

2.0 PROJECT DESCRIPTION

2.1 General:

The Port serves the geographical regions of Tamil Nadu, Pondicherry, South Andhra Pradesh and parts of Karnataka and has now emerged as hub on the east coast of India. Major commodities being handled at the Port are Containers, Automobiles Exports, POL and general cargo items. Though it is about 600 nautical miles away from the international maritime route, because of its location, proximity to market, competitive pricing, safe and secure operations this is one of the preferred ports for the trade.

The total quay length available is around 5.5 km. It has all 24 berths spread over in 3 docks i.e. Ambedkar Dock, Jawahar Dock and Bharathi Dock. The depth is varying from 8.5m to 16.5m. There is 7.0 km of entrance channel with the depth of outer channel being 19.2 m and that of the inner channel being 18.6 m. The port has a total land area of about 240 ha (approx.).

2.2 Type of the Project

The scope of the project is to include the following proposed activities:

1. Improvement to the existing Jawahar Dock (East) Berths for handling bulk cargoes – modernization
2. Improvement to the existing Bharathi Dock-II berth for handling bulk cargoes – Modernization
3. Relocation of existing Sand trap and Capital Dredging –Change in location
4. Development of Multi level car parking facility (5000 cars) –New
5. Development of Coastal Terminal (1MTPA) at northern sheltering arm at east of Bharathi Dock turning circle – new
6. Development of Dry dock facility in the Boat Basin/Timer Pond area –New
7. Development of Storage sheds and tank farms as per the land use plan of the Chennai port -new

2.3 Proposed Location

The proposed project is within the existing Chennai Port in Chennai.

The co-ordinates of the project location is as follows:

Latitude : 13°04'53.54"N2.2

Longitude : 80°17'42.69"E

Table 2.1 Details about Project Site

Name of the Project	Chennai Port Trust
Capacity	<p>Project Description: The following proposals planned for development/ improvement of Infrastructure facilities:</p> <ol style="list-style-type: none"> 1) Improvement to the existing Jawahar Dock (East) Berths for handling bulk cargoes – No Capacity addition; 2) Improvement to the existing Bharthi Dock II Berth for handling bulk cargoes – No Capacity addition; 3) Relocation of existing Sand Trap and Capital Dredging – No Capacity addition; 4) Development of Multi level Car parking facility – 5000 Cars (No Capacity addition); 5) Development of Coastal Terminal at northern sheltering arm at east of Bharathi Dock turning circle – 1MTPA; 6) Development of Dry Dock Facility in the Boat Basin / Timber Pond area - No Capacity addition; and 7) Development of Storage Sheds and Tank Farms as per the Land Use Plan of the Chennai Port – No Capacity addition.
Location of the project	
District & State	Chennai, Tamil Nadu
Mandal	Chennai
Village	Rajaji Salai
Land Availability	285ha

Latitude & Longitude of each project	Improvement to the existing Jawahar Dock (East) Berths for handling bulk cargoes – No Capacity addition	Latitude: 13° 5'16.60"N Longitude: 80°17'45.73"E
	Improvement to the existing Bharthi Dock II Berth for handling bulk cargoes – No Capacity addition	Latitude: 13° 6'42.54"N Longitude: 80°17'59.64"E
	Relocation of existing Sand Trap and Capital Dredging – No Capacity addition	Latitude: 13° 6'23.23"N Longitude: 80°18'35.67"E
	Development of Multi level Car parking facility – 5000 Cars (No Capacity addition)	Latitude: 13° 5'59.34"N Longitude: 80°17'57.00"E
	Development of Coastal Terminal at northern sheltering arm at east of Bharathi Dock turning circle – 1MTPA	Latitude: 13° 6'9.42"N Longitude: 80°18'25.01"E
	Development of Dry Dock Facility in the Boat Basin / Timber Pond area - No Capacity addition	Latitude: 13° 5'17.20"N Longitude: 80°17'41.85"E
	Development of Storage Sheds and Tank Farms as per the Land Use Plan of the Chennai Port – No Capacity addition	Latitude: 13° 4'58.24"N Longitude: 80°17'46.66"E
General climatic conditions		
Maximum Temperatures	30 ⁰ C	
Minimum Temperatures	18 ⁰ C	
Annual average rain fall	125cm	
Predominant wind direction	SE	

