

**Project No: AESPL/IND-E/18-19/EIA/002**

# **Executive Summary of Draft Environmental Impact Assessment Report**

**Proposed establishment of Integrated Project consisting of Poly vinyl Chloride (PVC) Plant, Polymer modified bitumen (PMB) Plant, Gas Storage Terminal, LPG Bottling Plant, Gas Based Captive Power Plant, Sea Water Desalination Plant (RO process) for captive consumption**

**By**

**Veritas Polychem Private Limited**

**Corporate office: Veritas House, 70 Mint Road,  
Fort, Mumbai 400 001  
Maharashtra.**

**Baseline Monitoring:  
Winter 2018-19**

**October 2019**



**Environmental Consultant:  
Aditya Environmental Services Pvt. Ltd., Mumbai  
QCI- NABET Accredited EIA consultant  
[www.aespl.co.in](http://www.aespl.co.in)**

# EXECUTIVE SUMMARY

## 1.1 Introduction

As per EIA Notification S.O. No 1533 dated 14<sup>th</sup> Sep 2006 the project falls under activity 5 (e) (Petroleum products and petrochemical based processing), Category "A" and requires prior environmental clearance from EAC-II, Ministry of Environment, Forest and Climate Change.

The project is of Integrated Project consisting of Poly vinyl Chloride (PVC) Plant, Polymer modified bitumen (PMB) Plant, Gas Storage Terminal, LPG Bottling Plant, Gas Based Captive Power Plant, Sea Water Desalination Plant (RO process) for captive consumption by Veritas Polychem Private Limited (VPPL).

The project has been issued Terms of Reference for undertaking EIA/EMP in accordance with the provisions of the EIA notification dated September 14, 2006 as per MOEF&CC letter No. IA-J-11011/225/2019-IA-II(I) dated 13th August 2019.

## 1.2 Project proponent

Veritas Polychem Private Limited is wholly subsidiary of Veritas (India) Limited. It is a group company of GROUPE VERITAS (GV) a diversified multinational group with business interest in

- International Trade, Distribution & Manufacturing
- Infrastructure & Logistics
- Alternate Fuel & Energy
- Agro Ventures & Biotechnology
- Information Technology

## 1.3 Project Description

Project consists of following activities at site

**Table 0-1 Products and its capacities**

Sr. No.	Plant / Activity	Capacity/ Quantity
1	PVC Plant	200,000 MTPA
2	PMB Plant	360,000 MTPA
3	Mounded bullets	32 Nos each of capacity 2500 m <sup>3</sup> (8 for VCM, 12 for LPG 12 for Propylene)
4	LPG Bottling Plant	60,000 MTPA
5	LPG Bulk Filling Station	300,000 MTPA
6	Captive gas-based power plant	4 x 4.5 = 18 MW
7	Water Desalination Plant (RO process)	4356 m <sup>3</sup> /day raw water generation

VPPL will be importing Vinyl chloride monomer, Liquified petroleum gas (LPG), Propylene and Bitumen by ship carriers. It will be unloaded at Dighi port and will be stored at site.

VCM will be converted to PVC in the PVC Plant.  
 Bitumen will be blended with polymer to get polymer modified bitumen.  
 Propylene will be filled in truck tankers and will be distributed.  
 LPG will be partly bottled, partly filled in truck tankers and will be distributed.

Loading gantry facilities will be developed for transport of Propylene, LPG road tankers to end customers.

Project site is located at Gat No. 49, 50, 51, 52, 53, 54, 56, 57, 61, 63, 66, 75-A & adjacent reclaimed land, Dighi Port Area. Village Nanavali, Taluka Shrivardhan, Dist. Raigad, Maharashtra.

Total site plot area is 59.277 Acres. Proposed project cost is ~ Rs. Rs. 2050.47 crores

### **Power requirement**

For Normal use (operating load 12 MW), power will be generated at site.

There will be 4 x 4.5 MW Gas engine/Gas turbine sets (with waste heat recovery boiler) based on LNG as fuel. Normally three will be in service and forth will be stand by.

For emergency power, emergency diesel generator set of 315 KVA will be installed.

### **Steam requirement**

Steam requirement of the site will be catered by waste heat recovery boilers of Gas engine/turbines and independent 5 TPH and 20 TPH boilers operating on LNG as fuel.

