



Development of Urban Extension Road-II (NH-344M) from design chainage Km 0.000 to Km 38.111 in the state of NCT of Delhi, Development of link road (new NH-344P) (Km 0.000 to Km 29.600) between Bawana Industrial Area Delhi (from Km 7.750 of UER-II) till bypass of NH-352A at Village Barwasni, Sonipat, Haryana in the state of NCT of Delhi/Haryana and Development of link road (new NH-344N) (Km 0.000 to Km 7.500) between Dichaon Kalan till Bahadurgarh Bypass/NH-10 in the state of NCT of Delhi/Haryana.

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EXECUTIVE SUMMARY

E.1 INTRODUCTION

The proposed project is a part of the Bharat Mala Project which has been envisaged as an umbrella program under the Ministry of Road Transport and Highways. The project involves constructions or improvement of national highways/ newly declared National Highways with an aim to improve road connectivity to border areas, backward areas, religious and tourist sites.

M/s. URS Scott Wilson India Private Limited in association with AECOM India Private Limited have been appointed as Consultants by NHAI to carry out the preparation of Feasibility study / Detailed Project Report of road stretches selected of Bharat Mala Scheme – Development of Urban Extension Road-2 (NH-344M) from design chainage Km 0.000 to Km 38.111 in the state of NCT of Delhi, Development of link road (new NH-344P) (Km 0.000 to Km 29.600) between Bawana Industrial Area Delhi (from Km 7.750 of UER-2) till bypass of NH-352A at Village Barwasni, Sonipat, Haryana in the state of NCT of Delhi/Haryana and Development of link road (new NH-344N) (Km 0.000 to Km 7.500) between Dichaon Kalan till Bahadurgarh Bypass/NH-10 in the state of NCT of Delhi/Haryana. Further, URS Scott Wilson India Private Limited in association with AECOM India Private Limited assigned Amaltas Enviro Industrial Consultants LLP a NABET accredited consultant to prepare the Environmental Impact Assessment report including Environmental Management Plan.

E.2 BRIEF ABOUT THE PROJECT AND ITS LOCATION

The proposed highway is green field project and proposed RoW of UER-2 (NH-344M) is 100 m as per Delhi Master Plan. The road section design will include dual 3 lane carriageway and 3 lane wide service road. Total length of proposed project UER-2 (NH-344M) is 75.211 m. The road section also includes provision for Non-Motorised Transport (NMT) viz. pedestrian walkways & cycle tracks. At certain stretches the acquired RoW is 140 m, with a provision of 20 m wide green belt in addition to the road RoW. The proposed project highway UER-2 (NH-344M) takes off from NH-1 (Ch. km 23+800) near village Bankoli and terminates near the junction of Sector-24 in Dwarka. In addition to this alignment,



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two spurs are also proposed to be developed as part of UER-2 which includes a spur between UER-2 & Barwasani By-pass (Sonipat) and another in the form of Spur to Bahadurgarh By-pass connecting UER-2 and Bahadurgarh By-pass (NH-10).

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

Table E-1: Salient features of the project

Project Name	Development of Urban Extension Road-2 (NH-344M) from design chainage Km 0.000 to Km 38.111 in the state of NCT of Delhi, Development of link road (new NH-344P) (Km 0.000 to Km 29.600) between Bawana Industrial Area Delhi (from Km 7.750 of UER-2) till bypass of NH-352A at Village Barwasni, Sonipat, Haryana in the state of NCT of Delhi/Haryana and Development of link road (new NH-344N) (Km 0.000 to Km 7.500) between Dichaon Kalan till Bahadurgarh Bypass/NH-10 in the state of NCT of Delhi/Haryana.
Proponent	National Highways Authority of India (NHAI), MoRTH, GoI New Delhi
Capacity	75.211km
Coordinates	Start 28°48'40.08"N ; 77°08'8.45"E End 28°33'35.73"N ; 77°01'43.27"E
Project Category (as under EIA Notification, 2006)	Category-A
Total Civil Cost	INR 4,557.56 Cr.
Total Capital Cost (including LA and Utility Shifting etc.)	INR 7,582.67 Cr.
Road Stretch	NH-1 to Sector-24, Dwarka in the NCT of Delhi along with two spur in Sonipat and Jhajjar District of Haryana State.
Road Length	75.211 Km