General location details	
Nearest city	Chennai
District headquarters	Chennai, Tamil Nadu
Nearest railway station	Chennai Central Railway Station at a distance of about 2 KM.
Nearest Airport	Chennai International Airport at about 20 km from Chennai Port.
Archaeological/ Historically important site	None within 15km radius from the Chennai Port Trust Mahabalipuram at 60km from the Chennai Port
Sensitive places	Being a Capital of State, Hospitals and schools are present.
Sanctuaries/ National parks	Vedanthangal Bird Sanctuary at 90 Km Gunidy National Park at 9.2 km Anna Zoological Park at 42 Km
Nearest Reserved Forest	Nil

2.4 Details of Existing Berths:

2.4.1 Jawahar Dock

The Jawahar Dock has **six berths** with a total length of 1,310 m (4,300 ft) and maximum permissible draft of 13.0 m (34 ft) and 11 m (36 ft). All berths are 218.3 m (716 ft), and half of them have maximum draft of 13.0 m (34 ft). The dock mainly handles edible oil.

2.4.2 Dr. Ambedkar Dock

The Dr. Ambedkar Dock has **13 berths** with a total length of 1,676 m (5,499 ft) and maximum permissible drafts from 8.5–12 m (28–39 ft). The longest berth is 246 m (807 ft) long with maximum draft of 9.5 m (31 ft). Berth No. 7 is 198 m (650 ft) long with maximum draft of 8.5 m (28 ft), whereas Berths 8, through 12 are each 170.6 m (560 ft) and have maximum draft of 11 m (36 ft). Berth 14 is 179 m (587 ft) long with maximum draft of 9.5 m (31 ft). Berths 18 and 19

are naval berths. The dock has car and cruise terminals and chiefly handles general cargo, cars, granite steel, and food grains.

2.4.3 Bharathi Dock

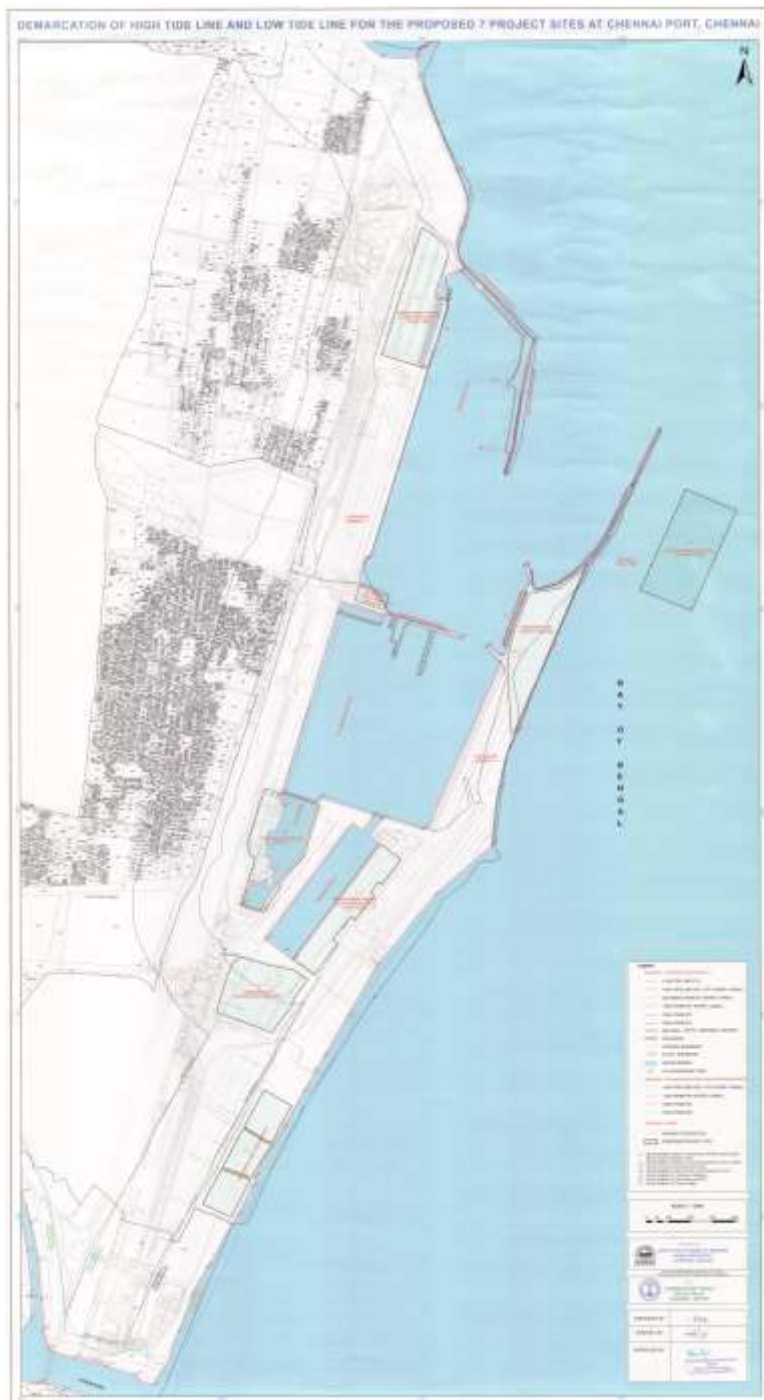
The Bharathi Dock contains **three berths** with total quay length of 917.2 m (3,009 ft), with berths ranging from 274.3 m (900 ft) in length with maximum permissible draft of 16.5 to 338.9 m (54 to 1,112 ft) in length with maximum draft of 14.6 m (48 ft). The dock has three terminals, namely, container terminal, iron ore terminal, and oil terminal. It mainly handles containers, iron ore, and POL (petroleum, oil and lubricants).

