

**EXECUTIVE SUMMARY**

**ENVIRONMENTAL IMPACTASSESSMENT REPORT**

**FOR**

**DEVELOPMENT OF MAJALI FISHING HORBOUR AT  
MAJALI VILLAGE, KARWAR TALUK, UTTARA KANNADA  
DISTRICT**



**Prepared for**  
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## SUMMARY & CONCLUSIONS

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### 1 INTRODUCTION

Karnataka's coastline called Karavali stretches 300 km between Mangalore in Dakshina Kannada district and Karwar in Uttara Kannada district. The coastline of Karnataka has been along the eastern shore of Arabian Sea. The Exclusive Economic Zone of Karnataka coast is estimated at 87,000 km<sup>2</sup> with a continental shelf area of 27,000 km<sup>2</sup>. The total fishermen population in the three coastal districts have been estimated as 2,33,624 of which 96,853 persons are actively engaged in fishing and fishery related activities. The marine fish production of Karnataka state during the year 2011-12 has been estimated at 3,40,570 tonne valued at Rs.1,335.64 Crores. Also, there has been an increase in the exports of Indian fish products.

### 2 PURPOSE AND JUSTIFICATION OF THE PROJECT

Marine fisheries constitute an important industry in Uttara Kannada district. It is an important economic activity and a source of livelihood to a large number of coastal people in the district. In order to improve the socio-economic status of the local fishermen "Development of harbour is a Must". Due the proposed harbour development at Majali, there will positive impacts on the socio - economic status of the surrounding areas, more employment opportunities will be generated, Physical infrastructure development such as improvement to roads, UGD lines, street lights, fishermen rest sheds, restaurant, boat repair shops, auction halls, fuel stations etc. will take place. There will be reduction of pollution burden on the seashore especially on the marine biota. Keeping the Environmental Management as the focal issue right from the harbour development area, Layout stage will definitely herald a new era in the sustainable harbour growth in harmony with the environment.

### 3 JUSTIFICATION OF THE PROJECT SITE

- Availability of wide range of fish species at the northern breakwaters.
- Site is very well connected by road which shall help in transportation of raw materials and finished products.

- The site has been acquired as non-agricultural land. Hence, conversion approval for nonagricultural purpose is not required.
- Local Manpower is available for construction as well as operation phase.
- All infrastructure facilities are easily available.
- Back up land area is available.
- Infrastructure facilities like ice plant, freezing plant etc. available in the close vicinity of the site.
- Ideal location from the point of view of nearness to residing fishermen community.

#### 4 DETAILS OF PRODUCT AND PROJECT LOCATION

The location of the proposed fishery harbour site at Majali corresponds to Latitude 14<sup>0</sup> 53' 46.4" N and Longitude 74<sup>0</sup>06' 49.7" E and is in Karwar taluk of Uttara Kannada District of Karnataka State.

**Table No. 1 Details of Products**

| Sl.No. | Product Name  | Quantity (TPA) |
|--------|---------------|----------------|
| 1      | Fish Handling | ≤10,000        |

#### 5 SALIENT FEATURES OF THE PROJECT SITE

| Sl.No. | Particulars/Parameters                                      | Name         | Aerial distance from the Project Site  |
|--------|---|--------------|--|
| 1      | Geographical Positions                                      | Project Site | Latitude 14 <sup>0</sup> 53' 46.4" N and Longitude 74 <sup>0</sup> 06' 49.7" E |
| 2      | Nearest village   | Majali       | 2km  |
| 3      | Nearest city  | Karwar       | 13km   |
| 4      | Nearest River   | Kalinadi     | 10   |
| 5      | Nearest Highway   | NH-17        | 2.5km  |
| 6      | Nearest Airport   | Panaji       | 98km   |
| 7      | Nearest Railway Station                                     | Karwar       | 13km   |
| 8      | Nearest National park, Reserve Forest, Wildlife Sanctuaries | ----         | Not present within 10 km radius  |

## 6 BASELINE ENVIRONMENTAL STATUS

The study was conducted for the period December 2015 to February 2016.

