



L&T Infra Engineering

L&T Infrastructure Engineering Ltd.

Client: Kakinada SEZ Private Limited

Project: EIA and EMP Study for Kakinada SEZ Port

Project No.:
C1161304

Title: Executive Summary

Document No.:
RP002

Rev.:
0

This document is the property of **L&T Infrastructure Engineering Ltd.** (formerly known as **L&T-Rambøll Consulting Engineers Limited**) and must not be passed on to any person or body not authorised by us to receive it nor be copied or otherwise made use of either in full or in part by such person or body without our prior permission in writing.

File path:
I:\ports\2016\c1161304 - ksez-port eia\outputs\reports\rp002-exe.smry\final-16.08.2016\vp002-r0-sap-exe.smry\cvcs -16.08.2016.doc

Notes:

1.

Revision Details:

| | | | | | | | | | |
|-------------|-------------|------------------|-----------------|--------------|----------------|--------------|-----------------|--------------|--|
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 0 | 16.08.2016 | First Submission | SAP SNV | | CVS | | | CVS | |
| Rev. | Date | Details | Init. | Sign. | Init. | Sign. | Init. | Sign. | |
| | | | Prepared | | Checked | | Approved | | |

TABLE OF CONTENTS

| | | |
|-----------|--|-----------|
| 1 | Introduction | 1 |
| 2 | Project Site | 1 |
| 3 | Need for Development | 2 |
| 4 | Project Benefits..... | 2 |
| 5 | Project Description | 3 |
| 6 | CRZ Compatibility | 4 |
| 7 | Description of Environment | 4 |
| | 7.1.1 Marine Environment | 5 |
| | 7.1.2 Terrestrial Environment | 5 |
| | 7.1.3 Socio-Economic Conditions..... | 5 |
| 8 | Anticipated Environmental Impacts and Mitigation Measures | 6 |
| 9 | Environmental Monitoring Programme | 11 |
| 10 | Budgetary Estimate for Environmental Management..... | 11 |
| 11 | Additional Studies..... | 11 |
| | 11.1 Risk Analysis | 11 |
| | 11.2 Disaster Management Plan | 11 |
| | 11.3 Social Impact Assessment..... | 11 |
| | 11.4 Traffic and Transportation Study..... | 12 |
| 12 | Corporate Social Responsibility | 12 |

LIST OF TABLES

| | |
|---|---|
| Table 1: Salient Features of Phase I Development..... | 3 |
| Table 2: Project Activities, Anticipated Impacts and Mitigation Measures during Construction and Operational Phases | 6 |

LIST OF FIGURES

| | |
|---|---|
| Figure 1: Project Location..... | 1 |
| Figure 2: Kakinada SEZ Port Phase I Layout..... | 4 |

1 Introduction

Kakinada SEZ Private Limited (Kakinada SEZ), a subsidiary company of GMR Infrastructure Limited, proposes to develop an “**All-Weather Deep-Water Multi-Purpose Port**” at Kona Village, Thondangi Mandal, East Godavari District, Andhra Pradesh on the East Coast of India. Kakinada SEZ Port is proposed to be developed in multiple phases based on market scenario and present proposal is for Phase I development with a capacity of 16 MTPA to handle dry bulk and multi-purpose/general cargo.

The proposed development of Kakinada SEZ Port Phase I attracts the provisions of Environment Impact Assessment (EIA) Notification, 2006 (as amended) and Coastal Regulation Zone (CRZ) Notification, 2011 (as amended). The proposed project is categorised under Ports, Harbours listed as Item 7(e) in the Schedule of the EIA Notification, 2006. Based on the handling capacity of the port, the proposed development is classified as Category “A”. The Ministry of Environment, Forest and Climate Change (MoEF&CC) has issued the Terms of Reference (ToR) for undertaking EIA study vide letter no. 10-24/2008-IA.III dated February 07, 2013. The validity of the ToR was extended up to February 06, 2017 by MoEF&CC vide letter no. 10-24/2008-IA.III dated March 26, 2016.

