Development of Dholpur-Rajakhera upto State Boarder SH-2A Road from km 0.000 to km 43.300, in the state of Rajasthan (Highway 3 – Package 13)

TERMS OF REFERENCE (proposed)

ENVIRONMENTAL ASSESSMANT AND MANAGAMENT PLAN

August 2015

Proposed Terms of Reference for Environmental Impact Assessment of Comprising Section Dholpur to Rajakhera of SH-2A

Objective

Terms of Reference (TOR) are proposed for preparation of Environmental Impact Assessment (EIA) and Environmental Management Plan for improvement of Dholpur to Rajakhera of SH-2A. It will be help in preparation of EIA/EMP report with relevant project specific data, which will be informative, compact and easy to comprehend.

General Information

The environmental impacts of highway projects may include some diversion on damage to sensitive eco-systems, soil erosion, changes to drainage pattern and there by ground water, interference with animal and plant life, loss of productive agricultural lands, resettlement of people, disruption of local economic activities, demographic changes, accelerated urbanization and increase in air pollution. Highway development and operation should, therefore, be planned with careful consideration of their environmental impact. Identification and assessment of potential environmental impact should be an integral part of the project cycle. It should commence early in the planning process to enable a full consideration of alternatives, and to avoid later delays and complications. Highway Authorities should have a clearly designated staff member with overall responsibility for environmental matters and knowledge of environmental laws and regulations. As per the EIA notification 2006, projects or activities included as Category 'A' in the Schedule and requires prior Environmental clearance from the Ministry of Environment and Forests on the recommendations of an Expert Appraisal Committee.

INVENTORY (HIGHWAY)

S. No.	Particulars	Existing	Proposed
1.	Road Length	43.300	**43.300**
2.	Carriageway	Two Lane wide bituminous carriageway and at certain place 0.5m to 1.0 m wide unpaved shoulders.	7 m with 2.5m earthen shoulder.
3.	ROW (m)	15-25 m	16 for open areas 12m for habitation areas
4.	Bypasses	Nil	Nil
5.	Junctions	Major=02	Major=02

S. No.	Particulars	Existing	Proposed
6.	ROB/RUB	1	1
7.	Vehicular Underpass	Nil	Nil
8.	Pedestrian/ Cattle Underpass	Nil	Nil
9.	Bus bays	Nil	Nil
10.	Bus Shelter	Nil	6 Nos. (LHS) 6 Nos. (RHS)
11.	Truck Lay bay	Nil	Nil
12.	Rest Area	Nil	Nil
13.	TOLL PLAZA	Nil	01 No
14.	Major Bridges	Nil	Nil
15.	Minor Bridges	Nil	Nil
16.	Fly Over	Nil	Nil
17.	Culverts	17	17

SCOPE OF THE WORK

The scope of work for preparing the Environmental Impact Assessment (EIA) is comprised of the following terms of references:

- The generic structure and contents of the environmental impact assessment document as provided in Appendix III of the EIA Notification dated 14th September 2006 is followed and its amendments.
- The baseline environmental information in the study area viz. climate, physiographic features, drainage, geology, flora, fauna, ambient air, water and noise and socioeconomic conditions.
- Assessment of the potential significant impacts and identification of the mitigative measures to address impacts adequately.
- The study of analysis of alternatives incorporating environmental concerns including ‘with’ and ‘without’ project scenario and modification in the proposed project due to environmental considerations.

- The monitoring to generation baseline environmental conditions in respect to ambient air quality, soil quality and noise pollution level through primary data collection. The parameters and number of sampling locations will be decided based on requirements indicated in EIA manual prepared by ministry of Environment Forests and Climate Change, New Delhi.
- The study area of 10 km from road on either side will be delineated and will be marked on topo-sheet map and other suitable map.
- Assessment of general Physico-chemical quality of water of the study area covering ground and surface water sources.
- Study of land use pattern through appropriate techniques.
- Assessment of qualitative and quantitative waste load.
- Study of land use pattern of project area and impact of the project through secondary sources.
- Collection of followings data;
  - Traffic survey
  - Pedestrian survey
  - Road safety and accident survey for the identifications of accidental spots.
  - Survey of cross drainage structures
  - Geotechnical investigation for at the existing & proposed locations of structures.
- Survey and analysis of alternatives.
- Survey of procurement of raw materials and water for the proposed project.
- Collection of metrological data from secondary sources.
- Conduct public hearing and public consultation/ stakeholder consultations.
- Ensure environmental compliances with various requirements and provisions under applicable Acts, Rules and Regulations of MoEF and other statutory requirements relevant to the construction of project road.