| Attributes                 | Sampling  |  |                                  |
|----------------------------|---|--|----------------------------------|
|                            | Locations   | Parameters   | Frequency                        |
| <b>Meteorological</b>      | Project location  | Temperature,<br>Relative Humidity,<br>Precipitation<br>Wind direction,<br>Wind Speed | December 2015 to February 2016   |
| <b>Ambient Air Quality</b> | 07 locations in the study area of 10km radius from the project location | PM <sub>2.5</sub> , PM <sub>10</sub> , SO <sub>2</sub> , NO <sub>x</sub> ,           | Twice a week during study period |
| <b>Noise</b>               | 07 locations in the study area of 10km radius from the project location | Noise Levels in dB(A)  | Once for a season                |
| <b>Ground Water</b>        | 9 locations in the study area of 10km radius from the project location  | Physical, Chemical, Microbiological and Heavy Metal                                  | Once for a season                |
| <b>Surface water</b>       | 6 locations in the study area of 10km radius from the project location  | Physical, Chemical, Microbiological and Heavy Metal                                  | Once for a season                |
| <b>Soil Quality</b>        | 11 locations in the study area of 10km radius from the project location | Physical, Chemical Characteristics, Soil Texture                                     | Once for a season                |
| <b>Ecological Data</b>     | Within 10km radius of study area  | Existing Flora & Fauna   | Once in Study Period             |
| <b>Socio-economic Data</b> | Within 10km radius of study area  | Socio-economic characteristics of the affected area                                  | Once in Study Period             |

### Baseline Environmental Status

**Ambient Air Environment:** The concentrations of PM<sub>10</sub> PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>x</sub>) were found within the acceptable limits given by National Ambient Air Quality Standards (NAAQ).

### **Noise Environment:**

The minimum noise level 50.4 dB (A) and the maximum noise level 52.7 dB (A) were observed in day time. The relative high values of noise recorded in Majali village.

### **Summary of Soil Quality**

The following are the highlights of soil quality in the study area:

- ❖ Results of pH were varying in narrow range for one location to other location from 6.4 to 7.6 during the study period .Overall the pH of all the soil samples were found almost neutral.
- ❖ Concentration of organic carbon was found in the range of 0.66 to 0.8 %. Very low value was observed in the samples.
- ❖ Average concentration of total Nitrogen was found in the range of 0.5%-0.89%. Minimum value was observed in the soil sample of Galjibagh.
- ❖ Phosphorous (as P) content was found in the range of 2.89 to 4.48 kg/ha. Minimum value was observed in the soil sample of Uyalvada.

### **Summary of Water Quality**

- ❖ pH range was observed between 6.75 – 7.54 for surface water whereas ground water samples shows pH between 6.78 to 8.02.
- ❖ Average Total dissolved solids were recorded in the range of 343 to 6350 mg/l. whereas surface was shows the values between 29100 to 56320 mg/lit
- ❖ Average Total Hardness was in the range of 105 - 1111.0mg/l with minimum at Daptamal & maximum at Anagandi village. Hardness of surface water shows between 1301.04 to 2301.8 mg/lit
- ❖ Results of Alkalinity or surface water found between 910 to 7200 mg/lit whereas ground water shows values of the same between 89 to 960 mg/lit
- ❖ All the heavy metals were found well within the range of prescribed standards. Any of toxic metals were not found in any village during analysis.

### **Ecology & Biodiversity**

Total 52 species of floral species recorded during the study period. Among the faunal diversity 6 species of mammals & reptiles, 26 species of avifauna 8 species of invertebrates recorded.

### Socio Economic Environment:

**Sex Ratio:** The sex ratio i.e. the number of females per 1000 males is in range of 795 – 1224 with lowest in Maigini and highest in Sawantwada.

**Literacy Rate:** Among all the villages of study area Hankonjoog is having high literacy rate i.e. 92.6 %. There is not much difference between female literacy rate and male literacy rate in the study region. Female literacy rate is an important indicator for social change

Kamargaon has significant employment i.e. 60 % as main workers, while the lowest employment as main workers is in Hankonjoog i.e. 3%. Almost all the villages have more than 50 % people as non-workers

### Land Use Land Cover Statistics

| Sl.No.             | Classes       | Area in Aq. Km | Area in %  |
|--------------------|---------------|----------------|------------|
| 1                  | Water body    | 138.05         | 43.94      |
| 2                  | Beach         | 5.58           | 1.78       |
| 3                  | Built-up Land | 46.46          | 14.79      |
| 4                  | Agriculture   | 10.95          | 3.49       |
| 5                  | Forest        | 73.69          | 23.46      |
| 6                  | Open Land     | 39.42          | 12.55      |
| <b>Grand Total</b> |               | <b>314.16</b>  | <b>100</b> |

