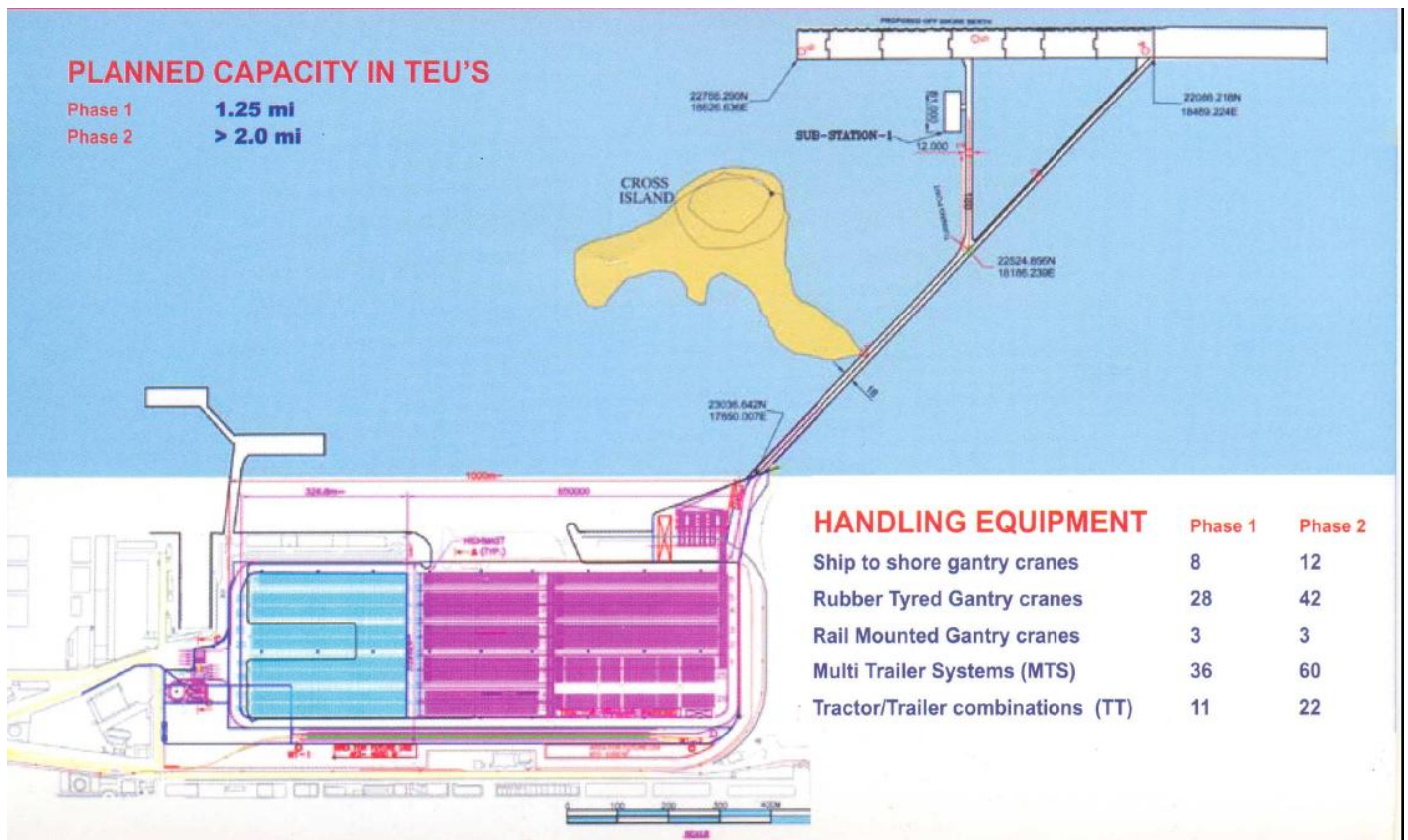


INDIRA CONTAINER TERMINAL PVT. LTD. (ICTPL)



ENVIRONMENTAL AND SOCIAL DUE DILIGENCE REPORT

April, 2014 (Ver 4.0)

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LIST OF ABBREVIATIONS

BOT	Build Operate & Transfer
BPS	Ballard Pier Station
BPX	Ballad Pier Extension
CD	Chart Datum
CES	Consulting Engineering Services
CPCB	Central Pollution Control Board
CRR	Compliance Review Report
CRZ	Coastal Regulation Zone
DSPL	Dragados Servicios Portuarios Y Logisticos, S.L
D.O	Dissolved Oxygen
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ESDD	Environment and Social Due Diligence
GIL	Gammon India Ltd.
GIPL	Gammon Infrastructure Pvt. Ltd.
HA	Hauer Associates
ICB	International Competitive Bidding
ICTPL	Indira Container Terminal Pvt. Ltd.
IE	Independent Engineer
IIFCL	India Infrastructure Finance Company Ltd.
JICA	Japan International Cooperation Agency
JNP	Jawaharlal Nehru Port
LA	License Agreement
LE	Lender's Engineer
MbPT	Mumbai Port Trust
MCGM	Municipal Corporation of Greater Mumbai
MoEF	Ministry of Environment and Forest
MPCB	Maharashtra Pollution Control Board
MT	Million Tonne
MTEU	Million Twenty Feet Equivalent Unit
MTS	Multi Trailer System
NSICT	Nhava Sheva International Container Terminal
O & M	Operation and Maintenance
OCT	Offshore Container Terminal
RCD	Railway Container Depot
RMQC	Rail Mounted Quay Crane
RMG	Rail Mounted Gantry
RTG	Rubber Tyred Gantry
SSGC	Ship to Shore Gantry cranes
TEU	Twenty Feet Equivalent Unit
TT	Tractor Trailer

ENVIRONMENTAL AND SOCIAL DUE DILIGENCE REPORT

1. INTRODUCTION

1.1. BACKGROUND

1. In 1996, the Japan International co-Operative Agency (JICA) undertook a study of the existing Mumbai Port and the developmental activities in the surrounding areas (such as Jawaharlal Nehru Port etc.) to formulate a master plan and suggest short term development/improvement plan for Mumbai Port.
2. The JICA study identified the bottlenecks that restrict the growth of container traffic at Mumbai Port. The main bottleneck was the shallow depth at berth and channel and hence inability to take larger container vessels. Subsequently, M/S Consulting Engineering Services (India) Pvt. Ltd. (CES) was engaged by Mumbai Port to review the JICA's report and their recommended proposals with particular reference to container traffic handling in Mumbai.
3. CES, in their feasibility report recommended construction of two berths in stage I (short term plan) and third berth in the **Stage II** to meet the need to bring vessels of 2500 TEU capacity. After acceptance of CES's report Mumbai Port Trust (MbPT) conducted road shows in Mumbai, Dubai, Singapore to publicize the matter among prospective builders. However after road shows considering the views of prospective builders, it was decided that the berths should be designed for 4500 TEU vessel instead of 2500 TEU looking at the trend of increase in size of container vessels.
4. Subsequently, Indira container Terminal Pvt. Ltd (ICTPL or Company) has been awarded the project on Built-Operate-Transfer (BOT) basis under a license granted to it by Mumbai Port Trust (MbPT). The Licensee is also require to operate and maintain the existing container operations of MbPT at the Ballard Pier Station (BPS) for the first five years of the License.
5. ICTPL, a special purpose vehicle, has been set up by a consortium comprising Gammon India Limited (GIL), Gammon Infrastructure Projects Limited (GIPL) and Dragados Servicios Portuarios Y Logisticos, S.L (DSPL). The consortium was selected by MbPT pursuant to an international competitive bidding (ICB) process.
6. ICTPL will undertake the works of approach trestle, Jetty Yard Machinery, paving of container yard, administration and operational buildings, electric water supply schemes, sub-stations, fire fighting schemes etc.
7. On the other hand Mumbai Port will undertake the works of capital dredging, filling of prince's and Victoria Docks (P.V Docks), rail siding and demolitions of old ware houses & sheds. MbPT has awarded the work of capital dredging (including filling of Prince's and Victoria Docks) on 1st April 2009.

8. ICTPL has signed the Common Loan Agreement on **14th of November 2008** with the lenders¹ including India Infrastructure Finance Company Ltd. (IIFCL). IIFCL as part of its infrastructure scheme has approved Rs 160 Crores to ICTPL out of the total project cost of Rs 1015.66 Crores. Out of the approved Rs 160 Crores, IIFCL has already disbursed Rs 94.33 Crores to ICTPL till 31st March, 2014.
9. World Bank has sanctioned US\$ 195 million line of credit to IIFCL to encourage flow of private investments into infrastructure. The sub-project has been considered for retroactive financing out of the above line of credit from World Bank. In order to be eligible for funding from the WB loan facility, Compliance Review Report (CRR) need to be prepared for the sub-projects which includes (i) Finance; (ii) Procurement; (iii) Environment and (iv) Social aspects. The Present report on Environmental and Social Due Diligence (ESDD) is part of the CRR.

1.2. SCOPE OF THIS REPORT

10. This ESDD has been prepared is based on to the data collated and analyzed on environmental and social safeguard measures being implemented by the project , integrated in the project documents, EIA/EMP reports and other compliance reports. The report also reviews the compliance of the sub-project with respect to applicable environmental and social regulations of Govt. of India as well as the environmental and social safeguard requirements of World Bank.

1.3. LOCATION:

11. The project is located in the Mumbai Port, which is part of Mumbai harbour, one of the major parts of India. The Port of Mumbai is situated almost midway (Latitude 18°05.3'N, Longitude 72°45.9' E) on the west coast of India and covers a harbour of 400 square kilometers, protected by mainland of Konkan on its east and Island of Mumbai on its West.
12. The Mumbai harbor is approached from south-west, with mainland to the east, and the city of Mumbai to the west. The harbor width is around 8 km at the entrance. The total length of the dredged channels of Mumbai port is about 30.4 km. A major part of dredged channel is the main harbor channel (length 23.1km) running between the Prong's reef at the western end of the harbor and the oil berths at Jawahar Dweep. The Mumbai harbor channel is presently maintained at a depth of 10.7 m to 11.0m CD. As part of development of the project, MbPT shall dredge the common user approach channel, turning circle and basin in front of the berth as required for 14.5m draft vessels.

13. The project location map is shown in **Figure 1.1**.

¹ The lenders of the project include Canara Bank (25.84%), PNB (24.62), Central Bank of India (22.53%), IIFCL (19.69%), UBI: (7.32%).

