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नव मंगलूर पत्तन न्यास
NEW MANGALORE PORT TRUST



भारत सरकार (पत्तन, पोत परिवहन और जलमार्ग मंत्रालय)
Govt of India (Ministry of Ports, Shipping and Waterways)
ಪಣಂಬೂರು ಪಣಮ್ಬೂರು Panambur / ಮಂಗಳೂರು ಮಂಗಲೂರು Mangalore - 575 010

By Speed Post

Date: 12.10.2021

To,

The Member Secretary,
Expert Appraisal Committee (Infra 1),
Ministry of Environment Forest and Climate Change
Indira Paryavaran Bhavan, JorBaug, New Delhi

Subject : Application for Terms of Reference for Development of Multipurpose Cargo Berth (Berth No.17) at New Mangalore Port by New Mangalore Port Trust (NMPT)

Project Name: Development of Multipurpose Cargo Berth (Berth No.17) at New Mangalore Port by New Mangalore Port Trust (NMPT)

Respected Sir/Madam,

With reference to above mentioned subject, New Mangalore Port Trust (Ministry of Ports, Shipping and Water ways) submitting herewith the application Form1, Prefeasibility Report and proposed Terms of Reference for Development of Multipurpose Cargo Berth (Berth No.17) at New Mangalore Port Trust. Kindly appraise our project for granting Terms of Reference in next EAC meeting.

Thanking you,

Yours Sincerely

Chief Engineer (Civil)
New Mangalore Port Trust

Enclosure: Form 1, PFR and TOR.

ದೂರವಾಣಿ : ಕಚೇರಿ : 0824 -2407341
ಫ್ಯಾಕ್ಸ್ : 0824- 2408390

ಫೋನ್ : ಕಾರ್ಯಾಲಯ : 0824 - 2407341
ಫೆಕ್ಸ್ : 0824 -2408390

Phone : Office : 2407341 (18 Lines)
Fax : 0824-2408390

An ISO 9001:2015, 14001:2015 & ISPS Compliant Port

**Prefeasibility Report to obtain
Environment and CRZ Clearance
For
Development of multipurpose cargo Berth
(Berth No.17) at New Mangalore Port**

**Project Proponent
New Mangalore Port Trust (NMPT)**

October 2021

Environmental Consultant



NABET ACCREDITATION NUMBER:

NABET/EIA/2023/RA0194

1 Executive Summary

New Mangalore Port is an artificially created lagoon type harbour with an approach channel. The Port is an all-weather port situated at Panambur, Mangalore (State of Karnataka in south India), on the west coast of India, 170 nautical miles south of Mormugao and 191 nautical miles north of Cochin Port.

The port is approached through a 7.5 km long channel with water depths -15.4 m CD in the outer channel and -15.1 m CD in the inner channel. The Port has a total land area of approximately 822 ha. and water spread area of about 120 ha.

