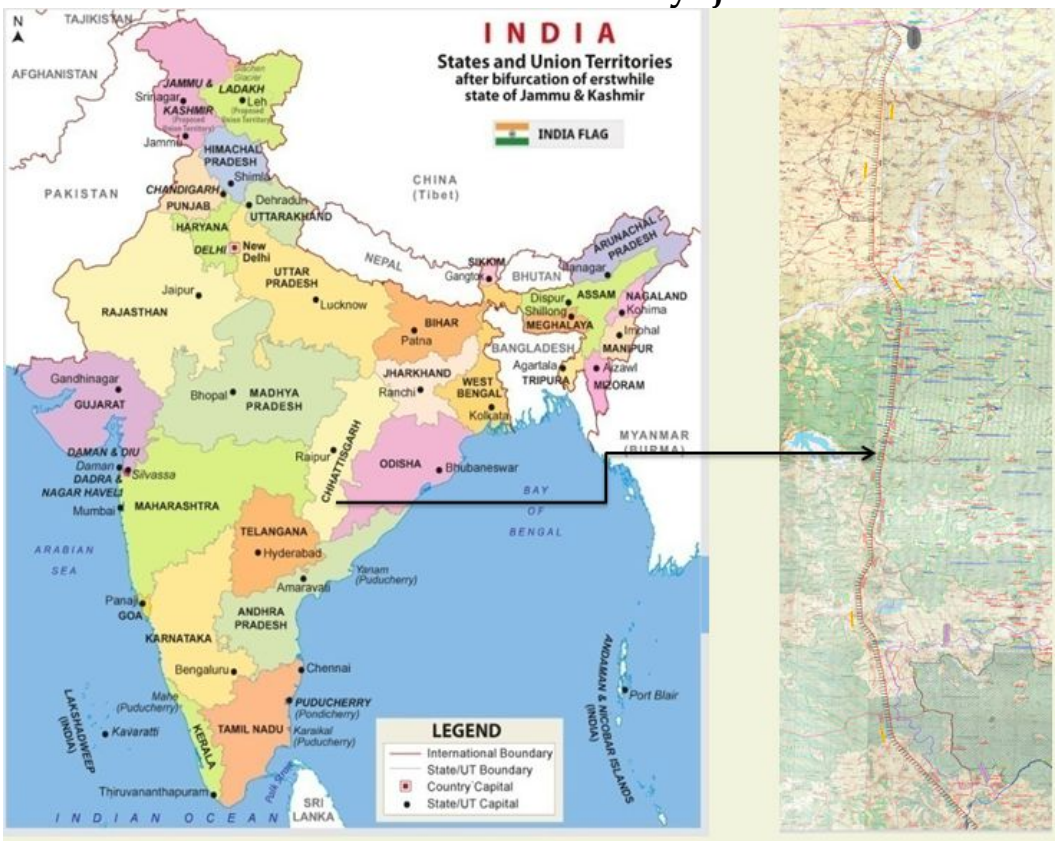
EXECUTIVE SUMMARY

For

Development of Economic Corridors, Inter-corridors, feeder routes and Coastal Road to improve the efficiency of freight movement in India (Lot-3/Odisha & Jharkhand/Package-2) Raipur-Vishakhapatnam (Ch. 0.000 - Ch. 124.661 km) (Length 124.661 km) in the State of Chhattisgarh under Bharatmala Pariyojana



Project Proponent:

NATIONAL HIGHWAYS AUTHORITY OF INDIA
(Ministry of Road Transport &Highways, Government of India)

Environmental Consultant:

ENVIRO INFRA SOLUTIONS PVT. LTD.

