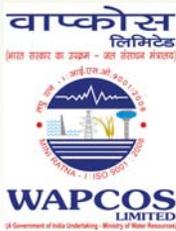
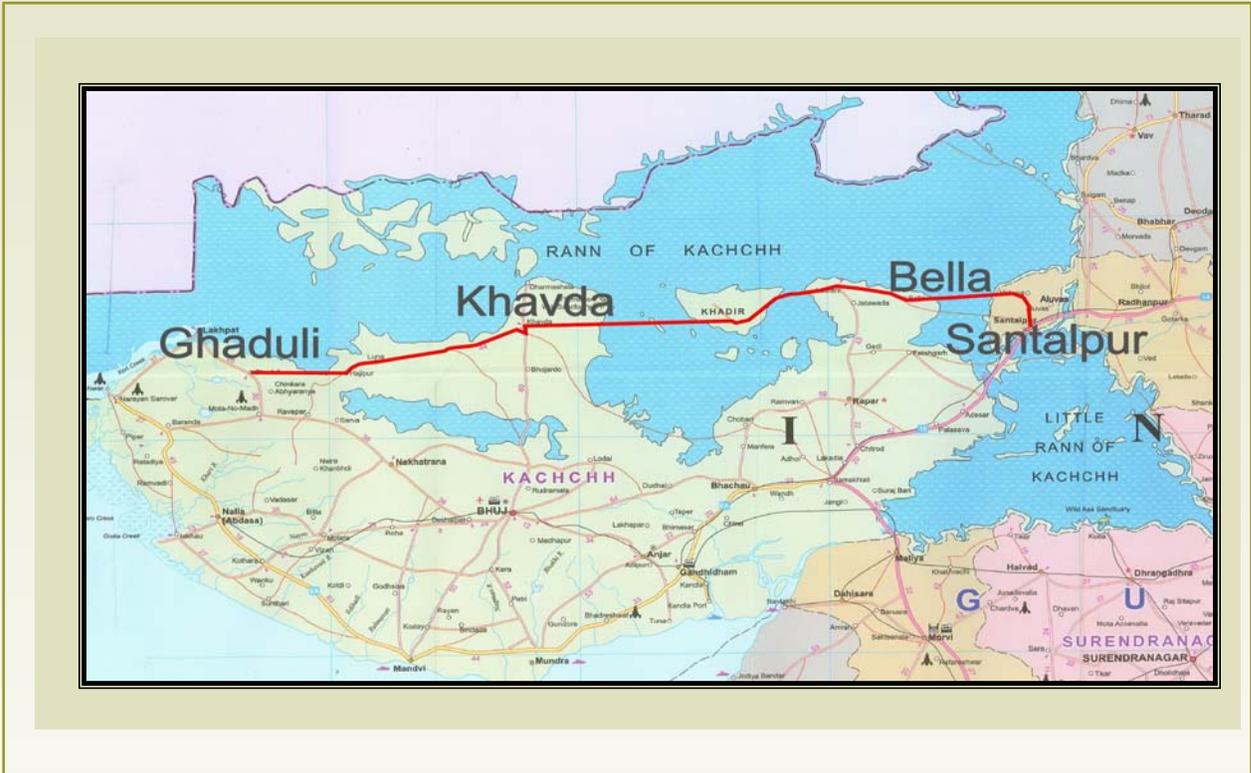




STATE ROAD & BUILDING DEPARTMENT OF GUJARAT

**ENVIRONMENTAL IMPACT ASSESSMENT FOR CONSTRUCTION / WIDENING/STRENGTHENING/UPGRADATION OF 255.013 KM LONG GHADULI-SANTALPUR ROAD THROUGH RANN OF KUTCH SH-52**



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# **EXECUTIVE SUMMARY**

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## EXECUTIVE SUMMARY

### ES.1 INTRODUCTION

The Government of Gujarat has taken up a massive programme of up-gradation and development of State Highways. As a part of this program, the Road and Building has been entrusted with the up-gradation of Gaduli -Santalpur section of Sh-52 of 2 lanes to 2 lanes with paved shoulders configuration in the State of Gujarat. The Consultancy services for preparation of Detailed Project Report for the above project was awarded to M/s Wapcos Ltd (the consultants) having their registered office at 701-704, 7<sup>th</sup> floor, sector-11, Gandhinagar ,Gujarat-382011.

Study of the proposed construction activities is carried out to establish the baseline environmental conditions of the project corridor and to analyze all the expected impacts, required avoidance and the possible cost effective mitigation measures. These mitigation measures need to be stream lined with the engineering design and social impact for effective implementation.

