चेक लिस्ट क्रमांक संख्या 8

प्रोजक्ट पर विस्तृत टीप संलग्न है

1 PROJECT SUMMARY

This section covers the description of those aspects of the project (based on project feasibility study), likely to cause environmental effects. This chapter also provides background information of the proposed project, brief description and objectives of the project and description of the area.

1.1 PROJECT

The proposed project involves construction of Economic Corridor under Bharatmala Pariyojana [Lot-3/Chhattisgarh/Package-1 (Bilaspur Urga Section)] which shall start near Dheka Village, Bilaspur and terminate at existing SH-04 near Urga.

The project road is part of Raipur – Dhanbad economic corridor and total length of the Project Road is 70.2 km.

1.2 NEED FOR THE PROJECT

The proposed project shall enhance and improve the current route between Bilaspur and Korba which is narrow and zig-zag and thus needs to be straightened and widened to mobilize the heavy traffic. Also the commuters commuting between the route shall save both time and fuel.

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

High-speed connectivity and access: The projected corridor is a proposed economic corridor. This will avoid traffic congestion and speed-up the freight movement

Aiding economic growth: The seamless connectivity will provide better access to vehicles as a link to the National Highways. The Project will reduce travel time and provide boost to trade and commerce linked to the regions connected through this economic corridor.

Growth of backward areas: The biggest strength of the alignment is that it plans to cover backward districts of Chhattisgarh. As a result of connectivity and access to other parts of the country, these backward areas will be aided to integrate with rest of the world. Further, freight and passenger traffic on the economic corridor will help promoting ancillary economy of these regions.

Decongestion of existing National and State Highways: The proposed corridor will take away traffic pressures from existing SH and NH passing through various cities. Also, long-distance traffic will shift to the proposed corridor, thereby leaving the NH and SH for regional and local usage.

Usage shift: Long-distance traffic will shift from existing roads to the proposed Economic Corridor, resulting in lesser congestion on these highways

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Improved safety: Due to access control, the Roadway & Travel Safety of the traffic connecting the cities will be enhanced as there will be minimum distractions & conflict zones

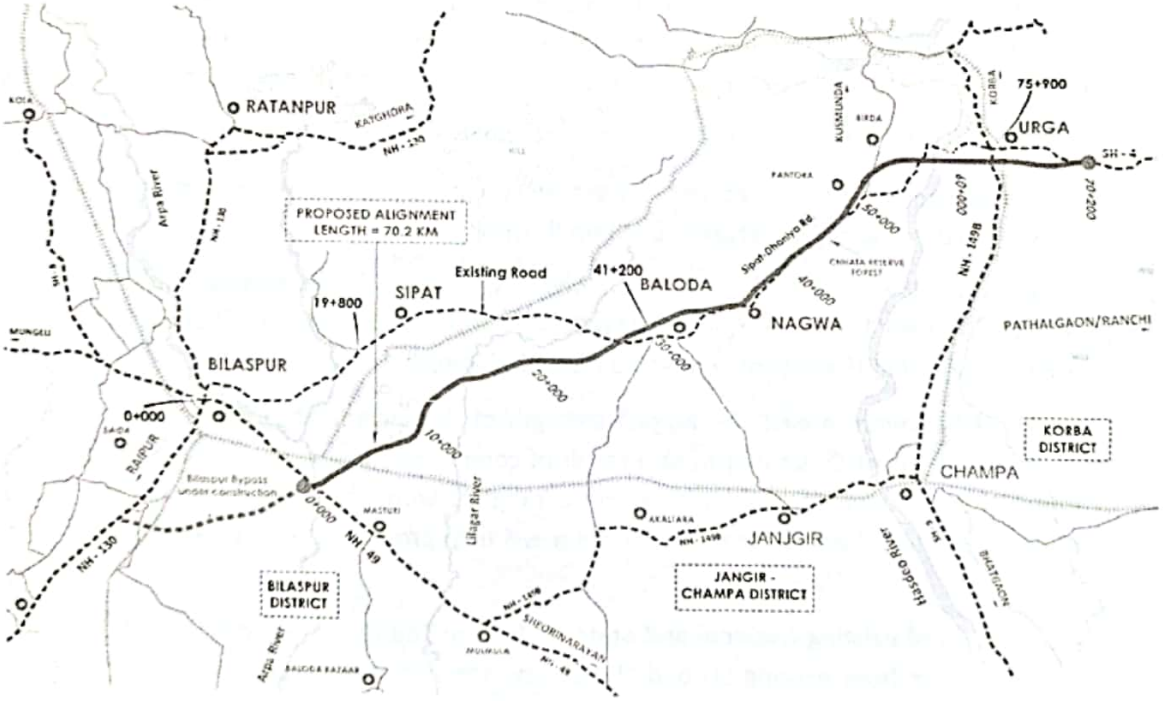
Support to industry: Different types of industries like Manufacturing, Tourism etc. along the proposed corridor will be facilitated in their business operation and reachability.

