

EXECUTIVE SUMMARY OF
Comprehensive EIA Report for Environmental and CRZ clearance for the Proposed RO RO
Jetty a/w Fabrication shops & open yard at Luvara, Dahej, Bharuch, Gujarat



M/s ISGEC Heavy Engineering Ltd

Plot no Z/89 .Special Economic Zone Dahej -II,
Bharuch District
Gujarat



PREPARED BY

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VALIDATED AND SUBMITTED THROUGH



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INTRODUCTION:

M/s ISGEC HEAVY ENGINEERING LTD. as one of the leading Heavy Engineering Industries having rich experience of over 75 years is engaged in designing, manufacturing and supply of Reactors, High Pressure Shell, Tube Heat Exchangers, and High Pressure Columns etc.

Company established its first unit in 1946 at Yamuna Nagar, Haryana and has expanded the fabrication capacities of Pressure Vessel Division by adding additional manufacturing facilities at Dahej, GIDC industrial Estate, Gujarat in April 2008. As an expansion process has already set up a fabrication shop and yard at the allocated plot no Z/89 in Dahej Special economic zone (SEZ) –II.

This fabrication shops and yard in Dahej SEZ-II has been established in land area of 2,25,138 m². To utilize the opportunity of the available water frontage of this location, company has approached Dahej SEZ-II for obtaining the immediate frontage of this plot through their plot no. Z -94 on lease to set up RO-RO ramp.

M/s ISGEC has also approached Gujarat Maritime Board (GMB) for permission for utilizing the water frontage for construction of a RO-RO jetty as load out point to transport the fabricated structures through sea route.

All large sized equipment manufactured by M/s ISGEC cannot be transported to its destination through road transportation alone because of huge dimension of the fabricated parts and hassles created due to obstructions along the route. The transportation of fabricated cargo through other jetties and ports will attract heavy levies & expenditure.

Project at Glance

Project proponent	M/s ISGEC HEAVY ENGINEERING LTD
Formerly Known as	The Saraswati Industrial Syndicate Limited
Type of project	Fabrications shops, open yard and associate RO-RO jetty
Water frontage	300 meter
Category of Project	Category B with < 5 million TPA of cargo handling capacity
S. No. in the schedule as per EIA notification, 2006	7 (E) Jetty and Harbour
Total area allocated in Dahej SEZ-II	2,25,138 m ² (22.5138 ha)

Fabrication yard Location	Established in plot no Z/89. Special Economic Zone Dahej -II
RO-RO ramp Location	Will be established in Z/94 (on lease from Special Economic Zone Dahej –II) in demarcated non processing zone meant for port development by SEZ.
Village	Luvara
Taluka	Vagra
District	Bharuch
State	Gujarat
Latitude	N 21°40'01.0"
Longitude	E 72°33'24.9"
Base Point of RO -RO Jetty (High tide line)	
Latitude	N 21°39'36.5"
Longitude	E 72°33'27.3"
Nearest Habitation	
Nearest village (habitation)	Luvara (appx.1.05km)
Nearest Taluka head quarter	Vagra
Other villages in the area	Lakhigam (2.80 km) , Jageshwar (2.0km), Ambheta (4.3km)
Road Network	
Road to the project site	Approach road to project site is available, Proposed RO-RO ramp will be connected to this road
Distance from State highway	Bharuch- Dahej High way is located approximately 5 km from the project site
Other Port Infrastructure in the Area	
Nearest Port	Dahej
Other terminals	Reliance terminal located adjacent to the proposed RO-RO jetty
Navigational channel	The navigational channel of the existing reliance terminal is located nearby which is providing

	approximately 5 meter draft
Railway Infrastructure	
Nearest Railway stations	Bharuch approximately 60 km
Protected Area	
Distance to nearest Protected area	No protected area within 10 km radius
Mangrove	No mangroves near the project site
Cargo Handling	
The anticipated Cargo traffic from the proposed jetty	The fabricated structures like Reactors, High pressure shell and tube heat exchangers. High pressure columns and vessels for various applications in Oil and Gas sector, Refineries, Fertilizer and Petrochemical plants.
Maximum dimension of Cargo	The dimension of the cargo entirely depending upon the order and the size provided by the client.
	The anticipated weight of cargo varies from 100 T - 2500 T The maximum anticipated length of up to 100 meter
	The diameter of cargo can be 4 meter and above
	Information from the operators of the barges indicated that shipments up to a maximum of 2500 DWT are anticipated.
	Barges would be expected to have the following approximate characteristics:
	DWT - 2,500
The size of vessels anticipated for cargo handling (Self propelled barges)	Length- 80 m Beam - 12.00 m Max draft- 4.5 m Free Board 1.0 m

