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DPCL/ENV/MOEFCC/2017-20 16.05.2017

To
The Additional Principal Chief Conservator of Forests (C),
Ministry of Environment, Forest and Climate Change,
Eastern Regional Office (EZ),
A/3, Chandrasekharpur,
Bhubaneswar- 751023
E-mail: roez.bsr-mef@nic.in

Dear Sir,

Sub : Half yearly Compliance report of Environment and CRZ Clearance for expansion of Dhamra Port at Dhamra, Bhadrak District of Odisha by M/s Dhamra Port Company Limited for the period of **October 2016 – March 2017**

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 letters for the said subject matter, please find enclosed herewith the compliance to the conditions stipulated in the letters for the period of October 2016 to March 2017 in both hard & soft copy for your kind reference.

Thanking you,
Yours Sincerely,

(Subrat Tripathy)
Chief Executive Officer

16/05/17.

Encl: As above
Copy to:

1) The Director (Monitoring –IA-III 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, Parivesh Bhawan, A/118, Unit 8, Nilakantha Nagar, Nayapalli, Bhubneswar-751012
4) The Regional Officer, State Pollution Control Board, Odisha, 160, Sahadev Khunta, Balasore – 756001
5) Member Secretary OCZMA & Director, Env-cum-Spl. Secretary to Govt., Forest & Env Dept., Govt. of Odisha, Plot No 108, Surya Nagar, Unit VII, Bhubaneswar-751003.

The Dhamra Port Company Limited

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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	All Construction design/drawings relating to construction activities must have the approval of the concerned Government Departments/ Agencies of the State Government of Odisha. 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.	Complied. The Project is under Operation phase. Groundwater was not drawn during construction activities.
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.	Complied. The Project is under Operation phase
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.	Complied. The capital dredging has been completed in 2010-11. National Institute of Ocean Technology, Chennai is carrying out shoreline study for Dhamra and Kanika sand. Marine water quality and productivity is being monitored by MoEF & CC accredited laboratory, there are no adverse impact on water quality and marine productivity in the vicinity. The details of Marine Water quality assessment report for the period Oct 2016 – Mar 2017 is enclosed as **Annexure I.**
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.	Complied.
v	To meet with any emergency situation, adequate foam containers should be kept ready with supporting firefighting system and water pipeline.	Complied. DPCL has a fire fighting team consisting of 32 crews including 1 officer, 1 supervisor, equipped with two fire tenders having water storage capacity of 4500 L and foam storage capacity of 500 L for each, and [ABC & CO2 (55 nos) & Foam (1 no)] type of extinguishers. List of types and quantity of fire extinguishers is attached as **Annexure-II**
vi	Staff posted in sensitive areas should be trained	Complied.

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	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 for the period Oct 2016 – Mar 2017 is enclosed as **Annexure III**
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	Complied. A large nursery of multi species has been established for greenbelt development. Site is undergoing expansion inline to Revised Master Plan, Greenbelt development shall be developed inline to this. Plantation has been done along the both edges of the 62.5 km rail corridor. Please refer **Annexure IV** for photographs of the same.
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.	Complied. DPCL has two nos. of Sewage Treatment Plant (STP) to handle 140 KLD & 15 KLD of sewage generated at port site & township. The treated water is being used for horticulture. The monitoring reports for the period Oct 2016 – Mar 2017 are enclosed as **Annexure I** 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 authorities. If need be, ear plugs and ear muffs should be provided to the workers in the project area	Complied. Suitable personal protective equipment's (PPEs) (Ear muffs & ear plugs) are kept mandatory for workers in noise prone areas. Noise monitoring at site is being done by a MoEF & CC accredited agency and levels have been found below the standards. The reports for the period Oct 2016 – March 2017 are enclosed as **Annexure I.**
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,	Complied. All the treated waste water from STP is being used for horticulture purpose. Monitoring is being carried out by MoEF&CC recongnised laboratory.

