

**PROPOSAL FOR UPFRONT TARIFF SETTING FOR A 4 MMTPA COAL IMPORT TERMINAL AT BERTH NO.11 OF MORMUGAO PORT TRUST UNDER “GUIDELINES FOR UPFRONT TARIFF SETTING FOR PPP PROJECTS AT MAJOR PORTS, 2008”**

**1. INTRODUCTION**

- 1.1 Port development and operations have undergone a major policy change over the last few years. All new terminals are being set up under Public Private Partnership (PPP) regime. PPP procedure requires investment from private parties for capital as well as operating expenditure. To reduce the revenue and regulatory risks for potential investors in PPP projects, the Central Government through the Ministry of Shipping, Road Transport & Highways, Department of Shipping has issued revised guidelines for regulation of tariff in the Major Port Trusts. These guidelines, issued vide Ministry's letter No.PR-14019/25/2007-PG dated New Delhi 12<sup>th</sup> February, 2008 are called as “Guidelines for Upfront Tariff setting for PPP Projects at Major Port Trusts, 2008”. These guidelines have been notified by Tariff Authority for Major Ports (TAMP) and published in the Gazette of India Extraordinary (Part III) Sec.4 of 26<sup>th</sup> February, 2008 vide Gazette No.27.
- 1.2 The Guidelines of 2008 provide for setting upfront tariff for all the major commodities and containers for each of the Major Ports. The upfront tariff set for a particular commodity to be handled in a particular Port shall be applicable to all the new terminals to be constructed under PPP regime to handle that particular commodity within that Port.
- 1.3 For all the existing facilities, the existing regime for fixing tariff and notification of Schedule of Rates by TAMP in consultation with Port Trust and the Users will continue as it is.

1.4 In this proposal, the Mormugao Port Trust seeks the approval of the Tariff Authority for Major Ports (TAMP) for setting upfront tariff for a **4 MMTPA** coal import terminal. The proposal is based upon the Guidelines of 2008 for upfront tariff setting with modification to take care of variation from norms in respect of storage.

2. **Factors considered for designing an optimal coal import terminal at berth no11 in Mormugao Port Trust**

2.1 Mormugao Port Trust is located on the West Coast of India within the state of Goa. This 125 years old Port was established by the Portuguese rulers of Goa. The Portuguese Engineers selected the estuary of the river Zuari for constructing the Port because it offered excellent tranquility, natural harbour and very good natural depths. Over the last 5 years, the Port has grown by leaps and bounds and today it is known for its deep draft channel capable of taking in Cape size vessels for part loading, vibrant community, co-operative workforce and trade-friendly attitude.

2.2 The biggest asset of Mormugao Port Trust is its navigation channel which is of (-) 14.1 mtrs. depth below the Chart Datum. Hence the proposed new optimal coal import terminal has been designed for handling fully loaded Panamax vessels . Looking at the existing trends, at the moment the Port does not expect to receive Cape size vessels carrying coal. However, the facility is proposed to be created at the new terminal for handling Cape size vessels because the Trade feels that over the next few years, as the channel is deepened further, fully loaded Cape size vessels can also be received and handled at the existing and proposed berths themselves and can sail out fully without the need of uploading at outer anchorage of MPT. The vessels carrying imported coal for discharge at Berth No.11, and the other berth at MPT handling coal, can be loaded with iron ore to be to be exported

and can sail out fully loaded when the depths are deepened to (-) 17.4 mt below the CD.

2.3 Though the Port has the advantage of depth, it has a major disadvantage of having an extremely limited land area. Most of the existing facilities have been created over reclaimed land. Cost of reclamation is quite high because the environmentally-sensitive state of Goa has very few quarries. While designing the optimal coal import terminal the existing berth no.11 is proposed to be shifted forward parallelly by 22 metres , thereby creating a new quay capable of receiving capsized vessels in future. The construction of new berth no.11 will also make available 6842 sq.mtrs ( 311 mtrs length X 22 mtrs width) of the existing berth/quay and back up land area for installation of cargo handling equipment.

