Executive Summary

Environment Impact Assessment

Construction of Third Chemical Berth

at Pir Pau Jetty, Mumbai Port Trust

Project Proponent

Mumbai Port Trust

Environment Consultant

ULTRA TECH, Thane

Environmental Consultancy and Laboratory

Accredited by NABET: Quality Council of India

EXECUTIVE SUMMARY

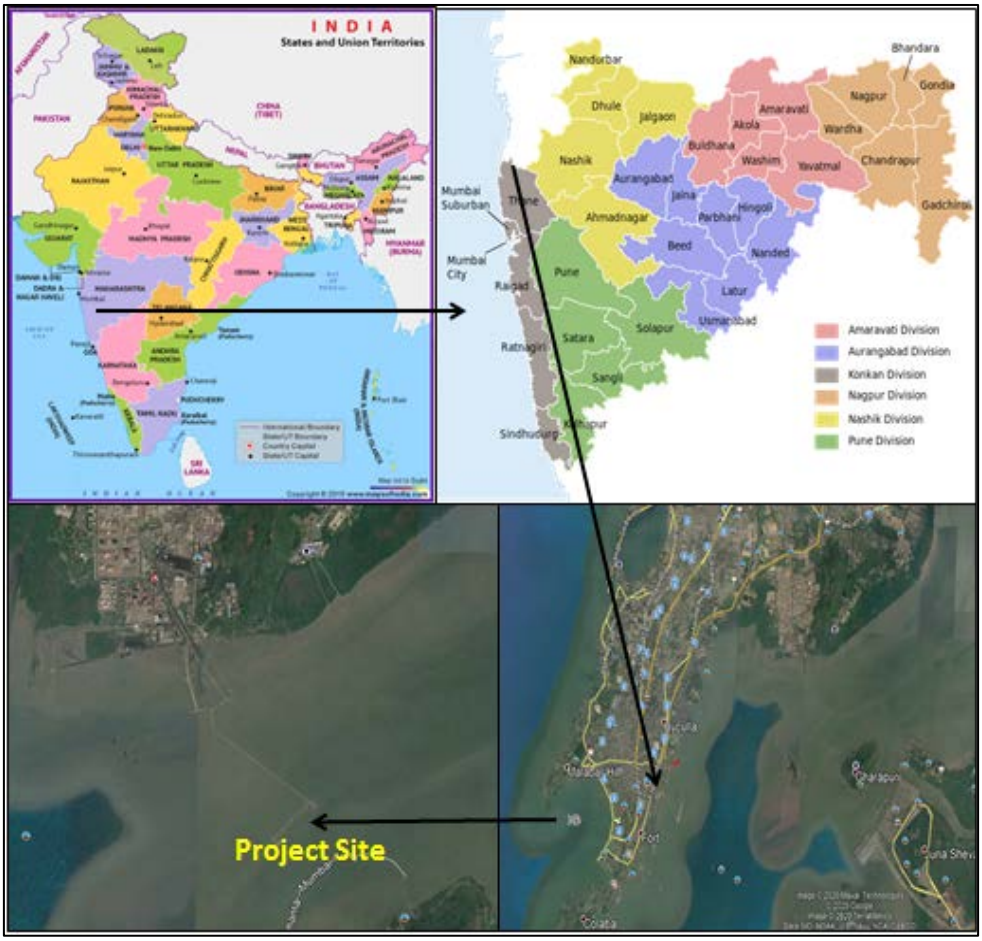
1. INTRODUCTION OF PROJECT PROPONENT

Mumbai Port has long been the principal gateway to India and has played a pivotal role in the development of the national economy, trade & commerce and prosperity of Mumbai city in particular. The port has achieved this position through continuous endeavour to serve the changing needs of maritime trade. Though traditionally designed to handle general cargo, over the years, the port has adapted to changing shipping trends and cargo packaging from break bulk to unitisation / palletisation and containerization. Besides, it has also developed specialized berths for handling POL and chemicals. For decades, Mumbai Port was India's premier port. Even today, with the development of other ports, it caters to 10% of the country's sea-borne trade handled by Major Ports of the country in terms of volume. It caters about 19% of POL Traffic handled by Major Ports.

The Mumbai Port is situated almost midway (Latitude 18o54' N, Longitude 72^{o}49' E) on the west coast of India and is gifted with a natural deep water harbour of about 400 km^{2} protected by the mainland of Konkan on its east and island of Mumbai on its west. The deep waters in the harbour provide ample shelter for shipping throughout the year. The approaches to the harbour are well lighted with the Prongs lighthouse to the north, visible 27 km and the Kennery lighthouse to the south visible 29 km. The entrance of the harbour which has approaches from the south-west is between Prongs Reef and the Thull Reef lying off the mainland to the south-east, a distance of about 9 km.

The main navigational harbour channel is for the great part, a natural deep-water fairway. The channel has been deepened to 15 m. With a mean high water neap tide of 3.3 m, the channel is adequate to meet the requirement of a large number of cargo vessels, passenger ships and deep drafted tankers. With good lighting arrangements navigation is allowed at the port round the clock.

