



CONSTRUCTION OF UP RAMP AT MPT RAILWAY YARD –BAINA..

DETAIL PROJECT REPORT

MORMUGAO PORT TRUST
NOVEMBER 2019

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1.0 INTRODUCTION

1.1 Background

The objective of Sagarmala initiative is to evolve a model of port led development with ports becoming a major contributor to the country's GDP. It envisages efficient integration of ports with the hinterland and industrial clusters through rail, road inland and coastal waterways. The idea is to offer efficient and seamless evacuation of cargo both the EXIM and domestic sectors to reduce logistic costs. Hence Port vide letter dated 07.09.2019 has requested Ministry of Shipping for considering the project under grants. Annexure A.

1.2 Present Proposal

The present proposal is for Construction of Up Ramp at MPT Railway yard- for ease of cargo movement and utilization of back up area approx.. 11.00 acres, at Baina.. . The report has been organised in the following sections;

- Section 1 : Introduction
- Section 2 : The Port and site conditions
- Section 3 : Details of Site conditions.
- Section 4 : Details of existing facilities.
- Section 5 : Traffic Projections.
- Section 6 : Project Proposal.

2. THE PORT AND SITE CONDITIONS

2.1 Mormugao Port at Present

Mormugao Port is located at the entrance of the Zuari river estuary on the West Coast of India at latitude 15° 25' North and longitude 73° 47' East, in the State of Goa. Goa is characterized by a mix of vegetated highlands and lowlands that are transacted by numerous rivers flowing from the adjacent states. Principal products of Goa include iron ore, steel billet and coil, marine resources, rice and palm products.

The port, about 125 years old, has been expanding gradually over the years meeting the demands of the growing trade. It was mainly an iron ore handling port; however the port has set its vision to shed this image diversify into a multi commodity handling port. Presently, Coal and coke is the main commodity handled. General cargo traffic and containers have also been increasing steadily. The Port presently has two General Cargo Berths at Berth No.10 and Berth No.11. Limitation in storage capacity is a serious issue hampering the development of the port.

2.2 Brief History of Port Development

The original port was constructed in 1880's and included berths 1,2 and 3. At the time of liberation from Portuguese rule, berths 4, 5, 6 and 7 had also been added. Major port development took place in the mid 1970's. Berth No.8 (POL berth) was commissioned in 1976 and Berth No.9 (Iron ore berth) along with the Mechanical Ore Handling Complex (MOHP) in 1978. The deepening of the channel and harbour basin (dredged to -13.40 m) for large ore carriers was also carried out in 1978.

The construction of general cargo berth no.10 in 1985 was the start of a new phase of development in the port followed by the second general cargo berth no.11 in 1985. In the meantime berths 3 & 4 had to be decommissioned in 1989 due to damage of berth no.3. In 1992, the private use of berths 6 & 7 by M/s Chowgule for handling of iron ore was discontinued and berth no.6 with berth no.5 were used to supplement berths 10 & 11 for handling general cargo.

In 1993, berths 1,2 and 3 and land area of 31,000 square meters water area of 50,000 square meters were leased to the Western India Shipyard Limited for setting up a floating dry dock. The lease period is for 25 years. The lease period got over in 2018. The area now is being proposed for housing an International & Domestic Cruise Terminal along with allied facilities.

In 1999, the port signed a license agreement with M/s ABG Heavy Industries Ltd. (now renamed as South West Port Ltd.) to construct and operate two modern berths named 5A & 6A to handle coal / coke and other general cargo. The existing berths 4, 5 and 6 including land area of approximately 42,000 square meters and water area of 62,000 square meters was handed over to them for this purpose. The lease period is for 30 years. The facility became operational in June 2004.

The year 2001 saw the addition of 3 nos. mooring dolphins primarily for handling iron ore. Subsequently in 2012, three more Mooring Dolphins were added and the basin dredged to -14.10 m. These dolphins are meant to handle bulk cargo.

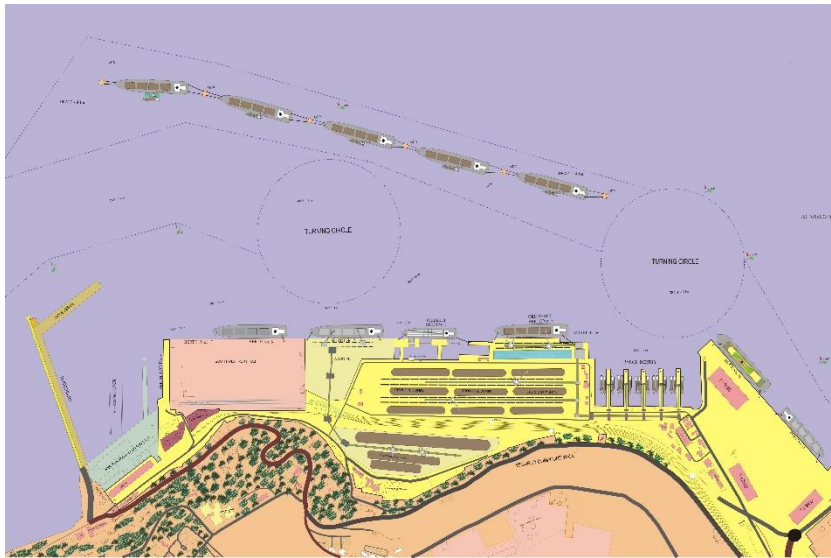


Figure 2.1 View of Mormugao Port

Concession Agreement for development of a dedicated Coal Terminal at Berth No.7 was signed in 2009. The berth with all its facilities has been commissioned in June 2014. The Port is handling POL, Bulk cargo at Berths 8, 9.

2.3 Hinterland Connectivity

Mormugao Port is connected by Rail, Road as well as Inland Waterway. These are discussed in detail below.

