

PRE-FEASIBILITY REPORT

For

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

For

**CONSTRUCTION OF 4 LANE ELEVATED/AT GRADE GANGA
PATH CONNECTING MUNGER (SAFIABAD) – BARIYARPUR –
GHORGHAT – SULTANGANJ ON HYBRID ANNUITY MODE
(LENGTH: 41.931 KM, COMPRISING 29.350 KM OF AT-
GRADE/EMBANKMENT SECTION AND 12.581 KM OF ELEVATED
SECTION)**

[Schedule 8 (b) “Township and Area Development”, Category B1]

Submitted to

State Expert Appraisal Committee (SEAC), Bihar

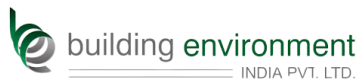
Submitted by

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1 EXECUTIVE SUMMARY

The proposed project involves the construction of a 4-Lane At-Grade/Elevated Ganga Path from Munger (Safiabad) – Bariyarpur – Ghorghat – Sultanganj under the Hybrid Annuity Mode (HAM). The project is being implemented by the Bihar State Road Development Corporation Limited (BSRDCL) in the Munger, Bhagalpur and Begusarai districts of Bihar. The total length of the proposed greenfield corridor is 41.931 km, comprising 29.350 km of at-grade/embankment section and 12.581 km of elevated section. The salient feature of the proposed project is as provide in **Table 1-1**.

Table 1-1: Salient Features of project

Sr. No.	Particulars		Proposed Details	
1.	Alignment	:	Construction of 4 Lane Elevated/At Grade Ganga Path connecting Munger (Safiabad) – Bariyarpur – Ghorghat – Sultanganj on Hybrid Annuity Mode (Length: 41.931 km, comprising 29.350 km of at-grade/embankment section and 12.581 km of elevated section)	
2.	Geographical location	:	Starting Point: Ch. 0+000 (25°20'26.21" N, 86°27'51.07"E) at Munger (Safiabad); End Point: 41+931 (25°14'54.74"N, 86°43'37.92"E) at Sultanganj	
3.	Location the proposed project	:	District: Munger, Bhagalpur and Begusarai	
			State: Bihar	
4.	Alignment passing through the Tehsils		The Alignment is passing through 1 Taluka in Munger District, 1 Taluka in Bhagalpur District and 1 Taluka in Begusarai District	
			District	Taluka
			Munger	Munger
			Bhagalpur	Sultanganj
			Begusarai	Sahebpur Kamal
5.	Connecting villages	:	Munger: 25 Villages Handio, Mohiuddinpur, Sagrampur, Hirodiara, Mokbira, Jafranagar, Jamaalkita, Basdevpur, Amarpur, Haranathpur Barari, Haranathpur Karari, Khemnaranayanpur, Sirmatpur, Chak Ali, Mahuli, Shankarpur, Shikandarpur, Sitalpur, Nakara, Nauagarhi, Tarapur Diara, Binda Diyara, Nirpur, Binda Diyara (Kalyan Tola), Binda Diyara (Jhoua Bahiyar) Begusarai: 1 Village Malhipur Barari Bhagalpur: 5 Villages	

Sr. No.	Particulars		Proposed Details			
			Goraghat Milik, Gangania, Kamarganj, Jahangira, and Masdi			
6.	Length of the proposed alignment	:	42 km at-grade section: 30.12 km elevated section: 11.88 km			
7.	Project cost	:	Total estimated cost ~ ₹5327 Cr.			
8.	Total land acquisition	:	Total: 249.241 Ha			
			Non-Forest Land: 249 Ha			
			Forest land: 0.241Ha			
9.	Carriageway	:	27 mt			
10.	Design Speed	:	Plain: 100 km/hr,			
11.	Proposed RoW	:	30-80 m			
12.	Proposed Interchanges	:	3 Nos. of interchange at following locations:			
			Chainage (Km)	Type	Connecting Road	Location
			0+000	T-Junction	NH-33	Safiabad
			7+320	T-Junction	Approach of NH -333B	Munger
			41+630	T-Junction	NH-33	Sultanganj
13.	Bridges	:	Major bridges: 1 Nos. Minor bridges: 3 Nos.			
14.	Elevated Section	:	9 locations varying from 420m length to 4380m length			
15.	Vehicular overpass & underpass	:	VUP: 5 Nos. LVUP: 7 Nos. SVUP: 14 Nos.			
16.	Culverts	:	61 Nos.			
17.	Median	:	3-5 m			
18.	Paved Shoulder	:	2.50 m			
19.	Earthen Shoulder	:	1.50 m			
20.	Tunnels	:	Nil			
21.	Railway over bridge	:	1 No.			
22.	Embankment	:	Average height of embankment: > 3.0 m			
23.	Service Road/Slip Road	:	1.5 m width			
24.	RWH structures		Rainwater harvesting structures are proposed at every 500 m interval throughout the alignment as per IRC: SP-50:1999 by taking Adequate measures.			
25.	Plantation	:	Throughout			

Chapter 1. Introduction of the project / background information

1.1 Project Background

The proposed project involves the construction of a 4-Lane At-Grade/Elevated Ganga Path from Munger (Safiabad) – Bariyarpur – Ghorghat – Sultanganj under the Hybrid Annuity Mode (HAM). The project is being implemented by the Bihar State Road Development Corporation Limited (BSRDCL) in the Munger, Bhagalpur and Begusarai districts of Bihar. The total length of the proposed greenfield corridor is : 41.931 km, comprising 29.350 km of at-grade/embankment section and 12.581 km of elevated section.

Within Munger District, the proposed alignment passes through or in the vicinity of 25 villages, including Handio, Mohiuddinpur, Sagrampur, Hirodiara, Mokbira, Jafranagar, Jamaalkita, Basdevpur, Amarpur, Haranathpur Barari, Haranathpur Karari, Khemnaranayanpur, Sirmatpur, Chak Ali, Mahuli, Shankarpur, Shikandarpur, Sitalpur, Nakara, Nauagarhi, Tarapur Diara, Binda Diyara, Nirpur, Binda Diyara (Kalyan Tola), Binda Diyara (Jhoua Bahiyar).

Within Begusarai District, the alignment traverses or passes adjacent to 1 village, Malhipur Barari.

Within Bhagalpur District, the alignment traverses or passes adjacent to 5 villages, including Goraghat Milik, Gangania, Kamarganj, Jahangira, and Masdi.

The proposed alignment traverses agricultural land, rural settlements, urban areas, riverine landscapes, and floodplain regions associated with the River Ganga. It also passes through portions of the Eco-Sensitive Zone (ESZ) of the Vikramshila Gangetic Dolphin Sanctuary and involves diversion of notified forest land at certain locations.

This option of new connectivity is economical option to diversion of the traffic, boost to development and providing employment opportunities in industrial and tourism sector the region.

As per the Environment Impact Assessment (EIA) Notification dated 14th September, 2006, as amended this is Category B project with type number '8 (b)' "Townships and Area Development", Category B1, which require preparation of EIA Report and requires Environmental Clearance from the State Environmental Impact Assessment Authority (SEIAA).

Further, as part of the proposed alignment passes through the default ESZ of the Vikramshila Gangetic Dolphin Sanctuary, National Board for Wildlife (NBWL) Clearance under the provisions of the Wildlife (Protection) Act, 1972, as amended, shall also be required.

In addition, the proposed alignment involves diversion of approximately 0.241 ha of forest land. Therefore, Forest Clearance (FC) under the provisions of the Forest (Conservation) Act, 1980), as amended, shall also be required prior to commencement of the project.

1.2 Identification of Project Proponent

Bihar State Road Development Corporation Limited (BSRDCL), a Government of Bihar undertaking, was incorporated under the provisions of the Companies Act, 1956, with the objective of planning, developing, improving, constructing, operating, administering, managing, controlling, and maintaining road infrastructure across the State of Bihar and, where required, elsewhere in India. The Corporation is entrusted with the development of various transportation infrastructure facilities, including roads, highways, expressways, bridges, flyovers, tunnels, streets, pathways, sidewalks, approach roads, and other allied infrastructure works and public utilities. BSRDCL also undertakes the construction of temporary shelters and emergency infrastructure during natural calamities or other emergency situations.