### **Water requirement**

The required water for the project will be met by desalination plant which will be installed at site.

Water requirement at site is as below,

**Table 0-2 Water requirement**

No	Water required for	Quantity in cmd (cubic meter per day)
1	Domestic	70
2	DM Plant	2880
3	LPG Plant	25
4	PMB Plant	25
5	Cooling Towers	1105
6	Gardening Belt maintenance	251
	<b>Total</b>	<b>4356</b>

### **Wastewater generation, treatment and disposal**

Wastewater generation from various sources will be as follows,

**Table 0-3 Wastewater generation**

No	Wastewater from	Quantity in cmd (cubic meter per day)	Total, cmd	Treatment and disposal
1	Domestic	56	56	Treated at STP and used at site for green belt maintenance.
2	PVC Plant	1818	2211	Treated on site and discharge to sea.
3	LPG Plant	25		
4	PMB Plant	25		
5	Cooling Towers	160		
6	Boiler blow down	39		
7	DM Plant	144		
	<b>Total</b>	<b>2267</b>	<b>2267</b>	-

### Waste generation and its management

Solid waste generation and disposal from the operation will be as follows:

**Table 0-4 Non-hazardous waste generation and disposal**

Sr. No.	Particulars	Quantity in TPA	Method of Disposal
1	STP Sludge	100	Used as manure.
2	Insulation waste	2	Insulation waste Landfill.
3	Garbage	10	Biodegradable garbage will be composted, used as manure.
4	Canteen Waste	10	Composting and used as manure.

**Table 0-5 Hazardous waste generation and disposal**

No	Description	Category as per HW rules 2016	Total Quantity (per year)	Method of Disposal
1	Spent and lube oils	5.1	10 Ton	Sale to authorized recyclers
2	Sludge and Filter contaminated with oil	3.3	5 Ton	Incineration.
3	Discarded Containers and Barrels	33.1	5 Ton	Sale to scrap dealers after decontamination / detoxification
4	Chemical Sludge from (PVC) Wastewater Treatment Plant	35.3	127 Ton	Landfill CHWTSDF / Sale to downstream PVC users.
5	Filter and filter material which have organic liquid in them, for example mineral oils, synthetic oil and organic chlorine compounds	35.1	2 Ton	Incineration
6	E waste	-	4 Kg.	Sale to authorized recyclers

7	Lead acid batteries	-	10 Nos.	Will be exchanged with the dealer on purchase of new batteries
---	---------------------	---	---------	--

### **Storage / handling of solid and hazardous wastes**

All waste will be handed with proper PPEs ensuring safety of the individuals working with the solid and hazardous waste handling. The wastes will be collected in drums and HDPE bags and further transferred at the storage location in the solid cum hazardous waste storage area provided with impervious flooring at site.

## **1.4 Description of the Environment**

### **1.4.1 Study period and area**

Baseline environmental study/monitoring is carried out during Winter 2018-19 (December, January, February) within 10 km radius of the site to understand ambient air, ground water, surface water, soil, sediment quality, noise level, biological, marine study and socio-economic status of study area.

### **1.4.2 Land use and Land cover**

The project site is located along the Rajapuri Creek adjacent to Arabian Sea.

As a result, waterbody (57.58%) is the most predominant amongst the land use classes found within study area. South side of the project site shows comparatively high altitude and moderate dense vegetation (18.98%) is predominantly observed the hilly terrain.

Open/Mixed vegetation covers near about 5.17% of the land cover within study area. Scrub land (4.46%) and open land (6.14%) are some of the dominant classes within study area. Fallow land comprises of 3.59% of overall land use. Habitation covers rural settlement of 0.17% and there is no urban settlement within 10km radius.

A number of reservoirs located throughout the study area contribute to 0.25% of the land cover. Presence of Rajapuri Creek, Vavdungi/Shighre River corresponds to waterbodies within the study area. Many aquacultures along the shores near mangrove areas which is considered as non-forested wetland corresponding to 1.28% of the land use.

Plantation covers approximately 2.29% of the land cover. Minor industrial establishments are seen within the study area covering 0.07% of the land cover. Mining area (0.01%) also includes small open quarries which are used to extract stone for construction and filling purposes.

