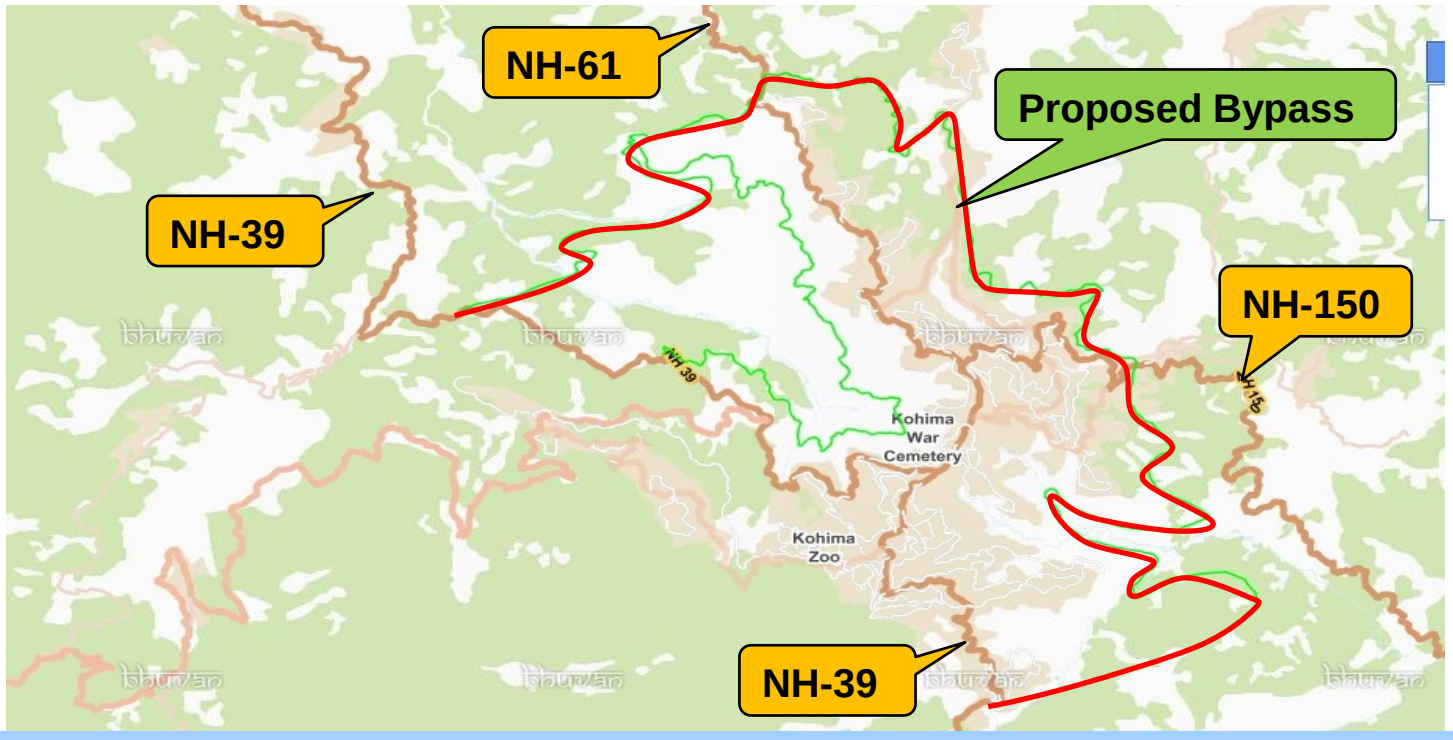
NATIONAL HIGHWAY INFRASTRUCTURE DEVELOPMENT CORPORATION LTD
Government of India
(Ministry of Road Transport and Highways)

Preparation of Detailed Project Report (DPR) and providing pre-construction services in respect of 4 Laning of **Kohima Bypass** connecting NH-39 (New NH-02),NH-150 (New NH-02), NH-61 (New NH-29) and NH-39 (New NH-02) on Engineering, Procurement and Construction (EPC) mode in the state of Nagaland.



FINAL DETAILED PROJECT REPORT

EIA & EMP REPORT(VOLUME-IV)

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In Association with

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Table of Contents

CHAPTER 4.0 ENVIRONMENTAL IMPACT ASSESMENT AND ENVIRONMENT MANAGEMENT PLAN

4.1 General

The National Highways and Infrastructure Development Corporation Limited (NHIDCL), Government India has been entrusted with the task of the capacity augmentation of the National Highway-39 for upgrading to 4- lane carriageway configuration.

For the purpose of project preparation, various corridors have been divided into convenient section, selected on the basis of the traffic generation, attraction potential, geographic location and other considerations. This report deals with NH-39 *(which is under widening and improvement for four lane configuration from Dimapur to Kohima)*,NH-61, NH-151 and again meets with NH-39 after crossing Kohima town between Km 192.00 & Km 193.00. The length of road is approx. 32.300 Kms

4.2 Necessity of EIP

Environmental Impact Assessment is to be carried out during project preparation to ensure environmental compliance. As a first step, **Environmental Screening** has been carried out

- to identify critical environmental issues & impacts,
- to identify environmental considerations to be integrated into the highway design,
- to determine appropriate extent & type of environmental assessment required, and
- to identify the types of statutory clearances to be obtained

4.3 Scope of EIP study

The scope of Consultancy service related to environmental aspects as set out in the TOR covers following major tasks:

- *Environmental screening and preliminary environmental assessment of the project;*
- *Collection and review of all available data, reports and published information relevant to environmental setting of the project road and the project influence area;*
- *Environmental impact assessment including compliance with the requirements of lending agencies, such as related to cultural properties, forestry, natural habitats etc.;*
- *Public consultation, including consultation with Communities located along the road, NGOs working in the area, other stake-holders and relevant Govt. depts. at all the different stages of assignment;*
- *Reconnaissance survey for pedestrian/animal crossings and environmental features;*
- *Field survey for trees (with girth size > 30 cm); and for monuments, burial & cremation grounds, places of worships, stream/river/canal;*
- *Strip plan indicating trees to be felled and planted, and reports, documents and drawings arrangements of estimates for cutting of trees;*

- *Identification of environmental restrictions to borrow areas & quarry sites;*
- *Environmental enhancement measures for highway side cultural properties, water bodies, bus bays/shelters and landscape, and borrow areas on public land;*
- *Preparation of application forms and obtaining NOC and forestry & environmental clearance from the respective authorities like SPCB, MOEF etc. on behalf of NHIDCL;*
- *Preparation of EIA report conforming to the guidelines of Govt. of India, World Bank/ADB as appropriate;*
- *Preparation of EMP report including monitoring plans during construction & operation, environmental mitigation & enhancement measures etc. and complete with plans, designs, drawings, BOQ and technical specifications;*

4.4 Policy, Legal And Administrative Framework

4.4.1 Administrative Framework

The Government through specific legislations regulates the environmental management system in India. The Ministries/Statutory Bodies responsible for ensuring environmental compliance by project promoters include:

- The Ministry of Environment and Forests (MoEF), Government of India
- Central Pollution Control Board (CPCB)
- State Pollution Control Boards
- Ministry/Department of Environment in the States

4.4.2 Legal Framework

Following acts, laws, rules and guidelines are applicable for the study:

1. Environment (Protection) Act, 1986
2. Air (Prevention & Control of Pollution) Act, 1981
3. Water (Prevention & Control of Pollution) Act, 1974
4. Forest (Conservation) Act, 1980 and its amendments
5. Forest (Conservation) Rules, 2003 and its amendments
6. Wildlife (Protection) Act, 1972
7. Wildlife (Protection) Amendment Act, 2002
8. World Bank Guidelines for Environmental Assessment
9. Environmental Guidelines for Rail, Road & Highways Projects, 1989 (MoEF)
10. EIA Manual published by Ministry of Environment & Forests, January 2001
11. IRC: 104:1988, Guidelines for Environmental Impact Assessment of Highways Projects
12. IS Codes & CPCB Guidelines for monitoring & analysis of air, water, soil etc.