The oil terminals at the port's Bharathi Dock (BD1 and BD3) can accommodate tankers to 100,000 dead weight tonnage (DWT), and a third berth can handle tankers up to 280.4 m (920 ft) and 140,000 DWT. Berth BD1 can accommodate ships to 108.1 m (355 ft) long. The oil terminals have capacity to handle 12 million tons of cargo per year and to pump 3,000 tons of crude oil and 1,000 tons of petroleum products per hour. Each berth is equipped with five marine loading arms, and the berths have pipelines to convey crude oil, white oil, and furnace oil.

2.5 HTL/LTL DEMARCATION

The HTL/LTL demarcation for the project site was conducted by Institute of Remote Sensing (IRS) Anna University, Chennai. The HTL/LTL map superimposing project layout as prepared by Institute of Remote Sensing (IRS) Anna University, Chennai.

Fig. 2.1 HTL/LTL Map



2.6 Proposed Activity

2.6.1 Improvement to the existing Jawahar Dock (East) Berths for handling bulk cargoes – Modernization

Existing Facility:

Basin dimensions of the dock is 655m x 152m. The total quay length is around 2 x 650m with 3 berths each on either side. The entrance width of the dock is narrow. Berth particulars of the dock have been presented below:

Table 2.2 Details of Cargo Handling at Jawahar Doct (East)

Berth Ref	Commodity	Length (m)	Draft (m)
JD I	Food grains/General Cargo	218	11.50
JD II	Coal/Other liquids	218	13.0
JD III	Food Grains/ General Cargo	218	12.0
JD IV	Coal/Other Liquids	218	11.0
JD V	Food grains/ General Cargo	218	12.0
JD VI	Coal/ General Cargo	218	11.0
	Total	1308	

Three berths on East side were used for handling coal. After closure of Coal traffic, 2 berths are used for multipurpose commodity and one berth leased out for handling other liquid. 3 berths on the West side is used generally for food grains. JD east berths have been strengthened in the year 2006 to cater the trade requirements. Design dredge depth of the dock is (-) 14m.

