

The Dhamra Port Company Limited

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DPCL/ENV-06/01/2015

To

The Additional Principal Chief Conservator of Forests

Ministry of Environment and Forests,

Eastern Regional Office,

A/3, Chandrasekharpur,

Bhubaneswar- 751023

E-mail: roez.bsr-mef@nic.in

15th May 2015

Dear Sir,

Sub : Half yearly Compliance report of Environment and CRZ Clearance for expansion of Dhamra Port at Dhamra, Bhadrak District of Orissa by M/s Dhamra Port Company Limited

Ref : 1) Environmental Clearance for Expansion of Dhamra Port Project vide letter dated 4th January 2000 bearing No. PD/26017/8/98-PDZ (CRZ).

2) CRZ recommendation letter for Phase II expansion vide letter dated 20th December, 2012 bearing no. OCZMA-1/2012-13/No. 17

3) Environmental and CRZ Clearance for expansion at Dhamra Port dated 1st January, 2014 bearing F. No. 11-104/2009-IA.III

4) Amendment in environmental and CRZ clearance vide letter dated 25th March, 2015 bearing F. No. 11-104/2009-IA.III

With reference to the above mentioned letter for the said subject matter, kindly find enclosed the compliance to the conditions stipulated in Environmental and CRZ Clearance and subsequent amendments for the period of Oct'14 to Mar'15 in both hard & soft copy for your kind reference.

Thank you,

For Dhamra Port Company Limited,

(Subrat Tripathy)

Chief Executive Officer

Copy to:

- 1) The Director (Monitoring -IA Division), Ministry of Environment, Forest & Climate Change, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi - 110003
- 2) Zonal Office, Central Pollution Control Board, Southern Conclave, Block 502, 5th & 6th Floors, 1582 Rajdanga Main Road, Kolkata - 700 107 (W. B.)
- 3) The Member Secretary, State Pollution Control Board, Odisha, Paribesh Bhawan, A/118, Unit 8, Nilakantha Nagar, Nayapalli, Bhubaneswar-751012
- 4) The Regional Officer, State Pollution Control Board, Odisha, 160, Sahadev Khunta, Balasore - 756001



Dhamra Port Company Limited

From : Oct,14
To : Mar,15

Status of the conditions stipulated in Environment Clearance

Phase – I: Half yearly Compliance report of the conditions stipulated in Environmental Clearance for Expansion of Dhamra Port Project vide letter dated 4th January 2000 bearing No. PD/26017/8/98-PDZ (CRZ).

Sr. No.	Conditions	Compliance Status
i	<p>All Construction design/drawings relating to construction activities must have the approval of the concerned Government Departments/ Agencies of the State Government of Odisha.</p> <p>Ground water should not be tapped for construction activities as the drawl of ground water for industrial use from the CRZ area is a prohibited activity.</p>	<p>All Construction drawings and designs of Phase I Expansion of Dhamra Port were approved by State Government of Odisha vide letter no. DPP-4/07.1331/Com dated February 19, 2007 and Memo no. 1153/Com dated February 14, 2007 of Commerce and Transport Department.</p> <p>Groundwater is not drawn for construction activities. The water requirement for Dhamra Port is being met from Matai River.</p>
ii	Adequate provision for all infrastructural facilities such as water supply, fuel, sanitation etc. must be extended for laborers during the construction period in order to avoid damage to the environment.	The facilities such as water supply, fuel, sanitation etc. for laborers have been provided during both construction & operation of the port.
iii	Dredging operations if any should be undertaken in consultation with the Central Water and Power Research Station, Pune or National Institute of Oceanography, Goa or any other authorized agency to ensure that dredging operations do not cause adverse impact on water quality and marine productivity in the vicinity. Dredging operation as far as possible should be kept to the minimum for avoiding any adverse impact on marine life.	<p>DPCL had engaged NIO, Goa to study impacts of dredging operation. NIO's study reports concluded that there are no adverse impacts on water quality during Dredging.</p> <p>The capital dredging has been completed in 2010-11. Marine water quality and productivity is being monitored by engaging approved laboratories. The Marine Water quality report is enclosed as Annexure I</p>
iv	Disposal sites for excavated material should be so designed that the revised land use after dumping and changes in the land use pattern do no interfere with the natural drainage.	<p>The dredged material was disposed-off at the designated site beyond 20 meter contour in the deep sea.</p> <p>DPCL has ensured that the change in land use pattern do not interfere with the natural drainage. The natural drainage system has been maintained.</p>
v	To meet with any emergency situation, adequate foam containers should be kept ready with	DPCL has a strong Fire Fighting Team equipped with two fire tenders, two foam type fire



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Sr. No.	Conditions	Compliance Status
	supporting firefighting system and water pipeline.	extinguishers and 168 (ABC & CO ₂) type of extinguishers.
vi	Staff posted in sensitive areas should be trained in implementation of the Crisis Management Plan already drawn by the authorities. Mock Drill(s) for this purpose should be on a regular basis. Provisions of Dock Safety Act and the Guidelines issued by the DG, FASLI/CLI, Mumbai for the safety and health of the workers should be followed.	The employees of DPCL have been trained on safety guidelines. Regular Mock Drills are conducted as per the Crisis Management Plan. The Details of drills conducted towards dock safety from October 2014 to March 2015 is enclosed as Annexure II
vii	For development of Green Buffer including mangroves wherever feasible, the authorities should start growing large nursery of multipurpose species such as Eucalyptus, Casuarina, Dalbergia, Terminalia etc. The norm of about 2000-2500 trees per Hectare may be adopted for raising of green belt. Necessary permission may be obtained for cutting of trees, if any, for the project	A large nursery of multi species has been established for raising for the green belt. Plantation on both the edges of the 62.5 km railway corridor has been taken up & 1,60,000 plants have been planted. Plantation of suitable species has been taken up in and around port bulb and Administration/Residential area. So far 1,90,500 plants have been planted inside the port. Peripheral Plantations of 10,000 plants have also been carried out around the port. Details furnished in Annexure-III .
viii	To prevent discharge of sewage and other liquid wastes including ballast into marine environment, adequate system for collection, treatment and disposal of liquid wastes must be provided to the satisfaction of the Odisha Pollution Control Board, Bhubaneswar.	DPCL has installed a Sewage Treatment Plant (STP) to handle 140 KLD of sewage generated at port site. The treated water is being used in plantation. The monitoring reports are attached as Annexure IV MARPOL and Ballast Water Convention are enforced by DPCL for visiting ships.
ix	Adequate noise control measures must be provided to noise levels at various work places within the standard prescribed by the competent	Suitable Personal Protective Equipments (PPEs) are mandatory for workers in noisy areas. Ear muffs & ear plugs are being provided. Noise



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Sr. No.	Conditions	Compliance Status
	authorities. If need be, ear plugs and ear muffs should be provided to the workers in the project area	monitoring at site is being done by OPCB approved agency and the reports are attached as Annexure V
x	The quality of treated effluents, solid wastes and emissions must confirm to the standards laid down by the competent authority including State Pollution Control Board, Govt. of Odisha, Bhubaneswar	No effluent is being discharged by the port. All emissions are well within the prescribed limits. Ambient Air Quality reports are attached as Annexure VI
xi	An Environmental Cell should be set up immediately and made operational with adequate laboratory facilities, equipments and a mobile van for collecting air samples. The record and data should be submitted with proper analysis and corrective measures required, if any, for maintaining the levels within the prescribed limits to the Eastern Regional Office, Ministry of Environment & Forests, Govt of India, Bhubaneswar. The Environment Cell should coordinate and monitor environmental mitigative measures executed in the project area. The Project Proponent is advised to institutionalize their Environmental Monitoring through some recognized Scientific Institution for the project.	DPCL has a well-structured Environmental Management Cell, staffed with qualified man power for monitoring of the ambient environment together with an OPCB approved agency, The monitoring results (enclosed in Annexures I, IV, V and VI) are well within the permissible limits. Monitoring data is being submitted along with half yearly compliance reports to the Eastern Regional Office, MoEF, MoEF-New Delhi, CPCB-Kolkata and Odisha Pollution Control Board. Our Last Half Yearly Report was submitted on 1 st Dec 2014
xii	Necessary leakage detection devices with early warning system must be provided at strategic locations.	Not applicable as no gaseous cargo is being handled by the port.
xiii	Standby DG sets must be provided to ensure uninterrupted power supply (to) the pump house and the fire fighting system	DG Sets have been provided for emergency backups & uninterrupted power supply which includes the water supply system and fire fighting system.



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Sr. No.	Conditions	Compliance Status
xiv	Third party inspection should be ensured during the construction and operational phases with adequate insurance cover. The Project authorities should confirm on regular intervals of six months to the Ministry about the implementation of the suggested safeguard measures and the data/report should be opened for inspection by the Team which would be constituted by the Ministry, If found necessary	Six monthly compliance reports are regularly submitted to the Eastern Regional Office of MoEF, Bhubaneswar, MoEF-New Delhi, CPCB-Kolkata and Odisha Pollution Control Board and the last report was submitted on 1 st December 2014. MoEF Regional Office and OPCB are regularly inspecting the project site. Safeguard measures as advised by inspection team are always implemented.
xv	Full support should be extended to the Eastern Regional Office, Ministry of Environment & Forests, Govt. of India, Bhubaneswar during inspection of the project for monitoring purposes by the project proponents by furnishing full details and action plans including action taken report on mitigative measures.	Full support is extended to the Eastern Regional Office, Ministry of Environment & Forests, Bhubaneswar and other regulating authorities for inspection of the Project. All the details are submitted as and when required by the Authorities.
xvi	Adequate funding provisions, year-wise and item-wise, must be made for implementation of the above mentioned safeguard measures.	INR 3.7 Crores was allocated for the environmental safeguards. A sum of INR 3.22 Crores has been spent during FY 14-15.
xvii	The Rapid Environmental Impact Assessment Studies for the construction of the above project by M/s Kirloskar Consultants Ltd. should be expedited. The project proponent was advised to keep in mind the proneness of the coast of Odisha to sever cyclonic storms while going ahead with their project.	The Rapid Environmental Impact Assessment Study has been conducted in time & the said report has been submitted. DPCL has already formulated detailed Disaster Preparedness & Management Plan to handle any natural calamities such as cyclones, storms, quakes etc., along the Coast.
2	In case of any deviation or alteration in the project including the implementation agency, a fresh reference should be made to the Ministry for modification in the clearance condition or Imposition of new ones for ensuring environmental protection. The project authorities would be responsible for	Environmental and CRZ Clearance obtained for expansion of the port from MoEF vide F.No.11-104/2009-IA.III dated 1 st Jan, 2014



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Sr. No.	Conditions	Compliance Status
	implementing the above suggested safeguard measures.	
3	The Ministry reserves the right to revoke clearance, if the conditions stipulated as above are not implemented to the satisfaction of the Ministry	Point Noted
4	These stipulations would be enforced among others under the provisions of Water (Prevention and control of pollution) Act, 1974, the Air (Prevention and control of pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Public Liability (Insurance) Act, 1991 along with their amendments and rules from time to time.	Point Noted



Status of the conditions stipulated in Environment Clearance

Phase – II: Compliance report of the condition stipulated in CRZ recommendation for Phase II expansion vide letter dated 20th December, 2012 bearing no. OCZMA-1/2012-13/No. 17

Sr. No.	Conditions	Compliance Status
1	The Ballast Water Management has to be scrupulously followed to ensure that no harmful exotic organisms or pathogens are transferred to the coastal/marine water. In this regard, the DPCL should approach the Ministry of Shipping, Govt. of India to evolve a suitable ballast water management plan to maintain the health of the coastal/marine ecosystems	DPCL has voluntarily adopted guidelines for itself to ensure that ships calling at port are in compliance to guidelines issued by MS Notification No 13/2001.
2	The marine water and sediment (biogeochemical parameters including phytoplankton community structure) should be monitored regularly by a reputed scientific institute/university	CEMC has been tasked with monitoring our water quality, marine productivity, air, noise and other physical and biological parameters. Since April 2015, SGS India Pvt. Ltd, Mumbai has been entrusted with this work.
3	One of the objectives of the CRZ guidelines is to ensure the livelihood of the fishermen community vis-à-vis developmental activities. Hence the DPCL should approach the Director, Indian National Centre for Ocean Information Services (INCOIS), Govt. of India, Hyderabad, to get PFZ advisories / installation of Electronic Display Board (EDB) to disseminate the prospective fishing ground information to the fishing community for their livelihoods. The DPCL is also to indicate any change that has occurred in the fishing zone due to operation of the Port.	Noted. Appropriate action shall be undertaken
4	The use of unclaimed/salvaged coal for local people may be explored.	DPCL has examined this issue. So far there has not been any unclaimed coal and the quantity of salvaged coal is negligible. The procedure required under relevant rules is to auction such unclaimed coal with custom's permission to meet unpaid duties and port charges; and to account salvaged coal back to the stock of original importer. Any other method would contravene custom's and other laws.
5	DPCL shall ensure that the dust/fine grained particles of the jetty must be cleaned regularly and methodically so that there is no spillage to the coastal waters to avoid turbidity of the water	Jetty is regularly cleaned both mechanically and manually every day.