The proposed project shall ensure Superior operation and maintenance enabling enhanced operational efficiency of the Project Highway;

The proposed project shall minimize the adverse impact on the local population and road users and reduction of fuel consumption shall reduce the carbon footprints of the area.

1.3 LOCATION OF THE PROJECT

Project starts from the end point of Bilaspur Bypass, which is under construction at NH-130. It is 11 Km away from the start point along NH-130 towards south and then ends with existing road SH-04 at a distance of 7.5 km from Urga. The project road is part of Raipur – Dhanbad economic corridor and total length of the Project Road is 70.2 km.



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1.4 SIZE AND MAGNITUDE OF OPERATION

The total length of the proposed road is 70.2 km. The proposed RoW is 70 mtrs.

1.5 PROPOSED SCHEDULE FOR APPROVAL AND IMPLEMENTATION

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

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

The completion period of the construction is estimated to be about **24 months**.

The estimated civil cost of the project is about **INR 1181.92 Crores.**

1.6 TECHNOLOGY AND PROCESS DESCRIPTION

The planning of the proposed Highway comprises of estimation of current and future traffic volumes on the existing road networks. A team of Highway engineers predicted and analyzed all possible impacts of the existing highway systems in the proximity. Some considerations were posing adverse effects on the environment, such as noise pollution, air pollution, water pollution, and other ecological impacts.

The various process involved are as under

Geometric design-Highway geometric design primarily refers to all the visible elements of the highways. Highway engineers who design the geometry of highways considered all environmental and social effects of the design on the surrounding infrastructure. The other area of concerns involved in the process is safety, service, and performance standards when designing highways for certain site topography. Parameters such as Design speed, Design traffic volume, Number of lanes, Level of Service (LOS), Sight Distance, Alignment, super-elevation, and grades, Cross section, Lane width, Horizontal and vertical clearance etc. were also taken into considered.

Materials for construction- There are two major types of pavement surfaces - Portland cement concrete (PCC) and hot-mix asphalt (HMA). Underneath this wearing course are material layers that give structural support for the pavement system. These underlying surfaces may include either the aggregate base and sub-base layers, or treated base and sub-base layers, and additionally the underlying natural or treated sub-grade. These treated layers may be cement-treated, asphalt-treated, or lime-treated for additional support.

Pavement Design- Highway pavements are designed as all-weather, long-lasting structures to serve modern day high-speed traffic. Offering high quality riding surfaces for safe vehicular

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travel, they function as structural layers to distribute vehicular wheel loads in such a manner that the induced stresses transmitted to the subgrade soil are of acceptable magnitudes.

Designing Drainage System-Regardless of how well other aspects of a road are designed and constructed, adequate drainage is mandatory for a road to survive its entire service life. Excess water in the highway structure can inevitably lead to premature failure, even if the failure is not catastrophic. Determination of situations a particular design process should be applied, usually a combination of several appropriate methods and materials to direct water away from the structure.