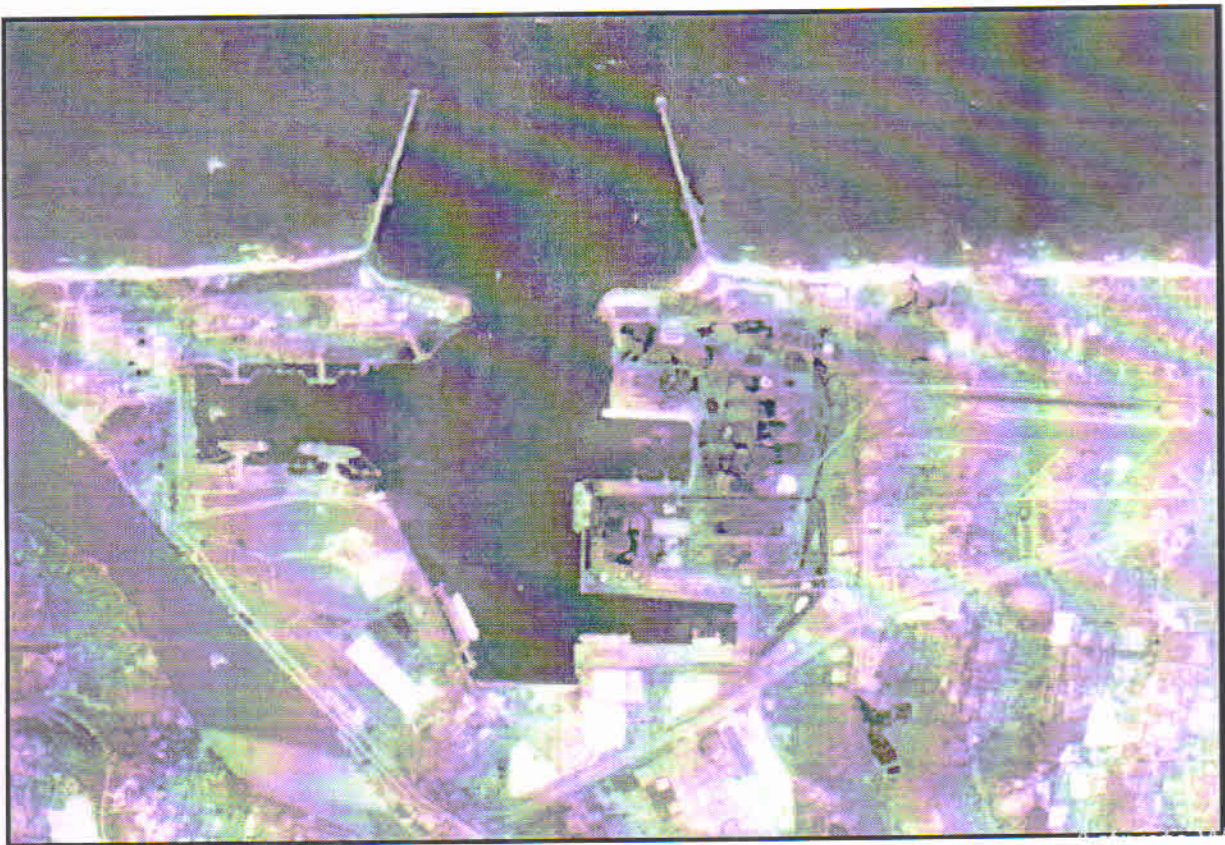


Figure 1: Overall Layout of NMPT Port

The Port has 3 dock basins.

- Eastern dock basin
- Western dock basin
- Oil dock basin

The eastern dock basin comprises 7 multipurpose berths and western dock with 2 berths. A deep draft multipurpose berth exists between eastern and western dock area. The Oildock basin comprises 5 jetties to handle liquid bulk and POL. There is also an offshore Single Buoy Mooring for handling VLCCs.

Presently, NMPT handles, POL (IOC/BPCL), Crude Oil (MRPL), LPG, Fertilizer, Wooden Logs, Edible Oil, Coal, Liquid Ammonia, Phosphoric Acid, Cement, Mechanical Cargos, Limestone, Containerized cargo, Iron Ore Pellets, Iron Ore Fines, Granite stones, etc.

The cargo-wise traffic handled at New Mangalore Port during the past 5 years is given in the Table.1.

Table 1: Cargo-wise traffic handled for the past 5 years

S. No.	Name of Cargo	2016-17	2017-18	2018-19	2019-20	2020-21
		In MTPA	In MTPA	In MTPA	In MTPA	In MTPA
1	CRUDE-POL PRODUCTS	24.96	24.47	25.85	22.61	21.89
2	IRON ORE	2.93	4.89	4.63	4.99	4.73
3	FERTILIZER	0.75	0.97	0.78	0.91	1.09
4	THERMAL COAL	3.53	0.71	0.07	-	-
5	COKING COAL	-	0.14	0.33	0.01	0.09
6	OTHER COAL	3.39	5.85	6.17	5.13	3.30
7	CONTAINERS	1.41	1.74	1.92	2.28	2.29
8	OTHERS	2.98	3.28	2.76	3.22	3.11
	GRAND TOTAL (A+B+C)	39.95	42.05	42.51	39.15	36.50

The purpose of the new deep drafted berth No.17 is to take over the deep drafted vessels presently calling at berth No.14 after it is dedicated to handle only containers. Hence it is necessary to review the pattern of traffic and ship sizes being handled at berth No. 14 for the past few years.

NMPT have appointed M/s. ULTRA TECH Environmental Consultancy & Laboratory (MoEFCC recognized and NABET accredited), Thane, to carry out study of the impacts of the project on the local environment and for obtaining Environmental and CRZ Clearance. ULTRA TECH is an established Consultancy in the field of Environmental Services for the past 30 years.

2 Introduction

2.1 Project Proponent

New Mangalore Port is a small water of, all-weather port at Panambur, Mangalore in Karnataka state in India, which is the deepest inner harbour on the west coast. It is the only major port of Karnataka and the seventh largest port in India. It is operated by New Mangalore Port Trust. The cargo wise traffic handled at New Mangalore Port for the past 5 years has shown a growth of around 7%. Port broadly handles POL- crude and products (59%), Iron ore (12 %), Fertilizers (1.6%), Thermal & Coking Coal (16%) Containers (4.14%) and other miscellaneous cargoes (7.91%). About 75% to 80% of the traffic is accounted by liquid bulk, coal and iron ore. Among the cargoes handled, the share of containers of the total cargo handled at NMPT has increased significantly which was around 1.9% during 2013-14 has increased to 4.14%.

