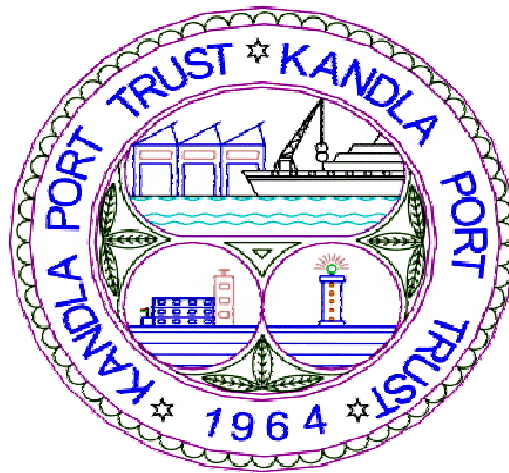


EXECUTIVE SUMMARY
OF
INTEGRATED ENVIRONMENT IMPACT ASSESSMENT REPORT
FOR
DEVELOPING INTEGRATED FACILITIES WITHIN THE EXISTING
KANDLA PORT AT KANDLA



KANDLA PORT TRUST

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EXECUTIVE SUMMARY

1.1 PROJECT DESCRIPTION

Kandla Port is situated at Latitude 23° 01' N and Longitude 70° 13' E on the shores of the Kandla Creek. It is in the district of Kutch and is located on the west bank of Kandla creek which runs into the Gulf of Kutch at a distance of 90 nautical miles from the Arabian Sea. The width of the channel varies from 200 meters to 1,000 meters. The contour depth along the shipping channel is around 10 meters. The total length of the Kandla Port approach Channel is around 23 kms.

Presently, Kandla Port handles dry cargo at its ten general cargo berths and through barges at Bunder Basin and Tuna. Both these facilities have a combined capacity of 46.28 Million Metric tonnes per annum, which includes dry handling capacity of 33.28 MMTPA and liquid cargo handling capacity of 13.0 MMTPA. Against this capacity, a total of 82.50 MMTPA was handled at Kandla Port resulting in berth occupancy exceeding 80% at general cargo berths in 2011-12.

In order to ease pressure on the existing berths and increase the capacity of dry & liquid cargo handling, Kandla Port Trust has proposed to develop new Barge Jetty at Tuna, new Barge Jetty at Khori Creek and new Oil Jetty at old Kandla and few other projects for strengthening and upgrading existing facilities at Kandla Port. Commissioning of the proposed Barge Jetty at Tuna shall augment the dry cargo handling capacity of Kandla Port by 5.49 MMTPA, commissioning of the proposed Barge Jetty at Khori Creek shall augment the dry cargo handling capacity of Kandla Port by 8.57 MMTPA and commissioning of the proposed new Oil Jetty at old Kandla shall augment the liquid cargo handling capacity of Kandla Port by 3.39 MMTPA.

1.1.1 Type of the Projects

- **Development of Barge Jetty at Tuna, Kandla Port**

Construction of Barge jetty at Tuna is proposed to ease pressure on the existing berths. KPT has taken various measures that include development of 13th to 16th dry cargo berths at Kandla Port and dry bulk cargo berth at Tekra and Upgradation of barge handling facility at Bunder Basin to handle Multipurpose Dry Cargo. It is anticipated that even after commissioning of the aforementioned facilities, the capacity shall be inadequate to handle the likely dry cargo traffic in future. In light of the same it is proposed to develop the facility at Tuna at Kandla Port to handle all kind of dry cargo (excluding container cargo). Commissioning of the proposed facility shall augment the dry cargo handling capacity of Kandla Port by 5.49 MMTPA.

- **Development of Oil Jetty to Handle Liquid Cargo at Old Kandla**

In order to ease pressure on the existing liquid cargo berths, KPT has taken a slew of measures that include development of Oil jetties at Old Kandla Port to handle liquid cargo along with ship bunkering facility in future. Commissioning of the



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proposed facility shall augment the liquid cargo handling capacity of Kandla Port by 3.39 Million MTs per annum.

- **Development of Barge Jetty at Khori Creek, Kandla Port**

A jetty of length 1000 m shall be constructed by the BOT operator along with installation of floating cranes at OTB, cargo handling equipment at jetty, development of back up area and provision of electrification, fire fighting and other civil and mechanical works at an estimated cost of Rs 261.76 Crore.