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Start Point	UER-2: NH-1 (Ch. 23+800) near village Bankoli
End Point	UER-2: Sector 24 in Dwarka
Realignment	4 No.- Ch. 15+000 to Ch. 20+400 (5.4 km), Ch. 27+000 to 27+100 (0.1 km), Ch. 27+600 to 27+900 (0.3 km), Ch. 30+200 to 32+200 (2 km) is proposed.
Existing ROW (ERoW)	<ol style="list-style-type: none">1. The existing RoW of UER-2 (NH-344M) varies between 55 m to 100 m except approx. 8 Km of length has no available ROW2. The existing RoW of Spur to Sonipat By-pass (NH-344P) varies between 30 m to 45 m for only length of approx. 3.25 km.3. There is no existing RoW available for Spur to Bahadurgarh By-pass (NH-344N)
Proposed ROW	<p>UER-2 (NH-344M) - Proposed ROW varies from 35 m to 200 m (200m PROW at proposed toll plaza)</p> <p>SPUR-I (NH-344P) - Proposed ROW varies from 30 to 170m (170m PROW at proposed toll plaza).</p> <p>SPUR-II (NH-344N) - Proposed ROW varies from 35 m to 60 m.</p>
Districts En-route	<ul style="list-style-type: none">• Four districts in NCT of Delhi i.e. North, North West, West South West• Two districts in the State of Haryana i.e. Sonipat and Jhajjar
Major Bridges	1 No.
Minor Bridges	23 Nos.
Culverts	32 Nos.
Interchange	8 Locations i.e. 6 nos. at Ch. 0+000, 1+700, 5+200, 7+750, 11+300 & 26+150 of NH-344M. 1 nos. at Ch 29+300 of NH-344P. 1 nos. at Ch. 7+300 of NH-344N.



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Intersection	93 Locations
Service/Slip Road	110.027 Km
Major Junction	19 Locations
Minor Junction	74 Locations
Road Over Bridges (ROB)	2 Nos. (Ch. 3+505 of NH-344M near Holambi Kalan and Ch. 20+700 of NH-344M near Mundka Industrial Area)
Elevated Flyover	27 Nos.
Underpass Box/VUP/LVUP	37 Nos. (11 nos. underpass box, 12 VUP, 12 LVUP & 2 VOP)
Subway	17 Nos.
Proposed Toll Plazas on project road	2 Nos. (Ch. 22+650 of NH-344M & Ch. 9+550 of NH-344P)
Bus Bay and Bus Shelters	29 Nos.
Design Speed	100 km/hr
Main Carriageway (Proposed)	Varying from 12.5 to 43 m
Safety Measure	Crash Barriers
Lighting	Lighting including High Mask at Toll plazas, interchanges, major bridges and Amenities Areas

Table E-2: Features of EIA Importance

1.	Project Road	<p>Total Project Length: 75.211 Km</p> <p>1. Urban Extension Road-2 (new NH-344M): Length- 38.111 Km</p> <p>2. Link Road (new NH-344P): Length- 29.600 Km</p> <p>3. Link Road (new NH-344N): Length- 7.500 Km</p>
2.	Type of PPP	EPC
3.	Location of the proposed project	The proposed project Urban Extension Road-II (NH-344M) takes off from NH-1 (Ch. 23+800) near village Bankoli and terminates near the junction of Sector-24 in Dwarka.



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		State-wise location is given in the table below:				
		S. No.	State	District	Location	Village
		1.	Delhi	North, North West, West and South West	Narela & Bawana, Kanjhawala, Nangloi, Najafgarh & Kapashera.	Bankoli, Holambi Kalan, Holambi Khurd, Khera Khurd, Bawana, Dariyapur Kalan, Harweli, Karala, Mohammad Pur Majari, Madan Pur Dabas, Rani Khera, Rasulpur, Mundka, Bakkarwala, Dichaon Kalan, Jaroda Kalan, Neelwal Nangli Sakrawati, Masoodabad, Najafgarh, Roshanpura, Dindarpur, Tajpur, Chhawala, Dhulsiras in NCT of Delhi