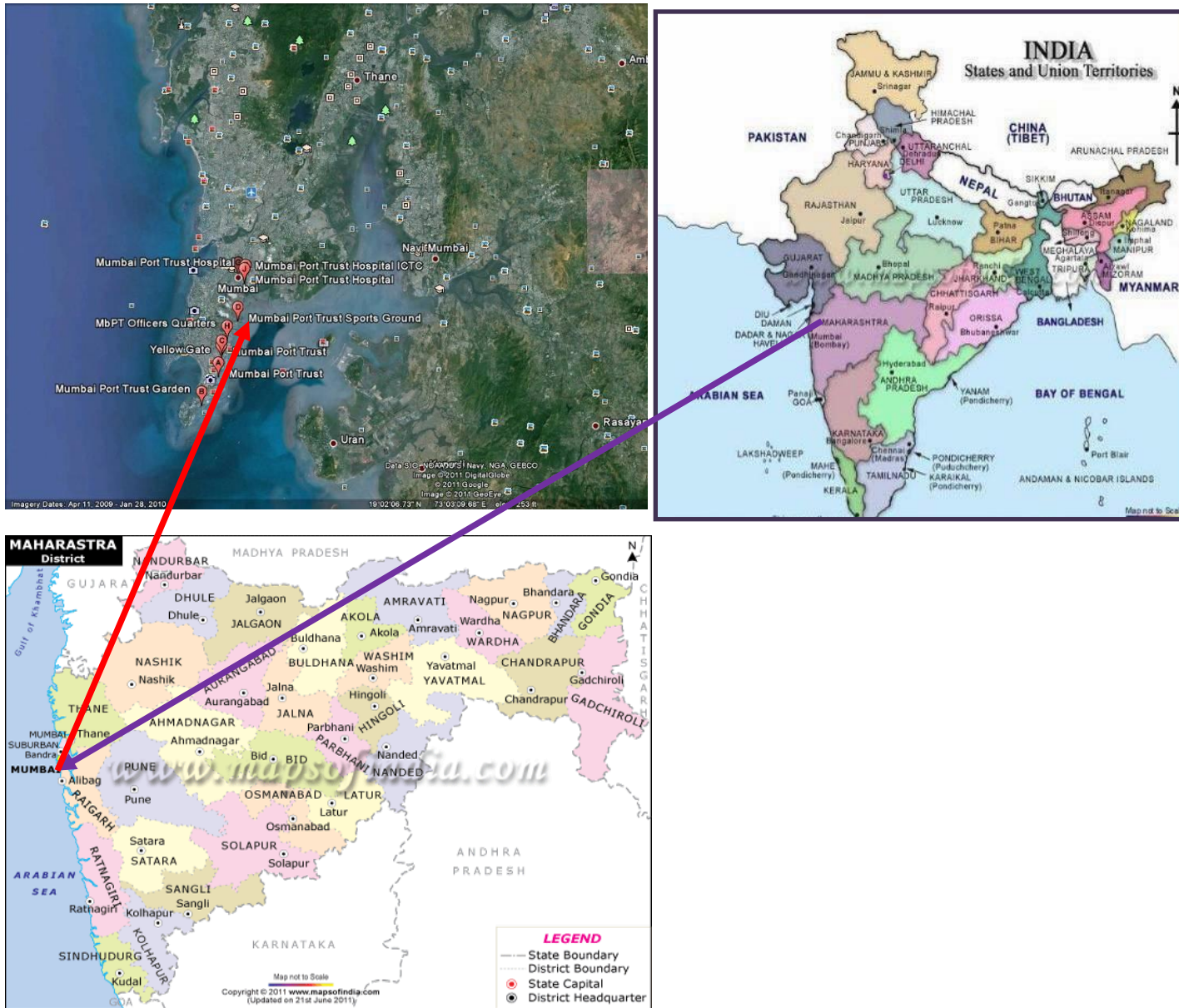


Figure:1.1: Location Map-Mumbai Port

1.4. PROJECT DESCRIPTION:

14. The BOT project mainly comprises of two parts:

- (a) Operation and Management including necessary developments, modifications and augmentation of facilities of Ballard Pier Station (BPS);
- (b) Development, Construction, Operation and Management of the offshore container terminal (OCT) in Mumbai Harbour

15. The Scope of ICTPL's work include:

(a) Berths:

16. The size of berthing structure would be 700m x 58m. The Length Overall (LoA) of 4500 TEU vessel is 285M and that of 6000 TEU vessel is 300M. Hence total berth length of 700M can accommodate even 2 Nos. of 6000 TEU vessel also, considering future trend of larger container vessels. Accordingly the berths will be designed for 6000 TEU vessel. As regards the width of 58M of the berths, it will be able to accommodate Rail Mounted Quay side Cranes (RMQC) of 30M Gauge and provide space for placing hatch covers and / or containers up to a height of 2 Nos. and traffic lanes for incoming and outgoing tractor trailers carrying containers. The offshore berths will be connected to South of Victoria dock by the R.C.C. trestle of 12 to 18M width (.Y. shaped) and 1 Km length. .Y. shape of trestle will facilitate smooth movement of trailers from container yard to berth & Vice Versa.
17. The foundation for trestle and berths will be piled foundation and superstructure will comprise pre cast concrete and in situ concrete work.

(b) Cargo Handling Equipment:

18. Using industry standard productivity assumptions and statistical modeling of moves based on cargo mix, the requirement of equipment as per build up of traffic was firming up by ICTPL. At the time of start of commercial operations ICTPL will provide 6 RMQCs, 20 Rubber Tyred Gantry Cranes (RTG), 4 Reach Stackers, 2 Rail Mounded Gantries (RMG), 25 Multi Trailer System (MTS), Tractor Trailer (TT). As the traffic builds up further addition will be made.

(c) Other Port Facilities:

(i) Navigation Aids:

19. The existing port of Mumbai & Jawaharlal Nehru Port use the common/ main harbour channel from Prongs light house to Elephanta Island (25 km.). MbPT has provided adequate navigational aids for safe navigations in the Channel. In addition, MbPT in the year 1999 has provided Vessel Traffic Management System (VTMS) for tracking every

individual vessel navigating in Mumbai harbour. Therefore for OCT project no major navigational aids are considered necessary except for 1 Km. length in front of offshore berth. These will be provided by MbPT.

(ii) Stack Yard:

20. The area of 45 Ha. of P & V Docks has been declared as Container Yard by MbPT for the OCT project. This area includes 22 Ha. of dock basins and 23 Ha. of wharves and finger jetties. MbPT the licensor will fill up the P & V docks to achieve safe bearing capacity of 10T / sq. m. (CBR = 6) As per Cl. No. 2.1.3.2. of L.A. only 35 Ha. of container yard will be initially handed over to ICTPL by MbPT. Remaining 10 Ha will be handed over after ICTPL starts construction of 3rd berth within 10 years of operation or after achieving 0.8 million TEU traffic / Annum for 2 years whichever is earlier.
21. After getting P&V docks filled up by MbPT, ICTPL will provide gravel bed/concrete, RTG tracks in the container yard along with other operational building, workshop etc.
22. Container stacks will be designed parallel to the berth. There will be 4256 slots for loaded container and 882 ground slots for empty containers. There will be 560 ground slots for Refer containers and additional 2772 ground slots for empty / loaded containers. Loaded containers will have 5 high and empties 6 high making the total stacking capacities for (35 ha.) for 42672 TEUs.

(d) Utilities and Services

(i) Utility Building:

23. Container yard will accommodate all the buildings. Administrative building will accommodate port offices, customs, security, users & telecommunication facilities. Workshop will cater to emergency repairs. Field offices, toilets and canteen facilities will be available at suitable locations near the berth and container yard.

(ii) Storm Water Drainage

24. The entire onshore area will be graded to slope towards the sea and the water will be drained into the sea. R.C.C. drains will be constructed to carry storm water drainage of areas other than gravel bed yard area for which 2 Nos. 300 mm Dia. UPVC pipes perforated at bottom will be provided.

(iii) Water Supply and Sewage Disposal:

25. As per Article 8.17(i) of the License Agreement, MbPT the licensor, will supply water to the Project except for the construction purposes as made available to the Licensor by Municipal Corporation of Greater Mumbai (MCGM) on payment of charges as per consumption shown by water meter. The take off points for water to be supplied at berths will be the nearest available water line. As regards sewage disposal, the ICTPL will be required to design and provide network of suitable pipelines from their buildings to

the nearest sewer of MbPT which in turn has been connected to MCGM.s sewer network for further transport to the sewage treatment plant of the city.

(iv) Fire fighting System

26. Article 2.2 of L.A. requires Licensee to design and construct this system. The fire fighting system for the container berths, buildings and container stack yard will consist of seawater based loop hydrant system. Vertical turbine pumps along with Jockey Pumps will be installed by the Licensee in the new Fire Water pump houses to be constructed in container yard and on the berth.

(v) Electrical System

27. Article 8.17 of L.A. states that Licensor will supply power to ICTPL the Licensee to the extent of 3 MVA as made available to the Licensor by Tata Power Co. Ltd. (TPC) on payment of charges. If additional power is required by the Licensee, the Licensor will co-ordinate with TPC to make available to the Licensor the additional power requirement. As per preliminary design criteria shown in Appendix 21 of L.A. Licensee will construct two sub-stations for electric supply to RMQCs at berths and for operational buildings in yard lighting, fire pumps etc. in container yard. Underground cables of suitable capacity will be laid for electrical system.

28. The Scope of Mumbai Port Include:

(i) Channels:

As per LA, the MbPT shall carry out the capital dredging and maintenance work to achieve the following levels:

- (a) For BPS: As required for 9.7m draft vessels and shall be maintained at every dredging cycle in the year;
- (b) For OCT: The common user channel, turning circle and basin in front of berth as required for 14.5m draft vessels and these levels will be maintained at every dredging cycle.

29. Approximately 13 million m³ dredging is expected out of which 2-3 million m³ shall be used for filling.

(ii) Filling:

30. Filling of Victoria and prince's dock basins are to be undertaken by MbPT. It is proposed to close the dock gates and fill the intermediate areas with selected filling materials. Simultaneously, a short area immediately on the sea side of the outer gates will be filled with stones.