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Phase – II: Compliance report of the condition stipulated in CRZ recommendation for Phase II expansion vide letter dated 20th December, 2012 bearing no. OCZMA-1/2012-13/No. 17

Sr. No.	Conditions	Compliance Status
	column	
6	The mangrove vegetation around the port should be conserved both during construction and operation phase.	<ul style="list-style-type: none"> Scattered mangroves identified near southern boundary of Phase I development spread over an area of 9 ha DPCL has excluded these mangroves from port activity by fencing and implementing conservation measures Mangroves to north of port has been excluded from proposed expansion of the port A buffer of 50 m width will be maintained between the project boundary and mangrove vegetation
7	Coastal erosion and accretion shall be monitored on a regular basis. The impact of dredging and dumping of the sediment on Dhamra Shoreline change and on the ecologically sensitive areas including the Kanika Sand Islands has to be assessed at regular interval by a recognized institute.	Dhamra and Kanika Sand shoreline change including erosion and accretion will be monitored at regular intervals by recognized institute.
8	Provision shall be made for treatment/recycle of toxic contents, such as used oil, fertilizers (if any) and similar other toxic materials	DPCL has made an agreement with OPCB approved vendor for collection of used oil and vendor shall take care of treatment and disposal at their premises as per OPCB norms.
9	Environmental Impact Assessment (EIA) study of dredging material should be done on a regular basis with special emphasis to turbidity.	Turbidity monitoring shall be carried out at all monitoring locations during dredging period.
10	The DPCL should ensure that the suspended sediments generated during excavation and during disposal of the dredged materials do not adversely affect the health of the coastal ecosystems within the port area including eco-sensitive areas along the coast.	<ul style="list-style-type: none"> Mathematical model studies were carried out (by NIO, Goa) to determine the dispersion of dredge plume during dredging and disposal of dredge material. The result of the study was that the suspended sediment concentration is limited to nearby areas only and not reaching the shore or the proposed eco-sensitive area. The dredging and disposal will be monitored by a recognized institute in phase-II expansion.
11	A conservation plan for Kanika Island will be prepared and implemented by the Forest Department, the cost of which will be met by the DPCL	<ul style="list-style-type: none"> A Conservation Plan has been prepared with a total financial outlay of Rs. 2.75 Crores. Draft conservation plan submitted to the Principal Secretary, Forest and Environment



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Sr. No.	Conditions	Compliance Status
		<p>Department and Chairman, OCZMA for approval.</p> <ul style="list-style-type: none"> DPCL commits to place Rs. 2.75 Crores for execution of conservation plan.
12	Mangrove plantation around the port will be protected by the DPCL under the supervision of the Forest Department.	<ul style="list-style-type: none"> Create awareness amongst port workers regarding importance of mangroves and conservation Facilitate to improve degraded mangrove vegetation in cooperation of Department of Forest, Odisha. Natural creeks to be maintained. Discharge of wastes/waste water during port construction and operation would not be allowed Illegal cutting of mangroves for firewood by workers during the construction and operation phases of port would be strictly prevented
13	Shoreline Changes in and around Kanika Island shall be monitored on monthly basis	Shoreline monitoring shall be carried out on regular basis.



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Phase – II: Compliance report of the condition stipulated in Environmental and CRZ Clearance for expansion at Dhamra Port dated 1st January, 2014 bearing F. No. 11-104/2009-IA.III and subsequent amendment dated 25th March, 2015

Sr. No.	Conditions	Compliance Status
6. Specific Condition		
i	Consent to Establishment shall be obtained from Odisha Pollution Control Board under Air and Water Act and a copy shall be submitted to the Ministry before start of any construction work at site	Consent to Establishment has been obtained. Copy Enclosed as Annexure-VII
iii	The proponent shall submit undertaking that there shall be no acquisition of grazing/grave land for the project.	No acquisition of grazing/grave land is proposed. Undertaking of project proponent during Public Hearing is attached as Annexure-VIII
iv	The Regional Office of MoEF may conduct a site visit every year to verify compliance.	Noted
v	The Natural creek and drainage pattern of the area should not be disturbed and the cross drainage passing through cargo stack yards shall be released into settling ponds as committed.	Will be complied
vi	No housing component is permitted in CRZ area i.e. within 500m from HTL.	There is no plan for housing component in CRZ area
vii	The dredging materials shall be at depths 25m or more upto fill up of 30cm or less. Initial and final sounding records for depth of the disposal sites and GPS records shall be maintained for vessels carrying out disposal. The disposal shall be carried out in the ebb tides and shall be ensured that water quality (SS less than 500mg/l) is maintained during disposal near the vessel.	Will be complied
viii	Commitment for all the recommendations provided by OCZMA and NIO for protection of Kanika island and earmark specific amount for the conservation plan. The plan can be prepared in consultation with the OCZMA and forest department.	Kanika Conservation Plan has been submitted to Forest Department
ix	The village forest adjacent to the project site should be developed with tree plantation, in consultation with the revenue department/forest department	This shall be complied
x	As discussed during the meeting the dumping area should be at the latitude 20° 55' 5" and longitude 87° 10' 5" in the offshore region	Noted
xi	All the commitments made during the Public	Complied with



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Sr. No.	Conditions	Compliance Status
	Hearing shall be complied with	
xii	Regular air quality monitoring should be conducted at the site and all the parameters should be within limits.	Being complied
xiii	All the recommendation of the EIA/EMP & Risk Assessment and Disaster Management Report shall be complied with letter and spirit. All the mitigation measures submitted in the EIA report shall be prepared in a matrix format and the compliance for each mitigation plan shall be submitted to MoEF along with half yearly compliance report to MoEF-RO.	EMP & Action Plan is annexed at Annexure-IX
xiv	All the recommendations and conditions stipulated by Odisha Coastal Zone Management Authority (OCZMA) No. OCZMA-1/2012-13 dated 20.12.2012 shall be complied with	Will be complied
xv	The green belt shall be provided all around the periphery and storage yards	As planned in the EIA, plantation will be done in and around the port and stack yards in a area of 84 Ha
xvi	There shall be no ground water drawal within CRZ area	No ground water drawal in the CRZ area is proposed
xvii	Sewage shall be treated and the Treatment Facility shall be provided in accordance with the coastal Regulation Zone Notification, 2011. The disposal of treated water shall confirm the regulation of State Pollution Control Board.	In Phase-I we already have a STP of capacity 140 KLD. In Phase-II, another 90KLD STP is proposed. Treated water of Phase-I STP is regularly monitored and it is well within the standards (Annexure-IV).
xviii	Solid Waste Management shall be as per Municipal Solid (Management and Handling) Rules, 2000	Will be complied
xix	The project shall be executed in such a manner that there shall not be any disturbance to the fishing activity.	Noted.
xx	It shall be ensured that there is no displacement of people, houses or fishing activity as a result of the project	The land proposed for expansion is dry mud which falls in intertidal zone. There will be no displacement of people or fishing activities for the project.
xxi	No construction work other than those permitted in Coastal Regulation Zone Notification shall be carried out in Coastal Regulation Zone area.	Noted
xxii	The project proponent shall set up separate	Separate Environmental Management Cell for



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Sr. No.	Conditions	Compliance Status
	environmental management cell for effective implementation of the stipulated environmental safeguards under the supervision of a senior executive	implementation of environmental safeguards is already in place.
xxiii	The funds earmarked for environment management plan shall be included in the budget and this shall not be diverted for any other purposes.	Noted
7. General Conditions		
i	Appropriate measures must be taken while undertaking digging activities to avoid any likely degradation of water quality.	Noted
ii	Full support shall be extended to the officers of this Ministry/Regional Office at Bhubaneswar by the project proponent during inspection of the project for monitoring purposes by furnishing full details and action plan including action taken reports in respect of mitigation measures and other environmental protection activities.	Noted
iii	A six-monthly monitoring report shall need to be submitted by the project proponents to the Regional Office of this Ministry at Bhubaneswar regarding the implementation of the stipulated conditions.	Six monthly repzort is regularly submitted to Regional Office of MoEF.
iv	Ministry of Environment & Forests or any other competent authority may stipulate any additional conditions or modify the existing ones, if necessary in the interest of environment and the same shall be complied with.	Noted
v	The Ministry reserves the right to revoke this clearance if any of the conditions stipulated are not complied with the satisfaction of the Ministry.	Noted
vi	In the event of a change in project profile or change in the implementation agency, a fresh reference shall be made to the Ministry of Environment and Forests.	Noted
vii	The project proponents shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of	Noted



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Sr. No.	Conditions	Compliance Status
	start of land development work.	
viii	A copy of the clearance letter shall be marked to concerned Panchayat/local NGO, if any, from whom any suggestion/ representation has been made received while processing the proposal.	Complied with
ix	Odisha State Pollution Control Board shall display a copy of the clearance letter at the Regional Office, District Industries Center and Collector's Office/Tehsildar's office for 30 days.	Complied
8	These stipulations would be enforced among others under the provisions of Water (Prevention and Control of Pollution) Act 1974, the Air (Prevention and Control of Pollution) Act 1981, the Environment (Protection) Act, 1986, the Public Liability (Insurance) Act 1991 and EIA Notification 1994, including the amendments and rules made thereafter.	Noted
9	All other statutory clearances such as the approvals for storage of diesel from Chief Controller of Explosives, Fire Department, Civil Aviation Department, Forest Conservation Act, 1980 and Wildlife (Protection) Act, 1972 etc. shall be obtained, as applicable by project proponents from the respective competent authorities.	Noted
10	The project proponent shall advertise in at least two local Newspapers widely circulated in the region, one of which shall be in the vernacular language informing that the project has been accorded Environmental and CRZ Clearance and copies of clearance letters are available with the Odisha State Pollution Control Board and may also be seen on the website of the Ministry of Environment and Forests at http://www.envfor.nic.in . The advertisement should be made within 10 days from the date of receipt of the Clearance letter and a copy of the same should be forwarded to the Regional Office of this Ministry at Bhubaneswar.	Complied with
11	This clearance is subject to final order of the Hon'ble Supreme Court of India in the matter of Goa Foundation Vs. Union of India in Writ	Noted



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Sr. No.	Conditions	Compliance Status
	Petition (Civil) No. 460 of 2004 as may be applicable to this project.	
12	Any appeal against this clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.	Noted
13	Status of compliance to the various stipulated environmental conditions and environmental safeguards will be uploaded by the project proponent in its website	Noted
14	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zilla Parishad/Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the company by the proponent.	Complied with
15	The proponent shall upload the status of compliance of the stipulated clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of MoEF, the representative Zonal Office of CPCB and the SPCB.	Noted
16	The project proponent shall also submit six monthly reports on the status of compliance of the stipulated clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MoEF, the respective Zonal Office of CPCB and the SPCB.	Noted
17	The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of clearance conditions and shall also be sent to the respective Regional	Noted