The location of Mumbai Port and the project site is depicted in Figure below:



Location of Mumbai Port and Project Site

2. DETAILS OF PROPOSED PROJECT

Mumbai Port has proposed the construction of Third Chemical Berth at the North of existing First Chemical Berth at a distance of 300 m at Pir Pau Jetty. With the construction of the Mumbai Transharbour Link, the Old Pir Pau is now being restricted to handle only small barges of lesser than 2000 tonnes. The capacities of first and second chemical berth are 2 MMTPA and 2.5 MMTPA, respectively. Even though the berth occupancy is high, due to lesser parcel size, the traffic handled is less than the capacity of berths. Considering the berth occupancy of more than 70% and also as requested by the users, it would be necessary to construct the third chemical berth.

The Latitude and Longitude are given in below table:

Chemical Berth Extension	Latitude	Longitude
Construction of Third Chemical Berth at the North of existing First Chemical Berth at a distance of 300 m at Pir Pau Jetty.	18°58'48.33"N	72°55'10.80"E

2.1 Third Chemical Berth Construction

Design Parameters

The layout and design of the Third Chemical Berth will be as per following parameters:

- Displacement load – 72,500 t.
- Depth at berth -13m CD. Draft of 12 m.
- LOA – 230 m.
- 2 nos. Berthing Dolphins
- 4 nos. Mooring Dolphins
- Unloading Platform
- Catwalks- connecting between Mooring dolphins and berthing dolphins
- Super Arch cone fenders
- QRMH
- Fire-fighting works as per the OISD guidelines

Details of Proposed Third Chemical Berth

Sr. No	Description	Quantity	Unit
1	Mooring Dolphin (Size :- 12m x 11m,Nos :- 4)	528	m^2
2	Berthing Dolphin (Size :- 15m x 14m,Nos :- 2)	420	m^2
3	jetty Head (Size :- 37m x 18.6m)	940	m^2
4	Approach trestle (Size :- 300m x 11m)	3300	m^2
5	Catwalk (2 catwalks of length 45m, 2 catwalks of length 58 m)	206	m
6	Pump Room	1	L.S.
7	Pipeline & Firefighting	1	L.S.
8	Dredging in Berth Pocket (Size:- 500 x 60 m, Avg. Depth :- 4 m)	1,20,000	m^3
8a	Dredging in turning circle (Dia. 500 m, Avg. Depth 0.5 m)	98,125	m^3

Capital Dredging

As per CWPRS report, the dredged material is being disposed-off at DS-3 dumping location which is an offshore dumping ground and located at latitude 18°54'23''N and longitude 72°41'29''E.

- Berth Pocket – 400m x 60m, Depth – 13 m CD
- Turning Circle – 450 m dia., Depth – 9 m CD
- Only soil dredging. Total quantity - 2.25 lakh cum

Detailed Layout of Third Chemical Berth is attached as **Annexure I.**

2.2 Resource Requirement

Manpower

There will be a requirement of 100 to 200 workers during construction stage. The manpower requirement for Third Chemical Berth during operational stage is as follows:

AEE = 01 No.

Junior Engineer = 04 Nos.

Fitter = 04 Nos.

Electrician = 04 Nos.

Wireman = 04 Nos.

Mazdoor = 04 Nos.

Total = 21 Nos.

Water Requirement

Water for construction phase about 10 KLPD will be met from water transported through tankers/barges from MCGM source. The existing drinking facility at Pir Pau will be sufficient for the new project. There will be no additional water requirement for operation phase of Third Chemical berth.

Energy/Power Requirement

The existing 500KVA dry type transformer at Second Chemical Berth (SCB) is under utilization as the connected load of SCB is 25KVA only. Therefore same transformer can be utilized to meet the requirement of Third Chemical Berth by providing additional LT Circuit Breaker and laying new LT cables from SCB sub station to TCB. As an alternative a new substation will be constructed which will get 22 kV HT power supply from the substation of

first chemical berth. Power shall be taken to the proposed new substation by XLPE cables of suitable size.

2.3 Capital Investment and Implementation Schedule

Approximate execution cost of construction of Third Chemical Berth is Rs. 95.65 Cr and project will be implemented 24 months after receiving statutory clearance from MoEF&CC.

2.4 Cost of Environment Protection Measures

Mumbai Port is already in operation and has budgetary allocation for environmental protection measures. The budgetary allocation for environmental protection measures are given below:

Cost of Environment Protection Measures

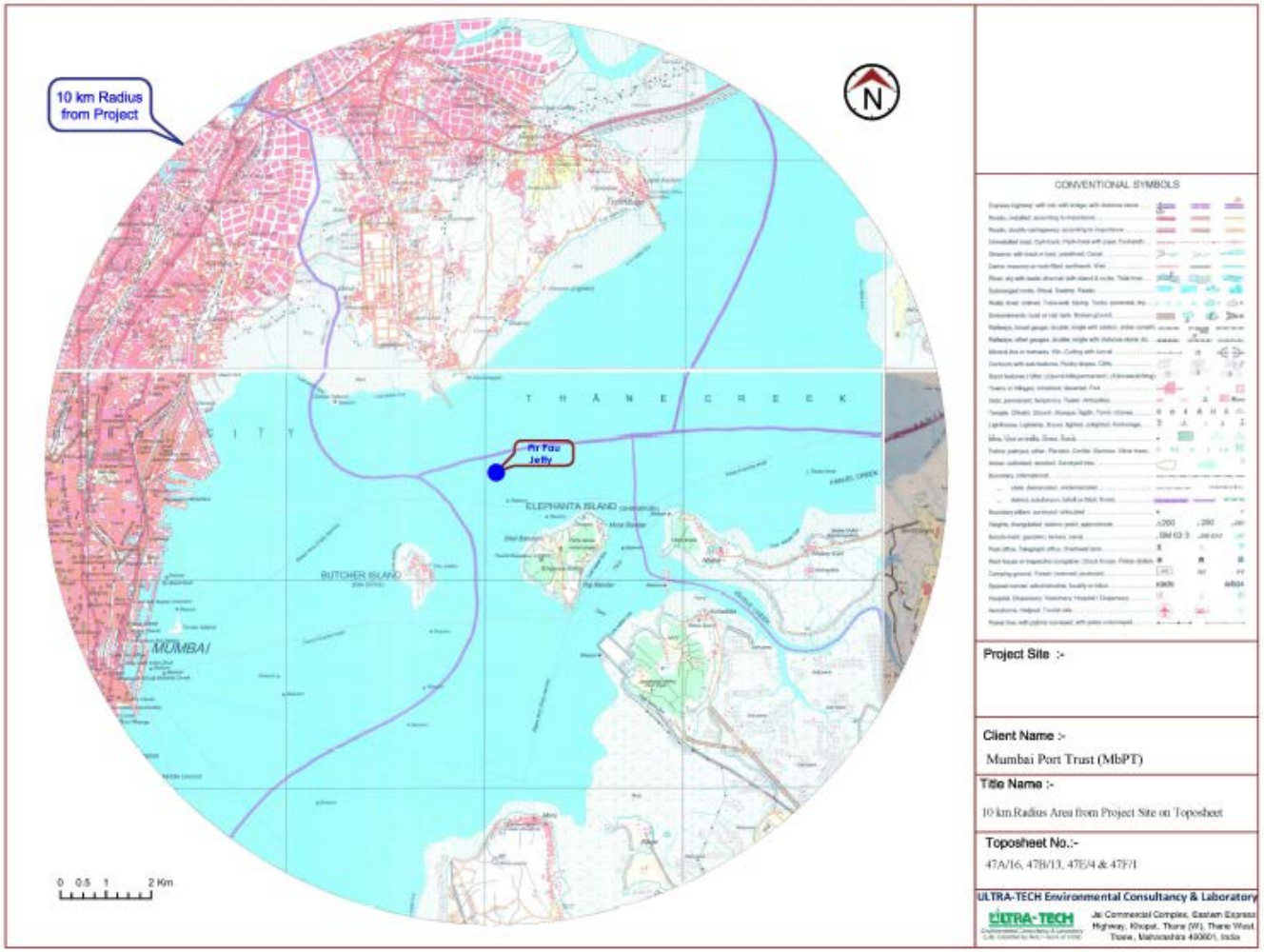
Sr. No.	Environmental Aspect	Capital Expenditure in Lakhs	Annual Recurring Expenditure in Lakhs
1	Pollution Monitoring for TCB	2.0	0.5
2	Fire Fighting	200.0	20.0
3	Green Belt	10.0	2.0
	Total	**212.0**	**22.5**

3. ENVIRONMENTAL SETTING OF PROJECT AREA

The project is located at MbPT which is a part of Mumbai harbour. The Mumbai Harbour is an excellent natural deep water harbour situated on the west coast of India and inside the protected waters of the Mumbai Gulf area. The detailed environmental settings around Mumbai Port are depicted in Table below:

Sr. No.	Particular	Details
1	Project Location	Pir Pau Jetty, Mumbai Port, Mumbai
2	Toposheet No. of OSM	OSM map 47A/16, 47B/13, 47E/4, 47F/1
3	Climatic Conditions	Based on IMD – Mumbai (Annual) – 30 years data ° Annual Mean Max Temp: 34.3^{0}C (Summer) ° Annual Mean Min Temp: 17.8^{0}C (Winter) ° Annual Total Rainfall: 2454.00 mm ° Predominant Wind Direction : SE-NW
4	Railway Station	° Govandi Railway Station: 8.40 km
5	Airport	° Chattrapati Shivaji Maharaj International Airport – 13.20 km
6	Sea Port	Project site falls within MbPT limit
7	Village/Major Town	Mahul Village – 4.90 km Gharapuri Village – 1.80 km Nhava Village – 4.90 km Chembur – 7.00 km
8	Ecologically Sensitive Areas	Mud Flats near Mahul Creek – 2.29 km, S Mangrooves near Sewri and Mahul creek– 5.38 km, SW Thane Creek Flamingo Sanctuary – 8.2 km N
9	Historical / Tourist Place	° Elephanta Caves – 2.30 km, SE ° Gateway Of India, Mumbai – 10.34 km, SW ° Shri Siddhi Vinayak Ganpati Mandir – 09.90 km, NW ° Sewri Fort – 6.37 km, NW ° Chhatrapati Shivaji Maharaj Vastu Sangrahalaya – 10.24 km, SW ° Veer Mata Jijabai Bhosale Udyan And Zoo – 8.35 km, W
10	Beach resorts	None within study area
11	Biosphere reserves	None within study area
12	Defense installations	Naval Dockyard: 8.1 km SE
13	Water Bodies/	° Belapur Lake – 12.30 km, E