1. INTRODUCTION

Purpose of this report preparation is to establish the baseline environmental aspects of the project road corridor and to analyze all the expected impacts, required avoidance and the possible cost effective mitigation measures. Further

these mitigation measures need to be stream lined with the engineering design and the contracting process for effective implementation of environment management plan (EMP).

The Project Road starts (at junction on NH-3) at km 0.000 and ends at km 43.300 (at Rajasthan/UP Border) of Rajakhera. The proposed road includes 2-laning of Dholpur-Rajakhera. Geographic map of project district is showing in Fig**. ES: 1.** the objective of the project is to strengthen and widening of existing to meets the traffic needs for the future

2. PROJECT DESCRIPTION

This chapter shall contain the broader details of the need of the project, basic activities, location, alignment and alternatives examined, implementation schedule. Following are some of the details considered relevant.

- Highway alignment plan with the help of GT sheet (Survey of India) of project area of 1:50,000 scale, and surrounding area covering 10 km radial distance, from project boundary showing the details:-
  - (i) Protected Areas notified under the Wild Life (Protection) Act, 1972,
  - (ii) Critically polluted areas as notified by the Central Pollution Control Board from time to time,
  - (iii) Notified Eco-sensitive areas,
  - (iv) Inter-state boundaries and international boundaries
- Total area proposed for the project, Nature of terrain (mainly plain), details of villages, tehsils, districts and states, latitude and longitude for important locations.
- Requirement of natural resources and their sources,
- Technologies involved for design, construction, equipment and operation