 DPCL	Dhamra Port Company Limited	From : Oct,14 To : Mar,15
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Sr. No.	Conditions	Compliance Status
	Office of MoEF by email.	
Conditions stipulated in the amendment dated 25th March, 2015		
i	The port shall ensure that the ships under operation follow the MARPOL Convention with regard to discharge or spillage of any toxic, hazardous or polluting material like ballast water, oily water or sludge, sewage, garbage etc.	MARPOL Convention is being followed
ii	Dust screens shall be provided with height of two meter above the stack height. Water sprinkling shall be carried out for settling dust. Three layers of green belt of tall growing tress shall be provided on all sides of the stack area.	Will be complied
iii	Transportation of iron ore shall be by covered conduit/closed trucks/rails only. Closed conveyor belt shall be used for unloading the product.	Noted
iv	Water sprinklers will be provided in the area of ore storage and vehicular path/roads.	Water sprinkling is being done on regular basis to ensure dust suppression in Phase-I ore storage area and vehicular paths/roads.
v	All the recommendations of EMP and Disaster Management Plan (DMP) shall be complied with	Will be complied

ANNEXURE I – MARINE WATER QUALITY

BIOLOGICAL ANALYSIS REPORT-MARCH

A. PHYTOPLANKTON

Eight Different locations of surface water have been identified at Dhamra Port harbor. Water sample from each location (1 L approx.) was collected. Analysis results are mentioned below:

March – 2015

Sampling Location	Total Count/L	No. of Species	Chlorophyll -a (µg/L)	Major Species
Station-1	1635	09	1.4544	C.pentagonum, Skeletonema, N.longisigma, C.furca, Bacillaria
Station-2	4667	13	1.7548	C.pentagonu, Bacillaria, Podosira
Station-3	7485	18	2.4519	C.pentagonum, N.striata, C.furca
Station-4	3154	11	1.5025	C.pentagonum, Chaetoceros, Bacillaria
Station-5	986	05	0.8195	Bacillaria, Chaetoceros, Ceratium,
Station-6	1147	10	1.0890	Podosira , C.pentagonum, Bacillaria
Station-7	1765	10	1.2134	C.pentagonum, Pleurosiga,
Station-8	1024	09	1.0069	Pleurosiga, N.longisigma, Podosira

January – 2015

Sampling Location	Total Count/L	No. of Species	Chlorophyll -a (µg/L)	Major Species
Station-1	1824	12	1.3333	C.pentagonum, Skeletonema, N.longisigma
Station-2	4544	19	2.1222	C.pentagonu, Bacillaria,
Station-3	8009	21	1.0219	C.pentagonum, N.striata, C.furca
Station-4	3222	17	0.7675	C.pentagonum, Chaetoceros
Station-5	1127	08	0.7996	Bacillaria, Chaetoceros, Ceratium, Podosira
Station-6	1289	10	0.3890	Podosira , C.pentagonum,
Station-7	1333	13	0.3134	C.pentagonum, Pleurosiga,
Station-8	1865	13	1.1122	Pleurosiga, N.longisigma

November – 2014

Sampling Location	Total Count/L	No. of Species	Chlorophyll-a (µg/L)	Major Species
Station-1	1675	13	1.2111	C.pentagonum, N.longisigma
Station-2	4899	14	2.5564	C.pentagonu, Pleurosiga
Station-3	8321	19	1.3765	C.pentagonum, C.furca, Chaetoceros
Station-4	2897	19	0.5675	C.pentagonum, N.striata
Station-5	1087	10	0.8976	Pleurosiga, Chaetoceros, Ceratium, Podosira
Station-6	1390	8	0.3443	C.pentagonum,
Station-7	1436	13	0.3765	C.pentagonum, Bacillaria
Station-8	1838	13	1.2311	C.pentagonum, Skeletonema, N.longisigma

B. ZOOPLANKTON

Eight Different locations of surface water have been identified at Dhamra Port harbor. Water sample from each location (1 L approx.) was collected in Polyethylene Bottle. Analysis Results are mentioned below:

March – 2015

Sampling Location	Total Count/L	No. of Species	Major Species
Station-1	1255	13	Rotifera, Protozoa, Nematoda
Station-2	1148	11	Anostraca, Cladocera,
Station-3	2563	24	Protozoa, Nematoda, Rotifera
Station-4	2001	20	Cladocera, Nematoda
Station-5	1129	13	Crustacean Larvae, Protozoa, Nematoda
Station-6	1063	10	Ostracoda, Protozoa, Copepod, Rotifera
Station-7	994	07	Copepod, Rotifera
Station-8	1009	11	Protozoa, Rotifera, Nematoda

January – 2015

Sampling Location	Total Count/L	No. of Species	Major Species
Station-1	928	09	Rotifera, Protozoa, Nematoda
Station-2	1098	15	Rotifera, Anostraca
Station-3	2897	21	Protozoa, Nematoda, Rotifera
Station-4	2659	19	Protozoa, Cladocera, Nematoda
Station-5	1342	13	Crustacean Larvae, Protozoa, Nematoda
Station-6	1023	10	Ostracoda, Protozoa
Station-7	1677	15	Copepod, Rotifera
Station-8	1158	07	Protozoa, Rotifera, Nematoda

November – 2014

Sampling Location	Total Count/L	No. of Species	Major Species
Station-1	1012	19	Protozoa, Nematoda
Station-2	1235	09	Rotifera, Protozoa, Nematoda
Station-3	3432	15	Rotifera, Anostraca
Station-4	2222	11	Protozoa, Cladocera, Nematoda
Station-5	1654	19	Copepod, Rotifera
Station-6	911	12	Ostracoda, Protozoa
Station-7	1212	08	Protozoa, Rotifera, Nematoda
Station-8	1435	15	Crustacean Larvae, Protozoa, Nematoda, Rotifera

C. BACTERIAL ESTIMATION

For the estimation of bacterial population in water samples of Dhamra Port, samples were collected from approved sampling points in pre-sterilized bottles. The results obtained from the samples are presented in below:

March – 2015

Stations	TVC (CFU/ml)	TC (CFU/ml)	FC (CFU/ml)	EC (CFU/ml)
Station-1	280	58	3.6	BDL
Station-2	170	34	1.8	BDL
Station-3	540	70	10	BDL
Station-4	140	22	3.6	BDL
Station-5	110	14	<1.8	BDL
Station-6	240	52	4.0	BDL
Station-7	120	23	2.0	BDL
Station-8	150	34	3.7	BDL

Note: ND- Not Detected

January – 2015

Stations	TVC (CFU/ml)	TC (CFU/ml)	FC (CFU/ml)	EC (CFU/ml)
Station-1	140	25	8.1	BDL
Station-2	110	24	8.1	BDL
Station-3	180	33	12	BDL
Station-4	90	10	<1.8	BDL
Station-5	140	24	12	BDL
Station-6	160	24	12	BDL
Station-7	90	6	<1.8	BDL
Station-8	140	24	8.1	BDL

Note: ND- Not Detected

November – 2014

Stations	TVC (CFU/ml)	TC (CFU/ml)	FC (CFU/ml)	EC (CFU/ml)
Station-1	160	24	8.1	BDL
Station-2	180	25	8.1	BDL
Station-3	140	13	10	BDL
Station-4	110	10	4	BDL
Station-5	90	5.5	<1.8	BDL
Station-6	90	1.8	<1.8	BDL
Station-7	100	6	1.8	BDL
Station-8	110	1.8	4	BDL

Note: BDL- Below Detection Limit

D. OFFSHORE WATER QUALITY PARAMETERS

Water samples were collected during the month of Mar-15, Jan-15 and Nov-14 from eight different identified points of the channel and analyzed for various parameters along with phytoplankton population. Results are given below:

March, 2015

Sl. No	Parameter	Units	Testing Method	OSW-1	OSW-2	OSW-3	OSW-4	OSW-5	OSW-6	OSW-7	OSW-8
1	Turbidity	NTU	APHA 2130 B	55	60	50	35	45	40	20	40
2	pH	-	APHA 4500H+ B	8.1	8.3	8.0	8.3	7.9	8.1	8.1	8.2
3	Temperature	°C	APHA 2550 B	31	30	29	32	32	31	30	32
4	Conductivity	mS/cm	APHA 2510 B	6.58	8.44	12.54	8.24	32.54	42.15	34.52	30.15
5	Salinity	ppt	APHA 2520 B	24.55	28.46	29.76	29.23	24.89	30.01	31.25	30.11
6	Chlorinity	o/oo	Mohr's Titration	15.02	17.45	16.22	14.89	13.54	14.12	14.25	15.89
7	Dissolved Oxygen	mg/l	APHA 4500-O	7.5	6.4	7.2	7.2	7.0	7.6	7.3	7.2
8	BOD at 27° C for 3 days	mg/l	APHA 5210 B	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
9	Total Suspended Solid	mg/l	APHA 2540 D	745	550	346	452	521	459	358	412
10	Total Solid	mg/l	APHA 2540 B	3145	2372	1848	1026	1452	1847	1559	1851
11	Petroleum Hydrocarbon	mg/l	APHA 6040	1.1	0.8	1.5	1.1	0.6	0.9	0.9	1.0
12	Calcium Hardness	mg/l	APHA 3500-Ca B	680	850	890	750	920	510	820	940
13	Magnesium Hardness	mg/l	APHA 3500-Mg B	340	264	420	290	210	330	170	110
14	Nitrite as NO ₂ -	mg/l	APHA 4500 NO ₂ - B	0.23	0.12	0.09	0.10	0.12	0.34	0.15	0.10
15	Ammonia as NH ₃ -N	mg/l	APHA 4500 NH ₃ B, C	0.19	0.15	0.08	0.32	0.45	0.31	0.12	0.06
16	Phosphate as PO ₄	mg/l	APHA 4500-P D	1.88	1.01	1.32	1.15	0.84	0.57	1.14	1.05
17	Sodium as Na	mg/l	APHA 3500Na B	1130	1540	1080	1140	1040	910	910	960
18	Potassium as K	mg/l	APHA 3500K B	460	380	290	340	320	280	250	300
19	Total Chromium as Cr	mg/l	APHA 3500Cr B	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
20	Copper as Cu	mg/l	APHA 3111 B	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
21	Cadmium as Ca	mg/l	APHA 3111 B	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
22	Mercury as Hg	mg/l	APHA 3112 B	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
23	Total Dissolved Solids	mg/l	APHA 2540 C	2400	1822	1502	574	931	1388	1201	1439
24	Total Hardness as CaCO ₃	mg/l	APHA 2340 C	1020	1114	1310	1040	1130	840	990	1050
25	Nitrate as NO ₃	mg/l	APHA 4500 NO ₃ - E	0.32	0.25	0.32	0.65	0.98	0.57	0.78	0.59
26	Sulphate as SO ₄	mg/l	APHA 4500 SO ₄ 2- E	14.14	12.39	13.47	10.36	12.54	11.21	13.21	11.25
27	Calcium as Ca	mg/l	APHA 3500Ca B	272.54	340.68	356.71	300.60	368.74	204.41	328.66	376.75
28	Magnesium as Mg	mg/l	APHA 3500Mg B	82.62	64.15	102.06	70.47	51.03	80.19	41.31	26.73