2.2 Brief description of nature of the project

The main activities of the proposed project will be construction multipurpose cargo Berth (Berth No.17) at New Mangalore Port Trust with > 5 million TPA of cargo handling. Hence, the present proposal is classified under Schedule 7(e) & Category 'A' according to EIA Notification 2006 & subsequent amendments.

2.3 Need of the project and its importance

After converting the deep drafted berth No.14 into a container berth, the Port has no other deep draft berth to handle the displaced other cargo through large ships of 60,000 dwt and above. Therefore, Port has proposed to develop an additional deep draft general cargo berth between berths No.8 and No.13. The proposed berth location has a waterfront of around 390 m with sizable back up of around 3.5 Ha.

The purpose of the new deep drafted berth No.17 is to take over the deep drafted vessels presently calling at berth No.14 after it is dedicated to handle only containers. Hence it is necessary to review the pattern of traffic and ship sizes being handled at berth No. 14 for the past

few years. It may be noted that the total traffic for each commodity is the volume of cargo handled by the ships on their port calls and not necessarily discharged at berth No.14 as some of the ships discharge their cargo at multiple berths.

The berth-14 is converted into an exclusive container terminal, the present container traffic will continue there. All coal (coal, steam coal, coking coal and coke) will be shifted to the berth No. 16 under license with Mangalore Coal Terminal Private Limited developed under PPP mode. This leaves Iron ore fines/concentrate, fertilisers, river sand, bentonite, gypsum, machinery etc. to be handled at the proposed new berth No. 17. However, both berths No. 14 & No. 16 have been permitted to handle fertilisers, gypsum, limestone and dolomite to supplement their revenue till the time the traffic picks up to the expected level. But taking into consideration compatibility of cargo, ways of handling and transferring from berth to the storage yard, it is unlikely these could be handled at these two berths. Hence this proposed berth No.17 should be prepared to handle these cargoes also.

Container traffic at NMPT has grown from 94929 TEUs in 2016-17 to 150445 TEUs in 2020-21. The CAGR for Container Traffic for the past 5 years is an impressive 9.65%. Therefore, considering future prospects i.e., potential growth in container traffic and end of exclusivity to the upcoming JSW container terminal after 9 years, port may need to look at creating additional capacity for container handling. Hence, the upcoming berth may be designed to handle containers too. In such a case, the berth may be equipped to be operated using at least two RMQCs (Rail mounted Quay Cranes).

Anticipated benefits

By development of a new multipurpose cargo berth No. 17 there will be direct and indirect benefits to the country in general and the new Mangalore port and its hinterland in particular. Even on a pessimist approach the new terminal will be able to handle 340000 TEU or 4 MTPA additional cargo. This will trigger development of major and minor industries, processing units, employment potential in the hinterland apart from sizeable income to the port exchequer from the EXIM trade.

2.4 Employment Generation

During Construction Phase:

Construction phase will generate employment for local people including various subcontractors, electricians, machinists, welders, painters, blasters, riggers, pipe fitters and a number of

administrative and managerial staff. Thus the proposed development will create employment opportunity in skilled and unskilled sectors. Moreover fabrication industries are entirely based on the order received by the concerned yards not a yearlong activity. If the order is more the employment opportunity is also more and vice versa. Hence most of the man power required will be procured through the subcontractors, not directly employed by the IWT.

The expected labour force required during construction phase is to the tune of about 100 to 150 persons. Although the workforce requirement will be temporary in nature, it will be met from the local population as far as possible hence there will be positive impact. Local businessmen will get opportunity to supply construction materials. Demands generated from the labour force for basic facilities including eatables etc. will increase the local business activity of the area.

During Operational Phase:

Similar to the construction phase, the operation phase of the proposed development will also provide opportunities for employment mostly in the skilled and semi-skilled categories. This will enhance the income of the people associated with subcontracting business. All these activities will need support services like food, transport, medical facility etc. ultimately leading to improvement in quality of life of local people.

3 Site Information

3.1 Location of project

The project is located at New Mangalore Port Trust, Village Panambur, Tehsil Surathkal, Dakshina Kannada District, Karnataka. The proposed location of the berth No. 17 has been identified as the existing waterfront in between berths No. 8 and berth No. 13. This is shown in the Figure2. As can be seen, there is sufficient back up area behind the berth for the storage of cargo.