### ES.2 PROJECT DESCRIPTION

Road & Building Department of state government of Gujrat has take up to detailed project preparation for Rehabilitation and upgrading to 2 lanes/2 lane with paved shoulders configuration and strengthening of Gadhuli – Santalpur section from km 0 to km 255.013 of SH 52 in Runn of Kutch of the state of Gujarat. Paved shoulders of 1.5 m wide and earthen shoulder of 1.0 m width are in existence throughout the project Highway except at few stretches, where it has 4 lane divided carriage way facility. The existing Right of Way (ROW) is varying from 12.00 m to 55 m for entire length of the project road. Junctions Bypass and Service road does not for the entire project.

There are four minor bridges on project road. There are 17 minor bridges and 302 Pipe Drain culverts inclusive of 4 causeway, and 250 Box culverts. Location map of the project road is given in **Figure ES-1**.

### ES.3 ANALYSIS OF ALTERNATIVES

The analysis of alternatives has been made on the basis of “Long term Scenario with projects and Long term Scenario without project” in terms of potential environmental impacts.

To asses the overall project impacts a quantitative analysis is carried out. This shows that the project has generally significant, positive impacts. The project is recommended with the adoption of mitigation measures is crucial in order to avoid adverse negative impacts.



**Figure ES-1: Location Map Project Road**

#### **ES.4 DESCRIPTION OF EXISTING ENVIRONMENT**

The baseline environmental monitoring and discussions with the officials, NGOs and local public were conducted to establish the baseline environmental status of the study area and to assess the impacts of the proposed improvements to the project road. The baseline environmental monitoring was conducted from Jan2012 to Feb.2012.

##### **Soil Characteristics**

The soils of project area can be broadly classified into nine groups: black soil, mixed red and black soils, residual sandy soils, alluvial soils, saline, lateritic soils, hilly soils, desert soils and forest soils. Soil in the study area was found to be mostly silty sand with Clay. The pH of the soil ranged between 7.3 to 8.8 and hence was mostly saline in nature. Organic matter content was recorded low in study area and available Nitrogen, Phosphorus and potassium level were found following low, high and low. Over all the soil fertility in the project area was not productive.

##### **Meteorology**

Kutch falls in the arid tract and has a tropical monsoon climate. It experiences extremes of weather conditions with winter starting from mid November to end February with the temperature going down to the average minimum of 4.6° C in January. Summer extends from March to June with maximum temperature varying from 39-45° C. The estimated average annual rainfall is 326 mm and highly erratic leading to protracted droughts, which are

common phenomena. The evapo-transpiration rates are very high, with 2.25 m in a year. Wind velocity is generally light to moderate.

### **Hydrology**

The entire coast from Mandvi to Koteswar comprises miliolitic limestone and dunal sands with occasional tidal creeks, The Kori creek forming entrant to the Great Rann of Kutch is characterized by the mudflats and the alluvium. The aquifers are predominantly saline and the salinity tends to increase with the depth.

### **Water Quality**

For the water quality motoring, five surface and seven ground water samples were collected from different locations along the project road. These samples have been analysed for physico-chemical parameters as per established standard methods and procedures.

### **Ambient Air Quality**

To establish the baseline air quality scenario twelve representative ambient air quality monitoring locations were selected within the project road covering all land use categories as per the CPCB / BIS guidelines. Continuous 24 hours monitoring was done at a frequency of twice a week at more vales less uniform intervals during Jan.2012 to feb 2012. The observed values of PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>2</sub> and CO were good and within the prescribed limits of National Ambient Air Quality Standards for the Industrial and Commercial areas published by Ministry of Environment & Forest Notification 2009. There is no major air polluting sources in the project area.

### **Ambient Noise Level**

Total 12 representative locations as indicated mostly close to the project road covering industrial, commercial, and residential areas were selected for measuring the present status of ambient noise level. A sound level meter was used for monitoring of background noise level.

The ambient noise level monitoring results that daytime and nighttime equivalent sound level at all location was recorded with in prescribed permission limit.

### **Biological Environment**

Most of the trees present within the ROW are , Banyan- *Ficus indicus*, Indian Jujube- *Zizyphus mauritiana*, Khair- *Acacia catechu*, Satiana- *Alstnia scolaris*, Krishnasura - *Delonix regia*, Kikar, Babul- *Acacia nilotica*, Khejri- *Prosopis cineraria*, Neem- *Azadirachta indica*, Gorad -*Acacia senegal*. Thor- *Euphorbia neriifolia*. Total 5163 existing trees are required to be cut for the proposed project.

## **ES.5 ANALYSIS OF POTENTIAL ENVIRONMENTAL IMPACT AND MITIGATIONS**

Although this widening project will have many benefits but some negative impacts will be also created viz. the total land acquired is about 121 ha and felling of nearly 5163 trees (mainly, Babool, Kikar and Thor species and change the quality of air, water, and soil environment.