## 7 SUMMARY OF IMPACTS AND MITIGATION MEASURES

| Anticipated Environmental Impacts   | Mitigation Measures   |
|---|---|
| <b>Air Environment</b>  |   |
| Potential source of the pollution will fugitive emission from the equipment's and gaseous Emission from Transport vehicles.<br>Temporary Impacts on air quality of area due to Emission from DG set operated as standby power source. | Proper facilities / infrastructure (like enclosed/closed conveyor, DG set with stack of adequate height & diameter etc.) shall be provided.<br>Greenbelt area shall be developed in and around the proposed site to minimize the generation of fugitive dust. |
| <b>Noise Environment</b>  |   |
| Operation of DG set for emergency power supply will also increase the noise level.  | Periodic monitoring of sound level at suggested places shall be carried out, Machines with low sound pitch shall be used and vehicles with noise level shall not be operated at night.  |

| <b>Anticipated Environmental Impacts</b>  | <b>Mitigation Measures</b>   |
|---|--|
|   | Transport vehicles shall be set in operation only at day time & shall be equipped with low noise engine& silencers.  |
| <b>Water Environment</b>  |  |
| Movement & cleaning of the ships in the marine area will cause spillage of the fuels or other such materials in the marine resources which may Contaminate marine water.  | Regular monitoring of water quality will be carried out at the site and in nearby surface bodies to keep track of adverse environmental changes.<br><br>The waste generated from the ships will also be Treated & disposed off as per authority rules.   |
| Runoff of untreated sewage & effluent & other operational activity may also pose significant adverse impacts on the surface water quality   | Wastewater generated will be treated in adequate size Effluent Treatment Plant & the treated wastewater will be reused for gardening Purpose, washing and flashing.<br><br>Adequate design and procedural mechanisms have been proposed to ensure that the terrestrial groundwater or surface water bodies are not impacted by the harbour operations. |
| <b>Land Environment</b>   |  |
| Land pollution may take place during the operation phase due to accidental spillage of the fuel on land.  | Operational area of concern for soil contamination by spillage/leakage of materials or fuel shall be lined to prevent entering of contaminating materials in the soil under the area.<br><br>The used oil & discarded drums / empty containers shall be sold to the approved recycler/scrap dealers. ETP Sludge shall be used as manure                |
| Land pollution may take place during the operation phase due to Hazardous waste   | Dumping of solid wastes on land shall be strictly prohibited. The entire Hazardous waste generated shall be disposed adhering to the Hazardous Waste Management Rules 1989 & 2003.<br><br>A designated solid/hazardous storage area designed as per guidelines of CPCB shall be provided with proper floor lining.                                     |
| <b>Marine Environment</b>   |  |
| During the operation phase adverse impact on marine ecology will be due to runoff of untreated domestic wastewater, water from washing & sprinkling etc.<br>The jetty operations would also produce solid waste such as garbage; debris etc. which if not properly disposed might influence the | Disposal of sewage shall not be made in to the nearby/ adjacent marine or other ecological habitat to prevent impacts on the ecological structure &marine habitat.<br><br>Any kind of solid wastes shall not be dumped in to the marine environment as well as on  |

| <b>Anticipated Environmental Impacts</b>   | <b>Mitigation Measures</b>   |
|--|--|
| near shore areas.<br>This includes waste and wastewater discharges, accidents and spillage containing oil, etc.  | land of premises /surrounding area.<br>Regular monitoring of the local area shall be done to inspect any residual impacts.   |
| <b>Ecology</b>   |  |
| Damage to the ecology of the muddy terrain as well as the aquatic resources due to Turbidity in the water resources and disturbance of the muddy terrain (mainly by ship movement) | Any activities causing impact on marine environment especially navigation channel area & surrounding coastal area shall be prohibited to ensure that the operation of the proposed project does not affects the marine & ecological environment of the area.   |
| <b>Socio-Economic Environment</b>  |  |
| Proponent shall give priority to appointment of local people to maximum extent during the employment process for proposed project.   | Emergency response plan and DMP shall also be placed to take care of adverse impact in case of any incident of accident. Such plans shall also be helpful to the local villagers/area during the incidence of Natural Disaster.<br><br>Safety training shall be provided to all the workers. The industry shall carry out welfare activities and provide basic amenities to employees and surrounding villagers. |