January, 2015

Sl. No	Parameter	Units	Testing Method	OSW-1	OSW-2	OSW-3	OSW-4	OSW-5	OSW-6	OSW-7	OSW-8
1	Turbidity	NTU	APHA 2130 B	55	60	50	30	45	30	49	55
2	pH	-	APHA 4500H+ B	8.1	8.3	8.0	8.1	7.6	7.8	8.2	8.1
3	Temperature	°C	APHA 2550 B	31	30	29	25	25	26	25	25
4	Conductivity	mS/cm	APHA 2510 B	6.58	8.44	12.54	7.91	36.22	46.12	34.88	29.41
5	Salinity	ppt	APHA 2520 B	24.55	28.46	29.76	28.22	25.43	29.99	31.17	29.81
6	Chlorinity	o/oo	Mohr's Titration	15.02	17.45	16.22	15.87	12.76	13.09	17.13	17.45
7	Dissolved Oxygen	mg/l	APHA 4500-O	12.5	11.7	10.4	13.5	14.1	13.2	10.7	11.6
8	BOD at 27° C for 3 days	mg/l	APHA 5210 B	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
9	Total Suspended Solid	mg/l	APHA 2540 D	745	550	346	895	654	833	1187	976
10	Total Solid	mg/l	APHA 2540 B	3145	2372	1848	2334	2200	2876	2665	2977
11	Petroleum Hydrocarbon	mg/l	APHA 6040	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12	Calcium Hardness	mg/l	APHA 3500-Ca B	680	850	890	930	1080	660	960	1334
13	Magnesium Hardness	mg/l	APHA 3500-Mg B	340	264	420	310	360	220	480	666
14	Nitrite as NO ₂ -	mg/l	APHA 4500 NO ₂ - B	0.23	0.12	0.09	0.09	0.10	0.87	0.03	0.06
15	Ammonia as NH ₃ -N	mg/l	APHA 4500 NH ₃ B, C	0.19	0.15	0.08	0.16	0.25	0.29	0.09	0.09
16	Phosphate as PO ₄	mg/l	APHA 4500-P D	1.88	1.01	1.32	1.09	0.95	0.99	1.14	1.26
17	Sodium as Na	mg/l	APHA 3500Na B	1130	1540	1080	1200	1150	980	1080	1120
18	Potassium as K	mg/l	APHA 3500K B	460	380	290	400	380	330	360	370
19	Total Chromium as Cr	mg/l	APHA 3500Cr B	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
20	Copper as Cu	mg/l	APHA 3111 B	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
21	Cadmium as Ca	mg/l	APHA 3111 B	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
22	Mercury as Hg	mg/l	APHA 3112 B	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
23	Total Dissolved Solids	mg/l	APHA 2540 C	2400	1822	1502	1439	2089	2043	1478	1998
24	Total Hardness as CaCO ₃	mg/l	APHA 2340 C	1020	1114	1310	1200	1420	1020	1440	2000
25	Nitrate as NO ₃	mg/l	APHA 4500 NO ₃ - E	0.32	0.25	0.32	0.59	0.55	0.71	0.55	0.49
26	Sulphate as SO ₄	mg/l	APHA 4500 SO ₄ 2- E	14.14	12.39	13.47	12.21	11.89	14.32	12.12	13.39
27	Calcium as Ca	mg/l	APHA 3500Ca B	272.54	340.68	356.71	372.74	432.86	264.53	384.77	534.67
28	Magnesium as Mg	mg/l	APHA 3500Mg B	82.62	64.15	102.06	75.33	87.48	53.46	116.64	161.84

Note: BDL- Below Detection Limit

November, 2014

Sl. No	Parameter	Units	Testing Method	OSW-1	OSW-2	OSW-3	OSW-4	OSW-5	OSW-6	OSW-7	OSW-8
1	Turbidity	NTU	APHA 2130 B	55	60	50	30	45	30	49	55
2	pH	-	APHA 4500H+ B	8.1	8.3	8.0	8.1	7.6	7.8	8.2	8.1
3	Temperature	°C	APHA 2550 B	31	30	29	25	25	26	25	25
4	Conductivity	mS/cm	APHA 2510 B	6.58	8.44	12.54	7.91	36.22	46.12	34.88	29.41
5	Salinity	ppt	APHA 2520 B	24.55	28.46	29.76	28.22	25.43	29.99	31.17	29.81
6	Chlorinity	o/oo	Mohr's Titration	15.02	17.45	16.22	15.87	12.76	13.09	17.13	17.45
7	Dissolved Oxygen	mg/l	APHA 4500-O	12.5	11.7	10.4	13.5	14.1	13.2	10.7	11.6
8	BOD at 27° C for 3 days	mg/l	APHA 5210 B	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
9	Total Suspended Solid	mg/l	APHA 2540 D	745	550	346	895	654	833	1187	976
10	Total Solid	mg/l	APHA 2540 B	3145	2372	1848	2334	2200	2876	2665	2977
11	Petroleum Hydrocarbon	mg/l	APHA 6040	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12	Calcium Hardness	mg/l	APHA 3500-Ca B	680	850	890	930	1080	660	960	1334
13	Magnesium Hardness	mg/l	APHA 3500-Mg B	340	264	420	310	360	220	480	666
14	Nitrite as NO ₂ -	mg/l	APHA 4500 NO ₂ - B	0.23	0.12	0.09	0.09	0.10	0.87	0.03	0.06
15	Ammonia as NH ₃ -N	mg/l	APHA 4500 NH ₃ B, C	0.19	0.15	0.08	0.16	0.25	0.29	0.09	0.09
16	Phosphate as PO ₄	mg/l	APHA 4500-P D	1.88	1.01	1.32	1.09	0.95	0.99	1.14	1.26
17	Sodium as Na	mg/l	APHA 3500Na B	1130	1540	1080	1200	1150	980	1080	1120
18	Potassium as K	mg/l	APHA 3500K B	460	380	290	400	380	330	360	370
19	Total Chromium as Cr	mg/l	APHA 3500Cr B	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
20	Copper as Cu	mg/l	APHA 3111 B	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
21	Cadmium as Ca	mg/l	APHA 3111 B	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
22	Mercury as Hg	mg/l	APHA 3112 B	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
23	Total Dissolved Solids	mg/l	APHA 2540 C	2400	1822	1502	1439	2089	2043	1478	1998
24	Total Hardness as CaCO ₃	mg/l	APHA 2340 C	1020	1114	1310	1200	1420	1020	1440	2000
25	Nitrate as NO ₃	mg/l	APHA 4500 NO ₃ - E	0.32	0.25	0.32	0.59	0.55	0.71	0.55	0.49
26	Sulphate as SO ₄	mg/l	APHA 4500 SO ₄ 2- E	14.14	12.39	13.47	12.21	11.89	14.32	12.12	13.39
27	Calcium as Ca	mg/l	APHA 3500Ca B	272.54	340.68	356.71	372.74	432.86	264.53	384.77	534.67
28	Magnesium as Mg	mg/l	APHA 3500Mg B	82.62	64.15	102.06	75.33	87.48	53.46	116.64	161.84

Note: BDL- Below Detection Limit

[illegible]

November, 2014

Sl. No.	Parameter		Units	OSS-1	OSS-2	OSS-3	OSS-4	OSS-5	OSS-6	OSS-7	OSS-8
1	Particle size	Sand	%	0.07	0.49	0.13	0.13	0.40	0.13	0.07	0.15
		Silt	%	19.39	20.33	41.53	44.21	34.10	31.63	41.77	33.76
		Clay	%	80.54	79.18	58.34	55.66	65.50	68.24	58.16	66.09
2	Organic Matter		mg/Kg	4.5	2.3	2.9	3.8	2.9	4.7	3.7	4.2
3	Iron as Fe		%	4.8	4.9	5.12	4.7	4.75	4.39	5.47	4.69
4	Manganese as Mn		%	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
5	Calcium as Ca		%	0.53	0.56	0.6	0.58	0.5	0.54	0.54	0.6
6	Magnesium as Mg		%	1.14	1.12	1.15	1.24	1.12	1.13	1.15	1.29
7	Sodium as Na		%	23.76	24.2	24.1	24.52	43.7	23.2	24.45	24
8	Potassium as K		%	0.77	0.83	0.82	0.7	0.85	0.76	0.84	0.8
9	Copper as Cu		mg/Kg	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
10	Nickel as Ni		mg/Kg	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
11	Cobalt as Co		mg/Kg	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
12	Zinc as Zn		mg/Kg	< 3	< 3	< 3	< 3	< 3	< 3	< 3	< 3
13	Lead as Pb		mg/Kg	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
14	Cadmium as Cd		mg/Kg	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
15	Total Chromium as Cr		mg/Kg	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1

Note: BDL- Below Detection Limit

F. PRIMARY PRODUCTIVITY

Primary production is the synthesis and storage of organic molecules during the growth and reproduction of photosynthetic organisms. The Primary productivity values of water samples of different sampling points were recorded and given in table below:

Sl. No.	Location	March, 2015		January, 2015		November, 2014	
		GPP	NPP	GPP	NPP	GPP	NPP
1	Station- 1	1.7	0.8	1.9	0.9	1.5	0.05
2	Station -2	1.8	0.9	1.7	0.8	1.4	0.9
3	Station- 3	1.2	0.7	1.0	0.5	0.9	0.4
4	Station- 4	1.4	0.7	1.2	0.75	1.0	0.15
5	Station- 5	1.0	0.7	1.1	0.65	1.1	0.45
6	Station- 6	1.3	0.9	0.9	0.45	0.7	0.2
7	Station- 7	1.3	0.55	1.0	0.5	0.8	0.3
8	Station- 8	0.8	0.45	0.9	0.45	0.7	0.45

***GPP= Gross Primary Productivity, NPP= Net Primary Productivity**

G. BENTHIC FLORA AND FAUNA STUDY

Benthic organism refers to the group of organisms that live on or in the sediment region. The benthic community includes wide variety of organism termed as benthic flora and benthic fauna (benthic invertebrates). Benthic communities are important linkage between primary producers and higher trophic level, being as a consumer of planktons and as a food for bottom feeding fish.

G.1 Fungal & Phytobenthos Study:

For the estimation of fungal population in sediment samples of Dhamra port, samples collected from approved sampling points in pre-sterilized bottles were brought to the laboratory under ice pack and processed for estimation of fungal population following standard serial dilution method.

For the estimation of Phytobenthos approximately 50 g of wet sediment was taken. The samples were then used for phytoplankton estimation under microscope. Results are represented in the table below:

March, 2015

Sl. No.	Stations	Fungus (CFU/1g dry wt.)	Phytobenthos			
			Total Count / 50g wet sediment	No. of Species	Diversity Index	Major Species
1.	Station-1	2541	135	2	0.6459	N.longsigma,
2.	Station-2	4200	225	3	0.5718	Podosira
3.	Station-3	918	315	3	0.7868	Podosira
4.	Station-4	3377	225	3	0.5623	Podosira
5.	Station-5	2627	225	3	0.9502	Podosira
6.	Station-6	5779	135	2	0.6931	Podosira
7.	Station-7	4205	1260	6	1.2126	Podosira, N.longsigma, Ditylum
8.	Station-8	1668	315	5	1.1846	Podosira

January, 2015

Sl. No.	Stations	Fungus (CFU/1g dry wt.)	Phytobenthos			
			Total Count / 50g wet sediment	No. of Species	Diversity Index	Major Species
1.	Station-1	2510	130	2	0.6559	N.longsigma
2.	Station-2	4259	220	3	0.5688	Podosira
3.	Station-3	978	305	4	0.7158	Podosira
4.	Station-4	3241	220	3	0.5363	Podosira
5.	Station-5	2615	220	2	0.9142	Podosira
6.	Station-6	5711	140	3	0.6891	Podosira
7.	Station-7	4125	1210	7	1.1456	Podosira, N.longsigma, Ditylum
8.	Station-8	1487	310	5	1.0126	Podosira

G.2 BENTHIC FAUNA STUDY

Sediment samples for benthos study were collected from eight pre identified sampling stations using sediment grab with a sampling area of 0.06354m². Results obtained from the samples were represented in the Table-12.

