Behati	Hardoi
27	Tatyora	Hardoi
28	Hardoi	Hardoi
29	Tash kheda	Hardoi
30	Kasrawan	Hardoi
31	Seraiyan	Hardoi
32	Ghusar	Hardoi
33	Mahona Maheshpur	Hardoi
34	Khetuai	Hardoi
35	Madara	Hardoi
36	Lalpur	Hardoi
37	Singhuamau	Hardoi
38	Bhainamau	Hardoi
39	Panchakohara	Hardoi
40	Karahi	Hardoi

41	Anua	Hardoi
42	Balleepur	Hardoi
43	Bamhana Kheda	Hardoi
44	Khajurmai	Hardoi
45	Pipauna	Hardoi
46	Rao Bahadur	Hardoi
47	Lodhi	Hardoi
48	Sunny	Sandila
49	Mahri	Sandila
50	Matuwa	Sandila
51	Tevari	Sandila
52	Patseni	Sandila
53	Kachona	Sandila
54	Kamipur	Sandila
55	Lonhra	Sandila
56	Katiyamau	Sandila
57	Reaso	Sandila
58	Samodha	Sandila
59	Jamsara	Sandila
60	Sonb	Sandila
61	Rampur Ansu	Sandila
62	Saray Maroofpur	Sandila
63	Meetau	Sandila
64	Ashraf Tola	Sandila
65	Sandila Mahatwana	Sandila
66	Begamganj	Sandila
67	Tiloya Kalan	Sandila
68	Tiloya Khurd	Sandila
Unnao District		
1	Adaora	Unnao
2	Sahijana	Unnao
Lucknow District		
1	Katra Tarauna	Malihabad
2	Taruana	Malihabad
3	Fatehpur	Malihabad
4	Jindaur	Malihabad
5	Mankauti	Malihabad
6	Bhatoyia	Malihabad
7	Khushalpur	Malihabad
8	Rasulabaad	Malihabad
9	Khadahua	Malihabad
10	Chandpur	Malihabad

11	Ahmedabad	Malihabad
12	Madhopur	Malihabad
13	Nazar Nagar	Malihabad
14	Tikri Khurd	Malihabad
15	Sarawan	Malihabad
16	Malihabad	Malihabad
17	Firozpur	Malihabad
18	Mujasa	Malihabad
19	Nejabhari	Malihabad
20	Mahmoodnagar	Malihabad
21	Sahila mau	Malihabad
22	Kanar	Malihabad
23	Habibpur	Malihabad
24	Dugauli	Malihabad
25	Salihabad	Malihabad
26	Tikaitganj	Malihabad
27	Kakori	Lucknow
28	Kusmoura Haluwapur	Lucknow
29	Pahia Aajampur	Lucknow
30	Amethiya Salempur	Lucknow
31	Sikarori	Lucknow
32	Mahipatmau	Lucknow
33	Chandoiya	Lucknow
34	Begariya	Lucknow
35	forest	Lucknow
36	Barora hussain Badi	Lucknow

Water Bodies:

The alignment of the proposed passes through plain and undulating terrain, and passes through agricultural area. The terrains and the highway alignment are moderate with flat gradients. The project is crossing the river / channels at different places. The details are as follows.

- Sharda River Crossing
- Gomati River
- Kahimua River
- Dewaha River

Detailed information shall be furnished in EIA Report.

Sanctuaries and Wildlife Parks:
The details of eco-sensitive areas noted within 10 km from the project are listed below.

- Dudhwa Tiger Reserve: 6.7 km from Palia End
- Palia Kalan Airstrip: 4.4 km from Palia End
- Kishanpur WLS: Passing through and total length in WLS is about 18.0 km
- Pilibhit Tiger Reserve: 32 km from Palia End and 28 km from Mailani
- Nepal Country Border: 15 km from Palia End

Detailed information shall be furnished in EIA Report.

iv. Existing Infrastructure.