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		2.	Haryana	Sonepat and Jhajjar	Kharkhoda & Sonepat, Bahadurgarh	Jhinjoli, Halalpur, Nahara, Mandora, Garhi Bala, Mohammadabad, Bindroli, Bhowapur, Rohat, Kakroi, Mehlana, Barwasini, Bahadurgarh, Belaur	
4.	Seismic Zone	Zone-IV (High Damage Risk Zone) as per IS 1893 (Part 1) : 2002					
5.	Forest Land Diversion	Forest Land: 9.2869 h. (Note: Forest Area may increase after declaration of deemed forest based on nos. of trees along the alignment by Forest Department).					
6.	Affected water bodies	<p>The proposed alignment is crossing various water bodies. Details are given below:</p> <p><u>UER-2 (NH-344M)</u></p> <ul style="list-style-type: none"> • Drain No.6: Chainage: Km. 0+550 • Nahri Major Distributary: Chainage: Km. 0+835 • Drain: Chainage: Km. 2+315 • Western Yamuna Canal: Chainage: Km. 7+100 • Water Body-1: Chainage: Km. 14+400 • Water Body-2: Chainage: Km. 15+900 • Mungashpur Drain: Chainage: Km. 27.100 to 27+200 • Pond: Chainage: Km. 33+500 					



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		<ul style="list-style-type: none"> Najafgarh Drain: Chainage: Km. 37+400 <p><u>SPUR-1 (NH-344P)</u></p> <ul style="list-style-type: none"> Twin Drain Chainage: Km 15+700, Km 19+477, Km 29+293 Distributary/Canal: Chainage: Km. 15+508, Km. 23+908, Km. 25+252, Km. 28+756, Km. 23+200 to 24+325 <p><u>SPUR-II (NH-344N)</u></p> <ul style="list-style-type: none"> Mungashpur Drain: Chainage: Km. 5+400
7.	Existing trees within ROW	Approximately 17,000 nos. of trees (including forest area). Details of existing tree are given in Annexure-III .
8.	Compensatory plantation	Approx. 1,70,000 nos. of trees
9.	Green belt development	As per IRC SP 21:2009 /MoRTH Code/Guidelines
10.	Cropping pattern in affected area	Paddy, jowar and bajra during Kharif and Wheat and Mustard crops during the Rabi seasons are the major crops in Delhi. The main crops of Haryana are wheat, rice, sugarcane, cotton, oilseeds, pulses, barley, maize, and millet. There are two main types of crops in Haryana: Rabi and Kharif..
11.	Reserve Forest /Protected Forest in Affected Area	Protected Forest – approx. 9.2869 ha
12.	Wildlife Sanctuaries Associated with this Project	No
13.	No. of Structures Affected	482 structures (including private, religious, government and community properties)
14.	No. of affected villages by Land acquisition	40 villages (Delhi -26 and Haryana-14)
15.	Total Area of Land Acquisition	Total Land Acquisition: 527.27 ha Government Land: 273.55 ha



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		Private Land: 253.71 ha
16.	No. of project affected persons (PAFs) & (PAPs)	Total PAFs –224 Total PAPs – 794
17.	Resettlement Action Plan (RAP) including Land Acquisition Budget	INR 1272.43 Cr.
18.	Amenities Proposed	The amenities proposed during operation phase are toll plaza, administrative buildings, weighing stations, parking areas, rest areas, roadside furniture, pedestrian facilities, landscaping and tree plantation, truck lay-bys, bus-bays and bus shelters, highway lightings and office cum residential complex of PIU. The toll plaza location has been selected based on the traffic studies at Ch. 22+650 of NH-344M and Ch. 9+550 of NH-344P.
19.	Estimated Solid waste generation during construction phase	1000 Kg Municipal Solid Waste is expected to be generated during construction considering 2500 labourers.

E.3 ANALYSIS OF ALTERNATIVES

Suitable alignments for UER-2 (NH-344M), Spur-I (NH-344P) and Spur-II (NH-344N) have been considered which seem more feasible as the length is less as compare to other option. Also it provides better alternative from NH-1 Intersection to Sector-24 Dwarka, Spur to Barwasini By-pass (Bawana Industrial Area to Barwasni By-pass) and Spur to Bahadurgarh By- pass {From Km 26+135 of UER-2 (NH-344M) (Dichaun Kalan) to Bahadurgarh By-pass/ NH-10 near Village Balaur, respectively.

E.4 DESCRIPTION OF THE ENVIRONMENT

Study Area: The base-line data has been collected for Core Zone (Corridor of Impact (COI)), an area covering 500 m on both side 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



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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 October 2019 to December 2019.