The Environment (Protection) Act, 1986, is the most comprehensive law on the subject. The law grants power to the Central Government to take all measures necessary to protect and

improve the quality of environment and to prevent pollution of the environment. The following rules, notifications and standards under the Environment (Protection) Act, 1986 are particularly relevant in this case:

1. Environment (Protection) Rules, 1986 and its amendments
2. Noise Pollution (Regulation & Control) Rules, 2003 and its amendments
3. EIA Notification, 1994 and its amendments
4. Ash Utilisation Notification, 1999 and its amendments
5. National Ambient Air Quality Standards and its amendment

4.4.3 Objective of Screening

The objectives of the screening are:

- To determine the category of the project depending on the type, location, sensitivity, and scale of the project, and the nature and magnitude of its potential environmental impacts.
- To determine the appropriate extent and type of Environmental Assessment (EA) required, i.e. scoping.
- To identify the types of EA instruments suitable for the EA of the project.
- To conduct public consultation shortly after screening and before the Scope of Work for the EA are finalized.

To determine whether the project requires statutory environmental & forest clearance, no objection certificates and consents depending on its scale of investment and type & location of development

4.4.4 Scope of Screening

- The scope of the environmental screening includes:
- Collection & review of available secondary data/information on physical, biological & social environment in the area of influence (study corridor)
- Field study, survey and monitoring in the study corridor for generation of some necessary primary data
- Establishment of baseline environmental status/condition of the study corridor (along the ROW of the road in particular and in a study corridor of 7 km on either side of the road in general)
- Study of the project activities in terms of construction and operation to identify the potential sources/causes of impacts
- Identification & assessment of potential impacts on the environment during construction and operation of the road
- Public consultations shortly after screening and before the Scope of Work for the EA are finalized.
- Recommendation of preventive, mitigatory, compensatory & enhancement measures to eliminate/minimize the adverse impacts

- Categorization of the project depending on the type, location, sensitivity, and scale of the project, and the nature and magnitude of its potential environmental impacts.
- Scoping for finalization of the Scope of Work for the EA, the types of suitable EA instruments to be used and types of statutory clearances required.

4.5 Project Description

4.5.1 The Road Alignment

The project road starts from the Km 173.00 of existing NH-39, (which is under widening and improvement for four lane configuration from Dimapur to Kohima), and crosses NH-61, NH-151 and again meets with NH-39 after crossing Kohima town between Km 192.00 & Km 193.00.

The entire project road lies in hilly terrain. As per the discussions held with PWD officers, Kohima, in connection with NH-150, ROW of 60 m should be available. Existing roadway width is 7.0 m and adjoining hill side is all private land**.** Some villages are there adjacent to the project road. Some of the important villages are Merima, Taskau, Sunourii, etc.

4.5.2 Existing Features of Project road

The salient features of the road stretch have been summarized in **Table-4.1** below.

Table-4.1 Salient Features of the project road

Terrain	Hilly terrain
Soil Type	Clayey & sandy soil
Wildlife Corridors & Migratory Routes	No movement of wildlife along project road has been reported.
River/Stream crossing	Dhansiri, Dikhu, Doyang, Zungki & Local streams
Existing ROW	NA
Road crossing	None
ROB	None
Bridge & culverts	NA
Archeological, Historical, Cultural & Heritage Sites	No such sites have been reported.
Eco. sensitive areas	There are no reserved forests / national parks/Biosphere reserves in close vicinity of the existing road alignment.

4.6 Baseline Environmental Scenario

In the screening stage, existing environmental set-up of the study corridor (7 km on either side of the project road), in general, and within the Right of Way (ROW), in particular, has been studied and described in subsequent sections.

4.6.1 Physiography of Kohima District

Kohima is the capital city of the north eastern state of Nagaland, India. Kohima is situated in the southern part of the state and at an altitude of 1500 meters above sea level. Kohima is situated around 74 km from Dimapur, a very popular and important town in Nagaland.

4.6.2 Seismicity

Nagaland falls in Zone-V of the Seismic Zonation Map of India with an expected maximum magnitude greater than 8. More than 40 earthquakes of magnitudes greater than 6 on the Richter scale have been recorded in the last century in the NE region. Two earthquakes with magnitudes greater than 8 occurred in 1897 and 1950 in the north-eastern region. The role of seismicity as a triggering mechanism should be studied for historic landslide events (Thigale, 1999). Many large landslides have been triggered by earthquakes (Schuster and Highland, 2001). Repeated earthquakes in the NE region caused by intermittent tectonic stress release indicate that the orogenic movements are still in progress (Verma, 1985). Froehlich et al (1992) maintain that high density of joints in rocks is probably connected with high seismicity of any region. This would also support large scale mass wasting.

4.6.3 Land Use Pattern

Maximum length of the project road is passing through private forest lands.

4.6.4 Soil

Nagaland, being mountainous and prone to heavy rainfall for millennia in the past ages, yet Nagaland has one of the thickest top-soil layers compared to any place in India. In many places in Nagaland even if the ground is cut 100 m into the mountain side, it still does not reach the underlying rock. The reason may be found in the porous nature of soil where every rain drop sinks underground where it falls without surface flow or water current or it may also be due to the tremendous speed with which the plants cover up any bare area of the soil surface. This is due to the excellent plant growth condition of soil, water and temperature prevalent in the area.

The results of subgrade soil investigations along the existing road alignment shows that the soil have gravel (20.76%), sand (31.1%) and silt and clay (48.14%).

4.6.5 Agriculture

Ninety percent of the total population of Kohima lives in rural areas. The rural people are mainly engaged in agriculture which is the major source of the state income. The two forms of cultivation practiced by the people - Terrace and Jhum cultivation.

Terrace cultivation

Under this system, a piece of land, generally in the valley where water can be channeled into it, is made into flat plots depending on the contour and slope of the land. In gentle slope the plots are bigger and in sharp slope plots are smaller. Likewise, the height of the plots depends on the slope of the land. In case of gentle slope the height is less and in case of sharp slop the height is more. The field is prepared in many plots of flat land and the sides of each flat piece of land are raised above the land in order to retain water. Water is brought from nearby rivers, streams or falls. Sometimes water from the roadside is also channelised to the field. As soon as water is available the hard soil is softened and turned into a thick mud. Thus, when the field is ready, paddy are planted in this field. The water is allowed to remain for the whole period of the growing season of the plants but just before harvesting the field is drained and it remains dry up to the time when it is ready for harvesting. In October - November, the field become ready for harvesting. Unlike Jhum, no other crop is grown along with paddy in terrace field. This is called terrace cultivation.

Jhum cultivation

Another form of cultivation in Nagaland is Jhum which mean shifting cultivation. Under this form of cultivation, the field is cultivated for one or even two to three years if it is sufficiently fertile. Then it is kept fallow for a period seven to ten years for regaining of its fertility, and thereafter it is again cultivated. This kind of rotational practice of cultivation is known as Jhum Cultivation. It is the predominant pattern of cultivation practiced in hilly terrains of Nagaland.

Under this traditional agrarian practice, an area selected for cultivation is cleared of all trees, shrubs and under-growths and felled vegetation is left in their respective places for next 2-3 months in order to dry up. This is usually done in the dry winter months on November and December. During the months of February and March, fire is set to these dry vegetative materials and the area is cleared up. Next, the logs obtained by felling of trees are placed in an orderly manner from top to bottom in the field in such a way that the loose earth materials are prevented from being washed away due to monsoon showers. The logs are fixed with pegs to keep them in position. These works are generally completed before the onset of pre-monsoon showers.