<table>
<tr><th>Sr. No.</th><th>Particular</th><th>Details</th></tr>
<tr><td></td><td>Reservoirs</td><td>° Mithi River – 10.00 km, S
° Anushaktinagar Lake – 6.00 km, S
° Sion Talav – 9.20 km, S
° Teen Talav – 8.00 km, S
° Vashi Lake – 12.25 km, NE</td></tr>
<tr><td>14</td><td>Critically polluted areas as per MoEF notification</td><td>None within study area</td></tr>
<tr><td>15</td><td>Seismic Zones</td><td>Zone III – Moderate Risk Zone as per as per IS1893 (Part1) : 2002</td></tr>
<tr><td>16</td><td>Nearest Industries</td><td>
<table>
<tr><th>Sr. No.</th><th>Name of Industry</th><th>Type</th><th>Distance (km)</th><th>Direction</th></tr>
<tr><td>1</td><td>Bharat</td><td>Refinery</td><td>3.60</td><td>North</td></tr>
<tr><td>2</td><td>HPCL</td><td>Refinery</td><td>3.80</td><td>North</td></tr>
<tr><td>3</td><td>Tata Power</td><td>Thermal</td><td>3.30</td><td>NW</td></tr>
<tr><td>4</td><td>JNPT</td><td>Port</td><td>4.39</td><td>SE</td></tr>
</table>
</td></tr>
<tr><td>17</td><td>Sand dunes</td><td>None within study area</td></tr>
<tr><td>18</td><td>Mud flats</td><td>Mud flats near Mahul Creek 2.29 km NE</td></tr>
<tr><td>19</td><td>National parks, marine parks, sanctuaries, reserve forests, wild life habitats, biosphere reserves</td><td>° Maharashtra Nature Park – 7.80 km
° Flamingo Bird Sanctuary – 8.2 km N</td></tr>
<tr><td>20</td><td>Salt marshes</td><td>None within study area</td></tr>
<tr><td>21</td><td>Turtle nesting sites</td><td>None within study area</td></tr>
<tr><td>22</td><td>Horse-shoe crab habitats</td><td>None within study area</td></tr>
<tr><td>23</td><td>Sea grass beds</td><td>None within study area</td></tr>
<tr><td>24</td><td>Nesting grounds</td><td>None within study area</td></tr>
</table>



Toposheet of Study Area covering 10 km Radius of the Project Site

4. OBJECTIVES OF ENVIRONMENT IMPACT ASSESSMENT

The cargo handling capacity of First Chemical Berth is 2.0 MMTPA and Second Chemical Berth is 2.5 MMTPA. The proposed third chemical berth will have capacity 2.0 MMTPA. The overall capacity of the berth will increase to 6.5 MMTPA. Hence, the proposed project falls under Sr. No. in the Schedule 7(e) Ports, harbors, breakwaters, dredging. The handling capacity of the berth is ≥ 5 MMTPA. As per EIA notification 2006, the projects listed in Schedule 7 (e) having cargo handling capacity ≥ 5 MMTPA (excluding fishing harbors) are categorized as A Category project and will be appraised at Central level. As the proposed development will be in a CRZ area, CRZ Clearance from MoEF&CC is mandatory under the CRZ Notification 2011.

Environmental Impact Assessment (EIA) study needs to be conducted as per the guidelines stipulated in the EIA notification of September 2006 and CRZ Notification of January 2011. Hence, it is proposed to conduct an EIA study to assess the impacts likely to occur as a result of various activities associated with the proposed expansion and modernization at Mumbai Port. A suitable Environmental Management Plan (EMP) will be prepared based on the impacts identified to mitigate the adverse impacts. An Environmental Monitoring Plan will also be suggested in this EIA report.

The project was appraised by Expert Appraisal Committee (Infra-2) at MoEF&CC, New Delhi during its 47th meeting held during 27th November 2019 to grant Terms of Reference for EIA studies. TOR has been granted by MOEF&CC vide letter no. F.No. 10-50/2019-IA-III dated 21st January 2020.

