

## **Proposed Terms of Reference for EIA Study**

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### **Project Introduction**

The Government of India has taken up development of Economic Corridors, Inter Corridors, Feeder Corridors to improve the efficiency of Freight Movements in India under Bharatmala Pariyojana.

The National Highways Authority of India (NHAI) acting on behalf of Government of India is applying for Environment Clearance of subjected project under Lot4/Pkg-4, in Rajasthan State. The scope of the project is to develop 8/6 lane access controlled highway of 204.606 km. The alignment shall start from Haryana–Rajasthan boarder at Ch. 79.394 km (27°39'13.12"N, 76°57'46.62"E) near Firozpur Jhirka, Haryana and traverses entirely through plain / rolling terrain and ends near Itawa village at Ch. 284.000 km (26°01'57.27"N 76°15'42.06"E) in the district of Sawai Madhopur, Rajasthan.

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It is a green-field expressway project, hence, requires Environment Appraisal as Category A under the purview of EIA Notification, 2006 (amended thereof). The baseline environment study in the project vicinity shall be carry for one season. Terms of Reference has been prepared considering standard ToR prepared by MoEF&CC for Highway Projects and past experience of the relevant development project. Below are the points that will be addressed during EIA Study.

- 1) Brief description of the project, project name, nature, size, its importance to the region / state and the country
- 2) In case the project involves diversion of forests land, guidelines under OM dated 20.03.2013 may be followed and necessary action taken accordingly.
- 3) Details of any litigation(s) pending against the project and/or any directions or orders passed by any court of law/any statutory authority against the project to be detailed out.
- 4) Detailed alignment plan, with details such as nature of terrain (plain, rolling, hilly), land use pattern, habitation, cropping pattern, forest area, environmentally sensitive places, notified industrial areas, sand dunes, river, lake, details of villages, teshils, districts and states, latitude and longitude for important locations falling on the alignment by employing remote sensing techniques followed by ground truthing and also through secondary data sources.
- 5) Alternative analysis with procedures and criteria adopted for selection of the final alternative with reasons.
- 6) Land use map of the study area to a scale of 1:25,000 based on recent satellite imagery delineating the crop lands (both single and double crop), agricultural plantations, fallow lands, wastelands, water bodies, built-up areas, forest area and other surface features such as railway tracks, ports, airports, roads, and major industries etc. and submit a

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- detailed ground surveyed map on 1:2000 scale showing the existing features falling within the right of way namely trees, structures including archeological & religious, monuments etc. if any.
- 7) Examination of stability of slopes in hilly area. Discussion on soil erosion control measures from embankment. Measures for Landslide, rock fall protection measures to be indicated.
  - 8) Details of the tunnel and location of tunneling with geological structural fraction. In case the road passes through a flood plain of the river, the details of micro drainage, flood passages and information on high levels flood periodicity at least of last 50 years in the area should be examined.
  - 9) Study regarding the Animal bypasses / underpasses etc. across the habitation areas shall be carried out. Adequate cattle passes for the movement of agriculture material shall be provided at the stretches passing through habitation areas.
  - 10) The information should be provided about the details of the trees to be cut including their species and whether it also involves any protected or endangered species. Measures taken to reduce the number of the trees to be removed should be explained in detail.
  - 11) Details of compensatory plantation and explore the possibilities of relocating the existing trees. Animal and wild life crossings to be provided in areas inhabited by wild life.
  - 12) Necessary green belt shall be provided on both sides of the highway with proper central verge and cost provision should be made for regular maintenance.
  - 13) If the proposed route is passing through a city or town, with houses and human habitation on the either side of the road, the necessity for provision of bypasses/diversions/under passes shall be examined and submitted.
  - 14) The proposal should also indicate the location of wayside amenities, which should include petrol station/ service centre, rest areas including public conveyance, etc. Noise reduction measures should also be indicated.
  - 15) Details about measures taken for the pedestrian safety and construction of underpasses and foot-over bridges along with flyovers and interchanges.
  - 16) Assess whether there is a possibility that the proposed project will adversely affect road traffic in the surrounding areas (e.g. by causing increases in traffic congestion and traffic accidents). Specific care be also taken to ensure that by passes have a sufficient buffer to prevent unwanted obstructions defying the purpose of the bypass.
  - 17) Examine and submit the details of use of fly ash in the road construction, if the project road is located within the 100 km from the Thermal Power Plant.
  - 18) Examine and submit the details of sand quarry, borrow area and rehabilitation.

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- 19) Examine and submit the details of sand quarry and borrow area as per OM no.2-30/2012-IA-III dated 18.12.2012 on 'Rationalization of procedure for Environmental Clearance for Highway Projects involving borrow areas for soil and earth" as modified vide OM of even no. dated March 19, 2013.
- 20) Explore the possibilities of utilizing the debris/ waste materials available in and around the project area.
- 21) Submit the details on compliance with respect to Research Track Notification of MoRTH
- 22) Climate and meteorology (max and min temperature, relative humidity, rainfall, frequency of tropical cyclone and snow fall); the nearest IMD meteorological station from which climatological data have been obtained to be indicated.
- 23) The air quality monitoring should be carried out as per the new notification issued on 16<sup>th</sup> November, 2009.
- 24) Identification of project activities during construction and operation phases, which will affect the noise levels and the potential for increased noise resulting from this project. Discuss the effect of noise levels on nearby habitation during the construction and operational phases of the proposed highway. Identify noise reduction measures and traffic management strategies to be deployed for reducing the negative impact if any. Prediction of noise levels should be done by using mathematical modeling at different representative locations.
- 25) Examine the impact during construction activities due to generation of fugitive dust from crusher units, air emissions from hot mix plants and vehicles used for transportation of materials and prediction of impact on ambient air quality using appropriate mathematical model, description of model, input requirement and reference of derivation, distribution of major pollutants and presentation in tabular form for easy interpretation shall be carried out.
- 26) Examine the protection to existing habitations from dust, noise, odour etc. during construction stage. IRC guidelines to be followed for traffic safety while passing through the habitat.
- 27) Details of area to be cut, depth of cut, locations, soil type, volume and quantity of earth and other materials to be removed with location of disposal/dump site along with necessary permission.
- 28) If the proposed route is passing through low lying areas, details of fill materials and initial and final levels after filling above MSL, should be examined and submit.
- 29) Examine and submit the water bodies including the seasonal ones within the corridor of impacts along with their status, volumetric capacity, quality likely impacts on them due to the project.