2 Project Site

The proposed Kakinada SEZ Port is located approximately 26 km to the North of existing Kakinada Deep Water Port in the state of Andhra Pradesh. Government of Andhra Pradesh notified the Minor Port Limits of Kakinada SEZ Port vide G.O.Ms. No. 10 dated December 3, 2007. The site proposed for development of Kakinada SEZ Port is located at Latitude 17° 10' 49.06" N and Longitude 82° 26' 57.39" E. The project location is shown in **Figure 1**.



Figure 1: Project Location

3 Need for Development

Although India has a vast coastline of over 7,000 km with more than 200 ports (comprising 12 Major and 180+ Non-Major ports) that carry more than 90% of India's total trade volume, the coastline is highly underutilized and has significant potential for improvement.

Today, ports carry about 90% of India's total trade by volume. The current proportion of Merchandize Trade in GDP of India is only 42%, whereas for some of the developed countries in the world such as Germany and European Union it is 75% and 70%, respectively. Therefore, India still has a potential to increase its merchandize trade. Moreover, with the current emphasis on "**Make in India**" the proportion of merchandise trade in India's GDP is expected to increase and rapidly reach proportions seen in developed countries. Thus, ports would play a vital role in enhancing trade and commerce potential of the country by enhancing their operational efficiency and capacity well in advance of the need.

The new AP Port Policy (2015) of Government of Andhra Pradesh envisages connecting the ports to their key markets in primary, secondary and tertiary hinterlands, so that ports would be considered as part of logistics supply chain and efficient utilization of port infrastructure enhancing the capital efficiency of the infrastructure. GoAP's Port policy 2015 has identified Kakinada SEZ Port as one of the locations for the development of new ports.

The Kakinada SEZ Port project would cater to the existing industries in its primary hinterland of Kakinada industrial belt as well as secondary hinterland of Nalgonda, Karimnagar and Vijayawada; and tertiary hinterland spreading to central Andhra Pradesh, Telangana, Southern Orissa, Eastern Madhya Pradesh and Chhattisgarh. Kakinada SEZ Port is also expected to serve the industries in its hinterland including those that would come up at the Kakinada Special Economic Zone. Kakinada SEZ spreads over an extent of approximately 8,500 acres.

Also, development of Kakinada SEZ Port assumes considerable significance in the backdrop of it being located within the Vizag Chennai Industrial Corridor (VCIC) of East Coast Economic Corridor (ECEC) and contributing to the economic growth of Andhra Pradesh.

4 Project Benefits

- Due to proposed project construction, employment potential of about 750 personnel on direct basis and around 1,500 on indirect basis will be created. During operational phase, the port is likely to generate employment of 1,000 people on direct and indirect basis within port premises and around 3,500 people will get employment due to port ancillary developments (indirect employment).
- Due to proposed project, surrounding villages and region would get maximum benefits such as upcoming industries and its allied ancillary units, direct and indirect employment, skill development opportunities to the employable youth in the region, better quality of educational and medical facilities to the local people and will also cater to the growing demand-supply gap of physical and social infrastructure, etc.
- Improved socio-economic conditions with focus primarily on workforce requirements and increase in industrial activity.
- Quality of life in the region is likely to improve due to the creation of jobs for the local people so that the dependency changes and there will be more than one earning member in the family, which will provide economic freedom and would facilitate a higher standard of living with better facilities.

- As a part of the Corporate Social Responsibility (CSR) initiatives, it is envisaged to create better and quality Education, Health, Hygiene and Sanitation, Empowerment and Livelihoods and Community Development Initiatives.
- Improvement in the trading, marketing as well as value-addition of local products.
- The proposed project shall further act as a catalyst to industrialization and urbanization of the region.
- Overall economic growth of East Godavari District, in particular and Andhra Pradesh, in general.

5 Project Description

The proposed Kakinada SEZ Port Phase I will be developed as an All-Weather Deep-Water Multi-Purpose Port to handle upto 1,20,000 DWT vessels. The salient features of Phase I development are given in **Table 1** and Phase I layout is shown in **Figure 2**.