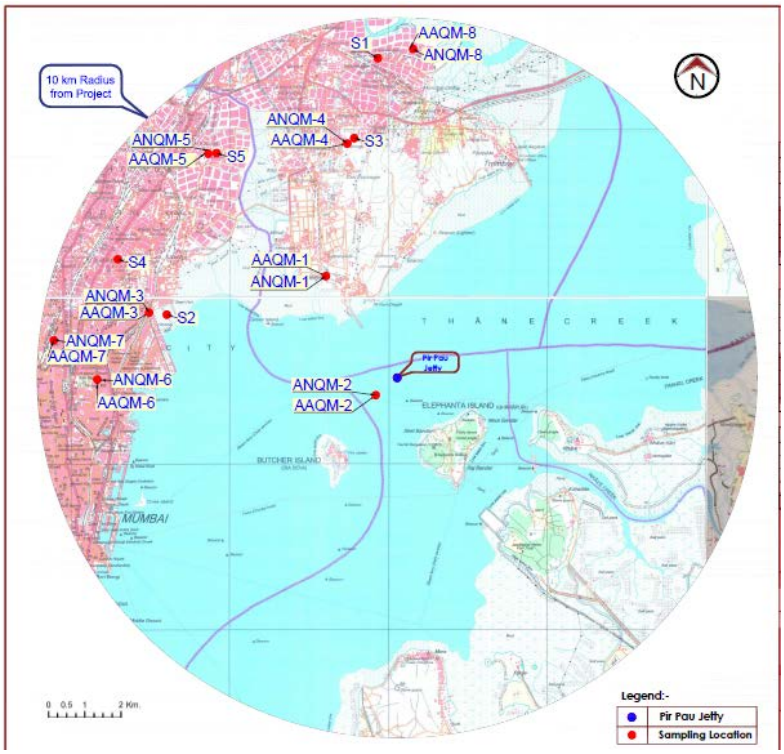
5. METHODOLOGY FOR EIA STUDY

Detailed review of the feasibility report for the proposed development has been carried out. The study area of 10 km radius around the project location was marked using latitudes and longitudes of the project site. For all major environmental components, primary and secondary data was generated and compared with the available historical / published information for assessment of various environmental components to develop the Environmental Management Plan (EMP).

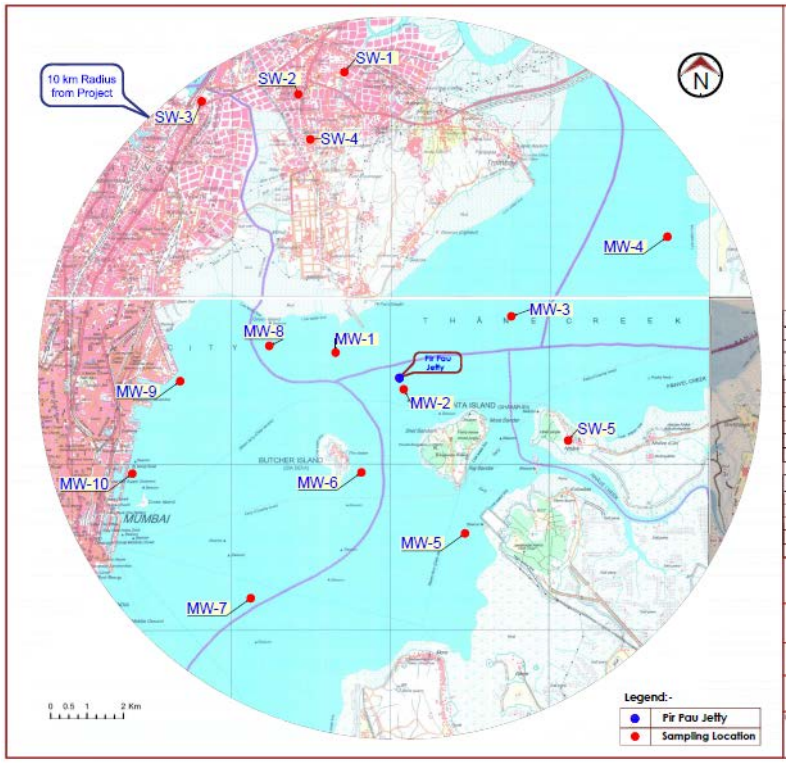
Land use pattern, drainage and contour was mapped within 10 km radius from the proposed project site using remote sensing and GIS tools followed by ground truth verification. Baseline monitoring program was undertaken during November 2019 to January 2020 to establish the marine water quality, marine sediment quality, soil quality, ambient air quality, ground water and surface water quality along with noise levels in the study area. The average meteorological conditions of the Mumbai were obtained from the observations of IMD Mumbai. Ecology and biodiversity studies were carried out for terrestrial and marine components of the study area. The marine biodiversity impact assessment report and management plan on marine, brackish water and biodiversity was prepared by the CSIR-National Institute of Oceanography (NIO), Mumbai Regional Center. Field Survey was undertaken to develop socio-economic profile of the study area and was compared with published census data for further refinement.

A detailed review on the possible environmental pollutants such as emissions, siltation, liquid and solid wastes were undertaken. Impact assessment of various environmental components have been carried out using standard EIA tools and techniques with appropriate input of primary and secondary baseline data to determine the significance of the impact. Various activities those are envisaged during construction and operation phases of the proposed project were evaluated for its significance. Based on the impact, suitable EMP was developed to mitigate the probable negative impacts. Oil Spill Contingency Plan and Emergency Response Plan prepared by MbPT were also reviewed for the proposed project.

CRZ map for Mumbai Port indicating the HTL / LTL demarcation is prepared by Institute of Remote Sensing, Anna University, Chennai.