Road Infrastructure:
The proposed route is connected and approached through State highways and National Highways. The proposed highway is connected to NH24 in Hardoi Lucknow and NH25 in Malihabad. The project is also connected to NH24 at Shahjahanpur bypass and provides connectivity to various prestigious industrial projects. This route is connected to National Highway NH – 730 at Khutar bypass.

Industrial Infrastructure:

The project route is having various prestigious industrial projects within 5 to 10 kms viz;

i. Bajaj Hindustan Sugar Limited,
ii. Sukhbir Agro Energy Limited,
iii. Rosa Thermal Power Plant,
iv. DCM Shriram Sugar Industry, Shahjahanpur

Railway Stations near project alignment

A. From Palia
1. Palia Kalan railway station 0.1 km from Palia End
2. Bhira Kheri railway station 7.7 km. from Palia End and 0.28 km from Daulat Pur Village
3. Dudhwa railway station 12.4 km.
4. Rajnarainpur railway station 0.2 km near Bhira

B. From Mailani:
1. Mailani railway station 0.8 km from Mailani
2. Hamirpur Road railway station 9.8 km.
3. Sehramau railway station 9.8 km.

C. From Shahjahanpur
1. Shahjahanpur Railway Station 1.5 km

2. Kahilia Railway Station 2.0 km

D. Shahabad

1. Shahabad Railway Station 0.8 km
2. Todarpur Railway Station 2.0 km near Saidpur
3. Behtagokul Railway Station 3.0 km
4. Kauraha Railway Station 0.5 km
5. Hardoi Railway Station 4.5 km
6. Baghauli Railway Station 0.5 km
7. Kachhauna Patseni Railway Station 1.5 km
8. Dalelnagar Railway Styation 1.5 km
9. Umartali Railway Station 1.0 km
10. Sandil Railway Station 0.5 km

E. Lucknow

1. Rahimabad Railway Station 1.5 km
2. Dilawarnagar Railway Station 2.7 km
3. Malihabad Railway Station 0.5 km
4. Kakori Railway Station 1.0 km

Bus Depots:

1. Palia Bus Depot within 100m from Palia.
2. Bhira Kheri Bus Depot within 1km of Bhira Kheri
3. Shahjahanpur Bus Depot at 2.26km near Shahjahanpur
4. Pihani Chungi Bus Stop near Hardoi: 1.79 kms
5. Dubagga Bus stop near Lucknow: within 1km

Airport:

1. Lakhimpur Kheri Airport (also known as 'Palia Airport') is situated near Dudhwa National Park at Palia Kalan in Lakhimpur Kheri. It is not operational and is at a distance of approximately 5 km from Palia and 30.5 km from Mailani
2. Kheri Airport from Khutar at 41.6 km
3. Chaudhary Charan Singh International Airport in Lucknow from Shahjahanpur at 157 km
4. Airforce Strip near Roodahi 13km

Water Transport Infrastructure:

1. JNPT at distance of about 50 km from Kalyan end.

v. Soil Classification

Lakhimpur Kheri District: Geomorphologically the area of Lakhimpur district is a vast alluvial plain traversed by numerous streams flowing in a south-easterly direction. The surface of the land is interrupted by low river beds and the high banks which flank the streams on either side. The main river frequently change their course leaving behind old channels in which water accumulates to form lakes and swamps. The master slope of the country is towards south-east.

Loam or Dumat soil occupies the level upland where as clay or matiyar are found in the depressions. The tarai tract, in the northern part of the district, has soils varying from clayey loam to loam and just below often gravels are encountered (based on Soil Map published by NBSS & LUP).

Shahjahanpur District: Shahjahanpur district forms part of Central Ganga Plains in the upper Ganga Basin, exhibiting monotonous flat topography, with master slope towards south and southeast. Ramganga river, which flows NNW-SSE in the western part of the district, forms the principal drainage. Southwestern periphery is drained by the river Ganga. Other important rivers are Garra, Khannaut, Bahgul, Jokhal and Kathana. River Garra divides the district into almost equal halves.