- **Upgradation of Barge handling capacity at Bunder Basin at Kandla**

The Bunder Basin is situated on North of Cargo Jetty area facing Kandla Creek (also connected by internal road to cargo jetty area). A basin of size 85 m x 152 m having a wharf length of 152 m on it south which was constructed in North of Cargo Jetty called Bunder Area. It is proposed to further upgrade the Bunder Basin area for barge handling on PPP basis. The jetty at Bunder Basin shall be used for unloading/loading of cargo from barges used to lighten/load the ships at Outer Tuna Buoy (OTB).

- **Providing Railway Line from NH 8A to Tuna Port**

Providing of BG Railway Line from NH 8A to Tuna Port. The same it is proposed to develop the facility at Tuna at Kandla Port to handle all kind of cargo. Hence this project should be seen as part of larger Kandla Port complex with interlinked operations.

- **Multipurpose Cargo Terminal at Tekra off Tuna**

The project is a development of multipurpose (other than Liquid/Container Cargo) cargo terminal to be developed through PPP model on BOT basis. The project envisages developing a T-shaped jetty at Tuna off Tekra. There is no interlinked or interdependent project.

- **Construction of Rail Over Bridge at NH 8A near Nakti Bridge (Crossing of NH 8A)**

Construction of ROB at NH 8A near Nakti Bridge (Crossing of NH 8A) is proposed facility to ease pressure to handle the existing and forecasted cargo transport movement from Kandla Port and Tuna Port and to reduce the traffic problems. Hence this project should be seen as part of larger Kandla Port complex with interlinked operations.

- **Mechanization of Dry cargo handling facility at Kandla Port (Berth 7 & 8)**

As a first step towards the financial viability of the Project, it is required to estimate the dry cargo traffic that is expected to be handled at the 7th and 8th Berth. For arriving at this estimate, it is necessary to look into the traffic handled by Berths at Kandla Port in the past.



- **Development of Ship Repair/ Building Facility at Kandla**

The proposed project is for development of ship repair / building facility at Kandla port. The project site shall be leased to the private developer on the land lease model for the purpose of setting up a ship repair / building facility for 30 years.

- **Container Terminal at Tuna Off-Tekra on BOT Basis**

The project is a development of container terminal to be developed through PPP model on BOT basis. The project envisages developing a container jetty along with allied facilities at Tuna off Tekra. There is no interlinked or interdependent project.

- **Strengthening of Oil Jetty 1 & 2**

The project is Strengthening of Oil Jetty No. 1 and 2 for handling of vessels up to 13 m draft. The project envisages, as suggested by IIT Madras, strengthening T-shaped Oil Jetties i.e. No. 1 and No. 2 by additional piles and also the dredging alongside the berths.

1.1.2 Water Requirement

Water will be received from high service reservoir near Bhachau and Narmada Canal through 18" pipeline of Gujarat Water supply and Sewerage Board. 11 KLD water will be used for construction purpose and about 8 KLD water will be consumed by labours.

1.1.3 Power Requirement

The port receives Bulk power supply from PGVCL through seven 11 KV sub stations. Besides, the port has two diesel generating sets to meet with emergency needs. A scheme is presently under implementation to augment the power supply to 66 KV and to provide necessary infrastructure for receiving Bulk supply, stepping down and distribution.

Uninterrupted good quality estimated power requirement of 900MW is expected to be supplied in the SEZ area by the Gujarat Government. However, master plan caters for setting up a dedicated power back up from an independent power producer (IPP) at a later stage, if required.

1.1.4 Regulatory framework and need of the EIA

The proposed project will attract CRZ Notification on Coastal Regulation Zone (CRZ) 2011 provides for declaring the Coastal Stretches as Coastal Regulation Zone (CRZ) and regulating activities i.e. imposing restrictions on industries, operations and processes in the CRZ.

CRZ is defined as all coastal stretches of seas, bays, estuaries, creeks, rivers and back waters which are influenced by tidal action (in the land ward side) up to 500 m from the High Tide Line (HTL) and the land between the High Tide Level and Low Tide Line (LTL). The HTL means the line on the land up to, which the highest water



line reaches during spring tide (the HTL shall be demarcated uniformly in all parts of the country by the Ministry of Environment and Forest, New Delhi recognized authorities).