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	Bhubaneswar	monitoring reports for the period Oct 2016 – Mar 2017 are enclosed as **Annexure I.** All results are well within the prescribed standards. We have colour coded bins for segregating different category of solid waste. Biodegradable wastes are used for compost preparation. Recyclable wastes are handed over to authorized recyclers. Inert wastes are used for filling low laying areas. Ambient Air Quality Monitoring is also being carried out by MoEF & CC accredited agency, Reports for the period Oct 2016 – Mar 2017 is enclosed as **Annexure I.** All emissions are well with the prescribed standards.
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.	Complied. DPCL has a well-structured Environmental Management Cell, staffed with qualified man power at site supported by team at Head Office in Ahmedabad. Environment monitoring is being carried out by MoEF & CC accredited agency, the monitoring results for the period Oct 2016 – Mar 2017 (enclosed in **Annexures I**) are well within the permissible limits. Monitoring data is being submitted along with half yearly compliance reports to the Eastern Regional Office, MoEF & CC, MoEF & CC, New Delhi, CPCB-Kolkata and Odisha Pollution Control Board. Our Last Half Yearly compliance report was submitted on 29th Nov 2016.
xii	Necessary leakage detection devices with early warning system must be provided at strategic locations.	Not applicable at present. As presently 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 firefighting system	Complied. 6 stand by DG Sets, capacity ranging from 62.5 KVA to 200 KVA have been provided for emergency backups & uninterrupted power supply to the water supply system and firefighting system.
xiv	Third party inspection should be ensured during	Complied.

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	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 & CC, Bhubaneswar, MoEF & CC-New Delhi, CPCB-Kolkata, Odisha Pollution Control Board and Odisha Coastal Zone Management Authority. The last report was submitted on 29th November 2016. Officials from MoEF & CC Regional Office and OPCB are regularly inspecting the project site. Safeguard measures as advised by inspection team are taken into consideration for implementation.
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.	Complied. Full support is being extended to the Eastern Regional Office of Ministry of Environment & Forests & Climate Change, Bhubaneswar during their visit. Details required are being submitted to the Authorities.
xvi	Adequate funding provisions, year-wise and item-wise, must be made for implementation of the above mentioned safeguard measures.	Complied. A sum of INR 3.14 Crores has been spent for FY 2016-17. Cost break up is enclosed as **Annexure-V.**
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 severe cyclonic storms while going ahead with their project.	Complied. 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.
1	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 implementing the above suggested safeguard measures.	Complied and noted.
2	The Ministry reserves the right to revoke clearance, if the conditions stipulated as above	Point noted

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	are not implemented to the satisfaction of the Ministry	
3	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

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	Complied. The Ballast Water Management has been followed so as to avoid transfer of any harmful exotic organisms or pathogens to the coastal/marine water. DPCL ensure that the ships visiting at port are in compliance to guidelines issued by Ministry of Shipping 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	Complied. Monitoring of marine water and sediment (biogeochemical parameters including phytoplankton community structure) is being carried out by MoEF & CC accredited agency. Results of the same for the period Oct 2016–Mar 2017 are enclosed as **Annexure – I**
3	One of the objectives of the CRZ guidelines is to ensure the livelihood of the fishermen community vis-à-vis developmental acclivities. 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	Complied. INCOIS display board has been installed at fishing harbor, Dhamra. The same is in working condition. (Please refer **Annexure VI** for Photograph of INCOIS displayed) DPCL provides support for repair services as and when required.

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**
	the fishing zone due to operation of the Port.	
4	The use of unclaimed/salvaged coal for local people may be explored.	Complied. 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 column.	Complied. DPCL ensures that the dust/fine grained particles present on jetty are cleaned on regular basis both by mechanically and manually so to avoid spillage into the marine/coastal waters.
6	The mangrove vegetation around the port should be conserved both during construction and operation phase.	Complied. The mangroves around the port are conserved and awareness has been created among the port employees and workers regarding importance of mangrove and its conservation needs.
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.	Complied. NIOT Chennai, has carried out shoreline change study alongside Dhamra and Kanika sand shore. NIOT, Chennai has also carried out study on impact of dredging and dumping of sediment on Dhamra Shoreline Change and on ecologically sensitive areas. There are no significant impacts observed on the nearby ecologically sensitive areas. Report enclosed as **Annexure VII**
8	Provision shall be made for treatment/recycle of toxic contents, such as used oil, fertilizers (if any) and similar other toxic materials	Complied. DPCL has made an agreement with OSPCB approved vendor for collection of used oil and vendor shall take care of treatment and disposal at their premises as per OSPCB norms. Details of the same are submitted to OSPCB as a part of Hazardous waste return (Form IV) on regular basis.
9	Environmental Impact Assessment (EIA) study of	Complied.