Status of SEZ Dahej II

Dahej SEZ is a notified area under SEZ act 2005. Government of India has issued a notification dated 20/12/2006 declaring an area of 1718 hectors to develop as SEZ. Dahej ZEZ has already obtained Environmental Clearance from MoEF Government of India vide letter no 21/1084/2007/IA/III

dated 17/03/2012.

The other installations closure to the Project site

The villages in the close vicinity of the project site are Luvara village (1.05 km) and Jageshwar village (2.0km). The nearest industrial plant is the Petrochemical unit of M/s Reliance Industries and Shipyard of M/s ABG Shipyard LTD

PROJECT DESCRIPTION:

The proposed project is envisaged to set up a Roll on and Roll off (Ro-Ro) jetty as load out point to transport the fabricated structures through sea route instead of road transportation associated with the existing fabrication shop open yard.

Fabrication Unit

Fabrication unit will be equipped with facilities to fabricate, Pressure Vessels, Columns , Towers, Reactors, Heat Exchangers, Boilers, Hydraulic & Mechanical Presses, Condensers, Evaporators & other fabricated goods at the allocated area in the plot no Z/89 in Dahej SEZ -II.

Proposed Water front Facility: Roll-on/ Roll-off (RO-RO) jetty

RO-RO Jetty is meant for the vessels designed to carry cargo in wheeled vehicles such as trucks and trailers that are driven on and off the vessel on their own wheels. Barges with Ramp are the preferred mode of transporting tracked or wheeled combat equipment to an operational area. The method of discharging shall be by using multi-wheeled trailers that shall transfer onto a barge using Ro-Ro ramp.

RO-RO jetty

For the construction of RO-RO jetty, two options for the construction of RO-RO ramp have been considered. In the first option the RO-RO ramp and berthing structure will be with dimension of 30.5m length and 20m width, which will be constructed by using two layers of MS containers filled with mass concrete/ stones/ concrete blocks. In the second option, Ramp will be constructed on RCC piles. The final layout shall be selected on the basis of modeling studies to evaluate the shore line changes due to the proposed activity.

Dredging

Dredging near the berthing area and channel connecting to the main channel may be required for providing the safe passage of barges. Dredging will enable the site to meet the needs of the loading cargo and provide opportunity for the potential and safe berthing of barge and other operations

Raw Material Required Along With Estimated Quantity, Sources and Mode of Transport

The main raw material required for fabrication activity is steel plates of varying thickness, which will be transported to the site through trailers from steel plants to fabrication yard.

Water and Power Requirements

M/s ISGEC will be arranging 50KL/day of water from the GIDC/Dahej industries association for its fabrication shop, no additional quantity is required for the activities at RO-RO jetty as the work force will be the same. Out of this 20KL/day will be used for industrial purposes like hydro testing and washing of the equipment's and 30KL/day for domestic use and canteen etc.

Power:

The electrical power requirement is estimated as 650 KVA in the first phase of the fabrication shop and open yard which will increase to 1300KVA in the second phase. The same will be sufficient enough to meet the power requirement for the activities in the RORO jetty also. Adequate power backup shall be provided via DG sets. One Diesel driven D.G Sets of 500 KVA has been considered as standby arrangement in First Phase and another 500 KVA will be procured in the second phase, based on the requirement and also by considering the frequency of power failure in this locality

Quantity of Waste Generated and Its Mode of Treatment and Disposal

The major waste generated will be the steel scrap which shall be disposed through approved recyclers, the quantity generated will be depend on the order on hand and the quantum of fabrication works.