Soils in the district are deep and well drained, with loamy surface. In the northeastern part, the soils are mainly fine silty to coarse loamy, whereas in southwestern part they are mainly fine to coarse loamy and calcareous (based on Soil Map published by NBSS & LUP).

Hardoi District: The district forms a part of marginal Ganga, alluvial plains. Geomorphology bears tremendous control on the ground water regime. The relief, slope, depth of weathering, type material, nature ofdeposits and thickness and overall assemblage of different land forms plays an important role in the ground water regime in hard rock as well as in the unconsolidated sediments. Various geomorphic units identified in the area are grouped into four major categories,(Rajeev Mohan et al 91) these are (1) Pediment zone (2) Alluvial plain (3) Ravines land and (4) Flood plains.

Soil of the area can be grouped into four types Mar, Kabar, Parwa, and Rakar. Mar is a dark coloured clay soil mixed with calcareous nodules (Kankar) with swelling and shrinking character. The soil is friable in dry state, moisture retentive and highly fertile. Kabar is also a fertile soil but contains less amount of clay and lighter in colour than Mar. Kabar and Mar soils are commonly known as black cotton soil and occur in the area of central parts. Parwa generally occurs in the northern parts of area. This is a loamy soil, usually having grey colour. Rakar soil is a coarse grained red soil, strewn with Kankar. It has less fertility and occurs on ravine slopes.

Unnao District: The entire district is a alluvial plain of almost flat topography with the master slope in the direction NW to SE. It has two distinct topographical features viz. Lowland and Up-land. Low-land or the younger alluvial plain lies along the Ganga river in the west and along the Sai river in the extreme north and east. The upland or the older alluvial plains extends NW to SE between the two high banks of the above rivers. The lakes and ponds are also existing.

The main soil types of the district are Bhur or Sandy soils, Matiar or clayey soils and Dumat or Loam. The Loam or Dumat soils are occurring in the plain, Bhur on the ridges and the Matiar in the topographic lows. The 'Reh' or Usar-soil patches are frequently occurring mainly in the Matiar or clay dominating soils.

Lucknow District: The district forms a part of Ganga basin with flat alluvial terrain. General elevation varies from 103 m to 130 metres above mean sea level. The general slope of the district is south-east. Geomorphologically the district is divided into two geomorphic units (i) Older flood plains & (ii) Active flood plain.

Soils in the district exhibits a vide variation in composition texture and appearance. The major position of the district is occupied by soils locally known as "Bhur" or "Silty Sand" on the ridges. "Matiyar" or "Clay Soils" occurs along topographic lows and "Dumat or Loamy soils" in the level lands. Clay is dominant in the areas where "Reh" (Usar) prevails. Along the river valleys, a very fertile soil called "Dumat" is prevalent which is youngest.

vi. Climatic data from secondary sources.

The climatic conditions are characterized by a hot summer and dryness in the non-rainy seasons. The cold season from December to February is followed by the hot season from March to May. The south-west monsoon season is from June to September and is followed by the post monsoon season from October to November. Meteorological data has been collected from three meteorological stations of the IMD nearest to the site – Lucknow. Temperature: The mean maximum temperature in the region reaches 46 C in the warmer months from March to June. During the winter season, in December-January, the minimum temperature dips to 9.2 C and the maximum temperature remains around 29 C. The lowest average monthly minimum temperature is around 21 C.

The maximum humidity is observed to be 90.00 percent during the month of August. The minimum humidity is recorded (26 percent) during the month of January. Maximum rainfall occurs under the influence of the monsoons (June-September). The annual rainfall is around 869.2 mm.

vii. Social Infrastructure available.

Basic social infrastructure is not well developed along the route. The villages on the proposed route have primary health care facilities, basic education, markets, police station, transportation, roads etc.