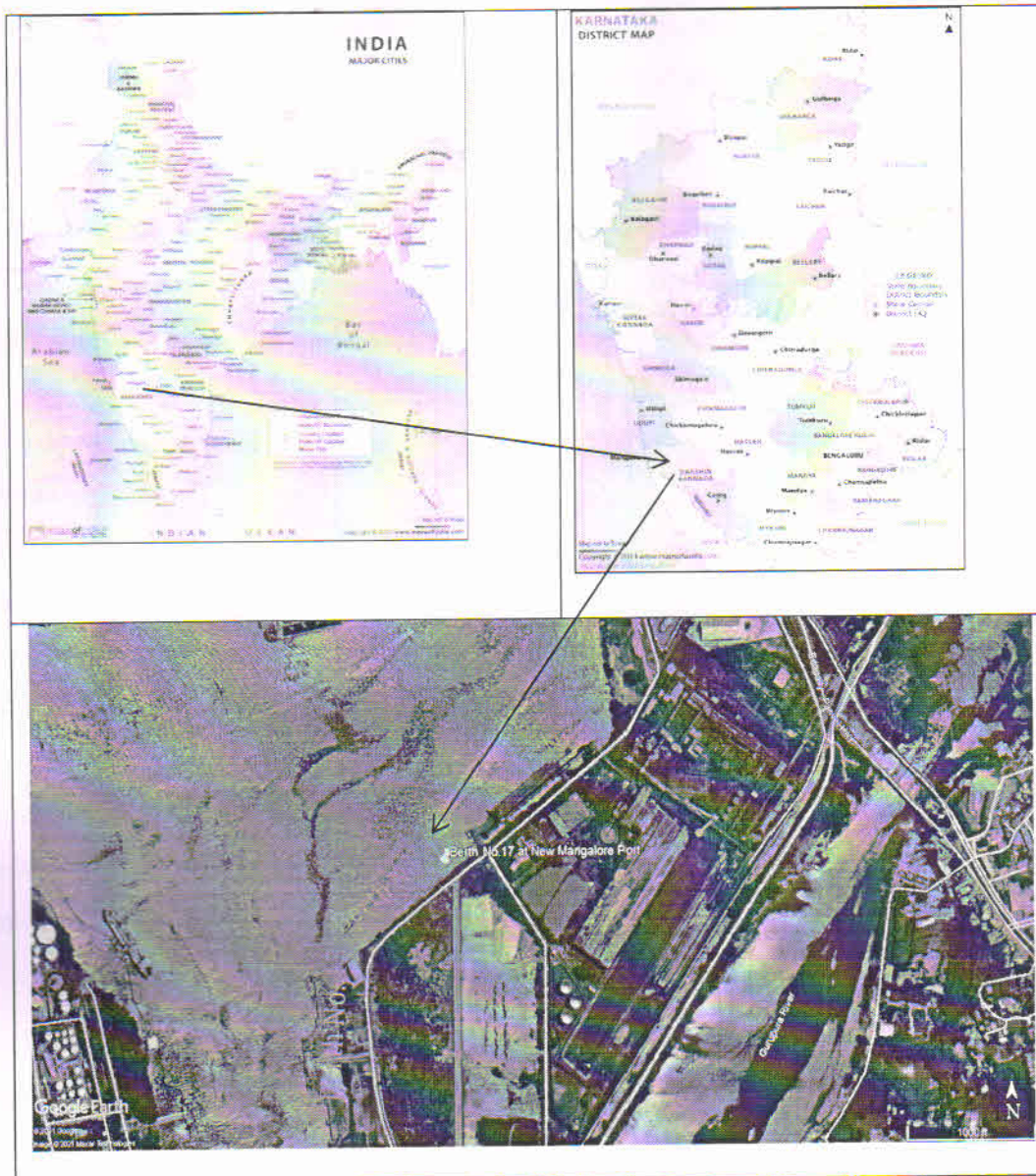


Figure 2: Location of Proposed Project

3.2 Details of Site Selection and alternatives

As per the Traffic analysis carried out by AECOM, the projected traffic for NMPT for the year 2020 is estimated as 43.4 MTPA. Additionally the total growth is found raising high up to 61.2 MTPA by 2025 and 85.2 MTPA by 2035. The report predicts an increase in traffic is majorly due to dry bulk cargo demand and an additional capacity of 41.8 MT would be needed by 2035.

The cargo traffic can be accommodated by the port by developing a new deep draft berth. It is recommended to develop a new deep draft berth is proposed beside the iron ore berth (Berth 18). Since, the required open area and sheds for storage are proposed in the vacant area behind the berth.

Alternatives considered

Eastern arm has 6 berths (berth 2 to 7) with the draft varying from -9.5 m CD to -10.5 m CD. The average occupancy of these berths is about 28%. The low berth occupancy is attributed to the following.

Cargo complexion is fragmented and is handled in small parcel sizes. Cargoes are handled through ship gears and no equipment are deployed on berth. It may be noted that approximately 91% of container traffic is handled at berth in the eastern arm. With the proposed new container terminal, all the container cargo would shift to berth 14. Berth 5 & 6 which predominantly handles non-hazardous liquid (palm/ edible oil) cargo, cement and fertilizer for which necessary infrastructure like pipelines, conveyors are in place. The eastern arm is approximately 600 m long with the tapered width varying from 195m to 160m. In order to cater deep draft vessels of panamax ships, it is required to provide the dock width of approximately 220 m to 250 m. The berth in the eastern arm were constructed when the port was commissioned i.e. 1975. Most of these berths have attained their design life and need retrofits. Given the established infrastructure along berth 5-7, it is proposed to increase the width of the dock along berth 2-4.

