

## CHAPTER – 6

### ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

#### 6.1 Environmental Impacts Assessment

Identification of impacts is an important component in environmental impact assessment process. Several techniques and methodologies are in vogue for Identification of the impacts due to proposed widening of the road. The environmental impacts due to the proposed widening of the project can be classified as primary (direct) and secondary (indirect) impacts. Primary impacts are those which are induced directly by the project where as secondary impacts are those which are indirectly induced, which include changing patterns of social and economic activities due to the proposed road widening project. The assessment of the impact in respect of air, water, land and socio-economic components of environment have been made, based on available scientific knowledge and judgments.

The proposed widening of NH-69 will reduce the chances of accidents, greater travel speeds, reduced vehicular pollution and comfort for drivers/ users of the highway. However, it may have varied impact on the various environmental components like water quality and hydrology, air quality, noise levels, forests, public health and socio-economic structure of the surrounding area.

##### 6.1.1 Air Environment

Impact	Measures
Generation of Dust	<ul style="list-style-type: none"> <li>• Sprinkling of water               <ul style="list-style-type: none"> <li>• Earth handling, Asphalt mixing site, borrow areas, construction site</li> </ul> </li> <li>• Air Pollution control at stone crusher site               <ul style="list-style-type: none"> <li>• Masks for workers of stone crushing units</li> </ul> </li> <li>• Regulation of construction timings near sensitive receptors and settlements</li> <li>• Regular Air Quality Monitoring</li> </ul>

Impact	Measures
Gaseous Pollution	<ul style="list-style-type: none"> <li>Vehicles and machineries - regularly maintained to conform to the emission standards</li> <li>Asphalt mixing sites atleast 500 m away from residential quarters.</li> <li>Workers in asphalt mixing , application of asphalt mix will be provided with masks.</li> <li>Supervising officers will ensure that the worker use the masks</li> </ul>

### 6.1.2 Noise Environment

Impact	Measures
Noise	<ul style="list-style-type: none"> <li>Noise levels of machineries used shall conform to relevant standard</li> <li>Workers shall not be exposed to noise level more than 90 dBa (Leq) for 8 hours.</li> <li>Workers will be provided ear plugs</li> <li>Regulation of timings of construction work generating noise pollution near the sensitive and residential areas.</li> <li>Regular Noise Level Monitoring</li> </ul>

### 6.1.3 Water Environment

Impact	Mitigation Measures
Loss or impacts on waterbodies	Precautions need to be taken during the construction work of culverts and bridges across the rivers and canals such that the flow in these water bodies is not obstructed thus affecting the cross drainage. Further, attention to be paid so that no waste, debris is discharged into surface water body.
Siltation of water bodies	<ul style="list-style-type: none"> <li>Turfing or pitching of embankments where possible to prevent erosion.</li> <li>Slopes of embankments - modified and re-channelised so that contaminants may not enter the water body</li> <li>No solid waste will be dumped in or near the waterbodies or rivers</li> </ul>
Flooding due to siltation of drainages channel	Excavated earth and other construction materials shall be stored away to prevent washing away
Water for construction	Water sources would be selected such that local availability is not affected
Contamination from wastes	<ul style="list-style-type: none"> <li>Septic tanks and oil interceptors will be provided to prevent any uncontrolled effluent discharge from workers camps and storages.</li> <li>The camp site will be provided with proper drainage connected with local drain</li> </ul>

Impact	Mitigation Measures
Contamination from fuel	<ul style="list-style-type: none"> <li>Vehicle maintenance will be carried out in a confined area, away from water sources.</li> <li>It will be ensured that used oil or lubricants are not disposed to watercourses.</li> </ul>
Sanitation and Water use in Construction Camps	<ul style="list-style-type: none"> <li>Construction camp will be organized in a planned manner.</li> <li>Workers shall be provided proper sanitation facilities including toilets.</li> <li>Camps will have water supply facilities like tube wells</li> </ul>
Rain Water Harvesting	<ul style="list-style-type: none"> <li>Rain Water Recharge Pits at every 500 m of the project road will be provided.</li> </ul>