Accredited by NABET (Quality Council of India)
for EIA Studies as 'A' Category Consultant
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EXECUTIVE SUMMARY

1.0 INTRODUCTION

The National Highways Authority of India (NHAI) has been entrusted with the assignment of Development of Economic Corridors, Inter-corridors and feeder routes and Coastal road primarily to improve the efficiency of freight movement in India under Bharatmala Pariyojna Lot -3/Odisha & Jharkhand/Package-2 having length of proposed alignment 464.662 km (which is totally green field) which starts from near Abhanpur (ch. 0.000) / Ch. 61.600 of proposed Raipur-Durg Bypass and ends at Vishakhapatnam bypass (ch.464.662) of Existing section of SH-38. The whole length of road is divided into 3 parts, i.e., part-1, part-2, and part-3. Accordingly draft EIA/EMP report has been prepared Part wise.

This draft EIA/EMP report is prepared for Part-1 of Development of Economic Corridors, Inter-corridors and feeder routes and Coastal road primarily to improve the efficiency of freight movement in India under Bharatmala Pariyojna Lot-3/Odisha & Jharkhand/Package-2 (Ch. 0.000 to Ch. 124.661). The part 3 of this proposed project is confined to the state of Chhattisgarhand starts from Jhanki village of Abhanpur tehsil in Raipur district and passing through four districts such as Raipur, Dhamtari, Kanker and Kondagaon districts of Chhattisgarh state and ends at Marangpuri village of Baderajpur tehsil in Kondagaon districts.

YONGMA Engineering Co. Ltd. JV With Arkitechno Consultants (I) Pvt. Ltd, have been appointed as DPR Consultant by NHAI to carry out the Development of Economic Corridors, Inter-corridors and feeder routes and Coastal road primarily to improve the efficiency of freight movement in India under Bharatmala Pariyojna Lot-3/Odisha & Jharkhand/Package-2 (Ch. 0.000 to Ch. 124.661)from Jhanki village of Abhanpur tehsil in Raipur district and passing through four districts such as Raipur, Dhamtari, Kanker and Kondagaon districts and ends at Marangpuri village of Baderajpur tehsil in Kondagaon districts in the state of Chhattisgarh. Further, YONGMA Engineering Co. Ltd. JV with Arkitechno Consultants (I) Pvt. Ltd, has assigned CEMC Pvt. Ltd. in association with Enviro Infra Solutions Pvt. Ltd. a NABET accredited consultant to prepare the Environmental Impact Assessment report including Environmental Management Plan for the above referred project.

1.1 BRIEF ABOUT THE PROJECT AND ITS LOCATION

Proposed National Highway is Green field alignment project and proposed for 6 lane carriageway width with paved shoulders. The project road starts from Jhanki village of Abhanpur tehsil in Raipur district and passing through four districts such as Raipur, Dhamtari, Kanker and Kondagaon districts of Chhattisgarh state and

ends at Marangpuri village of Baderajpur tehsil in Kondagaon districts from CH: 0.000 to 124+661 having a total length of 124.661kms. The proposed National Highway project has been envisaged through an area which shall have the advantage of simultaneous development as well as shall result in a shorter distance to travel.

The salient features of the proposed project have been presented below:

Salient features of the project

1.	Project Road	Part-1 of Development of Economic Corridors, Inter-corridors, feeder routes and Coastal Road to improve the efficiency of freight movement in India (Lot-3/Odisha & Jharkhand/Package-2) Raipur-Vishakhapatnam (Ch. 0.000 - Ch. 124.661 km) (Length 124.661 km) in the State of Chhattisgarh under Bharatmala Pariyojana in the state of Chhattisgarh
2.	Location of the proposed project	The Part 1 of this proposed project will start from Jhanki village of Abhanpur tehsil in Raipur district and passing through four districts such as Raipur, Dhamtari, Kanker and Kondagaon districts of Chhattisgarh state and ends at Marangpuri village of Baderajpur tehsil in Kondagaon districts in the state of Chhattisgarh.
3.	No, of affected villages by Land acquisition	Raipur District: 06 villages Dhamtari District : 35 villages Kanker District: 16 villages Kondagaon District: 09 villages **Total: 66 villages**
4.	Total Length of the proposed project	124.661 km
5.	Total Area of Land Acquisition	Total Land Acquisition: **682.0 Ha**. Government/Private Land: 486.893 ha Forest Land: 195.107 Ha.
6.	Terrain	Mostly plain and hilly area.
7.	Seismic Zone	Zone II
8.	Geographical Location	**Starting Point:** 21°05'18.85"N 81°45'01.40"E **Ending Point:** 20°01'44.59"N