Table 1: Salient Features of Phase I Development

| S. No | Parameter | Description |
|-------|--|---|
| 1. | Location | Kona village, Thondangi Mandal, Andhra Pradesh Co-ordinates: Latitude 17° 10' 49.06" N, Longitude 82° 26' 57.39" E |
| 2. | Handling capacity | 16 MTPA (Coal: 9.5 MTPA; General/multi-purpose cargo: 6.5 MTPA) (Cement, Clinker, Limestone/Dolomite, Finished Fertilizer – Urea, MoP, DAP, Granite, Wood, Steel Products, Potash Feldspar, Ball Clay, Feldspar Chips, Alumina, Bentonite / Laterite, SEZ Induced cargo, Containerised cargo, Edible oil) |
| 3. | Land area and existing land use | Phase I – 183.4 Ha; Master Plan (Port) – 323.75 Ha; Future development of other logistics (warehouses, CFS, logistics park), marine projects (shipbuilding, ship repair, offshore supply base) and export oriented (petrochemical, light engineering, cement) – 490.8 Ha; Project site comprises of beach sand, land with scrub, casuarina, cashew plantations and palm |
| 4. | Greenbelt area | 20 ha |
| 5. | Number of berths (Berth length/Minimum dredged level at berth) | <ul style="list-style-type: none"> • One Coal Berth (300 m/-17.6 m CD) • Two Multi-Purpose Berths (230 m each/-13.5 m CD) • One Port Crafts Berth (100 m) |
| 6. | Breakwaters | <ul style="list-style-type: none"> • North Breakwater of 460 m of length • South Breakwater of 2,400 m of length |
| 7. | Design vessels | <ul style="list-style-type: none"> • Coal: upto 1,20,000 DWT • General cargo/multi-purpose cargo: upto 40,000 DWT |
| 8. | Approach Channel | Length: 6,484 m (Outer), 1,245 m (Inner); Width: 205 m; Depth: -17.88 m CD (Inner), -19.51 m CD (Outer) |
| 9. | Turning Circle | Diameter: 542 m; Depth: -18.7m CD |
| 10. | Capital Dredging | 21.78 Million m ³ |
| 11. | Land Reclamation | 14.0 Million m ³ of capital dredged material will be used for raising the level of backup area; No Sea Reclamation. |
| 12. | Disposal of dredge material | About 7.78 Million m ³ of dredge material will be disposed offshore beyond 25 m contour at identified disposal areas or beach nourishment towards of North within project site. |
| 13. | Maintenance Dredging | 0.5 Million m ³ ; will be disposed offshore beyond 25 m contour at identified disposal areas or beach nourishment towards North within project site. |
| 14. | Navigational aids | Fairway buoys; Channel marker buoys; Beacons (Breakwater lights); Leading lights; Transit lights. |
| 15. | Road/Rail | <ul style="list-style-type: none"> • Beach Road passing through the project site will be used which is proposed to be widened to four lane by GoAP. • A dedicated rail corridor of 11 km is proposed (additional land of 132 Ha will be acquired) |
| 16. | Water requirement and | <ul style="list-style-type: none"> • Construction phase: 155 KLD; Source: local authorised suppliers |

| S. No | Parameter | Description |
|-------|--------------------------------|---|
| | source | <ul style="list-style-type: none"> Operation phase: 772 KLD (one time requirement of fire water demand is 735 KL); Source: Samalkota canal/Nakkalakhandi drain |
| 17. | Power requirement and source | <ul style="list-style-type: none"> Construction phase: 500 KVA; Source: DG sets Operation phase: 5 MVA; Source: sub-station at Tuni; standby DG set of 250 KVA will be provided |
| 18. | Wastewater Management | <ul style="list-style-type: none"> STP of 40 KLD in port premises and 100 KLD at Port colony Oil-water separator of 20 KLD capacity to treat oily wastewater |
| 19. | Air Pollution Control measures | <ul style="list-style-type: none"> Dust suppression system at coal stackyard, conveyors, loading and unloading areas and transfer towers Wind barrier and greenbelt development |
| 20. | Solid waste management | <ul style="list-style-type: none"> Municipal Solid Waste (MSW) generation: 1.3 TPD Solid Waste Management measures such as Organic Waste Composter; Proper collection, handling and transport system and disposal |
| 21. | Project Cost | INR 2,041.92 Crores (INR 20,419.2 Million) |
| 22. | Project Development Schedule | Envisages construction within a time frame of 36 months |