Paint is the only hazardous material that will be stored in the project site. The anticipated paint consumption is about 1500 Litres per month. The empty paint cans generated will be around 100 per month

The waste water generated during occasional floor washing and hydro testing will be collected in Guard pond and will be subjected to primary treatment with, oil and grease traps, primary settling tank, and sludge drying bed and will be partly recycled for hydro testing and the remaining will be

reused for gardening and Toilet Flushing in the Toilet Blocks. The primary treated water will be also used as fire fighting source as and when required.

The waste water generated from washing area will be collected separately and reused for lawn developing in the premises.

The domestic sewage generated from Toilet blocks will be disposed off in septic tank soak pit arrangement.

Project Cost

Total project cost for fabricated yards will be Rs. 89,52, crores, Total project cost for proposed RORO Jetty if using the first option will be Rs. 17,41, Crores, if opting for the second option on piles the project cost will increase to Rs. 23.85 Crores.

Baseline Environment

Primary baseline data was collected in the project area as well as the area falling within 10 km from the proposed project boundary; Secondary data and data on Environmental Sensitivity Areas were collected within 10 km aerial distance from the project boundary.

Mapping, land use and land cover was carried out for proposed site along the coast by using remote sensing satellite data. IRS P6- LISS III satellite imagery for preparing the existing land-use pattern of the study area (10 km radius from the proposed site).

The land use/ land cover map of the study area (10km radius) shows that major portion is under Gulf of Khambath which is about 41% whereas 22% area belongs to estuary. Next major land use is mudflat (9.2 %) followed by industrial area about 8%.

The soil of the agriculture fields from surrounding two villages were collected for the analysis of different parameters. The soil survey has been carried out, to record crop limiting factors like water holding capacity, pH, conductivity, chloride content, and soil fertility status with respect to nitrate and phosphate content. In the soil salinity affect is negligible except for sensitive crops. Not much agriculture activity is prevailing in the study area, except at few scattered agriculture fields.

Water Quality

pH of the water column of the Narmada estuary varies from 7.10 – 7.50. The chloride level in the water column of the Narmada estuary near the project site is indicating the dominant presence of seawater near the project site irrespective of tidal conditions as the project site is located almost at the mouth of the estuary where Narmada joins with Gulf of Khambath. The recorded level of

dissolved oxygen in the Narmada estuary is varying from 6.0 mg/l – 6.5 mg/L. The BOD level was varying from 0.30 mg/L- 7.20 mg/L during the study period. The Nitrate level was slightly high and was varying from 0.09 mg/l to 0.180 mg/L. The phosphate level was varying from 0.070 mg/L to 0.200 mg/L. From this, it can be concluded that there is no shortage of supply of nitrogen, phosphorous in this part of Narmada estuary.

Narmada Estuary, near the project site during the sampling period was very turbid during the high tide period and the low tide due the high tidal flux experienced in this region. During the onset of high tide in the Gulf of Khambath, turbulence created due to the incoming tidal flux brought the sediments in suspension; same is the condition during low tide period, when the outgoing tidal currents carry lot of sediments along with it. TDS level of Narmada estuary near the project site was also indicating the sea water predominance during low tide and high tide period.

Estuarine Biodiversity

Phytoplankton community from the Narmada estuary near the project site was represented by 12 genera during winter season, 9 genera during summer and post monsoon season. Phylum, Chrysophyta and sub phylum Bacillariophyceae was most dominant genera among the phytoplankton communities during all the seasons.

The zooplankton community was dominated by Rotifers; Brachionous sp., and Crustaceans, belonging to order Copepoda, Sub order: Calanoida. Nauplis larvae were the dominant form of net plankton during all the seasons. The zooplankton genera in the Narmada estuary near the project site was represented by 8 genera almost common during the winter, summer, and post monsoon collection without showing any seasonal variations

Fisheries in the Study Area

The Narmada estuary is few remaining estuaries in India where, Indian Shad, (Hilsa (Tenulosa) ilisha), an anadromous fish belonging to the family Clupeidae, occurring in the Indo-West Pacific region, come during monsoon season for breeding.