		81° 51'58.13"E
9.	Proposed Bridges	Major Bridges –09 Nos. Minor Bridges –43 Nos.
10.	Proposed ROBs / Underpasses / Flyover including Pedestrian underpass/Tunnels and Viaducts	ROBs: 1, VUP: 04,SUOP/LVOP/VOP/SVOP:02, SVUP/VOP:29,FLYOVER: 01, VIADUCT: 06, TUNNELS: 01
11.	Culverts	148 Nos
12.	Right of Way	60 m and 45 m in forest areas
13.	Design Speed	100 km/hr for plain terrain and for rolling terrain
14.	Carriageway	2x14.5 m.
15.	Embankment	1.2m (Average)
16.	Proposed Toll Plazas	01 location at km 13+300; 10 lanes on both side
17.	Safety Measure	Crash Barriers
18.	Lighting	Lighting all along including High Masts at Toll plazas, interchanges, major bridges / ROB's and Amenities and Truck Parking Areas
19.	No of Structures Affected	54
20.	Total Project Cost	4068.16 Cr (approx.)
Environmental & Social Features		
21.	Forest Land Diversion	195.107 Ha.
22.	Water bodies Impacted	At 36 locations (08 Ponds, 10 canals, 10 local streams, 06 Seasonal streams, 01 location (Mahanadi River) and 01 Nalah/Canal)
23.	Existing trees within ROW	3019
24.	Compensatory plantation	Approx. 9057nos of trees shall be planted (Three row plantations shall be done)
25.	Green belt development	As per IRC SP 21:2009 /MoRTH Code/Guidelines
26.	No. of project affected persons (PAFs) & (PAPs)	Total PAFs – 54 Total PAPs – 270
27.	Resettlement & Rehabilitation Cost (R&R) including land Cost	Rs. 227.61Crores

1.2 ANALYSIS OFALTERNATIVES

Three alternative alignments have been considered:

i) **Option 1 (Green & Brown field alignment):** In Chhattisgarh state, the alignment crosses the villages Kurud, Umarda, Mandraud, Megha, Mohandi, Kosamkhuta, Birjhuli, Singhpur, Dugli, Nayapara& ends near Ghutkel village, i.e. CG/Odisha Border with tunnel provision of length- 4.350Km, design speed 100Kmph with smooth gradient in hilly terrain & permissible hill cutting. The option-1 has not been recommended due to project length is more than the all options.

ii) **Option 2 (Green field alignment):** In Chhattisgarh state, a Crow flyalignment was considered which starts from Jhanki near (Abhanpur) and follows Urla-2, Patewa, Dhuma, Chandna, Hasda,Nawagaon, Kapatphodi, Jarhidih & Bargaon villages. 28.200 Km length of option-2crosses in between buffer area & some core area of Sitanadi & Udanti Tiger reserve forest. The alignment was discussed with CG state forest department andthe department has denied for the alignment and suggested to change thealignment towards west side which is 48Km away. The option-2 has not beenrecommended due to the alignment passes through Sitanadi & Udanti Tiger Reserve Forest.

iii) **Option 3A (Green field alignment):**In Chhattisgarh state, the alignment starts from Jhanki follows Urla-2, Karga, Sirri,SivniKatln, Mendaraka, Sidhaurikhurd, Joratarai, Chiwarri, Maheshpur, Dudhawa,Sainunda, Machhali villages & ends near Palana village. The alignment passes beyond the Sitanadi Tiger Reserve wildlife. The option-3A has not beenrecommended due to the forest length is more.

(iv) Option 3B (Green field alignment): In Chhattisgarh state, the alignment starts at Jhanki village follows Urla-2, Karga, Sirri, Sivni Kalan, Mendaraka, Sidhaurikhurd, Joratarai, Chiwarri, Maheshpur, Dudhawa, Malgaon, Choria, Khalari, Thema, Tiriyarpani, Laxmikant, Machhalivillages & ends near Marangpuri village. Design speed 100 Kmph has been considered with tunnel provision of length 2.650 Km. The option-3B has been recommended due to less forest length.