2.3.1 Road Infrastructure

An extensive road network exists in Goa region, providing an important transportation link with the rest of the country. Goa is connected to the rest of India via NH-4A and NH-17. Presently the Port is connected to NH-17 by another highway NH-17A. This highway passes through urban areas like Vasco-Da-Gama and Chicalim and hence is not suitable for trucks and trailers. Another Highway NH-17B is under construction. The total length of NH-17B is 18.30 kms and links Verna at NH-17 to Sada Jn. In the year 2004, a stretch of 13.10 kms of NH-17B upto Varunapuri has been completed. Work on the balance stretch of 5.20 kms has now been taken up by the State Government and is expected to be completed by November 2020. As part of the road work a flyover is to be constructed linking the 4 lane road to the port inside Gate no.9. A link to the Harbour road and a second link to Vasco city from the flyover is also proposed. The existing road network is shown in Figure 2.2 and Figure 2.3 shows 4 lane road connectivity to Port.

Figure 2.2 Existing road network



Figure 2.2 Network showing 4 lane road connectivity to Port.



Construction of Up Ramp At MPT Railway Yard-Baina

2.3.2 Internal Roads

The freight traffic from inland areas enters the port premises through Gate No 9, Gate No 1 and Gate No 2. Presently, Gate No 9 provides access to almost 95% of truck traffic movement and the rest of the traffic enters through Gate No 1. All the important loading/unloading points related to road transport i.e. containers, wood chips, fertilisers and other general cargo are located close to Gate No 9 while Gate No 1 is used for ammonia tanker movement and the trucks bound for IMC and Adani. Figure 2.3 shows photographs of the entry points at Gate nos 1 & 9.

Figure 2.3 Main Entry Gates to the Harbour Area



Gate No 9 intersection at Port



Gate No 1 intersection at Port

Gate No 9 and Gate No 1 are connected by 2 lane road outside port premises along port boundary.

2.3.3 Rail Infrastructure

Two primary railways operate within the states of Goa and Karnataka to serve Mormugao Port through Vasco da Gama Station. The largest railway is South Western Railway (SWR), one of the 16 railway zones in India. It is headquartered at Hubli and comprises Bangalore and Mysore divisions of the former Southern Railway and reorganized Hubli division of the former South Central Railway including Hospet-Bellary. South Western Railway connects MPT at Vasco da Gama Station with the hinterland districts of Belgaum, Dharwad, Bellary and Uttarkannad in Karnataka State. These regions are major cargo generation centers. South Western Railway also serves the sites of proposed power generation facilities in Bijapur, Kudgi and Raichur. Figure 2.4 shows the South Western Railway Network

Figure 2.4SWR Network



Source: South Western Railway

The second important rail line in Goa State is Konkan Railway (KR). The Konkan Railway is a line which runs along the west coast of India from Mangalore in Karnataka to Mumbai through Goa, following the coast line of India and passing through the Western Ghats. Although Konkan Railway primarily serves passenger traffic, it is important to MPT in that it serves potential power generation sites near Tadri. It also connects to a planned future rail link between Ankola on the coast and the SWR hub at Hubli. The Konkan Railway line runs parallel with the SWR line between Majorda and Madgaon, allowing interchange of wagons at Majorda for points north or Madgaon for southern or eastern destinations. Additionally, Majorda is the junction from which SWR serves Vasco da Gama Station. Just to the north of Majorda, Verna Station on the Konkan Railway provides significant rail storage and switching capacity. However, Verna is not easily accessible from the SWR connection to Vasco da Gama Station and Mormugao. Figure 2.5 shows the Konkan Railway network.

Figure 2.5 Konkan Railway Network



Source: Konkan Railway

Together, the two railways form a network of rail hinterland access that is primarily limited by Vasco da Gama Station’s storage and switching capability. However, an important limitation on the South Western Railway network is also found in the single line track between Castle Rock and Londa Junction. This short stretch of line has very steep grades and passes through National Forest Reserve land. Figure 2.6 shows existing MPT rail freight distribution routes in blue with major cities labelled in white and principal cargo origins/destinations in orange:

Figure 2.6 Principal Rail Freight Routes to MPT



There are four routes in the main railway sections that influence available rail freight capacity and would be required to provide any new capacity introduced at the port.

Railway	Major Rail Stations and Junctions
KR	(Vasco), Madgaon, Karwar, to Mangalore
SWR	Vasco, Madgaon, Londa, Belgaum to Miraj
SWR	Vasco, Madgaon, Londa, Hubli to Hyderabad
KR	(Vasco), Majorda, Verna to Mumbai

Vasco through Majorda, Madgaon, Karwar to Mangalore – This southbound route is a single-track broad gauge line that runs close and parallel to the sea coast starting at Vasco (SWR) in Goa and interchanging at Majorda (KR) for the Madgaon to Mangalore section of the Konkan Railway. It serves not only Mormugao port but also connects Mumbai, Karwar and Mangalore ports. Significant capacity is available on this line.

Vasco, Majorda, Madgaon, Londa, Belgaum to Miraj – This SWR route is a single-track broad gauge line that connects to Eastern and Northern parts of India through Londa Junction, connecting to Belgaum. It continues north to Miraj where it connects the Central railway section that serves the northern states.

Vasco, Majorda, Madgaon, Londa, Hubli and Hyderabad – This is an important route for MPT. Presently the entire coal and Steel cargo movements takes place in this route. This route has the highest tonnage traffic and is currently operated near its capacity. The stretch between Vasco da Gama and Hospet is single track. With mountainous terrain and numerous curves the grade often exceeds 2.5 percent. This combination of steep grade and single track places severe limits to rail capacity between the Port and Hospet. SWR has taken up doubling of these tracks.

Vasco through Majorda and Verna to Mumbai – This route runs north on the Konkan Railway and provides connectivity to Maharashtra, especially Ratnagiri, Sawantwadi & Kudal. South Maharashtra has high potential for steel and power plants and may provide an alternate route to future east-bound traffic. As with the southern KR route, significant capacity also exists for northbound freight.