31. The location of OCT berths and stack yard is shown in **Figure 1.2.**

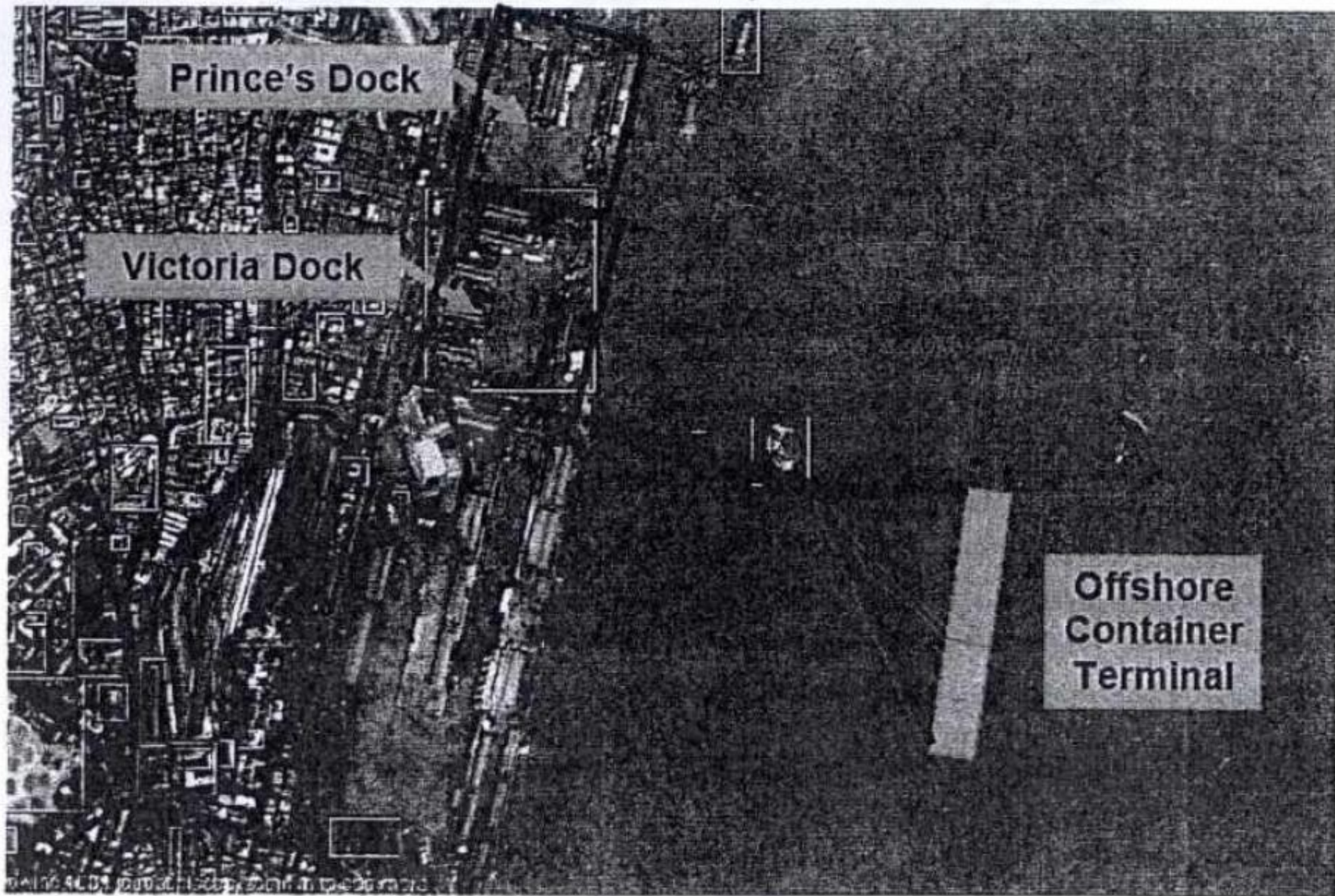


Figure 1.2: Location of OCT berths and stackyards

1.4.1. **Project Construction Status:**

32. M/s Frischmann Prabhu (India) Pvt. Ltd. has been appointed as the Lender's Engineer to monitor the progress in construction activities including the Quality, Health and Safety Aspects. The progress status as referred from the LE's monthly progress report , October 2013 is given below:

- Effective date of start of work as per EPC contract is 12th May 2009 (ICTPL has awarded the EPC contract to GIL), The scope of EPC contract include:
 - Construction of RCC trestle;
 - Berths;
 - Paving of different kinds for container yard;
 - Administrative and Operational buildings;
 - Water Supply;
 - Firefighting sanitary works and gate complex
- Designs for the facilities were approved in June 2010 by Mb PT;
- GIL has set up full-fledged laboratory, workshop and office building and cement godown at site;
- GIL has procured material for piling gantries. Fabrication of one big gantry for approach trestle has been completed and it has been launched and positioned.
- Test pile for approach trestle has been cast and high tension wires were put in bore hole and grouted. Static, lateral and dynamic load testing have been completed;
- Piling for approach trestle has been completed up to 259 piles out of 259 piles. Piling for Main Berth has commenced in June 2010 and 785 piles out of 785 piles have been completed.
- Piling for Fire Water Platform has commenced in November 2010 and all 48piles have been completed.
- All expansion piles have been completed.
- GIL has developed casting yard with 2 EOT cranes installed therein together with one concrete batching plant. 50 beds for beams/slabs are ready.

33. The details of the project description and activities undertaken are given in Chapter-3 of Technical Report of Lender's Engineers (LE) Report as enclosed in **Appendix-I**.

1.5. **STRUCTURE OF THIS REPORT:**

34. The report has two major sections. In **Section-2**, the due diligence carried out on environmental safeguards has been provided including the details of compliance of the project with respect necessary clearance requirement of GOI and compliance with safeguard policies of World Bank. This is then further followed by adequacy of the EA and EMP study, analysis of alternatives and public consultation details. **Section-3** presents due diligence of social safeguards including the impact of the project for land acquisition, resettlement issues, project benefits and public consultation.

2. ENVIRONMENTAL DUE DILIGENCE

35. As part of the Environmental due diligence, the compliance of the project was reviewed with respect to
- (i) Applicable regulatory clearances (like environmental clearance, CRZ clearances etc.);
 - (ii) Environment and Social safeguard framework (ESSF) of IIFCL
 - (iii) respective safeguard requirements of World Bank;
 - (iv) the process of identifying environmental impacts and integration of environment management measures;
 - (v) public consultation;
 - (vi) EMP implementation mechanism and Environmental Quality Monitoring
 - (vii) Environmental Management Plan for Dredging Work
 - (viii) EPC Contractor's Health, Safety and Environment (HSE) Plan
 - (ix) EPC Contractor's Emergency Preparedness and Response Plan
 - (x) HSE Compliance Status of EPC Contractor
 - (xi) Details of Hazardous Substances Handling and Management

2.1. COMPLIANCE TO CLEARANCE:

36. The development of construction of two offshore container berths (length 350m, width 58 m per container berth), the first stage and the third berth in the second stage and development of container terminal on BOT basis in Mumbai harbour requires Environmental Clearance and requires an EIA/EMP study. As part of the project necessary clearances and permits has already been obtained by Mumbai Port Trust. The current status of availability of such clearances and the relevant conditions applicable to the project is given in **Table 2.1**.

Table 2.1: Statutory clearance required and present status of clearance:

Clearance Required	Statutory Authority	Current Status of Clearance
Environmental Clearance including CRZ clearance	Ministry of Environment and Forests, New Delhi	MoEF has granted the Environmental Clearance on 15 th June 2006 to Mumbai Port for construction of two offshore container berths and development of container terminal. Mumbai Port Trust regularly sends compliance to clearance conditions to MoEF. The compliance to some of the important clearance conditions condition of the clearance is given in table 2.5. On the first page of EC letter, 2 nd para, its mentioned that both the berths and trestle are constructed over piled formation, only the berths and trestle fall within coastal regulation zone area, rest the other facilities are located outside the coastal regulation zone area. On the second page of EC letter, just before specific conditions, its being mentioned that The

Clearance Required	Statutory Authority	Current Status of Clearance
		<p>proposal has been examined in the Ministry of Environment & Forests and environmental Clearance to this project is hereby accorded under Environment Impact Assessment Notification,1994 and Coastal Regulation Zone Notification, 1991.</p> <p>MOEF has extended the validity of the clearance dated 15.06.2006 for a period of five years vide letter No. 10-18/2005-IA.III dated 7th June, 2004. Accordingly, the validity of clearance is extended upto 14.06.2016.</p>
Consent to Establish	Maharashtra Pollution Control Board (MPCB), Mumbai Office	<p>The consent to establish has been granted on 17.01.2006 and is granted up to commissioning of the unit.</p> <p>Consent (under water act, Air Act and HW (M&H) Rules) has been awarded for Construction of offshore container berths and development of container terminal in Mumbai Harbour as mentioned on page no. 1 of consent to establish.</p>
Chief Controller of Explosives (CCoE) Permission for Diesel Storage	Petroleum and Explosives Safety Organisation, Ministry of Commerce and Industry, Govt. of India, CBD Belapur, Navi Mumbai	<p>CCoE permissions for storage of Petroleum Class B (Diesel) at location of Mazgaon, Mumbai of Mumbai district (Maharashtra State) have been obtained from Joint CCoE, West Circle, Mumbai.</p> <p>License No. P/WC/MH/14/3558 (P28694), Validity Till 31/12/2013 (Applied for extension of validity period).</p>
Labour License	Office of Dy. Chief Labour Commissioner (Central), Sion (E), Mumbai	<p>The establishment has been registered under the provisions of the Contract Labour (Regulation and Abolition) Act, 1970 and the Contract Labour (Regulation and Abolition) Central Rules, 1971 and labour license has been obtained for the project under the said act.</p> <p>The original License No. B-46(50)/2009-L, dated 22/05/2009 has been renewed by the Ministry of Labour & Employment, Govt. of India upto 21/05/2014 vide letter dated 13/04/2013.</p>

37. The relevant clearance copies are enclosed as **Appendix-II**. For Coverage of accident risks and group health insurance cover for workers, Gammon India Limited (GIL) has taken risk coverage by special contingency Policy for Contractor's Plant and Machinery Insurance from United India Insurance Co. Ltd.(Valid till 29/05/2014) and Group Health

Insurance for workers from Reliance General Insurance (Valid till 19/06/2014). These insurance related policy documents are also included in **Appendix-II**.

38. Summary of Clearance:

- Mumbai Port trust has received the Environmental Clearance for the construction of two offshore container berths and development of container terminal. The present project of “Develop, design, finance, construct, equip, operate, maintain offshore container berth to handle two vessels of size 6000 TEUs with average dimensions of LOA 275 m, beam 42 m, and fully laden draft 14.5 m” is part of the environmental clearance.
- The Consent to Establish as issued for Mumbai Port Trust includes conditions to be applicable to the project under Water (Prevention and Control of Pollution) Act, 1974 and under section 21 of the Air (Prevention & Control of Pollution) Act, 1981.
- The project does not require any forest diversion; hence no forest clearance is required.
- CCoE Permission for storage of Petroleum Class B at project site has been obtained under rule 148 of Petroleum Rules, 2002.
- Contract Labour License required for 500 workers has been obtained from the office of Assistant Labour Commissioner, Mumbai under Contract Labour (R&A) Act,1970 and Central Rules, 1971.