5. Planning Brief

i. Planning Concept (type of industries, facilities transportation etc) Town and Country Planning/Development authority Classification

The stretch of proposed Package VI is 266.014km starting from Palia in Lakhimpur Kheri District and ends at Lucknow in Lucknow District. The proposed highway is a divided arterial highway intended for traffic with full control of access and provided with grade separators at intersection. Other planned activities include construction of intersections/junctions, culverts and drainage works, toll plazas and ancillary structures, temporary access, diversion roads and site location for WMM plant and other road construction related plants and establishments. The offsite work includes, quarrying from nearby quarry sites, labour camps, material storage yard, earth from nearby burrow area and dumping of construction spoils at dumping sites.

ii. Population Projection

NA

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

The total stretch of 266.014 km. The RoW will cover emergency services, green belt and other related components. The green belt development as per Indian Road Congress Guidelines (IRC: SP: 21-2009) and the Ministry of Road Transport & Highways (MORTH) Green Highways (Plantation, Transplantation, Beautification & Maintenance) Policy-2015.

Details of Land use breakup will be described in EIA. Compensatory plantation will be a part of management plan.

iv. Assessment of Infrastructure Demand (Physical & Social).

Infrastructure: The infrastructure required is office, store and shelter for workers. And it will be provided at project site.

Water: Water for drinking, dust suppression & plantation purpose water will be required & drawn from the nearby Village by tankers.

Workers: Most of the workers will be from nearby village so no accommodation at site will be required.

Landscaping & Green belt development: As per IRC: SP: 21-2009 and MORTH Green Highways (Plantation, Transplantation, Beautification & Maintenance) Policy-2015, it is mandatory to have plantation along the highways. A number of species will be planted suitable to this area of climate conditions like indigenous Neem, Mango, Pipal, Wad, Jamun etc. the details will be provided in EIA Report. The general benefits of plantations are;

- Reduction in Heat Island,
- Plantation of herbs, shrubs and trees will create three tier which will reduce the impacts of air pollution and dust as trees and shrubs are known to be natural sink for air pollutants
- It will provide much needed shade on glaring hot roads during summer
- It will reduce the impact of ever increasing noise pollution caused due to increase in number of vehicles

- Moderating the effect of wind and incoming radiation
- Grass plantation on the embankment slopes will reduce soil erosion and cutting
- Rumbling sound of vehicle leads to sleeping hence sound barrier
- Prevention of glare from the headlight of incoming vehicles
- Enhancement of Bio-diversity,
- Compensatory tree plantation,
- Fruit bearing plants can generate local economy,
- Enhance Greenery and Aesthetics along the highway.

Health and safety system: During the construction phase and allied activities, all the precautionary measures shall be taken into account as per mines rules & regulations for safety & security.

Disaster management and risk assessment: There is a possibility of incidents like bank caving, flooding & drowning during the monsoon. Detailed emergency plan in consultation with Risk and Hazard Expert and project manager will be prepared and submitted during EIA.

v. Amenities/Facilities.

Amenities and Facilities: Basic amenities such as toilets for both men and women and clean drinking water will be provided to the workers. A temporary restroom will also be erected for resting. First aid kits and PPE will be provided to the employees while imparting knowledge about its usage.

6. Proposed Infrastructure

i. Toll Plaza Complex

Toll Plaza Complex shall be designed as per IRC: SP: 73-2015. Location of Toll Plaza will be decided in conjunction with adjacent sections and will be finalized in consultation with Client

Locations will be decided keeping in view the following factors:

1) Land Availability
2) Stream of traffic on toll plaza
3) Visibility of the approaching traffic.
4) Reasonably away from the road intersections and rail crossings
5) Free from risk of flooding and submergence.
6) Preferably on flat land and away from congested urban locations.

ii. Truck Lay Bye

Truck lay by will be proposed for parking of trucks by the side of the project highway. The guidelines as given in IRC: SP: 73-2015 will be followed in regard to location, size and facilities to be provided at the truck lay bye.