March, 2015

Sl. No	Station	Name of Phylum, Class and Number of individuals encountered	Total number of species Encountered	Total Fauna per m ³
1.	Station-1	Phylum- Arthropoda Class- Malagostraca-61 Phylum- Annelida Class-Polychaeta-23	9	140
2.	Station-2	Phylum-Annelida Class-Polchaeta-10 Phylum-Arthropda Class- Copepoda-1	11	173
3.	Station-3	Phylum- Arthropoda	137	2159

		Class- Malagostraca-61 Phylum- Annelida Class-Polychaeta-23 Phylum- Mollusca Class-Gastropoda-9 Class- Pelecypoda-4		
4.	Station-4	Phylum- Annelida Class-Polychaeta-19 Phylum-Mollusca Class-Gastropoda-1 Class-Pelecypoda-2 Class-Bivalvia-1	23	362
5.	Station-5	Phylum- Anthropoda Class- Amphipoda-11 Phylum- Annelida Class- Polychaeta Phylum- Mollusca Class- Pelecypoda-3 Class- Bivalvia-17 Class- Gastropoda-1	72	1134
6.	Station-6	Phylum- Annelida Class- Polychaeta-37 Phylum- Mollusca Class- Bivalvia-3	40	630
7.	Station-7	Phylum-Annelida Class- Polychaeta-37 Phylum- Mollusca Class- Gastropoda-5 Class-Bivalvia-3 Class- Scaphopoda-3	31	488
8.	Station-8	Phylum- Annelida Class- Polychaeta-22	22	346

January, 2015

Sl. No	Station	Name of Phylum, Class and Number of individuals encountered	Total number of species Encountered	Total Fauna per m ³
1.	Station-1	Phylum- Arthropoda Class- Malagostraca-61 Phylum- Annelida Class-Polychaeta-23	11	128
2.	Station-2	Phylum-Annelida Class-Polychaeta-10 Phylum-Arthropoda Class- Copepoda-1	10	179
3.	Station-3	Phylum- Arthropoda Class- Malagostraca-61 Phylum- Annelida Class-Polychaeta-23 Phylum- Mollusca Class-Gastropoda-9 Class- Pelecypoda-4	139	2112
4.	Station-4	Phylum- Annelida	21	342

		Class-Polychaeta-19 Phylum-Mollusca Class-Gastropoda-1 Class-Pelecypoda-2 Class-Bivalvia-1		
5.	Station-5	Phylum- Anthropoda Class- Amphipoda-11 Phylum- Annelida Class- Polychaeta Phylum- Mollusca Class- Pelecypoda-3 Class- Bivalvia-17 Class- Gastropoda-1	70	1112
6.	Station-6	Phylum- Annelida Class- Polychaeta-37 Phylum- Mollusca Class- Bivalvia-3	46	640
7.	Station-7	Phylum-Annelida Class- Polychaeta-37 Phylum- Mollusca Class- Gastropoda-5 Class-Bivalvia-3 Class- Scaphopoda-3	30	464
8.	Station-8	Phylum- Annelida Class- Polychaeta-22	21	358

ANNEXURE II – DETAILS OF MOCK DRILLS

S. No.	Description of mock drills and training	Numbers of training & mock drill conducted
1	Oil spillage Drill	01
2	Emergency Rescue mock drill	01
3	Safety Induction Training	304
4	Portable fire Extinguishers training	12
5	Defensive driving training	5
6	Tool box training	1050
7	Safety Awareness Program	5



ANNEXURE III – GREEN BELT DETAILS

Year of Plantation	Species Planted	Spacing	Height	Total Area Covered	Area Still Available
2010-2015 Green Belt	Casuarina equisetifolia Acacia mangium Acacia auriculiformis Peltophorum ferrugineum Terminalia arjuna Syzygium cumini Azadirachta indica Phyllanthus emblica Pongamia pinnata Aegle marmelos Albizia lebbeck Dalbergia sissoo Simarouba glauca Haldinia cordifolia Terminalia bellirica Pterospermum acerifolium Terminalia tomentosa Swietenia mahagoni Oroxylum indicum	2mX 2.5m 2m X 2m 1m X 1m	8m	93Acre	Nil
2008-2015 Railway Corridor	Pithecellobium dulce Terminalia catappa Acacia auriculiformis Acacia mangium Delonix regia Peltophorum ferrugineum Bambusa sp. Ficus religiosa Terminalia arjuna Albizia lebbeck Thespesia sp. Syzygium cumini Azadirachta indica Dalbergia sissoo Calophyllum inophyllum	1m X 1m	9m	110Acre	Nil
2011-2015 Block plantation	Casuarina equisetifolia Acacia mangium Acacia auriculiformis Delonix regia Azadirachta indica Phyllanthus emblica Pongamia pinnata Aegle marmelos Albizia lebbeck Dalbergia sissoo Simarouba glauca Haldinia cordifolia Terminalia bellirica Pterospermum acerifolium Terminalia tomentosa Swietenia mahagoni Oroxylum indicum	2m X 2m	6m	7.8 Acre	Nil

Survival % of plantation

1 st Year	2 nd Year	3 rd Year	4 th Year	5 th Year
100%	100%	95%	85%	80%

Financial details (Oct 14-Mar 15)

Budget for plantation : Rs. 10.2 Lakh
Expenditure : Rs. 10.1 Lakh

ANNEXURE IV – STP MONITORING REPORT

24th March, 2015

Sl. No	Parameters	Unit	Testing Method	Results	
				Inlet	Outlet
1	Appearance	--	--	Turbid	Clear
2	Colour	--	APHA 2120 B,C	Blackish	Colourless
3	Odour	--	APHA 2150 B	Foul	Odourless
4	pH	--	APHA 4500H B	7.1	7.7
5	Total Suspended Solids	mg/l	APHA 2540 D	556	55
6	BOD for 3 days at 27°C	mg/l	APHA 5210 B	240	15
7	Oil & Grease	mg/l	APHA 5220 B	5.8	2

13th February, 2015

Sl. No	Parameters	Unit	Testing Method	Results	
				Inlet	Outlet
1	Appearance	--		Turbid	Clear
2	Colour	--	APHA 2120 B,C	Blackish	Colourless
3	Odour	--	APHA 2150 B	Foul	Odourless
4	pH	--	APHA 4500H B	6.0	7.2
5	Total Suspended Solids	mg/l	APHA 2540 D	502	42
6	BOD for 3 days at 27°C	mg/l	APHA 5210 B	202	21
7	Oil & Grease	mg/l	APHA 5220 B	6.1	2.2

15th January, 2015

Sl. No	Parameters	Unit	Testing Method	Results	
				Inlet	Outlet
1	Appearance	--		Turbid	Clear
2	Colour	--	APHA 2120 B,C	Blackish	Colourless
3	Odour	--	APHA 2150 B	Foul	Odourless
4	pH	--	APHA 4500H B	6.3	7.1
5	Total Suspended Solids	mg/l	APHA 2540 D	711	55
6	BOD for 3 days at 27°C	mg/l	APHA 5210 B	210	22
7	Oil & Grease	mg/l	APHA 5220 B	5.8	1.8

17th December, 2014

Sl. No	Parameters	Unit	Testing Method	Results	
				Inlet	Outlet
1	Appearance	--		Turbid	Clear
2	Colour	--	APHA 2120 B,C	Blackish	Colourless
3	Odour	--	APHA 2150 B	Foul	Odourless
4	pH	--	APHA 4500H B	7.9	7.4
5	Total Suspended Solids	mg/l	APHA 2540 D	721	63
6	BOD for 3 days at 27°C	mg/l	APHA 5210 B	250	25
7	Oil & Grease	mg/l	APHA 5220 B	6.9	2.8

13th November, 2014

Sl. No	Parameters	Unit	Testing Method	Results	
				Inlet	Outlet
1	Appearance	--		Turbid	Clear
2	Colour	--	APHA 2120 B,C	Blackish	Colourless
3	Odour	--	APHA 2150 B	Foul	Odourless
4	pH	--	APHA 4500H B	7.8	7.4
5	Total Suspended Solids	mg/l	APHA 2540 D	750	40
6	BOD for 3 days at 27°C	mg/l	APHA 5210 B	260	22
7	Oil & Grease	mg/l	APHA 5220 B	7.2	2.0

11th October, 2014

Sl. No	Parameters	Unit	Testing Method	Results	
				Inlet	Outlet
1	Appearance	--		Turbid	Clear
2	Colour	--	APHA 2120 B,C	Blackish	Colourless
3	Odour	--	APHA 2150 B	Foul	Odourless
4	pH	--	APHA 4500H B	7.7	7.2
5	Total Suspended Solids	mg/l	APHA 2540 D	742	42
6	BOD for 3 days at 27°C	mg/l	APHA 5210 B	250	18
7	Oil & Grease	mg/l	APHA 5220 B	7.8	1.6

ANNEXURE V – NOISE MONITORING REPORT

Sl. No.	Location	23-24 March, 2015		13 February, 2015		14-15 January, 2015	
		Max.	Min.	Max.	Min.	Max.	Min.
1	Near MCC - 1	70.2	61.8	71.6	61.9	73.1	69.5
2	Near Settling Pond	65.4	52.9	63.2	50.7	63.2	57.2
3	Near WTP	63.4	42.7	60.1	44.2	64.2	51.3
4	Near Community Hall	60.2	42.2	53.3	45.4	51.3	48.6
5	Near Dhamra Guest House	62.5	55.2	71.6	51.1	63.6	50.5

Note: All values in dB(A)

Sl. No.	Location	15-17 December, 2015		12-13 November, 2015		9-11 October, 2015	
		Max.	Min.	Max.	Min.	Max.	Min.
1	Near MCC - 1	77.3	65.2	75.6	68.8	73.4	69.2
2	Near Settling Pond	66.3	58.1	63.4	55.8	61.9	57.4
3	Near WTP	64.2	47.3	62.3	49.8	60.2	48.6
4	Near Community Hall	55.4	52.7	57.5	54.5	58.4	52.3
5	Near Dhamra Guest House	66.9	51.8	69.6	58.5	71.6	59.3

Note: All values in dB(A)

ANNEXURE VI – AMBIENT AIR MONITORING REPORT

23rd - 24th March, 2015

Sl. No.	Location	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	Ammonia NH ₃
1	Near MCC – 1	58.4	33.2	0.82	3.2	6.2
2	Near Settling Pond	76.2	46.5	2.8	6.8	7.6
3	Near WTP	53.4	31.2	2.2	3.2	6.8
4	Near Community Hall	65.2	38.6	2.8	3.6	7.1
5	Near Dhamra Old guest House	45.6	26.6	1.2	2.2	5.2
Testing Method		IS 5182 (Part 23)	Gravimetric Method	IS 5182 (Part 2)	IS 5182 (Part 6)	Indophenol Blue Method

Note: All values in µg/m³

14th – 17th February, 2015

Sl. No.	Location	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	Ammonia NH ₃
1	Near MCC – 1	60.9	31.3	0.81	3.2	7.0
2	Near Settling Pond	85.4	50.7	2.7	5.7	6.2
3	Near WTP	55.7	36.6	1.6	4.1	3.9
4	Near Community Hall	72.1	38.1	1.9	4.5	4.7
5	Near Dhamra Old guest House	40.1	20.7	1.1	3.9	4.1
Testing Method		IS 5182 (Part 23)	Gravimetric Method	IS 5182 (Part 2)	IS 5182 (Part 6)	Indophenol Blue Method

Note: All values in µg/m³

14th – 15th January, 2015

Sl. No.	Location	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	Ammonia NH ₃
1	Near MCC – 1	60.2	32.3	0.7	2.8	5.6
2	Near Settling Pond	82.6	48.6	3.2	6.2	8.8
3	Near WTP	64.2	35.6	2.2	4.0	6.2
4	Near Community Hall	70.3	42.8	1.9	3.9	6.2
5	Near Dhamra Old guest House	43.6	26.6	1.4	3.2	5.2
Testing Method		IS 5182 (Part 23)	Gravimetric Method	IS 5182 (Part 2)	IS 5182 (Part 6)	Indophenol Blue Method