### **1.4.3 Meteorology**

The meteorology of the site and nearby areas is affected primarily by the presence of Rajapuri creek and Arabian sea and presence of hills on south side in immediate vicinity.

The prominent wind direction at project site during the study period (winter 2018-19) was from north and north west direction.

Project site is in southern part of Raigad district and at seacoast. It has warm & humid weather throughout the year.

The area receives rainfall for more than four months of the year, which provides main climatic variations. Out of total rainfall 90% is experienced during Monsoon season of months June to September.

#### 1.4.4 Soil

Based on the soil sample analysis (samples collected from 4 locations) for its physical and chemical properties, it is observed that

- Soil in the area is mainly having “clay” with less moisture content.
- pH of soil varies from 5.67 to 6.63 which is “Moderately acidic” to “Neutral” in nature.
- Electrical conductivity (salinity) is average.
- Phosphorus content is medium at all locations.
- Organic carbon is more than sufficient.
- Potash content in soil is very less.

#### 1.4.5 Ambient Air Quality

The broad findings of the ambient air quality monitoring are as follows:

- Concentration of PM<sub>10</sub> was varying from 50.6 µg/m<sup>3</sup> to 70.5 µg/m<sup>3</sup>.
- Concentration of PM<sub>2.5</sub> was varying from 18.7 µg/m<sup>3</sup> to 26.1 µg/m<sup>3</sup>.
- Concentration of SO<sub>2</sub> was varying from 8.7µg/m<sup>3</sup> to 14.6 µg/m<sup>3</sup>.
- Concentration of NO<sub>x</sub> was varying from 16.1µg/m<sup>3</sup> to 27.0 µg/m<sup>3</sup>.
- Concentration of CO was varying from 0.17 mg/m<sup>3</sup> to 0.46 mg/m<sup>3</sup>.
- Concentration of nMHC was varying from 0.16 ppm to 0.40 ppm.
- Ammonia, Benzene, HCl and VCM were below detection limits.

Results are compared with National Ambient Air Quality Standards (NAAQ) in respect of monitored parameters as shown in Table below. As can be seen the results, ambient air is well within the NAAQS standards in the areas.

#### 1.4.6 Noise

Based on the noise monitoring carried out at 9 monitoring locations, following observations are made,

- Data monitored in Industrial area is within specified limits during Day & Nighttime, as not much activities around project site.

Noise levels were found to be exceeding the standard at Agardanda village during Day time & Nanavali, Agardanda and Dighi villages during nighttime. Exceedance of noise level may be attributable to nearby localized disturbances/ traffic nearby.

#### 1.4.7 Ground Water Quality

Ground water samples (borewell and open well) were collected from 9 locations within study area.

Ground water quality is mostly within specified standards except Coliform at Nanavali well water.

#### 1.4.8 Surface Water Quality

Surface water samples (Pond and Dam water) were collected from 5 locations.

Based on analysis, surface water analysis mainly falls under classification C (Drinking water source with conventional treatment followed by disinfection) & E (Irrigation, industrial cooling or controlled waste disposal).

#### 1.4.9 Biological Environment

District Raigad is one of the costal districts of Konkan region of Maharashtra, spread over an area of 7152 km<sup>2</sup>. It shows variation in topography from high altitudinal Sahyadri hill ranges to coastal plains. The soils of the district are formed from the predominating rock formation i.e. Deccan Trap. According to the topographical situation and location, soils in Raigad district are grouped as Forest, Varkas, Rice, Khar or Salt, Coastal Alluvial and Laterite soils. District receives average 3029 mm annual rainfall mostly contributed by southwesterly monsoon.

According to bio-geographic provinces classification of India, entire study area falls under category 8A i.e. 'Coasts - West Coast'. None of villages in study area are listed as Eco-Sensitive Areas (ESA) vide Order under section 5 of EP Act 1986 dated 13<sup>th</sup> November 2013, series of draft Notifications dated 10<sup>th</sup> March 2014, 4<sup>th</sup> September 2015, 27<sup>th</sup> February 2017 and 03<sup>rd</sup> October 2018 issued by Ministry of Environment, Forest & Climate Change (MoEF&CC). Nearest ESA, Gopalwat and Bhalgaon (in Roha Taluka) is about 10.6Km towards NE.