Truck lay byes will be located near check barriers and places of conventional stops of the truck operators. The places will be identified on the basis of field survey with adequate space.

The truck lay bye will have following facilities:

1) Paved Parking
2) Rest areas with toilets, drinking water
3) Telephone

iii. Green Belt.

IRC: SP: 21-2009 "Manual on Landscaping and Tree Plantation" and IRC: SP: 103-2014 “Guidelines on Tree Plantation along Rural Roads” shall guide the plantation of rows of trees with staggered pitch on either side of the road. The choice of the trees shall also be made as per the same code. Local, indigenous species that grow in the project area micro-climate shall be planted. Indicative arrangements for plantation of trees shall be in accordance with the IRC: SP: 21-2009, IRC: SP: 103-2014 and IRC: 66-1976.

iv. Bus Bays and Bus Shelters

The buses shall be allowed to stop for dropping and picking up passengers only at the bus bays. The bus bays will confirm to the specifications and standards as given in IRC: SP: 732015

The layout, design and location of the bus stops shall be as per IRC: SP: 73-2015. The bus stop layout shall ensure safe entry and exit of buses from the project corridor and safe movement of passengers. The shelter structure shall be structurally safe and functional so as to protect the waiting passengers adequately from sun, rain and wind.

iv. Social Infrastructure.

It is anticipated that toll booths, temporary camps and rain water harvesting structures along with supporting drains shall come up along the alignment. The proposed highway shall spur the area development in the region in terms of industries, townships, educational institutes etc.

v. Connectivity (Traffic and Transportation Road/ Rail/ Metro/ Water ways etc)

Road Infrastructure:

The proposed route is connected and approached through State highways and National Highways. The alignment starts at Intersection of SH-90, outskirt of Palia Kalan, Lakhimpur District (Chainage Km 000.000) and ends at Baroura Husen Badi village after Dubagga Chowk, Lucknow District (Chainage Km. 266.014). Further it is connected to NH24 in Hardoi Lucknow and NH25 in Malihabad. The project is also connected to NH24 at Shahjahanpur bypass and provides connectivity to various prestigious industrial projects. This route is connected to National Highway NH – 730 at Khutar bypass.

<table>
<tr><td>1.0</td><td>Major Bridge</td><td>There are about 3Major Bridges i.e. 1 in Hardoi bypass and 2 in Shahjahanpur bypass.</td></tr>
<tr><td>2.0</td><td>RUB/ROB</td><td>There are 01 Railway crossings. Hence 1 ROB are proposed along the alignment.</td></tr>
<tr><td>3.0</td><td>Bypass and Realignments</td><td>Alignment Passes through Congested Built up Area in following location, where Bypass will Be required:
1) Khutur
2) Powayan
3) Shahjahanpur
4) Shahabad
5) Hardoi
Apart from this, there are two major realignments at Sehramaujanubi and Behta Gokul</td></tr>
<tr><td>4.0</td><td>Vehicular overpass / underpass</td><td>There are about 20 Vehicular underpasses.
1) Khutur bypass-3nos
2) Powayan bypass -2nos
3) Shahajahanpur bypass- 5nos
4) Shahabad bypass- 3nos
5) Hardoi bypass- 3nos
6) Sehramou Janubi Realignment- 2nos
7) Behta Gokul Realignment- 2nos</td></tr>
<tr><td>5.0</td><td>Intersections</td><td>
<table>
<tr><td>Palia</td><td>MDR 2 C</td></tr>
<tr><td>Bhira</td><td>SH 90</td></tr>
<tr><td>Lalpur</td><td>SH 25</td></tr>
<tr><td>Lalpur</td><td>SH 26</td></tr>
<tr><td>Rujha Kala</td><td>SH 25</td></tr>
<tr><td>Dhara</td><td>SH 25</td></tr>
<tr><td>Powayan</td><td>Jankapur Rd</td></tr>
<tr><td>Mainari</td><td>SH 25</td></tr>
<tr><td>Paina Bujurg</td><td>SH 25</td></tr>
<tr><td>Shahjahanpur</td><td>SH 29</td></tr>
<tr><td>Shahjahanpur</td><td>NH 24</td></tr>
<tr><td>Shahjahanpur</td><td>SH 29</td></tr>
<tr><td>Shahjahanpur</td><td>NH 24</td></tr>
<tr><td>Chauthera</td><td>SH 25</td></tr>
<tr><td>Shahabad</td><td>SH 25</td></tr>
<tr><td>Shahabad</td><td>SH 29</td></tr>
<tr><td>Shahabad</td><td>SH 25</td></tr>
<tr><td>Hardoi</td><td>SH 25</td></tr>
<tr><td>Hardoi</td><td>Sandi Rd</td></tr>
<tr><td>Hardoi</td><td>SH 21</td></tr>
<tr><td>Hardoi</td><td>SH 25</td></tr>
<tr><td>Lodhi</td><td>Baghauli Rd</td></tr>
<tr><td>Ashraf Tola</td><td>Sandila Rd</td></tr>
<tr><td>Malihabad</td><td>NH 25 A</td></tr>
<tr><td>Malihabad</td><td>NH 25 A</td></tr>
<tr><td>DUBAGGA</td><td>IIM Rd</td></tr>
<tr><td>DUBAGGA</td><td>BYPASS Rd</td></tr>
</table>
</td></tr>
</table>