2.3.4 Internal Rail Connectivity Improvements

Currently all rail traffic for Mormugao Port Trust enters Vasco Station prior to exchanging into the Port Trust Railway. However, Vasco Station is near capacity with little opportunity for expansion. MPT has already partly augmented its internal rail network with a view to augment its cargo handling capacity. As part of the augmentation work dedicated coal handling lines are provided for Berth No.6 and Berth No.7. Both these terminals are provided with Rapid Wagon in Motion Loading facility. Separate lines have also been provided for handling steel through berth no.5.

2.3.5 Inland waterways

Goa is bestowed with an excellent system of interconnected and navigable inland waterways. Until recently, these rivers were instrumental in transporting bulk of the iron ore from the mines to Mormugao Port and nearby Panjim port for export. The river system in Goa consists of the rivers Mandovi, Zuari, Tiracol, Chapora, Talpona, Sal and Galgibaga rivers. The two main rivers, the Zuari and Mandovi are navigable for as much as 60 km in land from their mouths and were mainly utilized for barge transport of iron ore, the iron ore being loaded in to the barges at riverside terminals. Almost all of the iron ore handled at the Mormugao port and nearby Panjim Port was shipped to the port through barges on waterways. There are more than 30 barge loading jetties located along the rivers in mining areas. River Mandovi carried the bulk of the barges, with over 70% of the traffic coming to Mormugao. There are about 250 barges of total capacity 390,000 in Goan waters which were used for the transport of this iron ore from the mines.

With the ban on mining and transportation of Goan iron ore imposed by the Supreme Court from October 2012 coupled with the fall in International iron ore prices, the iron ore business has almost come to a standstill. This has severely affected the barge and truck industry.

3. SITE CONDITIONS

3.1 Geographical Location

The port of Mormugao, is situated in the State of Goa, on the west coast of India, between the Major Ports of Mumbai and New Mangalore. It is located at the mouth of the river Zuari at latitude 15 25' North and longitude 73 47' East. Mormugao is an open type natural harbour and has a natural promontory known as Mormugao Headland. The harbour is protected by a breakwater of 522 m long and a mole of 270 m long. The approach channel is 6 km long.

3.2 Topography

The existing port stretches from the breakwater area to berth no. 11 close to the Vasco city. Immediately behind the foreshore area is the Headland slope. Towards the south is the approach channel.

3.3 Tidal Information

The mean tidal variation at Mormugao Port is the order of 1.6 meters at spring tides and around 0.7 meters at neap tides. The maximum height of tides is 2.5 mts. The following tides level refers to the chart datum which is 4.84 mts. below the principle bench mark. The bench mark is 3.60 mts. above the IMSL (Indian Mean Sea Level).

Lower low water springs	0.00 mts
Mean lower low water	+0.37 mts.
Mean higher low water	+1.05 mts
Mean sea level	+1.30 mts
Mean lower high water	+1.78 mts
Mean higher high water	+2.06 mts
Higher high water springs	+2.30 mts

3.4 Wave conditions

A number of wave observations have been made at and around Mormugao harbour at different times, including both ship observations & those made from the shore and the measured wave heights by installing a wave rider buoy. Mormugao harbour on the Southern side where berths are located is protected by a breakwater and mole and generally it is the waves from directions between SW and NW that could affect the tranquillity in the harbour. The deep water waves from NW generally have a small percentage probability exceedance and does not affect harbour tranquillity significantly since their height gets reduced by the time they reach the harbour. Wave periods during the monsoons tend to be longer than during the rest of the year when NW winds prevail. During the master plan study, HOWE India constructed the wave rose diagram from the visually observed wave heights during the period 1949 to 1962, from the area bounded by Latitude 10°N to 20°N and Longitude 70°E to 80°E. These wave analyses indicated

that the yearly average probability of exceedence of the wave height of 2 m for the Westerly direction would be

Direction	Exc. Hs = 2 m
SW	4.7 %
W	4.5%
NW	0.4 %

3.5 Prevailing winds

The mean sea wind varies from 2 on the Beaufort scale in November to 4 in July, the annual mean sea wind speed being 13.6 Kmph. In an average year, there are 316 days with wind varying between 0 to 3 on the Beaufort scale and 48 days with winds varying between 4 to 7 on the Beaufort scale.

The predominant wind direction changes with the time of the year. During the period June – September, wind blows from the west and south- west. During the remaining period, the wind direction is from NE, ESE during the evening. The highest speed is 105 kms recorded in June 1994. Winds of force more than 10 on the Beaufort scale are not expected.

3.6 Sea swell and currents

In fair season on the open sea, wave heights are almost always under 2 m. Very rarely are they in the range of 2m to 3m, direction of waves being from the west, north-west and north. In the monsoon season, the waves are mainly from the west and south-west. About 25% of the observations indicate waves of between 2 to 3m.

The currents in the region outside the sheltered harbour have been found to be generally less than one knot, during fair season and are mainly caused by tidal ebb and flow. Within the sheltered harbour, indicated current strengths are of the order of 30 to 40 cm/sec. During heavy monsoon rains the current pattern is altered from that during the fair season but the current strengths do not get appreciably altered.

3.7 Temperature and relative humidity

There is little variation in temperature and the humidity is high. The Maximum temperature varies 28 degrees Celsius in January to 36 degrees Celsius in May. The minimum temperature varies between 21 degrees Celsius in January to 28 degrees Celsius in May. The mean percentage relative humidity is about 83% for the year.

3.8 Visibility

Except to some extent in the monsoon season, the visibility conditions are excellent. There may be 3 to 4 days in a year with visibility less than 4 kms.

3.9 Cyclones

Mormugao is not situated in a pronounced cyclonic zone. The number of occasions it was visited by cyclones during the past 75 years is less than a dozen.