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- 30) Examine and submit details of water quantity required and source of water including water requirement during the construction stage with supporting data and also categorization of ground water based on the CGWB classification.
- 31) Examine and submit the details of measures taken during constructions of bridges across river/canal/major or minor drains keeping in view the flooding of the rivers and the life span of the existing bridges.
- 32) Provision of speed breakers, safety signals, service lanes and foot paths should be examined at appropriate locations throughout the proposed road to avoid the accidents.
- 33) Details of changes in drainage pattern shall be examined and submitted.
- 34) In case of river / creek crossing, details of the proposed bridges connecting on banks, the design and traffic circulation at this junction with simulation studies.
- 35) Bridge design in eco sensitive area / mountains be examined keeping in view the rock classification hydrology etc.
- 36) Details to ensure free flow of water in case the alignment passes through water bodies / river / streams etc.
- 37) Rain water harvesting pit should be at least 3 - 5 m above the highest ground water table. Provision shall be made for oil and grease removal from surface runoff.
- 38) Examine the impact and submit details of construction/widening impact of road on destruction of forest, poaching, reductions in wetland areas
- 39) Submit the details of road safety, signage, service roads, vehicular under passes, accident prone zone and the mitigation measures.
- 40) Examine road design standards, safety equipment specifications and Management System training to ensure that design details take account of safety concerns and submit the traffic management plan.
- 41) Accident data and geographic distribution should be reviewed and analyzed to predict and identify trends - incase of expansion of the existing highway and provide Post accident emergency assistance and medical care to accident victims.
- 42) If the proposed project involves any land reclamation, details to be provided for which activity land to reclaim and the area of land to be reclaimed.
- 43) Details of the properties, houses, businesses religious and social places etc. activities likely to be effected by land acquisition and their financial loses annually.
- 44) Details of social impact assessment due to the proposed construction of road.
- 45) Detailed R&R plan with data on the existing socio-economic status of the population in the study area and broad plan for resettlement of the displaced population, site for the resettlement colony, alternative livelihood concerns/employment and rehabilitation of

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the displaced people, civil and housing amenities being offered, etc and the schedule of the implementation of the project specific.

- 46) Details of Corporate Social Responsibility. Necessary provisions should be made in the budget.
- 47) Details of environmental management and monitoring plan for all phases of the project viz. construction and operation.
- 48) Estimated cost of the project including environmental monitoring cost and provide details of budget provisions (capital & recurring) for the project specific R&R Plan.
- 49) Details of blasting if any, methodology/technique adopted, applicable regulations/permissions, timing of blasting, mitigation measures proposed, keeping in view mating season of wild life.

### **Baseline Environment Monitoring**

Baseline Environment Monitoring shall be carried out for one Season. Components of environment to be studied are detailed out below.

### **Ambient Air Quality Monitoring**

The air quality monitoring should be carried out as per the new notification issued on 16th November, 2009. PM<sub>2.5</sub>, PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>x</sub> and CO as per CPCB & MoEF&CC guidelines shall be monitored.

### **Noise Level Monitoring**

Noise levels in terms of L10, L50, L90 & Leq along with hourly noise level shall be collected from representative locations for a minimum of 24 hours. Monitoring stations shall be finalised, covering most of the land use present along the corridor for assessment of present noise level status of the project region.

### **Water Quality Sampling**

Ground & surface water samples will be collected and tested for physical, chemical and biological parameters (Temperature, pH, Turbidity, Conductivity, Odour, Colour, Total Solids, Total Dissolve solids, Total Suspended Solids, Total Hardness, Alkalinity, Chloride, Fluoride, Sulphate, Phosphate, Nitrite, Nitrate, Sodium, Iron, Potassium, Lead, Zinc, Chromium, Copper, Calcium, Magnesium, Manganese, Arsenic, DO, BOD, COD, Faecal & Total Coliform) as per applicable standards of CPCB / BIS / MoEF&CC standards & specifications. Depth of ground water level in the project region will also be assessed with the help of Central Ground Water Board.

### **Soil Quality Sampling**

In order to assess soil type, soil samples will be collected and tested for physical and chemical characteristics (pH, electrical conductivity, moisture content, sand, silt, clay, texture,

*Development of 8 lanes (Greenfield Expressway) from Firozpur Jhirka (Ch. 79.394 Km) to Itawa (Ch. 284.000 Km) Section of NH-148 N (Total length 204.606 Km), Under BHARATMALA PRIYOJANA Lot-4/Pkg-4 in the state of Rajasthan.*

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moisture retention capacity, infiltration rate, bulk density, porosity, organic matter, Nitrogen, Potassium, Phosphorous, Lead, Iron, Organic Carbon, Calcium, Magnesium) as per ICAR specification / guidelines.