Keeping in view of having less/minor effect on environmental and social components and acquiring minimum forest land, alignment **Option 3B** has been fixed and it seems more feasible as compared to the other options.

1.3 DESCRIPTION OFENVIRONMENT

Study Area: The base-line data has been collected for Core Zone [Corridor of Impact (COI)], an area covering 500 m on both sides of the proposed alignment and 10 km buffer zone for prominent environmental attributes like Ambient Air quality, Noise Level, Water quality and Soil profile. Primary and Secondary data has also been collected for other environmental attributes for the preparation of EIA/EMP report. The baseline study for the project was conducted during the months from **December 2019 to February 2020 (Winter Season)**.

Baseline Study: The findings of the baseline environmental status on land (topography, geology, soil quality, land use pattern), meteorology (Temperature, Relative Humidity, rainfall, wind speed, wind rose), air (Ambient Air quality- PM_{10}, $PM_{2.5}$, SO_2, NO_X. and CO), water (surface & ground water), noise level, ecological environment (terrestrial and aquatic flora & fauna), socio-economic conditions (demographic profile and households condition) were presented and interpreted with reference to environmental standards.

- **Meteorology:** The study area is located in Raipur, Dhamtari, Kanker and Kodagaon districts in the state of Chhattisgarh. The climate of area around the proposed alignment is tropical. It is hot and humid because of its proximity to the Tropic of Cancer and its dependence on the monsoons for rains. Summer temperatures can reach 45.2 °C. The monsoon season is from late June to October and is a welcome respite from the heat. Chhattisgarh receives an average 1274.3 millimeters of rain. Winter is from November to January. Winters are pleasant with low temperatures and less humidity. About one third of the total rainfall is brought by the northeast monsoon. October and November see low-pressure systems and tropical cyclones form in the Bay of Bengal which, along with the northeast monsoon, bring rains to the southern and coastal regions of the state

The meteorological study has been done from Raipur IMD station.

- **Air Environment:** Ambient air quality monitoring has been done at 09 locations. Specific station-wise Ambient Air Quality (AAQ) data for PM_{10}, $PM_{2.5}$, SO_2, NO_X. and CO as recorded during the study period i.e. from December 2019 to February 2020**.** All the parameters have been analyzed and show that all the parameters are well below the National Ambient Air quality standards, 2009.
- **Water Environment:** The development of any region is based on the availability of sufficient water resources, as developmental activities require water for irrigation, domestic and other purposes. The water resources in the area broadly fall into following categories:

- **Ground Water resources: Borewells**

  Ground water: Ground water sampling has been taken for 08 locations. The pH varies from 7.23–7.56, TDS varies from 1049-1121mg/L, Conductivity varies from 1125-1232uS/cm and Hardness varies from 174–183 mg/L.

- **Surface Water resources: Mahanadi River, Sendur nadi and Kuleri Nadi**

  Surface water: Surface water sampling has been taken for 03 locations. The pH varies from 8.21 – 8.56, TDS varies from 256.4–262.7 mg/L, Dissolved Oxygen varies from 6.1–6.7mg/l, BOD varies from 2.3 mg/l – 2.9 mg/l, Total Coliform varies from 242–254MPN/l00ml and Faecal Coliform varies from 21–31 MPN/l00ml.

- **Noise Environment**

  Ambient noise level monitoring has been done at 09 locations. The hourly recorded noise level at various locations in the study area shows fluctuations because of change in traffic movement, construction activities and other man-made sources. The equivalent values of noise levels varies from 47.3dB (A) to 50.3 dB (A) during daytime which are within the prescribed norms of CPCB whereas during night time the noise level varies from 30.2dB (A) to 34.6dB (A), which reveals that all values are below the national standard.