**Dense Vegetation:** Most of the hills in study area are covered with natural evergreen vegetation. Except some human settlements, most of the forest areas are inaccessible to human and remained untouched due to dense vegetation, topography and legally protected area across Rajapuri creek spreading from North to North east of site as Phansad Wildlife Sanctuary.

*Tectona grandis*, *Bombax malabaricum*, *Firmiana colorata*, *Erithrina indica*, *Calicopteris floribunda* and species of *Terminalia* were found dominant in Dense Vegetation. Faunal species generally noted are Drongo, Kingfisher, Bulbuls, Jungle babblers, Shikra, Common Mynas, squirrels, evidences of wild boar and black napped hare.

**Human Settlements:** Human habitation in study area is rural in nature with Murud as semi-urban town. Villages in study area are found situated at base of hills and along major roads. Typical plant species are grown in and around habituated areas. These species are intentionally planted for the purpose of beautification, shade, protection from stray/ grazing animals and for food value.

Similarly, faunal species of interest such as cattle, domestic animals/ birds were inhabited. Besides these, gardens developed in housing colonies, Coconut-Areca nut orchards shows artificial plantation of species. These exhibit different kinds of species composition. Open

spaces/ waste areas, plants exist naturally, both supports respective fauna and constitutes part of biodiversity.

**Agricultural Fields:** Agricultural fields in study area are seen towards foothills and in between open area. Major crop in the region is Rice, however secondary crops like Wari, Nagali etc. are grown. In addition to agriculture crops, vegetable and horticultural crops growing and animal husbandry are also practiced in study area.

**Water Bodies:** Drainage in the area is mainly through Rajapuri creek. Due to undulating terrain, number of small stream/ nallah and other rivers flow downhill and joins the creek. Entire stretch of Rajapuri creek in study area is saline with Mangroves especially at north bay (between Agardanda and Usadi) and south bay (between Dighi and Harvit). Aquaculture/ prawn farming were noticed near Agardanda and Mithagar on north bank along creek. Three reservoirs/ dams near Kudki, Amboli, Tisale are sources of drinking water. Flocks of birds like Kingfisher, Egrets etc. were observed perching on trees/rock outcrops here during survey.

**Flora:** During survey, 51 tree, 30 shrub, 17 herb, 4 climbers, 3 epiphytes and some other species were observed. None of the observed species is listed in '*Red Data Book Plants of India (Nayar & Sastry 1987-88)*'.

**Fauna:** During survey, 10 mammal, 1 reptile, 49 bird and 5 insect species were observed. Conservation status as per Indian Wildlife Protection Act 1972 of respective species is mentioned against it in table. Some species are not classified in any of the schedule. No schedule I species observed during survey.

#### 1.4.10 Socio economic environment

There are total 41 villages & 1 Murud Janjira (M Cl) town are falling under the study area & 62% covers under Murud tehsil 31% under Shrivardhan tehsil.

12 villages/habitations/settlements in the study area were surveyed. The entire area consists of rural population.

Total population of the study area is 53003 out of which 25566 (48 percent) are males and 27437 (52 per cent) are females.

There are 11622 households in the study area with average family size is 4.6 persons per household as per 2011 census.

Study area as a whole has a moderate sex ratio i.e. 1073 female per 1000 male & it is higher as compare with the average sex ratio of Raigad district 959 Maharashtra State 929 female per 1000 male.

As per 2011 census study area literacy rate (73.6 %) is similar as compared with Raigad District (73.6 %) but higher with Maharashtra State (72.6%) average literacy rate. The male and female literacy rates are 78.7% and 68.8% respectively of the total male & female population.



The total working population in the study area is 18951, i.e. 35.8% of which 25.5% are main workers & 10.3% are marginal workers it means highest number of populations is shared by non-workers i.e. 64.2% of the total population.

Among the main workers, male participation rate is 40.0 percent and female participation rate is 11.9 percent it means proportion of main workers is higher in male population than in female population while in non-workers the percentage of female population is 78.2% shows higher than of male population i.e. 49.2% in the study area.