3.10 Monsoon period

The south-west monsoon is the main rainy season. 80% of the rainfall is during the months of June, July and August. The average rainfall is about 2500 mm per year.

3.11 Seismic Activity

The area falls under Zone III as per IS:1893. Importance factor is 1.5.

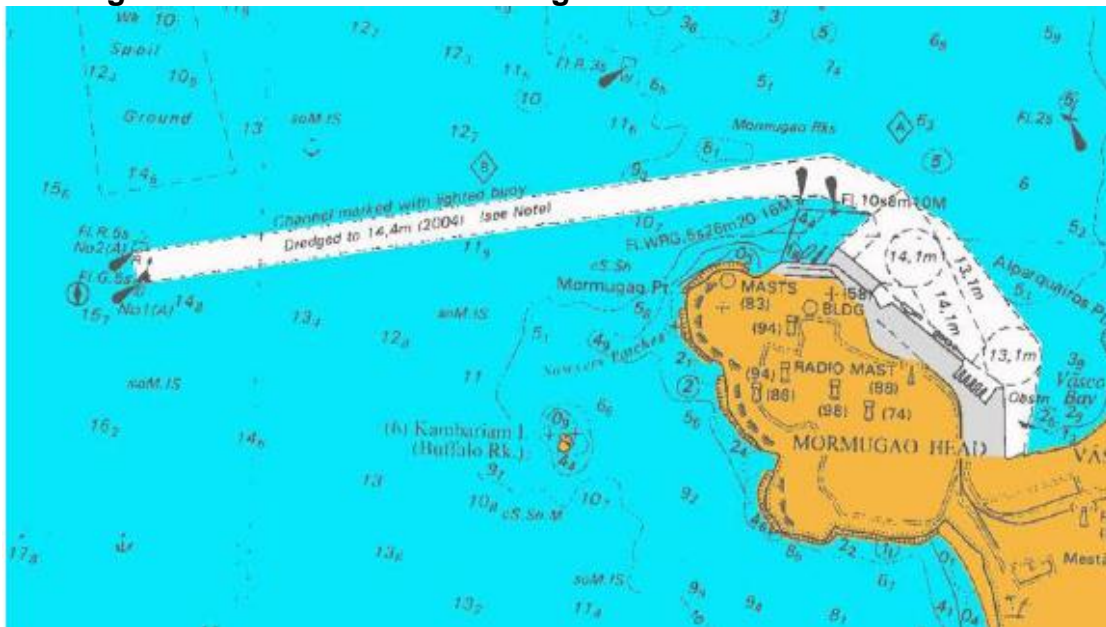
4. DETAILS OF EXISTING FACILITIES

4.1 Navigational Facilities and Breakwater

a) Approach Channel

Figure 4.1 shows the MPT Navigational Channel. Presently, the Navigational channel of the port comprises an outer channel 5200 m long and an inner channel 2300 m long.

Figure 4.1 MPT Navigation Chart



Source: Indian National Hydrographic Office Chart #IN4 2022

The channel is 250 m wide. Deepening of the Channel has been undertaken. The outer channel is being dredged up to - 19.8 m CD and consequently will be extended to about 9 kms. The inner channel upto the western Turning Circle is being dredged to -19.50 m. The channel is one way navigation channel. With the completion of the dredging work, the maximum fully laden vessel draft that can be accommodated within the harbour at all stages of the tide will 18.00 meters allowing for under-keel clearances.

b) Breakwater and Mole

The port has a 522 m long breakwater aligned slightly east of north at the western end of the port / berthing facilities. The Breakwater has been converted into a berth for cruise vessels, with berthing facilities on the leeward side. A wall has also been constructed along the seaside which has arrested wave overtopping making the berth available throughout the year. The mole structure has also been converted into a berth for the dedicated use of Navy and Coast Guard.

Figure 4.2 Cruise and Mole Berths



The breakwater and the mole give protection to the berths from W and NW waves during the monsoons.

4.2 Berthing and other Facilities

The Table 4.1 gives the list of available berthing facilities at MPT;

Table 4.1 Berthing Facilities at MPT

Berth no.	Type of berth	Designed/ actual depth (m)	Quay length (m)	Vessel Size	
				LOA (m)	DWT
1,2 & 3	Ship Repairs	-	-	-	-
4	Port Crafts	8.00	194	-	5000
5	¹ Gen. Cargo	13.10	200	100	50,000
6	² Coal	14.10	250	225	80,000
7	³ Coal	14.10	300	260	80,000
8	⁴ Liquid bulk	13.10	298*	260	60,000
9	⁵ Iron Ore	14.10	358*	335	80,000
10	General cargo	12.00	250	225	55,000
11	General cargo	13.10	270	225	65,000
	Mooring dolphins 1 to 5	14.10	340*	225	70,000
	Mooring dolphins 5 & 6	14.10	360*	225	70,000
Cruise	Cruise Vessels	9.50	450	250	15,000
Mole	Navy & Coast Guard	9.50	250	200	10,000

* Length between mooring dolphins

^{1&2} Berths 5 & 6 will be dredged to -19.50 m as part of the deepening of the channel

³Berths 7 will be dredged to -16.50 m as part of the deepening of the channel

^{4&5} Berths 8 & 9 will be dredged to -19.50 m as part of the PPP project

4.3 Storage Facilities

Storage facilities comprise of covered storage areas in the form of transit sheds, warehouses and open storage areas and tanks for liquid cargo. For the storage of liquid bulk, two oil terminals are located adjacent to the port area, one for Indian Oil Corporation and the second for Hindustan petroleum Corporation [HPCL]. Other oil companies such as Bharat Petroleum Corporation Ltd [BPCL] use these terminals for product supply that is transported further using road tankers. Other tankage facilities include those of Zuari Industries Ltd, Ganesh Benzoplast Ltd. and Indian Molasses Company Ltd. Table 4.2 and 4.3 gives the details of storage facilities for general cargo and liquid cargo.