#### 6.1.4 Solid Waste Generation

Item	Management Strategy
<b>Top Soil 87700 m<sup>3</sup></b> To be utilized in median (Top layer of 150 mm thick) -- 27700 m <sup>3</sup> In slopes of embankment -- 60000 m <sup>3</sup> To be disposed off in low lying areas within ROW	Completely used in Green Belt Development
<b>Overburden – 245100 m<sup>3</sup></b> To be utilized in median (Below layers) -- 52,500 m <sup>3</sup> To be utilized for construction of Roads to quarries -- 1,00,000 m <sup>3</sup> In road embankment for additional 2 lanes -- 16,50,000 m <sup>3</sup>	Used for strengthening of slopes of embankments, construction of haul roads to quarries & median filling
<b>Construction debris 24000 m<sup>3</sup></b> Bituminous material removed from existing pavement -- 28000 m <sup>3</sup> <b>Total 52000 m<sup>3</sup></b>	Construction Debris – Mostly reused for filling of low lying areas and in road construction. Remaining dumped after requisite permission in designated disposal grounds
Domestic Solid Waste – 0.16 m <sup>3</sup> / day	Disposed in Municipal / Grampanchayat at Dumping grounds after requisite permission

#### 6.1.5 Land Environment

Impacts	Mitigation Measures
Loss of topsoil Total land requirement for Project (Available ROW land & land to be acquired) : 157.22 ha	<ul style="list-style-type: none"> <li>Removed and stockpiled on sides and used on the side slopes &amp; shoulder, for top cover of borrow areas and in green belt development.</li> <li>Turfing of road embankment slopes with herbs, shrubs and grasses</li> </ul>
Loss of topsoil from borrowing	<ul style="list-style-type: none"> <li>Arable lands will be avoided for earth borrowing. If needed, topsoil will be separated and refilled after excavation</li> </ul>

Impacts	Mitigation Measures
Borrowing of fill materials	<ul style="list-style-type: none"> <li>Excavation from pre-selected locations. After excavation the borrow pits will be dressed to match with the surrounding.</li> <li>Borrow pits - depth regulated. Slope of Sides of the excavation not steeper than 1 vertical to 4 horizontal from the edge of the final section of bank.</li> </ul>

### 6.1.6 Ecological

Impacts	Mitigation Measures
Loss of trees	<ul style="list-style-type: none"> <li>About 1950 trees likely to be felled</li> <li>Thrice the no. of tree cut will be planted i.e. More than 5850 trees will be planted as per the compensatory afforestation.</li> <li>Shrubs to be planted in median.</li> <li>Arjuna, Pipal, Nili gulmohar, Mango, Kachnar, Siris, Neem are the predominant tree species along the project corridor and same species will be planted</li> </ul>

### 6.1.7 Public Health / Occupational Safety

Impacts	Mitigation Measures
Safety to Public	Signs on road before construction areas
Restriction to Access	Safe and convenient passage for vehicles, pedestrians and live stocks to and from the side roads and property across the road.
Occupational safety for workers	Contractor will arrange all safety measures for workers as per factories Act
Occupational safety for Asphalt plant workers and crusher plant	<ul style="list-style-type: none"> <li>All worker employed on mixing asphaltic material, cement, lime mortars, concrete etc., will be provided with protective footwear and protective goggles.</li> <li>For crusher workers masks should be provided.</li> </ul>
Explosive use	Contractor shall obtain such permission as required from all Government Authorities, public bodies and private parties whatsoever concerned or affected or likely to be concerned or affected by blasting operations.

### 6.1.8 Cultural Properties / Roadside Amenities / Archeological Sites

Impacts	Mitigation Measures
Affected roadside amenities and cultural properties	<ul style="list-style-type: none"> <li>Affected religious structures will be relocated. Alternative sites will provided and appropriate enhancement will be done.</li> <li>All common property resources will be replaced before the start of construction. Relocation site identification will be in accordance to the choice of the community / concerned agency.</li> </ul>