Mammals observed in the sea in the immediate vicinity of the Project site

No mammals were observed near the project site during the sampling period. The mammals commonly observed in Gulf of Khambath are Common Dolphins. Except the sighting of few dolphins on 12th - 14th NOV 2009, immediately after the disturbance caused by the cyclone Fyan in the Arabian sea, the Dolphins are not reported from the study area in Narmada estuary.

Ground water Quality

Ground water samples were collected from, one open wells each from Ambetta village, Luvara village, and Lakhigam village. Most of these wells are situated closure to the village ponds, either on the boundary of the pond or in the pond itself for getting the recharge from the rain fed ponds. Fluoride was absent in all the sampled wells. Nitrate, Sulphate, Iron was below the permissible limit. None of these wells are used for drinking purpose except house hold activities like washing cloth and utensils. The industrial establishments in the locality are providing drinking water to the villagers in the study area.

Surface water Quality:

The surface water quality of sampled inland water bodies, mainly the village ponds, meant for rain water harvesting and recharging of the well located at its periphery are of good quality.

Micrometeorology:

Micro meteorology data of the region, is based on the monitoring data collected from automatic weather at Ambetta Village on the roof top of Krishnanand Ashram for a period of Three season i.e. Winter (January-February 2012), Summer (March - May,2012), Post Monsoon (October-November 2012)

Rainfall

As per the available rainfall data, the rain fall in Vagara Taluka, during 2010 this region experienced maximum rainfall (1017 mm), while 2012 recorded lowest rain fall off the region, 583mm only.

Wind speed and Wind direction

The predominant wind directions in the project site were, showing seasonal variations.. During January – February 2012 the predominant wind direction was in NW-SE and NE-SW ,while in March 2012 the predominant wind direction was in NW-SE. In April and May 2012 the wind direction was mainly in S-N -NW-SE, , in October 2012 the recorded predominant wind direction in automatic weather monitoring station was NE-SW and NW-SE, while in November 2012 the predominant wind direction was in N-S and NE-SW direction. The recorded wind speed was varying from 0-29.2 km/hr in January, 0-32.1 km/hr in February, 0-17.2 km/hr in March, 0-20.6 km/hr in April, 0-29.8 km/hr in May, 0-31.6 km/hr in October and 0-28.2 km/hr in November, 2012.

Ambient Air Quality

Ambient air quality monitoring stations were selected near project site, in Luvara village, Ambetta village and Lakhigam village. All the selected parameters were within the permissible limit as notified by CPCB

Floral and Faunal Diversity of the Study Area:

For evaluation of Floral diversity, tree species, herbs, shrubs, climbers and major crops, were documented during this base line study. For the assessment faunal diversity in the study area, Birds, Butterflies, Reptiles, and wild mammals were documented. Among the enumerated flora and fauna present in the study area, none of them fall under any threat category, of RED data book of Indian Plants and IUCN Red list.

Socio-Economic Status of the Region

The socioeconomic profile of the study area is collected through questionnaire as well as from the secondary data available from the 2001 census. There are only five villages, within 10 km from the project site with a total population of 14391 consisting of 3106 households. All these villages were very small with a population ranging from only 1330- 6846.

PREDICTION AND EVALUATION OF ENVIRONMENTAL IMPACTS

Potential impact on land environment during construction of RO- RO jetty

The impacts from change in land use will occur only at the land acquired for development assess bund, RORO ramp and approach road. Approach road along the periphery of the allocated land in Plot #89 already exists, which is leading up to plot # 94. The fabrication shop is already established in the allocated plot of SEZ. As this area is demarcated for industrial development, and surrounded by many industries the activity associated with the land preparation and construction will have no significance in ecological impact analysis.

Impact on Eco-sensitive sites due to the project activity

The nearest Mangrove patches is located approximately 5.53 km from the project site in the creeks near the Dahej jetty, other small patch of mangroves is located along the other bank of the Narmada estuary approximately 10.35 km from the project site, and sand dunes are located approximately 1 Km from the project site from the Krishna Ashram towards light house along the coastline. The

nearest major fish landing centre is in Bhadbut village is located 35 km from the project site. No Impact on these eco sensitive sites is expected due to the project activity. The nearest water front facility is the Reliance terminal which is located approximately 348 meter from the project site. Nearest habitation is in Luvara village which is located about 1.05km from the project site.