Table 4.2 Details of Storage Facilities for General Cargo/Containers

Description	No. of sheds/plots	Area (sq.m)	Storage Capacity (T)
Covered Storage			
Owned by port	7 sheds	24,985	47497
Owned by FCI/CWC	4 sheds	14480	22216
Total covered storage	11 sheds	39465	69713
Open storage			
Containers	-	14823	489 ground slots (862 TEUs)
Other cargo	-	131681	292895
Total open storage	-	146504	304726

Table 4.3 Details of Storage Facilities for Liquid Cargo

S.No.	Commodity	No.	Capacity
1. POL Product			
a	IOC - Vasco	11	87113 KL
b	HPCL - Vasco	8	33700 KL
c	ZIL - Zuarinagar	4	27500 KL
d	Ganesh Benzoplast - Sada	2	46000 KL
2. Phosporic Acid			
a	ZIL - Zuarinagar	3	13670 KL
3. Caustic soda, molasses and other liquids			
a	Ganesh Benzoplast, Sada	3	46000 KL
b	IMC - Harbour	9	1500 KL
c	JRE	2	7800 KL
4. Ammonia			
a	ZIL - Zuarinagar	1	3000T
b	ZIL-Sada/jetty	1	5000T

4.4 Pipelines

The liquid cargo berth No.8 is used for discharge from vessels carrying a wide variety of cargoes like edible oils, Ammonia, caustic soda, phosphoric acid as also POL products like HSD, MS, LDO, FO, Naptha etc. The berth is connected with pipe lines of various sizes belonging to various parties. All the pipe lines are owned, operated and maintained by the relevant users for imports leading to their tank farms on shore, some of which are within the port premises and some outside. This berth is to be shifted as part of the Redevelopment of berths 8, 9, & barge berths for handling multipurpose cargo.

5. TRAFFIC PROJECTIONS

5.1 General

The origin-destination of key cargo for all Indian Ports and development of traffic scenarios for a period of 20 years was carried out by Mckinsey & Co. as part of the Sagarmala assignment. Accordingly, based on macro level analysis, the future traffic of MPT upto 2035 is presented in Table 5.1 and Table 5.2.

Table 5.1 Traffic Projections

Commodity	2014-15	2015-16	2020	2025		2035	
				Base	High	Base	High
Liquids	1.06	1.06	0.8	1.0	1.1	1.7	1.9
Thermal coal	2.00	3.73	2.6	3.3	3.6	5.4	6.4
Coking coal	7.27	8.54	9.2	12.7	13.5	22.5	26.1
Iron ore	0.76	3.97	0.4	0.5	68.6	0.9	130.2
Steel	1.95	1.15	1.3	1.8	1.9	3.2	3.8
Fertilisers	0.23	0.22	0.5	0.7	0.7	1.0	1.1
Containers (MTEU)	0.31	0.35	0.4	0.41	0.43	0.45	0.18
Others	3.3	1.76	5.8	8.59	9.47	14.35	16.82
Total (MTPA)	14.7	20.78	21.0	29.0	99.3	49.5	186.5

Note: Traffic projections are from AECOM Report

The following inference can be drawn from the projections.

- Liquid cargo growth is almost stagnant
- There is a steady rise in the coal traffic projections
- Iron ore projections are unpredictable.
- All other cargo have reasonable growth prospects.

Road and Rail connectivity improvements are key factors for sustained cargo growth through the port. The port will also need to create additional rake handling capability as well as cargo storage capacity.

6. PROJECT PROPOSAL

The construction of the balance portion of the 4 lane Port connectivity road is in progress and the executing agency is PWD Government of Goa. The physical progress of the work is about 77.00%. The work mainly consists of construction of four lane road at grade as well as an elevated portion commencing from Varnapuri and linking the flyover to the Port, inside Gate no. 9 area as well as a second connectivity to Sada Junction. Two ramps namely down ramp to Sada and down ramp to Vasco city were part of the plan. However Down ramp to Sada was not feasible due to space constraint as per original plan hence with the consent of MPT, now the down ramp location has been shifted in the MPT Railway yard ,where around 11.00 acres land is available for storage of cargo.

In order to have full advantage of this down ramp which will connect the Port area at Baina through the flyover, it is necessary to have an up-ramp to complete the full circulation of the Traffic from the storage area to Port and vice versa.

Hence the Up ramp has been planned for which proposal was submitted vide our letter dated 07.09.2019.Annexure A.

SECTION-1

CONTEXT / BACK GROUND

Mormugao Port is presently handling Cargo like Granite, wood chips, iron ore, gypsum, petroleum products, container cargo, fertilizers at Beth No. 10 & 11. About 3.00 MTPA cargo is handled at the Berths. These cargoes are being stacked at storage yards in the back up area of berth No. 10 & 11.

As part of Four lane road connectivity project, the PWD/Goa has planned to construct a down ramp in lieu of Sada Ramp, from the elevated road which will land at Baina, in the Port area. The Port had requested the PWD, Goa to undertake simultaneously construction of an up-ramp taking off from the MPT Railway yard at Baina. This is because the Port has about 11.00 acres of land in the Baina area which could be used for Port related activities. The PWD, Govt. of Goa has responded by stating that, this up-ramp has to be constructed by the Port from its own funds, however, provision can be made by them for providing connectivity to the elevated road without the up ramp. Annexure B. With only a single down ramp descending from the flyover, there will be limited use of the down ramp, whereas with both the up and down ramps, there will be proper traffic circulation and better utility potential of Port land.

SECTION -2

Problems to be addressed

The construction of the Up ramp will not pose any problems at the local or regional level. The project will be executed in Port area at MPT Railway Yard -Baina, and does not pose any problems traffic wise during execution or after completion.

SECTION- 3

AIMS AND OBJECTIVES

3.1 Aims

To Augment the storage capacity of the Port by making more area available for stacking cargo such as container, general cargo, POL, & break bulk cargo within area.