The notification provides for construction of ports, harbour, jetties, wharves, quays, and spillways, under the following regulations:

- Clearance is required for any activity, within the Coastal Regulation Zone only if it requires water front and foreshore facilities.
- The clearance is required from the Ministry of Environment and Forests, GOI for construction of ports and harbors and light houses and for construction activities such as jetties, wharves, quays and spillways.

The area of study covers a radius of 10 km, around the proposed sites at Kandla.

1.2 DESCRIPTION OF ENVIRONMENT

The baseline data for one year have been collected from the project sites as per the Terms of Reference approved by Ministry of Environment and Forests, Gol.

The summary of the results are as follows:

1.2.1 Air Environment

The parameters monitored during the monitoring period are PM₁₀, PM_{2.5}, SO₂, NO_x and CO. The ambient air sampling was performed continuously for 24 hours to determine 24- hour average concentration. All the monitored parameters were found well within the limits of National Ambient Air Quality Standards 2009 except PM 2.5.

1.2.2 Noise Environment

The noise data compiled as per the monitoring performed in the month of October, 2012. The results are as follows:

Residential Area: In residential area, KPT colony noise level is 49.7 dB(A) during day time and 41.2 dB(A) recorded during night time. During daytime and nighttime noise level within the residential area are well within the prescribed limit.

Commercial Area: The noise level are ranging between 52.6 dB(A) at Passenger Jetty one to 58.2 dB(A) at Railway crossing & Kandla SEZ during the daytime and 45.1 dB(A) at Tuna port to 50.7 dB(A) to IFFCO plant during night time recorded. In commercial area noise level is less than the prescribed limit.

1.2.3 Water Environment

Water samples were taken from creeks nearby Kandla Port and one sample was collected from Gujarat water supply. Results of the marine water quality of the



study area are good and suitable for aquatic biota. The water samples taken from Gujarat Water supply show the physico-chemical characteristics of water samples, including heavy metal content are good, conforming to drinking water quality standards, prescribed in IS:10500 (Test Characteristics for Drinking Water).

1.2.4 Land Environment

Physical Properties

Monitoring data shows that the texture of soil at all locations is Sandy Loam. The monitoring sites have sand ranging from 66% to 76% in soil samples. Silt content varies from 14% to 20%, while Clay content varies from 8% to 12% in the soil samples.

Chemical Properties

- The data shows that value of pH ranges from 7.12 at Kandla Creek to 8.97 at oil Jetty indicating that all soil samples are neutral.
- Jetty 15 area shows maximum conductivity of 7310 $\mu\text{mhos/cm}$, while Oil Jetty shows minimum conductivity of 1428 $\mu\text{mhos/cm}$.
- Values of CEC ranges from 1.59 meq/100g as lowest at Oil Jetty and 31.8 meq/100g as maximum at Jetty 15.
- The average concentration of Nitrogen, Phosphorus and Potassium in the soil samples varies from 0.76 to 14.40 mg/100gm, 46.2 to 172.0 mg/100gm and 2.0 to 40.0 mg/100gm.

1.2.5 Biological Environment

Biological environment of any area constitute all living beings of that area, it is an integral part of the environment. Hence, any change in the surrounding environment could cause loss of species or decrease in biodiversity of the area. Therefore, the present study is proposed to assess the impact of the proposed projects on biological environment of the project site and surrounding area within 10km radius. Accordingly, mitigation measures are evolved to sustain the biological diversity. In general biological environment is represented by flora and fauna. Flora constitutes the herbs, shrubs and trees and fauna constitutes the mammals, birds, reptiles, arthropods, amphibians, fishes etc.

The observations made in the flora of the study area reveal that the diversity and affinities of the flora of the region has approximately 71 taxa of flowering plants belonging to 28 families. According to the growth habit these species are distributed as: 12 tree species (17%), 10 shrub species (14%), 47 herb species (66%), and 02 mangroves species (3%). The marine vegetation is highly varied, which includes sand dune vegetation, mangroves, sea grasses, macrophytes and phytoplankton. The dominant species of sand dune flora are *Euphorbia caudicifolia*, *E. nerifolia*, *Aloevera* sp, *Ephedra foliata*, *Urochodra setulosa*, *Sporobolus maderaspatenus*, *Eragrostis unioides*, *Calotropis procera*, *Fimbristylis* sp, *Indigofera* sp and *Ipomoea pescaprae*. The common sea grasses

found growing on the mud flats are *Halophila ovata* and *H.beccarii*. The information was also collected from secondary sources for authentication of the data from Deputy Conservator of Forests, Bhuj and Zoological Survey of India, Jodhpur.