Note: All values in µg/m³

15th - 17th December, 2014

Sl. No.	Location	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	Ammonia NH ₃
1	Near MCC – 1	63.2	31.2	0.62	3.4	4.2
2	Near Settling Pond	95.7	54.2	2.44	5.8	6.2
3	Near WTP	66.2	47.4	1.6	3.2	4.8
4	Near Community Hall	77.8	45.8	1.75	4.6	4.2
5	Near Dhamra Old guest House	41.3	35.2	1.22	2.2	5.0
Testing Method		IS 5182 (Part 23)	Gravimetric Method	IS 5182 (Part 2)	IS 5182 (Part 6)	Indophenol Blue Method

Note: All values in µg/m³

12th - 13th November, 2014

Sl. No.	Location	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	Ammonia NH ₃
1	Near MCC – 1	60.4	27.0	0.62	2.4	2.8
2	Near Settling Pond	97.1	62.7	2.44	4.62	5.2
3	Near WTP	67.9	38.2	1.28	3.2	4.6
4	Near Community Hall	70.1	46.1	1.34	3.8	4.6
5	Near Dhamra Old guest House	49.2	25.3	0.88	2.2	3.4
Testing Method		IS 5182 (Part 23)	Gravimetric Method	IS 5182 (Part 2)	IS 5182 (Part 6)	Indophenol Blue Method

Note: All values in µg/m³

9th - 11th October, 2014

Sl. No.	Location	PM ₁₀	PM _{2.5}	SO ₂	NO ₂	Ammonia NH ₃
1	Near MCC – 1	51.4	21.6	0.56	2.4	4.6
2	Near Settling Pond	94.2	55.4	2.6	5.4	4.6
3	Near WTP	56.8	28.4	0.94	3.2	3.8
4	Near Community Hall	67.4	30.2	1.92	4.8	3.2
5	Near Dhamra Old guest House	40.6	19.4	0.82	2.6	2.8
Testing Method		IS 5182 (Part 23)	Gravimetric Method	IS 5182 (Part 2)	IS 5182 (Part 6)	Indophenol Blue Method

Note: All values in µg/m³

ANNEXURE VII- PHASE-II CONSENT TO ESTABLISH



BY REGD POST

**OFFICE OF THE
STATE POLLUTION CONTROL BOARD, ODISHA**

Parivesh Bhawan, A/118, Nilakantha Nagar, Unit-VIII,
Bhubaneswar - 751 012

No. 2615 /

Ind-II-NOC - 5659

Date 19.02.13 /

OFFICE MEMORANDUM

In consideration of the application for obtaining Consent to Establish of **M/s. Dhamra Port Company Ltd.**, the State Pollution Control Board is pleased to convey its Consent to Establish under section 25 of Water (Prevention & Control of Pollution) Act, 1974 and section 21 of Air (Prevention & Control of Pollution) Act, 1981, **for expansion(Phase-II) of Dhamra Port Company Ltd. for additional cargo handling capacity of 71.3 MTPA & 1 million TEU containers cargo with following Berthing facilities and Cargo handling capacities**

Berthing facilities and cargo handling capacity	<ul style="list-style-type: none">• Three berths for dry bulk cargo<ul style="list-style-type: none">- Coal : 22.3 MTPA- Iron Ore : 12.3 MTPA- Limestone, manganese and other non-hazardous 1.74 MTPA• Four berths for break bulk cargo and general cargo : 8.0 MTPA• Two liquid / gas cargo jetties<ul style="list-style-type: none">- Crude Oil : 10.0 MTPA- POL products : 2.5 MTPA- Naptha : 2.46 MTPA- LNG : 12.0 MTPA• Two berths for container cargo (1 mission TEU)• One barge facility• One mooring facility for transloading operation
---	--

at Dosinga, Tehsil- Chandbali (plot nos & khata nos. as mentioned in application form) in the district of **Bhadrak** with the following conditions.

GENERAL CONDITIONS.

- 1. This Consent to establish is valid for the Cargo Handling capacity & containers cargo mentioned in the application form. This order is valid for five years, which means the proponent shall commence construction of the project within a period of five years from the date of issue of this order. If the proponent fails to do substantial physical progress of the project within five years then a renewal of this consent to establish shall be sought by the proponent.**
- 2. Adequate effluent treatment facilities are to be provided such that the quality of sewage and trade effluent satisfies the standards as prescribed under Environment Protection Rule, 1986 or as prescribed by the Central Pollution Control Board and/or State Pollution Control Board or otherwise stipulated in the special conditions.**
- 3. All emission from the industry as well as the ambient air quality and noise shall conform to the standards as laid down under Environment(Protection) Act, 1986 or as prescribed by Central Pollution Control Board/State Pollution Control Board or otherwise stipulated in the special conditions.**
- 4. Appropriate method of disposal of solid waste is to be adopted to avoid environmental pollution.**
- 5. The industry shall comply to the provisions of Environment Protection Act, 1986 and the rules made there under with their amendments from time to time such as the Hazardous Waste Management, Handling & Transboundary Movement Rules 2008, Hazardous Chemical Rules, /Manufacture, Storage and Import of Hazardous Chemical Rules, 1989 etc. and amendments there under. The industry shall also comply to the provisions of Public Liability Insurance Act, 1991, if applicable.**
- 6. The industry shall apply for grant of Consent to operate under section 25/26 of Water(Prevention & Control of Pollution)Act, 1974 & Air (Prevention & Control of Pollution)Act, 1981 at least 3 (three) months before the commercial production and obtain Consent to Operate from this Board.**
- 7. This consent to establish is subject to statutory and other clearances from Govt. of Odisha and/or Govt. of India, as and when applicable.**

SPECIAL CONDITIONS : -

- 1. The proponent shall obtain Environmental and CRZ clearance and construction activity for the expansion proposal shall commence after obtaining environment and CRZ clearance.**
 - 2. The proponent shall obtain forest clearance if forest land is involved in the project area.**
 - 3. The consent to establish is given for the above mentioned capacity. Any further expansion in the capacity, any change, addition or alternation of any nature has to be under taken with prior approval of the Board.**
 - 4. The impact on marine ecology during the construction phase would be largely confined to the duration over which the activities are spread. Hence, the key factor in minimising the adverse impacts would be the reduction in the construction period at the site.**
-

5. The socio-economic study especially related to fishing, infrastructure development etc. needs to be studied. Certainly, a large scale infrastructure like road network, railways, power lines etc. will develop in the vicinity of area due to this project.
 6. It is also suggested that monitoring of the marine environment during dredging and post – dredging need to be carried out and to carry out necessary corrective measures to conserve the marine environment.
 7. Vehicles hired for bringing construction material at site should be in good condition and should have valid **Pollution Under Check (PUC)** certificate and to conform to applicable air and noise emission standards and should be operated only during non-peak hours.
 8. The inter tidal and near shore areas shall be restored to their original contours once the construction activities are completed. General clean – up along the corridor used for construction related activities, adjacent inter tidal areas, creeks etc. shall be undertaken and all the discarded materials must be removed from the site and aesthetic quality of the surroundings restored, once the construction operations are completed.
 9. Details of the construction activities that are to be taken up in the CRZ area shall be submitted to the Board.
 10. An effective wastes collection, treatment and disposal mechanism should be evolved for incoming ships as well as waste generated within the port that include ballast and bilge water, solid waste, cargo waste, kitchen waste, toilet effluent, packing materials, floating debris, construction left over materials etc. A detail management plan to this effect shall be submitted to the Board.
 11. The spillage of bulk items should be minimized as these materials reach the dock waters, which sometimes accumulate in the sediments. These pollutants and metals may be mobilized by microbes or bottom disturbances and get back into the dock waters and ultimately reach water body.
 12. Effective monitoring system should be evolved to check the release of spillage of oil into the dock waters, estuary and near shore water by ship and also during transportation. Proper collection and treatment facilities should be provided for proper treatment and disposal after achieving the standards.
 13. Strict prohibition shall be practiced against the discharge of ballast water and sediment in the dock water, estuarine / near shore waters to prevent introduction of exotic microorganisms including pathogens in the local waters.
 14. The monitoring of the marine environment during dredging and post – dredging over a period shall be carried out and the corrective measures shall be taken to conserve the marine environment.
 15. Steps should be taken towards the maintenance of health of the study area, critical locations are to be carefully selected and designed as monitoring sites for periodic monitoring with respect to water quality, sediment quality and flora and fauna.
 16. Temporary colonies of work force should be established sufficiently away from the High Tide Line and proper sanitation including toilets and bathrooms are to be provided to the inhabitants to prevent abuse of the inter tidal area. Sewage and other wastes generated in these settlements should not be released to the creek. Work force should be provided with adequate fuel to discourage them from cutting nearby tree for firewood.
 17. As a first important step towards the maintenance of health of the marine ecology of the study area, critical locations are to be carefully selected and designated as monitoring sites for periodic monitoring with respect to water quality, sediment quality and flora and fauna shall be carried out.
 18. Details of drainage system in the berth and stack yard and the effluent treatment plant shall be provided in order to treat the discharge/runoff from the stack yard.
-

19. Domestic effluent generated from colony and port area shall be treated in sewage treatment plant and treated waste water shall meet prescribed standard such as **pH=6.5-8.0, SS=50mg/l, BOD=30mg/l & O&G=5mg/l** for discharge into inland surface water before reuse for plantation.
 20. The surface run off from open stack yards and mineral handling area shall be collected and adequately treated to meet prescribed standard for inland surface water before discharge to river.
 21. Leachate from storage of chemicals and other materials having toxic content if any shall be collected and treated properly. Care shall be taken to prevent the ground water contamination
 22. Water sprinkling, use of wind barriers and covered conveyer at various stages of coal handling should be practiced. Other exhaust arrangement and bag filter may be included to minimize SPM content. While loading and unloading coal and other bulk materials through grab and conveyers, the dropping height shall be minimized.
 23. Open storage yards for dust prone materials should be surrounded with green belt. Plantation and development of lawns shall be undertaken to minimize the effect of dust and noise.
 24. The pollution caused by coal / iron ore is aggravated by its dispersal with winds. Since the wind in the area is strong it is recommended that the coal / iron ore should be sprinkled with water so as to reduce the chances of the dust dispersed over a large area including the sea/river.
 25. Details of transportation and its impact during transportation of the stones and other construction material for the construction of the groynes breakwaters and other Port facilities shall be submitted to the Board.
 26. Adequate dust suppression and or extraction system shall be installed at all potential dust generating points in ore/mineral handling system to minimize fugitive emission.
 27. The collection and handling of raw materials shall be carried out in closed conveyor so that fugitive emission will be minimum.
 28. Adequate fire fighting system shall be adopted at the coal stock yard to control fire hazard if any.
 29. The noise level during pilling, transport and erection of structures etc. shall be kept to a minimum through proper lubrication, muffing and modernization of equipments.
 30. To minimize noise and vibration, heavy machinery should be properly installed and maintained. Personal protection in the form of earplugs should be made available to the workers, who are exposed to the high noise areas like workshop, dumper house, crane operation, tipper shop etc.
 31. An effective oil spillage containment and management plan should be evolved with the involvement of various agencies like Port, Pollution Control Board, Indian Coast Guard Oil Companies etc.
 32. Mechanisms should be evolved for proper monitoring, effective handling and transportation of hazardous chemicals. The mechanism for import of hazardous wastes may be strengthened with involvement of the State Pollution Control Boards.
 33. On site living rooms of workers and the gas storage should be well apart to minimize the risk of accidents. Adequate safety measures including provision of gas mask and ear plugs during cutting operation and medical treatment facilities for workers in case of accidents should be ensured. The working place shall be provided with better sanitation facilities.
 34. Sectorwise follow – up of some **'DO & DONTs'** by the ground workers should be made mandatory for better maintenance of material and machines to ensure prevention of hazards / accidents to some extent.
-