2.1.1. Other Legislation Applicable to Construction Activities:

39. The other applicable legislation pertaining to the construction activities of port terminal are given below:

- **Minimum Wages Act, 1948** (the employer is supposed to pay not less than the Minimum Wages fixed by appropriate Government as per provisions of the act);
- **Child Labour (Prohibition and Regulation) Act, 1986** (the Act prohibits employment of children below 14 years of age in certain occupations and processes and provides for regulation of employment of children in all other occupation and processes. Employment of child labour is prohibited in Building and Construction industries)
- **The building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act 1996 and the Cess Act of 1996** (all the establishments who carry on any building or other construction work employs 10 or more workers are covered under this Act; the employer of the establishment is required to provide safety measures at the building or construction work and other welfare measures, such as canteens, first-aid facilities, ambulance, housing accommodation for workers near the workplace etc.)

40. Environment and Health and Safety Provisions in EPC contract: ICTPL has entered in to an EPC contract agreement with their contractor M/s. Gammon India Ltd. Relevant EHS clauses as per EPC contract agreement are mentioned as follows:
41. Clause no. 7.20 all safety pre-cautions are kept as contractor's responsibility. The Contractor shall comply with the provisions of all the Applicable Laws relevant to safety provisions for the execution of the Construction Works.
42. Clause no. 7.21 -protection of environment including minimum damage and nuisance to people and property resulting from pollution, noise and other has been considered as part of contractor's responsibility.
43. Additionally removal of hazardous materials, clearance and rehabilitation of construction site after completion of construction work has been detailed in clause nos. 7.23 and 7.24 respectively.
44. Under clause 7.28 and 7.29 said the contractor is required to comply with the relevant labour laws and providing minimum wages to the labour. The Contractor shall make his own arrangements for the engagement of all personnel and labour, local or otherwise, and for their payment, housing, feeding and transport etc. The contractor shall obtain all relevant labour registrations and comply with all the relevant labour laws applying to his employees, Sub-Contractors etc. The mentioned relevant sections of the EPC contract are given in **Appendix-III**.

2.1.2. *Applicable Safeguard Policies:*

45. **Environment and Social Safeguard Framework (ESSF) of IIFCL:** The ESSF defines procedures, roles, and responsibilities, at various project milestones for managing the adverse environmental impacts. Projects financed by IIFCL need to undergo to an environmental and social due diligence process utilizing the procedures described in the ESSF to ensure sustainable project investment.
46. **Applicable World Bank Policies:** The sub-project has been considered by IIFCL for retroactive financing from the World Bank's line of credit. Thus as part of the Environmental Compliance Review, the applicable environmental safeguard policies of World Bank were reviewed.
 - The sub-project falls under category FI (OP 4.01: Environmental Assessment) requiring an environmental assessment.
 - The sub-project activities involve unloading, stacking and loading of containers in the vessels which thus does not involve significant impact issues on ecological environment. Thus the OP 4.04: Natural Habitats and OP:4.36: Forest Land may not be applicable.

2.2. AVAILABILITY OF EIA/EMP REPORT:

47. As a part of Environment Clearance process, Mumbai Port Trust has appointed National Environment Engineering Research Institute (NEERI) for preparation of the EIA and EMP report.
48. The EIA report is found substantive in contents and addresses adequately the baseline environmental status including sediment quality, marine ecology and fisheries data, Impact identification and Impacts Prediction, impact assessment and mitigation measures suggested in form of Environment Management Plan.
49. A copy of the EIA/EMP report is given in the **Appendix-IV**.
50. In October 2008, Mumbai Port Trust however desired to prepare Environmental Management Plan with focus towards compliance of conditions of Environment Department and Pollution control boards regulations of Water Act-1974, Air Act-1981, Hazardous Waste Management Rules, Hazardous Chemicals Storage and Handling Rules and Notifications of EP Act-1986. This report has been prepared by Mr. D.R. Rasal, Advisor-Environment. This report is compilation of baseline data reports of NEERI, WAPCOS and Mumbai Port Trust and the necessary compliances required for conditions of Consent and Authorizations issued by Maharashtra Pollution Control Board and guidelines prescribed by Ministry of Environment. Apart from Environmental Baseline status, prediction of impacts and Environmental Management Plan, this report also covers details on Oil Spill Response Contingency Plan, Responsible Strategies & Disaster Management Plan, Environmental Monitoring Programme along with EMP Budget. This report covers overall project description for onshore & offshore facilities, associated impacts including discharge of wastes by ships in marine environment and its management along with roles & responsibilities at organizational level in MbPT. Copy of this EIA/EMP report is also enclosed in Appendix-IV alongwith Section 4 of Feasibility Report which gives details about analysis of the capacity & type of facilities required to be developed for proposed container terminal development at Mumbai Port Area.

2.3. ENVIRONMENTAL PROFILE AND SENSITIVITY:

51. The EIA report is found substantive in contents and addresses adequately the baseline environmental status, assessment of potential impacts and suggestive measures that are to be taken to minimize the impacts. The primary data of water, air, noise and sediment quality and biological characteristics of the project environs were obtained from field data collection for one season. Samples were collected by NEERI in post monsoon season. The summary of baseline environmental condition is given in **Table 2.2**.

Table 2.2: Summary of Baseline Environment for the Indira Container Terminal (as per EA report)

S.No.	Baseline Parameter	Sampling Results
1	Air Quality	Air quality samples were collected from 5 locations. The SPM concentrations range between 273.7-637.5 $\mu\text{g}/\text{m}^3$ occasionally having higher concentration than the standards. SO ₂ and NO _x concentrations are

S.No.	Baseline Parameter	Sampling Results
		within the stipulated limits of CPCB at all locations.
2	Noise Quality	The noise levels were measured at the same locations where air quality was measured. Noise levels were recorded at 15 minutes interval. The equivalent noise levels are found higher than the CPCB standards in commercial areas.
3	Water Quality	Water samples were collected from five locations near the proposed terminal area. The water quality data are given below: Salinity : 35.7 to 39.0 ppt. pH : 8.0-8.2. DO : 6.6-6.8 mg/l during high tide and 6.1-6.6 mg/l during low tide. C.O.D : 42-92mg/l and 68-93mg/l during high and low tides respectively; B.O.D : 5 to 6.2 mg/l Total Suspended Solids, nitrogen and phosphate registered within the stipulated standards of CPCB at all locations.
4	Sediment Quality	Sediment analysis indicated the presence of substantial quantity of clay and silt particles at all locations. The size distribution of sediments shows that the seabed predominantly consists of clayey silt in all monitoring locations.
5	Marine Biology	Phytoplankton: The average concentration of phytoplankton varied within the range of 31-957 cells/m ³ at harbour area. Chlorophyll: The Chlorophyll content showed the range 0.5-10.7mg/m ³ . While Pheophytin cell showed variation of 0.4-6.9 mg/m ³ at harbor area. Zoo-plankton: The zooplankton population showed lower range of biomass of 0.01-20.9mg/m ³ at harbour area. The population varied between 22-3823ml/m ³ . The most dominant species in the harbour area is Lucifer sp. With population (no/m ³) of 371368. Benthos: The macro benthic population (no/m ³) varied between 0-401 and biomass between 0 and 2.48mg/m ³ at these locations. The values of population of phytoplankton, zooplankton and macro benthos at different stations indicate that marine eco-system under the study area is semi productive in nature.
6	Terrestrial Ecology	The project site does not fall within any of the notified eco-sensitive zone, National parks and Wild life sanctuaries. No rare or endangered species is reported in the EIA report in and around the project site.

52. With reference to presence of historically important buildings, project developer has informed that nearest building is old traffic building in MbPT area which is 100 mtrs. Away from ICTPL project boundary and there are no impacts on this building due to ICTPL construction activities during construction & operation phase. This old traffic building is conserved and it is not used by MbPT for its operations. Outside the Mumbai port boundary, Mumbai port office is also very old building and declared as English Heritage by Municipal Corporation of Greater Mumbai (MCGM). Moreover, ICTPL associated activities will not have any impact on this building as it is situated outside the

boundary of port area. Other nearby historically important buildings are CST railway station building at the distance of 2.5-3 km, Shivaji Raje Archaeological Museum at the distance of 5-6 km and Gateway of India at 6-7 km distance. All these buildings are situated at a significant distance and ICTPL project activities will not have any impact on these structures.

2.4. ENVIRONMENTAL MANAGEMENT PLAN:

53. On the basis of the EIA, it has been found that the project has certain potential of impacts from proposed project construction and other ancillary project activities. The potential impacts from the container terminal project are given in details in Chapter-5 of the EIA report prepared by NEERI. To mitigate or manage the potential impacts, an Environment Management Plan (EMP) has been framed and is given in table 2.3.

Table 2.3: Environmental Management Plan

Activities/Impact Receptor	Parameter	Direct/Indirect Impacts	Proposed Mitigation Measures	Responsibility
Acquisition of Land	Land	No loss of land is envisaged as the land required for the project is being provided by Mumbai Port. No human population to be displaced.		MbPT
Construction Water Requirement	Water	Developer will not extract water from any surface or ground water body for the construction phase of the project.	Developer will not abstract water from any surface or ground water body for the construction phase of the project. No existing resources/water sources (surface/groundwater) which are currently being used by the neighboring population for the purpose of obtaining drinking water and/or water for irrigation or other purpose will be tapped into.	Contractor/ICTPL
Accidental Spillage	Water	The only impact that is envisaged on the terrestrial water quality is accidental spillage of oil or fuel from construction machinery that may run-off into nearby surface or ground water bodies or uncontrolled liquid effluents from labor camps.	The selected contractor will be obliged to follow the procedures detailed in the existing waste management plan and the waste disposal execution plan.	Contractor/ICTPL
Construction of container berth-excavation, filling and disposal of capital dredge spoil	Marine Environment-Sediment Transport and Quality	Construct of container berths could obstruct the littoral transport leading to accretion which may trigger localized erosion	The disposal of sediment dredged spoils will be carried out in accordance with the dredged disposal scheme based on modeling simulations so that the impact on sediment quality is minimal.	Contractor/ICTPL/ MbPT
	Terrestrial Biology	Potential impact on terrestrial biology from the construction of construction of berth.	Since the berths will be located in the inter-tidal and sub-tidal areas. These will be enshrined in all contractual and procedural obligations.	Contractor/ICTPL/ MbPT
	Freshwater biology	The construction of berth in the coastal area including capital dredging may lead to potential impacts like (i) resuspension and settlement of sediment and release of nutrients (especially phosphates); (ii) increased turbidity and impact on light penetration and photosynthesis;(iii) short term depletion of oxygen demand; (iv) loss in benthic habitats.	The construction activities are largely confined to the duration over which the activities are spread. The alteration of marine biota will regenerate once such construction activities are completed. Environment friendly construction technologies to be used.	Contractor/ICTPL/ MbPT
	Marine Water Quality	Impact of capital dredging on water quality, increase in TDS levels etc.	The disposal of capital dredge has been planned taking into account the bathymetry, hydrodynamics to ensure minimum increase in the concentration of suspended solids. Several types of miscellaneous construction vehicles like jack-up barges, cranes, transport vessels, barge equipped with grouting concrete are sources of low level organic and petroleum pollution to local marine waters. The number of such vehicles will be kept to an optimum level to minimize risks of	Jaisu Shipping/MbPT