The burning of the leaves of the felled trees, shrubs etc. enhance the fertility of the soil because of the presence of lime and phosphate in ashes. The soil is boggy, and loose because its formation has been greatly influenced by decayed leafs, shrubs and undergrowths. Thus, soil is so soft at places that crops can be grown even without tilting the earth. After preparation of the ground, crops are sown, generally in April depending on the pre-monsoonal showers. In Nagaland, paddy is sown in the first year along with the maize and some other vegetables such as taro (a plant of arum family), beans, pumpkin, cucumber and several varieties of gourds. These are grown together, mixed with paddy plants in jhum lly on the outskirts of the field. In the second and third year, Millet, maize etc are grown with some other variety of vegetables.

Food Crops

Rice is the main food for different tribes of Nagaland. Therefore, in most of the places, paddy is the major crop. Paddy can be grown both in terrace and jhum fields. Fertilizer consumption as well as crop yield per hectare of the state is still below the national average.

Other major crops include millet, maize etc. These are taro (a variety of arum), pumpkin, beans, squash, potato, brinjal, chilli, garlic, cucumber, gourd, tomato, cabbage, cauliflower, etc. These vegetables can be well grown both in terrace and jhum and also in private firms and homestead gardens.

The high production cost is one of the major constraints in crop cultivation. The farmers are forced to go for single cropping as they depend purely on monsoon rain for cultivation. The deteriorating condition of natural fertility due to soil erosion and large practice of jhum cultivation is factors for large scale production as soil are found to be highly acidic. The knowledge on water management practices, fertility management and methods of scientific cultivation of crops is lacking among the farmers. Availability of quality seeds and other planting materials in time is also a major constraint. The agricultural produce being organic by default has immense potential of being exported however lack of proper marketing channels to get maximum profit is a limiting factor in this direction. To compete in the national and international market, technology based small scale agro-industries, cold storage; transportation facilities are to be encouraged.

Cash Crops

The important cash crops are orange, pineapple, sugar cane, cotton etc.

4.6.6 River and Drainage

River: Primarily there are four main rivers that flow through Kohima which are Dhansiri, Dikhu, Doyang and Zungki.

Dhansiri: Dhansiri flows through the southwestern part of the state through Rangapahar-Dimapur Plains of Dimapur District. This river receives almost all the western and southern drainages of Nagaland. Its main tributaries are river Dzuza and Diphu. At the extreme southwest of the state, it assumes a northwardly course forming a natural boundary with North Cachar Hills of Assam which finally drains into the Brahmaputra.

Dikhu: River Dikhu, which has a total length of about 160 km, originates from Nuroto Hill area in Zunheboto district. The river traverses towards north along the border of Mokokchung and Tuensang districts. The main tributaries of river Dikhu are Yangyu of Tuensang district and Nanung in the Langpangkong range in Mokokchung district. The river flows further northward and leaves the hill near Naginimora and finally merges with the Brahmaputra River in the plains of Assam.

Doyang: It is the longest river in the state originating from the Japfü Hill near the Southern slope of Mao in Manipur and moves in a south west direction passing through Kohima district and flows northward into Zunheboto and Wokha District. It passes through a great part of Wokha District and flows south westerly into Dhansiri in Sibsagar, District of Assam. The main tributaries of Doyang are Chubi River which flows southward from Mokokchung District and Nzhu River, originating from Nerhema area of Kohima district and flows through Miphong in Tseminyu area and finally pours itself to Doyang.

Zungki: The Zunki River which is the biggest tributary of Tizu, starts from the northeastern part of Changdong forest in the south of Teku and flows in southernly direction towards Noklak, Shamator and Kiphire and finally joins Tizu below Kiphire.

4.6.7 Climate

Kohima features a more moderate version of a ***humid subtropical climate.*** Kohima has a pleasant and moderate climate - not too cold in winters and pleasant summers. December and January are the coldest months when frost occurs and in the higher altitudes, snowfall occurs occasionally. During peak summer months from July-August, temperature ranges an average of 80-90 Fahrenheit. Heavy rainfall occurs during summer.

4.6.8 Flora and Fauna

Flora

The topography and the geography of an area always have a tremendous influence on the vegetation of any area. Nagaland lies in the tropical belt and is mountainous. Nagaland is

botanically one of the richest spots in the world. Nagaland is endowed with rich flora and fauna. Varieties of Bamboo grow throughout Nagaland. Many depend on Bamboo and its product for their livelihood. Bamboo shoot is a favorite dish for Nagas. Furniture, baskets etc. made out of bamboo and harvested a great chunk of income annually. Green grasses and varieties of flowers grow everywhere. Very rare and unique species of flora such as Rhododendron, Magnolia and Juglans are also found in Nagaland. Nagaland is also known for chilly (Capsicum) and rice (Oryza). The number of poisonous plants are also numerous. Some plants are so poisonous that rashes and ruptures appear on the skin of persons who simply happen to walk past the plants.(Rhus species). The stings of others may cause pain continuing for about three months, for which there is no known remedy. A particular variety of plant boiled and served to pigs. There are 22 species of Bamboos available in the state. World tallest Rhododendron tree has been found in Japfu Mountain of Kohima district.

Fauna

Wild elephants are found in the plain sectors of Dimapur areas bordering with Assam. Tiger, Barking deer, Sambar, Bear, Wild Bore, Monkey, Porcupine etc. are found in Nagaland. Partridge, Robin, Quail, Warbler, Hornbill and peasant etc. are some of the important birds found in the state. Nagaland is also popular for Tragopan which is very rare and unique bird.

Domestic Animals

Nagas are very fond of rearing domestic animals. They rear Chicken, Pig, Dog, cat, mithum, Buffaloes, Goats etc. for various purposes. Almost all the Naga families, especially in rural area (i.e. Villages) rear chicken, pig and dog. Chicken and pig are the most common ones. Dog is reared to guard the houses. Mithun is regarded to be the most prestigious among the domestic animals, Buffaloes and goats are reared for milk.

4.6.9 Biodiversity and Forest Types of Nagaland

Nagaland is very rich in bio-diversity, both flora and fauna. Even today some pockets of forests are covered with gigantic trees, where sun- rays cannot penetrate. Due to reckless and uncontrolled cutting of trees for timber, firewood, continued Jhum cultivation and annual fire in vast tracts of land, forests got degraded and barren, which accelerated diminishing of the most of the original characteristics of the forests.

Though Nagaland is a small state but as far as types of forests are concerned it has been endowed with a wide variety of forest types. This is mainly due to the fact that though it is mainly in tropics, Nagaland has land elevation ranging from a few hundred meters up to about four thousand meters.

- ***Northern Tropical Wet Evergreen Forests***

  These forests once covered the Namsa- Tizit area but now only a small vestige is found in the Zankam area. It is found only in Mon District. The dominant species in this type of forest are Hollong*(Dipterocarpusmacrocarpus),*Makai*(Shoreaassamica),* Nahor (*Mesuaferae)* etc

- ***Northern Tropical Semi Evergreen Forests***

  This type of forests are found in the foothills of Assam-Nagaland border in Mokokchung, Wokha and Kohima Districts. The Species that make up these forests are similar to those of the Northern Tropical Wet Evergreen Forests. The only difference is that in the former case the evergreen species dominate though there are deciduous species like *Bhelu, Paroli, Jutuli* etc, whereas in the present case, the number of evergreen species decreases and the deciduous species are dominant.

- ***Northern Sub-tropical Broad Leaved Wet Hill Forests***

  This type of forests are found in the hill areas below 1800m and above 500m in all the districts of Nagaland. The wet evergreen species are conspicuous by their absence and the dominant species are mostly semi-deciduous. Some of the important timber species in this type are - Koroi, Pomas, Sopas, Gamari, Gogra, Khokan, Hollok, Sam, Am, Badam, Betulaetc.