2.4 Mormugao Port Trust (MPT) provides port related services and facilities to the Trade and commerce of mainly state of Goa as well as parts of Karnataka and Maharashtra. While the state of Goa is served through connectivity by way of inland waterways,rail and road, parts of Karnataka and Maharashtra are served by rail and road. Both the South Western Railway and Konkan Railway provide rail connectivity to the Port. The optimal proposed coal import terminal at Berth No.11 of Mormugao Port Trust will have facilities for loading the imported coal into railway wagons. No coal is expected to be taken away from the Port by road. The terminal is to be built for importing coal/coke/limestones etc., for the Goan as well as Karnataka steel and power industries. The demand for coal is projected to pick up significantly in the new future and is expected to remain high in the medium time frame due to the setting up of various steel and power manufacturing units, mainly in Karnataka.

2.5 Besides the above general factors, the specific parameters used for arriving at the tariff are described along with the calculations in the following paragraphs.

### 3. **Estimation of capacity**

3.1 Optimal capacity of the coal import terminal has been determined taking into consideration various components of the facility that will be required to be created, equipment and plant and machinery to be provided, productivity levels and utilization levels, as per the norms prescribed. Tariff shall be prescribed with reference to the optimal capacity of the terminal irrespective of any traffic forecast.

3.2 The optimal capacity of the terminal is reckoned as 70% of the maximum capacity, and the lower value of the optimal quay capacity and optimal storage capacity.

### 4. **Estimation of optimal quay capacity**

4.1 The optimal quay capacity is 70 % of the maximum or possible quantity of coal that can be loaded into the ship in a period of one year expressed in tonnes.

#### **Optimal quay capacity**

$$\text{Optimal Quay Capacity} = 0.7 * \left\{ \frac{S1}{100} * P1 + \frac{S2}{100} * P2 + \frac{S3}{100} * P3 \right\} * 365$$

S1 - Percentage share of capacity of capesize vessels

P1 - Ship day output of capesize vessels

S2 - Percentage share of capacity of Panamax  
Vessels

P2 - Shipday output of Panamax vessels

S3 - Percentage of share of capacity of Handy-size and  
Handymax Vessels

P3 - Ship day output of Handy size/Handymax vessels

S1, S2 and S3 are to be determined taking into consideration the draft availability and type of vessels expected to be handled at a particular port.

4.2 At Mormugao Port, the depth of channel is (-)14.1 mtrs. below the Chart Datum and a tidal variation of about 1.8 mtrs. on an average is available. With this advantage of a deep draft channel, the Port can handle partially loaded Cape size vessels and unload fully Panamax/ post panamax/ camsar max size vessels as well as handy max vessels. Inquiries with the Trade and the existing pattern of composition of the shipping fleet leads us to conclude that any new coal import terminal would be getting 80% Panamax vessels and 20% Handymax vessels. No capsizes vessels carrying coal whether partly loaded or fully loaded call at MPT. Hence, the percentage of capsizes vessels is taken at NIL. This has been the approximate general trend at the port of Mormugao in respect of imported coal. While the panamax vessels as well as handymax will generally be gearless, few geared vessels depending on freight advantage to the shippers may also be unloaded. Choice of ships is by the buyers as at Mormugao Port, as almost all the coal imports are on FOB basis. Sometimes they are also high sea C&F sales.

4.3 The norms for ship day output for various types of vessels are defined in the guidelines and reproduced below:

Norms for Ship-day output

Type of Ship	Unloading
Capesize	50,000 tons/day
Panamax	35,000 tons/day
Handy Size & Handy max	15,000 tons/day

Using the above norms and the formula, the optimal quay capacity of Coal Import terminal at Mormugao Port Trust comes to 7.92 million tons per annum (mtpa). The calculations are as below.

### Calculation of optimal Quay Capacity

Shipping fleet composition at Port of Mormugao		DWT
S1: Cape-size (80,000 DWT and above)	0	175000
S2: Panamax (50,000 DWT to 80,000 DWT)	80%	70000
S3: Handymax (below 50,000)	20%	45000
P1: Ship-day output for Capesize vessels	50,000	Tpd
P2: Ship-day output for Panamax vessels	35,000	Tpd
P3: Ship-day output for Handymax vessels	15,000	Tpd
Capacity Utilization Level	70%	
<b>Optimum Quay Capacity</b>	<b>7.92</b>	<b>Mtpa</b>