3.2 Objectives

Currently the Port is receiving cargo and containers. The container traffic has to traverse the city area before entering Port and hence 4 lane road project was formulated to reduce the congestion in city roads. The PWD-Govt. Of Goa is ready to construct the down ramp near MPT Railway yard in lieu of Sada ramp which was not feasible. If Mormugao Port constructs the Up ramp, the storage capacity open as well as covered will increase due to the vacant available area due to shifting of store premises and Workshop premises due to closure of Mechanical Ore handling plant.

3.3 Deliverables

Qualitative and Quantitative information:

1. The project on completion will fulfil the objective to have additional hindrance free storage area with proper connectivity to the road network inside and outside the Port.
2. To Augment the storage capacity of the Port which will increase the turnaround time of ships due to additional storage area. The Port will be able to handle more ships and effectively throughput of the Port will increase.

SECTION – 4

STRATEGY

Mormugao Port caters to various industries in the hinterland of Karnataka. Mormugao Port is used as feeder Port for container cargo, granites blocks from neighbouring State & manufactured steel coils in Karnataka are exported through MPT. Further import of wood chip is from the place for proper mills at Dandeli.

At present Port has two important bottle necks for the growth. One of the major factors is that Port has less backup area which brings restrictions on cargo handling. Port has areas which are not connected by efficient road network hence remained underutilized .Hence, the present location of the flyover which is passing through the area which is un utilized by the Port due to closure of MOHP ,the same can be now connected to the Port by providing up-ramp to be constructed by Port and down ramp which is being constructed by PWD-Government of Goa under Port connectivity project.

SECTION- 5

TARGET BENEFICIARIES

5.1 The target beneficiaries are:

- I. The EXIM Trade focused on handling clean cargoes like container and steel coils cargoes.
- II. The Shipping Industry drive to quicker TRT.
- III. The end-user who benefits from the reduced transaction cost on transit and early receipt of goods.
- IV. The Mormugao Port also benefits from the increased clean cargo volumes and additional revenue.

5.2 The benefits expected after commissioning of four lane Road connectivity at Berth No. 11:

- I. Increase in volume of Export-oriented clean cargoes in the hardened backup area in the berths and in the Port's revenue.
- II. Increased Cargo throughput enabling quicker loading and unloading of cargo (handling time) leading to increase in cargo throughput in a given period of time.
- III. Additional revenue from usage of open areas at MPT Railway yard Baina.
On realization of above benefits, the Mormugao Port may get some relief towards meeting the future Financial Commitments.

SECTION- 6

LEGAL FRAME WORK

Mormugao Port Trust is a body corporate (Board of Trustees) constituted under the Major Port Trusts Act 1963, as amended from time to time, under the Laws of India and under the administrative control of the Ministry of Shipping, Govt. of India.

SECTION- 7

ENVIRONMENTAL IMPACT

The up ramp and down ramp are falling well within the Port area –existing Railway yard, workshop premises and store area. . There are no sensitive environmental features present in the said location . In this case there is no necessity for CRZ clearance or land acquisition. The proposed land of 11.00 acres being commercial Port area there are no inhabitants which need to be rehabilitated. There being Port property and some local housing in the surrounding, there is no damage to any crops or plantations. The environmental impacts associated with the proposed Up ramp are construction related impacts. These are proposed to be addressed through good engineering practices and adoption of environmental management measures.

SECTION- 8

TECHNOLOGY

The proposal involves construction of an Up ramp at MPT Railway yard, with an approximate length of 500 metres which will connect with the flyover. The foundation will consist of RCC bored in situ piles of 1000 mm diameter , with M 40 Grade Concrete. The substructure will have piers ,pier caps. Pedestals. Superstructure will have RCC diaphragm ,bearings PSC Girders and deck slabs. The approach to the ramp will have 500 metres of road.

The proposed Up –Ramp is as shown in Annexure C,D

SECTION- 9

MANAGEMENT

The tender will be invited through open tender (e-tender). The work will be executed by floating two cover system e-tender. The tender will be prepared as an Engineering Procurement and Construction based tender, with proper Minimum eligibility criteria as per CVC guidelines. The project Management consultancy will be in place before the preparation of EPC, Tender, scrutiny of Tenders and execution of work.

- Operation and Management

After development, the road will be managed in-house by Mormugao Port through Traffic and Civil Engineering Department for the user's requirement. Civil infrastructure will be maintained by Civil Engineering Department in Coordination with the user Departments as done in the case of other infrastructure managed by this Port. Hence, there will be no additional manpower recruitment for Operation and Management of this road plan.

SECTION- 10

FINANCE

10.1 Component-wise cost Estimate

The abstract estimate for the project is as in Annexure E :

10.2 Schedule of Implementation

The proposed Implementation schedule is attached in Annexure F. The execution of work will be through works contract, awarded after inviting open e-tenders.

10.3 Phasing of Expenditure

The year wise phasing of the expenditure is as follows:

Sl. No.	Year	Phasing of Expenditure in Rs.
1	2019-20	5.00 cr.
2	2020-21	21.13 cr
	Total	26.13 cr

10.4 Billing and Revenue Collection (Not Applicable)

SECTION- 11

TIME FRAME

The time frame for the project is 15 months. Presently a cable stayed bridge has been proposed for the road landing inside the Port area at Gate No 9. This bridge will take about 20 months to get completed and the elevated road landing inside gate no.9 can be operationalized only after this is complete. With the up and down ramps, it is still possible to connect the port at Gate no.1 by by-passing the Vasco city.

SECTION- 12

COST BENEFIT ANALYSIS

12.1 Financial Analysis

NOT APPLICABLE: Proposed project is connectivity to NH17B. Being an infrastructure project, no additional revenue stream will be generated.

The benefits are expected after commissioning of the proposed on-going Four lane fly over connectivity road connecting NH-17B and landing inside Port. :

- I. Increased handling of EXPORT oriented clean cargoes in the developed backup area and increase in the Port's revenue.