## 1.5 Anticipated Environmental Impacts and mitigation measures

### 1.5.1 Air environment

Impact on air environment is anticipated due to proposed Gas engine/turbine, and boilers based on LNG. The increase in fuel requirement will have increase in NO<sub>x</sub>, SO<sub>2</sub>, PM contents of the region.

#### Mitigation Measures for Air Quality Impacts

Following mitigation measures are planned and suggested in view of air environment during operation phase:

##### 1. Gas engine/turbine/Boilers:

Stack of sufficient height for Gas engine/Gas Turbines and Boilers.

Low NO<sub>x</sub> Burners for Boilers & Gas engine/Gas Turbines.

Regular monitoring for fuel burning stacks through MoEF&CC approved laboratory

### 1.5.2 Noise

Noise & vibrations generated from the transport vehicles/traffic, equipment & machineries including gas engine/turbine, pumps, motors, blowers. This will add to noise level, exposing on site to high noise level.

#### Mitigation Measures

- Acoustic enclosures on all major equipment in the plant will have to be provided for noise attenuation.
- Low noise generating equipment and working methods for production unit shall be selected to reduce noise generation.
- Proper mounting of equipment & machinery on strong non-vibrating foundation & fitted by proper shunting & rubber padding to avoid vibration and thereby noise.
- Provision of ear protection equipment (ear plug/ earmuff) for activities that are likely to create noise in excess of 75 dB (A) to protect worker's health and safety.
- Undertake in plant audit to identify high noise level generating equipment.
- Preventive maintenance including regular lubrication of machineries and equipment to reduce noise level
- Static & dynamic balancing of all rotating equipment & machineries shall be done on regular basis starting from the installation time to reduce the vibration & noise.

- Regular noise monitoring shall be done as per environment monitoring plan chapter 6
- The impacts of noise on occupational health would be mitigated by proper shift timing & annual audiological checkup of concern employees. Workers showing hearing loss, if any, will be shifted to other less noisy areas.
- Dense Greenbelt development along the boundary of premises shall be carried out.

### 1.5.3 Water & wastewater

As seen in chapter 2, total water requirement during operation phase will be ~ 4356 KLD. It will be sourced from desalination plant.

Out of total 2,267 KLD treated effluent, it is proposed to recycle/reuse 56 KLD within facility and balance 2211 KLD will be discharged to sea along with desalination return water to sea.

Dispersion Modelling Studies for Discharge of return sea water from desalination plant and treated waste water has been carried out.

### 1.5.4 Land

Major concern in land environment during operation phase is contamination of land by:

- Spill and leak during transport, handling, storage and handling of chemicals.
- Spill of oil and greases during maintenance of equipment, machineries and vehicles.
- Improper storage/dumping of wastes, resulting in leachate, contaminating the soil.
- Contaminated runoff from site and contaminated drain from storage areas of hazardous wastes and chemical storages, tanker loading/unloading areas draining to land.
- Transportation in truck/tanker or drums through highway, which may have considerable impacts on environment of the area falling in the route of the transportation. During the incidence of major accident, the hazardous materials being transported can have serious impacts on land where on it spilled or leaked.
- **Mitigation measures**
- ETP sludge shall be disposed to CHWT/SDF facility.
- Production, maintenance area and warehouses for storage of raw materials, finished products and hazardous wastes will be provided with impervious flooring.
- All bulk storage tanks will be provided with adequate dyke walls to prevent spreading of spill or leaked chemicals causing contamination of soil.
- Necessary cleanup procedures (SOPs) for the specific area will be designed and implemented.
- Used oil from machineries/equipment etc. will be collected in drums & disposed of as per norms.
- ETP facilities for management of effluents will be provided as planned during erection and commissioning phase and untreated effluents will not be disposed of on land or sea.

- The chemicals used will be transferred through closed pipelines by DCS control system to avoid/prevent spill/leak of the materials.
- Hazardous waste management will be done as per statutory guidelines & requirements. ETP sludge generated will be dried in mechanical dewatering system and kept in sacks in covered godowns, with impervious flooring sloping so that any leachate will be collected and taken back for treatment.
- Discarded containers will be decontaminated and sale to MPCB authorized party.
- All transportation of hazardous wastes will be done in closed truck/tanker by MPCB approved agencies.
- HAZMAT guidelines will be followed for transport of all hazardous materials. All required safety & emergency equipment & materials will be provided on the transport vehicles.
- Proponent will maintain a good spill or leak control action plan to cope up with such incidents.
- Monitoring of soil samples in areas near hazardous waste storage will be done as per Environmental monitoring plan.
- No waste will be stored on open barren land under any condition.