### Estimation of optimal yard capacity

- 5 The availability of stack yard area is a major constraint at Mormugao Port Trust. Most of the Port facilities like the berth nos. 8, 9, 10 and 11 are on the existing land behind berth no.11. This is extremely limited and as per the directions of the GSPCB the port is required to take care of pollution aspect also. The proposed coal import terminal will be built entirely on reclaimed land. The storage is proposed to be done in storage domes with a capacity of 80,000 tons. The Goa State Pollution Control Board (GSPCB) and NEERI, Nagpur have directed that at Berth Nos.10 and

11 of MPT, Coal/coke must be stored only in covered spaces and handled by mechanical means. The High Court of Bombay at Goa has also asked MPT to comply with the directions. Looking at the existing conditions, the optimal coal import terminal at the berth no.11 of the port envisages 4 such domes within the limited area of 76000 sq mtrs plus 6862 sq mtrs of quay area available within port as conceptualized by the consultant.

5.1 As per the Guidelines of 2008, the optimal yard capacity is 70% of the maximum quantity that could pass through the yard.

$$\text{Optimal Stackyard Capacity} = 0.7 * A * \frac{U}{100} * Q * T$$

A - Area of the yard made available by the port for development in Sq.m

U - Percentage of total yard area that could be used for stacking

Q - Quantity that could be stacked per sq.m./ of area

T - Turnover ratio of the plot in a year

The norms for the above parameters are given below:

Parameters	Norm
A	As provided by port
U	70%
Q	3 Tons/Sq.m.
T	12

The parameters fixed cannot be directly applied to the proposed coal import terminal at Berth No.11 as the storage is envisaged to be in the covered domes

instead of open space as per norms fixed. Therefore, calculation of optimal storage capacity as per norms will not be realistic and therefore the same is calculated as follows:

### **Estimation of Optimal Stackyard Capacity**

Capacity Utilization Level	70%
A: Storage in each Dome	80,000 Tons
U: no. of Domes	4 nos
T: Turnover ratio of each Dome in a year	18 Times
<b>Optimum Stack yard Capacity (B)</b>	<b>4.03 Mtpa</b>

**The optimal stack yard capacity comes to 4.03 million tons per annum for coal import terminal at Mormugao Port Trust.**

### **6 Optimal terminal capacity (C)**

As per the Guidelines of 2008, optimal terminal capacity is the lower value of the optimal quay capacity and optimal yard capacity. According to the calculation in paras above, optimal quay capacity is 7.92 mtpa, but optimal stack yard capacity is only 4.03 mtpa. Hence the optimal terminal capacity shall be taken as 4.03 million tons per annum.

### **7. Calculation of Capital cost**

The Guidelines of 2008 describe the norms for calculation of capital cost for cargo handling, storage and miscellaneous charges. The capital cost for coal import terminal is divided into three parts as tabled below:

#### **Norms for calculation of Capital Cost**

Sl. No.	Group	Norm
1.	Civil Construction cost	As per estimates given by the Port Trust for construction of civil works listed for achieving maximum capacity.
2.	Coal unloading Handling Equipment	As per estimate given by Port Trust for two stream working with the list of equipments given below
3.	Miscellaneous *	5% of civil and equipment cost.

\* It includes the cost of all other facilities required such as pollution control, fire fighting equipment, upfront payment, interest during construction (IDC), working capital margin, miscellaneous equipments, power supply, lighting, etc.

#### 8. **Civil construction cost**

The Civil construction cost for coal import terminal has been estimated as below. The cost of berth apron and approach does not include berth construction cost and berth side dredging, as these two items will be accounted for framing tariff for Berth hire in a later part of this proposal. These are part of the berth cost, approach road etc., for which consultant has given his estimates. Cost estimates are based on the estimates made by the consultants at 2010 rates in the Techno Feasibility Report

#### **Civil Construction Cost**

Coal storage domes	192.00 INR Crore
Dismantling of warehouses	0.05 INR Crore

Road connectivity	2.50	INR Crore
Removing existing water lines	0.05	INR Crore
Water supply arrangement	0.10	INR crore
Cut off wall	0.32	INR crore
Contingencies (5% Rs.195.03 crores)	9.75	INR crore
<b>Civil Construction Cost –for construction of domes, storage area etc., other than civil construction costs taken towards berth construction</b>	<b>204.78</b>	<b>INR Crore</b>

**Estimated cost of Equipment, Plant and Machinery for coal import terminal as per Techno-Feasibility Report prepared by consultant.**