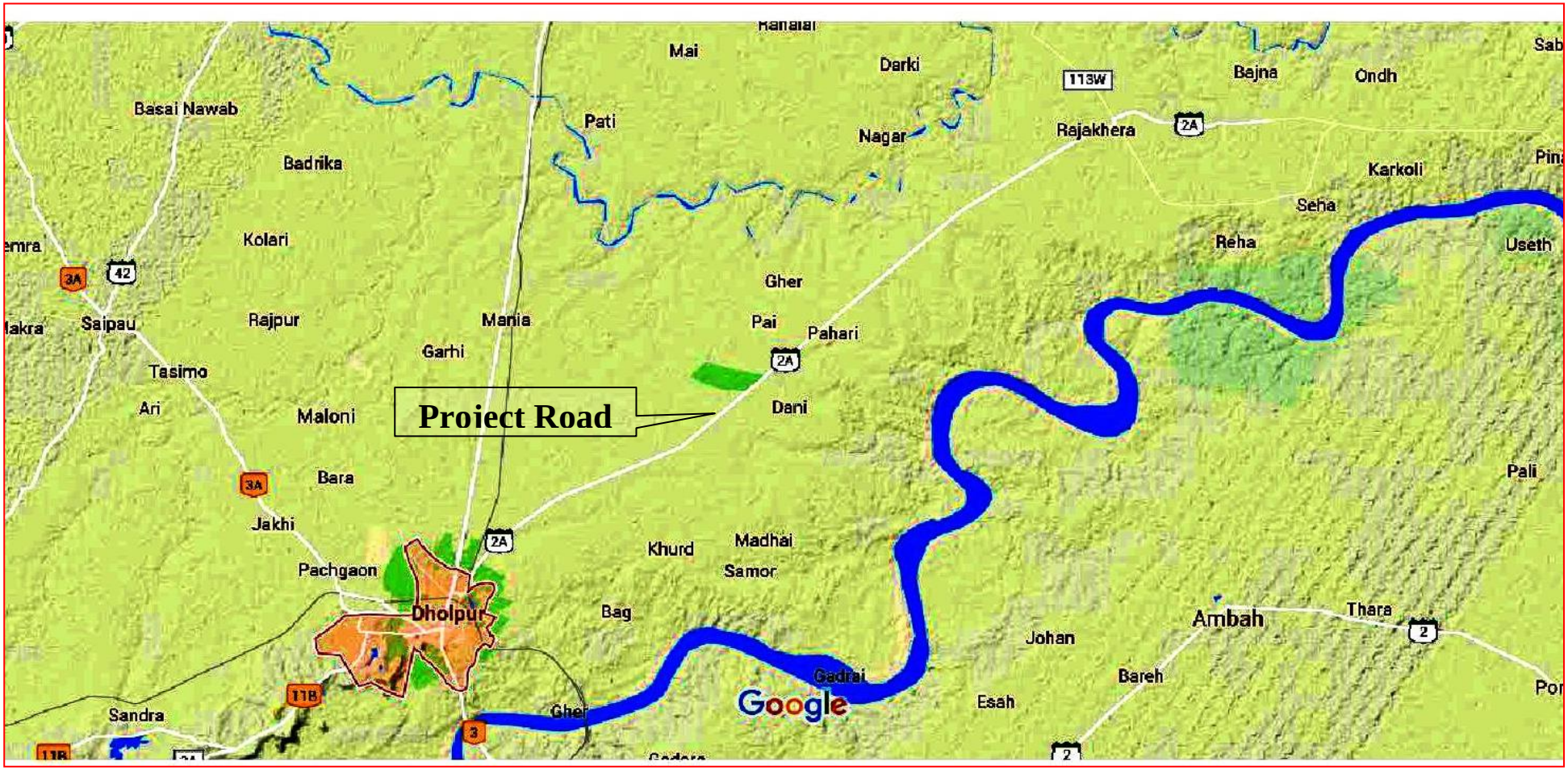

Figure ES 1: Topographical Map of Project Influence Road

- **Site Preparation**
- Details of low lying areas, fill materials required and initial and final levels after filling above MSL,
- Details of the area to be stripped, locations, volume and quantity of earth to be removed, type of soil and proposal for utilization of removed top soil with location of dump site to be provided,
- 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 dump site to be provided.
- Details of trees which is proposed to be felled due to strengthen and widening of existing 2-lane to 2-lane with earthen shoulder including number of trees to be cut, their species and whether it also involved any protected or endangered species.

3. ANALYSIS OF ALTERNATIVES

Analysis of alternatives will be carried out in detailed and careful manner after examination of options available with respect to the project. After analysis selection of most viable alternative was made in view of the technical feasibility, environmental acceptability and social adaptability. Based on these the alternative alignments and concept of widening will be adopted. The analysis of alternatives is one of the most important exercises that need to be carried out to find the least cost option with regards to socio-economic and environmental consequences to each alternative and the cost attributed to it. In fact these options will also enable the consultants to approach people for various aspirations of the local stakeholders.

Environmental alternatives and design considerations

The project offers some environmental alternatives in order to facilitate the decision making process. As usual the analysis of alternative should start with the customary 'with' and 'without' the project scenarios. This is to justify the proposal of a widening alternative to no widening alternative. The *"with"* project scenarios will, however, only occur only if the recommendations provided for the construction stage are followed and all construction activities are carried out according to principles of environment friendly road construction. improvement of existing alignment and proposal of bypasses will be been done in following ways which will have significant beneficial impact in terms of

- Minimizing displacement
- Reducing resistance to the project
- Minimize the impact on the existing trees/local environment.
- Maximum benefit in terms of road geometry, pavements, shoulders, embankments etc
- Uninterrupted flow of through traffic along the project stretch
- Avoid future possibility of installation of speed breakers by the local administration/public
- Avoid adverse impacts of the crowded areas along the project stretch
- Provide scope for wayside amenities

4. DESCRIPTION OF THE EXISTING ENVIRONMENT

Study Area: The environment impact assessment will be conducted considering likely potential impacts on physical, biological, social/economic and cultural resources in the right of way as well as the area falling within 500 meters on the either side of the right of way. The 500m study area is considered adequate for the assessment of most physical and social effects arising from project development. However it is also recognized that a number of potential (positive and negative) impacts could also have effects beyond this boundary, such as effects on road linkages, employment effects and some community effects. Secondary data will be collected within 15 kms aerial distance as per form-1 of EIA notification 2006.

Regional meteorological conditions and the project corridor air basin is of high significance in road development projects because the transportation and diffusion of all ambient air pollutants generated during project implementation and/or operational phase. The data plays significant role in location of Hot mix plants and other construction plants activities that lead. This chapter will contain details of secondary data, meteorological data obtained from IMD along with wind roses and the locations identified for the monitoring will be marked on the index map. One season monitoring data excluding monsoon will be collected.

4.1 LAND ENVIRONMENT

4.1.1 Baseline Cost in Crore INR

- Data of the proposed land and its availability is to be ascertained from local authorities, revenue records etc. Details of the alternatives considered. Justification of the proposed quantum of the area and alignment
- Description of the existing situation of the land along the alignment. Study of the land use pattern, habitation, cropping pattern, forest area, environmentally sensitive places, mangroves, notified industrial areas, sand dunes, nature of the terrain (plain, rolling, hilly), sea, river, lake etc. by ground truthing and also through secondary data sources
- Road factors :(i) land width available, (ii) geometrics – curvature, gradient, and pavement width etc.(iii) structural condition of road and road structures will be analysed.
- Traffic factors: (I) traffic volume- vehicles per day, (ii) traffic composition (iii) average speed of travel, (iv) time delays at railway crossings,(v) presence of road intersection – Nos./km, (vi) access control, (vii) accidents – fatal and injury accidents per year will be calculated.
- Geology: rock types, history of any volcanic activity, seismicity and associated hazards, oil cover and condition, physical and chemical properties will be studied.