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 climate of this region is sub-tropical climate. The climate of the district is warm. In the hot season the heat is great and it becomes intense. The year may be divided into four seasons. The cold season from December to February is followed by the hot season from March to May. The south-west monsoon season is from June to September and October and November is post monsoon season.

The annual rainfall in the district is received during the south – west monsoon season from June to September, July being the month with the highest rainfall. In general, monsoons are warm and moderately humid; winters are fairly cold and dry, while summers are largely hot and dry.

➤ **Air Environment:** Ambient air quality monitoring has been done at 12 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 October to December 2019. All the parameters have been analyzed and show that all the parameters are well below the National ambient air quality standards, 2009 except PM_{10} & $PM_{2.5}$ which exceeds NAAQS, 2009 in allocations.

➤ **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:





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Surface Water resources: Canals and Drains. Ground Water resources: Hand pump and bore-well

➤ **Surface water:** Surface water sampling has been taken for 7 locations. The pH varies from 6.91-7.7, During analysis DO was found in the range of <0.1 to 5.9 mg/L. Based on test result data comparison study, it is interpreted that all parameters of Surface water is within limit except with sulphates which have been found more than Limit value at location SW1.

➤ **Ground water:** Ground water sampling has been taken for 9 locations. pH of the monitored samples was found in the range of 7.06-7.98. TDS analysis was also carried out for ground water sample and it was found in the range of 822 - 7020 mg/l. Total Hardness ranges from 300-1990 mg/l with maximum in the water sample of DSIDC Industrial Area, Narela and minimum in Jain Nagar, Rohini Sector-38, New Delhi. Heavy metal analysis was also carried out and the Iron content was found in the range of 0.15-0.28 mg/l. Based on test result data comparison study, it is interpreted that of Total Hardness and TDS of study area has been found above the desirable limit at some locations. This water should not be directly used in drinking purpose.

➤ **Noise Environment**

Ambient noise level monitoring has been done at 12 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 48.27 dB(A) to 68.04 dB(A) during daytime which are within the prescribed norms of CPCB. Whereas during the night time 37.53dB (A) to 59.36dB (A).

➤ **Soil Environment**

The soil of the study area is categorized as Sandy clay loam based on different soil separates (sand, silt and clay). They have less water holding capacity 32.2 to 45.5 but more drainage capacity as texture is Sandy clay loam. The colour of soil in the study area is found Brown. The pH of the soil samples ranged from 7.34 to 7.68 during the study period, indicating that soils are slightly alkaline in nature. The soil EC also varied from 236 to 628. The Analysis indicate that the Organic carbon is 0.35 to 1.40 which



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indicate that soils are high (<0.5 %) in organic carbon status. Concentration of total phosphorus and total nitrogen was in the range of 124.2 to 184.5 kg/ha and 989.5 to 1524.5 kg/ha. Based on soil analysis data it is concluded that surface soils are alkaline in reaction. The soils are having more than sufficient quantity of nitrogen and phosphorus and phosphorus.

E.4.1 ECOLOGICAL ENVIRONMENTS

The proposed alignment passes through protected forest and no Wild Wildlife Sanctuary is within 10 km radius from alignment.

Some of the important tree species of the project site are; Babul, Bel, Maharukh, Siris, Kardhai, Neem, Palash, Garmala, Rain Tree, Shisham, Nilgiri, Silver Oak, Su-babul, Bakain etc.

The commonly occurring grass species in the study area are: *Dactyloctenium aegypticum*, *Bambusa spp.*, *Chrysopogon fulvus*, *Cynodon dactylon* etc.

The dominant shrub species in the study area include: *Calotropis procera*, *Adhatoda vasica*, *Zizyphus jujuba*, *Zizyphus nummularia* etc.

Trees: *Acacia nilotica*, *Aegle marmelos*, *Dalbergia sissoo*, *Syzygium cumini*, *Azadirachta indica*, *Phoenix dactylifera* etc.

The **common mammalian species** recorded/observed in the project area include: *Boselaphus tragocamelus* (Nilgai), *Canis aureus* (Jackal), *Funambulus pennantii* (Five-striped Palm Squirrel), *Lepus nigricollis* (Indian Hare), *Semnopithecus entellus* (Langur) etc.

The **common amphibians and Reptiles** recorded in the project site are: *Duttaphrynus melanostictus* and *Rana catterbeiana*.