These activities are executed on behalf of the Road Construction Department, Government of Bihar, or directly for other departments, agencies, organizations, and statutory bodies of the Government of Bihar, with the objective of providing safe, efficient, and sustainable transportation infrastructure in the State. Details of project Proponents:

Proponent	:	Bihar State Road Development Corporation Limited (BSRDCL)
In-Charge person	:	Mr. Avinash Kumar Deputy General Manager (Tech) PIU Bhagalpur
Registered Address	:	RCD Mechanical Workshop Campus, Near Patna Airport, Sheikhpura, Patna 800014 (Bihar)
Address for correspondence:	:	Bihar State Road Development Corporation Limited (BSRDCL) PIU, Bhagalpur SE National Highway Circle Office Campus, Zero Mile, Bhagalpur-813210

1.3 Description of Nature of the project

The project commences at Chainage 0+000 near Safiabad, Munger at geographical coordinates 25°20'26.21" N, 86°27'51.07" E, and terminates at Chainage 41+931 at Sultanganj geographical coordinates 25°14'54.74"N, 86°43'37.92"E. The alignment generally follows the southern bank of the River Ganga, traversing predominantly plain alluvial terrain and providing an important regional transport corridor connecting Munger, Bhagalpur and Begusarai. Refer Figure 2-2 for alignment location. The salient feature of the proposed project is as provide in **Table 1-1**.

Table 1-1: Salient Features of project

Sr. No.	Particulars	Proposed Details
1.	Alignment	: Construction of 4 Lane Elevated/At Grade Ganga Path connecting Munger (Safiabad) – Bariyarpur – Ghorghat – Sultanganj on Hybrid Annuity Mode (Length: 41.931 km, comprising 29.350 km of at-grade/embankment section and 12.581 km of elevated section)

Sr. No.	Particulars		Proposed Details			
2.	Geographical location	:	Starting Point: Ch. 0+000 (25°20'26.21" N, 86°27'51.07"E) at Munger (Safiabad); End Point: 41+931 (25°14'54.74"N, 86°43'37.92"E) at Sultanganj			
3.	Location the proposed project	:	District: Munger, Bhagalpur and Begusarai State: Bihar			
4.	Alignment passing through the Tehsils		The Alignment is passing through 1 Taluka in Munger District, 1 Taluka in Bhagalpur District and 1 Taluka in Begusarai District			
			District	Taluka		
			Munger	Munger		
			Bhagalpur	Sultanganj		
			Begusarai	Sahebpur Kamal		
5.	Connecting villages	:	Munger: 25 Villages Handio, Mohiuddinpur, Sagrampur, Hirodiara, Mokbira, Jafranagar, Jamaalkita, Basdevpur, Amarpur, Haranathpur Barari, Haranathpur Karari, Khemnaranayanpur, Sirmatpur, Chak Ali, Mahuli, Shankarpur, Shikandarpur, Sitalpur, Nakara, Nauagarhi, Tarapur Diara, Binda Diyara, Nirpur, Binda Diyara (Kalyan Tola), Binda Diyara (Jhoua Bahiyar) Begusarai: 1 Village Malhipur Barari Bhagalpur: 5 Villages Goraghat Milik, Gangania, Kamarganj, Jahangira, and Masdi			
6.	Length of the proposed alignment	:	42 km at-grade section: 30.12 km elevated section: 11.88 km			
7.	Project cost	:	Total estimated cost ~ ₹5327 Cr.			
8.	Total land acquisition	:	Total: 249.241 Ha Non-Forest Land: 249 Ha Forest land: 0.241Ha			
9.	Carriageway	:	27 mt			
10.	Design Speed	:	Plain: 100 km/hr,			
11.	Proposed RoW	:	30-80 m			
12.	Proposed Interchanges	:	3 Nos. of interchange at following locations:			
			Chainage (Km)	Type	Connecting Road	Location
			0+000	T-Junction	NH-33	Safiabad

Sr. No.	Particulars		Proposed Details			
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			41+630	T-Junction	NH-33	Sultanganj
13.	Bridges	:	Major bridges: 1 Nos. Minor bridges: 3 Nos.			
14.	Elevated Section	:	9 locations varying from 420m length to 4380m length			
15.	Vehicular overpass & underpass	:	VUP: 5 Nos. LVUP: 7 Nos. SVUP: 14 Nos.			
16.	Culverts	:	61 Nos.			
17.	Median	:	3-5 m			
18.	Paved Shoulder	:	2.50 m			
19.	Earthen Shoulder	:	1.50 m			
20.	Tunnels	:	Nil			
21.	Railway over bridge	:	1 No.			
22.	Embankment	:	Average height of embankment: > 3.0 m			
23.	Service Road/Slip Road	:	1.5 m width			
24.	RWH structures	:	Rainwater harvesting structures are proposed at every 500 m interval throughout the alignment as per IRC: SP-50:1999 by taking Adequate measures.			
25.	Plantation	:	Throughout			

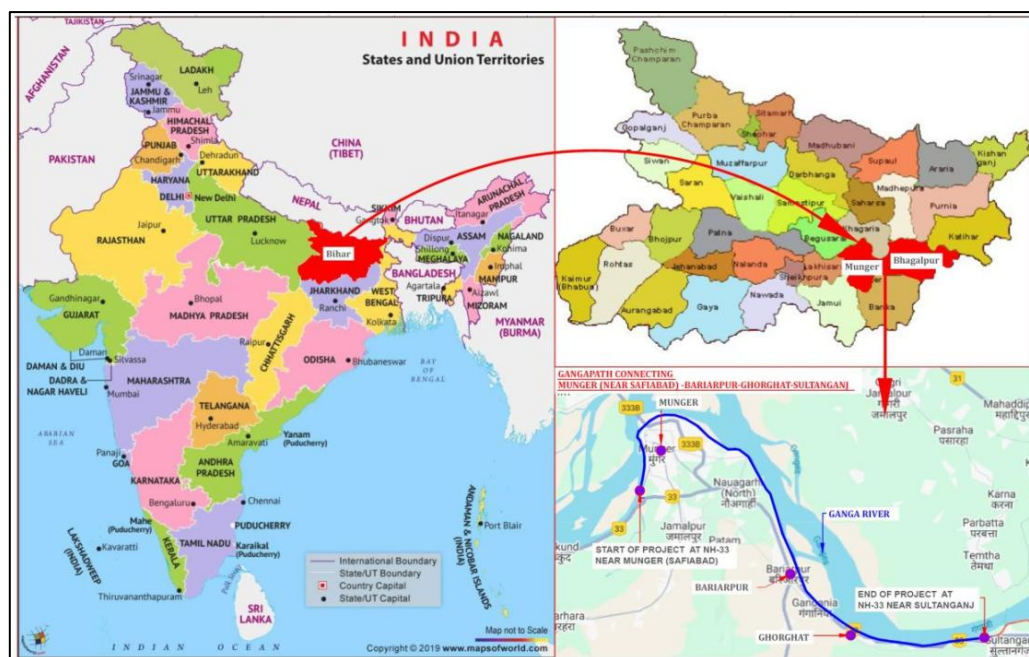


Figure 1-1: Index Map showing Location of the Project

1.4 Need of the project

The proposed 4-lane Greenfield At-Grade/Elevated Ganga Path from Munger (Safiabad) to Sultanganj has been envisaged to cater to the increasing transportation demand in eastern Bihar by providing a high-speed, safe, and efficient corridor along the southern bank of the River Ganga. The existing road network connecting Munger, Bariyarpur, Ghorghat, and Sultanganj experiencing significant traffic congestion due to rapid urbanization, increasing commercial and industrial activities, and growing passenger and freight movement. As the existing roads pass through densely populated settlements with mixed traffic conditions, numerous intersections, and limited capacity, they are characterized by reduced travel speeds, longer travel times, higher vehicle operating costs, and increased road safety concerns.

The proposed greenfield corridor is designed to overcome these limitations by providing seamless connectivity between major urban centres and intermediate settlements while improving access to railway stations, industrial areas, educational institutions, tourism destinations, river ghats, and future urban developments. With a design speed of 100 kmph, the access-controlled facility will substantially reduce travel time, fuel consumption, and vehicle operating costs by minimizing delays caused by congestion, urban traffic, and geometric deficiencies. The project will also divert through traffic, particularly heavy commercial vehicles, away from congested town centres such as Bariyarpur, Sultanganj, and Bhagalpur, thereby reducing traffic congestion, improving urban mobility, and enhancing road safety for local communities.