- ***Northern Sub-tropical Pine Forests***

  This types of forests are found in hill elevation of 1000 meters to 1500 meters in parts of Phek and Tuensang Districts of Nagaland. Pine is the dominant species and is found mixed with Quercus, Schima, Prunus, Betulaand Rhododendron.

- ***Northern Montane Wet- temperate Forests***

  This type of forests are found on the higher reaches of the tallest mountains in Nagaland above 2000 meters in - Japfu, Saramati, Satoi, Chentang ranges. The species are typically evergreen with Quercus, Michelia, Magnolia, Prunus, Schima, Alnus and Betula.

- ***Temperate Forests***

  This type of forests are found in peaks of the tallest mountains (above 2500 meters) like Saramati and Dzukou area. The species that dominate are Rhododendron, Patches of Juniperuscoxie and Birch.

Schools, Medical Facilities & Religious Places

There is no sensitive receptors along the project road.

4.7 Requirement of Environmental Clearance

The current project is a part of NH-02 and does not attract Environmental Clearances as per following notification. (Copy of the notification is attached at the end of the chapter as **Appendix-4.1**)

The EIA notification 2006

The notification clearly defines the category of any road for clearance process,

Project Activity	A Category	B Category	General Condition
7f (Highways including Expressway)	i) New National Highways; ii) Expansion of National Highways greater than 30 Km, involving additional right of way greater than 20 m involving land acquisition and passing through more than one state.	i) New State Highways; ii) Expansion of National / State Highways greater than 30 km involving additional ROW greater than 20 m involving land acquisition.	General Condition shall apply
General Condition (GC):- Any project activity specified in Category B will be treated as Category A, if located in whole or in part within 10 km from the boundary of: (i) Protected Areas notified under the wildlife (Protection) Act, 1972 (ii) Notified Eco-sensitive areas, (iv) inter-state boundaries and international boundaries.			
The Government of India relaxed the condition for Environmental Clearance for road projects less than 100 Km length with additional ROW less than 40 m on existing alignments and 60 m on re-alignments and bypasses on 22nd August 2013 vide notification no SO 2559(E).			

4.8 Environment Management Plan (EMP)

Environmental Impacts	Mitigation Measures	Location	Time Frame	Responsibility	
				Implementation	Supervision
A. Pre-construction Stage					
A.I Pre-construction Activities by PIU					
Land and Properties Acquisition	For Four laning of project road approximately **258.174 Hectares of** land will be acquired. The acquisition of land and private properties will be carried out in accordance with the National Highway Act. It will be ensured that R&R activities are to be completed before the construction activity starts, on any sub-section of project roads.	Corridor of Impacts	Before Start Construction	Competent Authority for acquisition of land and properties.	NHIDCL
Removal of Trees	Approximately **2200 trees** may need to be cut from the ROW. Before the commencement of construction with prior Forest Clearance will be taken from the Forest Department for removal of trees. Joint inspection will be carried out with the forest department for counting of trees. All works shall be carried out in such a fashion that the damage or disruption to the flora is minimum. The effort shall be made to conserve the trees by adjusting in the median.	ROW	Before Construction Starts	Contractor	NHIDCL
Utility Relocation	All utilities will be relocated with prior approval of the concerned agencies. Relocation will be reasonably complete	All utilities as per	Before Construction	Affected Agencies	NHIDCL

Environmental Impacts	Mitigation Measures	Location	Time Frame	Responsibility	
				Implementation	Supervision
	before construction starts.	details given in Strip Plan.	Starts		
Removal of Community Utility	All community utilities, such as community sources of water will be replaced at appropriate locations.		Before Construction Starts	Contractor	NHIDCL
Pre-construction activities by the Contractor/Engineer of SC					
Procurement of Machinery					
Hot-mix Plants & Batching Plants	Specifications of hot mix plants and batching plants will comply with the requirements of the relevant current emission control legislations.	Location will be decided by contractor with temporary acquisition of land	Before Construction Starts	Contractor	NHIDCL
Other Construction Vehicles, Equipment and Machinery	The discharge standards promulgated under the Environment (Protection) Act, 1986 will be strictly adhered to. All vehicles, equipment and machinery to be procured for construction will conform to the relevant Bureau of Indian Standard (BIS) norms. Noise limits for construction equipments to be procured such as compactors, rollers, front loaders, concrete mixers, cranes (moveable), vibrators and saws will not exceed 75 dB (A), measured at one meter from the edge of the equipment in free field, as specified in the Environment (Protection) Rules, 1986.	ROW	Before Construction Starts	Contractor	NHIDCL

Environmental Impacts	Mitigation Measures	Location	Time Frame	Responsibility	
				Implementation	Supervision
Identification & Selection of Material Sources					
Borrow Areas	Arrangement for locating the source of supply of material for embankment and sub-grade as well as compliance to environmental requirements, as applicable, will be the sole responsibility of the contractor. Locations identified by the consultant/contractor shall be reported to the Supervision Consultant and shall in turn report to the PIU.	ROW	Before Construction Starts	PIU, Construction Agencies	NHIDCL
Quarries	The contractor will identify materials from existing licensed quarries with the suitable materials for construction. No new quarry will be opened by contractor. Apart from approval of the quality of the quarry materials, the Supervision Consultant's representative will verify the legal status of the quarry operation, as to whether approval is obtained.	ROW	Before Construction Starts	PIU, Construction Agencies	NHIDCL
Water	The contractor will source the requirement of water preferably from surface water bodies, as river and nallah in the project area. The contractor will be allowed to pump only from the surface water bodies. Boring of any tube wells will be prohibited. To avoid disruption/disturbance to other water users, the contractor will extract water from fixed locations. The contractor shall	ROW	Before Construction Starts	PIU, Construction Agencies	NHIDCL

Environmental Impacts	Mitigation Measures	Location	Time Frame	Responsibility	
				Implementation	Supervision
	consult the local people before finalizing the locations. Only at locations where surface water sources are not available, the contractor can contemplate extraction of ground water. The contractor will need to comply with the requirements of the State Ground Water Department and seek their approval for doing so.				
Labour Requirements	The contractor will use unskilled labour drawn from local communities to avoid any additional stress on the existing facilities (medical services, power, water supply, etc.)	Along project corridor at construction sites	Before Construction Starts	PIU, Construction Agencies	NHIDCL
Setting up Construction Sites					
Construction Camp Locations Selection, Design & Layout	Construction camps will not be proposed :- 1) With in 1000 m from the nearest habitation to avoid conflicts and stress over the infrastructure facilities, with the local community. 2) Locations for stockyards for construction materials will be identified at least 1000 m from watercourses. 3) The waste disposal and sewage system for the camp will be designed, built and operated such that no odour is generated. 4) Unless otherwise arranged by the local sanitary authority, arrangements for disposal of excreta suitably approved by the local medical health or municipal authorities or as directed by	Decided by Contractor.	Before Construction Starts	PIU, Construction Agencies	NHIDCL

Environmental Impacts	Mitigation Measures	Location	Time Frame	Responsibility	
				Implementation	Supervision
	Supervision Consultant will need to be provided by the contractor.				
Arrangements for temporary Land Requirement	The contractor as per prevalent rules will carry out negotiations with the land owners for obtaining their consent for temporary use of lands for construction sites/ hot mix plants /traffic detours /borrow areas etc. The Supervision Consultant will be required to ensure that the clearing up of the site prior to handing over to the owner (after construction or completion of the activity) is included in the contract.	Areas temporarily acquired for construction sites/ hot mix plants/ borrow areas/ diversions / detours.	Before Construction Starts	PIU/Contractor	NHIDCL
B. Construction Stage					
Construction Stage Activities by Contractor					
Site Clearance					
Clearing and Grubbing	The demarcated vegetation will be removed from the Corridor before the commencement of construction. All works will be carried out such that the damage or disruption to flora is minimum. Only ground cover / shrubs that impinge directly on the permanent works or necessary temporary works will be removed with prior approval from the Supervision Consultant. The contractor, under any circumstances will not damage trees (in addition to those already felled with prior permission from the	Corridor of Impact	Construction Phase	PIU/Contractor	NHIDCL