- **Soil Environment**

  Soil sampling has been done at 08 locations. The soil pH ranges from 7.44 to 7.61, thereby indicating the soils are neutral to slightly alkaline. The texture of the soil is Sandy loam. Soils are good in available nitrogen content, have low available phosphorus, potassium content and have high organic carbon.

- **Ecological Environment**

  The major forest types found along the study area are: Tropical dry deciduous forest and Depositional saline plains with grassland, Saline-alkaline scrubs. The natural vegetation present within the study area is in the form of shrubs, herbs, grasses and climbers with fewer naturally growing trees. Some of thecommon tree/shrub species present along the study area are Rinjha (*Acacia leucophloea),* Babool *(Acacia nilotica),* Neem (*Azadirachtaindica),* Amaltas (*Cassia fistula),* Jamun *(Syzygiumcumini),* Imli (*Tamarindusindica),* Saj (*Terminaliatomentosa*), Van masuri (*Antidesmaghaesembilla),* Karonda (*Carissa opaca),* Arandi (*Ricinuscommunis),* Sitaphal (*Annona squamosal),* Charota (*Cassia auriculata),* Khursi (*Grewiarithii),* Baibidang (*Embeliarobusta) etc. The* detailed list of flora and fauna has been described in Chapter 3 of EIA/ EMP report.

  The proposed stretch doesn't pass through any eco-sensitive zone of Wildlife

sanctuary or national park. However it passes at a distance of 0.7 km from the nearest border of the eco-sensitive zone of Sitanadi Sanctuary at ch 96.500. The detailed study of elephant movement has been studied and provided in the EIA/EMP report.

The NOC from National Tiger Conservation Authority and Project Elephant of MoEFCC is under process.

- **Socio Economic Environment**

The primary purpose of socio-economic analysis is to provide an overview of the State's, socio- economic status and the relative status of the Project Influence Area (PIA) within the State.

The proposed project passes through Dhamtari, Kanker and Kondagaon districts in the state of Chhattisgarh. The demographic profile and socio-economic status of the people in the project affected district and state as per census 2011 are as follows:

Items	Chhattisgarh	Raipur	Dhamtari	Kanker	Kondagaon
Total Population	25,545,198	4,063,872	799,781	748,941	1,413,199
Rural Population	19,607,961	2,580,583	650,586	672,180	1,219,705
Urban Population	5,937,237	1,483,289	149,195	76,761	193,494
Total Males	12,832,895	2,048,186	397,897	373,338	698,487
Total Females	12,712,303	2,015,686	401,884	375,603	714,712
Gender Ratio	991	984	1010	1006	1023
SC Population	3,274,269	724,250	58,581	31,543	37,963
% SC	12.82	17.82	7.32	4.21	2.69
ST Population	7,822,902	476,446	207,633	414,770	931,780
% ST	30.62	11.72	25.96	55.38	65.93
Density of Population (per sq. Km)	189	328	196	105	135

(Source: Census of India, 2011)

1.4 IMPACTS AND MITIGATIONMEASURES

The potential impact and their mitigation measures have been presented below:

S. No.	Parameters	Potential Impact	Mitigation Measures Suggested
1.	Topography and Soil	• Cut and fill operations during road construction	• The alignment passes through plain and hilly terrain and no substantial cut and fill operations are planned.
		• Borrow earth	• Borrow soil will be procure from approved quarry. • IRC guidelines will be followed during excavation
		• Quarries	• Operational and government licensed quarry have been identified, which will be used to procure the material
2.	Air environment	• Generation of Dust	• Sprinkling of water • Earth handling site • Borrow area • Road construction site • Air pollution control at stone crusher • PPE for workers • Stone crushing units environment compliance • Regulation of construction timings near sensitive receptors and settlements
		• Gaseous Pollution	• Vehicles and machineries will be regularly maintained to conform to the emission standards. • Asphalt mixing sites should be 1 km away from residential area. • Asphalt plant will be equipped with pollution control equipment • Use of PPE by workers engaged in construction and application of asphalt mix on road surface. • Responsibility of contractors and supervising officers to ensure that the workers use the PPE