The incorporation of elevated sections, grade-separated intersections, and modern geometric design standards will significantly improve operational safety by reducing conflict points and

accident risks. In addition, the corridor will facilitate efficient movement of agricultural produce, industrial goods, and other commodities, thereby strengthening regional logistics, promoting industrial growth, and supporting economic development in the project influence area. Improved connectivity to important religious and tourist destinations, particularly Sultanganj, the origin of the internationally renowned Shravani Kanwar Yatra, is expected to promote tourism, pilgrimage, and associated economic activities.

The proposed Ganga Path has also been planned to integrate with the existing and proposed network of National Highways, State Highways, bridges, and future transport infrastructure, thereby enhancing the overall regional transportation system. Adoption of a greenfield alignment, along with selective elevated stretches, has been aimed at minimizing displacement of settlements, reducing interference with existing urban infrastructure, limiting land acquisition, and avoiding critical utilities to the extent feasible. Furthermore, the elevated sections will enhance connectivity during flood events that frequently affect the Ganga basin, ensuring uninterrupted movement of emergency services, disaster response teams, and essential supplies.

Beyond transportation benefits, the project is expected to act as a catalyst for planned urban expansion, industrial development, logistics parks, warehousing, commercial activities, and employment generation, thereby contributing to balanced socio-economic development in the Munger, Bhagalpur and Begusarai districts. As a strategically important infrastructure project under the Government of Bihar's long-term transportation development programme, the 42 km long 4-lane Greenfield At-Grade/Elevated Ganga Path will significantly improve east-west mobility along the Ganga, enhance regional connectivity, reduce travel time and logistics costs, improve road safety, and support sustainable economic growth while providing a resilient and environmentally responsible transportation corridor for eastern Bihar.

1.5 Benefits of project alignment

The proposed 4-lane Greenfield At-Grade/Elevated Ganga Path from Munger (Safiabad) to Sultanganj (Bhagalpur) has been carefully planned to establish a high-capacity, safe, and resilient transportation corridor along the southern bank of the River Ganga. The selected alignment has been optimized based on engineering, environmental, social, and economic considerations to ensure efficient connectivity while minimizing adverse impacts on existing settlements and environmentally sensitive areas. The project is expected to deliver substantial direct benefits, including improved regional connectivity, reduced travel time, enhanced road safety, lower vehicle operating costs, and improved freight mobility, as well as indirect benefits such as accelerated socio-economic development, increased investment opportunities, employment generation, promotion of tourism and pilgrimage, improved disaster resilience, and balanced regional development. Collectively, these benefits will contribute significantly to the sustainable infrastructure development and long-term economic growth of the Munger, Bhagalpur and Begusarai districts and the eastern region of Bihar.

1.6 Demand & Supply Gap

Not applicable

1.7 Import Vs Indigenous Production

Not applicable

1.8 Export Possibilities

Not applicable

1.9 Employment Generation Due to Proposed Project

Direct Employment

During the construction phase manpower will be needed to take the part in various project activities. Skilled, semi-skilled and unskilled labours, will likely get work. In the post construction phase, it is expected that the project will provide social benefits to local people in terms of direct employment by way of better commercial and industrial development of the area.

Indirect Employment

The project shall also induce indirect employment for cleaners, guards, local vendors, operation and maintenance workers etc. Local vendors, construction material traders, electrician, plumbers etc. will be benefitted through employment generated during construction and maintenance phase.

Chapter 2. Project Description

2.1 Type of project including interlinked and interdependent projects, if any

Not applicable

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

The proposed project involves the construction of a 4-Lane At-Grade/Elevated Ganga Path from Munger (Safiabad) – Bariyarpur – Ghorghat – Sultanganj under the Hybrid Annuity Mode (HAM). The project is being implemented by the Bihar State Road Development Corporation Limited (BSRDCL) in the Munger, Bhagalpur and Begusarai districts of Bihar. The total length of the proposed greenfield corridor is 41.931 km, comprising 29.350 km of at-grade/embankment section and 12.581 km of elevated section. The alignment traverses through 25 villages in Munger District 1 village in Begusarai district and 5 villages in Bhagalpur District. The latitude & longitude of proposed alignment are given in **Table 2-1**.

Table 2-1: Geographical Location of the alignment

S. No.	Latitude	Longitude	S. No.	Latitude	Longitude
1.	25°20'26.613" N	86°27'51.235" E	11.	25°19'56.812" N	86°33'45.173" E
2.	25°21'40.934" N	86°27'53.600" E	12.	25°18'33.519" N	86°34'17.605" E
3.	25°22'49.225" N	86°27'36.544" E	13.	25°17'07.981" N	86°34'57.564" E
4.	25°23'05.543" N	86°27'33.577" E	14.	25°16'03.894" N	86°35'48.547" E
5.	25°23'44.539" N	86°28'26.783" E	15.	25°14'58.400" N	86°37'35.311" E
6.	25°23'30.792" N	86°28'33.093" E	16.	25°14'26.972" N	86°40'01.787" E
7.	25°23'50.114" N	86°29'20.365" E	17.	25°14'25.102" N	86°40'58.463" E
8.	25°22'54.306" N	86°30'52.878" E	18.	25°14'36.867" N	86°41'54.099" E
9.	25°22'25.878" N	86°31'57.440" E	19.	25°14'57.070" N	86°43'43.531" E
10.	25°21'32.189" N	86°32'55.541" E	20.	25°14'54.74"N	86°43'37.92"E

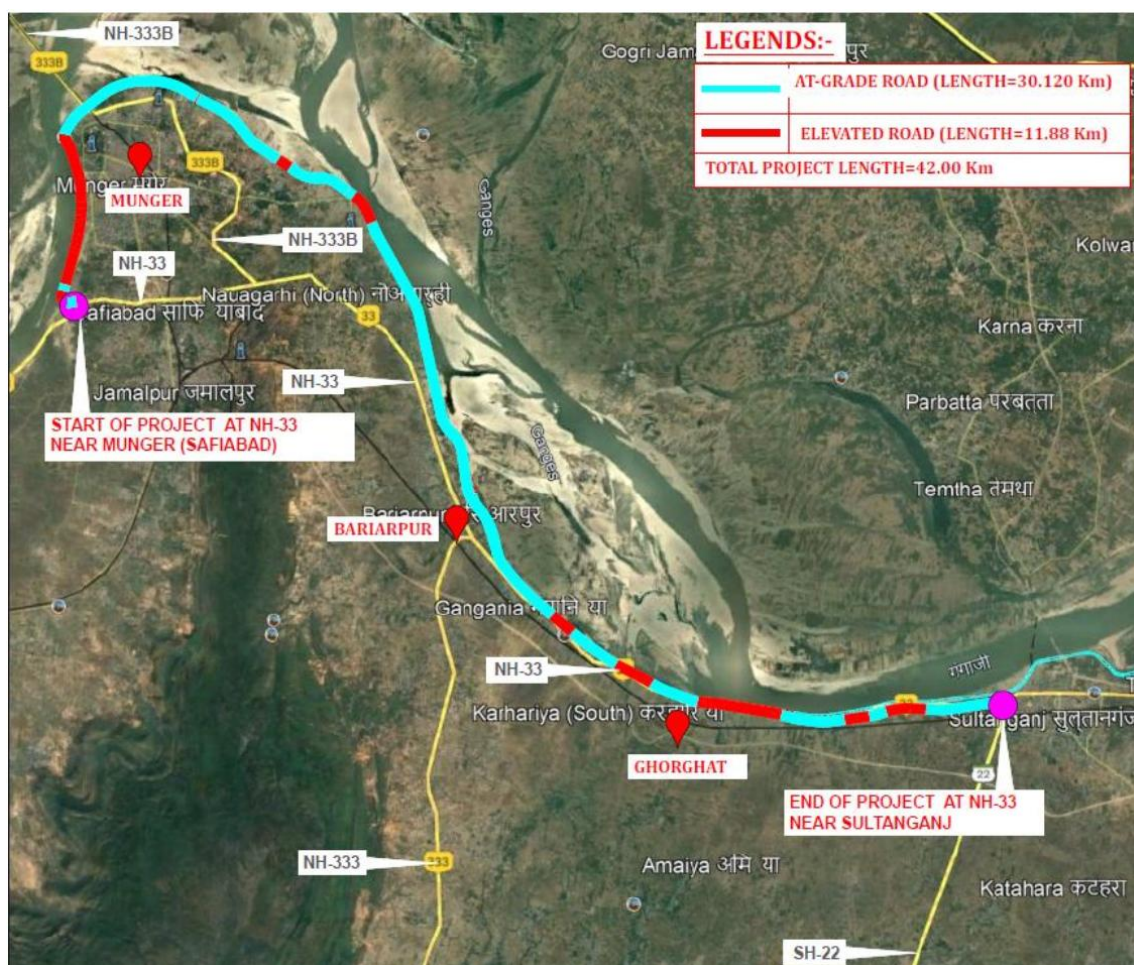


Figure 2-1: Key Map showing Location of the Project

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

The analysis of alternatives for the project road has been carried out for “With Project Scenario” and “Without Project Scenario”, “With and Without Environment Management Plan”. It is found that Project is acceptable with Environment Management Plan. The minor adverse impacts would be manageable to an acceptable level by implementing Environmental Management Plan due this EIA with EMP has been considered an acceptable and justified option. In order to avoid land acquisition and effective connectivity to new bus stand and future metro route, the “With Project Scenario”, has been found to be acceptable option. The current project will also divert the traffic bound for southern portion of the State as well reduce congestion.