Proposal:

Chennai Port Trust consists of three docks with 24 berths for handling of edible oil, molasses, lime stone, rock phosphate, sulphur, other ores, phosphoric acid, barites, granite, scrap, mill scales, logs & timber, and general cargo. The existing JD east berth composes monolith wall of 518m and balance 137m wall cum pile structure. The existing structure is good in condition and strengthening at portions of JD4&D6 of 140mts length.

Project Facilities and Services:**(i) Facilities**

The following facilities have been proposed for the project

- Minor repairs for the existing berths, strengthening works
- Procurement of the following equipments (Indicative)
 - Harbour Mobile Crane (100 ton) with Grab (35 ton) – 5 nos
 - Fork Lift Truck (10 ton) – 10 nos.
 - Fork Lift Truck (5 ton) -, 20 nos.
 - Payloaders – 2 nos.
 - Operation and Maintenance of the facility
- Yard developments

2.6.2 Improvement to the existing Bharathi Dock-II Berth for handling bulk cargoes – Modernization

Existing Facility:

BD provides handling facilities for Iron Ore, POL and containers. Total available quay length is about 1930m.

Table 2.3: Details of Cargo Handled at Bharathi Dock

Berth Ref	LOA (m)	Water depths (m)	Commodities Handled
BD I	356	16.0	POL
BD II	382	17.4	Iron Ore
BD III	308	17.4	POL
CTB I	200	13.4	Containers
CTB II	200	13.4	Containers
CTB III	200	13.4	Containers
CTB IV	286	13.4	Containers
Total	1931		

The BD II commissioned in the year 1977 with the facility of receiving, stacking, reclaiming, weighing, sampling, and ship loading up to 8 MTPA of iron ore per annum. Installed facilities are capable to handle bulk carrier of size 150,000 DWT with rated ship loading capacity of 2 x 4000 tonnes per hour and the capacity of the stack yard is about 8 MTPA.

The two POL berths (BD I & BD III) are capable of unloading and discharging crude and petroleum products using marine loading arms and has capacity of about 12 MTPA together.

Quay length of 885m, comprising container berths (CTB I to CTB IV) has been under concession to CCTPL from 2001. Berths are capable to handle container vessels up to size 65,000 DWT. Container handling of BD encompasses operations through a dedicated backup area of 25 ha. capacity of this terminal is 1.6 MTEU.

Proposal:

Bharathi Dock was commissioned in the year 1977 with facilities for handling 8 MPTA of iron ore. It has two POL berths (BD I & BD II) for handling crude and petroleum products upto 12 MPTA & handles containers upto 1.6 MTEU. It is proposed to re-pave the existing surface, replacement of fenders, strengthening works to the steel pils and yard pavement. Further a

2.6.3 Relocation of existing Sand trap and Capital Dredging –Change in location

Chennai port is an artificial harbor with 7km long approach channel for safe navigation of vessels calling at port. It is protected on eastern side by 1005 m long outer arm breakwater constructed in 1984. Due to the bed slope of the coast the channel is falling within the littoral drift zone. The effect of littoral drift is immense on the shoreline of harbor and it experiences severe erosion during the SW & NE during monsoon periods. To overcome this 100 M x 1000M sand trap was constructed at eastern side of eastern breakwater. To prevent closure Cooum river mouth state government has constructed

revetment / training wall at southern end of the port. These are causing heavy sedimentation in the existing sand trap and increasing the recurring expenditure on maintenance on dredging cost. In this connection CWPRS (Central Water & Power Research Station), Pune has studies on siltation in channel erosion and suggested dredging for new sand trap at the end of outer arm close to entrance channel. This will help in minimizing the recurring expenditure on maintaining the channel dept for safe navigation of vessels visiting the port.