3.3 Project connectivity

The Port is connected with 3 National Highways. The main road networks connecting the hinterland to New Mangalore Port are as follows:

NH-66 connecting Kochi – Mangalore – Goa – Mumbai

NH-75 connecting Bangalore – Hassan – Mangalore

NH-169 connecting Mangalore – Shimoga – Chitradurga – Bijapur – Sholapur

New Mangalore Port is connected to the Indian Railway Network through Southern Railway, South Western Railway and Konkan Railway. The Railway Marshalling Yard at Panambur, inside the New Mangalore Port, is a part of the Southern Railway. This is connected to the Konkan rail network at Thokur providing access to Mumbai via Coastal Karnataka and Goa and

to the South Western railway at Kankanady providing access to the Karnataka heartland and Bangalore and Mysore via Hassan and to Kerala through the southern railway.

3.4 Environmental Setting

The Environmental Setting in 10 km radius of project site is presented below in **Table 2**

Table 2: Environmental Setting around 10 km radius area

Sr. No.	Particulars	Details
1	Site location	New Manglore Port
2	Site Coordinates	Latitude -12°22'29.17"N Longitude- 74°49'1.69"E
3	Nearest highway	Panvel - Kochi-Kanyakumari hwyNH66- 1.0 km
4	Nearest railway station	Mangalore Railway Station-7.4 km ThokurRailwau Station-4.5 km
5	Nearest Airport	Mangaluru International Airport - International airport-7.0 km
6	Nearest major water bodies	
7	Archaeologically important Places	Nil
8	Protected areas as per Wildlife Protection Act, 1972 (Tigerreserve, Elephant reserve,Biospheres, National parks, Wildlife sanctuaries,community reserves andconservation reserves)	Nil
9	Reserved / Protected Forests	Nil
10	Defense Installations	Nil
11	Seismicity	Seismic Zone-III as per IS 1893 (Part I): 2002

Climate

Under the Köppen climate classification, Mangalore has a tropical monsoon climate and is under the direct influence of the Arabian Sea branch of the southwest monsoon. It receives about 95 per cent of its total annual rainfall between May to September but remains extremely dry from December to March. Humidity is approximately 75 per cent on average and peaks during June, July and August. The maximum average humidity is 93 per cent in July and average minimum humidity is 56 per cent in January. Mangalore experiences moderate to gusty winds during day time and gentle winds at night. The driest and least humid months are from December to February.[92] During this period, temperatures during the day stay below 34 °C (93 °F) and drop

to about 19 °C (66 °F) at night. The lowest temperature recorded at Panambur is 15.6 °C (60 °F) on 8 January 1992 and at Bajpe it is 15.9 °C (61 °F) on 19 November 1974. According to the India Meteorological Department (IMD), the temperature in Mangalore has never reached 40 °C (104 °F). The summer gives way to the monsoon season, when the city experiences the highest precipitation of all urban centres in India due to the influence of the Western Ghats. The rains subside in September but there is occasional rainfall in October. The highest rainfall recorded in a 24-hour period is 330.8 mm (13 in) on 22 June 2003. In 1994, Mangalore recorded its highest annual rainfall at 5,018.52 mm (198 in).

4 Project Description and Facilities

Length of the berth:

Considering the design ship size of 150,000 DWT vessel will be considered for the design of proposed Berth No.17 with dimensions of 294m (LOA) x 45.9m (Beam) x 16m (Draft) and Maximum vessel of 6500 TEU with LOA of 300m to be considered.

Width of the berth

The width of the deck is taken as 26 m as this is an offshore berth. This has been fixed considering the following: The maximum propping base of the HMC will be 11 m. This will be placed about 3 m away from the fender base. After this 7.5 m space required for 2-lane traffic will need to be provided. The balance space of 4.5 m is provided in case a trailer needs to be turned around.

Approach trestles

The berth will be located about 34 m from the shoreline and hence to approach this it is proposed to have two approach trestles, each of 10 m width.