2.4 Size & Magnitude of Operation

Table 2-2: Details of area in each village

Sr.No.	District	Name of Village
1.	Munger	Handio

Sr.No.	District	Name of Village
2.	Munger	Mohiuddinpur
3.	Munger	Sagrampur
4.	Munger	Hirodiara
5.	Munger	Handio
6.	Munger	Mohiuddinpur
7.	Munger	Mokbira
8.	Munger	Jafranagar
9.	Begusarai	Malhipur Barari
10.	Begusarai	Malhipur Barari
11.	Munger	Jamaalkita
12.	Munger	Basdevpur
13.	Munger	Amarpur
14.	Munger	Haranathpur Barari
15.	Munger	Haranathpur Karari
16.	Munger	Khemnarayanpur
17.	Munger	Sirmatpur
18.	Munger	Chak Ali
19.	Munger	Mahuli
20.	Munger	Shankarpur
21.	Munger	Shikandarpur
22.	Munger	Sitalpur
23.	Munger	Nakara
24.	Munger	Nauagarhi
25.	Munger	Tarapur Diara
26.	Munger	Binda Diyara
27.	Munger	Nirpur
28.	Munger	Binda Diyara (Kalyan Tola)
29.	Munger	Binda Diyara (Jhoua Bahiyar)
30.	Bhagalpur	Goraghat Milik
31.	Bhagalpur	Gangania
32.	Bhagalpur	Kamarganj
33.	Bhagalpur	Jahangira
34.	Bhagalpur	Masdi

The TCS details is attached as an **Annexure – 1**.

2.5 Project Description with Process Details

Alignment feature is given in **Table 1-1** of Chapter 1.

2.6 Raw material required along with estimated quantity

The highway construction will require minor minerals like stones, gravel, ordinary clay, ordinary sand, limestone, boulders, kankar, murum, brick earth, bentonite, road metals. As per MINES AND MINERALS (DEVELOPMENT AND REGULATION) ACT, 1957, excavation of minor minerals during construction of roads shall be executed after prior permit. Raw material details given in **Table 2-3**.

Table 2-3: Raw Materials and Sources

Construction material	Quantity in MT	Source	Mode of transport	Distance from source in Km
Aggregates	2291000	Pakur/Sahibganj/Dumka	Road	150 to 250
Sand	1009800	Kiul River, Jamui (Lakhisarai)	Road	80 to 100
bricks	500000 nos	Munger/Sultanganj	Road	15 to 30
Cement	475200	Buxar/Prayagraj/Satna	Road	300 to 700
Steel	95000	Jamshedpur/ Bokaro	Road	400 to 500
Bituminous	8152	IOCL (Barauni)	Road	60 to 100

2.7 Resource Optimization, Recycle/ Reused

Topsoil removed during cutting & filling will be kept aside for reuse in median development. Excavated material removed will be reused to maximum extent by reusing the same for filling low laying areas if any or in embankment. Else it will be used in filling other identified low lying areas.

Detailed quantification will be provided in EIA.

2.8 Requirement and Source of Water/Energy

Water:

It is estimated that during construction phase water demand will be approx. 182 KLD, Fresh water requirement is 64 KLD and Flushing water requirement is 32 KLD and about 87 KLD for site activities. The water shall be obtained from nearby surface/ground water with consent.

During operation phase water requirement will be workers and operations of toll plaza, water sprinkling and landscaping.

Energy:

Power requirement during construction phase will be met with LS D.G sets in case of non-availability of electric supply. For operational phase, Total power requirement is 1 MW which will be met through state electricity board. Provision of DG sets – 250 x 6 KVA capacity each for power backup.

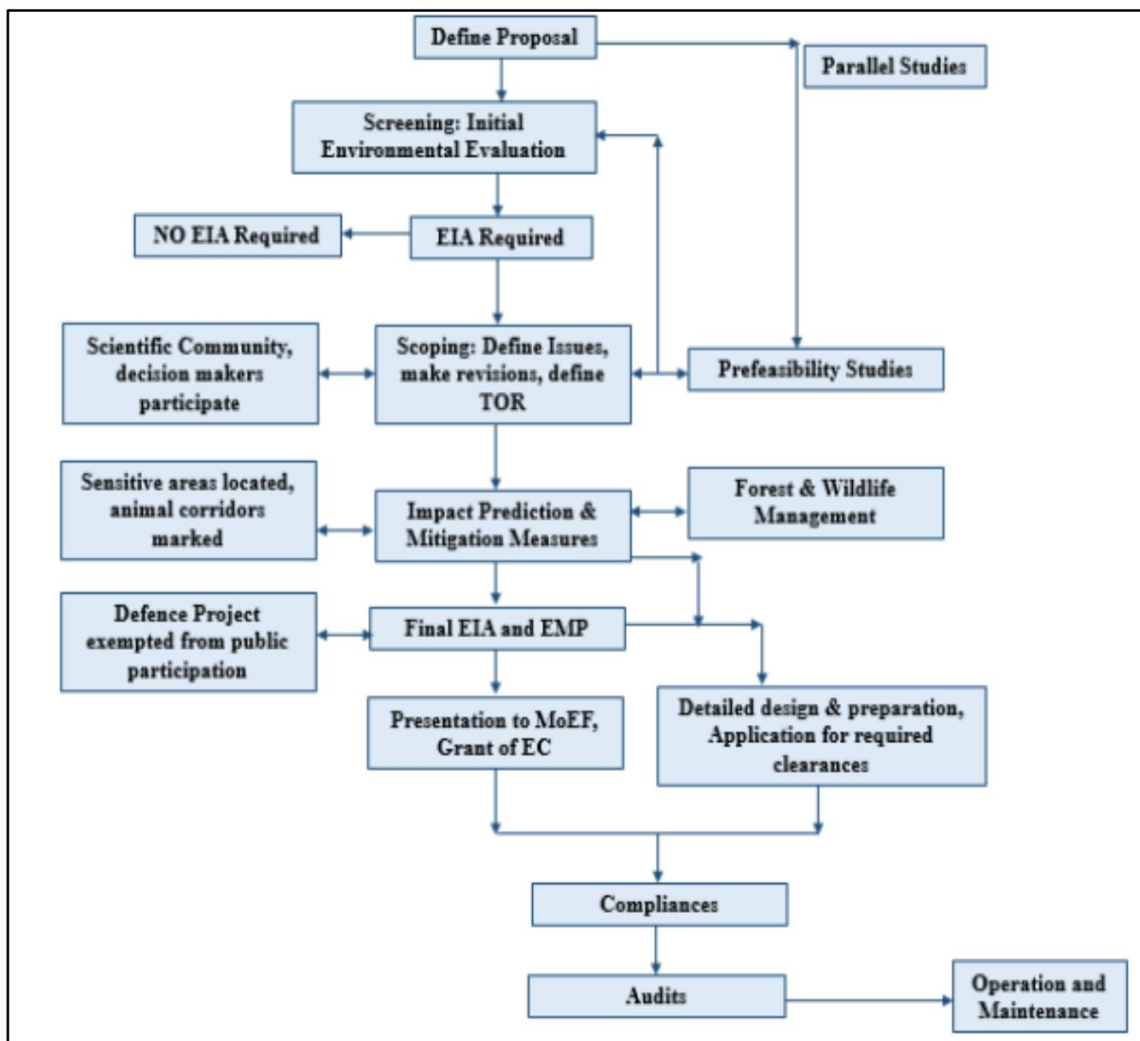
2.9 Quantity of Waste Generated

Debris generated during construction will be utilized to maximum extent for filling low lying area if any or in embankment development etc. Also arrangements will be made by prospective contractors for disposal of solid waste. Movable/Bio toilets will be provided as sanitation facility wherever necessary while solid waste will be segregated and disposed as per MSW rules & regulations. During construction phase waste will be generated from labour colony and from working site. Total generated waste will be 478 kg/day, out of which 190 kg/day is biodegradable waste and 286 kg/day is non-biodegradable waste. During operation phase waste generated will be approx. 20 kg/day.