			any kind of accidental spillage.	
	Soil Quality	Disposal of waste dredged materials, impacts from accidental spillage fuels and lubricants.	The construction of the berth will be carried out in the inter-tidal and sub-tidal area and hence no major impacts are anticipated on the soil quality. Dredged materials are free from contamination and further a proper waste management practice would minimize the impact on soil quality.	Jaisu Shipping/ICTPL/MbPT
Construction Camps	Marine Water Quality	Potential Impacts on intertidal sediments due to release of pathogens from construction workforce if adequate sanitation is not maintained,	The construction camps will be equipped with adequate waste management facilities to minimize the release of pathogens in marine environment.	Jaisu Shipping/ICTPL/MbPT
	Land Environment	Impact on land use from stockpiles and construction camps etc.	These impacts are temporary in nature and rehabilitation of these shall be made.	ICTPL/MbPT
	Soil Quality	Disposal of waste materials from the construction camps, fuels and lubricants	The contractor will be obliged to follow the procedures detailed in the existing waste management plan and the waste disposal execution plan.	ICTPL/MbPT
Construction activities	Air	Emissions can be expected from diesel generators. All other emissions are intermittent and include emissions from material transport, from heavy vehicles on site and from marine vessels.	The storage of spoil, sib-soils and top-soils will be carefully done to minimize risk of windblown material dust; water sprinkling to be done at the construction camp area; no burning at site o any waste arising out of construction camps; covering vehicles transporting materials; vehicles or equipments will be checked for pollutants; no idling of vehicles; the DG set will be positioned at the sufficient height.	ICTPL/MbPT
	Noise	Noise are expected from various construction activities	Noise from DG set will be controlled by providing acoustic enclosure; equipments and machineries will be properly maintained and serviced so as to prevent unnecessary noise emissions.	ICTPL/MbPT
Operation Stage				
Operation of container yard including O&M of Ballard Pier station	Water	Potential impacts are expected from (i) runoffs from waste water generated from stack yard; (ii) sewage from ship and the general project site; (iii) Other water discharge from the ships (e.g. oily bilge waste or ballast water); (iv) other waste e.g. engine oil from the general port area)	Untreated waste disposal shall be restricted. The run-offs from the stack yard will be disposed off. The sewage from the ships will be treated within the ships, in the absence of such facilities (e.g. older vessels, barges) the sewage will be brought for treatment in the STP on land. In normal scenario ballast water not to be released in container terminal	ICTPL/MbPT
	Marine environment	There is no significant change to the coastline and bathymetry is expected over the period of 20 years, by which the regime is expected around the civil structures where current may get accelerated due to the blockage.	The disposal logistics of maintenance dredge spoil has been carefully planned based on economic considerations and meeting acceptable standards for its disposal. For ship at berth, provision will be made of specially equipped pump truck to receive sewage from such ships (older vessels do not having inbuilt sewage treatment facilities) to the treatment plant at land for further processing.	MbPT
	Freshwater Biology	The operation of container berths will not have any significant impact on freshwater bodies considering its location and operation philosophy.	Appropriate technology and contemporary standards and procedures would be selected to minimize possibility of such impacts. It will be checked that the perturbations due to the proposed coastal activities are within the assimilative capacity of the coastal marine environment of harbor area.	MbPT
	Land Environment	The development of container berths will not result in changes in the land use along the coast as the proposed project will be located in	Feasible, isolated land pockets created by port developments will be designated for specific natural uses and left undisturbed to allow natural succession. Adequate care shall be taken to minimize the disposal of solid waste.	ICTPL/MbPT

		the boundary of MbPT.		
	Air	Vehicular movements at the proposed site during operational phase do not contribute significantly to ambient air quality.	Continuous sources of emissions such as DG sets and boilers will installed with sufficient number of stacks of sufficient heights (MPCB norms) Burning of solid or oil wastes will be avoided Storage areas and conveying systems will be adequately covered during the handling of cargo, to reduce or completely eliminate fugitive dust emissions.	ICTPL/MbPT
Shipping Operations	Air	Exhaust Emission	Exhausts shall be frequently cleaned. Correct adjustments and maintenance of engines and boilers shall be ensured.	MbPT
	Water	Discharge of bilge oil, cargo residues, operations wastes, waste water	Awareness, understanding and observance of MARPOL regulations among ship's crews shall be ensured. All liquids containing oil shall pass into the sea only via soil separation systems. Sludge and separated oil residues are either be incinerated on board on special furnaces or discharged in port in oil collector facilities. Only marine diesel oil or marine gas-oil shall be used to reduce sludge formation.	MbPT

2.5. ENVIRONMENTAL MANAGEMENT & IMPLEMENTATION FOR CAPITAL DREDGING & BACKFILLING OF P&V DOCKS IN MUMBAI PORT:

54. M/s. Jaisu Shipping Company Pvt. Ltd. has taken up the capital dredging project as a part of construction of Off Shore Container Terminal and back filling of the existing Prince's Dock and Victoria Dock at Mumbai Port, MBPT. The dredging is going to be carried Out in two stages of soil dredging followed by rock dredging. M/S. Jaisu Shipping Company, Pvt. Ltd. has proposed and implemented Environmental Management Plan (EMP) to ensure that the pollution resulting from the project activity is minimized and will be within the carrying capacity as proposed /provided by the Mumbai Port Trust and conforming to the statutory requirements. The basic structure of EMP consists of planning and implementation of various measures in order to minimize the environmental impacts resulting from proposed dredging w.r.t. to Soil, Water, Air, Flora and Fauna. Copy of Environmental Management Plan prepared for Capital Dredging has been attached as **Appendix-V**.
55. Regular monitoring of environmental setup with respect to Soil, Water, Air, and Noise quality will be done, commencing from pre-dredging period. Proposed environmental monitoring locations are mentioned in this document by indicating coordinates. Environmental monitoring job for the capital dredging for OCT, filling of prince's and Victoria Docs activity has been awarded to Dr. V.R. Shastry, Professor of Mining Eng., National Institute of Technology, Surathkal, Karnataka whose latest report are enclosed in further section of ESDDR related with Environmental Quality Monitoring.

2.6. PUBLIC CONSULTATION AND INFORMATION DISCLOSURE:

56. MbPT have undertaken several consultations as part of obtaining relevant clearance from various institutional bodies.
57. **Public Hearing:** As part of obtaining the environmental clearance, a public hearing was conducted on 29th of September 2005. As part of the procedures of public hearing information on EIA/EMP reports have been disclosed by MbPT and people were informed about the public hearing meeting. Overall the issues being raised at the Public Hearing meeting was adequately addressed by the port authorities. The summary of the public hearing details are given in **Table 2.4** and proceedings of public hearing meeting is enclosed as **Appendix-VI**.

Table 2.4 Some of the major issues discussed in Public hearing meeting:

Issues Raised	Response
CWPRS Report	CWPRS has done siltation study to include the same in Mathematical modeling for the entire Mumbai Port. The model concludes that the berths are well oriented with the flow direction.
Road management, space management,	Mumbai Port owns a very Good Network for road and rail connectivity. Mumbai Port to Vadala dedicated for

Issues Raised	Response
supporting mainland infrastructure and proper transport system	Port traffic. In 1997-1998 nearly 6 Lakh TEU has been handled without a truck terminus Road. Now the truck terminus is in place and in 2009 during the days of commissioning of the project the expected traffic from the new berths shall be 6 lakh TEU, hence this traffic will be easily accommodated. MbPT has a captive railway line from the Docks to Vadala for a 10 km route length.
Follow up action required while taking into consideration the minimum risk?	The DMP as prepared by the port authority is adequate to handle such situations. Accident analysis leakages (one of two inch) happen due to unloading work. Fire fighting is able to handle such situation and maximum precaution is taken.
What benefit common man will get from the project.	MbPT has constructed several roads and are given to public and P.D Mello road is one of them. MbPT will see that no further slums are being developed in the project area
Whether any heritage building being affected by the project	There is no heritage building in the port area only old sheds and warehouses are getting affected.
Whether any other land will be reclaimed? Whether Mangroves will be affected due to dredging?	No land is being reclaimed for the project; just the port basin area is being filled up. About Mangroves, it may be mentioned that the project road is about 25km away from the Mangroves. Mumbai Port has taken up a project to protect the Mangroves in Sewree The mangroves situated between Sewree and the project site will be no away affected.
What about passenger water transport from Ferry wharfs.	Not affected. In fact MbPT has given clearance to Ferry wharf cruise terminal to the Maharashtra Government.
MbPT should give NOC for providing drinking water, toilet blocks etc. in slums in their areas. Municipality is ready to provide. What about the water to be given to the hutments?	The unauthorized hutments which are constructed post 1995 are already having unauthorized water connections and MbPT is suffering at their end. It also mentioned that MbPT has already constructed 55 Sulabh Sauchalay mainly in Darukhana areas.

2.7. EMP IMPLEMENTATION SUPERVISION AND MONITORING MECHANISM:

58. Overall the implementation of EMP during construction phase of OCT and operation and maintenance of BPS container berth lies with ICTPL in association with the head of construction contractor. Capital dredging is the responsibility of MbPT and the EMP for the same is being implemented through M/s Jaisu Shipping.

i) Supervision and Monitoring:

59. MbPT regularly supervises the implementation of EMP measures. The EMP measures considered for the sub-project is being supervised by the HSE team under the supervision of Deputy Conservator of MbPT.