1.7 PROJECT FEATURES

1.7.1 Salient Features

Table 1-1: Salient Features of the project

S. No.	Particular	Details
1.	Project Name	Development of Economic Corridor to improve the efficiency of freight movement in India under Bharatmala Pariyojana **Bilaspur Urga section of NH-130A (Raipur Dhanbad Economic Corridor)**
2.	Nature of Project	Economic Corridor
3.	Location of project stretch	Near Dheka Village, Bilaspur to existing SH4 near Urga.
4.	Geographical Coordinates	22° 1'23.45"N 82°12'46.50"E to 22°15'54.01"N 82°47'50.07"E
5.	Land details	Agricultural land with patches of settlements and Forest
6.	Water demand	1508891 KL
7.	Sources of water	Surface Water Source after obtaining necessary permission from appropriate authority
8.	Man power	900
9.	Power requirement	7000 kVA which shall be managed from State Electricity boards.
10.	Nearest railway station	Ghatora Railway Station, 2.3 km (approx.) in North direction from Ch. 3.5 Km. Jairamnagar Railway Station about 2.6 kms towards South from Ch. 8.8 Km. Urga Railway Station 0.3 km towards North from Ch. 63.9 Km.
11.	SH / NH Crossing / connecting	NH 49, NH 149 B and SH 4
12.	Nearest air-port	Bilaspur Airport, 10 km in South West Direction
13.	Seismic zone	Zone II (least active)

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The project road is to be developed as fully access controlled highway with 4-lane configuration at present and extendable to 8-lane in future within the proposed RoW of 70m. Accordingly following typical cross sections (discussed in the next section) have been developed in accordance with the 4-lane manual and the office Memorandum no. NHAI/Planning/ EC/DPR/2016 dated 03.05.2018 issued by MORTH regarding design specifications for various categories of roads under Bharatmala Pariyojana.

1.7.1.1 Cross-Sectional Elements

Table 1-2: Cross-sectional Elements

Sl. No	Cross Section Type		Length (m)
1	TCS 1	4-lane without service road (in Embankment)	58280
2	TCS 1A	4-lane without service road (in Cutting)	360
3	TCS 2	4-lane with service road / slip road on both sides (in embankment)	4580
4	TCS 3	4-lane with service road on one side	6280
5		Toll Plaza	700
Total			**70200**

1.7.1.2 Access control measures

The project road cuts across Nationals Highways, State Highways and Major District Roads at a number of locations. In addition, there are many crossings of village roads. Since the project road in being developed as fully access controlled highway, access to project road has been provided at NH/SH crossings and any other road connecting to major built-up areas. At all other roads only crossings have been provided with suitable grade separated structures. The type and span grade separated structures have been decided based on the classification of cross road.

Rationalization of grade separated structures:

- Maintaining the existing mobility or better at cross roads, controlled access to Project Highway and minimum rise and fall along the Project Highway are the primary guiding factors while deciding the type of grade separation facility.
- At NH crossings, interchanges have been provided with Flyover / Overpass as per the terrain condition; At SH crossings Flyover/ Overpass has been provided with at-grade junction below the flyover; At all other 2-lane roads including MDR crossings 1x12x5.5m span vehicular underpass has been provided; For 1-lane village roads, if the cross road under consideration is the main connecting road to a village, 1x12x5.5m span vehicular underpass has been provided. If any other connecting road exists for the village, 1x12x4.0m span light vehicular underpass has been provided; at all cart track crossings, 1x7x4.0m span small

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vehicular underpass has been provided; If any road is not provided with grade separation facility due to site condition, the same is connected through service road of same specification as that of existing cross road with the nearest grade separator.