## 8 ADDITIONAL STUDIES

### Risk Assessment

A detailed Risk Assessment (RA) study was carried out for the proposed project. The following processes/units have been covered for the RA study of the proposed project:

- Harbour operation
- D. G. Set
- Material handling/transportation/storage
- Personnel safety measures
- Noise environment

### Disaster Management System

The project proponent will be developed an emergency management system to tackle the emergency situation. The roles of the following personnel are described to tackle any such emergency situations;

- Site Main Controllers



- Incident Controllers and Deputy Incident Controllers
- Key Personnel
- Essential Workers

The other important elements addressed as a part of Disaster Management Plan are:

- Assembly points
- Emergency control center
- Fire control arrangements
- Medical arrangements
- Other arrangements

## **9 GREEN BELT DEVELOPMENT PLAN**

The proponent has planned to develop green belt within premises all along factory periphery consisting of at least three rows of trees of local species. However, if the adequate land is not available within premises, unit shall tie up with local agencies like gram panchayat, school, social forestry office etc. for the plantation at suitable open land in nearby locality. Total 800 m<sup>2</sup> area shall be allocated for greenbelt. Further, avenue plantation will be undertaken along the road side of the plant. Extensive afforestation at plant area will be undertaken which not only act as lung will space in the area but will also improve aesthetics. Multi-layered plantation comprising of medium height trees (7 m to 10 m) and shrubs (5 m height) are proposed for the green belt. Moreover, in future creepers will be planted along the boundary wall to enhance its insulation capacity. The landscapes are colourfully developed by planting decorative plants & trees and the right plant species shall be selected in consultation with expert Horticulturist & forest department. The land shall be chosen timely with permission of relevant concerned authority for land utilization for forestry/greenbelt.

## **10 SOCIAL WELFARE AND UPLIFTMENT PLAN**

The proponent is actively involved in the improvement of society through its contribution in social welfare activities & programs. It directly organizes various programs for social welfare & upliftment or indirectly contributes in such activities conducted by other organizations by providing financial & other aid. Owing to the

approximate cost for demand of infrastructure and service support, the management of KFDC shall conduct a need based survey for identifying the required services in the surrounding area and allocate a specific budget to be implemented with an action plan of five years.

## 11 BUDGETARY PROVISION FOR EMS

Budgetary Provision for Environment Management Plan

| No.  | Particulars                               | Amount in<br>INR, Lakhs |
|--|---|-------------------------|
| <b>One Time Installation Cost (Capital Cost)</b> |   |                         |
| 1  | Air Pollution Control                     | 25                      |
| 2  | Noise Control System                      | 15                      |
| 3  | Green Belt Development                    | 15                      |
| 4  | Environment Monitoring and Management     | 30                      |
| 5  | Occupational Health & Safety              | 15                      |
|  | <b>Total</b>                              | <b>100</b>              |
| <b>Recurring Cost</b>                            |   |                         |
| 1  | Environmental Monitoring /APH Maintenance | 10                      |
| 2  | Greenbelt Maintenance                     | 7                       |
| 3  | Noise Pollution Control                   | 5                       |
| 4  | Occupational Health                       | 10                      |
| 5  | Environmental Management                  | 5                       |
| 6  | Corporate Social Responsibility           | 15                      |
|  | <b>Total</b>                              | <b>52</b>               |

## 12 CONCLUSION

The proposed project of fishery harbour envisages the activity of fish handling at Vill: Majali, Tal:Karwar, Dist. Uttara Kannada. The EIA study has been carried out with respect to the TORs awarded by SEAC, Karnataka. All the impacts likely to have an effect on the environment have been identified and efficient/adequate mitigation measures have been proposed for the same. Considering the probability of likely impacts, the proponent has planned adequate mitigation measures and EMP. Further, the proponent also undertakes CSR activities which shall have beneficial impacts on the socio-economic environment. Employment generation due to the proposed project is also

considered positive impact on the socio-economic environment. Measures like energy conservation and greenbelt development are also noteworthy. Looking to the overall project scenario, employment potential and allied development plans; it has been noticed that the proposed project would significantly help in the improvement of the society and our nation on a larger scale.

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