60. MbPT periodically (six-monthly basis) sends compliance to Environmental Clearance conditions to MoEF which is attached as **Appendix-VII**.

ii) Environmental Monitoring:

61. ICTPL carries out quarterly environmental monitoring for proposed construction of OCT and O&M work of BPS terminal.

62. M/s. Jaisu shipping also carries out monthly environmental quality monitoring for the dredging and reclamation works.

63. Additionally, Mumbai port also carries out routine environmental monitoring in an around the project including harbor water quality (physio-chemical & biological) monitoring as part of their overall environmental monitoring programme. A laboratory has been established by MbPT with adequate laboratory staff members.

64. The implementation, supervision and monitoring arrangement made as part of the project is shown in **Figure 2.1** below.

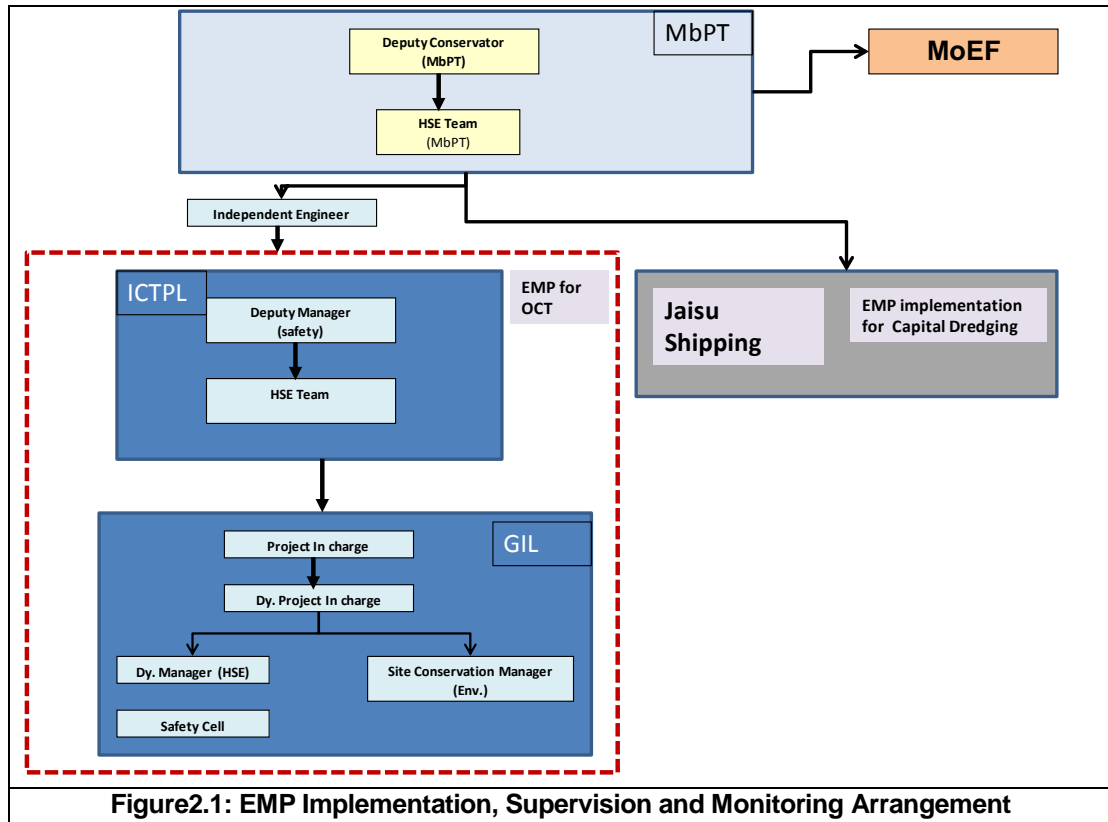


Figure2.1: EMP Implementation, Supervision and Monitoring Arrangement

65. M/s Gammon India Ltd.(GIL), the EPC contractor have engaged M/s Padmaja Aerobiologicals (P) Ltd. to carry out physico-chemical environmental monitoring during construction stage. The monitored results are found to be within the permissible limits. Copy of environmental monitoring reports by the abovementioned agencies for the period of 2011-12 & 2012-2013 are given in **Appendix VIII**.
66. ICTPL project representative has informed that there is no change in the parameters such as temperature, pH Value, turbidity, total dissolved solids, total suspended solids etc. on comparing current Analysis of Harbour Water Samples Reports (from Mumbai Port Trust's Pollution Control Cell) against the reports which were generated before start of construction activities. So it can be concluded that there are not any changes in marine environment due to construction activities related to OCT.

iii) EMP Budget:

67. As part of the implementation of EMP approximately Rs 1 Crore is earmarked. Expenditure is being incurred for:
- Environmental Monitoring for capital dredging;
 - Environmental monitoring for construction of OCT and O&M work of BPS container terminal;
 - Water sprinkling ;

- Procuring of laboratory equipments established by Mumbai port.

68. As earlier mentioned in para no. 42 related with supervision & monitoring, MbPT regularly sends compliance to Environment Clearance conditions to MoEF. Copies of such compliance reports submitted during December 2010 & Dec. 2012 are given in Annexure-VII. The EMP implementation measures corresponding to some of the important clearance conditions are given in **Table 2.5**.

Table 2.5: EMP Implementation Status as per EC Conditions as submitted to Regional Office, MoEF by Mb PT:

S.No.	Relevant Clearance Conditions Applicable to ICTPL	Responsibility	Status of EMP Implementation
1	All the conditions stipulated in the No Objection certificate from Maharashtra Pollution control Board vide their letter No. BO/PO (P&P)/ CC-151, dated 17.01.2006 should be strictly implemented.	MbPT/ICTPL	The HSE plan submitted by M/s ICTPL was forwarded by MbPT vide letter dated 23.07.2009. The Environmental monitoring report for capital dredging work prepared by NIT, Suratkhali was forwarded by MbPT on 23.09.2009 and is being sent periodically to MoEF.
2	The reclamation of the port area should be carried out with the dredged material; dredged material should be dumped into the sea. No reclamation should be carried outside the port limit. 55 acres should be carried out	Jaisu Shipping/MbPT/	Yes, it is complied with
3	The coastal protection works should be carried out after detailed hydrodynamic modeling studies and it should be ensured that no erosion or accretion takes place in other areas due to the shore protection works.	MbPT	The project scope does not envisage any coastal protection works. As such no erosion or accretion would take place.
4	Reclamation of 500 acres should be carried out only for port development. The height of the reclaimed area will be maintained above the maximum flood level.	Jaisu Shipping/MbPT/	This has been modified, the reclamation is of 55 acres and not 500 acres. It will be complied with.
5	The wave tranquility study and ship maneuvering studies carried out should be taken into account while operating the port.	MbPT	Will be complied with before operation of port.
6	The project proponent should ensure that during the construction and operation of the port there will no impact on the livelihood of the fishermen. The fishermen should be provided free access to carry out fishing activity.	MbPT/ICTPL	This will be ensured. As such there is no fishing activity in the project area.
7	The project proponent should undertake a comprehensive hydrodynamic modeling study with regard to river diversion and submit the report to the ministry within 6 months from the date of receipt of this letter. Further, the unit should comply with all the findings/recommendations of the study.	MbPT	There is no river diversion involved in the project. The hydrodynamic modeling studies have been already carried out by CWPRS, Pune. There is no impact on the tidal flow due to the project.
8	Construction labor camps should be located outside the Coastal regulation Zone (CRZ) areas and should be provided with adequate cooking and sanitation facilities	MbPT/ICTPL	The labour camp are taken from MbPT on rent outside the coastal regulation zones area. These camps are provided with accommodation, cooking fuel, drinking water, toilets facilities. MbPT has its own sewage treatment facility.

S.No.	Relevant Clearance Conditions Applicable to ICTPL	Responsibility	Status of EMP Implementation
1	Development of the proposed channel should be undertaken meticulously conforming to the existing central/local rules and regulations including Coastal Regulation Zone Notification 1991 and its amendments. All the construction designs/drawings relating to the proposed development activities must have approvals of the concerned State Government department/Agencies.	MbPT	The necessary statutory approvals will be obtained.
2	A well equipped laboratory with suitable instruments to monitor the quality of air and water shall be set up as to ensure that the quality of ambient air and water conforms to the prescribed standards. The laboratory will also be equipped with qualified manpower including a marine biologist so that the marine water quality is regularly monitored in order to ensure that the marine life is not adversely affected as a result of implementation of the said project. The quality of ambient air and water shall be monitored periodically in all the seasons and the results should be properly maintained for inspection of the concerned pollution control agencies. The periodic monitoring reports of at least once in 6 months must be sent to Ministry (Regional office at Bhopal) and pollution control committee.	MbPT/TPL/NIT, Suratkhali	Mumbai Port has testing laboratory. The Air and water quality is being regularly monitored every month and reports are being sent to regional office Bhopal during the construction period. (a) For Civil Works M/s ICTPL through its contractors monitors environmental parameters on quarterly basis. (b) Capital Dredging Works: NIT, Suratkhali collects sampling during dredging period on monthly basis.
3	Adequate provisions for infrastructure such as water supply, fuel for cooking, sanitation etc. must be provided for the laborers during the construction period in order to avoid damage to the environment. Colonies for the laborers should not be located in Coastal Regulation Zone area. It should also be ensured that the construction workers do not cut trees including mangroves for fuel wood purpose.	MbPT/ICTPL	Are being complied with. Labour camps are provided with drinking water and fuel and are outside CRZ area.
4	To prevent discharge of sewage and other liquid wastes into water bodies, adequate system for collection and treatment of the wastes must be provided. No sewage and other liquid wastes without treatment should be allowed to enter into the water bodies.	MbPT/ICTPL	No discharge of sewage and other liquid waste are discharged in the water bodies during construction. Sewage from labour camps are treated in the existing sewage treatment plant of MbPT.
5	Appropriate facility should be created for the collection of solid and liquid wastes generated by the barges/vessels and their safe treatment and disposal should be ensured to avoid	MbPT/ICTPL	No ship is allowed to drain off any waste oil, used oil, dirty ballast in the harbor water. Most of the ships visiting the port are provided with incinerator on Board for burning waste oil/used oil.

S.No.	Relevant Clearance Conditions Applicable to ICTPL	Responsibility	Status of EMP Implementation
	possible contamination of the water bodies.		Waste oil are only disposed through the firms registered with Central Pollution control Board.
6	Necessary navigation aids such as channel markers should be provided to prevent accidents. Internationally recognized safety standards shall be applied in case of barge/vessel movements.	MbPT/ICTPL	All necessary navigational aids will be provided as per the international standards for safety of the barges/vessels.
7	For employing unskilled, semi skilled and skilled workers for the project, preference shall be given to local people.	MbPT/ICTPL	This is a BOT project and the construction contractor has employed unskilled, semi skilled workers available locally.