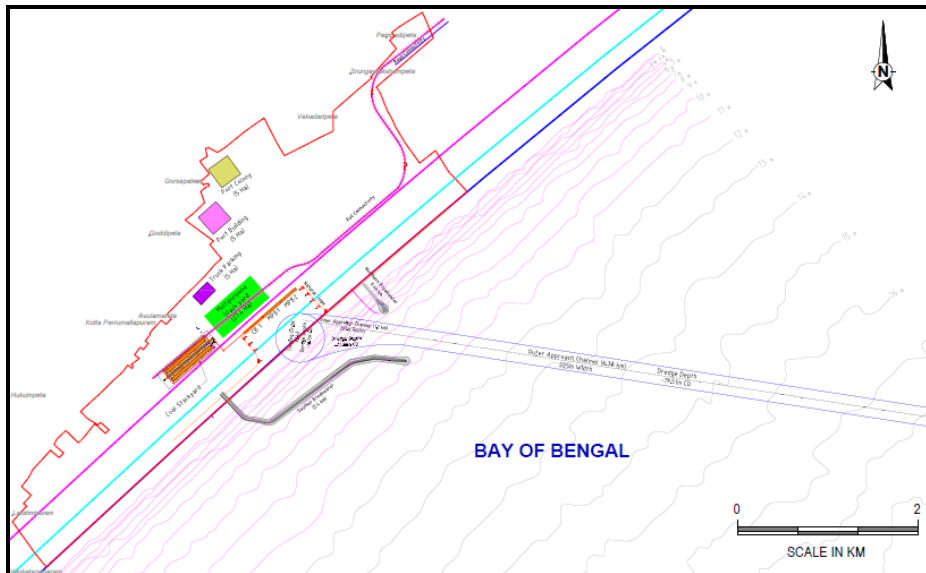


Figure 2: Kakinada SEZ Port Phase I Layout

6 CRZ Compatibility

National Institute of Oceanography (NIO), Goa was engaged for demarcation of HTL, LTL and CRZ boundaries. Based on the survey, the CRZ setback lines were demarcated and project layout was superimposed on CRZ map. The project development falls in CRZ I(B), CRZ III, CRZ IV and the activities proposed within CRZ area are permissible as per CRZ Notification, 2011.

7 Description of Environment

Study Area: As per the Ports and Harbours EIA Guidance Manual issued by MoEF&CC, an area within 5 km radius from project boundary for primary data generation and 15 km radius as the general study area for secondary data collection are considered.

Study Period: Baseline marine environment monitoring was carried out during Post Monsoon season 2014. Baseline terrestrial environment data was monitored during Pre-

Monsoon season 2015. Also, data pertaining to terrestrial environment (Post Monsoon season 2014) and marine environment (Pre-Monsoon season 2014) were reviewed and presented.

7.1.1 Marine Environment

The marine environment baseline survey observations are provided below:

- Water temperature ranged between 26.96^oC to 28.45^oC; pH value ranged in between 7.67 and 8.05.
- Salinity ranged between 24.5‰ and 25.6‰.
- Turbidity ranged between 0.5 NTU and 32.0 NTU.
- Dissolved Oxygen ranged between 5.9 mg/l and 6.8 mg/l.
- Phytoplankton represented by 64 species under 5 groups was recorded.
- Overall chlorophyll content was relatively low due to low phytoplankton abundance.
- Zooplankton represented by 36 taxa; Epibenthic taxa represented by 32 taxa.
- During trawl fishing experiment, 7 taxa were encountered including finfish/squid species.

7.1.2 Terrestrial Environment

The terrestrial environment baseline survey observations are provided below:

- The land use of the project region observed as 49.59% is sea and other water bodies, 20.53% is Fallow lands, 12.96% of Plantations, 8.71% of Agriculture lands, 7.15% of Open lands. The rest is distributed among Settlements and Beach sand.
- Predominant wind directions observed were South South West (SSW) followed by West South West (WSW); Calm conditions prevailed for 1.38 % of the total time. The average wind speed was observed to be 4 m/s.
- Soil types are sandy followed by clay and silt.
- Groundwater quality in the project region indicates no pollution of the water resources.
- Ambient air quality parameters PM₁₀, PM_{2.5}, SO₂ and NO_x are within NAAQS limits.
- Day and night equivalent noise levels at all locations were found to be well-within standards prescribed by CPCB.
- As per the Flora and Fauna study, there are no Rare or Endangered or Endemic or Threatened (REET) species or any species listed in Schedule I of the Wildlife (Protection) Act.