Overall, it is found that the proposed project road will result in some adverse impacts to the biophysical and socioeconomic environment of the project. It needs to be mitigated by adopting appropriate mitigation measures in the design, construction and operation phase. Net environmental impacts to the physical, biological and socioeconomic environment, will be insignificant and of short term in nature by observing proposed mitigation measures.

Environment Management Plan the various impacts and their mitigation measures, has been formulated to avoid/ minimise the anticipated impacts. The responsibility of implementing of suggested mitigation measures lies mainly with Contractor, Construction Supervision Consultant and PIU. During the construction and operation phases existing environment is change through many ways viz. soil erosion, loss of soil productivity, compaction of top soil, contamination of air, water & soil and destruction of biodiversity etc.

## **ES.6 ENVIRONMENTAL MONITORING PROGRAMMES**

An environmental monitoring plan is proposed as part of the EMP to evaluate the efficiency of implementation of mitigation measures recommended in the EMP and facilitate management decisions for the project. During the construction and the operation stages various water, air and soil parameters will be measured according prescribed method of CPCB/BIS. Air quality monitoring will be conducted one time in every season, three seasons (except monsoon) per year, and continuous 24 hours / or for 1 full working day. Water quality will be analysed two times in a year (pre monsoon and post monsoon seasons) during the entire construction period. Noise levels using an integrated noise level meter kept at a distance of 15 m from edge of the pavement will be taken ones every season for each construction.

## **ES.7 SAFETY MANAGEMENT AND ADDITIONAL STUDIES**

Describes the Policy, Legal and Administrative Framework reviews the existing institutional and legislative setup relevant to the project at the National and State levels, Risk assessment and disaster management plan and public consultants and R & R Plan.

## **ES.8 PROJECT BENEFITS**

The proposed road is very near to international border and it will be useful for operational and administrative requirement of Border Security Forces. As it passes through the desert area of great Rann of Kutch, the movement of vehicles will increase

traffic and journey will become speedy and also reduce expenditure in fuel and subsequently reduction in air pollution.

#### ES.9 ENVIRONMENTAL MANAGEMENT PLAN

Provide Cost effective environmental management plan to eliminate/ offset the identified environmental impact, so that development will become environmentally sound.

The Environmental Management Plan (EMP) consists of a set of mitigation, monitoring and institutional measures to be taken during the design, construction and operational phases of the project to eliminate adverse environmental impacts, to offset them, or to reduce them to acceptable levels. The main aim of the environmental management plan is to ensure that the various adverse impacts are mitigated and the positive impacts are enhanced.

#### ES.10 ENVIRONMENT BUDGET

The total environmental cost is nearly **2.33 Crore** including **afforestation** coast (**1.67 Crore**), mitigation coast (**22.75 lakh**), **environmental monitoring** coast approx (**24.39 lakh**) and training and mobilization cost (**10 lakh**).

#### ES.11 DISCLOSURES OF CONSULTANT ENGAGED

Description of the name & brief resume of the consultant engaged in the preparation of EIA report.

#### ES.12 CONCLUSIONS AND RECOMMENDATIONS

Benefits of the project will be the reduction in cost of travelling & transportation, reduction in travelling time, and better connectivity from Gaduli to Santalpur etc. The proposed widening of the road requires diversion of nearly 121 ha land. The project also envisages for compensatory afforestation and avenue plantation throughout the stretch with indigenous species which are suitable to the environment. The project requires cutting of about 5163 trees. Temporary impacts on air quality, water quality and noise levels are anticipated during the construction phase and an increase in the ambient noise level is anticipated during the operation phase of the project.

Proper mitigation measures are proposed in the EMP for mitigating the negative impacts. The environmental monitoring plan and reporting mechanism proposed as part of the EMP will ensure the proper implementation of the EMP. Thus the overall benefits of project outweigh the negative impacts of the project.

**Table ES-1: Inventory of Project Highway**

Sl. No	Description	Quantities
1	Total length of the alignment (kilometers)	255.013
2	Main Carriageway	3.75 m
3	Right of way	60 m generally
4	Side shoulders (unpaved)	1.0 m
5	Median in rural section	4.5 m inclusive two I-shaped

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		Kerbs
6	Median in urban section	Preferably 4.5 m otherwise min 1.5 m according to site condition & space availability
7	Number of bridges Major and Minor	4, 17
8	Length of Major Bridge	More than 60 m
9	Length of Minor Bridge	6 m to 60 m
10	H P Driain	302
11	Box Culverts	250
12	Total Land Acqutions (hectares)	121
13	Forest Land Acqutions (hectares)	79.474