Map showing Ambient Air, Noise and Soil Quality Monitoring Locations



Map showing Marine and Surface Water Sampling Locations

6. BASELINE MONITORING

6.1 Air Environment

8 ambient air quality monitoring stations were selected in and around the project site and studies were carried out as per CPCB standards. Levels of PM_{10} and $PM_{2.5}$ are found to exist in the range of 115 to 64 µg/m3 and 45 to 19 µg/m3 respectively. Sulphur dioxide and Oxides of Nitrogen are observed in the range of 18 to 10 µg/m3 and 47 to 18 µg/m3 respectively. The level of CO ranges from 2.5 to 1.2 µg/m3. The level of NH_3 ranges from 98 to 18 µg/m3. The level of O_3 ranges from 50 to 10 µg/m3. The level of Benzene ranges from 13.1 to 1.1 µg/m3.

6.2 Noise Environment

8 ambient noise quality monitoring stations were selected in and around the project site and studies were carried out as per CPCB standards. The noise data compiled on noise levels is given in Table 3.9. The noise level of the study area for industrial zone varied from 55 to 75.4 dB (A) during day time and 52.9 to 71.2 dB (A) during night time which are within limits as per ambient noise standards.

The noise level of the study area for residential zone varied from 44.8 to 60.1 dB (A) during day time and 41.5 to 51.1 dB (A) during night time which are exceeding the limits of the ambient noise standards. The location is located near Ghatkopar-Mankhurd Link Road which is a heavily crowded traffic area. Also, flyover construction work is going on at the same location. Hence, noise results of the study area for residential zone exceed the ambient noise standard limits.

6.3 Soil Quality

The collected soil samples were analyzed for various chemical parameters. The parameters selected were pH, electrical conductivity, soluble anions and cations, nutrients and organic carbon content, etc.

pH is an important parameter indicating alkaline and acidic nature of soil. It severally affects the microbial population as well as the solubility of metal ions that regulates nutrient availability. The pH of the soil in study area is slightly alkaline to moderately alkaline in reaction having pH in the range of 7.4 -8.2.

The soluble salts were determined from soil extract (1:2) and are expressed in terms of electrical conductivity (EC). The EC of soil extract in the study area is in the range of 0.342 to 1.152 mS/cm which is less than 2 mS/cm indicating no salinity problem to be expected in the soil.

6.4 Surface Water Quality

The analysis results indicate that the pH values in the range of 7 to 7.7, the minimum value was observed at SW5 (7) and maximum value was observed at SW3 (7.7) DO was observed to be in the range of 4 to 5.3 mg/l. The TDS was observed in the range of 460 to 1970 mg/l, the minimum TDS value was observed at SW5 whereas maximum value was observed at SW2.

The chlorides and sulphates were found to be in the range of 52 to 101 mg/l and 92 to 910 mg/l, respectively. The calcium & magnesium were found to be in the range of 71 to 321 mg/l and 23 to 146 mg/l, respectively.

The surface water quality of all monitoring locations i.e. SW-1 (Ghatla Pond), SW-2 (Teen Talao - Chembur), SW-3 (Sion Pond), SW-4 (Wadavali Village Pond), SW-5 (Nava Talao - Nhava Sheva) in accordance with water quality standards falls under Class D (propagation of wildlife and fisheries).

6.5 Marine Water Quality

pH is an important parameter to determine the acidity or alkalinity and neutral scale. It greatly affects the microbial population as well as the solubility of metal ions and regulates nutrient availability. pH of the marine water at selected locations is in the range of 7.3-7.8. The electrical conductivity ranges of 37500 to 54900 mS/cm. Dissolved oxygen is found between ranges of 5.1 - 6.1 mg/L. Total dissolved solids detected in range of 24320 to 35670 mg/L.

6.6 Marine Sediment Quality

It was observed that the sediments are slightly alkaline as their pH is in the range of 7.2 to 8.2. Organic matter present in sediment influences its physical and chemical properties. Coastal sediment analysis shows that the concentration of organic matter is in the range of 1.1

– 2.2% and organic carbon is in the range of 0.5 – 1.3%. Sediment analysis shows lower values of organic carbon. The concentration of heavy metals found is in the normal range.

6.7 Ecology and Biodiversity

The surrounding area of the project site has different kinds of habitats namely mangrove forest, tidal lagoon, mudflats, scrub vegetation and roadside plantations. Due to mangrove forest and mudflat region, it attracts a relatively good diversity of bird species which included the long distance migrants coming from as far north of Arctic Circle. Avian predator like Black Kite is sighted in fairly good numbers in such type of habitats probably because of availability of food in good quantities. Thane Creek Flamingo Bird Sanctuary is located on 8.2 km away from the proposed project site.

6.8 Socio-economic Environment

As per Census of India 2011, Greater Mumbai is home to 12.47 million of which male and female are 6.7 and 5.7 million. Municipal Corporation of Greater Mumbai (MCGM) governs the city of Greater Mumbai respectively, of which Mumbai city has population of 3,085,411 and Mumbai Suburban has population of 9,356,962.

The growth rate of population for Greater Mumbai in the last decade was 4.73%. However, there was a negative growth of -7.57% in the Mumbai city population as compared to population of 2001 and there was change of 8.29% in the Mumbai suburban district population as compared to population as per 2001.