Justification of the Proposal:

- a. The approach channel was created for a length of 3.7 km in North East side in 1969 across the flow of littoral drift and Bharathi Dock has been created to handle deep drafted vessels. Further, 1005m long outer arm breakwater was constructed during 1984.
- b. The present approach channel of the port is of 7Km length, initiated towards north and then turned towards eastern side with 7 zones in 7Kms length and dredged to a depth of (-) 18.60m contour at Zone –I (750m length) and (-) 19.20m contour in the remaining length of channel.
- c. In recent years, the discharge from river Cooum is in reduced level. However, the effect of Littoral drift is still effective and the shore line of Harbour and its north and south directions are facing severe accretion as well as erosion during the south-west & north-east monsoon periods when the wave direction is predominantly in 145° & 65° respectively.
- d. A sand trap of size 100m x 1000m was constructed to mitigate the problem of siltation in channel by littoral drift and it was located in eastern side of eastern breakwater.
- e. The severe sedimentation over the years due to littoral drift accreted and saturated the sand trap forming near shore beach. The sand bypasses the trap and moves towards the channel causing rapid siltation at the channel, which adds up to recurring expenditure on maintenance dredging cost.
- f. In order to prevent siltation at the channel, a new sand trap may be required to be created at an appropriate location. Hence, a study has been entrusted to CWPRS,

Pune to ascertain hydrodynamics & sediment transport process due to recent development works in the Port. In the Interim Report submitted the CWPRS has computed the maximum rate of sediment transport as 0.68 million m³/year from south to north based on wave energy concept using CERC formula showing a net rate of sediment transport along Madras coast as 0.56 million m³/year. Thus it can be reasonably assumed that the average rate of littoral drift from south to north of Chennai coast is 0.5million m³/year.

Proposed:

- g. According to the recommendations of CWPRS, Pune, it is proposed to create a new sand trap of size 250m x 500m to be dredged to a depth of (-) 22m below current depth.

2.6.4 Development of Multi Level Car Parking Facility (5000 Cars) – New

Due to increase in export volume of automobile and user like Hyundai, Nissan, Ford and Ashok Leyland are demanding more space for car cargo, due to space constraint in the port, it is proposed to develop a Ro-Ro cum multipurpose berth to augment the facility. In view of additional requirement of car handling at port, it is proposed to construct a Multilevel Car Parking facility to park 5000 cars on a ground area of 10290 sqm with 5 floor structure adjacent to the proposed Ro-Ro berth. Out of 10290 Sq mt an area proposed to Construct a Multilevel car parking an area of 2200 sqm. Similarly, in order to accommodate the vessels of larger size, the berth also requires dredging of 2, 00,000 cum.

Proposal:

At present the car handling operations are carried out at the port in 47,700 sq. metre of open space. The basic objective behind developing the multilevel car parking is to use this space for other cargo handling related activities and further to increase the efficiency in car handling operation. Presently, six to seven Ro-Ro vessels visit the Port in a month. To ensure that the terminal is optimally utilized, the port is planning to use the terminal for other cargos like clean cargo.

The proposed berth designed for 300 m length and 30 m width based on the requirement to accommodate 225 m to 275 m length of car carrier/ cargo vessels. The entire substructure has been considered as a system of bored cast in situ concrete piles. The superstructure will be made up of combination of pre-cast and cast-in-situ concrete decking. The car carrier / cargo vessels need a minimum draft of -12.0 m CD. The present available depth at the proposed berth area is varying from -1.0 m to -12.0 m. The total area to be dredged is estimated 35,600 sqm and the dredging quantity is about 2,00,000 m³.

Chennai Port has already obtained Environmental Clearance from MoEF for the construction of additional berth (Ro-Ro) vide letter no. 10-83/2007-IA-III dtd. 16.01.2008 and got validity extension up to 16.01.2018 vide letter no. 10-83/2007-IA-III dtd. 08.03.2013.

The proposal envisages in development of multilevel car park facility adjacent to the berth on land and partially falls on water front is planned for a total area of 10,290 Sq.mt. to accommodate 5000 cars. The number of floors planned is Ground + 5 floors. Rest of project will be as per existing EC including dredging.

2.6.5 Development of Coastal Terminal (1 MTPA) at northern sheltering arm at east of Bharathi Dock turning circle –New;

To accelerate the economical mode of transportation towards development of dedicated Coastal Terminal, Ministry of Shipping, GoI has instructed all major ports for development of exclusive coastal terminals for handling dry bulk/ general cargo.