3.	Noise environment	• Noise level may likely to increase during construction phase	• Properly maintained equipment's to be used • Noise levels of machineries used shall conform to relevant standard prescribed in Environment (Protection) Rules, 1986. • Ear plugs and muffs will be used by workers as per requirement during construction activities. • Regulation of timing of construction work generating noise pollution near the residential areas
4.	Water environment	• Drainage pattern At 36 locations (08 Ponds, 10 canals, 10 local streams, 06 Seasonal streams, 01 location (Mahanadi River) and 01 Nalah/Canal) will be impacted due to the proposed National Highway.	• Provision of proper drainage through culverts along the proposed National Highway. • All the water bodies will be crossed by bridges and structures without affecting their original course and flow • Stabilization and turfing of slopes along the water bodies.
		• Siltation of water bodies	• Silt fencing around water bodies during construction to avoid silt laden runoff entering water body • Turfing or pitching of embankments of water bodies affected will be done where possible to prevent erosion that causes siltation. • No solid waste will be dumped in or near the water bodies or rivers.
		• Flooding due to siltation of drainages channel	• Excavated earth and other construction materials should be stored away from water bodies
		• Water for construction	• Water source would be selected so that local availability is not affected
		• Rain water harvesting	• Rainwater harvesting drains will be provided along the roadside
		• Contamination from wastes	• Provision of septic tanks to prevent any untreated sewage discharge from construction worker scamps • Oil interceptors at construction machine maintenance yards

		• Contamination from fuel and wastes	• Vehicle maintenance will be carried out in a confined area, away from water sources, and it will be ensured that used oil or lubricants are not disposed to watercourses
		• Sanitation and water use in construction camps	• Construction camp will be organized in a planned manner. • Proper sanitation facilities will be provided including toilets. • Camps will have separate water supply facilities so that local water sources are not affected
5.	Land environment	• Loss of topsoil	• Topsoil on stripping shall be removed and stockpiled on sides to be used on the side slopes, for top cover of borrow areas and for plantation in pits
		• Loss of topsoil from borrowing	Arable lands will be avoided for earth borrowing. If needed, topsoil will be separated and refilled after excavation
		• Borrowing of fill materials	Excavation from pre-selected locations. After excavation, the borrow pits will be dressed to match with the surrounding.
		Loss of Land • As per available data, it is observed that total Land acquisition is 684.475 ha.	The compensation to project affected persons will be paid as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013, National Highways Act (NH Act), 1956 and relevant Acts and guidelines of Government of India.
		Loss of structures So far as the type of dwelling structures is concerned 54 nos. of structures coming under within alignment.	

		Loss of Common Property Resources (CPRs) A total of 35 CPRs (16 temples, 11 wells and 08 ponds) falls within proposed alignment.	Relocation of CPRs will be done in consultation with the locals and relocation will be completed first before dismantling the existing structures of CPRs.
6.	Ecological resources	• Loss of trees	Approx. 3019 nos. of trees are likely to be felled. At least, thrice numbers of trees for each tree to be cut will be planted as a part of compensatory afforestation. Green belt development along proposed National Highway. Plantation of about 9057 trees (three row plantations on either sides of the proposed National Highway) proposed. Shrub plantation and grass carpeting in median is also proposed.
7.	Impacts on wildlife	• Loss of Habitat and Defragmentation	• Plantation will be done along the National Highway to compensate the loss of vegetation • The strips of vegetation will be planted on either side of the linear clearing to provide attractive corridors for animals movement.
		• Degradation of Habitat Quality	• Precautions will be taken to avoid leakage of chemicals, any hazardous materials due to construction activities. • Labour camps will be located far from habitat of any fauna • Invasive alien species will be removed from time to time
		• Noise Induced physiological and Behavioral Changes	• Dense vegetation along the National Highway may be provided for attenuation of noise. • Silence zone will be marked and provided with sign boards to alert drivers • Noise buffers using diversity of tree species, with a range of foliage shapes and sizes, combination of shrubs and trees and evergreen species will be provided. • Noise wall/Barrier will be provided