7.1.3 Socio-Economic Conditions

Socio-economic profile in the study area is assessed based on 2011 Census and latest statistical abstract of East Godavari District and the observations are provided below:

- The study area covers seven Mandals in East Godavari District and one Mandal in Visakhapatnam District covering a total of 54 villages.
- Total population covered in study area is 2,96,580.
- Main Workers constitute about 33.23%, Marginal Workers about 9.66% of the total population and remaining 57.1% are Non-Workers.
- Literacy rate is about 51.48% of total population.
- Some of the villages in the study area have medical and educational facilities to meet the requirements of local population.

8 Anticipated Environmental Impacts and Mitigation Measures

Anticipated impacts on the environmental and social attributes, which are likely to arise due to construction and operation of proposed project have been identified, predicted and evaluated.

Table 2: Project Activities, Anticipated Impacts and Mitigation Measures during Construction and Operational Phases

| S. No. | Activity | Relevant Environmental Components likely to be Impacted | Proposed Mitigation Measures |
|---------------------------|--|--|--|
| <i>Construction Phase</i> | | | |
| 1. | Capital Dredging / Construction of Approach Channel / Berths / Breakwaters and other Offshore Structures | <ul style="list-style-type: none"> Marine water quality Marine ecology | <ul style="list-style-type: none"> – Check turbidity levels with baseline levels as reference during entire monitoring programme – Dredge Management Programme: Discharge of waste into sea will be prohibited – Oil Spill control measures will be adopted – Slop tanks will be provided to barges/workboats for collection of liquid/ solid waste; Recirculation/Reuse of Bentonite clay and adoption of prevailing best practises in construction to minimise the spill on marine environment – Marine environmental monitoring as per environmental monitoring programme |
| 2 | Material transport and construction activities | <ul style="list-style-type: none"> Air quality Noise | <ul style="list-style-type: none"> – To reduce impacts from exhausts, emission control norms will be enforced/adhered – All the vehicles and construction machinery will be periodically checked to ensure compliance to the emission standards – Construction equipment and transport vehicles will be periodically washed to remove accumulated dirt; Providing adequately sized construction yard for storage of construction materials, equipment/tools, earthmoving equipment, etc. – Provide enclosures on all sides of construction site – Movement of material will be mostly during non-peak hours – On-site vehicle speeds will be controlled to reduce excessive dust suspension in air and dispersion – Water sprinkling will be carried out to suppress fugitive dust; Environmental awareness program will be conducted to the personnel involved in developmental works – Use of tarpaulin covers and speed regulations for vehicles engaged in transportation – Noise levels will be maintained below threshold levels stipulated by CPCB/APPCB – Machinery/construction equipment will be with specifications conforming to source noise levels less than 75 dB (A) – Well-maintained construction equipment, which meets the regulatory standards for source noise levels, will be used |

| S. No. | Activity | Relevant Environmental Components likely to be Impacted | Proposed Mitigation Measures |
|--------|--|---|--|
| | | | <ul style="list-style-type: none"> – Any equipment emitting high noise, wherever possible, will be oriented so that the noise is directed away from sensitive receptors; Noise attenuation will be practised for noisy equipment by employing suitable techniques such as acoustic controls, insulation and vibration dampers – High noise generating activities such as piling and drilling will be carried out in scheduled timings to minimise noise impacts – Personnel exposed to noise levels beyond threshold limits will be provided with protective gear like earplugs, muffs, etc.; Ambient noise levels will be monitored at regular intervals; Exercise route selection, traffic regulations, timings etc. |
| | | Disturbance to Natural Drainage pattern | – The project site is not having any drains passing across and project development will ensure proper drainage system without impacting the surroundings |
| | | Vegetation and Strain on existing infrastructure | – Care will be taken to minimise the loss of vegetation; Green belt of 20 ha will be developed; Temporary construction workers camp with self-sufficient infrastructure facilities will be provided |
| | | Existing Traffic | <ul style="list-style-type: none"> – The project site is connected to NH 16 through a road via Vontimamidi – Thondangi – Kottapalli – Annavaram – To mitigate impacts from transportation of construction material, existing roads will be strengthened and widened where necessary – For transport routes passing through dense habitations, bypass roads will be provided; Transportation of construction materials will be mostly carried out during non-peak hours – Traffic Wardens shall be deployed at villages for regulating the traffic – Drivers would be sensitized with respect to need to drive carefully while passing through the villages; Speed of the trucks shall be controlled especially when passing through villages by providing speed breakers, sign boards and other appropriate speed control techniques. |
| 3. | Land Reclamation for raising the level of Backup area. | Existing Water Resources like Groundwater and surface water | <ul style="list-style-type: none"> – No direct Hydraulic filling of back up area is envisaged. The dredged materials will be pumped to the area near coast, which will be separated from adjoining land by creating containment bund; Return Seawater will be sent back to sea. – Land reclamation is proposed to be carried out to raise the level of back up area by using the dredged materials (dry); – |
| 4. | Solid Waste Management | Soil quality | <ul style="list-style-type: none"> – Construction waste shall be used within project site for filling of low lying areas – Cut material shall be used within project site for levelling the site – Local authorised waste recycler shall be employed to remove general refuse from the site, separately from construction waste and hazardous wastes – Recyclable wastes will be disposed through approved APPCB vendors |