4.2 AIR ENVIRONMENT

Activities during the construction and the vehicular emissions are likely sources of air emissions will be analysed. In addition, release of hazardous gases due to explosions/leak from the hazardous chemicals carrying transport trucks on the near by habitation, is a matter of concern even though they may be categorized as low probability risk.

4.2.1 Base Line

- Climate and meteorology data & wind rose data will be collected from the IMD.
- Ambient air quality PM_{10}, $PM_{2.5}$, SO_2, NO_2 and CO will be assessed at the sensitive locations along the alignment of the project. Care shall be taken while selecting the monitoring locations in order to reflect the ambient air quality such as near by residential area, notified sanctuaries etc

- Estimation of present traffic volume, traffic composition, speed of traffic, different fuel consumption by the vehicles, composition of the fuel and the air emissions on burning of the fuel and for the projected traffic flows.
- Frequency of tropical cyclones and associated hazards will be analysed.

4.3 WATER ENVIRONMENT

4.3.1 Base line

- Determine the sensitivity of the study zone and identify the main potential impacts, working from basic data on the drainage basin, nature and frequency of flooding, water quality, water use, fauna species and habitats. Assess likely modification of baseline conditions arising from the project.
- Details of springs, lakes, reservoirs with in 2 km from the proposed road site.
- Fix-up the locations of representative monitoring stations along the proposed project road for surface and ground water resources and document them.
- Samples will be collected for both surface and ground water and examined for physico-chemical parameters.
- Delineation of water sheds and water drainage pattern in the study area using the topographical maps and the impact of the proposed highways in changes the water course etc for examining the drainage patterns especially during monsoon season and during floods.

4.4 NOISE ENVIRONMENT

- Identify 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 near by habitation during the construction and operational phases of the project. Identify noise reduction measures and traffic management strategies

4.4.1 Base line

- Select the locations of monitoring stations along the alignment of the project covering sensitive locations such as residential, hospitals, schools, sanctuaries etc. Monitoring shall be done for 24 hrs at each location

4.5 BIOLOGICAL ENVIRONMENT

- Conduct an inventory, map and describe the existing terrestrial, wetland and aquatic vegetation. Describe and assess potential impacts of the project

construction and operation on local biodiversity existed along the road and biodiversity of Kesarbagh & National Chambal wildlife sanctuary (abundance, diversity, health, rare species and rare plant and animal communities). Describe and discuss measures to be implemented to mitigate and monitor potential impacts of the project.

4.5.1 Base line

- Assessment of plant species with respect to dominance, density, frequency, abundance and density index etc.
- Quantitative estimation of forest and non-forest flora.
- Assessment of fauna and avid- fauna indicating endangered and endemic species with respect to schedule of the wild life protection act.
- Location of national parks, sanctuary and biosphere reserve, tiger reserve, elephant reserve and wildlife migratory routes with in 15 km radius of proposed project.
- Information on dependence of local people on minor forest products.
- Photographs showing the vegetation in the area.
- Biodiversity- terrestrial and aquatic.

4.6 SOCIO ECONOMIC AND HEALTH ENVIRONMENT

- Proper planning calls for recognition that road Project can lead to modifications in the community environment surrounding the road, influencing various aspects of lifestyles, travel patterns and socio as well as economic activities. Some times in the absence of proper planning new highways/expansion of existing highways may benefit long distance travelers in a big way, while benefits to the local community my be minimal.

4.6.1 Baseline

- Details of the properties, houses, business etc. activities likely to be effected by land acquisition and their financial loses annually. Applicable R & R rules and regulations
- Data on notified settlements and applicable legislations, if any.
- Identification and prioritization of historical and archeological sites.
- Accident data and diseases in the locality and existing health care facilities.

- Data on demography including traditional skills and sources of livelihood along the proposed site.
- Data relating to historically, culturally, archeologically and ecologically important places in the study area.
- Socio-economic profile of the people on both sides of the boundaries of the proposed site.