2.8. IMPLEMENTATION OF SAFETY MANAGEMENT SYSTEM DURING CONSTRUCTION PHASE:

69. **EPC Contractor' s HSE Plan** : The EPC contractor has developed Health, Safety and Environment (HSE) Plan for managing the HSE issues at construction sites for OCT (MbPT). This document works as a guidance manual for implementing good industry practices w.r.t. environmental management, worker safety and accident/hazard prevention at work site. HSE Plan adopted by GIL- EPC Contractor has been attached as **Appendix-IX**.

Gammon India Ltd. has adopted Safety, Health and Environment Policy. The HSE Plan details about management measures for various areas like Environmental Management System, Safety Management System, Welfare activities for employees, Occupational Health & Hygiene, Emergency Plan for OCT (MbPT) Project and annexures attached showing formats for various kind of monthly reports required to be generated under HSE Plan. Few of the examples are format for reporting accidents occurring at site, monthly HSE report, HSE Non-conformity report, Safety Training Programme, Safety News Bulletin, Housekeeping & General Inspection Report, Electrical Inspection report etc. The site safety Engineer shall be responsible for the maintenance of HSE safeguards in this project. However, the site management Team comprising of Project Manager, Engineers, supervisors and Foremen equally hold functional responsibilities for their respective areas and are individually responsible for execution of the HSE Management Plan. To enhance the skill, specialized in-house trainings (lifting tools & tackle, gas cutting and Welding, electrical hazard and Welding) have been provided on 18/10/2013, 09/11/2013 and 18.11.2013 to 15, 9, and 13 workers, respectively. Monthly internal audit is carried out by GIL team for site safety conditions in which recommendations for corrective actions are given along with date of action. Copy of such internal site safety report for the month of January 2013 is enclosed under Appendix-IX.

70. The proposed container terminal is being developed through EPC contracts. Each EPC contractor has safety officers on board and works in close coordination with the safety cell of ICTPL and the safety cell of Mumbai Port2.

71. The EPC contractor also maintains accident / near miss accident reports and are periodically being reported to ICTPL. Format of the reports is given below:

- Loss time—
- Person Incharge at site:
- Date and Time:
- Brief Description of the incident;

² The safety cell of MbPT consist of (i) Senior Safety Officer; I/C Safety Cell; (ii) Safety Officer (Zone-I); (iii) Safety Officer (Zone-II); (iv) Safety Officer (Zone-III); (v) Welfare Officer (Docks); (vi) Welfare Officer (Ex. Docks)

- Injury details: Fatal/Non Fatal etc.
- Nature of Accident
- Witness
- Treatment provided & hospital details
- Suggestions for improvement

72. **Emergency Preparedness and Response Plan (EPRP):** GIL has developed Emergency Plan for employees which provides core guidance on actions necessary for all emergency situations, which could cause environmental impact, health hazard or property damage during construction activities. EPRP has been framed in such a manner so as to take immediate action by various groups to meet and control the critical situation within shortest period with protection measures. This plan has the two fold purposes. One is to prepare Gammon for the emergency situations by means of Mock Drill Exercises & Other Training programs. The other purpose is to handle emergencies and effective use of all resources in the command of Gammon with complete liaison and coordination with outside agencies to minimize the effect of such a disaster / emergency. This document comprises the important phone numbers of key project persons, Fire Response team of Gammon and important phone numbers of outside agencies involved in any emergency situation like nearest Fire station, Police station, Hospitals etc. Roles & Responsibilities of various project persons to be involved at the time of emergency event has been mentioned. Apart from this , many types of emergency situations has been described along with mitigation measures for handling various types of fire-fighting equipment with its maintenance procedure & evacuation plan. Gammon India has also developed Action & Response Plan for Fatal Accidents which mainly defines roles & responsibilities of various persons involved in project at the time of emergency. The Action & Response Plan for Fatal Accidents along with Emergency Preparedness and Response Plan of EPC Contractor are attached as **Appendix-X**.

73. **HSE Compliance Status of EPC Contractor:** Gammon India Limited at MOCT-Mb.P.T. site has its own defined safety management system evident with Safety, Health and Environment policy which is attached in **Appendix-XI** for details of HSE compliance status at project site submitted by GIL. At project site, Labours are provided with facilities like canteen, water & sanitation, medical and Bunk beds facility in resting area during leisure hours. Arrangement has been done for disposal for various kinds of wastes like domestic waste, Bio-medical waste, used oil, scrap batteries etc. Scrap Management & Waste generated is disposed of as per the waste management policy prepared as per site requirement in co-ordination with MbPT. Gammon India Limited at MOCT-MbPT. site is having its own accident management system. Regarding the accident risks, group health insurance cover is provided to all the workers.

74. For firefighting, required fire extinguishers are installed in different locations as per plan and ensure all these extinguishers are properly refilled through regular inspection on monthly basis. Emergency alarm system has also been installed and maintained properly. Mock-drill for firefighting and rescue operation at sea (life survival) is also being organized at regular intervals. Apart from this, a site based Legal register and Hazard

Identification & Risk Assessment (HIRA) Plan is also prepared. For safety awareness, among workers, movie shows are arranged in labors camp at Darukhana, Sewri –East, Mumbai with showing safety clips in movie breaks to create safety awareness. HSE compliance related documentation, Waste disposal related policies & arrangement details along with few site photographs are provided by project developer which are attached under Appendix-XI.

75. **Handling and Storage of Hazardous Substances in OCT:** Project developer has confirmed that Hazardous containers will be handled as per IMDG/ MbPT regulations. Final documents related with Disaster Management Plan for Operation Phase will be finalized before COD. Brief details related to handling & storage of Hazardous substances along with approximate quantities during operation phase has been provided by project developer which is attached as **Appendix-XII**. Copies of Hazardous segregation chart and Hazardous Containers Stacking for various IMO classes are also attached along with for reference. Under Appendix-XII, details of categories of Hazardous substances are provided which are going to be handled during Operation phase at OCT , Other details include precautions for handling corrosives, procedures for handling hazardous containers/cargo, inspection of Hazardous containers, fumigation of containers and procedure for handling of emergency of spill/leakage of cargo etc. As reported in this document, sufficient staff and machinery for fire-fighting activities will be recruited once commercial operations will start. Presently most of the vessels visiting the port are provided with Incinerator on Board for burning waste oil/used oil. No ship is allowed to drain off any waste oil, used oil, dirty ballast in the Harbour water and same is either burned by incinerator on board of the concerned ship or disposed through private firms registered with Central Pollution Control Board.

3. **SITE VISIT OBSERVATIONS:**

76. A site visit was undertaken by IIFCL's Environmental and Social Safeguard specialists along with WB's Safeguards Mission during March 15-16, 2012 to review the implementation of the project's environmental safeguards. During the site visit, following staff was mainly consulted regarding environmental safeguards related measures implemented at airport site:

1. Mr. Yeran Bekar, Deputy Chief Engineer, Mumbai Port Trust
2. Mr. Vilas Kolhe, Senior Executive Engineer, Mumbai Port Trust
3. Mr. P.M.Mahapatra, Chief Financial Officer, ICTPL
4. Mr.Capt.Jasbir Singh, Project Director, ICTPL
5. Mr.Jibu Kitty, Terminal General Manager, ICTPL
6. Ms.Aban Kamath, Dy. Manager Accounts & Finance, ICTPL
7. Ms.Kavita Sativi, General Manager – F & A
8. Mr.Milind A.Jerukar, General Manager, BMT Consultants India, Project Management Consultants

77. During site visit, a presentation was delivered by Gammon Safety team regarding implementation of Occupational Health and Safety Management associated with project construction activities. Based on the discussions with abovementioned officials, site observations are given below:

- Workers were seen wearing proper safety gears at work site and safety related signage were displayed at various locations inside project site;
- Labours are provided with accommodation facility of tin sheds having bunk beds, canteen , water & sanitation facility at project site;
- Fully equipped Occupational health Centre Manned by a qualified Doctor assisted with two qualified and experienced First Aiders has been provided;
- Waste Segregation Bins has been provided at suitable places and various kinds of waste generated inside port premises is managed through outsourced agencies authorized by regulatory authorities.
- Site has been categorized zone wise for safety implementation by various safety teams;
- For control of dust pollution, water sprinkling is done at construction site;
- Hazardous materials are stored at separate site with proper safety, labeling & colour code defined for particular hazardous material;
- Fire Extinguishers are installed at different locations inside project site alongwith Emergency alarm system.

78. The site visit photographs regarding health, safety & environmental safeguard measures implemented at project site during construction phase are given in **Photo Plate-I**.

3.1. CONCLUSION AND RECOMMENDATIONS:

3.1.1. Conclusion:

79. The sub-project has been prepared by ICTPL as per their own funding requirement and not in anticipation of World Bank in operation. The conclusions that are drawn based upon the review of documents, clearance conditions , communication with the ICTPL team and site visit observations are given below:

80. The sub-project is part of overall port expansion program of Mumbai Port which includes construction of two offshore container terminals and development of one container terminal on build , operate and transfer (BOT) basis in Mumbai harbour.

81. The sub-project does not affect any eco-sensitive zones as declared by MoEF. Also the project does not pass through any national park or wild life sanctuary area.

82. The land required for the project has been provided by MbPT and there is no land acquisition.

83. Information disclosure for the proposed Container Terminal has been disclosed as part of the public hearing process. The project largely received support from local people.
84. MbPT is regularly reporting the six monthly compliance status reports to MoEF for environmental conditions as stipulated in environmental clearance letter . As per the latest compliance report, the major conditions are found complied with.
85. ICTPL has adopted necessary safety management systems and the environmental management practices like waste management, dust control, workers health & safety related measures etc. at project site.
86. Periodic environmental quality monitoring including marine environment is carried out regularly by various agencies involved in project like MbPT, ICTPL and GIL (EPC Contractor). Reports for the period of yr 2011 to yr 2013 have been enclosed with ESDDR.
87. Regular environmental monitoring for dredging and reclamation works is also carried out by M/s. Jaisu Shipping for which environmental monitoring job has been awarded National Institute of Technology, Karnataka.
88. M/s. Jaisu Shipping Company Pvt. Ltd. has taken up the capital dredging project as a part of construction of Off Shore Container Terminal and back filling of the existing Prince's Dock and Victoria Dock at Mumbai Port, MBPT. The dredging is going to be carried Out in two stages of soil dredging followed by rock dredging. M/S. Jaisu Shipping Company, Pvt. Ltd. has proposed and implemented Environmental Management Plan (EMP) to ensure that the pollution resulting from the project activity is minimized and will be within the carrying capacity as proposed /provided by the Mumbai Port Trust and conforming to the statutory requirements.
89. Environmental Monitoring Reports are regularly submitted to MoEF. Project team has confirmed that there are not any changes in marine environment due to construction activities related to OCT.
90. The institutional arrangement available for the implementation of Environment Management Plan (EMP) and Safety Management System (SMS) appears to be adequate as there is a sufficient number of staff available for implementing and monitoring the EMP& SMS implementation.
91. Project developer has confirmed that Hazardous materials will be handled as per IMDG/ MbPT regulations at OCT.
92. Overall, the development of the container terminal will not have any significant impact on the existing environment.