In this connection Chennai Port propose to develop exclusive coastal terminal with open type piled wharf structure of 260m x 16m to 19.5m in front of the Northern sheltering arm of breakwater at south east corner of Bharathi Dock turning basin. The alongside of the coastal terminal and the adjacent areas of the turning basin could be dredged to (-) 9.00m CD to accommodate coastal shipping vessels having drafts up to 8.0m.

The development of backup area to a width of 30m by providing base course and concrete finish, Concrete approach road of 9.0m width from eastern revetment to

southern end of the proposed terminal, development of additional stocking area over the reclaimed area for about 52000 sqm and necessary rectification works to the existing block wall are proposed.

The capacity of terminal is 1 MTPA of existing and there is no proposal of increase in cargo for this present proposal.

Justification:

- a. The Ministry of Shipping, GoI is evolving a policy for developing Coastal shipping as a viable and economical mode of transporting cargo within the country. As part of this, all major ports have been instructed to develop an exclusive coastal terminal.
- b. Chennai Port has 24 berths with varying drafts from 8.5m to 16.5m for handling various parcel sizes of vessels. The channel has a depth of (-) 18.60m at Zone-I (750m length) and (-)19.20 m in the remaining length of channel.
- c. In Chennai Port, no berth is located outside the custom notified area and access to the custom notified area is through various Gates. However Coastal Dry bulk / General cargo vessels are being handled at SQ2 berth. Among the 24 berths of Chennai Port, North Quay- 1 no., has 8.5m draft and south quay – 2nos. have 9.5m draft are alone with shallower depths, however providing an exclusive cargo evacuation lane is impossible due to criss-cross movement of EXIM cargo from other berths.

Proposed Project Design:

The terminal consists of an open concrete piled structure with platform 16.5m to 19.5m width and 260m length in front of the northern sheltering arm at east of Bharathi dock turning basin. The platform has 3 rows of 1500mm dia. bored cast in situ concrete piles with main beam, longitudinal beam, secondary beam and deck slab. The founding level of pile is fixed as (-) 27.00m and basin depth shall be (-) 9.00m CD by dredging to berth coastal vessels having draft up to 8.0m. The terminal can accommodate two coastal vessels of various parcel sizes. The depth of the berth and basin is being fixed based on

the PIANC 2014 recommendations and Indian Standard recommendations. The berthing structure will be designed based on the IS codal provisions.

2.6.6 Development of dry dock facility in the boat basin / timer pond area –New

The boat basin/ timber pond is a shallow basin with drafts varying from -1 m to -6 m CD. It serves as a shelter for port crafts mainly tugs, launches etc. and for port craft that require repair and maintenance. It also houses a slipway for under water repair of port crafts. The timber pond is an extension of boat basin with water spread having even shallower draft.

The proposed facility is conversion of existing boat basin and timber pond located in the south west end of inner harbor to facilitate docking and maintenance ships. In this regard ChPT has signed MoU with Coast Garud and will be maintained by Coast Guard.

2.6.7 Development of Storage Sheds and Tank Farms as per the Land Use Plan of the Chennai Port

Ministry of Shipping has finalized the ‘Policy Guidelines for land management by Major Ports, 2014’. The said guidelines have been approved by the Union Cabinet on 02.01.2014. The main objectives of the policy is to ensure that land resources are put to optimum use as per the approved land use plan with focus on retaining/attracting port traffic.

Accordingly, port has finalized the land use plan and proposed to allot land to the users on tender basis. As part of the land use plan, Port has identified the land for development of covered sheds, tank farms etc. The facilities will be developed either through internal recourses or through third party.