During operation phase the waste which will be collected and segregated at source by providing separate bins on site and will be handed over to local vendor for further processing.

Construction and demolition (C&D) waste generated during the construction phase shall be managed in accordance with the Construction and Demolition Waste Management Rules, 2025. The generated waste will be reused for backfilling and road development.

2.10 Schematic representation of the feasibility drawing of EIA



Chapter 3. Site Analysis

The proposed 4-lane Greenfield At-Grade/Elevated Ganga Path from Munger (Safiabad) to Sultanganj (Bhagalpur) has been planned to follow a detailed evaluation of alternative alignments to identify the most technically feasible, economically viable, environmentally acceptable, and socially sustainable corridor. Since the project is a linear transportation infrastructure, the concept of a "site alternative" is represented by alignment alternatives rather than different project sites.

During the planning stage, multiple alignment options were examined using satellite imagery, topographical maps, cadastral maps, field reconnaissance, and engineering surveys. The alternatives were assessed based on parameters such as engineering feasibility, terrain characteristics, land acquisition requirements, impacts on habitations, environmental sensitivity, proximity to protected areas, forests and wetlands, river crossings, flood-prone areas, existing utilities, religious and cultural properties, construction cost, traffic efficiency, and future development potential.

The preferred alignment was selected after balancing these technical, environmental, social, and economic considerations. The final alignment minimizes displacement of settlements and avoids environmentally sensitive areas, including forests, wetlands, and ecologically important habitats, to the extent practicable. Elevated sections have been proposed at critical locations to maintain natural drainage, reduce impacts on the Ganga floodplain, improve flood resilience, and minimize interference with existing infrastructure and built-up areas.

The selected alignment also provides optimum connectivity with existing National Highways, State Highways, district roads, bridges, and proposed transport infrastructure while ensuring safe and efficient traffic movement. Consequently, it represents the most suitable alternative, offering the best balance between transportation efficiency, environmental sustainability, social acceptability, engineering feasibility, and long-term regional development objectives.

Basis for Selection of the Preferred Alignment:

- It should serve as uninterrupted traffic for proposed Tourist centres.
- It should provide linkage to other roads in the region.
- It should take in to account the future traffic growth and management.
- It should be coordinated with local and national development plans.
- It should minimize environment impact along the corridor.
- It should take in to consideration the opinions of local people in selection of alignment.

Accordingly, the selected alignment has been adopted as the preferred alternative for implementation, as it satisfies the project objectives while adhering to the principles of sustainable infrastructure planning and environmental management.

The preferred alignment commences at Chainage 0+000 near Safiabad, Munger at geographical coordinates 25°20'26.21" N, 86°27'51.07" E, and terminates at Chainage 41+931 at Sultanganj geographical coordinates 25°14'54.74"N, 86°43'37.92"E. The alignment generally follows the southern bank of the River Ganga, traversing predominantly plain alluvial terrain and providing an important regional transport corridor connecting Munger, Bhagalpur and Begusarai. Refer Figure 2-2 for alignment location. The salient feature of the proposed project is as provide in **Table 1-1**.

3.1 Connectivity

The project road starts from Munger (Safiabad), traverses through number of villages/towns viz Handio, Mohiuddinpur, Sagrampur, Hirodiara, Mokbira, Jafranagar, Jamaalkita, Basdevpur, Amarpur, Haranathpur Barari, Haranathpur Karari, Khemnarayanpur, Sirmatpur, Chak Ali, Mahuli, Shankarpur, Shikandarpur, Sitalpur, Nakara, Nauagarhi, Tarapur Diara, Binda Diyara, Nirpur, Binda Diyara (Kalyan Tola), Binda Diyara (Jhoua Bahiyar), Malhipur Barari, Goraghat Milik, Gangania, Kamarganj, Jahangira, and Masdi ends at Sultanganj.

3.2 Landform, Land Use and Land Ownership

The preferred alignment traverses the alluvial plains of the Ganga basin, characterized by predominantly flat to gently undulating terrain with low relief. The elevation along the alignment varies gradually, with no significant hills or steep gradients. The area comprises fertile alluvial deposits interspersed with agricultural fields, rural settlements, riverine floodplains, drainage channels, and localized low-lying areas susceptible to seasonal inundation during the monsoon.

The proposed Right of Way (RoW) traverses a combination of agricultural land, fallow land, barren/open land, rural and peri-urban settlements, transportation corridors, water bodies, riverine areas, and limited commercial land uses. Agriculture constitutes the dominant land use along most sections of the alignment, with cultivation of seasonal crops supported by the fertile alluvial soils of the Ganga basin.

At locations passing near urban centres such as Munger, Bariyarpur, Ghorghat and Sultanganj, the alignment encounters residential, commercial, and institutional developments. The corridor also intersects existing roads, railway lines, irrigation canals, natural drains, and utility corridors. The alignment has been optimized to avoid environmentally sensitive areas, dense habitations, and major public infrastructure to the maximum extent practicable while ensuring efficient connectivity.

The indicative land use categories along the project corridor include:

- Agricultural land (predominant)
- Fallow and barren land
- Residential and rural settlements
- Commercial and institutional areas

- Transportation corridors (roads and railways)
- River Ganga, tributaries, canals, ponds, and drainage channels
- Open spaces and scrubland
- Limited plantation and vegetation patches

Detailed land use analysis has been carried out using satellite imagery, field verification, and revenue records to support the alignment design and environmental assessment and will be given in EIA.

3.3 Topography

Topography of Munger and Begusarai District:

The district has a diverse landscape ranging from hills to flood plains. The major geomorphic units are rocky upland, Padi plain and alluvial plain.

a) The Kharagpur Hill tract: It constitutes dominantly elevated and rugged landmasses, except south surrounded on all sides by alluvial plains. The Ganga flows along its northern tip. The altitude of hills varies from 500 to 250 m a msl. It comprises mainly quartzite and phyllite of Kharagpur Formation. The rock of Kharagpur Formation has undergone multi-phase tectonic deformation, which has given rise to many types of deformational structures. Thermal springs are common in Kharagpur Hills and these springs emerge from fissures in highly jointed or sheared quartzites.

b) Padiplain: Represented by the area formed by coalescence of the pediment and thus forms rolling topography and comprises residual soil overlain by mixture of sheet wash deposits

c) Alluvial Plain: Older Alluvial Plain is represented in major part of Tarapur, Asarganj and part of Sangrampur blocks and it is made up of sediments derived from the denudation of Chota Nagpur Plateau and Kharagpur Hills. The thickness of this alluvium in Khaira village is about 40m, while in the east it is reduced considerably. Northern part of the district is represented by Younger Alluvial Plain and confined within few km from the river Ganga. Locally, this is called Diara area. Relief of Diara area is level to very gentle undulating ground. The mighty Ganga meanders in these parts and usually these land masses are flooded during middle of July to the end of September. Alluvial thickness is more in diara area. A tube well drilled by CGWB up to a depth of 235m bgl, located at Heru diara village, confirms the huge thickness of sediments. Natural levee, flood basin (Tal) and crevasse splays are common landforms along the river Ganga. The relief of alluvial plain on an average is 30 to 65 m above mean sea level.