### 1.5.5 Biological environment

Operation phase involves transportation of raw material, work force and finished goods; operation of plants and machineries. This can lead to increase in noise levels at site.

Considering baseline environmental conditions, air dispersion modeling has been done, which indicates, incremental concentrations of gaseous pollutants together with existing baseline concentrations are lower than threshold limit specified in CPCB publication, March 2000 for Green belt Development.

Greenbelt will be developed includes periphery plantation, roadside plantation and plantation around various buildings. Well-developed greenbelt off area consisting different species of trees on ~ 20 Acres is proposed.

For particulate and noise abatement, two rows of trees will be planted all around the boundary of site. Green belt will be developed in two levels i.e. tall, native and evergreen broad-leaved species towards outer periphery whereas dwarf and native species towards inner side of it. This arrangement provides better screening effect.

### 1.5.6 Marine Environment

#### Baseline Environment - Marine

The baseline environmental quality was assessed through field studies within the impact zone for various components of the marine environment viz. bathymetry, physical processes (tide, current and waves), water quality, sediment quality and flora-fauna with specific reference to environmental aspects, which may have a bearing on the impacts of the project.

The baseline environmental quality was assessed during winter 2018-19 (December, January and February).

Water quality, sediment quality and marine biological diversity impact assessment report and management plan is jointly prepared by Aditya Environmental Services Private Limited. Marine Bathymetry, physical processes i.e. tides, currents & waves, water quality, sediment quality and numerical modelling done by Environ Software Private Limited Bangalore.

### **Bathymetry**

Bathymetry shows that maximum depth of 24.4 is available in the offshore.

### **Wind**

The wind is quite low for non-monsoon period of the year and it is relatively strong during south-west monsoon i.e. during May-August. In general, the average wind speed for over the year does not fall below 10 km/h.

### **Tide**

Tidal conditions at Dighi based navigational chart No. 2026 are as follows

Details of level Value (m)	(CD)
MHHW (Mean Highest high water)	3.60
MLHW (Mean Lowest High water)	3.30
MSL (Mean Sea Level)	2.40
MHLW (Mean Highest Low Water)	1.70
MLLW (Mean Highest Low Water)	1.30

It is clear from the values of mean HWL, LWL and MSL indicated above that the tidal range is low, just around 2 to 2.5 m. With due consideration to the prevailing bathymetry, fishing vessels can approach the facility at any time of the day for anchoring.

### **Current**

The tidal currents are driven by the tidal amplitude. if the tidal range is low, the tidal currents will also be correspondingly of low magnitude.

### **Sediment**

Both physico chemical and biological parameters were studied from 8 sampling stations.

Sediments are mainly clay in nature.

pH of the sediments was slightly acidic, varied from 6.24 to 6.63.

Chromium, cadmium and lead were below detection limit.

#### **1.5.7 Socio economic environment**

Impacts on socio-economic environment due to proposed project during operation phase are envisaged due to direct and indirect employment which will be beneficial.

The project will have positive effect on socio – economic environment as there will be growth in employment for direct/indirect workers. During employment, local populace will be given preference considering their skills & suitability.

VPPL will carry out the Corporate Environmental Responsibility activities as per the MOEF & CC guidelines.

### 1.5.8 Environmental monitoring program

Post project monitoring is an important aspect in Environmental management plan. In order to verify the outcome on the implemented control/mitigation measures and to alter the mitigation, in case required, post project monitoring is required and essential.

Following will be monitored on a regular basis during construction and operation phase to ensure a high level of environmental performance and to comply with statutory/legal conditions

- Effect on baseline data.
- Effectiveness of pollution control measures.

## 1.6 Additional Studies

### 1.6.1 Risk Assessment, Hazard identification and consequence analysis

The principal objective of the risk assessment study is to identify and quantify the major hazards and the risk associated with various activities the project, which may lead to emergency consequences (disasters) affecting the public safety and health.