Bungarus caeruleus (Kalo taro), *Calotes versicolor* (Indian Garden Lizard), *Daboia russelii* (Russell Viper), *Lacertidae* (Wall Lizard), *Naja naja* (Indian Cobra), *Ptyas mucosa* (Dhaman), and *Ptyas mucosus* (Indian Rat Snake) etc.

The **common bird species** recorded in the project area during post-monsoon season, 2019 are: *Ceryle rudis* (Common Kingfisher), *Pavo cristatus* (Indian Peafowl), *Eudynamis colopaceus* (Asian Koel),



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Columba livia (Blue Rock Pigeon), *Spilopelia chinensis* (Spotted Dove), *Passer domesticus* (House sparrow), *Milvus migrans* (Black Kite), *Gallinula chloropus* (Waterfowl) etc.

The **common Butterfly species** recorded in the project area during post-monsoon season, 2019 are: *Atrophaneura aristolochiae*, *Byblia ilithyia*, *Curetis theitis*, *Graohium nomius*, *Graphium agememnon*, and *Papilio demoleus*

The **common insect fauna** recorded in the project area during post-monsoon season, 2019 are: *Acrida* sp. (Grasshopper), *Aisoma panorpoids* (Trumpet tail), *Apis dorseta* (Giant honeybee), *Apis indica* (Honey bee), *Camponotus* sp. (Ant), *Cuileceta longiareolata* (Mosquito), etc.

The important **commercial fish species** in the water bodies of the project area during post-monsoon season, 2019 are *Cirrhinus mrigala*, *Catla catla*, *Bagarius yarrelli*, *Oreochromis aureu*, and *Labeo rohita* etc.

E.5 ANTICIPATED ENVIRONMENTL IMPACTS AND MITIGATION MEASURES

The impact of proposed project on different component of environment has been assessed and mitigative measures have been suggested. The details are given in Chapter 5 of EIA report.

➤ Land Environment

Additional land of approx. 253.71 ha will be required for development of proposed project roads as area is very limited except UER-2 (NH-344M). Cut and fill of the site are required. This will change the topography of the site which may affect the existing drainage pattern of the site. Soil runoff from the site may lead to off-site contamination (particularly during rainy season). Approx. 9.2869 hectares of forest area proposed to be diverted (Note: Forest Area may increase after declaration of deemed forest based on nos. of trees along the alignment by Forest Department). The alignment will require cutting of approximately 17,000 no. of trees (including forest area).

➤ Soil Environment

Impact: During construction phase, the potential impacts due to project activities are loss of productive



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soil, Erosion, contamination of soil while during operation phase, no significant impacts are predicted other than those resulting from protection works in erosion prone areas and failure to maintain re-vegetated areas along the alignment, borrow sites, and debris disposal sites. Bridge approaches with high embankments are vulnerable to soil erosion during high rainfalls.

Mitigation Measures: More trees plantation to enhance environment and soil conservation. Top soil should be removed and stored separately during excavation. Top soil may be used to re-vegetate the disturbed slope as early as possible. During operation phase, to prevent soil erosion along the embankment, regular monitoring inspections will be undertaken to ensure that drainage; bridge approaches and re-vegetated areas are maintained and strengthened to prevent reoccurrence of soil erosion.

➤ Water Environment

Impact: There will be short term impact on water bodies during construction phase while in operation phase no direct impact on water quality is predicted. Total water requirement for 24 months of construction period is 21,97,509.00 KL. Majority would be sourced from Delhi Jal Board.

Mitigation measures: Provision of recharge pits, in design to recharge ground water as per the CPCB guidelines.

➤ Air Environment

Impact: The project site impact on ambient air quality within the project site and nearby areas may be significant during the construction phases. The most important pollutant during this phase will be suspended particulate matter due to the excavations, handling and transport of earth and construction material etc. at site along with gaseous pollutants like dioxides of nitrogen, sulphur, and carbon monoxide. During operation phase, Air quality is likely to improve after commissioning because of saving of fuels in the vehicular traffic riding on smooth and improved roads with much less interruption. It is also possible in future that there may be reduction in the pollutant load of transportation because of improvement in fuel quality, design improvement of engines and availability of mix of environment



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friendly fuels.