Environmental Impacts	Mitigation Measures	Location	Time Frame	Responsibility	
				Implementation	Supervision
	forest department).				
Generation of debris from dismantling of pavement structure	Debris generated due to the dismantling of the existing pavement structure shall be suitably reused in the proposed construction, subject to the suitability of the material and the approval of the Supervision Consultant. Unutilized debris material shall be suitably disposed off by the contractor, either through filling up of borrow areas created for the project or at pre-designated dump locations, subject to the approval of the Supervision Consultant. Debris generated from pile driving or other construction activities shall be disposed such that it does not flow into the surface water bodies or form mud puddles in the area.	Throughout Project Corridor	Construction Phase	PIU/Contractor	NHIDCL
Bituminous and non- bituminous waste disposal	Bituminous and non- bituminous construction wastes will be utilized in the road construction. No disposal of solid waste will be required.	Throughout Project Corridor	Construction Phase	PIU/Contractor	NHIDCL

Environmental Impacts	Mitigation Measures	Location	Time Frame	Responsibility	
				Implementation	Supervision
Planning Traffic Diversions Detours	Temporary diversions will be constructed with the approval of the Supervision Consultant. Detailed traffic control plans will be prepared and submitted to the Supervision Consultant for approval, 5 days prior to commencement of works on any section of road. The traffic control plans shall contain details of temporary diversions, details of arrangements for construction under traffic, details of traffic arrangement after cessation of work each day, safety measures for transport of hazardous material and arrangement of flagmen. Environmental personnel of the Supervision Consultant will assess the environmental impacts associated as the loss of vegetation, productive lands and the arrangement for temporary diversion of the land prior to the finalization of diversions and detours. Special consideration will be given to the preparation of the traffic control plan for safety of pedestrians and workers at night.	All along the Project Corridor.	Construction Phase	PIU/Contractor	NHIDCL
	The contractor will ensure that the diversion/detour is always maintained in running condition, particularly during the monsoon to avoid disruption to traffic flow. He shall inform local community of changes to traffic routes, conditions and pedestrian access arrangements. The temporary traffic detours will be kept free of dust by frequent application of water.				

Environmental Impacts	Mitigation Measures	Location	Time Frame	Responsibility	
				Implementation	Supervision
Procurement of Construction Materials	The location, shape and size of the designated borrow areas will be as approved by the Supervision Consultant and in accordance to the IRC recommended practice for borrow pits for road embankments (IRC 10: 1961). The borrowing operations will be carried out as specified in the guidelines for sitting and operation of borrow areas. The unpaved surfaces used for the haulage of borrow materials will be maintained dust free by the contractor. Since dust rising is the only impact along the haul roads sprinkling of water will be carried out twice a day along such roads during their period of use.	All along the project corridor, all access roads, sites temporarily acquired & all borrow areas	Construction Phase	PIU/Contractor	NHIDCL

Environmental Impacts	Mitigation Measures	Location	Time Frame	Responsibility	
				Implementation	Supervision
Stripping, stocking and preservation of top soil	The topsoil from borrow areas, areas of cutting and areas to be permanently covered will be stripped to a specified depth of 150 mm and stored in stockpiles. At least 10% of the temporarily acquired area will be earmarked for storing topsoil. The stockpile will be designed such that the slope does not exceed 1:2 (vertical to horizontal), and the height of the pile is to be restricted to 2 m. Stockpiles will not be surcharged or otherwise loaded and multiple handling will be kept to a minimum to ensure that no compaction will occur. The stockpiles will be covered with gunny bags or tarpaulin. It will be ensured by the contractor that the topsoil will not be unnecessarily trafficked either before stripping or when in stockpiles. Such stockpiled topsoil will be returned to cover the disturbed area and cut slopes.	Throughout project corridor, adjacent to the roadway embankment and in borrow areas.	Construction Phase	PIU/Contractor	NHIDCL
Quarries	The quarry operations will be undertaken within the rules and regulations in force.	All along the project corridor and all haul roads.	Construction Phase	PIU/Contractor	NHIDCL

Environmental Impacts	Mitigation Measures	Location	Time Frame	Responsibility	
				Implementation	Supervision
Operation of Construction Equipments and Vehicles	All vehicles and equipment used for construction will be fitted with exhaust silencers. During routine servicing operations, the effectiveness of exhaust silencers will be checked and if found to be defective will be replaced. Noise limits for construction equipment used in this project (measured at one meter from the edge of the equipment in free field) such as compactors, rollers, front loaders, concrete mixers, cranes moveable), vibrators and saws will not exceed 75 dB(A), as specified in the Environment (Protection) Rules, 1986. Notwithstanding any other conditions of contract, noise level from any item of plant(s) must comply with the relevant legislation for levels of noise emission.	All construction equipments and vehicles	Construction Phase	PIU/Contractor	NHIDCL

Environmental Impacts	Mitigation Measures	Location	Time Frame	Responsibility	
				Implementation	Supervision
Precautionary/ Safety Measures During Construction	All relevant provisions of the Factories Act, 1948 and the Building and other Construction Workers (regulation of Employment and Conditions of Service) Act, 1996 will be adhered to. Adequate safety measures for workers during handling of materials at site will be taken up. The contractor has to comply with all regulations regarding safe scaffolding, ladders, working platforms, gangway, stairwells, excavations, trenches and safe means of entry and egress.	All construction sites	Construction Phase	PIU/Contractor	NHIDCL
Earthworks					
Excavations	All excavations will be done in such a manner that the suitable materials available from excavation are satisfactorily utilized as decided upon beforehand. The excavations shall conform to the lines, grades, side slopes and levels shown in the drawings or as directed by the Supervision Consultant.	All along the project road	Construction Phase	PIU/Contractor	NHIDCL
Excavations	While planning or executing excavation the contractor shall take all adequate precautions against soil erosion, water pollution, etc. and take appropriate drainage measures to keep the site free of water, through use of mulches, grasses, slope drains and other devices. The contractor shall take adequate protective measures to see that excavation operations do not affect or damage adjoining structures and water bodies. For safety precautions guidance may be taken from IS:3764.				

Environmental Impacts	Mitigation Measures	Location	Time Frame	Responsibility	
				Implementation	Supervision
Excavations	Earth fill Embankment and other fill areas, unless otherwise permitted by the Supervision Consultant, be constructed evenly over their full width and the contractor will control and direct movement of construction vehicles and machinery over them.				
Earth fill	Embankment and other fill areas, unless otherwise permitted by the Supervision Consultant, be constructed evenly over their full width and the contractor will control and direct movement of construction vehicles and machinery over them.	Along earth fill areas	Construction Phase	PIU/Contractor	NHIDCL
Stripping, Stocking and Preservation of Topsoil	The stockpiles will be located at least 100 m from water courses.	Wherever productive land is acquired	During Construction Phase	Contractor	Supervision Consultant, NHIDCL
Slope Protection and Control of Erosion	Embankments and other areas of unsupported fill will not be constructed with steeper side slopes, or to greater widths. While planning or executing excavations the Contractor will take all adequate precautions against soil erosion as per MORTH 306.	All along the project road.	During Construction Phase	Contractor	Supervision Consultant, NHIDCL
	Turfing on critical road embankment slopes with grass sods, in accordance with the recommended practice for treatment of embankment slopes for erosion control.				