Topography of Bhagalpur District:

Geomorphologically, Bhagalpur district forms part of the Mid-Ganga Foreland Basin. The northern and central parts, lying to the north and south of the Ganga respectively, comprise flat

Indo-Gangetic alluvial tracts—the northern section belonging to the North Bihar Plains and the southern to the Central Bihar Plains. The southern fringe transitions into a marginal alluvial tract. The general elevation of these alluvial areas remains within 45 m above mean sea level, with the master slope on both sides directed towards the Ganga River. Scattered across the plains are isolated Pre-Cambrian hard rock inliers, which rise prominently above the surrounding terrain; the highest of these is at Shahkund (143 m). This combination of fertile alluvial plains, low-lying flood-prone diara lands, and occasional rocky uplifts shapes the district’s agricultural potential and settlement patterns.

The district’s river network—dominated by the Ganga, along with tributaries like the Kosi, Chandan, Kadwa, Garha, and Bhadua—plays a critical role in shaping its topography, soil fertility, and flood patterns. Seasonal flooding replenishes soil nutrients but also poses challenges for infrastructure and settlement stability.

The preferred alignment is characterized by predominantly flat to gently sloping terrain with very low relief, typical of the Ganga floodplain. The ground elevation gradually decreases towards the River Ganga, with minor undulations caused by natural levees, abandoned channels, floodplain depressions, and agricultural fields.

The alignment runs broadly parallel to the southern bank of the River Ganga and passes through extensive agricultural lands, rural settlements, riverine floodplains, and peri-urban areas. The terrain is composed mainly of deep alluvial deposits of sand, silt, clay, and gravel, which have been deposited over time by the Ganga and its tributaries. Owing to the low-lying nature of the area, certain stretches are prone to seasonal flooding and waterlogging during the southwest monsoon.

The topography is favourable for highway development as it requires comparatively limited earthwork and facilitates the adoption of standard geometric design. However, the presence of flood-prone areas, natural drainage channels, irrigation canals, and river crossings has been carefully considered in the alignment planning. Elevated sections, bridges, culverts, and adequate cross-drainage structures have been incorporated at appropriate locations to maintain natural drainage patterns, ensure hydraulic continuity, minimize impacts on the Ganga floodplain, and enhance the resilience of the corridor against flood events.

Overall, the relatively level topography provides suitable conditions for the construction and long-term operation of the proposed highway while enabling efficient connectivity with minimal engineering constraints.

There are 1 nos. of major bridges and 3 nos. of minor bridges and 61 nos. Culverts are proposed on rivers and streams crossing the alignment.

3.4 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. Incase of notified industrial area, a copy of the Gazette notification should be given.

As per the preliminary investigation it is found that the project road traverses through the villages mentioned as below;

Sr. No.	Chainage (Km) From	Chainage (Km) To	Village Name	Sub District	District
1.	0+000	0+200	Handio	Munger	Munger
2.	0+200	0+500	Mohiuddinpur	Munger	Munger
3.	0+300	0+500	Sagrampur	Munger	Munger
4.	0+500	0+800	Hirodiara	Munger	Munger
5.	0+500	0+800	Handio	Munger	Munger
6.	0+800	1+600	Mohiuddinpur	Munger	Munger
7.	1+600	2+400	Mokbira	Munger	Munger
8.	-	-	Jafranagar	Munger	Munger
9.	-	-	Malhipur Barari	Begusarai	Begusarai
10.	6+300	7+400	Malhipur Barari	Begusarai	Begusarai
11.	6+700	7+000	Jamaalkita	Munger	Munger
12.	7+200	7+300	Basdevpur	Munger	Munger
13.	7+300	7+450	Amarpur	Munger	Munger
14.	7+500	9+000	Haranathpur Barari	Munger	Munger
15.	8+900	9+000	Haranathpur Karari	Munger	Munger
16.	9+300	9+400	Khemnarayanpur	Munger	Munger
17.	9+400	9+700	Sirmatpur	Munger	Munger

Sr. No.	Chainage (Km) From	Chainage (Km) To	Village Name	Sub District	District
18.	9+400	9+700	Chak Ali	Munger	Munger
19.	9+700	11+300	Mahuli	Munger	Munger
20.	11+300	12+000	Shankarpur	Munger	Munger
21.	12+000	12+900	Shikandarpur	Munger	Munger
22.	12+900	13+800	Sitalpur	Munger	Munger
23.	13+800	14+900	Nakara	Munger	Munger
24.	14+900	17+700	Nauagarhi	Munger	Munger
25.	17+700	24+000	Tarapur Diara	Munger	Munger
26.	24+000	28+400	Binda Diyara	Bariarpur	Munger
27.	28+400	29+000	Nirpur	Bariarpur	Munger
28.	29+000	32+200	Binda Diyara (Kalyan Tola)	Bariarpur	Munger
29.	32+200	33+100	Binda Diyara (Jhoua Bahiyar)	Bariarpur	Munger
30.	33+100	33+800	Goraghat Milik	Sultanganj	Bhagalpur
31.	33+800	38+000	Gangania	Sultanganj	Bhagalpur
32.	38+000	38+600	Kamarganj	Sultanganj	Bhagalpur
33.	38+600	40+100	Jahangira	Sultanganj	Bhagalpur
34.	40+100	42+000	Masdi	Sultanganj	Bhagalpur

The preferred alignment traverses the alluvial plains of the Ganga basin, characterized by predominantly flat to gently undulating terrain with low relief. The proposed Right of Way (RoW) traverses a combination of agricultural land, fallow land, barren/open land, rural and peri-urban settlements, transportation corridors, water bodies, riverine areas, and limited commercial land uses. At locations passing near urban centres such as Munger, Bariyarpur, Ghorghat and Sultanganj, the alignment encounters residential, commercial, and institutional developments.

The corridor also intersects existing roads, railway lines, irrigation canals, natural drains, and utility corridors. Details of Land use breakup will be described in EIA.

Also the alignment is passing through 0.241 ha of Forest land and through the Eco-Sensitive Zone (ESZ) of the Vikramshila Gangetic Dolphin Sanctuary hence, Forest Clearance and NBWL Clearance will also be applicable. Detailed information shall be furnished in EIA Report.

3.5 Existing Infrastructure

The social infrastructure like educational facilities (primary and higher secondary schools, Degree College), drinking water supply, post office, public transportation are available in the nearby town. Details will be given in EIA.

3.6 Soil Classification

The area is predominantly characterized by deep alluvial soils deposited by the Ganga River and its tributaries. The soil is generally sandy loam to silty loam, with patches of clay loam in low-lying areas. These soils are moderately fertile, well-drained to moderately drained, and are extensively used for agricultural activities. The geotechnical characteristics are generally suitable for road construction, subject to detailed site-specific investigations and appropriate pavement design.

3.7 Climatic data from secondary sources

The alignment passing through Munger, Bhagalpur and Begusarai districts experiences a sub-tropical humid climate with three distinct seasons: summer (March–June), southwest monsoon (June–September), and winter (November–February). Summers are generally hot, with maximum temperatures reaching 42–44°C, while winters are mild to cool, with minimum temperatures occasionally dropping to 7–8°C. The region receives an average annual rainfall of approximately 1,050–1,250 mm, with nearly 80–85% occurring during the southwest monsoon. Relative humidity remains high during the monsoon season (up to 95%) due to the influence of the River Ganga. The predominantly flat alluvial terrain, coupled with intense monsoonal rainfall, makes certain stretches susceptible to seasonal flooding and waterlogging. These climatic characteristics have been duly considered in the project planning and design through the provision of adequate drainage, flood-resilient embankments, elevated sections, and suitable cross-drainage structures to ensure safe and uninterrupted operation of the proposed highway.

3.8 Social Infrastructure Available

The alignment passing through Munger, Bhagalpur and Begusarai districts is supported by a well-developed network of social infrastructure, including educational institutions, healthcare facilities, administrative offices, banking services, markets, public utilities, and transportation infrastructure. Major towns such as Munger, Bariyarpur, Sultanganj, and Bhagalpur provide access to schools, colleges, hospitals, Primary Health Centres (PHCs), Community Health Centres (CHCs), railway stations, bus terminals, and other essential civic amenities. The region is also characterized by important religious and cultural destinations, particularly Sultanganj, a

major pilgrimage centre associated with the Shravani Kanwar Yatra. The proposed highway will enhance accessibility to these facilities by improving regional connectivity, reducing travel time, strengthening emergency services, and supporting the overall socio-economic development of the project influence area.

Chapter 4. Planning Brief

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

Not Applicable

4.2 Population Projection

Not Applicable

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

The proposed Right of Way (RoW) traverses a combination of agricultural land, fallow land, barren/open land, rural and peri-urban settlements, transportation corridors, water bodies, riverine areas, forest land and limited commercial land uses. Agriculture constitutes the dominant land use along most sections of the alignment, with cultivation of seasonal crops supported by the fertile alluvial soils of the Ganga basin.