5 ANTICIPATED IMPACT AND MITIGATION MEASURES

Assessment of the nature, type and magnitude of the potential impacts likely to be caused to the various relevant physical, biological and cultural environmental components along the project corridor. The basis of the assessment of impacts is the baseline information as in description of existing environment. For each type of potential impact or environmental concern, model studies, empirical methods, reference to the existing similar situations and reference to the existing similar situations. The analysis will predict the nature and significance of the expected impacts (quantitative as well as qualitative).

To minimize the adverse impacts of the project, mitigation measures have been formulated and will be implemented during the project implementation. The mitigation measures would be directed towards the restoration of the dynamic balance of nature. The mitigation of negative impacts involves reduction in magnitude of the adverse impacts during various stages of the project through:

- Alterations during design, site clearance, Construction and Operation phases of the road project to avoid adverse impacts, and
- Additional mitigation measures for unavoidable negative impacts on the environmental components.

5.1 LAND ENVIRONMENT

5.1.1 Anticipated Impacts

- The road itself – land consumption, removal of vegetation, fragmentation of natural habitat, removal of buildings and severance of form land causes, direct impacts. The most immediate and obvious effect of road development on soil is the elimination of the productive capacity of soil covered by the roads.
- Impact of the project construction leading to soil erosion, destabilization of slopes, side- tipping of spoils material, loss of properties, loss of fertile lands and diversion of natural surface water flows are to be studied in detail.

- Assessment whether there is a possibility that the proposed project adversely affect road traffic in the surrounding areas.
- Impact due to construction of bridges across water bodies.
- Impact on local area developments and integration with local master plan.

5.1.2 Mitigation Measures

- The extent of environmental impacts during construction, operation and post operation is largely determined during planning and route or site selection. Early consultation and determination of alternatives can substantially reduce the potential environmental impacts of this project.
- While selecting new road alignments attention will be paid to avoid areas prone to land slides, soil erosion, fertile agricultural lands, environmental sensitive areas and other damaging features.
- Before finalizing the alignment erosion potential of each alternative will be carefully examined and the one involving least disturbance to the natural ground shall be preferred.
- Balancing filling and cutting requirements through alignment choice to reduce the need for borrow pits and to minimize excess spoil material generation shall be examined.
- Drainage improvement requirements to minimize water logging and flooding due to disturbance of the natural drainage pattern will be examined.
- Afforestation plan to compensate for the cutting of the trees during the proposed road construction activity.

5.2 AIR ENVIRONMENT

Activities during the construction and the vehicular emissions are likely sources of air emissions. In addition, release of hazardous gases due to explosions/leak from the hazardous chemicals carrying transport trucks on the near by habitation is a matter of concern even though they may be categorized as low probability risk.

5.2.1 Anticipated Impacts

- Anticipated impacts during the construction stage and operation stage shall be predicted. The immediate surroundings may have a greater impact. The existing surrounding features such as habitation, hospitals, schools, notified

sanctuaries etc. up to 500 meters and impact on them will be addressed separately.

- Impact during construction activities due generation of fugitive dust from crusher units, and air emissions from hot mix plants and vehicles used for transportation of materials.
- Impact prediction on ambient air quality will be carried out using appropriate mathematical model.

5.2.2 Mitigation Measures

Mitigative measures are to be proposed during the construction stage as well as the operation stage of the project for all the identified impacts. Some measures to be listed include:

- Selecting road alignment, which avoids passing close to housing, schools and work places;
- Providing sufficient capacity to avoid traffic congestion, even with projected increase in traffic flow
- Planting tall leafy and dense vegetation between roads and human settlements to filter pollutants
- Water sprinkling and transporting construction materials with tarpaulin coverage during the construction stage. Purchasing road metal from the crushing units, which are compiling SPCB norms
- Integration with the local government awareness campaign programmes on good practices of vehicle maintenance etc. to reduce the air emissions discharge
- Environmental specifications for contractors shall cover the required safeguards during the design and construction stage.

5.3 WATER ENVIRONMENT

5.3.1 Anticipated Impacts

- Impact on surface water flow modification
- Impact on ground water table modification
- Impact on water quality degradation (surface & ground water)

- Impact due to discharge of wastewater generation from the temporary project offices.