Environmental Impacts	Mitigation Measures	Location	Time Frame	Responsibility	
				Implementation	Supervision
	Other measures of slope stabilization will include mulching, netting and seeding of batters and drains immediately on completion of earthworks. Dry stone pitching for apron and revetment will be provided for bridges and cross drainage structures.				
Drainage requirements at Construction sites (Flooding)	In addition to the design requirements, the contractor will take all desired measures as directed by the Supervision Consultant, such measures to prevent temporary flooding of the site or any adjacent area.	All along the project road	Construction Phase	PIU/Contractor	NHIDCL

Environmental Impacts	Mitigation Measures	Location	Time Frame	Responsibility	
				Implementation	Supervision
Dust Emissions	All earthworks will be protected in a manner acceptable to the Supervision Consultant to minimize generation of dust. The contractor will take every precaution to reduce the level of dust along construction sites involving earthworks, by frequent application of water. All vehicles delivering materials to the site shall be covered to avoid spillage of materials. The contractor shall every precaution to reduce the level of dust emission from the hot mix plants and the batching plants up to the satisfaction of the Supervision Consultant in accordance with the relevant emission norms. All existing roads used by vehicles of the contractor or any of his sub contractor or supplies of materials and plant and similarly roads which are part of the works shall be kept clean and clear of all dust/mud or other extraneous materials dropped by such vehicles or their tires.	All along the project road	During Construction Phase	Contractor	Supervision Consultant, NHIDCL
Contamination of soil by Fuel and Lubricants	Vehicle/machinery and equipment operation, maintenance and refueling will be carried out in such a fashion that spillage of fuels and lubricants does not contaminate the ground. An “Oil interceptor” will be provided for vehicle parking, wash down and refueling areas within the construction camps. Fuel storage will be in proper bunded areas. All spills and collected petroleum products will be disposed off in accordance with MoEF and Andaman & Nicobar Island Pollution Control Board guidelines.	All along the project road	During Construction Phase	Contractor	Supervision Consultant, NHIDCL

Environmental Impacts	Mitigation Measures	Location	Time Frame	Responsibility	
				Implementation	Supervision
	Fuel storage and refilling areas will be located at least 300 m from drains and important water bodies as directed by the Supervision Consultant. In all fuel storage and refueling areas, if located on agricultural land or areas supporting vegetation, the topsoil will be stripped, stockpiled and returned after cessation of such storage and refueling activities.				
Silting, Contamination of Water bodies	Silt fencing will be provided around stockpiles at the construction sites close to water bodies. The fencing needs to be provided prior to commencement of earthworks and continue till the stabilization of the embankment slopes, on the particular sub-section of the road.	Water bodies close to the project	During Construction Phase	Contractor	Supervision Consultant, NHIDCL
	Construction materials containing fine particles will be stored in an enclosure so that sediment-laden water does not drain into nearby watercourses.				
	All discharge standards promulgated under Environmental Protection Act, 1986, will be adhered to. All liquid wastes generated from the site will be disposed off as acceptable to the Supervision Consultant.				
Sub-Base & Base	The contractor will take all necessary measures/ precautions to ensure that the execution of works and all associated operations are carried out in conformity with statutory and regulatory environmental requirements.	All along the project road	During Construction Phase	Contractor	Supervision Consultant, PIU, NHIDCL

Environmental Impacts	Mitigation Measures	Location	Time Frame	Responsibility	
				Implementation	Supervision
	The contractor will plan and provide for remedial measures to be implemented in event of occurrence of emergencies such as spillage of oil or bitumen or chemicals. The contractor will provide the Supervision Consultant with a statement of measures that he intends to implement in event of such an emergency, which will include a statement of how he intends to adequately train personnel to implement such measures.				
	Adequate safety measures for workers during handling of materials at site will be taken up. The contractor will take every precaution to reduce the level of dust along the construction sites by frequent application of water.				
	Noise levels from all vehicles and equipment used for construction will conform to standards. Construction activities involving equipment with high noise levels will be restricted to the daytime.				
Surfacing	The contractor will take all necessary means to ensure that works and all associated operations are carried out in conformity with to MORTH 501.	All along the project road	During Construction Phase	Contractor	Supervision Consultant, NHIDCL
	All workers employed on mixing asphalt material etc. will be provided with protective footwear. Noise levels from all vehicles and equipment used for surfacing will conform to standards. Construction activities involving equipments with high noise levels will be restricted to the daytime.				

Environmental Impacts	Mitigation Measures	Location	Time Frame	Responsibility	
				Implementation	Supervision
Bridge Works & Culverts	While working across or close to the rivers, the contractor will not disrupt the flow of water. If for any bridgework, etc., closure of flow is required, the Contractor apart from obtaining the requisite clearances, will seek approval of the supervision consultant. The supervision consultant will have the right to ask the Contractor to serve notice on the downstream users of water sufficiently in advance.	All along the project road	During Construction Phase	Contractor	Supervision Consultant, NHIDCL
	Construction over and close to the non-perennial streams will be undertaken in the dry session. Construction work expected to disrupt users and impacting community water bodies will be taken up after serving notice on the local community. Dry stone pitching for apron and revetment will be provided for bridges and cross drainage structures.				
Soil					
Generation of Debris	(a.) Debris generated due to construction shall be suitably reused, subject to the suitability of the material and approval of the Supervision Consultant	ROW	During Construction Phase	Contractor	Supervision Consultant, NHIDCL
	(b.) All arrangements for transportation during construction including provision, maintenance, dismantling and clearing debris, where necessary will be considered incidental to the work and shall be planned and implemented as approved and directed by the supervision consultant.				

Environmental Impacts	Mitigation Measures	Location	Time Frame	Responsibility	
				Implementation	Supervision
Loss of Top Soils	(a) The top-soil from all areas of cutting and all area to be permanently covered shall be stripped to a specified depth of 150 mm and stored in stockpiles of height not exceeding 2 m. At least 10% of the temporarily acquired area shall be earmarked for storing top soil.	Where productive land is acquired	During Construction Phase	Contractor	Supervision Consultant, NHIDCL
	(b.)The stock pipe shall be designed such that the slope does not exceed 1:2 (Vertical to Horizontal), and the height of the pile be restricted to 2 m. to retain soil and to allow percolation of the water, the edge of the pile shall be protected by fencing.				
	(c.) Stockpiles will not be surcharged or otherwise loaded and multiple handling will be kept to minimum to ensure that no compaction will occur. The stockpiles shall be cover with gunny bags or tarpaulin.				
	(d.) It shall be ensured by the contractor that the top soil will not be unnecessarily trafficked either before stripping or when in stockpiles.				
	(e) Such stockpiled topsoil will be returned to cover the distributed area and cut slopes. Residual topsoil will be distributed on adjoining/proximate barren land as identified by the Supervision Consultant an a layer of thickness 75 mm – 150 mm. Top soil shall also be utilized for redevelopment of borrow areas. Landscaping along slopes, medians, incidental places.				

Environmental Impacts	Mitigation Measures	Location	Time Frame	Responsibility	
				Implementation	Supervision
Compaction Soil	Construction vehicles, machinery and equipment shall move or be stationed in the designated area only, while operating on temporarily acquired land for traffic detours, storage, material handling or any other construction related or incidental activities, topsoil from agricultural land will be preserved a mentioned above.	Where productive land is acquired	During Construction Phase	Contractor	Supervision Consultant, NHIDCL
Borrow Areas	No borrow area should be opened without permission of the Supervision Consultant. The location, shape and size of the designated borrow areas will be as approved by the Supervision Consultant and in accordance to the IRC recommended practice for borrow pits for road embankments (IRC 10: 1961).	All along the project road	During Construction Phase	Contractor	Supervision Consultant, NHIDCL
	The borrowing operations will be carried out as specified in the guidelines for sitting and operation of borrow areas. The unpaved surfaces used for the haulage of borrow materials will be maintained dust free by the contractor. Since dust rising is the only impact along the haul roads sprinkling of water will be carried out twice a day along such roads during their period of use.	All along the project road & all borrow areas.	During construction Phase	Contractor	Supervision Consultant, NHIDCL
	Borrow pits shall be redeveloped as per MoEF guidelines. Spoils shall be dumped with an overlay of stockpiled topsoils in accordance with compliance requirements with respect to MoEF guidelines.				