- The details of proposed grade separated structures are given below:

Table 1-3: Proposed grade separated structures

Type of Structure		Total
Flyover	1x45x5.5	1
Flyover	1x15 + 4x30 + 1x15	1
Flyover	1x15 + 5x30	1
VUP	1x12x5.5	12
LVUP	1x12x4	2
SVUP	1x7x4	16
Total		**33**

1.7.1.3 Slip roads / Service Roads

- Slip roads have been provided to provide access to Project Highway at certain grade separated structures.
- The service roads were proposed under 2 scenarios: a) At built-up areas to facilitate the movement of local traffic. b) If any road is not provided with grade separation facility due to site condition, the same is connected through service road with the nearest grade separator.
- Total length of slip road/service road is 5.060km, 10.430km on LHS and RHS respectively. Details are given below:

Table 1-4: Details of Slip/Service Roads

	LHS				RHS			
Sl. No	From	To	Length (m)	Width (m)	From	To	Length (m)	Width (m)
Slip Road								
1	400	1280	880	7.00	400	1280	880	7.00
2	27820	29420	1600	7.00	27820	29420	1600	7.00
3	62350	63550	1200	7.00	62350	63550	1200	7.00
		Total	**3680**			**Total**	**3680**	
Service Road								
1	1800	2280	480	7.00	43150	49000	5850	7.00
2	69300	70200	900	7.00	69300	70200	900	7.00
		Total	**1380**			**Total**	**6750**	

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1.7.1.4 Entry/Exit Ramps

Since the project road is being developed as fully access controlled highway, therefore, access to project road has been provided at NH/SH crossings and any other road connecting to major built-up areas. Entry/Exits have been provided at 3 locations, at Flyover with existing NH-49 (ch. 0+925), crossing of MDR road at ch. 28+714 and at flyover with existing NH-149B (ch. 62+950) Details are given below:

Table 1-5: Entry/Exit Locations

Sl. No.	Design Chainage	LHS	RHS	Remarks
	0+400	Exit	Entry	
	1+290	Entry	Exit	
	27+820	Exit	Entry	
	29+420	Entry	Exit	
	62+350	Exit	Entry	
	63+550	Entry	Exit	

1.7.1.5 Proposed pavements

The design traffic for 20 year design period is given below:

Table 1-6: Design MSA

Sl. No.	Section	Design MSA
1	Main Road	125
2	Slip road	30
3	Service road	10

Following crust for flexible pavement and rigid pavement has been adopted:

Table 1-7: Proposed Pavement Crust

Pavement Crust layer	ML	Slip Road	Service Road
Flexible Pavement – Cement treated WMM - BC+DBM+WMM+CTWMM+GSB			
Granular Sub-base (GSB)	200	200	200
Cement Treated WMM (CTWMM)	190	190	145
Wet Mix Macadam (WMM)	100	100	100
Dense Bituminous Macadam (DBM)	50	50	50
Bituminous Concrete (BC)	50	50	30
Rigid pavement – PQC+DLC+GSB			

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Pavement Crust layer	ML	Slip Road	Service Road
PQC	310	280	250
DLC	150	150	150
GSB	150	150	150

1.7.1.6 Bridges and Culverts

20 nos. of bridges are proposed along the project road consisting of 6 major bridges and 13 nos. minor bridges on main carriageway and 1 no. of minor bridge on NH-49 Bilaspur – Sarangarh road. Overall deck width of 12.5 m has been proposed as per 4-lane manual.

Table 1-8: Details of Major Bridges

Sl. No.	Design Chainage	Name of Nallah	Span (m)	Total Length (m)	Total Width of Structure (m)
1	1+540	Arpa River	10x30	300	2x16.0
2	7+080	Kurung Left Bank Canal	1x15 + 1x45 + 1x15	75	2x12.5
3	16+065	Lilaghar River	4x30	120	2x12.5
4	57+400	Hasdeo Right Bank Canal	LHS :1x23 + 1x76 + 2x30 RHS: 1x15+1x76+ 1x30+1x38	159	2x12.5
5	58+890	Hasdeo River	26x30	780	2x12.5
6	59+975	Hasdeo Left Bank Canal	1x76	76	2x12.5