5.3.2 Mitigation Measures

Mitigative measures are to be proposed during the construction stage as well as the operation stage of the project for all the identified impacts. Some measures to be listed include:

- Avoiding alignments which are susceptible to erosion, such as those crossing steep slopes.
- Minimizing the number of water crossings wherever possible.
- Leaving buffer zones of undisturbed vegetation (with increased in proportion to slope) between road sites and bodies of water.
- Mitigative measures such as providing adequate drainage modifications, settling basins, paving, infiltration ditches etc. is to be examined.
- Environmental specifications for contractors shall cover the required safeguards during the design and construction stage.
- Adequate sanitation facilities and hygiene at construction workers colony will be provided.
- Proper Landscaping on either side of the road shall help to avoid water logging and surface runoffs.
- Environmental specifications for contractors shall cover the required safeguards during the design and construction stage.

5.4 Noise Environment

- Identify 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 near by habitation during the construction and operational phases of the project. Identify noise reduction measures and traffic management strategies.

5.4.1 Anticipated Impacts

- Noise levels may be increased during construction activity, due to operation of various machines and equipments.

- Noise levels may be increased during operation of the highway due to increased activities. Prediction of noise levels shall be done by using mathematical modeling at different representative monitoring stations.
- Impact of vibrations during blasting activity, if any on human being and wildlife also. .

5.4.2 Mitigation Measures

Mitigative measures are to be proposed during the construction stage as well as the operation stage of the project for all the identified impacts. Some measures to be listed include:

- Development of bypass roads to avoid road alignment through noise sensitive areas.
- Adoption of proper surface design and maintenance.
- Provision of noise barriers. Specifications for building noise protection devices clearly indicating the location, design and material, and shall account for future road maintenance requirements.
- Environmental specifications for contractors shall cover the required safeguards during the design and construction stage.
- Planting tall leafy and dense vegetation between roads and noise sensitive areas.
- Interaction with the local government and vehicular manufacturers to conduct awareness campaign programmes on good practices of vehicle maintenance etc. to reduce the noise emissions.
- Prediction model outputs justify the selection of type of the noise barrier and thickness of the noise barrier etc.

5.5 Biological Environment

- Conduct an inventory, map and describe the existing flora and fauna. Describe and assess potential impacts of the project construction and operation on vegetation and wildlife (abundance, diversity, health, rare species and rare plant communities) in the study areas. Describe and discuss measures to be implemented to mitigate and monitor potential impacts of the project.

5.5.1 Anticipated Impacts

- A road project may have impacts on wildlife of Kesarbagh & National Chambal and ecology of the local area;
- Loss of wildlife habitat and biodiversity due to change in land use;
- Fragmentation of wildlife habitat and territories;
- Changes in water quality, soil profile, noise, light and air pollution, which may affect the nature and character of habitats;
- Pressure on habitats wildlife as a result of increased access provided by roads and
- Loss of forest resources, economically important plants, medicinal plants and threat to rare, endemic and endangered species.

5.5.2 Mitigation Measures

Mitigation measures are to be proposed during the construction stage as well as the operation stage of the project for all the identified impacts. Some measures to be listed include:

- Identification of sensitive natural environments in the early planning stage so that alternative routes, changes in width of the road can be examined.
- Possibility of twin new road corridors with previously established transport rights–of-way, such as railway lines.
- Provision of animal crossings in identified areas.
- Compensate the loss of forest coverage by appropriate plantation programme.
- Development of green belt along the alignment.
- Regeneration of rare plants of economic importance including medicinal plants and wildlife species.
- Conservation plan for conservation and protection of flora and fauna, wildlife migratory species and medicinal plants.
- Institutional arrangements for implementation and monitoring of various mitigating measures.
- Environmental specifications for contractors shall cover management of work forces (control of poaching and fire wood collection), machinery (speed, noise, and traffic), and prevention of erosion and contamination during construction.

5.6 Socio Economic and Health Environment

- Proper planning calls for recognition that road Project can lead to modifications in the community environment surrounding the road, influencing various aspects of lifestyles, travel patterns and socio as well as economic activities. Some times in the absence of proper planning new highways/expansion of existing highways may benefit long distance travelers in a big way, while benefits to the local community my be minimal.

5.6.1 Anticipated Impacts

- Analysis of positive and negative impacts on the present status of livelihood.
- Displacement of human settlement from proposed site. Impact on livelihood and loss of properties.
- Impact on community resources.
- Impact on historical and archeological sites.
- Impact on the existing travel parts due to faster traffic, access controls and median barriers.
- Impact due to accelerated urbanization.

5.6.2 Mitigation Measures

- Rehabilitation plan for land outie, homestead outie, and for displaced persons. Institutional arrangement for effective implementation will be assessed, if necessary, strengthened.
- Criteria and method of calculation of compensation for loss of land and crops. Proper counseling for guiding systematic financial planning with the compensation package.
- Training to local people for employing them in the proposed project.
- Employment opportunity and access to other amenities such as primary education and health care facilities for local people.
- Integration with the local master plan for the accelerated urbanization.
- Road safety management plan, especially the high way passes through the developed area.
- Institutional arrangements for road safety and to deal the road accidents are assessed, if necessary, strengthened.