Environmental Impacts	Mitigation Measures	Location	Time Frame	Responsibility	
				Implementation	Supervision
Stripping, Stocking and Conservation of Topsoil	The topsoil from borrow areas, areas of cutting and areas to be permanently covered will be stripped to a specified depth of 150 mm and stored in stockpiles. At least 10% of the temporarily acquired area will be earmarked for storing topsoil.	Throughout project road, where productive land is acquired.	During Construction Phase	Contractor	Supervision Consultant, NHIDCL
	The stockpile will be designed such that the slope does not exceed 1:2 (vertical to horizontal), and the height of the pile is to be restricted to 2m heights. Stockpiles will not be surcharged or otherwise loaded and multiple handling will be kept to a minimum to ensure that no compaction will occur. The stockpiles will be covered with gunny bags or tarpaulin. It will be ensured by the contractor that the topsoil will not be unnecessarily trafficked either before stripping or when in stockpiles. Such stockpiled topsoil will be returned to cover the disturbed area and cut slopes.				
Soil Erosion	On road embankment slopes, slopes of all cut, fill etc, will be stabilized through retaining, breast walls and geotextile. In addition shrubs and grasses will be planted on slopes. The section with high filling and deep cutting the side slop will be graded and covered with bushes and grasses as per specifications for stone pitching, grasses and shrubs.	Throughout project road	During Construction Phase	Contractor	Supervision Consultant, NHIDCL
	In the borrow pits the depth of the pits shall be so regulated that the sides of the excavation will have a slope not steeper than 1 vertical: 2 horizontal from the edge of the final section of bank.				

Environmental Impacts	Mitigation Measures	Location	Time Frame	Responsibility	
				Implementation	Supervision
	The work shall consist of measures as per design or as directed by the Supervision Consultant to control soil erosion, sedimentation and water pollution through use beams, disks, sediment, basins, fibers mats, mulches, grasses, slope, drains and other devices. All temporary sedimentation and pollution control works and maintenance thereof will be deemed as incidental to the earthwork and other items of work.				
Transporting Construction Materials					
Transporting Construction Materials	All vehicles delivering materials to the site will be covered to avoid spillage of materials. All existing roads used by vehicles of the contractor or any of his sub - contractor or suppliers of materials and similarly roads which are part of the works will be kept clean and clear of all dust/mud or other extraneous materials dropped by such vehicles.	All along the project road	During Construction Phase	Contractor	Supervision Consultant, NHIDCL
	The unloading of materials at construction sites close to settlements will be restricted to daytime only.				
Water					
Water Extraction for Project	The contractor will minimize wastage of water during construction activities. The contractor shall not open a new bore well or extract new groundwater without permission from Ground Water Board. The contractor may, however, use any existing bore well or any other source of water supply subject to necessary or relevant arrangement.	All along the project road	During Construction Phase	Contractor	All along the project road, NHIDCL

Environmental Impacts	Mitigation Measures	Location	Time Frame	Responsibility	
				Implementation	Supervision
Infrastructure Provisions at Construction Camps	The contractor during the progress of work will provide, erect and maintain necessary (temporary) living accommodation and ancillary facilities for labours to standards and scales approved by the supervision consultant.	All along the project road	During Construction Phase	Contractor	Supervision Consultant, NHIDCL
	Within the precincts of every workplace, latrines and urinals are provided in an accessible place, and the accommodation, separately for each for these, as per standards set by the Building and other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996. Except in workplaces provided with water-flushed latrines connected with a water borne sewage system, all latrines shall be provided with dry-earth system (receptacles) which shall be cleaned at least four times daily and at least twice during working hours and kept in a strict sanitary condition.				
	All temporary accommodation must be constructed and maintained in such a fashion that uncontaminated water is available for drinking, cooking and washing. The sewage system for the camp must be designed, built and operated so that no health hazard occurs and no pollution to the air, ground or adjacent watercourses takes place.				
	Compliance with the relevant legislation must be strictly adhered to garbage bins must be provided in the camp, shall be regularly emptied and the garbage disposed off in a hygienic manner. Construction camps are to be sited at least 1000 m away from the nearest habitation and adequate health care is to be provided for the work force.				

Environmental Impacts	Mitigation Measures	Location	Time Frame	Responsibility	
				Implementation	Supervision
Operation of Construction Equipment and vehicles	All vehicles and equipment used for construction will be fitted with exhaust silencers. During routine servicing operations, the effectiveness of exhaust silencers will be checked and if found to be defective will be replaced.	All construction Equipments and vehicles	During Construction Phase	Contractor	Supervision Consultant, NHIDCL
	Noise limits for construction equipment used in this project (measured at one meter from the edge of the equipment in free field) such as compactors, rollers, front loaders, concrete mixers, cranes (moveable), vibrators and saws will not exceed 75 dB (A), as specified in the Environment (Protection) Rules, 1986. Notwithstanding any other conditions of contract, noise level from any item of plant(s) must comply with the relevant legislation for levels of noise emission.				
	The contractor will ensure that the Ambient Air Quality at the construction sites are within the acceptable limits of industrial uses in case of hot mix plants and crushers and residential uses around construction camps.				
	In construction sites, nearest habitation noisy construction work such as crushing, concrete mixing and batching, mechanical compaction etc. will be stopped between 2200 hours to 0600 hours.				
	Monitoring of the noise levels will be carried out by the agency identified for Environmental Monitoring for the project.				

Environmental Impacts	Mitigation Measures	Location	Time Frame	Responsibility	
				Implementation	Supervision
Material Handling at Site					
Material Handling at Site	All workers employed on mixing asphaltic material, cement, concrete etc., will be provided with protective footwear and protective goggles. Workers, who are engaged in welding works, would be provided with welder's protective eye-shields.	All along the project road	During Construction Phase	Contractor	Supervision Consultant, NHIDCL
Archaeological Property					
Chance to found Archaeological Property	All fossils, coins, articles of value of antiquity, structures and other remains or things of geological or archaeological interest discovered on the site shall be the property of the Government and shall be dealt with as per provisions of the relevant legislations. The contractor shall take reasonable precaution to prevent his workmen or any other persons from removing and damaging any such article or thing and shall immediately upon discovery thereof and before removal acquaint the Supervision Consultant 's instruction for dealing with the same, awaiting which all work shall be stopped within 100 m in all directions from the site of discovery.	All along the project road	During Construction Phase	Contractor	Supervision Consultant, NHIDCL
	The Supervision Consultant shall seek direction from the Archaeological Survey of India (ASI) before instructing the Contractor to recommence work on the site.				

Environmental Impacts	Mitigation Measures	Location	Time Frame	Responsibility	
				Implementation	Supervision
Road Furniture and Enhancements					
Road Furniture	Road furniture including footpaths, railings, storm water drains, crash barrier, traffic signs, speed zone signs, pavement markers and any other such items will be provided as per design. The drains will be provided for near the outfall to a natural drain.	All along the project road	During Construction Phase	Contractor	Supervision Consultant, NHIDCL
Enhancements	Enhancement of all cultural properties, water bodies, incidental spaces will be carried out as per the enhancement designs prior to completion of construction in road sub sections. Adequate signage along these enhancement locations will be erected.	All along the project road	Construction Phase	Contractor	Supervision Consultant, PIU, NHIDCL
	Specific and generic enhancement measures proposed for the various cultural properties and the specifications are provided.				
	The contractor will undertake seasonal monitoring of air, water, noise and soil quality through an approved monitoring agency. The parameters to be monitored, frequency and duration of monitoring as well as the locations to be monitored will be as per the monitoring plan prepared.				