9. The cost of equipment, plant and machinery is estimated below at current market prices:

**Ship unloader**

Numbers	2	
Cost per ship unloader	44.00	INR Crore
	<b>88.00</b>	<b>INR Crore</b>

**Conveyor System**

Length	2,320	
Cost per meter	0.02	INR Crore
	<b>43.15</b>	<b>INR Crore</b>

## Wagon loader

Numbers	1	
Cost per In motion wagon loader with rail arrangement at the loader (silo)	9.00	INR Crore
	<b>9.00</b>	<b>INR Crore</b>
<b>Rail for ship unloader- in addition to above rails</b>	<b>0.15</b>	<b>INR Crore</b>
<b>Removal of existing electrical lines post etc.,</b>	<b>0.05</b>	<b>INR Crore</b>
<b>Electrical works including sub-station</b>	<b>3.00</b>	<b>INR Crore</b>
<b>Contingencies (5% of Rs.143.35 crs)</b>	<b>7.17</b>	<b>INR Crore</b>
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<b>Coal handling equipment (unloading terminal)</b>	<b>150.52</b>	<b>INR Crore</b>
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### Estimation of miscellaneous cost

10. Miscellaneous cost includes the cost of all other facilities required such as Pollution control, Fire Fighting equipment, Upfront payment, Interest during Construction, Working Capital margin, miscellaneous equipments, power supply, lighting and such other items. As per the norms in Guidelines of 2008, miscellaneous cost is estimated at 5% of Civil and Equipment cost. **It works out to Rs.16.92 crores (Rs.9.75 crores+ Rs.7.17 crores).**

### 11. Estimating operating cost

- 11.1 The operating cost incurred in a coal import terminal, vide Guidelines of 2008, is grouped under the following major heads and is calculated for operating at the optimal capacity.

### **Norms for calculation of operating cost**

11.2 The operating cost incurred in a terminal is grouped under the following major heads and is to be calculated for the optimal capacity.

- (1) Power and fuel cost
- (2) Repair and maintenance
- (3) Insurance
- (4) Depreciation
- (5) Lease Rental
- (6) Other expenses consisting of
  - a) Salaries and wages of operating and maintenance staff including welfare and other expenses towards them
  - b) Management and general overheads comprising :
    - (i) Salaries of management and administration staff including welfare and other expenses towards them
    - (ii) Maintenance of computers and other office equipment
    - (iii) Any other miscellaneous cost

11.3 The norms for various items of operating cost given above are given in Table below:

#### **Norms for operating cost**

<b>Sl. No</b>	<b>Group</b>	<b>Norm</b>
1.	Power	1.4 unit/ton
2.	a) Repair and maintenance of civil assets. b) Repair and maintenance of mechanical and electrical	1% of cost of all civil assets  7% of cost of all mechanical and electrical equipments

	equipments including spares.	
3.	Insurance	1% of Gross Fixed Assets value
4.	Depreciation	As per norms prescribed in Companies Act or any norms prescribed in the licence agreement whichever is higher.
5.	Lease Rental	As per Scale of Rate of the concerned Major Port Trust
6.	Other expenses	5% Gross Fixed Assets value

The elements of expenditure considered for this project are as follows:

### **Cost of Electrical energy**

<b>a.Consumption per ton</b>	<b>1.40 Unit/ton</b>
<b>b.Cost per Unit (KWH)</b>	<b>4.50 INR</b>
<b>c.Optimal Capacity</b>	<b>4.03 Mtpa</b>
<b>Cost of Electrical energy (a*b*c)</b>	<b>2.54 INR Crore</b>
<b>Repair &amp; Maintenance of civil assets</b>	<b>2.05 INR Crore</b>
<b>(as percentage of cost of civil assets-Rs.204.78 crs)</b>	<b>1%</b>
<b>Repair &amp; Maintenance of electrical &amp; mech. Assets</b>	<b>10.54 INR Crore</b>
<b>(as percentage of cost of assets-Rs.150.52 crs)</b>	<b>7%</b>
<b>Insurance</b>	<b>3.55 INR Crore</b>
<b>(as percentage of Gross Fixed Asset Value-Rs.355.29 crs)</b>	<b>1%</b>
<b>Depreciation</b>	
<b>(As per Companies Act)</b>	