- Stipulation of environmental specifications for contractors.

5.7 Solid Waste Management:-

5.7.1 Anticipated Impacts

- Waste generated during construction may impact soil, agriculture and water quality.
- Waster generated from workers camps may impact sanitation, water quality and agriculture.
- Oil spillage/leakage from machines and vehicles may contaminate earth.

5.7.2 Mitigation Measures

- Proper environmental specification will be stipulated in the chapter

6 ENVIRONMENTAL MONITORING PROGRAMME

The adverse environmental impacts identified during the Environmental Impact Assessment process of the proposed project may increase further during the construction as well as during post-construction phase. Monitoring of environmental factors and constraints will enable agencies to identify the changes in the environmental impacts at particular locations, application of mitigative measures and utilization of standard design guidelines for finalization of alignment design. Monitoring will also ensure that actions taken are in accordance with the construction contract and specifications. It provides a basis for evaluating the efficiency of mitigation and enhancement measures, and suggests further actions needed to be taken to achieve the desired effect. To ensure the effective implementation of the EMP, it is essential that an effective monitoring program be designed and carried out.

The monitoring programme will includes:

- Summary Matrix of environmental monitoring for all phases of project viz. construction and operation.
- Technical aspects of monitoring for achieving effectiveness in mitigation measures.
- Requirement of monitoring facilities and methods adopted.
- Frequency, location, parameters of monitoring
- Compilation and analysis of data and reporting system

- Procurement schedules and budgets in detail
- Training requirements.

7 ADDITIONAL STUDIES

7.1 Scoping Stage

Studies recommended by the expert appraisal committee while deciding the ToR for the project.

7.2 Public consultation

In keeping with the Govt. of India and MoEF guidelines, Public Consultations and Public Hearing will be conducted, as part of EIA study. This Para discusses on community consultations held with households/shop owner, government officials, stakeholders and incorporation of various measures pertaining to environmental issues based on the responses from the people and the public hearing with the issues raised by the public and the response of the PWD in the tabular form will be prepared.

7.3 R&R Action Plans

- Detailed R&R plan
- Details of budget provisions for the R& R plan

7.4 Road Safety

- Study road design standards, safety equipment specifications and management system training describing that design details take accounts of safety concerns.
- Identification of accident prone areas and its mitigation.
- Identification of habitat fragmentation and traffic accident of wildlife if any and its mitigation measures.
- Provision of speed breakers, safety signals, service lanes and foot paths at appropriate locations through out the proposed road to avoid the accidents.
- Accident data and geographic distribution will be reviewed and analyzed to predict and identify trends.
- Preparation of Traffic Management Plan.
- Institutional frame work for monitoring of road safety.

- Post accident emergency assistance and medical care to accident victims.

7.5 Green Belt Development Plan

Adequate plantation programme along the project road will be planned accordingly the inadequacy or limitation of space. Green areas not only improve the floral status, land-use and aesthetic look of an area, but also serve the dual purpose of filtering any fugitive dust from unpaved or open areas, help to abate noise effects through dampening, and replenish oxygen and ameliorate the surrounding temperature. Therefore development of plantation is nowadays imperative as a part of development projects.

The main objective of plantation along the project road and bypasses are:

- To reduce impacts of air and dust pollution.
- To provide shade on hot glaring road surface during summer.
- To arrest soil erosion at embankment slopes.
- Beautification of project corridor by planting selected ornamental trees and shrubs.
- Prevention of glare from headlights of incoming vehicles during night time.
- To compensate for trees to be felled during construction.

8 PROJECT BENEFITS

Highways have varied embedded connotations, Highways projects promote access to markets, materials and opportunities by facilitating movement of persons and goods and improve earning and thereby level of living. This in turn enhances the demand for transport. This two-way interactions works through a host of inter-sectoral forward and backward linkages effects and dynamic externalities, tends to relocate industries, services and labour thus help the shape the economic geography of the region.

The ultimate aim of the developmental activities is to promote societal welfare of the project area. The developments widening project play a significant roll in changing the socio-economic condition of the living of people of a region through dynamic externalities that such development often generates.