		• Impacts of Headlights Glare on Wildlife	• Hedges along both sides of National Highway will be provided to lower the intensity of lights
		• Avoidance of Road by Animals • To avoid Injury and Mortality of animals	• Animal underpasses/Viaduct are proposed to be constructed for animals to cross the National Highway. • Different types of underpasses like Box culverts, pipe culverts, and culverts with furniture will be constructed for passage of herpeto fauna, amphibians etc. • Fences will be provided in combination with underpasses to direct animals away from the National Highway. • Vegetation or other habitat features (rocks, fallen timber) will be placed, planted or allowed to regrow so that animals are directed to preferred crossing locations. • The plantation and lighting systems along the National Highway should be made less attractive to birds to avoid collision of birds with vehicles.
		• Reduce access to saltlicks and water holes	• Creation or improvement of water bodies will be done so that the animals have access to water. • Plantation along the water body will be done to attract the animals towards it. • The saltlicks areas will be protected from reach of human beings.
		• Discontinuity of Canopy	• The width of the linear clearing may be kept small in the area having dense canopy to maintain the continuity above the clearing.
		• Disruption of Processes that maintain regional wildlife populations	• The breeding sites of animals/amphibians, nesting sites of birds, thermoregulation surface sites of snakes will be avoided for any type of construction. • Construction/modification of ponds will be done to provide breeding sites to amphibians. • The construction of strips of surfaces (next to road where high mortality of snakes are reported) that may attract snakes for thermoregulation will be done.

		• Increased Human Pressure and Human-Wildlife Conflict	• Caution signs will be provided to alert drivers about wildlife • Speed limit will be restricted in and around dense habitation area to avoid any collision of animal. • Parking shall be restricted to avoid any encounter of humans with animals. • Temporary warning signs may be provided to warn drivers during specific time like breeding periods of animals or animal movement. • Animal Detection Systems may be provided for detection of any animal near National Highway. • Poachers will be warned through signboards
8.	Public health and occupational safety	• Safety to public	• Signs will be posted on National Highway before construction areas informing public about the work and safety provisions.
		• Restriction to Access	• Safe and convenient passage for vehicles, pedestrians and live stocks will be arranged during construction work
		• Occupational safety for workers	• Contractor will arrange all safety measures for workers as per factories act.
		• Occupational safety for asphalt plant workers	• All worker employed on mixing asphaltic material, cement, lime mortars, concrete etc. will be provided with protective footwear and protective goggles

1.5 ENVIRONMENTAL MONITORINGPROGRAMME

The Environmental Monitoring Programs are also suggested to provide information on which management decisions may be taken during construction and operational phase. The objective of this program is to evaluate the efficiency of mitigation and enhancement measures, updating the actions & impacts of baseline data and adaptation of additional mitigation measures. Total cost for environment monitoring plan is **Rs2,89,92,000.**

1.6 ADDITIONALSTUDIES

Public Consultation & Public Hearing

The public consultations were carried out in nearby villages of the project corridors. These consultations were taken up by environmental and social experts. Details are incorporated in EIA/EMP report.

In consonance with the EIA notification dated 14th September 2006, vide section 7(f) related to public hearing, the draft EIA/EMP report shall be submitted to the Chhattisgarh State Pollution Control Board (SPCB) for conducting public hearing in Raipur, Dhamtari, Kanker and Kondagaon districts.

Social Impact Assessment

The proposed National Highway will pass through Raipur, Dhamtari, Kanker and Kondagaon districts. There are 54 structures recorded within the corridor of impact the proposed National Highway. However, the proposed project will definitely have some positive impact on the socio-economic environment of the people of surrounding villages experiencing development in the area in specific and state and nation as a whole. The demographic profile and socio-economic status of the people in the project affected district are presented in EIA/EMP report.

Road Safety Features

The proposed road would act as the prime artery for the economic flow to this region. It will enhance economic development, provide employment opportunities to locals, strengthen tourist development, ensure road safety and provide better transportation facilities and other facilities such as way side amenities.