<b>Rate for Civil Assets (Berth, roads, etc)-(Rs.204.78 cr)</b>	<b>3.34%</b>
<b>Rate for Equipments-(Rs.150.52 crs)</b>	<b>10.34%</b>
<b>Depreciation (Rs.6.84 crs+Rs.15.56 crs)</b>	<b>22.40 INR Crore</b>
<b>Lease Rentals (As per SOR)</b>	
<b>Rate of lease rental per sq m per month (2010)</b>	<b>34.30 INR</b>
<b>Area leased</b>	<b>83,000 sq m</b>
<b>Lease Rentals (As per SOR)</b>	<b>3.42 INR Crore</b>
<b>Other expenses</b>	<b>17.76 INR Crore</b>
<b>(as percentage of Gross Fixed Assets value Rs.355.29 crs)</b>	<b>5%</b>
<b>Operating Costs at Optimal Capacity</b>	<b>62.26 INR Crore</b>

**12. Calculation of cargo handling storage and miscellaneous charges**

12.1 The tariff structure for services rendered at a mechanized coal import terminal is grouped under the following three major groups:

- i) coal handling charges
- ii) Storage charges
- iii) Miscellaneous charges.

The total revenue requirement determined as per these guidelines is apportioned among the aforesaid major tariff groups as follows:

Tariff Group	Percentage of total revenue allocated
Coal Handling Charges	98
Storage charges	1
Miscellaneous charges	1

In the proposed coal import terminal, storage is envisaged to be done in modern storage domes due to shortage of area available and also to avoid pollution. This is different from the norm fixed for open storage. This is expected to be expensive and therefore revenue allocation is taken completely towards coal handling charges.

12.2 The revenue required is calculated as per the Guidelines of 2008 for operating the terminal at normative optimal capacity.

$$\text{Annual revenue Requirement} = \text{Annual operating cost} + 16\% \text{ Return On Capital Employed}$$

12.3 Accordingly, the revenue required for calculating the Cargo Handling, Storage and Miscellaneous charges is as follows:

**Calculation of Tariff Cap:**

<b>Rate of return on capital employed</b>	<b>16%</b>	
<b>Gross Fixed Asset Value</b>	<b>355.29</b>	<b>INR Crore</b>
<b>ROCE</b>	<b>56.85</b>	<b>INR Crore</b>
<b>O&amp;M Cost</b>	<b>62.26</b>	<b>INR Crore</b>
<b>Revenue Requirement</b>	<b>119.11</b>	<b>INR Crore</b>
<b>Coal handled</b>	<b>4.03</b>	<b>Mtpa</b>
<b>Composite Tariff Cap per ton of iron ore handled</b>	<b>295.41</b>	<b>INR</b>
<b>Tariff cap for Cargo Handling Charges</b>	<b>295.41</b>	<b>INR</b>

12.4 **Storage Charges / Dome Rentals – for import / inward cargo, beyond free days**

This is a specialised facility, on a common user basis, in which the entire imported coal/ coke has to be stored in covered domes for reasons of pollution control and environment

protection as mandated by the GSPCB, NEERI and the High Court of Bombay at Goa. Accordingly, once any storage dome space is occupied by a particular consignment of cargo, the said/ same dome cannot be used till the entire consignment of a particular cargo is evacuated. In the proposal, MPT has taken the turnaround factor at 18. This means that on an average, a parcel size of 56,000 tonnes (0.7 x 80,000) can remain in any storage dome for a period of 20 days. (365 / 18 ). It is proposed that free storage may therefore be stipulated as 20 days in general , and specifically at least 2800 tonnes per day, for which the composite cargo handling and storage rate of Rs. 295.41 per tonne would be applicable. For parcel sizes in excess of 56,000 tonnes, the free days will be increased proportionately, i.e. 1 days for each additional 2800 tonnes. For parcel sizes of less than 56,000 tonnes, the free days will be only the number of days allowable for evacuation @ 2800 tonnes per day.

Beyond the free period of 20 days, the storage charges for over stayal of cargo in any dome have to be high, so as to act as a strong deterrent for importers against using the valuable storage space for speculation / commercial advantage. Further, since the terminal operators cannot use a dome for further storage of fresh shipments, unless it has been fully evacuated / cleared of the previous consignment of cargo, the terminal operators operations, and in turn revenue generation, are adversely affected if the importers / shippers do not clear the cargo within the stipulated time. For this reason also, so as to partially compensate the loss of revenue for the terminal operators, it is necessary to levy high tariffs for overstayal of cargo beyond the stipulated free dyas.