12.2 Basis for IRR calculation

NOT APPLICABLE

12.3 Justification

The Mormugao Port caters to the requirements of various industries in the hinterland of Karnataka and Maharashtra. The Export- oriented units particularly steel coils are located in Karnataka within the radius of 200km. Also paper mills are located at Dandelli, Karnataka which is also 150km from Port. The granite blocks are also exported from this port which is transported by rakes from Andhra Pradesh. Besides other cargo such as gypsum, imported iron ore, fertilizer are consumed by local industries. This Port is used as a feeder port for container cargo.

12.4 Concluding Remarks:

Being connectivity project to the proposed four lane flyover connecting to NH17B, no additional revenue stream will be generated.

SECTION- 13 RISK ANALYSIS

The following risks that may occur during implementation and commissioning of this project.

- i. Legal / Contractual risks
- ii. Environmental risks
- iii. Revenue risks
- iv. Project management risks
- v. Regulatory risks

13.1 Risks and Mitigative Measures.

The expected risks and Mitigative Measures are tabulated below.

Sl. No.	Risks	Mitigative Measures
i	Legal / Contractual risks	Tender document has the required provision to deal with / resolve the issues related to legal / contractual risks during implementing of this project.
ii	Environmental risks	This project is located within the Port commercial areas . Port has obtained necessary CTO's for operation of berths & handling cargo. Port has its own environmental monitoring cell.
iii	Revenue risks	As it is an infrastructure project IRR may not be applicable.
iv	Project management risks	This project will be managed by Project Management Consultant appointed by Mormugao Port Trust,& hence hence the risk will be minimized.
v	Regulatory risks	The Mormugao Port is a statutory body constituted under Major Port Trusts Act 1963, as amended from time to time, under the Laws of India and administrative control of the Ministry of Shipping, Govt. of India.The project site is within the jurisdiction of Mormugao Port and will be a part of NH-17B Highway flyover. Hence there is no regulatory risk forseen.

SECTION – 14

OUTCOMES

The completion of Up-Ramp will be the outcome of the project. This will lead to lead to effective Utilization of open storage area at MPT Railway yard Baina. The up ramp connects to the flyover at Baina further on going to four lane flyover of NH17B.

SECTION – 15

EVALUATION

15.1 Project Implementation

The project will be implemented through contract by inviting open tender (e-tender) on EPC basis, with a Project Management Consultant in place for tendering ,execution and monitoring the work.

15.2 Operation and Maintenance

On completion of construction, the UP-Ramp will be managed in-house by Mormugao Port Trust through Traffic and Civil Engineering Departments for the user requirements. Civil infrastructure will be maintained by Civil Engineering with Coordination of other Departments as being followed in the case of other roads managed by this Port.

15.3 Billing and Revenue Collection

The project will be done through Sagarmala scheme under Port infrastructure development and will not lead to direct revenue collection but due to usage of 11.00 acres land Port will benefit by way of increased throughput.

15.4 Conclusion

The proposed Up ramp at 4 lane flyover for Mormugao Port will provide the impetus for handling of EXPORT and IMPORT Cargoes, better connectivity to four lane road of NH17B and effective utilization of storage area at Baina.

CHIEF ENGINEER

Annexure-I

Format for Appraisal of Projects

1. Project Outline

1.1. Title of the Project;

Construction of an Up-Ramp at MPT Railway Yard-Baina.

1.2. Sponsoring Agency (Ministry / Department / Autonomous Body or Undertaking)

Mormugao Port Trust /(Ministry of Shipping GOI)

1.3. Proposed Cost of the Project

Rs. 26.13 Crores. Annexure E

1.4. Proposed Time lines for the Project

12 months for Construction from date of issue of Work Order.+ 3months for project gestation.

1.5. Whether Project will be implemented as part of a scheme or on stand - alone basis?

Stand - alone Project(but will merge in the flyover of 4 lane road project connecting MPT)

1.6. Whether financial resources required for the Project have been tied up? If yes, details?

The following funding pattern is proposed i.e. 50% of Capital Cost amounting to Rs.13.065 Crores, from Sagarmala scheme of MoS and balance 50% (Rs.13.065 cr.) from Port internal funding..

1.7. Whether Feasibility Report and/or Detailed Project Report has been prepared?

Detailed Project Report is prepared.

1.8. Whether the proposal is an Original Cost Estimate or a Revised Cost Estimate?

Original Cost Estimate.

1.9. Whether any land acquisition or pre-investment activity was undertaken or is contemplated this Project? Whether the cost of such intervention has been included in the Project Proposal?

This Proposal will be developed inside the Mormugao Port premises and hence no land acquisition is required for this project.

2. Outcomes and Deliverables

2.1. Stated aims and objectives of the Project

Aims

Providing an Up ramp connectivity to proposed under construction flyover connecting MPT to NH 17B.

Objectives

To provide connectivity to flyover at Baina and proper usage of down ramp being constructed by PWD Govt. Of Goa. To improve circulation of cargo movements & to improve efficiency in transportation of cargo.

2.2. Indicate year-wise outputs / deliverables for the project in a tabular form.

Information on Qualitative and Quantitative deliverables:

Output Completion of up ramp by March 2021.

Activities	2019-20		2020-21	
	Physical	Financial	Physical	Financial
Appointment of PMC	100 %	20 %	--	80 %
Tender process	100 %	--	--	--
Project execution	10 %	5 %	90 %	95 %

Deliverable:

- 1.Effective usage of down ramp provided by PWD in the Railway yard to improve the connectivity.
- 2.Utilization of 11.00 acres land for storage in the MPT railway yard.
- 3.Improving the plot turnout in the operational area by effectively using the MPT Railway yard area.
- 4.De congesting the operational storage area.
- 5.In turn improve the Port throughput.