| S. No. | Activity | Relevant Environmental Components likely to be Impacted | Proposed Mitigation Measures |
|------------------------|--|---|--|
| | | | <ul style="list-style-type: none"> – Excavated soil shall be stockpiled in a corner of the site in bunds to avoid run off with storm water – General refuse generated on-site shall be collected in waste skips and separated from construction waste – Burning of refuse at construction sites shall be prohibited |
| 5. | Handling of hazardous wastes | Human safety and property loss | <ul style="list-style-type: none"> – Adequate safety measures as per OSHA standards will be adopted – Construction site will be secured by fencing with controlled/limited entry points – Hazardous materials such as lubricants, paints, compressed gases, varnishes, etc., will be stored as per the prescribed/approved safety norms. Handling and storage as per statutory guidelines. – Medical facilities including first aid will be made available for attending to injured workers – Hazardous wastes will be disposed through approved APPCB vendors |
| 6. | Fishing | Fishermen and fishing villages | <ul style="list-style-type: none"> – Signboards will be placed at the construction activities in order to make fishermen aware of the ongoing activities – Necessary marker buoys will be installed; Interactions will be initiated with the fishing community before commencement of construction works – Construction shall be limited to as per the development plan; Proper Planning and execution of offshore construction activities to ensure the completion of construction as per schedule – Slop tanks will be provided to barges/workboats for collection of liquid/ solid waste |
| 8. | Water Resources | Water scarcity/Pollution | <ul style="list-style-type: none"> – Water requirement during the construction is around 155 KLD and will be sourced through authorized local water suppliers – Care will be taken to prevent the runoff from the construction site to the nearby natural streams; Optimized utilization of the water – Construction camp wastewater will be collected and sent to septic tanks followed by soak pits |
| Operation Phase | | | |
| 1. | Cargo handling and Inland Cargo movement and storage areas | Air Quality | <ul style="list-style-type: none"> – Covered Conveyor; Wind Barrier; Dust Suppression System at stockyard, Transfer towers, at berth/Unloaders, at wagon/truck loading, etc. – Use of Specialised Unloaders; Proper house-keeping; Trucks and railway wagons before leaving the loading area shall be covered with tarpaulin – Empty coal trucks and areas susceptible for coal dust before leaving premises shall be cleaned/washed to remove coal particles. – Green Belt; Scientific and regulated stacking of cargo piles – Regularization of truck movement; Periodic cleaning of cargo spills |