35. A comprehensive Disaster Management Plan should be formulated involving concerned agencies considering various aspects like containment of large scale oil spillage, accidental hazards arising from handling of dangerous / inflammable cargoes as well as natural calamities.
 36. 'Good House Keeping' is the most important area of concern and it should be attained by developing available human resources through conducting routine in house workshops on different activities for the betterment of the environment and welfare of the workers and organization.
 37. Comprehensive structure of "Environmental Management Cell" and the infrastructure facilities to be developed etc are to be detailed.
 38. **Present & post project land use pattern of acquired land is to be prepared and submitted to the Board for reference.**
 39. **Details of water resources for construction and operation of the project and approval from the Competent Authority for drawal of water is to be obtained and submitted to the Board.**
 40. **Spoils generated from dredging activity should be cautiously disposed off in a proper manner to avoid contamination as recommended in the EIA.**
 41. Proper management of spoil disposal shall be adopted so that handling of waste and dredging shall be kept of minimum.
 42. Maximum precaution shall be taken to minimize spreading of sediments to the surrounding area which will otherwise increase turbidity in the river.
 43. Rain water harvesting shall be followed by utilizing the rain water collected from the roof of the administrative buildings for recharging of ground water within the premises as per the concept and practices prescribed by CPCB.
 44. The civil construction shall be carried out with the fly ash bricks. If the fly ash bricks are not available locally the civil construction may be carried out with other bricks with prior intimation to the concerned Regional Office of SPC Board. A quarterly statement indicating the use of fly ash bricks during civil construction shall be submitted to the Board for record.
 45. **Road – connectivity shall be developed by the port Authority. Fly ash shall be used for road development. Agreement with power plants shall be made for lifting of ash from power plant.**
 46. The port authority shall develop a green belt along its boundary and vacant areas available inside the premises.
 47. The port authority shall take up adequate measure for routine health check up of its employees / workers and the people residing in the neighborhood of the plant free of cost.
 48. The ambient air quality including noise shall be within the prescribed norms of Environment Protection Act, 1986 for industrial area and at least 04 continuous ambient air quality monitoring stations around the port premises shall be set up to monitor Suspended particular matter, SO₂, NO_x, CO and other important parameters within at least to the distance in down wind direction and where maximum ground level concentration is anticipated. The exact location of the monitoring stations shall be finalized in consultation with the State Pollution Control Board.
 49. The ballast should be scientifically disposed.
 50. Separate application shall be made to obtain letter of authorization for disposal of all hazardous wastes under Hazardous Waste Management, Handling and Transboundary Movement Rules 2008 and amendment thereafter.
 51. All compliance shall be made with respect to manufacture, storage and import of Hazardous Chemical Rule, 1989 & amended thereafter and other provisions of the Environment Protection Act, 1986.
-

52. The sea water in the harbour area shall meet the water quality criteria for SW-IV class of sea water as given below :

- | | | | |
|----|--|---|---|
| a) | pH | : | 6.5 – 9.0 |
| b) | Dissolved oxygen | : | 3.0 mg/l or 40% of saturation value
whichever is high. |
| c) | Colour and odour | : | No visible colour or offensive odour |
| d) | Floating matter, Oil &
grease and scum including
petroleum product | : | 10 mg/l |
| e) | Fecal coliform | : | 500 MPN/100 ml |
| f) | BOD (3 days) at 27°C | : | 5 mg/l |

53. The Board may impose further conditions or modify the conditions stipulated in this order during installation and /or at the time of obtaining consent to operate and may revoke this clearance in case the stipulated conditions are not implemented and /or any information suppressed in the application form.

To,

✓ Cdr. Anil Kumar Kar,
M/s. Dhamra Port Company Ltd.,
Fortune Towers, 2nd Floor,
Chandrasekharapur,
Bhubaneswar-751023, Odisha

SSW
19/12/13
MEMBER SECRETARY

Memo No. _____/Dt _____/

Copy forwarded to :

1. The Director (Env.)-cum-Special Secretary to Govt., Forest & Env. Deptt., Govt. of Orissa
2. The District Magistrate & Collector, Bhadrak
3. District Industries Centre, Bhadrak
4. The Director, Factories & Boiler, Bhubaneswar
5. Sr. Env. Engineer (N), HSM Cell, SPC Board, Bhubaneswar
6. DFO, Bhadrak
7. Consent section, SPC Board, Bhubaneswar
8. Regional Officer, SPC Board, Balasore
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SR. ENV. ENGINEER(N)

ANNEXURE VIII UNDERTAKING OF PROPONENT FOR NO ACQUISITION OF GRAVE/GRAZING LAND

Issues raised during the meeting	Comments and commitments made by the applicant
1. Air pollution due to fugitive coal dust	1. Such fugitive coal dust did occur briefly during the winter of 2011 which was the first year of port operation. The sprinkling system was quickly augmented on the south side of the stack yard and the occurrence stopped. The same shall be followed and incorporated in the Environment Management Plan.
2. Damage to paddy crop by road side lights.	2. The road side lights have been readjusted to prevent lights falling on the paddy crop. The same shall be incorporated in the EMP.
3. Water logging	3. The area being a low lying flat land, it is subjected to water logging during heavy storms. Based on the experience of the first year the port has significantly improved the drainage system in and around the port area which is expected to prevent such occurrence in future.
4. Discharge of sewage to agriculture field	4. Although this was mentioned by one of the speakers, DPCL has not received any report or complaint about such discharges. The port has a full-fledged Sewage Treatment Plant within its own area, where the treated water from STP is meeting all standards and is being monitored regularly.
5. Green Belt Development	5. The port has already planted 1.23 lakh trees in the port area and 1.4 lakh trees along the rail road corridor in the phase I development. It is proposed to cover 84 hectares additionally in the phase II expansion. Details of green belt development has been incorporated in para 10.4.6. of EIA – EMP.
6. Employment	6. DPCL has complied with the guideline of Govt. of Odisha R & R Policy with regard to employment of the local people. Out of 1768 total employment in different category 905 are from Bhadrak District, 611 are from other districts of Odisha and 252 from outside Odisha. However during discussion with regard to restricting employment to locals DPCL agreed to abide by the Government decision with regard to definition of local area.
7. Fish drying platform	7. DPCL is committed to creating necessary facilities for fish drying after required land is made available to it by the Government/district authorities.
8. Compensation of Land to be acquired.	8. For Phase II expansion of the port government land only is to be acquired in between the High Tide Line and Low Tide Line, where neither habitation nor any private land is situated. However for the residual acquisition for Phase I, the compensation as decided by government will be paid.
9. Grave Yard and grazing field	9. There is no grave yard or grazing land in the proposed land to be acquired in between High Tide Line and Low Tide Line for phase II expansion. However DPCL will develop cremation facility in consultation with the local people in a need based manner.
10. Communication, Education & Training, Hospital, Veterinary facility, Drinking water, Sanitation and Irrigation facility	10. These facilities will be taken up in a phased manner as a part of DPCL's CSR initiative in consultation with the people and the district administration for which Rs. 50 Crores is being allocated.

The Dhamara Port Company Ltd.


Cdr. Anil Kumar Kar
Vice-President (Projects)

ANNEXURE IX -EMP and Action Plan

S. No.	Activity	Relevant Environmental components likely to be impacted	Likely Impacts in absence of Mitigation Measures	Mitigation Measures	Action Plan
Construction Phase					
1.	Development / Expansion of Port	Existing land use	Impact on nearby mangrove areas	<ul style="list-style-type: none"> Scattered mangroves identified near southern boundary of the port in phase I development were excluded by fencing and steps taken for conservation. The port boundary will be at a minimum distance of 50 m from the mangrove area on the northern side. Awareness will be created amongst port workers about the importance of mangroves and their conservation 	<ul style="list-style-type: none"> DPCL shall not disturb the excluded scattered mangroves near southern boundary DPCL has submitted the coordinates of port boundary by leaving 50 m buffer from northern side mangrove area Awareness programs for port workers will be undertaken before commencement of construction
		Impact on turtle nesting	Glare of Port Light may cause disturbance to hatchlings	<ul style="list-style-type: none"> Install specialized illumination system in line with "International Dark Sky Association (IDA)" to avoid illuminating the sky or focusing light towards sea. Mercury vapour and metal halides will not be used Sodium vapour lamps will be used 	<ul style="list-style-type: none"> DPCL has already implemented the suggested mitigation measures during Phase I and these measures shall be implemented during Phase II Expansion of port.
2.	Capital dredging and reclamation	Marine water quality	<ul style="list-style-type: none"> Increase in turbidity Change in marine water 	<ul style="list-style-type: none"> Checking of turbidity levels with baseline levels as reference during entire monitoring programme 	<ul style="list-style-type: none"> DPCL shall check the turbidity levels as a part of marine environmental monitoring as per monitoring plan.

S. No.	Activity	Relevant Environmental components likely to be impacted	Likely Impacts in absence of Mitigation Measures	Mitigation Measures	Action Plan
			quality due to aqueous discharges (oily waste, sanitary wastes) from dredgers, barges and workboats	<ul style="list-style-type: none"> • Ensure that slop tanks will be provided to barges/ workboats for collection of liquid/ solid waste • Discharge of waste into sea will be prohibited • Oil Spill control measures will be adopted 	<ul style="list-style-type: none"> • Marine environmental monitoring as per environmental monitoring programme shall be carried out • DPCL shall ensure that dredging contractor shall follow the protocol that shall be part of contract agreement. • Dolphin type jetties shall be constructed for expansion.
		Marine ecology	<ul style="list-style-type: none"> • Increase in dissolved oxygen levels • Increase in noise levels • Removal of benthic communities • Impact on species diversity and density in areas adjoining dredging site • Smothering or blanketing of sub-tidal communities 	<ul style="list-style-type: none"> • Dredge material shall be disposed only at designated disposal area • Marine environmental monitoring as per environmental monitoring programme will be carried out 	
		Changes in Sea Bed Profile	<ul style="list-style-type: none"> • Littoral drift • Alteration in sea bed 	<ul style="list-style-type: none"> • Dolphin type of berths ensures free movement of water 	

S. No.	Activity	Relevant Environmental components likely to be impacted	Likely Impacts in absence of Mitigation Measures	Mitigation Measures	Action Plan
		Impact on turtle	<ul style="list-style-type: none"> Accidental take during dredging 	<ul style="list-style-type: none"> Turtle Deflectors will be fixed on all Trailer Suction Hopper Dredgers (TSHD) during dredging Dredging will be monitored by Turtle observers on board the TSHDs. Dredging protocol to avoid entrapment of turtles will be followed 	<ul style="list-style-type: none"> DPCL has already implemented the suggested mitigation measures during Phase I and these measures shall be implemented during Phase II expansion of port.
3	Material transport and construction activities	Air Quality	<ul style="list-style-type: none"> Exhaust emissions from vehicles Dust suspension during site preparation and construction 	<ul style="list-style-type: none"> Providing adequately sized construction yard for storage of construction materials, equipment tools, earthmoving equipment, etc Provide enclosures on all sides of construction site Movement of material will be mostly during non-peak hours. On-site vehicle speeds will be controlled to reduce excessive dust suspension in air and dispersion by traffic Construction equipment and transport vehicles will be periodically washed to remove accumulated dirt Water sprinkling will be carried out to suppress fugitive dust Environmental awareness training will be imparted to personnel involved in developmental works 	<ul style="list-style-type: none"> DPCL shall ensure that construction contractor shall follow these mitigation measures and these shall be part of contract agreement. Air quality monitoring shall be carried out by DPCL as per monitoring programme.