The area falling under the proposed Right of Way (ROW) passes through forest area and agricultural land, hence there will be permanent change in the land use from forest to non-forest land and from agricultural to non-agricultural land. Details of Land use breakup will be described in EIA.

4.4 Assessment of Infrastructure Demand (Physical & Social)

Not Applicable

4.5 Amenities / facilities

The amenities proposed during operation phase are toll plaza, administrative buildings, weighing stations, parking areas & rest areas and office cum residential complex of PIU. The toll plaza location will be selected based on the traffic studies and a study of the existing physical features including the availability of land & designed as per IRC 84.

Chapter 5. Proposed Infrastructures

5.1 Industrial Area (Processing Area)

Not applicable

5.2 Residential Area

The start and end chainages, there are existing villages.

5.3 Greenbelt Development

Greenbelt Development shall be done as per Green Highway (Plantation and Maintenance) policy and Green Highways (Plantation Trans-plantation beautification and Maintenance) policy 2015.

5.4 Social Infrastructure

Not Applicable

5.5 Connectivity

	Aerial Distance (km)
Nearest Railway Station	Sultanganj Railway Station ~ 1.09 km towards SE Bhagalpur Railway Station ~ 1.66 km towards S
Nearest Airport	Purnea Airport ~ 88.44 km towards NE
Nearest Village	Munger – Adjacent to project site towards E Bariyarpur – Adjacent to project site towards W Sultanganj – Adjacent to project site towards S Bhagalpur – Adjacent to project site towards S
Nearest Highway/ Roads	NH - 33 – Adjacent to project site towards S NH -131B – Crossing project site at Bhagalpur NH - 333 B – Crossing project site at Munger

5.6 Drinking Water Management (Source and Supply of Water)

It is estimated that during construction phase water demand will be approx. 182 KLD, Fresh water requirement is 64 KLD and Flushing water requirement is 32 KLD and about 87 KLD for site activities. The water shall be obtained from nearby surface/ground water with consent. During operation phase water requirement will be workers and operations of toll plaza, water sprinkling and landscaping. Details will be furnished in EIA report.

5.7 Sewerage System

Bio toilets will be provided for the workers in construction phase. Details will be furnished in EIA report.

5.8 Industrial Waste Management

Not Applicable

5.9 Solid Waste Management

Debris generated during construction will be utilized to maximum extent for filling low lying area if any or in embankment development etc. Also arrangements will be made by prospective contractors for disposal of solid waste. Movable/Bio toilets will be provided as sanitation facility wherever necessary while solid waste will be segregated and disposed as per MSW rules & regulations. During construction phase waste will be generated from labour colony and from working site. Total generated waste will be 478 kg/day, out of which 190 kg/day is biodegradable waste and 286 kg/day is non-biodegradable waste. During operation phase waste generated will be approx. 20 kg/day.

During operation phase the waste which will be collected and segregated at source by providing separate bins on site and will be handed over to local vendor for further processing.

Construction and demolition (C&D) waste generated during the construction phase shall be managed in accordance with the Construction and Demolition Waste Management Rules, 2025. The generated waste will be reused for backfilling and road development.

Details will be furnished in EIA report.

5.10 Power Requirement/ Supply/Source

Power requirement during construction phase will be met with LS D.G sets in case of non-availability of electric supply. For operational phase, Total power requirement is 1 MW which will be met through state electricity board. Provision of DG sets – 250 x 6 KVA capacity each for power backup. During operational phase, electrical supply will be used wherever available.

Chapter 6. Rehabilitation and Resettlement (R&R) Plan

6.1 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).

Implementation of the proposed alignment may require acquisition of private land and may result in impacts on landowners, residential structures, commercial establishments, and livelihood sources. To address such impacts in a fair and transparent manner, land acquisition, rehabilitation, and resettlement (R&R) shall be undertaken in accordance with the applicable Central and State Government policies and statutory provisions.

The project will adopt the provisions of the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 (RFCTLARR Act, 2013), which provides a comprehensive framework for land acquisition, payment of fair compensation, rehabilitation, and resettlement of affected families. The Act ensures that affected persons receive compensation based on market value along with applicable solatium and rehabilitation assistance, while safeguarding their social and economic interests.

Where applicable, the project shall also comply with the relevant provisions of the National Highways Act, 1956 (as amended), Government of Bihar policies, and notifications issued by the Road Construction Department and Revenue & Land Reforms Department relating to land acquisition and resettlement.

The budget is already included in the land acquisition portion for the same.

Chapter 7. Project Schedule and Cost Estimation

7.1 Likely date of start of construction and likely date of completion

The construction of the proposed project shall commence after the finalization and approval of the Detailed Project Report (DPR), obtaining the Environmental Clearance (EC) from the Ministry of Environment, Forest and Climate Change (MoEF&CC), and securing all applicable statutory approvals, including the recommendation of the National Board for Wildlife (NBWL) and the grant of Stage-I Forest Clearance under the Forest (Conservation) Act, 1980 (as amended). Subsequently, compliance with all Stage-I Forest Clearance conditions shall be ensured, and the requisite Working Permission shall be obtained from the concerned Chief Conservator of Forests (CCF)/competent Forest Department authority before undertaking any construction activity involving forest land. Construction shall commence only after obtaining all statutory clearances, permissions, and approvals required under the applicable Central and State Government regulations.

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

The estimated capital cost of the project is ₹5327 crore.

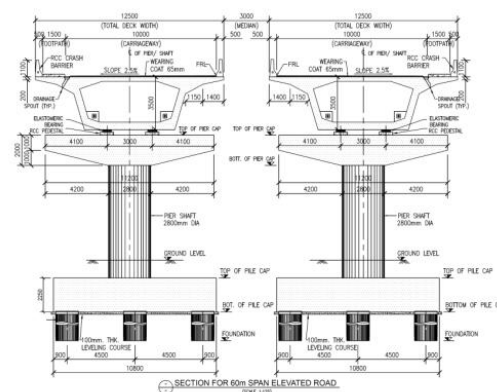
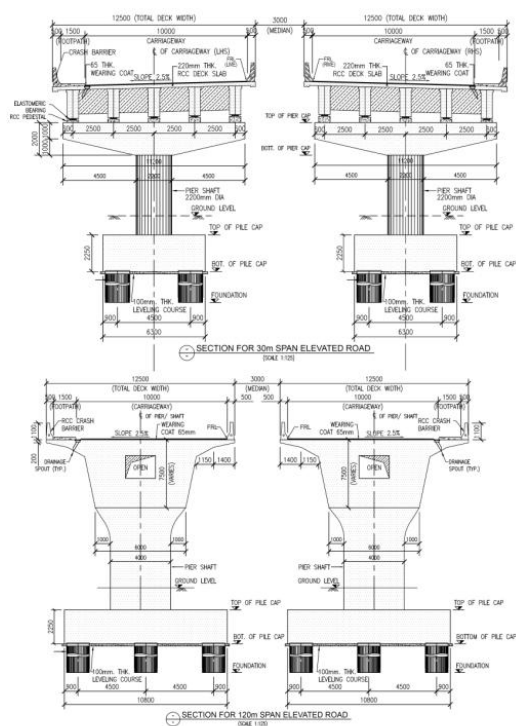
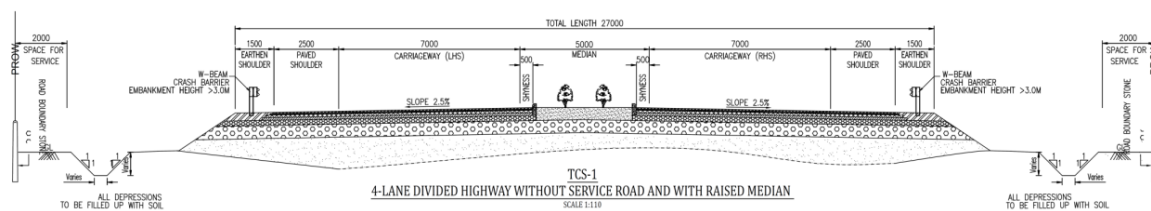
Chapter 8. Analysis of proposal (Final Recommendations)