Table 1-9: Details of Minor Bridges

Sl. No	Design Chainage	Name of Nallah	Span (m)	Total Width of Structure (m)
1	0+996	Nala	1x12	1x10.8
2	8+643	Nala	1x15	2x12.5
3	12+995	Nala	1x15	2x12.5
4	26+855	Nala	1x10	2x12.5
5	37+680	Nala	1x12	2x12.5
6	37+898	Nala	1x12	2x12.5
7	38+920	Nala	1x15	2x12.5
8	45+640	Nala	1x10	2x12.5 + 1x10.8
9	47+295	Nala	1x40	2x12.5 + 1x10.8
10	53+840	Nala	1x20	2x12.5

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Sl. No	Design Chainage	Name of Nallah	Span (m)	Total Width of Structure (m)
11	56+330	GangdelNala	1x40	2x12.5
12	63+556	TonhiNala	4x3x3	2x45.0
13	69+143.50	Canal	2x10	2x12.5
NH-49	0+994	Nala	1x24	2x12.5

Table 1-10: Summary of cross-drainage structures

Culverts	Total
1x2	28
1x3	65
1x4	3
1x5	29
1x6	9
Total	**134**
Minor Bridges	14
Major Bridges	6

1.7.1.7 RoB

The proposed alignment crosses railway line at 2 locations. ROB has been proposed at these locations. Details of proposed ROB are given below.

Table 1-11: Details of ROB

Sl.No	Design Chainage	Railway Section	Type of Structure	Span (m)	Total Length (m)	Width of Structure (m)
1	5+805.350	Bilaspur - Champa	ROB	1x14.17 + 1x76.08 + 1x24.2	114.45	2 x 12.5
2	63+847.5	Korba - Champa	ROB	1x15 + 1x75 + 1x70 + 1x15	175	2 x 16.0

1.7.1.8 Summary of proposed improvements

Salient features of the proposed road are given below.

Table 1-12: Summary of proposed improvements

S. No.	Description	Unit	Total
1	Length of Main Road	Km	70.20

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S. No.	Description	Unit	Total
2	Length of Slip Road	Km	7.360
3	Length of Service Road	Km	8.130
4	Lane Configuration		4-lane
5	Proposed Crust thickness		
	MSA		125
	BC	mm	50
	DBM	mm	50
	WMM	mm	100
	CTWMM	mm	190
	GSB	mm	200
6	No. of Entry/Exits	Nos.	3
7	Flyover (1x45)	Nos.	1
8	Flyover (1x15+4x30+1x15)	Nos.	1
9	Flyover (1x15+5x30)	Nos.	1
10	VUP (1x12x5.5)	Nos.	12
11	LVUP (1x12x4)	Nos.	2
12	SVUP (1x7x4)	Nos.	16
13	Total No. grade separated Structures	Nos.	33
14	ROB	Nos.	2
15	Major bridges	Nos.	6
16	Minor bridges	Nos.	14
17	Box culverts	Nos.	134
18	Toll Plaza on Main road	Nos.	1
19	Toll Plaza on Entry/exit	Nos.	8
20	Bus bays	Nos.	14
21	Truck Lay Bye	Nos.	4
22	Rest Area	Nos.	4

1.8 Details of Proposed Structure in proposed Forest Land

Development of Economic Corridor to improve the efficiency of freight movement in India under Bharatmala Pariyojana, Bilaspur – Urga section of NH-130A (Raipur – Dhanbad Economic Corridor)

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1.8.1 Summary of structures in proposed forest land

Sno.	Type of Structure	No.
1.	Minor Bridge	2
3.	SVUP	2

1.8.2 List of proposed Minor bridges in forest land

Sno.	Design Chainage (Km)	Proposed Span Arrangement (No. X Length)	Total length (m)	Proposed structure type	Remark	New /Reconstruction
1.	45+640	1x10	10	PSC Girder	4 with Paved shoulder + Service Road	New
2.	47+295	1x40	10	PSC Girder	4 with Paved shoulder + Service Road	New

1.8.3 List of proposed SVUP in forest land

Sno.	Design Chainage (Km)	Proposed Span Arrangement (No. X Length)	Structure Type
1.	27+324	1x7x4	SVUP
2.	30+406	1x7x4	SVUP

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