2.3. Indicate final outcomes for the project in the form of measurable indicators which can be used for impact assessment / evaluation after the project is complete. Baseline data or survey against which such outcomes would be benchmarked should also be mentioned.

As it is an infrastructure project, IRR is not applicable. As per the estimates and also reckoning the proposed capital expenditure of Rs.26.13 Crores.

1. Project Cost

Cost estimates for the project along with schedule duration (both year and activity-wise). Also the basis for these cost estimates along with the reference dates for normative costing (it should preferably not be more than a year old). Project cost is enclosed as Annexure E. Estimate is prepared based on the Goa Schedule of Rates And wherever rates are not available Market rate analyses has been used.

1.1. In case land is to be acquired, the details of land cost, including cost of rehabilitation resettlement needs to be provided.

Not Applicable, since Port's own land is available for the project.

1.2. In case pre-investment activities are required, how much is proposed to be spent on these, with details activity-wise?.

No pre-investment activities required.

1.3. Whether price escalation during the project time cycle has been included in the cost estimates and at what rates?

Yes. Contingencies and establishment charges has been included is per Port regulation for preparation of estimates The Calculation of Price Variation and Price Adjustment amount at the time of preparation of interim and final bill will be based on confirm indices and the prices of the construction materials.

1.4. Whether the Project involves any foreign exchange element, the provision made or likely impact of exchange rate risks?

No foreign exchange is required for the project.

2. Project Finance

2.1. Indicate the sources of project finance: budgetary support, internal and extra-budgetary sources, external aid, etc.

The following funding pattern is proposed i.e. (i 50% of Capital Cost amounting to Rs.13.065 cr. as grants from Sagarmala scheme and balance 50% from port internal funding.

Indicate the cost components, if any that will be shared by the State Governments, local bodies, user beneficiaries or private parties?

Not Applicable.

2.2. In case of funding from internal and extra-budgetary resources, availability of internal resources may be supported by projections and their deployment on other projects?

Rs. 13.065 Cr. from Port's Internal funds.

2.3. Please indicate funding tie-ups for the loan components, if any, both domestic and foreign, along with terms and conditions of loan based on consent/comfort letters.

Not Applicable. Funding through loan is not envisaged for the project.

2.4. If government support/loan is intended, it may be indicated whether such funds have been tied up?

It is proposed to seek funds in the following pattern.

(i) MoS for 50% of Capital Cost amounting to Rs.13.065 Crores under Sagarmala scheme and (ii) balance amount from Port internal funding.

2.5. Please provide the leveraging details, including debt-equity and interest coverage ratios, along with justification for the same.

Not Applicable

2.6. Mention the legacy arrangements after the project is complete, in particular, arrangements for the maintenance and upkeep of assets that will be created?

On completion of construction, the road will be maintained in-house by Mormugao Port through Traffic and Civil Engineering Department for the user's requirement. The road will be maintained by Civil Engineering Department in Coordination with the Departments as is the case of other roads being maintained by this Port.

3. Project Viability

3.1. For projects which have identifiable stream of financial returns, the financial internal rate of return may be calculated.

Note:- Road connectivity project – No additional revenue stream will be generated.

3.2. In case of projects with identifiable economic returns, the economic rate of return may be calculated. In such cases project viability will be determined by taking both financial and economic returns together.

The project is executed within the Port Premises on Port's land and does not involve any land acquisition or evacuation of people. Also, no major changes are envisaged in the area. Hence, Economic rate of return not worked out as it is an infrastructural project.

5.3 In case of proposals where both financial and economic returns are not readily quantifiable, the measurable benefits/outcomes simply may be indicated.

Not Applicable

6 Approvals and Clearances

Requirement of mandatory approvals / clearances of various local, state and national bodies and their availability may be indicated in a tabular form (land acquisition, environment, forestry, wildlife etc.). In case land is required, it may be clearly mentioned whether the land is in the possession of the agency free from encumbrances or encroached or stuck in legal resources?

Sl. No.	Approvals / Clearances	Agency Concerned	Availability (Y/N)
1	Environmental clearances will be obtained from MoEF&CC for the proposed development activities	MoEF&CC	This is upgradation of the existing roads for efficient movement of cargo connecting four lane road. No change in land use plan inside port operational areas. Hence Environmental clearance not required.

7.Human Resources

7.1 Indicate the administrative structure for implementing the project usually creation of new structures, entities etc. should be avoided

Existing Administrative Structure of MoPT will be utilized. Creation of new administrative structure is not required.

7.2 Manpower requirement, if any and posts (permanent or temporary) that are intended to be created.

Not required to create any posts. Existing manpower will be deployed in both during Construction and Operation & Maintenance.

7.3 In case outsourcing of services or hiring of consultants is intended, brief details of the same may be provided.

A Project Management Consultant will be appointed from tendering stage. Tender will be Engineering ,Procurement and Construction type of tender. The PMC will monitor the execution of work.

8 Monitoring and Evaluation

8.1 Indicate the Project Management / Implementing Agency(s). What agency charges are payable, if any?

Mormugao Port Engineering Team will appoint a Project Management Consultant for execution / management of project.

8.2 Mode of implementation of individual works: Department/Item- rate/Turnkey/EPC/ Public Private Partnership etc.

Through Works Contract by Inviting e- Tenders (Engineering ,Procurement and Construction type)

8.3 Please indicate timeliness of activities in PERT/Bar Chart along with critical milestones.
Enclosed as Annexure F

8.4 Please indicate the monitoring framework, including MIS, and the arrangement for internal/statutory audit.

Mormugao Port has own monitoring frame work and comprising both Project and Finance Departments and Statutory (CAG) audit.

8.5 Please indicate what arrangements have been made for impact assessment after project is complete.

The Port has an Environmental Monitoring Cell comprising a team of engineers . Regular monitoring of ambient air quality through a contract and a state-of-art air quality monitoring system are in place.

CHIEF ENGINEER