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		
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	dredging material should be done on a regular basis with special emphasis to turbidity.	Offshore water quality monitoring is being done on regular basis and the results for the period Oct 2016 – Mar 2017 can be referred at **Annexure-I.**
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.	Complied. Through the ground improvement technique, the dredge material is used for level raising/ reclamation of back up area as per approved plan. Excess material, if any is disposed to approved location in the sea. Regular monitoring is being carried out to assess the impact of the activity on coastal ecosystem. No impact has been observed on the coastal ecosystems.
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	Complied. Draft conservation plan, prepared by DPCL, has been submitted to the Principal Secretary, Forest and Environment Department and Chairman, OCZMA for approval.
12	Mangrove plantation around the port will be protected by the DPCL under the supervision of the Forest Department.	Complied. Mangrove plantations are done by the forest department wherever feasible.
13	Shoreline Changes in and around Kanika Island shall be monitored on monthly basis	Complied. NIOT Chennai, has carried out shoreline change study at Dhamra and Kanika sand shore. Report enclosed as **Annexure VII.**

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	Complied. Consent to Establish has been obtained. Copy submitted vide our compliance letter dated 20th November 2015. Copy enclosed as **Annexure VIII.**
ii	Prior clearance from National Board of Wildlife shall be obtained	The project boundary falls outside the notified Eco sensitive zone of Bhitakranika and Gahirmatha Sanctuary.
iii	The proponent shall submit undertaking that	Complied.

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**
	there shall be no acquisition of grazing/grave land for the project.	
iv	The Regional Office of MoEF may conduct a site visit every year to verify compliance.	Point 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.	Complied. Drainage pattern is being maintained. The creeks are trained to ensure proper drainage both from outside and inside. Runoff from the cargo stack yard is diverted to settling pond.
vi	No housing component is permitted in CRZ area i.e. within 500m from HTL.	Complied. No housing constructed in CRZ area.
vii	The dredging materials shall be at depths 25m or more up to 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.	Complied. Through the ground improvement technique, the dredge material is used for level raising/ reclamation of back up area as per approved plan. Excess material, if any is disposed to approved location in the sea.
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.	Complied. Draft conservation plan prepared by DPCL has been submitted to the Principal Secretary, Forest and Environment Department and Chairman, OCZMA for approval.
ix	The village forest adjacent to the project site should be developed with tree plantation, in consultation with the revenue department/forest department	Point Noted.
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	Point noted.
xi	All the commitments made during the Public Hearing shall be complied with.	Commitments made during Public hearing are being complied.
xii	Regular air quality monitoring should be conducted at the site and all the parameters should be within limits.	Complied. Air quality monitoring is done by a MoEF&CC accredited agency and all parameters are well within standards Results of the monitoring carried out during the period Oct 2016 – Mar 2016 are enclosed as

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**
		Annexure –I
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.	Complied. Compliance towards mitigation plan are enclosed as **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	Complied. Compliance report of the OCZMA recommendation is also enclosed.
xv	The green belt shall be provided all around the periphery and storage yards.	Complied. Site is undergoing expansion inline to Revised Master Plan, Greenbelt plantation shall be carried out inline to this. Plantation has been done along side both the edges of the 62.5 km rail corridor. Please refer **Annexure IV** for photographs of the same.
xvi	There shall be no ground water drawal within CRZ area	Complied. No ground water withdrawal in the CRZ area is done
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.	Complied. Domestic waste water generated at site is being treated in STP. Treated water of STP is regularly monitored and is utilized for horticulture. The monitoring report for the period Oct 2016 – Mar 2017 is enclosed as **Annexure-I**.
xviii	Solid Waste Management shall be as per Municipal Solid (Management and Handling) Rules, 2000	Complied. We have colour coded bins for segregating different category of solid waste. Biodegradable wastes are used for compost preparation. Recyclable wastes are handed over to authorized recyclers.
xix	The project shall be executed in such a manner that there shall not be any disturbance to the fishing activity.	Point noted.
xx	It shall be ensured that there is no displacement of people, houses or fishing activity as a result of	Complied. No displacement of people or fishing activities is