The proposed project is entirely green field National Highway. However, provision of diversions with direction signs, speed breakers and other safety requirements followed as per IRC & MoRTH guidelines. Provision for accident emergency assistance and medical care to accident victims have also been considered as road safety measures.

1.7 PROJECTBENEFITS

The proposed NH will provide better, fast, safe and smooth connectivity for the commuters of Chhattisgarh state and especially in Raipur, Dhamtari, Kanker and Kondagaon regions. Smooth and fast-moving traffic will cause only lower emissions thereby reducing pollution levels. Accident rates are also expected to come down substantially. Development of the proposed project road will improve the local agriculture and enable farmers to realize better value for their products as well as attract more investment to that region, thus boost economy of the area, state and nation as a whole. The vehicle operating and maintenance cost is expected to go down substantially. The proposed road alignment will also include general amenities like bus bays, truck lay bays, rest areas, service road at built-up locations, pedestrian and cattle underpasses, landscaping and tree plantation, traffic aid post, emergency telecom system, emergency medical aid post, street light at built ups etc. and thus overall facilities to the road users shall improve. People will have increased access to better social and health infrastructure and other services located outside the project area. This will in turn lead to overall improvement of the quality of life of the people residing in the project zone in terms of their economic, social and health status. Growth of local tourism and resultant boost to local economy is also expected due to proposed project.

1.8 ENVIRONMENTAL MANAGEMENT PLAN (EMP)

The Environmental Management Plan is prepared for avoidance, mitigation and management of the negative impacts of the project. It also covers remedial measures require to be taken EMP includes the list of all the project related activities, their impacts at different stages of project during pre-construction phase / design phase, construction phase and operational phase on environment and remedial measures to be undertaken to mitigate these impacts.

Total cost for environment management plan (including environmental monitoring plan) for the project is **approx. 9.15 Crores.**

1.9 CORPORATE ENVIRONMENTAL RESPONSIBILITY (CER)

As per MoEF&CC OM No 22-65/2017-IA.II (M) dated 1st May, 2018, the cost of CER is to be in addition to the cost envisaged for the implementation of the EIA/EMP which includes the measures for the pollution control, environmental protection and conservation, R&.R, wildlife and forest conservation/protection measures including the NPV and Compensatory Afforestation, required, if any, and any other activities, to be derived as part of the EIA process.

The cost for Fund allocation for Corporate Environment Responsibility (CER) as per the above mentioned circular has been calculated as **0.5%** of the total project cost (Rs.4,066.25 Cr.) i.e. **Rs20.35 Cr.**

1.10 FINDINGS & CONCLUSSION

The EIA/EMP report was prepared after thorough interaction with the engineering section of the consultants so that the negative impacts on the environment and human population could be avoided as far as possible. Some of the important findings of the study are as follows: -

1. There will be insignificant loss of bio-diversity as no rare plant or animal species are going to be affected by the present project.
2. The proposed stretch doesn't pass through any eco-sensitive zone of Wildlife sanctuary or national park. However it passes at a distance of 0.7 km from the nearest border of the eco-sensitive zone of Sitanadi Sanctuary at ch 96.500. The detailed study of elephant movement has been studied and provided in the EIA/EMP report.
3. Precautionary measures such as underpass, pipe culverts and chain link fences, tunnels etc. have been suggested to mitigate the likely impacts if any, on the wild life present in study area.
4. No monuments protected by the Archaeological Survey of India (ASI) are located close to the proposed National Highway.
5. The most important factors, which need continuous attention and assessment during the construction phase, are the ambient air quality, the water quality and the noise level. The ambient air quality of the study area is good. A noise level in the area is also below the limit.
6. Approximately 3019 numbers of trees are recorded in corridor of impact of the proposed National Highway. However, 9057 trees shall be planted as avenue plantation and compensatory afforestation will enhance the environmental condition of the area.
7. There are 54 structures (residential and commercial) recorded within the corridor of impact the proposed National Highway. However, the proposed project will definitely have some positive impact on the socio-economic environment of the people of surrounding villages experiencing development in the area in specific and state and nation as a whole.