Deck elevation

The salient levels for the deep draft general cargo berth shall be as follows:

Salient Levels

S. No	Description	Levels in m
1	Berthing Jetty - Deck level	(+)5.00
2	Approach Jetty - Deck level	(+)5.00

3	Dredging level for Berthing structure	(-)18.00m
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Berth structure

Soil in this location is composed of medium to stiff clay at the top layers and ends with rock stratum of hard granite rock with approximately 100 MPa. From the entrance of the lagoon area between the seawalls towards the approach channel up to 1.5 km the soil composition is medium sand and stiff clay with hard rock starting from a depth of -18 m CD. In the approach channel beyond 1.5 km from the mouth of the lagoon area silty clay material is prominent. As the top layer of the approach channel comprises of a very weak soil slopes of 1:6, 1:10 & 1:20 has been assumed after dredging in the lagoon, breakwater area and in the outer channel areas. The rock blasting has to be carried out as hard rock patches are starting from a depth of -15 m CD inside the lagoon and from -18 m CD from the mouth of the lagoon up to 1.5 km towards the approach channel. The structure of the berth is proposed to be in the form of open - piled jetty. There will be 5 rows of piles. The pile bents will be spaced at 5.5 m across the berth and at 7.0 m spacing along the length. The piles will be concrete bored cast-in-situ. The piles are sized at 1400 mm. The founding level of the piles will depend on the actual subsoil profile. The cross section of the berth showing the general arrangements proposed on the deck are shown in the figure hereunderdeck elevation is kept at + 5 m CD in line with the other berth.

Layout plan

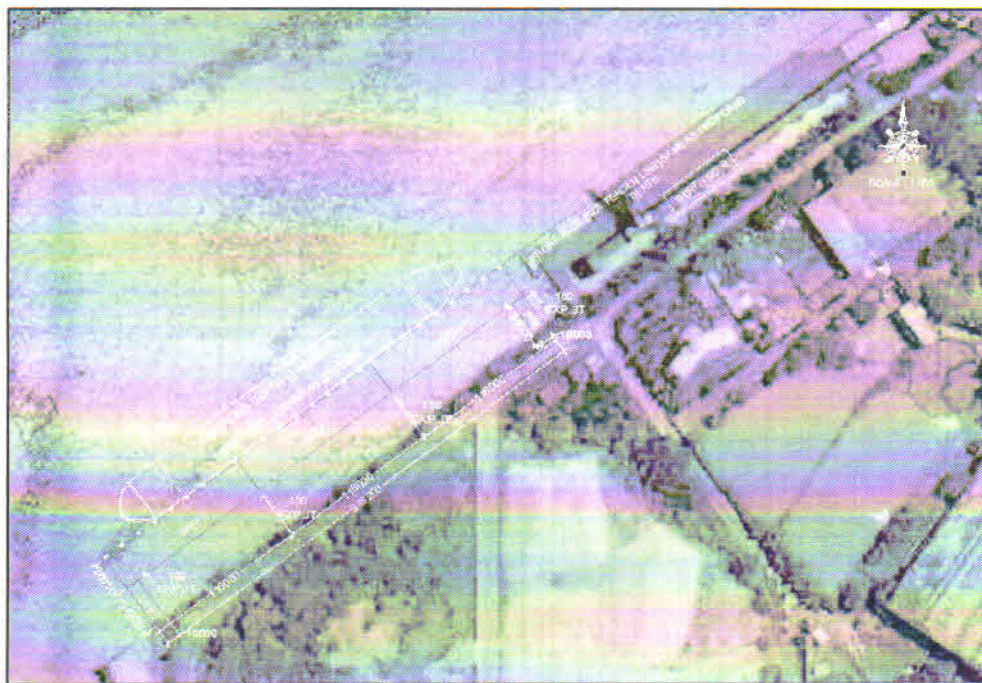


Figure 3: Overall layout of berth

Dredging Requirement

The existing sea bed level is ranging from (-) 1.0 MCD near shore to about (-) 8.0 MCD (average) near the proposed berth line which is 34 mtr away from the shore line. At present the dredging will be done upto the level of (-) 15.1 MCD and in future Port has plans to dredge the entire area in front of water front along the length of proposed berth and towards lagoon and channel upto (-) 18 MCD for berthing vessels at all tides.

Vessels

While cargo analysis has shown what cargoes can come to B-17, vessel analysis would reveal which out of these cargoes have to come to B-17, partly or fully.

For the identified probable cargoes, the following table gives details of vessels that called at the port in 2020-21, including their vessel size, parcel size and draft.

Table 3: Vessel characteristics

Ship Size in DWT	20,000-40,000		40,000-60,000		60,000-80,000		80,000-1,20,000		Draft in Metre		
	Handysize		Handymax		Panamax		Minicape		<10	10 to 12	>12
Number of vessels & Parcel size (in Tonnes)	Number of Ships	Parcel Size	Number of Ships	Parcel Size	Number of Ships	Parcel Size	Number of Ships	Parcel Size			
IOF / IOC/IOP	4	28,089	64	53,533	15	56,097	-	-	4	9	70
Fertiliser finished	6	28,988	12	39,643	3	42,918	1	14,995	2	18	2
Fertiliser Raw	2	18,200	2	18,040	-	-	-	-	2	2	-
Gypsum	1	33,000	-	-	-	-	-	-	-	1	-
River Sand	-	-	-	-	-	-	-	-	-	-	-
Sugar	2	28,718	-	-	-	-	-	-	1	1	-
Wheat	-	-	-	-	-	-	-	-	-	-	-
Minor bulk	50	8,945	25	36,043	19	45,529	24	66,436	58	6	54
Break bulk	3	2,979	-	-	1	11,563	-	-	4	-	-
Edible Oil	23	12,667	7	12,397	-	-	-	-	20	10	-