93. The current sub-project, therefore does not involve reputational risk to World Bank funding on environmental safeguards and recommended for funding under the proposed project.

3.1.2. Monitoring through LE

94. Generally, IIFCL undertakes site visit for monitoring of safeguards implementation once in a year. In case any significant issues related to environmental and social safeguard are reported than IIFCL may undertake additional site visit.

4. SOCIAL DUE DILIGENCE:

4.1. METHODOLOGY ADOPTED FOR SOCIAL DUE DILIGENCE

95. Social Due Diligence for the project Indira Container Terminal (ICT) has initiated by IIFCL after review of Project Information Memorandum (PIM), License Agreement (LA), Rapid Environmental Impact Assessment (EIA), Public Hearing and Lenders' Engineers (LE) report to understand the salient features of the project and social concerns. Following documents are referred in order to prepare the Social Safeguard Due Diligence Report:

- Environment Impact Assessment (EIA);
- Environment Management Plan (EMP);
- Minutes of Public Hearing;
- Lender' Engineers report (LE);
- License Agreement (LA)

4.2. SOCIAL IMPACT STUDY OF THE PROJECT:

4.2.1. Land Acquisition:

96. The total area of about 45 Ha. of Prince (P) & Victoria (V) Docks has been declared as Container Yard by Mumbai Port Trust (MbPT) for the Offshore Container Terminal (OCT) project. This area includes 22 Ha. of dock basins and 23 Ha. of wharves and finger jetties. MbPT the licensor will fill up the P & V docks to achieve safe bearing capacity of 10T / sq. m. (CBR = 6). As per Cl. No. 2.1.3.2. of L.A. only 35 Ha. of container yard will be initially handed over to Indira Container Terminal Pvt. Ltd.(ICTPL) by MbPT. Remaining 10 Ha will be handed over after ICTPL starts construction of 3rd berth within 10 years of operation or after achieving 0.8 million TEU traffic / Annum for 2 years whichever is earlier.

97. Land has been handed over by Mumbai Port Trust to ICTPL under the License Agreement on 3rd December 2007.

98. It has proposed to fill both Victoria Dock and Prince's dock to develop the on shore terminal area for the container berths. The Victoria dock has a water area of 10.2 Ha and Prince's dock water area is 12.14 Ha. Filled area of both the docks (Victoria & Prince's dock) along with the surrounding area will create about 45 Ha of land to develop

on shore terminal facilities for the proposed container berths. This 45 Ha area will accommodate;-

- 1) Container Stockyard area,
- 2) Rail Container Depot,
- 3) Administrative building,
- 4) Tractor trailer parking area,
- 5) Substation,
- 6) Work shop
- 7) Internal roads and other utility requirements.

99. The area and the ground spots break up requirement for the various years to handle up to 1.2 million TEUS have been worked out is given in **Table—3.1**

Table 3.1: Break-up of Land requirement
Ground Spots Requirement

Year	Traffic (TEUs)	Total ground spots required	Total area required (Ha)
2009-10	400000	1528	6.4
2010-11	460000	1757	7.4
2011-12	529000	2021	8.5
2012-13	608350	2324	9.8
2013-14	699603	2673	11.2
2014-15	804543	3074	12.9
2015-16	925224	3535	14.8
2016-17	1064008	4065	17.1
2017-18	1200000	4585	19.3
2018-19	1200000	4585	19.3

100. Regarding associated development of Truck terminal link road, connectivity to freight corridor etc., project developer has informed that land was already available with MbPT for these facilities and land acquisition and resettlement impacts are not caused due to development of said facilities. Further, development of these facilities has been done by MbPT and out of construction scope of ICTPL. These facilities were already existing and these are only repaired by strengthening/improvement work long before during the period of yr. 2009-10. At present, the Truck Terminus and Link Road are already developed and will be in use once commercial operations will start. Truck Terminus will be used as the parking facility for the trucks carrying import and export cargo and will help in reduction of congestion inside the terminal.

4.2.2. Resettlement Impact:

101. Since, the port expansion work is carried out within the existing available land and land is already available with the Mumbai Port and the entire port area is located on waterfront, inter-tidal land. Further, during the site visit it was also observed that there is no village on the vicinity of the project hence there is no rehabilitation and resettlement impact in the project.

102. No private land required to be acquired; hence there are no such issues on account of land acquisition, compensation and related settlement and rehabilitation issues involved in the project.

4.2.3. Impact on Non-title Holders

103. The total area of 45 acres of land allotted to the Indira Container Terminal has totally free from the non-titles holders like Squatters, Encroachers, hence there is no impact on encroachers and squatters.

4.2.4. Impact on Schedule Tribe:

104. The ST population in Mumbai district of Maharashtra comprises only 0.82% of the total district population and Mumbai district is not a part of the notified Fifth Schedule Area³, hence, it does not disturb any tribal settlement, so no Tribal Development Plan (TDP) is required to be prepared for this sub-project.

4.2.5. Compensation and Entitlements

105. As the project expansion work is being done on the existing available land and expansion work. No private land needs to be acquired or involuntary resettlement activities undertaken for the proposed physical activities; and the civil works is being carried out within the protected compound of the Mumbai Port Trust hence no ownership of private land is affected so compensation and entitlements of Affected People is not applicable.

4.2.6. Public Consultation/Hearing in the Sub-project

106. The formal Public Hearing was conducted by Maharashtra Pollution Control Board on 29th September 2005 in the hall of Asiatic Society at Mumbai Harbour. No social issues of concern were raised during the Public Hearing. The minutes of the public hearing details are given in **Appendix-VI**.

4.2.7. Employment Generation and Livelihood Promotion

107. Since the project is a BOT project and highly mechanized and all the workers are highly skilled and hired as per the expertise in the work field. As information provided by the concessionaire most of the workers are belong to outside the project area mainly from

The Web link for Schedule area in Maharashtra is:

³ <http://www.tribal.gov.in/Content/ScheduledAreasinMaharashtraSSAreas.aspx>

West Bengal and Odisha. So creation of local employment opportunity may not be a key issue for the project.

108. The provisions of local labour in Mumbai mainly come from migrant community. As information provided by the concessionaire the details of labour employed by the EPC-contractor is given in **Table-3.2** below.

Table-3.2 Labour employed by the subcontractor

Sr No	Particular	Unit	In Mumbai	Out of Mumbai	Total (Mumbai + Outside Mumbai)
1	Skilled	Nos	-	96	96
2	Semi Skilled	Nos	-	106	106
3	Un Skilled	Nos	-	209	209
Total				411	411

Source: Information provided by the Concessionaire

109. As per the Half Yearly Compliance status by Mumbai Port Trust, there is no fishing activity take place in the project area but the Mumbai Port Trust authority have committed to ensure that during construction and operation of the port there will be no impact on the livelihood of the fisherman. The fishermen will be provided free access to carry out the fishing activity. No complaints as such are received as informed by ICT.

4.2.8. Labour health, safety, hygiene of construction workers

110. Gammon India Ltd. has obtained the labour license for the sub-project as granted by Assistant Labour Commission (Central), Mumbai, Govt. of India, under the Contract-Labour Regulation & Abolition Act 1970 for the administrative convenience and to facilitate compliance in respect of recruited employees / workers with validity period of 21/05/2014.

111. The project authorities have hired skilled and unskilled workers outside the project region. As per the labour license given by the labour officers of Mumbai division, number of building workers to be engaged is limited to 300 at any day. These workers have been provided with adequate safety gears such as safety helmets, safety boots, and highway jackets. Facilities like onsite accommodation with basic amenities like water & toilets facilities, transportation to work site and other safety gears are also provided. Construction workers have also been provided with ready access to on- or off-site health facilities. The EPC Contractor Gammon India Ltd. has taken group insurance covering 400 workers and to protects their lives

4.2.9. Disclosure:

112. The final ESDDR report will be accepted and approved by the project developer and endorsed by IIFCL after getting the No Objection Certificate (NOC) from the World Bank. After approval, the report will also be uploaded for public disclosure in IIFCL's official website as well as Project developer's website.

4.2.10. Monitoring by IIFCL:

113. IIFCL shall undertake six-monthly site visits to the project and also take up with the Lenders Independent Engineers (LIE) to appropriately address the progress of the project..

4.2.11. Conclusion and Site visit Observations

114. The Social due-diligence study for the proposed offshore container terminal at Mumbai Port indicate that there are no issues involved on land acquisition or resettlement activity. The project is within the Mumbai Port area and there are no indigenous people affected due to the project .In fact, the project activity will help in generating employment opportunities during construction and operation stages of project.

115. A site visit was organized by the ESMU team of IIFCL along with Bank's Environmental and Social Safeguards team on 12th March 2012 to understand the project and safeguard procedures adopted by the subproject developer. During the site visit the team along with the members of Concessionaire has visited the site and observed that:

- The project is likely to enhance the socio-economic conditions in the region through greater economic opportunities and multiplier effect in terms of creation of service and small industry opportunities to support the project;
- Based upon the site visits it appears that the concessionaire has undertaken adequate social safeguard measures for better and on time implementation of the sub-projects;
- Land has been handed over by Mumbai Port Trust to ICTPL under the License Agreement on 3rd December 2007.
- As per the Half Yearly Compliance status by Mumbai Port Trust, there is no fishing activity take place in the project area
- Since the project is within the Mumbai Port Trust area so no resettlement and rehabilitation is involved in the project.
- There is no private ownership of land is affected due to the project.
- No Encroachers and squatters are being affected due to the project.
- The project expansion work is carried out within the available land which was already with the Mumbai Port and there are no villagers affected due to the project.
- The Project authority has established a sound health and safety regime for the staff and workers and has provided with ready access to on- or off-site health facilities

- Based on the site visits observations and due diligence findings, it can be concluded that the sub-projects have no significant social safeguard issues.
 - The EPC Contractor Gammon India Ltd. has taken group insurance for the workers and to protect their lives.
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