The sex ratio was 838 (females per 1,000 males) in the Mumbai city, 857 in the Mumbai suburban, and 848 as a whole in Greater Mumbai, all numbers lower than the national average of 914 females per 1,000 males. The low sex ratio is partly because of the large majority of Mumbai's population are male migrants from other states of India, who come here to work.

7. ANTICIPATED ENVIRONMENTAL IMPACTS

The impact of activities at the proposed Construction of Third Chemical Berth on various environmental components like air, water, noise, land, biological and socio-economic have been assessed and evaluated in this chapter. The evaluation of impacts is done on the basis of severity of the impact on environmental component. The impact is defined as positive if the environmental consequences of the activity are beneficial and vice-versa. The impacts are also defined as reversible if the impacts disappear over a period of time on the ceasing of activity that caused the impact. The impacts are termed as irreversible if the environmental consequences persist in the environment even after the activity ceases. The impacts are also defined in terms of duration over which the impact is expected such as long term or short term impacts.

The proposed project is for Construction of Third Chemical Berth at the North of existing First Chemical Berth at a distance of 300 m at Pir Pau Jetty. The development is an offshore structure and hence, no significant changes in the land use are envisaged.

Activities in construction phase of the project, which potentially affect the air quality, are transportation of construction materials, exhaust emission from DG sets, vehicles, workboats and construction machineries. Combustion of diesel in various construction equipment could also be one of the sources of air pollution during the construction phase. Emissions from construction equipment, machinery and transport vehicles may also contribute to air pollutants namely SO_2, NO_X, HC and CO. The impact on air environment during the construction phase is not expected to be significant. No demolition activities involved. Hence no major air quality impact envisaged during construction of third chemical berth.

Capital Dredging will be done one time. The dredged material will be disposed off at designated locations as per CWPRS-Pune report. Maintenance dredging may be required which will be having minimal amount of impact. The area is already under operational port with maintainance dredging of MbPT and JNPT. Hence no major additional impact on marine environment will be envisaged.

Fishing activity near the project site is already restricted. Fish landing is being carried out at Bhauccha Dhakka which is 7.30 km from the project site but fishing activity is carried out by

fishermen in deep sea away from jetty. There is no any direct or indirect impact on fisherman and fishing activities.

The construction of a Third chemical berth will generate noise that will be irradiated in the surrounding water. However, there would be piling activity and impulse noise will be generated in the region and therefore marine mammals may be impacted due to underwater noise in and around the project area.

Thane Creek Flamingo Sanctuary is more than 8 km away from the project site. As new berth will come next to existing operational berth, any direct impact on Sanctuary is not envisaged.

8. ADDITIONAL STUDIES

In order to comply with CRZ regulations, detailed HTL/LTL demarcation studies were conducted with respect to the project site. The study has been conducted by an authorized agency, Institute of Remote Sensing, Anna University, Chennai.

Quantitative Risk Study has been done to determine the potential risks of major disasters having damage potential to life and property and provide scientific basis using PHASTRISK (Version 6.7) software developed by DNV GL. Disaster Management Plan and Oil Spill Contingency Plan has been already prepared by MbPT for identification of various hazards addressed qualitatively and included in onsite-emergency plan. Details of risk assessment are given in the EIA report.

9. ENVIRONMENTAL MANAGEMENT PLAN

The Environmental Management Plan (EMP) provides an essential link between predicted impacts and mitigation measures during implementation and operational activities. EMP outlines the mitigation, monitoring and institutional measures to be taken during project implementation and operation to avoid or mitigate adverse environmental impacts, and the actions needed to implement these measures.

The likely impacts on various components of environment due to the project during developmental activities have been identified and measures for their mitigation are suggested.

The EMP lists all the requirements to ensure effective mitigation of every potential biophysical and socio-economic impact identified in the EIA. For each attribute, or operation, which could otherwise give rise to impact, the following information is presented:

- A comprehensive listing of the mitigation measures
- Parameters that will be monitored to ensure effective implementation of the action
- Timing for implementation of the action to ensure that the objectives of mitigation are fully met

The EMP comprises a series of components covering direct mitigation and environmental monitoring, an outline waste management plan and a project site restoration plan. Therefore, environmental management plan has been prepared for each of the above developmental activities.

During construction phase, all precautionary measures shall be taken for dust suppression, prevention of marine water contamination and noise reduction, etc. The effect on environment during construction phase will be localized, temporary and reversible in nature. Further, operation stage of the chemical berth will usually involve handling of chemical carrying cargos/vessels which may lead to vehicular emission of air pollutants into atmosphere, oil spillage, leakage in chemical carrying pipeline, etc.

9.1 Air Pollution Management

- Covering the materials with tarpaulin during the transportation.
- Dust suppression arrangements should be regularly used to avoid the dust emissions.
- All construction machines should be well maintained and use appropriate air pollution control equipment as required.
- Ambient air quality should be regularly monitored at critical locations near construction sites before start of work and during the execution of work so that increased ambient load can be estimated. If the levels are crossing the permissible values, immediate mitigatory measures need to be adopted.
- To lessen the gaseous emissions necessary steps must be followed such as only vehicles having PUC shall be allowed, well-equipped handling & transportation facilities shall be provided throughout the construction phase.