| S. No. | Activity | Relevant Environmental Components likely to be Impacted | Proposed Mitigation Measures |
|--------|-------------------------------------|---|---|
| | | | <ul style="list-style-type: none"> – Vessels visiting the facility shall meet emission standards as per MARPOL |
| | | Noise | <ul style="list-style-type: none"> – Acoustic Barriers and Enclosures; Personal Protecting Equipment (PPE) – Greenbelt Development; Counselling and traffic regulation |
| | | Induced Traffic | <ul style="list-style-type: none"> – Most of the cargo is proposed to be transported though dedicated Rail corridor from port site to SCR main line – Beach road passing through the project site is proposed to be widened to four lane upto Annavaram thus connecting NH-16 – As per the traffic study and proposed widening of surrounding roads, which are connecting National Highway to four lane will cater the Phase I port traffic – Speed of the trucks shall be regulated by providing speed breakers, sign boards and other appropriate speed control techniques – Proper lighting, signboards shall be provided at required locations |
| 2. | Aqueous discharges in harbour basin | Marine water quality and ecology | <ul style="list-style-type: none"> – Ships are prohibited from discharging wastewater, bilge, oil wastes, etc. into the near-shore as well as harbour waters – Ships would also comply with the MARPOL convention; As a mitigation measure for spillages an Oil spill Contingency Plan shall be prepared and implemented – Provision of waste reception facility during emergency |
| 3. | Cargo and Oil spills (Accidental) | Marine water quality and ecology | <ul style="list-style-type: none"> – In case of any cargo spillage during transfer from/to ships, it will be attempted to recover the spills; Oil spill control equipment such as booms/barriers will be provided for containment and skimmers will be provided for recovery – Response time for containment and recovery will be quicker |
| 4. | Maintenance dredging | Marine water quality Marine Ecology | <ul style="list-style-type: none"> – Maintenance dredging material will be disposed in identified disposal ground or will be used for beach nourishment towards North of project site – It will be ensured that dumping of the excess/unusable dredge material would be uniform; Environmental Monitoring Programme comprising of monitoring of marine water quality, marine sediment quality and marine ecology will be initiated one week prior to commencement of dredging and will be carried out during the dredging period |
| 5. | Water Supply | Water resources | <ul style="list-style-type: none"> – The water requirement is estimated at 772 kl/day during Phase I. The required water will be sourced from Samalkota Canal or alternatively from Nakkalakhandi Drain. |
| 6. | Wastewater Discharge | Water Quality | <ul style="list-style-type: none"> – 40 KLD capacity of STPs to be developed as a part of Phase I development in port operational area and 100 KLD STP to be developed at Port Colony – STPs to treat the sewage generated in the premises and treated wastewater from STPs will be used for irrigating the greenbelt – Oil-Water Separator; Settling Pond at Coal Stockyard; Storm Water Drainage System |
| 7. | Solid Waste Management | Groundwater and Soil quality | <ul style="list-style-type: none"> – STP sludge will be used as manure in green belt |

| S. No. | Activity | Relevant Environmental Components likely to be Impacted | Proposed Mitigation Measures |
|--------|------------------------------|---|---|
| | | | <ul style="list-style-type: none"> – Organic Waste Composter will be provided. Composted bio-degradable waste will be used as manure in greenbelt. – Other recyclable wastes will be sold to APPCB authorised vendors |
| 8. | Handling of hazardous wastes | Fire accidents due to products handling and other health hazards. | <ul style="list-style-type: none"> – Hazardous materials will be stored as per the prescribed/approved safety norms – Hazardous wastes (used oil and used battery) will be sent to APPCB approved recyclers – Medical facilities including first aid will be available for attending to injured workers – Emergency alarms, provision of fire hydrant system and fire station – Effective Disaster Management Plan (DMP) which covers onsite and offsite emergency plans |
| 9. | Fishing activity | Fishermen livelihood | <ul style="list-style-type: none"> – Necessary marker buoys will be installed – Interactions will be initiated with the fishing community before commencement of operations – Educate the fishermen about the orientation of approach channel and ships visits, etc. – Regular interactions with the fishing community – Conflicts, if any, with fishing community will be amicably resolved in all cases |
| 10. | Presence of Breakwaters | Shoreline; Natural current pattern/flow during high and low tides | <ul style="list-style-type: none"> – Sand bypassing from accreted area to eroding area – Shoreline monitoring will be carried out |
| 11. | Operation Of Port | Socio-economic conditions of the region | <ul style="list-style-type: none"> – During operational phase, the project is likely to generate employment for 1,000 people on direct and indirect basis within port premises and around 3,500 people will get employment due to port ancillary developments (indirect employment). Local people will be given preference based on their qualification and skill set. Together with this employment potential, project will help to enhance the socio-economic conditions of the area with better schooling, communication and transport facilities that will be developed/triggered as a part of overall economic development of the region. |
| | | Natural Hazards | <ul style="list-style-type: none"> – Disaster Management Plan (DMP) is prepared; Site Main controller will act as the overall in-charge of the control of training, protective and rehabilitation activities to ensure least damage to life and property |
| | | Induced Development | <ul style="list-style-type: none"> – Offers an efficient and cost effective supply chain/value proposition to the local importers and exporters |

9 Environmental Monitoring Programme

Post project environmental monitoring programme has been formulated and the same will be implemented. The effective implementation and close supervision of the Environmental Management Plan to mitigate the environmental impacts, which are likely to arise due to the construction and operation phases of the project would be achieved through a suitable institutional mechanism.