Eleven species of mammals were recorded in the study area of KPT. Through direct sighting 4 species were recorded, 07 species were recorded as per indirect evidence and through secondary sources from Forest and Wildlife Department and local villagers. All the species of mammals have been listed in various schedules of the Indian Wildlife (Protection) Act 1972 but 'commonly' occur in the region. Six species of reptiles were reported from the area. Out of these two were of under the lizard category and rests 04 were snakes. Two species of amphibians were also recorded. From the study of marine aquatic environment eleven species of mollusca, seven species of shrimps (Prawn) Arthropodes and seven species of annelids were recorded.

The project influenced area consists of sparse and patchy vegetation which is general in occurrence. No herb, shrub and tree species is falling in the list of Rare/threatened/endangered of Red Data Book of Indian Plants and IUCN. No rare or threatened species of fauna are falling in the project influenced area

1.3 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MESURES

Prediction of impacts is the most important component of an EIA study. Many scientific techniques and methodologies are available to predict impacts on physico-ecological and socio-economic environment. The prediction of the impacts helps to identify the gaps and implement Environmental Management Plan during and after the execution of the developmental activity to minimize the deterioration of environmental quality. The task of determination & assessment of Impacts of proposed project has been carried out based on the study of project activities, baseline environment status of area, ecological status and legal frameworks. The impacts of the proposed project have been studied for construction & operation phases.

Air Environment: During Construction phase, Gaseous emissions from DG sets and transportation vehicles are expected to cause deterioration in the Ambient Air Quality. Also digging operations will involve stock piling of the soil that may become source of fugitive dust emission especially during dry weather. Though the gaseous emissions are not expected to contribute significantly to the ambient air quality.

Noise: The major Impact on noise level of the proposed project, during the construction phase, is envisaged due to the noise generation by the operation of the machineries, equipments and some mechanical works.

Water: The major impacts on marine water quality are envisaged due to the civil works activities like driving of piles, construction of berth, approach way, movement



of construction equipments etc. During these works the turbidity level may increase in the local body which may lead to the considerable impacts on marine resources. The runoff from the site containing construction materials, debris, and construction waste and excavated earthen materials may have adverse impacts on the water environment especially on nearby marine water habitat, which in turn can increase turbidity in and consequently affects the rate of the photosynthetic activity of the aquatic life. Other sources of potential impacts arise from uncontrolled run-off from the labour camps and accidental spill of oil etc. in to surface water bodies.

Land: The construction activities like excavation for foundation, earth-filling, clearing, stripping, levelling the sites and vehicular movements will entail changes in the landscape, which are expected to be of short duration and not much significant. The excavated earth material if stacked loosely may result into runoff to the mud flats resulting in loss of topsoil.

1.4 ENVIRONMENTAL MONITORING PROGRAMME

For the effective and consistent functioning of the project, proper environmental monitoring programme shall be carried at Kandla Port Trust.

The programme shall include the following:

- Environmental Monitoring
- Personnel Training
- Regular Environmental audits and Correction measures
- Documentation–standards operation procedures Environmental Management Plan and other records

1.5 ADDITIONAL STUDIES

Oil Spill

An oil spill is the release of a liquid petroleum hydrocarbon into the environment, especially marine areas, due to human activity, and is a form of pollution. The term is usually applied to marine oil spills, where oil is released into the ocean or coastal waters, but spills may also occur on land. Oil spills may be due to releases of crude oil from tankers, offshore platforms, drilling rigs and wells, as well as spills of refined petroleum products (such as gasoline, diesel) and their by-products, heavier fuels used by large ships such as bunker fuel, or the spill of any oily refuse or waste oil.