In the case of fixation of tariffs for ground rent / storage charges at the Berth Nos. 5 A & 6A operated by M/s SWPL at MPT, Goa, the TAMP vide notification no. 19 dated 15<sup>th</sup> January 2007, has fixed the following scale of storage charges / round rent :

- a) Rate for 1st 5 days for balance cargo remaining after the free period – 10% of handling charges

- b) Rate for 6<sup>th</sup> day to 10<sup>th</sup> day – 25% of handling charges
- c) Rate for 11<sup>th</sup> day to 20<sup>th</sup> day – 50% of handling charges
- d) Rate for 21<sup>st</sup> day onwards for the balance cargo – 100% of handling charges

Accordingly, the following rates are proposed for Berth No. 11 :-

- (a) 1st 5 days after free period –Rs. 30 per tonne per day
- (b) 6<sup>th</sup> to 10<sup>th</sup> day – Rs. 75 per tonne per day
- (c) 11<sup>th</sup> day onwards – Rs. 150 per tonne per day

Notes : 1) 20 free days shall be allowed commencing from the date of the discharge, as there is a facility for direct loading of rakes even while a vessel is discharging. For the purposes of calculation of free period, Sundays, Customs notified holidays and terminals non-working days shall be excluded.

2) Dome rent / storage charges shall be payable for all days including Sunday and Customs notified holidays, for stay of cargo beyond prescribed free days.

3) After 21 days beyond free days, the balance cargo shall be liable to be shifted to other places out of the storage domes and Berth No.11 land areas, at the sole cost and consequences to the importers / exporters.

### **13. Calculation of Berth Hire charges**

13.1 Like the calculation of Cargo Handling charges, the tariff cap for Berth Hire charges is also based upon revenue requirement. According to the Guidelines of 2008, the revenue requirement is the sum of operating cost and 16% return on capital employed. In the case of Berth Hire charges, the capital cost will comprise

- a) cost of construction of berth
- b) cost of capital dredging alongside the berth.

13.2 Cost of construction of berth and cost of capital dredging alongside berth adopted as worked out by the consultants in the table below. The operating cost comprises only one item i.e. Repair and Maintenance Cost of the berth which is computed @ 1% of the construction cost.

13.3 While arriving at the revenue requirement, depreciation @ 3.34% of Capital cost for berth and 1% for insurance are also taken into account as was considered by TAMP in the previous proposal for fixation of upfront tariff for Berth No,7 at MPT, even though same is not provided in the norms.

13.4 The revenue required for construction and maintenance of berth as per the Guidelines of 2008 has to be recovered from the vessels calling at the new terminal. Therefore, we have to calculate the berth-occupancy factor to arrive at berth-hire rate per GT per hour. To calculate berth-occupancy factor, each of the three classes have been considered separately. GT of a vessel is assumed as 60% of the DWT. Number of Hours at berth is arrived at by dividing the Average Parcel Size by Ship-day output for each class. By multiplying the GT with Hours at Berth, we get the berth occupancy factor. Using the expected shipping fleet composition, capacity of the terminal, and the average parcel size, the expected number of vessels has been calculated for each class. The total Berth Occupancy Factor for a class equals the product of expected number of ships in that class and the Average GT-Hour of that class. The Sum of Berth Occupancy Factors of all the three classes is used to arrive at the Berth Hire Charges per GT per Hour.

13.5 . **The calculation shown below gives Berth Hire Rate as Rs.1.11 per GT per Hour.**

**Shipping fleet composition**

## Capesize

S1: Cape-size (80,000 DWT and above)	0%	
P1: Ship-day output for Capesize vessels	50,000	Tpd
D1: Average DWT for Capesize vessels	1,75,000	Tons
G1: Average GRT for Capesize vessels	1,05,000	Tons
PA1: Average parcel size for Capesize vessels	75,000	Tons
H1: Average hours at berth ( $=24*PA1/P1$ )	30.00	Hrs
GH1: Average GT-hrs for capesize vessels	31,50,000	ton-hr
E1: Expected number of capesize vessels ( $=S1*Capacity/PA1$ )	-	
B1: Total Berth Occupancy factor ( $=E1*GH1$ )	-	ton-hr
Berth Occupancy	-	Hrs