All necessary measures to minimize the risk due to the project will be taken during design stage and also during operation period viz, Fire & safety control measures, Emergency preparedness plan, Disaster Management plan.

Risk assessment, Hazard identification is carried out for the project during various project phases, Quantitative risk assessment/ consequence analysis based on ALOHA, during storage and transportation of chemicals, loading and unloading of chemicals, Safety aspects and main risks of processes, and suggested control measures.

### 1.6.2 Coastal Regulation Zone (CRZ) Mapping

As per the guidelines of CRZ notification (2011), the high tide line means, the line on land up to which the highest water line reaches during spring tide. The High Tide Line marking of the study area must be demarcated by the institutions authorized by the Central Government in accordance with the guidelines issued in this regard.

For High tide line marking in the study area, VPPL has approached, Institute of Remote Sensing (IRS), Anna University, Chennai (MoEF&CC authorized agency) to demarcate the High Tide Line (HTL) and Low Tide Line (LTL) in and around proposed development at Dighi port area so far as the CRZ Notification, 2011 and as per the subsequent corrigendum is concerned.

The proposed project of VPPL is lying under CRZ II.

### 1.6.3 Public consultation

Public hearing will be conducted as per terms of reference issued.

### 1.7 Project benefits

The facility will generate direct and indirect employment.

Direct and indirect employment will be ~ 5000 persons from this proposed project during operation phase. including transport sector, and, associated businesses like packaging, drums manufacturing. Further, the indirect employment via increased transportation, ancillary units & local economic activities will also add in the employment potential of the proposed project, which will be beneficial to the local community.

PVC industry is one of the major contributors to the economy of the country. With massive investments in infrastructure development, India will be the growth center of the global PVC industry. PVC products have huge potential to curb the challenges faced by the country. Introduction of innovative technologies and products based on PVC will certainly make difference in the sustainable development and management of country's infrastructure and economy.

Other tangible and intangible benefits include,

- **Socio-Economic Project:** Substantial state interest and welfare of the people.
- **Low Cost Housing:** Promotion and Development of low income and cost housing approximately 500 crores of saving annually in terms of the capital outlay with PVC Profiles.
- **Pradhan Mantri Ujjwala Yojana:** LPG bottling plant will support the PMUY. The LPG bottling plant will upsurge the usage of LPG in the deep villages of the state.
- **Skill development and economic upliftment:** Location of the whole project being remote village-Dighi, will bring in employment and skill up-gradation of the workforce and in turn prosperity to the villages nearby.
- **Development of Port:** The project will bring in over 2 – 3 MMT of captive cargo to the port presently under stress and enhance prominence of the port.
- **Domestic Production:** Boosting domestic (State) manufacturing capacities will directly bring in prosperity to the State, more so in this underdeveloped area.
- **Import Substitution:** (Over 1.8 MMTA of PVC is being imported into India)- will save foreign exchange exchequer.
- **Decrease Life Cycle cost of Road:** PMB is especially beneficial for coastal roads and increases the durability & safety of roads up to 8 times compared to normal bitumen roads. If the durability of roads goes up by 8 times the cost of new development, operations and maintenance of the roads will decrease substantially, on a most conservative basis we estimate it will go down by half in effect translating to a savings of at least Rs 1500 crores annually.
- **Green Power:** Power generation though NG instead of Coal based which is highly polluting but cheaper. The Power Plant is for Captive use however, extra power will be supplied to the existing port, as it does not have the grid connectivity which will benefit the port.

## 1.8 Conclusion

The assessment for the project of Veritas Polychem Private Limited at Dighi Port area has revealed that the upcoming establishment & associated activities will have not have much environmental impacts in operation phase.

Other impacts of the project will also remain far below acceptable limits after necessary mitigation as described & suggested in EIA report.

The major impacts will also be brought under acceptable limits by implementing the required hazard prevention, mitigation/control and environmental management plan as suggested in the report. Thus, it can be concluded that there would not be any major impacts on environment due to the project except the impacts of major accident scenarios.

The EIA study has concluded that the project would be environmentally acceptable, in compliance with environmental legislation and standards, and will be beneficial to surrounding communities and region as whole.