5 Land Use and Land Ownership

The 30 Acres (Approximate) of Port land which will be utilized for the storage of the cargo generated by the proposed project. The entire area is within Port estate and has been declared as Port (Notification enclosed as **Annexure A**). The land use plan is as per the Port Master Plan. 2.5 Acres of water area will be used for Construction of Berth adjacent to existing berth No. 8.

6 Water Requirement

Construction Phase:

The water requirement during the construction phase will be around 100 KLD of water. This water can be sourced from the port itself, if there is a shortfall, it can be met with water from

water tankers and water suppliers. Water has to be stored in a sump. The major impacts on marine water quality are envisaged due to the civil works activities like driving of piles, construction of berth, approach way, movement of construction equipment's etc., that will have a high potential to disperse the fine grained sediments in the water, thus increasing the particular load which in turn can adversely influence the photosynthetic activity further affecting the marine life. However this rise in turbidity will be only during the construction phase. The runoff from the site containing construction materials, debris, and construction waste and excavated earthen materials may have adverse impacts on the water environment especially on nearby marine water resources. Further the dispersion of fine sediment runoff in the water during the confection activities can increase the particulate load in the neighbouring aquatic habitat, which in turn can increase turbidity in and consequently affect the rate of the photosynthetic activity of the aquatic life. Proper mitigation measures shall be implemented to avoid such runoff as well as spillage of construction materials so that the materials in runoff cannot enter in to the water bodies.

Operational Phase:

During operation phase, no impact is envisaged on surface and groundwater resources. For domestic purpose water requirement will be 10 KLD for flushing. This water can be sourced from the port itself, if there is a shortfall, it can be met with water from water tankers and water suppliers. The net quantity of domestic wastewater generated will be also being taken care of port itself. Hence no significant impact on water quality is expected during the operation phase. Beside the sewage, as mention earlier there will not be any considerable impact on environmental quality as no toxic or serious pollutants are anticipated.

7 Power Requirement

The power supply requirement would be in the range of 4 to 5 MVA, which will be obtained from Mangalore MESCOM or the constructing agencies will use their own power generators

8. Proposed Infrastructure

Development of Berth no 17 at New Mangalore Port Trust.

9. R&R Plan

No R&R plan is involved. The proposed project is within port limit of NMPT.

10 Waste Management

Construction phase

The municipal waste generated during the project construction phase shall be of the order of only 50 to 100 kg/day. The dredged spoils shall be used in the extent possible for reclamation and unsuitable material will be disposed off at the designated location. Municipal solid waste generated will be disposed off through the concerned municipality Authorities. The solid waste generation during the construction phase will consist of biodegradable waste such as food waste and non- biodegradable waste such as packaging materials, plastic, metal item, etc. All recyclable items shall be collected and sold to authorized recyclers.

Operational Phase

During the operational phase solid waste will be generated from the proposed terminal and the generated waste will be minimum. Municipal solid waste generated will be disposed off through the concerned municipality Authorities. The solid waste generation during the construction phase will consist of biodegradable waste such as food waste and non- biodegradable waste such as packaging materials, plastic, metal item, etc. All recyclable items shall be collected and sold to authorized recyclers.

11. Environment Management

Precautions will be taken that the site is not polluted due to any oil spills/other pollutants due to activities during the construction period. Project proponent will develop an environmental management plan and take adequate anti-pollution measures during construction as well as operation phase.

12. Project Schedule and Cost Estimates

The total capital cost of the project is estimated at Rs.213.91 Crores. The summary break-up of the estimate is given as under:

Sl. No.	Description of work	Amount	Rs.
1	Berthing jetty		1631772000
2	Approach jetty		81600000
	Civil construction cost	Total	1713372000
	Contingency (3%) - Miscellaneous items		51401160

Detailed Engineering & Project Supervision @ 2%	34267440
Total	1799040600
GST @ 18%	323827308
Miscellaneous Cost @ 5% of project cost as per TAMP	16191365.4
Grand Total (in crore)	213.91

Project implementation schedule:

The project implementation period for the Proposed Construction of work is estimated at 24 months after the approval of the proposal.