## Panamax

S2: Panamax (50,000-80,000 DWT)	80%	
P2: Ship-day output for Panamax vessels	35,000	Tpd
D2: Average DWT for Panamax vessels	75,000	Tons
G2: Average GRT for Panamax vessels	45,000	Tons
PA2: Average parcel size for Panamax vessels	60,000	Tons
H2: Average hours at berth ( $=24*PA2/P2$ )	41.14	Hrs
GH2: Average GT-hrs for Panamax vessels	18,51,300	ton-hr
E2: Expected number of Panamax vessels		Nos

(=S2*Capacity/PA2)	54	
B2: Total Berth Occupancy factor (=E2*GH2)	9,99,70,200	ton-hr
Berth Occupancy	2,222	Hrs
<b>Handy-size and Handimax</b>		
S3: Handymax (below 50,000 DWT)	20%	
P3: Ship-day output for Handymax vessels	15,000	Tpd
D3: Average DWT for Handymax vessels	45,000	Tons
G3: Average GRT for Handymax vessels	27,000	Tons
PA3: Average parcel size for Handymax vessels	40,000	Tons
H3: Average hours at berth (=24*PA3/P3)	64.00	Hrs
GH3: Average GT-hrs for Handymax vessels	17,28,000	ton-hr
E3: Expected number of Handymax vessels (=S3*Capacity/PA3)	20	Nos
B3: Total Berth Occupancy factor (=E3*GH3)	3,45,60,000	ton-hr
Berth Occupancy	1,280	Hrs

<b>Total Berth Occupancy Factor (=B1+B2+B3)</b>	<b>13,45,30,200</b>	<b>ton-hr</b>
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<b>Berth Occupancy</b>	<b>40%</b>
<b>Capacity Utilization Level</b>	<b>70%</b>

## B. Tariff calculations for berth hire charges

Cost of construction of Berth	23.29	INR Crore
Providing pavement/redoing pavement	1.00	INR Crore
Dredging & Reclamation	38.98	INR Crore
Filling with Dredged Material	0.96	INR Crore
Stone pitching	0.84	INR Crore
Removing & relaying of existing channel buoy	0.05	INR Crore
Moorings	0.13	INR crore
Fenders	0.96	INR Crore
Miscellaneous(5% of Rs.66.21 crores)	3.31	INR Crore
Civil Construction Cost	69.52	INR Crore

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Repair and Maintenance Cost of Berth	0.70	INR Crore
(as a percentage of Capital Cost)	1%	

## Calculation of Tariff Cap for berth hire charges

Rate of return on capital employed	16%	
Gross Fixed Asset Value	69.52	INR Crore
ROCE	11.12	INR Crore

O&M Cost(1% of capital cost)	0.70	INR Crore
Depreciation (3.34%)	2.32	INR Crore
Insurance(1% of capital cost)	0.70	INR Crore
<b>Revenue Requirement</b>	<b>14.84</b>	<b>INR Crore</b>

Berth Hire Charges per GT per Hour	1.11	INR
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### Conclusion

#### Shipping fleet composition at Port of Mormugao

S1: Cape-size (80,000 DWT and above)	0%
S2: Panamax (50,000 DWT to 80,000 DWT)	80%
S3: Handymax (below 50,000)	20%
Capacity Utilization Level	70%

A: Cargo stored in one coal storage dome	80,000	Tons
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U: Percentage of dome that can be used	70%
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Q: No of coal storage domes	4.00	Nos
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T: Turnover ratio of the plot in a year.	18	Times
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Optimum Quay Capacity	7.92	Mtpa
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Optimum Stackyard Capacity	4.03	Mtpa
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Optimum Capacity of the terminal	4.03	Mtpa
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## Calculation of Cargo Handling, Storage and Miscellaneous Charges

Civil Construction Cost	204.78	INR Crore
Coal handling equipment (unloading terminal)	150.52	INR Crore
Revenue requirement (for cargo handling and storage)	119.11	INR crores
<b>Tariff cap for Cargo Handling Charges</b>	<b>295.41</b>	<b>INR Crore</b>

## Calculation of Berth Hire Charges

Civil Construction Cost	69.52	INR Crore
Revenue requirement	14.84	INR Crore
<b>Tariff Cap for Berth hire charges</b> (INR per GT per hour)	<b>1.11</b>	<b>INR Crore</b>
<b>Total Capital Cost of Coal Importing Terminal</b>	<b>424.82</b>	<b>INR Crore</b>

14.1 Tariff Authority for Major Ports may kindly approve the following tariff caps based upon the Guidelines of 2008, with the reference date as 1<sup>st</sup> January, 2010 and indexed to inflation as described in the Guidelines.