Details of Cargo Handling:

Table 2.4: Commodity wise Traffic handled during the last six years (In tones)

Commodity	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
LIQUID BULK						
POL-Crude	10031	9815	9221	10190	10194	9156
POL-Product	3960	3475	4154	2687	2464	2736
Edible Oil	1077	1125	1063	1033	1079	1262
Molasses	6	83	84	77	0	0
Chemicals	132	129	126	90	130	135
Other Liquid	8	4	52	70	58	57
Total Liquid Bulk	15214	14631	14700	14147	13925	13346
CONTAINER						
CCTL	22303	20238	17022	14187	15989	16744
CITPL	7085	9793	12645	14099	13918	13425
Inner Harbour	34	45	41	44	38	38
Total Container	29422	30076	29708	28330	29945	30207
DRY BULK						
Iron Ore Raw	2115	51	0	0	0	0
Iron Ore Pellets	0	46	52	71	146	0
Iron Ore Lumps	198	0	0	0	0	0
Barytes	571	563	882	532	251	417
Manganese Ore	11	0	0	0	0	0
Fert. Finished	434	394	190	160	272	61
Fert. Raw	337	249	232	255	270	199
Rice	0	0	0	0	0	0
Wheat	0	0	140	272	0	0
Maize/Pulses	86	190	174	35	37	0
Thermal Coal	1417	610	0	0	0	0
Coking coal	606	351	0	0	0	0

Steam Coal	5692	2232	0	0	0	0
Dolomite	618	727	1040	1053	996	609
Fluorspar	26	7	7	0	0	0
Gypsum	0	51	239	357	292	340
Limestone	1048	1907	2602	2682	2630	1648
Cobble Stone	130	113	116	162	162	175
Industrial Salt	40	80	0	0	0	0
Slag	0	0	0	253	782	0
Scrap	304	340	569	134	69	309
Other Dry Bulk Cargo	28	0	0	0	4	40
Total DRY BULK	13661	7911	6243	5966	6211	4409
BREAK BULK						
Granite	930	1106	597	602	516	341
Iron & Steel	880	1007	1115	1407	1419	1321
Sugar	333	112	174	0	0	17
Cement	0	0	4	18	0	0
Project Cargo	389	368	295	238	176	99
Timber and Logs	119	102	133	84	43	16
RO-RO	283	324	355	268	269	258
Other/Miscellaneous	229	70	80	45	37	44
Total Break Bulk	3163	3089	2753	2662	2460	2096
GRAND TOTAL	61460	55707	53404	51105	52541	50058

Note: The proposed Cargo type is similar to the existing whereas the quantity may vary within the overall permissible limits.

2.7 Resources:

2.7.1 Area Requirement:

The total quay length available is around 5.5km. It has all 24 berths spread over in 3 docks i.e, Ambedkar Dock, Jawahar Dock and Bharathi Dock. The depth is varying from 8.5m to 16.5m. There is 7.0Km of entrance channel with the depth of outer channel being 19.2m and that of the inner channel being 18.6m. The port has a total land area of 285ha (approx.).

2.7.2 Material Sources:

The material required for proposed activity is mainly Coarse aggregate, Fine Aggregate, Cement and Steel and it would be supplied through approved quarries which are available within 75-100 km lead. RMC plants are available outside the Port area within 15-20 kms lead. The nearby authorized quarries will be utilized accordingly.

2.7.3 Water Requirement:

Port is drawing water from CMWSSB for the operations of Port.

The surplus water will be shared during construction phase by the Port. The requirement of water is as follows:

Table 2.5 Water Requirement during Construction Phase

S.No	Description of Activity	Quantity (KLD)
1	Improvement to the existing Jawahar Dock (East) Berths for handling bulk cargoes	30.0
2	Improvement to the existing Bharathi Dock II berth for handling bulk cargoes	24.0
3	Relocation of existing Sand trap and Capital Dredging	Nil
4	Development of Multi level car parking facility	1.865
5	Development of Coastal Terminal at northern sheltering arm at east of Bharathi Dock turning circle	12.5
6	Development of Dry Dock facility in the Boat Basin/Timber Pond area	2.5
	Total	70.865

However the construction will be not simultaneous and will be distributed. So average water consumption during construction phase is 15-35 KL which can be met through existing sources.

As the major portion of the projects are modernisation and during operation phase the incremental increase in overall will be 3 KL.