Chief Engineer (Civil)
New Mangalore Port Trust (NMPT)

STANDARD TERMS OF REFERENCE (TOR) FOR EIA/EMP REPORT FOR PROJECTS/
ACTIVITIES REQUIRING ENVIRONMENT CLEARANCE

7(e): STANDARD TERMS OF REFERENCE FOR CONDUCTING
ENVIRONMENT IMPACT ASSESSMENT STUDY FOR PORTS,
HARBOURS AND INFORMATION TO BE INCLUDED IN EIA/EMP
REPORT

- 1) Reasons for selecting the site with details of alternate sites examined/rejected/selected on merit with comparative statement and reason/basis for selection. The examination should justify site suitability in terms of environmental angle, resources sustainability associated with selected site as compared to rejected sites. The analysis should include parameters considered along with weightage criteria for short-listing selected site.
- 2) Details of the land use break-up for the proposed project. Details of land use around 10 km radius of the project site. Examine and submit detail of land use around 10 km radius of the project site and map of the project area and 10 km area from boundary of the proposed/existing project area, delineating project areas notified under the wild life (Protection) Act, 1972/critically polluted areas as identified by the CPCB from time to time/notified eco-sensitive areas/interstate boundaries and international boundaries. Analysis should be made based on latest satellite imagery for land use with raw images.
- 3) Submit the present land use and permission required for any conversion such as forest, agriculture etc. land acquisition status, rehabilitation of communities/ villages and present status of such activities.
- 4) Examine and submit the water bodies including the seasonal ones within the corridor of impacts along with their status, volumetric capacity, quality likely impacts on them due to the project.
- 5) Submit a copy of the contour plan with slopes, drainage pattern of the site and surrounding area.
- 6) Submit the details of terrain, level with respect to MSL, filling required, source of filling materials and transportation details etc.
- 7) Examine road/rail connectivity to the project site and impact on the existing traffic network due to the proposed project/activities. A detailed traffic and transportation study should be made for existing and projected passenger and cargo traffic.
- 8) Submit details regarding R&R involved in the project
- 9) Submit a copy of layout superimposed on the HTL/LTL map demarcated by an authorized agency on 1:4000 scale along with the recommendation of the SCZMA.
- 10) Submit the status of shore line change at the project site
- 11) Details of the layout plan including details of channel, breakwaters, dredging, disposal and reclamation.
- 12) Details of handling of each cargo, storage, transport along with spillage control, dust preventive measures. In case of coal, mineral cargo, details of storage and closed conveyance, dust suppression and prevention filters.
- 13) Submit the details of fishing activity and likely impacts on the fishing activity due to the project. Specific study on effects of construction activity and pile driving on marine life.
- 14) Details of oil spill contingency plan.

STANDARD TERMS OF REFERENCE (TOR) FOR EIA/EMP REPORT FOR PROJECTS/ACTIVITIES REQUIRING ENVIRONMENT CLEARANCE

- 15) Details of bathymetry study.
- 16) Details of ship tranquillity study.
- 17) Examine the details of water requirement, impact on competitive user, treatment details, use of treated waste water. Prepare a water balance chart.
- 18) Details of rainwater harvesting and utilization of rain water.
- 19) Examine details of Solid waste generation treatment and its disposal.
- 20) Details of desalination plant and the study for outfall and intake.
- 21) Examine baseline environmental quality along with projected incremental load due to the proposed project/activities.
- 22) The air quality monitoring should be carried out according to the notification issued on 16th November, 2009.
- 23) Examine separately the details for construction and operation phases both for Environmental Management Plan and Environmental Monitoring Plan with cost and parameters.
- 24) Submit details of a comprehensive Risk Assessment and Disaster Management Plan including emergency evacuation during natural and man-made disasters
- 25) Submit details of the trees to be cut including their species and whether it also involves any protected or endangered species. Measures taken to reduce the number of the trees to be removed should be explained in detail. Submit the details of compensatory plantation. Explore the possibilities of relocating the existing trees.
- 26) Examine the details of afforestation measures indicating land and financial outlay. Landscape plan, green belts and open spaces may be described. A thick green belt should be planned all around the nearest settlement to mitigate noise and vibrations. The identification of species/ plants should be made based on the botanical studies.
- 27) The Public Hearing should be conducted for the project in accordance with provisions of Environmental Impact Assessment Notification, 2006 and the issues raised by the public should be addressed in the Environmental Management Plan. The Public Hearing should be conducted based on the ToR letter issued by the Ministry and not on the basis of Minutes of the Meeting available on the web-site.
- 28) A detailed draft EIA/EMP report should be prepared in accordance with the above additional TOR and should be submitted to the Ministry in accordance with the Notification.
- 29) Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
- 30) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.
- 31) Any further clarification on carrying out the above studies including anticipated impacts due to the project and mitigative measure, project proponent can refer to the model ToR available on Ministry website "<http://moef.nic.in/Manual/Port and harbour>".