Impact during dredging Operation

Dredging near the berthing structure and the channel connecting the main Navigational channel may be required for providing the safe passage of barges. The anticipated quantity dredging is about 1,60,000 cubic meter, the dredged out soil will be utilized for leveling the low lying area as well as during the construction of approach ramp. The impact on dredging in this region on the benthic biota is very less.

Potential impact during operations of RORO Jetty

The main cargo expected to handle from this RORO jetty are only fabricated structure of different dimensions. Hence no spillage of cargo in the water environment is envisaged from this project. The other major impact expected from this project is due to the activity of barges movement. The main impact will be due to the contaminated Bilge and Ballast water. The discharge of potentially oily bilge and ballast water shall be prevented from reaching surface waters. Most of the modern barges will be occupied with oil separator other bilge treatment facility on board itself.

Impact due to Waste water from the fabrication shop

It is zero discharge plant and waste water generated from industrial uses, like floor washing and hydro testing will be partly recycled and partly reused for gardening after primary treatment. No ETP is envisaged for this project, because there is no generation of organic waste stream from any process. The main activity in the fabrication shop will be fabrication and the main activity in the RORO jetty is the loading the fabricated structures in the self-propelled barges. Primary treatment will be carried out to separate oil and floating material from the waste water before using it for gardening and washing etc. The waste water generated from the toilet block will be disposed through STP/soak pits.

Air environment

The major pollutants in the construction phase are the Suspended Particles Matter due to vehicular movement for transportation of construction material, equipment,.

Water sprinklers shall be used to control the fugitive dusts. Diesel driven construction machineries shall be properly maintained to minimize the exhaust emission and noise pollution

Construction activities shall be restricted to daytime as far as possible to avoid any disturbance to surrounding areas. Whatever construction debris generated can be utilized for reclamation of low lying areas, therefore there will not be any problems of removal and disposal from the site.

Also during concrete work, care will be taken so that no mortar or cementing material should fall in the water. To minimize any impact on aquatic system, plastics sheet or tarpaulin will be utilized to avoid any chance of dumping of construction materials in to the river water. Provisions for infrastructure services including water supply, and electrification will be made available to the construction workers from the existing facilities. Safety equipment shall be provided to the workers working in the high-risk zone as per the safety rules under existing regulation.

Some emissions of greenhouse gases such as CO, CO₂, SO_x and NO_x will take place from the movement of barges in and around the berthing area for transfer of cargo. To restrict the impact on air quality proper measure will be taken as detailed in the Environmental management plan (EMP).

Ecological Impact during construction

Pile driving, deposition of rubble, sand compaction and other construction work in water may cause increase in sediment concentration and turbidity in the water column. It also reduces sunlight penetration. Disturbance from construction activities may cause displacement of fishery resources and other mobile bottom biota.

However, it is well documented that sediment concentration in Narmada estuary is quite high and with limited aquatic biodiversity. The increase in the suspended solids has resulted in high turbidity, which in turn resulted in the limit of photic zone. The damage to phytoplankton due to the increase of turbidity would be minor, localized, temporary and reversible. Nevertheless, it is unlikely to produce a measurable impact. Being a one-time operation, any long term adverse impact is not envisaged as the phytoplankton community structure will recover its initial status once the construction is completed. No mangrove patches or coral reefs or other eco sensitive receptors are present near the project site. Hence any ecological impact due to the construction activity will be localized and reversible

Potential Impact Ecological Impact during dredging

The river bed in this region is in generally muddy, with traces of sand found near the mouth region. The tidal flow traps sediments in suspension in the estuary and the sediment moves up and down

the estuary with the tide. More over the available water depth during the low tide period is very less, many part is partially exposed. During the influx of the tidal currents severe sifting of the sediments is a common phenomenon. This create unstable surface unsuitable for many benthic organisms. Hence the impact on dredging in this region on the benthic biota is very less.