S. No.	Activity	Relevant Environmental components likely to be impacted	Likely Impacts in absence of Mitigation Measures	Mitigation Measures	Action Plan
		Noise	<p>Noise from following activities</p> <ul style="list-style-type: none"> Vehicles transporting construction material Diesel run engines of construction machinery and dredgers Pile driving activities during construction of cargo berths 	<ul style="list-style-type: none"> Procurement of machinery / construction equipment will be done in accordance with specifications conforming to source noise levels less than 85 dB (A) Well-maintained construction equipment, which meets the regulatory standards for source noise levels, will be used Noise attenuation will be practiced for noisy equipment by employing suitable techniques such as acoustic controls, insulation and vibration dampers Personnel exposed to noise levels beyond threshold limits will be provided with protective gear like earplugs, muffs, etc. Ambient noise levels will be monitored 	<ul style="list-style-type: none"> DPCL shall ensure that construction contractor shall follow these mitigation measures and these shall be part of contract agreement. Noise levels monitoring shall be carried out by DPCL as per monitoring programme.
		-Disturbance to Natural Drainage pattern	<ul style="list-style-type: none"> Impact to natural flow of runoff due to blockage and change of drainage course 	<ul style="list-style-type: none"> Adequate storm water drainage system will be provided. If natural drainage disturbed, it will be reinstated 	<ul style="list-style-type: none"> Adequate storm water drainage system will be provided. If natural drainage disturbed, it will be reinstated
		Vegetation and Strain on existing	<ul style="list-style-type: none"> Loss of vegetation and strain on existing infrastructure 	<ul style="list-style-type: none"> There will be no loss of vegetation as the area does not contain any tree growth Temporary workers camp will be provided with sufficient infrastructure and other provisions 	<ul style="list-style-type: none"> DPCL shall provide sanitation, fuel and other facilities in construction workers camp

S. No.	Activity	Relevant Environmental components likely to be impacted	Likely Impacts in absence of Mitigation Measures	Mitigation Measures	Action Plan
		Existing Traffic	Traffic addition	<ul style="list-style-type: none"> The existing road will be strengthened to cater the increased traffic 	<ul style="list-style-type: none"> Presently, Jamujhadi Dhamra road is the main access road to Dhamra Port connecting NH-5 at Jamujhadi. It is a single lane road with earthen shoulders and needs to be strengthened. Government of Odisha plans to develop this road to two lane with paved shoulder which shall cater the increased traffic
4	Land Reclamation	Existing Water Resources like Groundwater and surface water	<ul style="list-style-type: none"> The land reclaimed is saline mud and is separated from the adjoining land mass through the salt dyke. This being an intertidal zone, there will be no impact on groundwater quality 	<ul style="list-style-type: none"> Protective bunds (salt dyke) already exists which will prevent inundation of salt water to the adjoining land. Return seawater will be channeled back to sea. 	<ul style="list-style-type: none"> DPCL shall ensure that construction contractor shall follow these mitigation measures and these shall be part of contract agreement.
5	Solid Waste Management	Soil quality	<ul style="list-style-type: none"> Impacts due to disposal of solid waste on ground 	<ul style="list-style-type: none"> Construction waste will be used within port site for filling of low lying areas. 	<ul style="list-style-type: none"> DPCL shall ensure that construction contractor shall follow these mitigation measures and these

S. No.	Activity	Relevant Environmental components likely to be impacted	Likely Impacts in absence of Mitigation Measures	Mitigation Measures	Action Plan
				<ul style="list-style-type: none"> Composted bio-degradable waste will be used as manure in greenbelt. Other recyclable wastes will be sold. Excavated soil will be stockpiled in a corner of the site within bund to avoid run off with storm water. General refuse generated on-site will be collected in waste skips and separated from construction waste. Burning of refuse at construction sites will be prohibited. 	shall be part of contract agreement.
6	Handling of hazardous wastes	Human safety and property loss	<ul style="list-style-type: none"> Accidents during construction 	<ul style="list-style-type: none"> Adequate safety measures as per OSHA standards will be adopted Construction site will be secured by fencing with controlled/limited entry points. Hazardous materials such as lubricants, paints, compressed gases, and varnishes etc., will be stored as per the prescribed/approved (MSIHC) safety norms. Medical facilities including first-aid will be available for attending to injured workers. 	<ul style="list-style-type: none"> DPCL shall ensure that construction contractor shall follow these mitigation measures and these shall be part of contract agreement. DPCL EHS team shall also supervise the safety norms followed by construction contractor.
7	Fishing	Fishermen and fishing villages	<ul style="list-style-type: none"> Impact on fishing due to Construction works 	<ul style="list-style-type: none"> Signboards will be placed at the construction sites in order to make fishermen aware of the ongoing activities 	<ul style="list-style-type: none"> DPCL shall ensure the display of signboards and marker buoys at marine side construction areas.

S. No.	Activity	Relevant Environmental components likely to be impacted	Likely Impacts in absence of Mitigation Measures	Mitigation Measures	Action Plan
				<ul style="list-style-type: none"> Necessary marker buoys will be installed Regular Interactions with the fishing communities 	<ul style="list-style-type: none"> DPCL shall have interaction with fisher folk prior to commencement of construction
Operational Phase					
1.	Cargo handling and Inland Cargo movement and storage areas	Air Quality	<ul style="list-style-type: none"> Emissions from loading/unloading equipment, DG sets, vehicular dust emissions, fugitive emissions from storage areas, spillage of cargo 	<ul style="list-style-type: none"> Use of specialized ship loaders/unloaders, wagon tippler, covered conveyors and rapid loading system through silos Dust suppression measures at loading/unloading points, wagon tippler complex, transfer points, stockyards, rapid loading system and at internal roads Periodic cleaning of cargo spills and speed regulations for vehicles engaged in transportation Greenbelt Development 	<ul style="list-style-type: none"> DPCL shall deploy specialized ship loaders/unloaders, wagon tippler, covered conveyors and rapid loading system through silos as per project development plan. DPCL shall adopt water sprinkling measures as part of dust suppression measures. Cargo spills if any during operational will be cleaned. Vehicular speed shall be maintained at minimum within port site. Greenbelt will be developed as per plan
		Noise	<ul style="list-style-type: none"> Due to equipment handling and vehicular movement Ship (un)loading operations 	<ul style="list-style-type: none"> Acoustic Barriers and Enclosures Personal Protection Equipment (PPE) Counseling and traffic regulation 	<ul style="list-style-type: none"> Acoustic Barriers and enclosures shall be implemented wherever feasible. Traffic regulation within port site shall be implemented

S. No.	Activity	Relevant Environmental components likely to be impacted	Likely Impacts in absence of Mitigation Measures	Mitigation Measures	Action Plan
		Traffic Addition	<ul style="list-style-type: none"> Cargo movement from/to port 	<ul style="list-style-type: none"> A dedicated rail corridor of 62.5 km has been developed and cargo are being transported through rail A dedicated four lane road and doubling of rail link along the rail corridor has been proposed in the Phase II 	<ul style="list-style-type: none"> DPCL shall implement four lane road and doubling of rail link along the rail corridor as per Phase II development plan.
2.	Aqueous discharges in harbour basin	Marine water quality and ecology	<ul style="list-style-type: none"> Change in marine water quality/ ecology due to discharge of ship wastes, sewage, ballast water, bilge water, solid waste etc. 	<ul style="list-style-type: none"> Ships should comply with the MARPOL convention. As a mitigation measure for accidental spillages, Oil spill contingency plan will be implemented. Carrier will be required to exchange ballast water in a deep sea location prior to arrival in the harbour Provision of waste reception facility for bilge oily water and waste oil will be provided 	<ul style="list-style-type: none"> DPCL shall provide regulations to Vessel operators DPCL pilots while boarding the ship will inspect the ballast water records of the ship to ensure compliance of ballast water convention guidelines. DPCL shall make arrangement with OPCB approved vendor for collection of bilge oily water and waste oil for further treatment and disposal.
3.	Accidental Cargo and Oil spills	Marine water quality and ecology	<ul style="list-style-type: none"> Change in marine water quality 	<ul style="list-style-type: none"> In case of any cargo spillage during transfer from/to ships, it will be attempted to recover the spills. Oil spill control equipment such as booms / barriers will be provided for containment and skimmers will be provided for recovery 	<ul style="list-style-type: none"> DPCL has developed DMP for Phase I addressing the contingency measures. The plan shall be upgraded to accommodate Phase II development

S. No.	Activity	Relevant Environmental components likely to be impacted	Likely Impacts in absence of Mitigation Measures	Mitigation Measures	Action Plan
				<ul style="list-style-type: none"> Response time for shutting down the fuelling, containment and recovery will be quicker. 	
4.	Maintenance dredging	Marine water quality	<ul style="list-style-type: none"> Increase in turbidity 	<ul style="list-style-type: none"> It will be ensured that the dumping of the maintenance dredge spoil would be uniform. Turtle deflectors on dredge head will be provided Environmental Monitoring Programme comprising of monitoring of marine water quality, marine sediment quality and marine ecology will be initiated one week prior to commencement of dredging and will be continued during the dredging period. 	<ul style="list-style-type: none"> DPCL shall check the turbidity levels as a part of marine environmental monitoring as per monitoring plan. Marine environmental monitoring as per environmental monitoring programme shall be carried out DPCL shall ensure that dredging contractor shall follow the instructions and include it as a condition of contract agreement.
		Marine Ecology	<ul style="list-style-type: none"> Due to decrease in DO levels which effect marine ecology and disturbance to benthic communities. 		
5.	Water Supply	Water resources	<ul style="list-style-type: none"> Impact on existing water resources 	<ul style="list-style-type: none"> Government of Odisha has accorded permission for water intake of 5 MLD from Matai River which can cater requirement for port expansion. Water Treatment Plant (WTP) of 5 MLD and water distribution system developed for Phase I. Distribution system shall be extended to cater to the requirement of expansion project. 	<ul style="list-style-type: none"> Water Treatment Plant (WTP) of 5 MLD was developed which will cater the requirements of Phase II Distribution system shall be extended to cater to the requirement of expansion project

S. No.	Activity	Relevant Environmental components likely to be impacted	Likely Impacts in absence of Mitigation Measures	Mitigation Measures	Action Plan
6.	Wastewater Discharge	Water Quality	<ul style="list-style-type: none"> Impact due to discharge of runoff from stock piles and disposal of untreated sewage 	<ul style="list-style-type: none"> Collection of runoff from stock piles in settling ponds Sewage treatment plant will be provided Treated wastewater from STP will be used for irrigating the greenbelt 	<ul style="list-style-type: none"> Settling ponds shall be constructed for collection of stockyard runoff STP of 90 KLD shall be developed to cater Phase II development
7.	Solid Waste Management	Groundwater and Soil quality	<ul style="list-style-type: none"> Impact due to disposal of untreated solid waste on ground 	<ul style="list-style-type: none"> Composted bio-degradable waste will be used as manure in greenbelt. Other recyclable wastes will be sold. 	<ul style="list-style-type: none"> DPCL is planning to develop compost yard to handle the biodegradable waste in Phase I which shall be extended for Phase II development.
8.	Cargo Movement	Existing infrastructure	<ul style="list-style-type: none"> Increase in Traffic Addition 	<ul style="list-style-type: none"> A dedicated rail corridor of 62.5 km has been developed and cargo are being transported through rail A dedicated four lane road and doubling of rail link along the rail corridor has been proposed in the Phase II 	<ul style="list-style-type: none"> DPCL shall implement four lane road and doubling of rail link along the rail corridor as per phase II development plan.

S. No.	Activity	Relevant Environmental components likely to be impacted	Likely Impacts in absence of Mitigation Measures	Mitigation Measures	Action Plan
9.	Handling of hazardous materials	Accidents due to products handling	<ul style="list-style-type: none"> Human life and loss of property 	<ul style="list-style-type: none"> Hazardous materials will be stored as per the prescribed/approved (MSIHC) safety norms. Operation areas will be secured by fencing with controlled/limited entry points. Hazardous wastes (used oil & used battery) will be sent to OPCB approved recyclers. Medical facilities including first aid will be available for attending to injured workers. Regular check of pipelines and tank farms Emergency alarms, provision of fire hydrant system and fire station. Effective Disaster Management Plan (DMP) which covers onsite and offsite emergency plans 	<ul style="list-style-type: none"> DPCL EHS team shall ensure to implement the mitigation measures.
10.	Fishing activity	Fishermen livelihood	<ul style="list-style-type: none"> Impact on fishing due to vessel movement 	<ul style="list-style-type: none"> Creation of awareness among the fisher folk about orientation of approach channel 	<ul style="list-style-type: none"> DPCL is having regular interaction with fishermen about crossing of approach channel and vessel movement. These will continue during phase II operational activities