Table 2.6 Water Requirement during Operation Phase

S.No	Description of Activity	Project Type	Quantity (KLD)
1	Improvement to the existing Jawahar Dock (East) Berths for handling bulk cargoes	Modernisation – No additional Manpower	--
2	Improvement to the existing Bharathi Dock II berth for handling bulk cargoes	Modernisation – No Additional manpower	--
3	Relocation of existing Sand trap and Capital Dredging	Relocation of Sand Trap	--
4	Development of Multi level car parking facility	No additional manpower	--
5	Development of Coastal Terminal at northern sheltering arm at east of Bharathi Dock turning circle	No additional Manpower	--
6	Development of Dry Dock facility in the Boat Basin/Timber Pond area	No additional Manpower	--
7	Construction of tank farm and storage sheds	Maximum 60 No	3.00
	Total		

2.7.4 Power Requirement:

Port being an operational area, Power requirement is met through the supply from TNEB which will be drawn from existing 33KV Substation. No additional power requirement is anticipated.

2.7.5 Solid & Hazardous waste Generated:

Construction Phase:

During construction phase, about 50-75 nos of labour and technical staff is likely to congregate. No labour camp is envisaged and all the workers will come from nearby area of Chennai. Construction workers will use the existing canteen facility.

Operation Phase:

Solid wastes from office, operational area etc is being disposed through Chennai Corporation Municipal Authority to the dumping yard whereas, waste oil, lubricants, Used Batteries is being disposed through authorized recyclers. The same arrangement will be continued. During operation phase all projects except shore tank farms, Dry Dock will be under ChPT only. For shore tank farm new additional both the projects maximum staff will be 60 and 200 only.

Disposal of Solid Waste:

- The solid waste generated in and around port area is segregated categorically as biodegradable, non-biodegradable and hazardous waste and collected in separate colour coded dustbins. The garbage thus collected is being disposed at dumping yard of Chennai Corporation.
- Solid waste like corroded steel plates, rubber pieces, discarded spares/equipments are being disposed on regular basis.

Disposal of Hazardous Waste:

- The hazardous waste generated is collected in separate container for safe disposal.

- Hazardous waste like oily cotton waste being re-used in blacksmith shops for energy conservation.
- Hazardous waste like used oil and condemned batteries are being disposed as per the hazardous waste management rules.

2.7.6 Manpower Requirement:

The project will employ on an average of 75-150 workers in different levels at one point of time during the Construction phase. Thus, there will not be any major increase in population due to the project.

2.8 Project cost:

The estimated cost of project is as follows:

S.No	Name of the Project	Estimated Cost Rs. In Crores
1	Improvement to the existing Jawahar Dock (East) Berths for handling bulk cargoes	369.00
2	Improvement to the existing Bharathi Dock II Berth for handling bulk cargoes	64.00
3	Relocation of existing Sand Trap and Dredging	39.00
4	Development of Multi Level Car Parking facility	40.59
5	Development of Coastal Terminal at northern sheltering arm at east of Bharathi Dock turning circle	78.00
6	Development of Dry Dock Facility in the Boat Basin/Timber Pond Area	315.00
7	Development of Storage sheds and tank farms as per the land use plan of the Chennai port	Land allotment will be made to the developer.

2.9 Project Schedule:

The project will commence once Environmental Clearance and other necessary approvals are obtained from the respective Ministry/Departments.

S.No	Name of the Project	Expected start date	Expected completion Date
1	Improvement to the existing Jawahar Dock (East) Berths for handling bulk cargoes	Contract Period -12 months	
2	Improvement to the existing Bharathi Dock II Berth for handling bulk cargoes	Contract Period – 12 months	
3	Relocation of existing Sand Trap and Dredging	Contract Period – 07 months	
4	Development of Multi Level Car Parking facility	Contract Period – 12 months	
5	Development of Coastal Terminal at northern sheltering arm at east of Bharathi Dock turning circle	Contract Period – 12 months	
6	Development of Dry Dock Facility in the Boat Basin/Timber Pond Area	Proposed to lease Indian Coast Guard proposed to develop the project. MoU yet to be signed	
7	Development of Storage sheds and tank farms as per the land use plan of the Chennai port	As and when the demand arises	