9.2 Water Pollution Management

- As such no additional water will be required for the proposed project; hence, no additional wastewater generation from the proposed project activity is envisaged.
- MbPT already have treatment facilities to treat the domestic water as per the existing CTO conditions.

9.3 Solid and Hazardous Waste Management

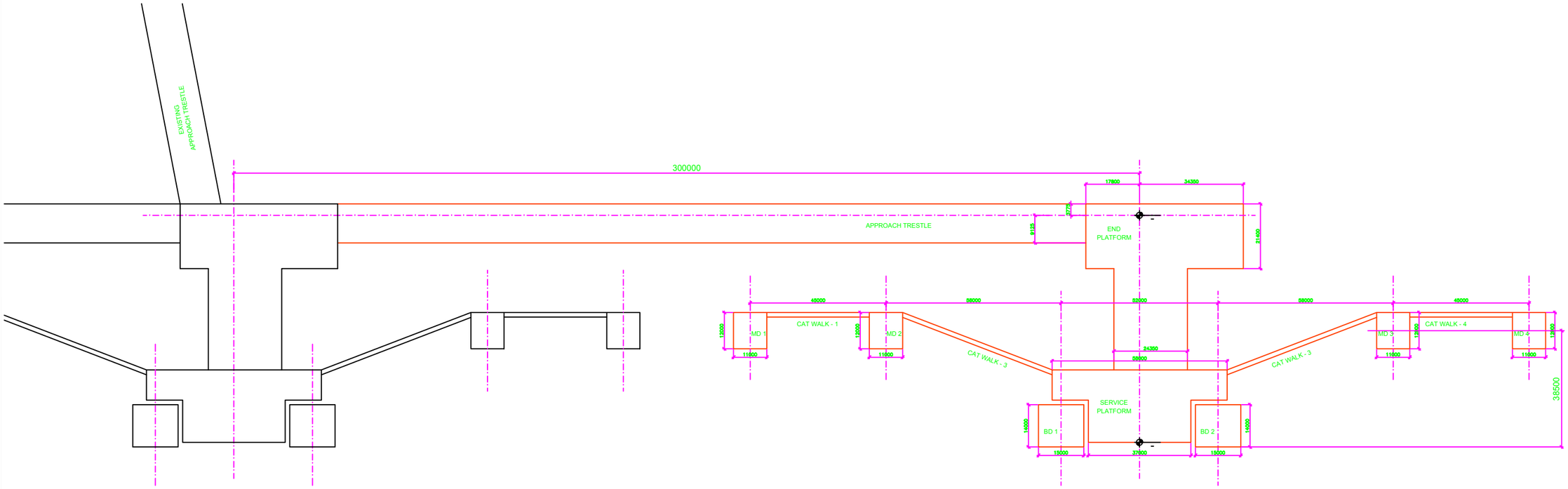
Mumbai Port Trust is already in operation and has 2 Chemical Berths at Pir Pau Jetty. The proposed project for Construction of Third Chemical berth is at existing Pir Pau Jetty only. Solid and hazardous waste generation during construction phase is envisaged. It is proposed that the contractor shall be responsible for collection, transport and disposal of all types of solid waste generation. Also, Solid and Hazardous Waste Management Plan for Construction Phase shall be developed by the contractor and approved by the developer prior to construction phase. Further hazardous waste generated during operation phase like oily rags, lube oil, etc. will be handed over to the authorized MPCB vendors of the area.

10. PROJECT BENEFITS

Mumbai Port is one of the most ideal sites as it has got suitable coastline and the port is not directly exposed to marine hazards especially storms. Maritime transportation is a major means of international trade as it is the cheapest mode of transport and benefits exports and imports. It has been a center of prosperity of the country. The proposed development will mark a boost to the commercial activity in the region. Proposed expansion will lead to increase the chemical cargo handling capacity of berths at Pir Pau Jetty and thus will benefit the Mumbai Port by increasing the overall port capacity for chemical vessel handling. The development will also provide opportunities for employment mostly in the skilled and semi-skilled categories.

ANNEXURE I

Layout of proposed Third Chemical Berth



FIRST CHEMICAL BERTH

PROPOSED THIRD CHEMICAL BERTH

REV.	DATE	DESCRIPTION	INITIAL

..\2016\mumbai\MBPT-Marathi 1.jpg

MUMBAI PORT TRUST

MbPT ESTATE

TITLE

PLAN SHOWING PROPOSED THIRD CHEMICAL BERTH

		DRAWN	TRACED	DATE	SCALE
ASSTT. EX. ENGINEER		ALANGEKAR		02/08/2019	AS SHOWN
EX. ENGINEER					
SUPTG. ENGINEER		DRG.NO.		19 / 2019	

DY. C.E. CHIEF ENGINEER

\\ULTRASERVER\EIA2\CRZ MAPING AUTOCAD FILES\13-19-2019_PROP_3RD_CHEM_BERTH(1).DWG A3