8.1 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. It will reduce the travel time substantially. In addition, the improved road will provide other benefits like proposed activity improves the economic status of the village people along project area. Overall improvement will be expected in terms of;

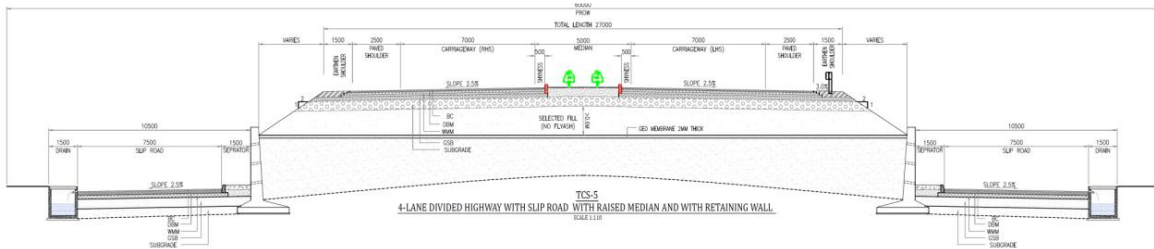
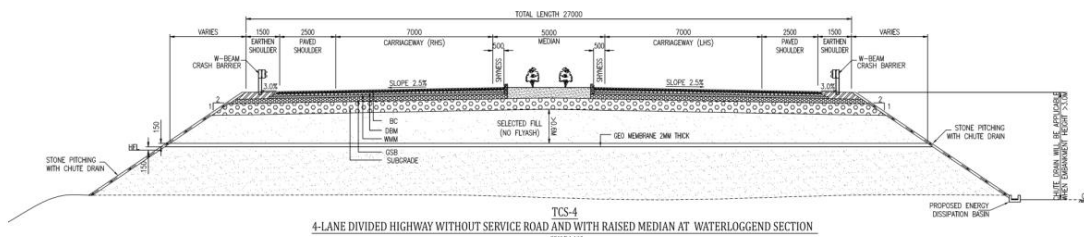
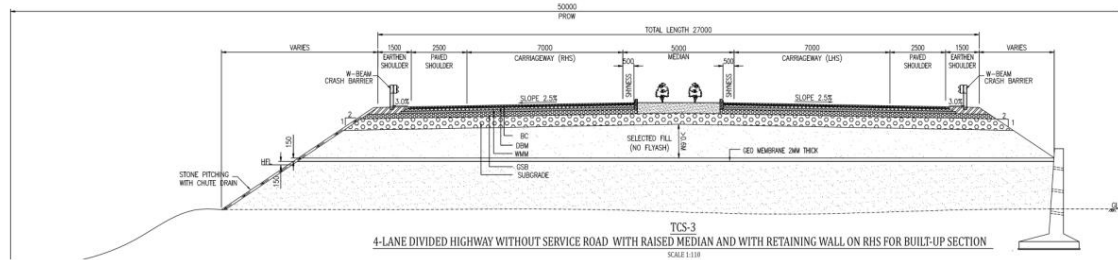
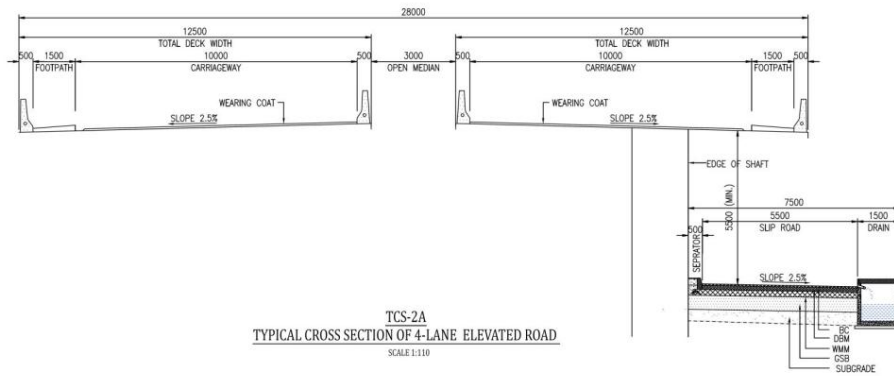
- The project will improve road connectivity between towns and villages.
- It will reduce travel time, vehicle operating costs, and fuel consumption.
- The project will facilitate faster movement of people and goods, thereby promoting economic development.
- Employment opportunities will be generated for local people during the construction and operation phases.
- Improved road infrastructure will enhance access to schools, hospitals, markets, and other essential public services.
- Better connectivity will support the growth of local businesses and tourism.
- Road safety will be improved through the provision of proper road signs, markings, crash barriers, and other safety features.
- The project will contribute to the socio-economic development and improve the quality of life of the people in the project area.

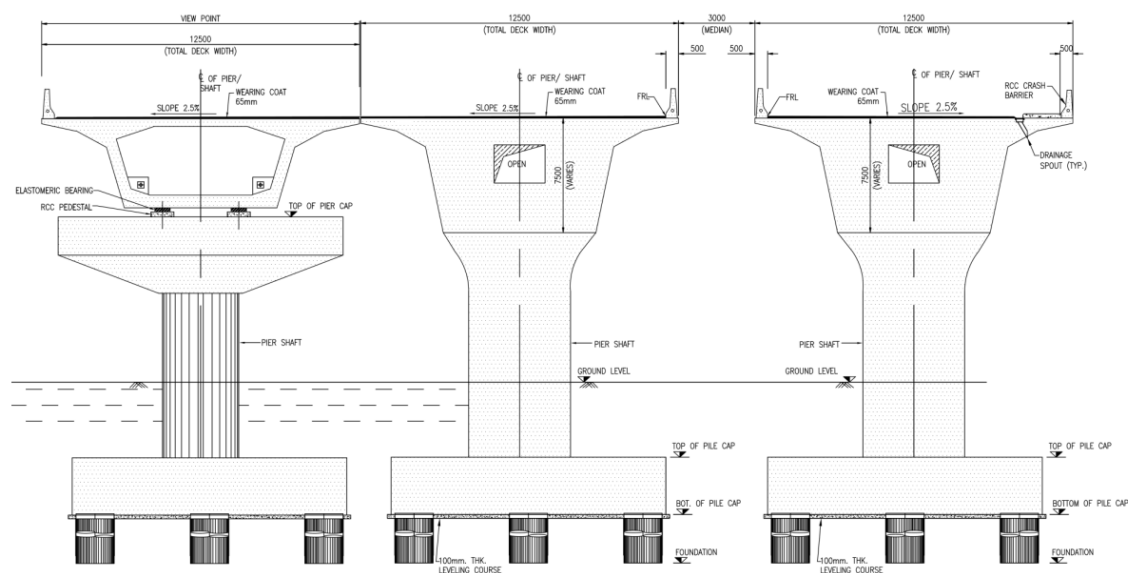
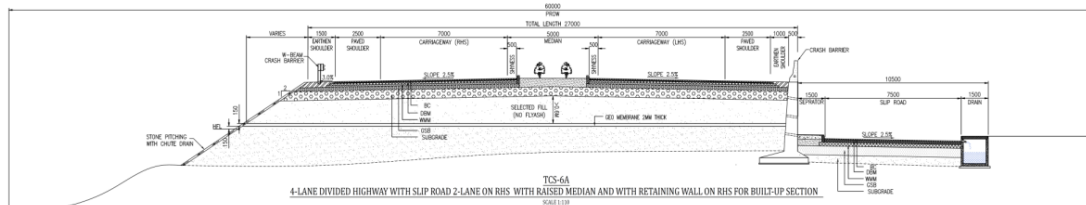
Annexure - 1



Elevated Road			
From	To	Length (m)	NO OF SPAN
0+250	0+670	420	1x30+6x60+1x30
0+850	5+230	4380	1x30+1x60+35x120+1x60+1x30
12+550	12+970	420	1x30+1x60+2x120+1x60+1x30
15+000	15+000	0	1x30+1x60+4x120+1x60+1x30
28+400	29+120	720	1x60+5x120+1x60
30+650	31+790	1140	1x30+1x60+8x120+1x60+1x30
33+200	35+600	2400	2x30+1x60+18x120+1x60+2x30
37+400	38+120	720	1x60+5x120+1x60
38+650	39+180	530	1x30+1x60+5x120+1x60+1x30

TCS-2





TYPICAL CROSS SECTION OF VIEW POINT (TCS-7)