Mitigation Measures: Plantation along the road sides and medians respectively shall be done which will help to control dust and fugitive emissions from reaching the receptors. Tree plantation for attenuating pollution levels shall include pollution tolerant species with thick foliage. all operational areas (work sites, haul roads, hot mix plants, quarries, borrow sites and disposal sites) under the road construction works shall be regularly monitored for air quality parameters so that suitable mitigation measures can be taken up if any of the parameters exceed the prescribed limit.

➤ **Noise Environment**

Impact: It is expected that during construction, workers will be subjected to higher noise level and nearby habitants. During the operation phase, noise will be generated through the vehicles movement. Noise levels will depend up on traffic density, traffic flow and traffic composition.

Mitigation Measures: Construction Camps will be at least 500 m away from inhabited areas. Other ancillary measures include maintenance of equipment in good condition, proper design of engine enclosures. Effective traffic management and good riding conditions shall be maintained to reduce the noise level throughout the stretch and speed limitation and honking restrictions may be enforced near sensitive locations.

➤ **Biological Environment**

During construction and operation phase the fugitive dust from crusher units, air emissions from hot mix plant and vehicles used in the transportations of materials will be major factors impacting the biodiversity.

The defect of dust and emissions will be temporary in nature, the adverse effect of which will automatically overcome by wind current and rainfall. As the similar flora and fauna are also available outside the project area, the adversity of these anthropogenic influences will be negligible.

➤ **Social Environment**





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The economic and social interaction of communities is going to be improved by the road projects.

Some important impacts are listed below;

- Impact on the present status of livelihood will be positive.
- Adverse impact due to displacement of human settlement from proposed site. Impact due to loss of properties
- Positive Impact on the existing travel areas due to faster traffic, access controls and median barriers. Positive Impact due to accelerated urbanization
- Employment opportunity and access to other amenities such as primary education and health care facilities for local people

➤ **Impact of Solid Waste**

During construction phase, 1000 kg of municipal waste is expected to be generated considering 2500 labour. All applicable waste disposal norms to be followed. Waste land to be preferred for construction debris disposal.

During operation phase, the municipal solid waste shall be generated from the amenities proposed along the alignment. Waste management during construction and operational phase shall be done as per Solid Waste Management Rules, 2016.

E.6 ENVIRONMENTAL MONITORING PROGRAMME

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 Rs. 1.20 Cr.

E.7 ADDITIONAL STUDIES

Public Consultation & Public Hearing

The public consultation has been carried out in nearby villages of the project corridors. These



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consultations were taken up by environmental and social experts of EIA Accredited Consultant Organization. Details of Public Hearings will be incorporated in Chapter 7 of this EIA-EMP report.

Socio-economic study in project area

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. Socio-economic study has been carried out for the proposed project and furnished in chapter-7 of final EIA/EMP report. During the survey, it has been found that total 482 nos. of structures, 224 nos. of families (PAFs) and 794 nos. of persons (PAPs) will be getting affected by land acquisition. The R&R plan has been prepared based on Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013. The R&R cost is INR 1272.43 Cr.

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 construction of green alignment of Urban Extension Road (UER) will ensure smooth flow of the traffic. Installation of proper road safety system through signage, barricades, and crash barriers will add to be safety to the traffic. Bus bays, lay byes, rest areas, underpasses, service roads are proposed in the project, which shall enhance the road safety.

Risk Assessment and Disaster Management Plan

Risk in general is defined as a measure of potential economic loss or human injury in terms of the probability of the loss or injury occurring and magnitude of the loss or injury if it occurs. Risk thus comprises of two variables; magnitude of consequences and the probability of occurrence.

Disaster Management Plan

A Disaster Management plan has been suggested for implementation during emergency situation.

E.8 PROJECT BENEFITS



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The proposed highway will provide better, fast, safe and smooth connectivity for the commuters of Delhi and Haryana state. 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 byes, 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.

E.9 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. 32.50 Cr.

E.10 FINDINGS & CONCLUSSION

The EIA/EMP report has been 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:



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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. Precautionary measures such as underpass, pipe culverts and chain link fences etc. have been suggested to mitigate the likely impacts..
3. No monuments protected by the Archaeological Survey of India (ASI) are located within the ROW of highway.
4. 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.
5. Approximately 17,000 numbers of trees are recorded in corridor of impact of the proposed highway. However, avenue plantation and compensatory afforestation will enhance the environmental condition of the area.
6. There are 482 structures (including private, religious, government and community properties) recorded within the corridor of impact for proposed 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.