7. Rehabilitation and Resettlement (R & R) Plan

i. Policy to be adopted (Central/State) in respect of the project affected persons including home oustees, land oustees and landless laborers (a brief outline to be given).

Most of the land coming under the project area is agricultural and cultivated land. Along with this the alignment of highway passing through forest land (0.04 Ha area) barren land (1.42 Ha area) and habited area (4.89 Ha area). The land required for the construction will be acquired by NHAI before the start of construction work. R&R plan will be prepared and will be submitted in EIA.

All surveys, analysis, assessment and management plans would be prepared as per Government of India/Ministry of Environment and Forest guidelines so as to facilitate their clearance requirements.

8. Project Schedule & Cost Estimates

i. Likely date of start of construction and likely date of completion

The project shall start its construction work as and when DPR is finalized and will get Environmental clearance from MoEF&CC. The completion period of the project construction is estimated about 36 months. Work will commence from January 2021 and the anticipated date of completion is December 2024.

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

The estimated cost is approximately Rs. 4136.00 Crores.

9. Analysis of proposal (Final Recommendations)

(i) Financial and social benefits with special emphasis on the benefit to the local people including tribal population, if any, in the area.

The project will have multiple benefits. In addition to the improved road infrastructure, the corridor will provide other benefits like proposed activity improves the economic status of the village people the dedicated project area. Overall improvement will be expected in local area in terms of;

1. Development and improvement in transportation infrastructure facility will connect villages with the nearby cities
2. Better approach to Medical & Educational services and quick transportation of perishable goods like fruits, vegetables and dairy products and
3. Opening up of opportunities for new occupations
4. Improved quality of life for people and so on.
5. Transporting, processing and marketing of agricultural products
6. Fast and safe connectivity resulting in savings in fuel, travel time and total transportation cost to the society
7. Reduction in accidents
8. Reduction in pollution
9. Proposed Tree Plantation along the road side, green pockets alongside of the alignment will have social benefits to the nearby people
10. The proposed highway will provide a boost to the infrastructural in the area.
11. Along with this real estate development, medical facilities, food courts, police stations, public toilets, petrol pumps may be developed. This will definitely add value in the social and financial benefits in the region
12. Indirect and direct employment opportunity to people from all skilled, semiskilled and unskilled streams will act as social benefits

It is assumed that the overall project will boost socio-economic development in the undermined regions of Uttar Pradesh and help in attracting more industries that would kindle the development and growth within the state.