Impact due to Disposal of dredged out material

The dredged out material will be directly pumped to the low lying area, hence there won't be any impact associated with the disposal of dredged out material in the water column

Potential impact during operations

During operation, impacts may arise from vessel movement and cargo handling. The major infrastructures of proposed RO RO jetty & berthing structure will be setup in waterfront area. There is no Eco sensitive area like mangrove and coral reefs are present in the impact zone of the jetty, hence there will not be significant impact on ecology due to development works for proposed project within site

The model studies reveals that resultant ambient air quality in the surrounding region during the occasional D.G sets operation in proposed fabrication unit will be well within the limit specified by CPCB. More over the impact of air pollution caused by the gaseous emissions from a D.G sets stack will be felt only in the project premises only 707 meter from the stack that also in SW direction. Maximum ground level concentration will occur within this range mainly towards the estuarine region of Narmada, there are no sensitive receptors in this region. All plumes at more downwind distances from the source by stack emission become so diluted by diffusion in the ambient atmosphere, that concentrations of pollutants become negligible.

Impacts on socioeconomic environment

Construction Phase

The construction phase will generate employment opportunity in the skilled as well as unskilled categories. The expected labour force required during construction is to the tune of about 100. Although the workforce requirement will be temporary in nature, it will be met from the local populace as far as possible hence there will be positive but temporary positive impact. The contractor will provide all required facilities to the labourers to reduce the impact on the existing facilities in the study area. Some positive impacts are also envisaged. Local businessmen will get opportunity to supply construction materials. Demands generated from the labour colony for basic

facilities including eatables etc. will increase the local business activity of the area.

The surrounding villages are still observed as economically not sound due to the lack of employment opportunities. Any development, either temporary or permanent will support the family of many villagers.

Operation Phase

Similar to the construction phase, the operation phase will also provide opportunities for employment mostly in the skilled and semi-skilled categories. Operation of the proposed project will also require transportation facilities to the commuters to commute from a nearby place to the project site and vice versa. This will enhance the income of the people associated with transport sector.. All these activities will need support services like food, housing, school, medical facility etc. ultimately leading to improvement in quality of life of local people. Indirectly, other service sectors also stand to benefit and impacts are positive.

Corporate social responsibility:

As the project site will be located in already demarcated area of SEZ Dahej II ,the villages located within this demarcated area are very few Luvara, Ambetta, Jageshwar and Lakhigam . Proponent will be employing local workforce to solve the logistics and other resource demand from this villages only as far as possible. As it is fabrication industry, technically skilled labour force will get maximum benefit. After the establishment of the Fabrication shop and RO RO jetty, Management will initiate discussion with local village representative to find out the area where, the project proponent can help the villagers as part of their CSR activities an estimated amount of 10 lakhs Rupees is earmarked for the purpose of CSR activity for the initial period of three years,

Green Belt Development:

Green belt will be developed within minimum of 30 % of the total available area i.e. in 67,541 sq. meters by using suitable trees and shrubs.

EMP FOR DREDGING

Prevention of Leakage from Equipment

The contractor should ensure that there is no leakage in the marine equipment including, but not necessarily limited to, pipelines and hopper seals. Wear and tear and the frequent handling and transport of the pipelines make them particularly sensitive to leakages during hydraulic placement

of dredged materials.

Prevention of Turbidity:

Considering the prevention of turbidity impact as well as prevention of localized water quality impacts from reduced flushing. Silt curtains will be deployed at the environmental receptor to reduce turbidity impacts.

Controlling Discharge of Excess Water from the Reclamation Area:

Wherever practicable, land reclamations will take place in closed reclamation areas. This means that each reclamation area will be bunded at the earliest opportunity, to minimize the release of fines to the marine environment, or direct them away from sensitive receptor sites.

Environment Management Cost

An estimated amount of Rs. 11,50,000 is earmarked as capital investment for the Environment Management activities and another Rs. 4,50,000=00 is considered for yearly operational cost

Post Project Environment Monitoring Budgetary Allocation

One lakh rupees (Rs. 1,00,000=00) is earmarked annually for Environmental monitoring and management plan for post project monitoring.