<b>Tariff cap for Cargo Handling Charges</b>	<b>295.41</b>	<b>INR</b>
<b>Berth Hire Charges per GT per Hour</b>	<b>1.11</b>	<b>INR</b>

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## MORMUGAO PORT TRUST

### UPFRONT TARIFF SCHEDULE FOR COAL HANDLING

#### 1.1 DEFINITIONS:

In this Scale of Rates unless the context otherwise requires, the following definition shall apply.

- (i) "Per Day" means per calendar day unless otherwise stated.

#### 1.2 GENERAL TERMS AND CONDITIONS:

- (i) Interest on delayed payments / refunds.
  - a) The User shall pay penal interest on delayed payments under this Scale of Rates. Likewise, the terminal operator shall pay penal interest on delayed refunds.
  - b) The rate of penal interest will be 2% above the Prime Lending Rate of the State Bank of India.
  - c) The delay in refunds will be counted only 20 days from the date of completion of services or on production of all the documents required from the Users, whichever is later.
  - d) The delay in payment by the users will be counted only 10 days after the date of raising the bills by the Terminal Operator. This provision shall, however, not apply to the cases where payment is to be made before availing the services where payment of charges in advance is prescribed as a condition in this Scale of Rates.
- (ii) All charges worked out shall be rounded off to the next higher rupee on the grand total of the bill.
- (iii) (a) The rates prescribed in the Scale of Rates are ceiling levels, likewise, rebates and discounts are floor levels. The operator may, if they so desire, charge lower rates and/or allow higher rebates and discounts.

- (b) The operator may also, if they so desire rationalize the prescribed conditionalities governing the application of rates prescribed in the Scale of Rates if such rationalisation gives relief to the users in the rate per unit and the unit rates prescribed in the Scale of Rates do not exceed the ceiling level.
- (c) The operator should notify the public such lower rates and/ or rationalisation of the conditionalites governing the application of such rates and continue to notify the public any further charges in such lower rates and/or in the conditionalities governing the application of such rates provided the new rates fixed shall not exceed the rate notified by the TAMP
- (iv) Users will not be required to pay charges for delays beyond reasonable level attributable to the operator.
- (v) In case vessel idles due to breakdown or non availability of the shore based facilities of the operator, or any other reasons attributable to operator, rebate equivalent to berth hire charges payable to the Mormugao Port Trust accrued during the period of idling of vessel shall be allowed by the operator.

**2. CARGO HANDLING CHARGES:**

<b>Particulars</b>	<b>Unit</b>	<b>Rate in Rupees</b>
Coal Handling Charges	Per metric ton	295.41

**Notes:**

- i. The handling charges prescribed above is a composite charge for unloading of cargo through unloading facilities storage at the coal storage domes upto a free period of 20 days.

**3. STORAGE CHARGES.**

The storage charge for the cargo stored in the coal storage dome beyond the free period allowed shall be as below:

(Rate in Rs. Per Ton )

<b>Sr.No.</b>	<b>Commodity</b>	<b>Rate for five days for the balance cargo remaining after the free period.</b>	<b>Rate for sixth day to tenth day for the balance cargo.</b>	<b>Rate for eleventh day onwards for the balance cargo.</b>
1.	Coal	30	75	150

**4. Berth Hire:**

The Berth Hire charges payable by masters/owners/agents of the vessel shall be as per rates below:

<b>Sl.No.</b>	<b>Vessels</b>	<b>Rate per GRT per hour or part thereof (Rs.)</b>	
		<b>Foreign Going Vessel</b>	<b>Coastal Vessel</b>
1.	All Vessels	1.11	0.67

**5. GENERAL NOTE TO SCHEDULE (2) TO (4) ABOVE:**

The tariff caps will be indexed to inflation but only to an extent of 60% of the variation in Wholesale Price Index (WPI) occurring between 1 January 2010 and 1 January of the relevant year. Such automatic adjustment of tariff caps will be made every year and the adjusted tariff caps will come into force from 1 April of the relevant year to 31 March of the following year.