10 Budgetary Estimate for Environmental Management

The budgetary estimate (Capital Cost including construction phase) for Environmental Management is **Rs. 70.0 Crores** (INR 700 Million) and the Annual Recurring Cost estimate is **Rs. 6.6 Crores** (INR 66 Million).

11 Additional Studies

11.1 Risk Analysis

Risk Analysis study was carried out to assess risks associated with the construction and operation of the proposed Kakinada SEZ Port. The Risk Assessment thus carried out also provides inputs for formulating the onsite Disaster Management Plan (DMP). The Risk Analysis covered the following:

- Hazard Identification including Failure Frequency
- Hazards due to Natural Calamities
- Risk reducing measures.

11.2 Disaster Management Plan

The Disaster Management Plan (DMP) is aimed to ensure safety of life, protection of environment, protection of installation, restoration of operations and salvage operations in the same order of priorities. For effective implementation of DMP, it would be widely circulated and personnel training will be provided through rehearsals/drills.

A framework for DMP was prepared to minimise damages in the event of a disaster. An On-Site Emergency Preparedness Plan and Off-Site Emergency Preparedness Plan including Oil Spill Contingency Plan were prepared to deal with emergencies and prevent disasters.

An institutional framework with clear assignment of roles and responsibilities was broadly prepared within which location of Emergency Control Centre and Assembly Points are identified. Communication system and alarm systems for effective communication in the event of a disaster are identified. DMP for natural hazards such as cyclones, tsunami, etc. was prepared. Mutual aid scheme, composition of District Level Emergency Committee and aspects relating to community involvement for dealing with off-site disasters were prepared.

11.3 Social Impact Assessment

The following assessment is specifically addressing the potential impacts due to the proposed development of Port.:

- Land required for Phase I development is under project proponent possession. Hence, project does not attract land acquisition and no R&R is involved.
- The impact on nearby settlements during construction phase will be due to air pollution and the noise generating activities.

- However, the activities are limited to the construction phase and will cease upon completion of the construction.
- Dust suppression measures such as sprinkling of water and suitable enclosures around the high noise generating areas within construction area will be provided.
- For impacts on fishing activities, necessary mitigation measures will be followed.
- Due to project proposed project construction, employment potential of about 750 personnel on direct basis and around 1,500 on indirect basis will be created. During operational phase, the port is likely to generate employment for 1,000 people on direct and indirect basis within port premises and around 3,500 people will get employment due to port ancillary developments (indirect employment).

11.4 Traffic and Transportation Study

Traffic and transportation study was carried out by considering traffic growth on existing connectivity along with Kakinada SEZ Port generated traffic by road. With the proposal of widening of existing roads around the Kakinada SEZ Port under various schemes proposed by GoAP and Government of India, the Phase I port traffic will be catered. A dedicated rail corridor of 11 km from port site to South Central Railway main line will cater most of port generated traffic.

12 Corporate Social Responsibility

Kakinada SEZ is undertaking CSR activities in the project region over the past 6 years in the following areas:

- Education
- Health, hygiene and sanitation
- Empowerment and livelihoods
- Community development initiatives.

The CSR expenditure incurred for the period 2010-15 is **Rs. 8.8 Crores**. In addition, CSR budgeted for the period 2016-19 is **Rs. 6.7 Crores** for community development including fisher folk in the project region.

After the construction period, once operations are started CSR activities would be continued. During operation phase, annual recurring CSR cost will be of 2% of the average net profits of the three immediately preceding financial years of the Kakinada SEZ Port as per Companies Act, 2013. Besides the on-going CSR activities, any other initiative arising out of community needs would also be undertaken.