The benefit of proposed widening will be seen from a different angle, viz.,

- To provide better connectivity to various villages located along the road. There is only one main connectivity through this road. Benefited villages through this road

are follow as Dukapur, Luhari, Bebalpur, Deholi, Indrav village, Muraina village, mahajeepura, Dighi, Rajakheda and Singhwali Khurd villages etc.

- To improve transport efficiency and traffic speed on existing road.
- To develop road safety facilities.
- To connect the locality with Dholpur and other cities to provide better facilities of health, education, employment etc.
- Improved quality of life of rural tribal population
- Reduced accident events and (vi) Better investment climate for industries creating more employment opportunities to local people.

9 ENVIRONMENTAL MANAGEMENT PLAN

The EIA study will contain detailed EMP covering the measures to mitigate and or minimize the adverse impacts. The EMP shall also include Risk Assessment & Disaster Management Plan, Environmental Monitoring Plans (for pre construction, construction and operations), EMP Implementation Plan and cost of EMP. In formulating the EMP, the consultant will integrate all these plans and findings of all modeling studies and sector-specific studies undertaken by the elsewhere. So the EMP will contain:-

- Administrative and technical setup for the management of environment with the roles and responsibilities of persons/party handling various functions.
- Summary matrix of EMP and budget provision for EMP, during pre construction, construction and operation stage. There are several other environmental issues that have been addressed as part of good engineering practices, the costs for which have been accounted for in the engineering cost. Various environmental aspects covered under engineering costs are listed below:-
  - Turfing and Pitching of slopes
  - Cutting of the hill slope
  - Construction of slope protection works as retaining walls, crash barriers etc.
  - Cleaning of culverts.
  - Safety signage.

- Junction development etc.

- Summary matrix of Environmental monitoring during construction and operation stage.
- Institutional arrangement proposed with other organizations/Govt. authorities for effective implementation of environmental measures proposed in the EIA.
- Safeguards/mechanism to continue the assumption/field conditions made in the EIA, for arriving the site suitability.

10 ENVIRONMENT BUDGET

The total environment budget is approx. 37 Lalkh.

11 DISCLOSURE OF CONSULTANTS ENGAGED.

This chapter will describe the name of the consultant engaged with the brief resume and nature of consultancy rendered.

ABSTRACT OF COST ESTIMATES

Sr. No	Items	Cost in Crore INR
1	Total Project Cost (TPC)	75.98
2	Environmental Cost	37
3	R&R Cost	5.85

SUMMARY OF PROJECT DETAILS

S.NO.	DESCRIPTION	
1	Length of new alignment proposed (kilometers)	Nil
2	Right of way of the new alignment (meters)	16/12 meter
3	Length of existing alignment proposed to be strengthened/widened (kilometers)	**43.300 km**
4	Right of way of the existing alignment (meters)	8-20 m

S.NO.	DESCRIPTION	
5	Right of way of the existing alignment after widening (meters)	16/12 m
6	Total length of the alignment (kilometers)	**43.300 Km**
7	Number of bridges Major Minor	Nil Nil
9	Number of culverts	17: Existing 10: Reconstruction 7: Retaining
11	Number of intersections	Major :2
12	Number of villages through which alignment passes through	7 No.

RAW MATERIAL REQUIRED DURING CONSTRUCTION

S.No	Material	Quantity	Mode of transport
1	Bitumen	3590 MT	Tanker
2	Aggregates	413556MT	Dumper
3	Cement	4129 MT	Dumper
4	Sand	5830 cum	Dumper

WATER REQUIRED DURING CONSTRUCTION, THEIR QUANTITIES IN CUBIC METER PER DAY.

S. No	Purpose	Demand	Source
1.	Road Making	Approx. 30 KLD	Ground Water & Surface water
2.	Dust Suppression		
3.	Drinking		

4.	Others		

DETAILS OF NATIONAL PARKS AND OTHER PROTECTED AREAS WITH IN 15 KM RADIUS FROM THE HIGHWAY.

S. No.	Item	Name	Aerial distance (Km) and reference point on the highway alignment
1	National park	Nil	NA
2	Marine park	Nil	NA
3	Sanctuary/tiger reserve Elephant reserve/ turtle nesting ground	A. Kesarbagh Wildlife Sanctuary	5 km
		B. National Chambal Wildlife Sanctuary	4-5 km
4	Core zone of biosphere reserve	Nil	NA
5	Reserved forest	Nil	NA
6	Wildlife habitat	Nil	Listed none of features exist within 15 km of the project road.
7	Habitat of endangered/exotic species		
8	Coral reef		
9	Mangroves		
10	Lakes/reservoirs/dams		
11	Breeding site		
12	Nesting site		