Environmental Impacts	Mitigation Measures	Location	Time Frame	Responsibility	
				Implementation	Supervision
C. Contractor Demobilization					
Clearing of Construction of Camps &Restoration	Contractor to prepare site restoration plans for approval by the supervision consultant all along the project road. The plan will be implemented by the contractor prior to demobilization. On completion of the works, all temporary structures will be cleared away, all rubbish burnt, excreta or other disposal pits or trenches filled in and effectively sealed off and the site left clean and tidy, to the entire satisfaction of the Supervision Consultant.	All Construction Workers' Camps	Construction Phase	Contractor	Supervision Consultant, NHIDCL
Redevelopment of Borrow Areas	Redevelopment of borrow areas will be taken up in accordance with the plans approved by the Supervision Consultant.	At all borrow area locations suggested for project	During Construction Phase	Contractor	Supervision Consultant, NHIDCL
D. OPERATION STAGE ACTIVITIES BY PIU-ENVIRONMENTAL CELL					
Monitoring & Operational Performance	The PIU will monitor the operational performance of the various mitigation/enhancement measures carried out as a part of construction of the project road.	All along the project road	During Operation Phase	Contractor	Supervision Consultant, NHIDCL
	The indicators selected for monitoring include the survival rate of trees, utility of enhancement provisions for cultural properties, water bodies, incidental spaces and within forest areas, status of rehabilitation of borrow areas and utility of double glazing for noise sensitive receptors.				

Environmental Impacts	Mitigation Measures	Location	Time Frame	Responsibility	
				Implementation	Supervision
E. OTHER ACTIVITIES					
Orientation of implementing agency and contractors	The PIU shall organize orientation sessions during all stages of the project. The orientation session shall involve all staff of Environmental Cell, field level implementation staff of PIU, Supervision Consultant and Contractor.	All along the project road	During Operation Phase	Contractor	Supervision Consultant, NHIDCL

[To be published in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section(ii)]

MINISTRY OF ENVIRONMENT AND FORESTS
NOTIFICATION

New Delhi, the 22nd August, 2013

S.O. 2559 (E).- Whereas by notification of the Government of India in the Ministry of Environment and Forests vide number S.O.1533(E), dated the 14th September, 2006 issued under sub-section (1) and clause (v) of sub-section (2) of section (3) of the Environment (Protection) Act, 1986 read with clause (d) of sub-rule (3) of rule 5 of the Environment (Protection) Rules, 1986, the Central Government directed that on and from the date of its publication, the required construction of new projects or activities or the expansion or modernization of existing projects or activities listed in the Schedule to the said notification entailing the capacity addition with change in process or technology and or product mix shall be undertaken in any part of India only after prior environmental clearance from the Central Government or as the case may be, by the State level Environment Impact Assessment Authority, duly constituted by the Central Government under sub-section (3) of section 3 of the said Act, in accordance with the procedure specified therein;

And whereas the Government of India in the Ministry of Environment and Forests had constituted a High Level Committee under the Chairmanship of Member (Environment and Forests and Science and Technology), Planning Commission, vide OM No.21-270/2008-IA.III dated the 11th December, 2012 to review the provisions of Environmental Impact Assessment Notification, 2006 relating to granting Environmental Clearances for Roads, Buildings and Special Economic Zone projects and provisions under the OM dated the 7th February, 2012 issued by the Ministry of Environment and Forests regarding guidelines for High Rise Buildings;

And whereas one of the terms of reference (ToR) of the Committee was to review the requirement of Environmental Clearance for highway expansion projects upto the right of way of 60 meters and length of 200 kms under Environmental Impact Assessment notification;

And whereas the Committee has submitted its report to the Ministry and on this ToR, the Committee has recommended exempting highway expansion projects from the requirement of scoping and that Environmental Impact Assessment or Environment Management Plan for highway expansion projects may be prepared on the basis of model ToRs to be posted on Ministry's website and in respect of requirement of environmental clearance, the Committee has recommended that expansion of National Highway projects up to 100 kms involving additional right of way or land acquisition upto 40 mts on existing alignments and 60 mts on re-alignments or by-passes may be exempted from the preview of the notification;

And whereas the report of the Committee has been examined in the Ministry of Environment and Forests. Earlier, vide notification S.O.3067(E), dated the 1st December 2009 all State Highway expansion projects, except those in hilly terrain (above 1000 m AMSL) and ecologically sensitive areas, have already been exempted from the purview of the Environmental Impact Assessment notification, 2006.

And whereas, keeping inter-alia in view the foregoing, the Ministry of Environment and Forests has decided to accept the aforesaid recommendations of the High Level Committee constituted vide OM No.21-270/2008-IA.III, dated the 11th December 2012;

Now, therefore in exercise of the powers conferred by sub-section (1) and clause (v) of sub-section (2) of section 3 of the Environment (Protection) Act, 1986 (29 of 1986) read with sub-rule (4) of rule (5) of the Environment (Protection) Rules, 1986, the Central Government hereby makes the following further amendment to the notification of the Government of India, in the Ministry of Environment and Forests number S.O. 1533(E), dated the 14th September, 2006 after having dispensed with the requirement of notice under clause (a) of sub-rule (3) of the said rule 5 in public interest, namely:-

2. In the said notification, -

(a) in paragraph 7, in sub-paragraph II, for item (i), the following item shall be substituted, namely:-

'(i) "Scoping"refers to the process by which the Expert Appraisal Committee in the case of Category Á 'projects activities, and State level Expert Appraisal Committee in the case of Category 'B1'projects or activities, including applications for expansion or modernization or change in product mix of existing projects or activities, determine detailed and comprehensive Terms of Reference (TOR) addressing all relevant environmental concerns for the preparation of an Environment Impact Assessment (EIA) Report in respect of the project or activity for which prior environmental clearance is sought and the Expert Appraisal Committee or State level Expert Appraisal Committee concerned shall determine the terms of reference on the basis of the information furnished in the prescribed application Form 1 or Form 1A including terms of reference proposed by the applicant, a site visit by a sub-group of Expert Appraisal Committee or State level Expert Appraisal Committee concerned only if considered necessary by the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned, terms of Reference suggested by the applicant if furnished and other information that may be available with the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned:

Provided that the following shall not require Scoping-

(i) all projects and activities listed as Category 'B' in item 8 of the Schedule (Construction or Township or Commercial Complexes or Housing);

(ii) all Highway expansion projects covered under entry (ii) of column (3) and column (4) under sub-item (f) of item 7 of the Schedule:

Provided further that-

A. the projects and activities referred to in clause (i) shall be apprised on the basis of Form I or Form IA and the conceptual plan;

B. The projects referred to in clause (ii) shall prepare EIA and EMP report on the basis of model TOR specified by Ministry of Environment and Forests;

(b) in the Schedule, against sub-item (f) of item 7, in column (3), for the entry (ii), the following entry shall be substituted, namely:-

"(ii) Expansion of National Highways greater than 100 km involving additional right of way or land acquisition greater than 40m on existing alignments and 60m on re-alignments or by-passes."

[F.No. 21-270/2008-IA.III]

Ajay Tyagi
Joint Secretary to the Government of India

Note: The principal rules were published in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section (ii) vide notification number S.O. 1533(E), dated the 14th September, 2006 and subsequently amended as follows:-

1. S.O. 1737 (E), dated the 11th October, 2007;
2. S.O. 3067 (E), dated the 1st December, 2009;
3. S.O. 695 (E), dated the 4th April, 2011;
4. S.O. 2896 (E), dated the 13th December, 2012; and
5. S.O.674(E), dated the 13th March, 2013