Risk Assessment and Disaster Management Plan

Risk analysis follows an extensive hazard analysis. It involves the identification and assessment of risks that neighboring populations are exposed to as a result of hazards present. This requires a thorough knowledge of failure probability, credible



accident scenario, vulnerability of population etc. Much of this information is difficult to get or generate. Consequently, the risk analysis is often confined to maximum credible accident studies. The Disaster Management Plan (DMP) is based upon identification of various hazards, probable risks in operation and construction of Kandla Port activities have been assessed to maximum credible accident analysis, consequence analysis which gives a broad identification of risks involved in the plant.

1.6 PROJECT BENEFITS

The proposed project has numerous benefits for the State of Gujarat which are listed below:

- This proposal would mean development of this area on lines with progressive policy of Govt. of Gujarat.
- The proponent has planned to recruit numbers of skilled, semi-skilled and unskilled manpower during the construction phase and indirect employment through contracts for civil construction, Mechanical erection, electrification, piping works and associated amenities. The indirect employment potential of the projects would be significantly beneficial for the area.
- The proposed project is expected to employ about 100 people per day of various skills which would mean income to about 100 people.
- This proposal would generate funds for the Govt. of Gujarat in terms of lease rent or the like, and lead to productive use of vast space which is presently lying idle.
- The proposal while generating income for people and Govt. of Gujarat does not create any nuisance or disturbance to existing port activity or local people conducting work / business in adjoining areas.
- Additional activities which would be supportive in nature to the port project shall also be developed in the nearby areas which will generate indirect employment opportunities.

General infrastructure of the area would be enhancing resulting in the social upliftment of the local inhabitants.

1.7 CORPORATE SOCIAL RESPONSIBILITY (CSR) OF KANDLA PORT TRUST (KPT)

The main objective behind the CSR plan of Kandla port trust:

- To stimulate infrastructure growth of the state, especially, developing the area into an economically bustling zone.



- To develop the port area and surrounding areas with top-class residential, water & power supply facilities.
- To enrich people's life in the area/periphery in every possible way.

Accordingly following projects for up-grading/creating certain facilities for people of Gandhidham and Vadinar have been identified under CSR for upcoming three years with the total expenditure of Rs 1182 lakhs (Budget provision to be kept by year accordingly):

- a) Road from Dr. Baba Saheb Ambedkar Circle to N.H. 8-A (Via Ganesh Nagar).
- b) Road from S.T. Bus Stand (N.H. 8-A) to Sunderpuri Cross Road via Collector Road.
- c) Road from N.H. 8 –A Railway Crossing to Maninagar (Along Rly Track).
- d) Road from Khanna Market Road (Collector Road) to Green Palace Hotel.
- e) Construction of Internal Roads at “Shri Ram” Harijan Co-op. Housing Society Ltd. (Nr. Kidana).
- f) Providing Under Ground Drainage line in Shree “Shri Ram” Harijan Co-op. Housing Society Ltd. (Nr.Kidana).
- g) Construction of Cremation Ground and kabrastan with other facilities at Vadinar.
- h) Providing Cement Concrete internal roads in village Vadinar Stage –I.
- i) Payment of Education Fees of Children of Gandhidham Taluka will be made as per actual, if they get admission in Medical & Engineering College on merit & are Below Poverty Line.
- j) Construction of Girls Hostel in Gandhidham which will be maintained and managed by a renowned N.G.O.

In addition to above, KPT is ready to take the projects against the requirement of Social Responsive organisations under CSR schemes for further future years also.

1.8 ENVIRONMENT MANAGEMENT PLAN

An Environmental Management Plan (EMP) can be defined as “*an environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning of a project are prevented; and that the positive benefits of the projects are enhanced*”. EMPs are therefore important tools for ensuring that the management actions arising from Environmental Impact Assessment (EIA) processes are clearly defined and implemented through all phases of the project life-cycle. This plan also helps an organization map its progress toward achieving continual improvements. Each organization is unique and, as a result, so is Environmental Management Plans. The level of detail and length of an EMP varies depending on the type of organization, the complexity of its processes and the maturity of the organization in understanding its environmental responsibilities. Some plans may end up being only a few pages long, while others could become extensive documents.

The Environmental Management Plan (EMP) for the integrated facilities within Kandla Port area includes the following:

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- Air emissions management
- Control of Noise
- Wastewater management
- Waste management
- Dredged materials management
- Hazardous materials and oil management
- Biodiversity Management
- Greenbelt Development
- Mangrove Plantation
- Energy Conservation Measures
- Environment Management Cell