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Sr. No.	**Conditions**	**Compliance Status**
	the project.	envisaged.
xxi	No construction work other than those permitted in Coastal Regulation Zone Notification shall be carried out in Coastal Regulation Zone area.	Complied. Construction work is being carried out inline to CRZ notification 2011, amended till date and Environment / CRZ clearances obtained for the project.
xxii	The project proponent shall set up separate environmental management cell for effective implementation of the stipulated environmental safeguards under the supervision of a senior executive	Complied. DPCL has a well-structured Environmental Management Cell, staffed with qualified personnel at site supported by team at Head Office in Ahmedabad.
xxiii	The funds earmarked for environment management plan shall be included in the budget and this shall not be diverted for any other purposes.	Complied. A sum of INR 3.14 Crores has been spent for FY 2016-17. Details of the same are annexed in **Annexure-V.**
7. General Conditions		
i	Appropriate measures must be taken while undertaking digging activities to avoid any likely degradation of water quality.	Complied
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.	Complied. Full support is being extended to the Eastern Regional Office of Ministry of Environment, Forests & Climate Change, Bhubaneswar during their visit. Details required are being submitted to the Authorities.
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.	Complied. Six monthly compliance report is regularly submitted to Regional Office of MoEF & CC, Bhubaneswar. Last compliance report for April 2016 – September 2016 period was submitted vide our letter dated 28.11.2016.
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.	Point 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	Point noted

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**
	Ministry.	
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.	No change in the project profile or implementing agency of the development at Dhamra Port. However DPCL has now proposed Revised Master Plan for Dhamra Port for which, necessary procedure inline to the EIA notification 2006, has already been initiated.
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 start of land development work.	Date of last financial closure was on 30th September, 2014. The same has been submitted vide our earlier compliance submitted to RO-MOEF&CC, Bhubaneshwar
viii	A copy of the clearance letter shall be marked to concern Panchayat/local NGO, if any, from whom any suggestion/ representation has been made received while processing the proposal.	Complied. The copy is enclosed as **Annexure-X.**
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.	-
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.	Point 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.	Complied. License on storage of explosives from PESO and NOC from Fire Dept. is enclosed as **Annexure-XI.**
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	Complied. Advertisement copies are attached as **Annexure-XII.**

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**
	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.	
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 Petition (Civil) No. 460 of 2004 as may be applicable to this project.	Point noted
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.	Point noted
13	Status of compliance to the various stipulated environmental conditions and environmental safeguards will be uploaded by the project proponent in its website	Complied. Compliance report for each period is uploaded on the company's website (http://www.adaniports.com/ports-downloads) and the same is being updated twice in a year.
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. The copy is enclosed as **Annexure-X.**
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.	Complied. Compliance report for each period is uploaded on the company's website and the same is being updated twice in a year. Results of environmental monitoring are enclosed as **Annexures I** to the compliance report. Hard copy as well as soft copy of the same are submitted to all concerned authorities.

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**
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.	Complied. Compliance report for each period is uploaded on the company's website and the same is being updated twice in a year. Results of environmental monitoring are enclosed as **Annexures I** to the compliance report. Hard copy as well as soft copy (Email) of the same are submitted to all concerned authorities.
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 Office of MoEF by email.	Complied. Environmental statement for FY 2015-16 was submitted to OSPCB with a copy to the Regional Office of MoEF & CC vide our letter no DPCL/ENV-12/01/16 dated 15th Sep 2016. Copy of the same is enclosed as **Annexure – XIII.** All Submitted Environment Statements as well as Half Yearly Compliance Reports are available on our company website and can be viewed publicly
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.	Complied. 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.	Complied. Site is undergoing expansion inline to Revised Master Plan. Stack yards expansions are planned accordingly. Detailed engineering design for dust screen will be prepared inline to Site condition and further be implemented. Water sprinkling is being done on regular basis to ensure dust suppression in cargo storage area and vehicular paths/roads. Greenbelt development shall also be developed inline Revised Master Plan.
iii	Transportation of iron ore shall be by covered conduit/closed trucks/rails only. Closed conveyor belt shall be used for unloading the product.	Complied. Transportation of Coal/Iron ore is done in covered conveyor belt system
iv	Water sprinklers will be provided in the area of ore storage and vehicular path/roads.	Complied. Water sprinkling is being done on regular basis to ensure dust suppression in coal storage area and

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**
		vehicular paths/roads.
v	All the recommendations of EMP and Disaster Management Plan (DMP) shall be complied with	Complied. Compliance of EMP is enclosed as **Annexure IX.**

LIST OF ANNEXURES

S. No	Annexure Number	Details
1	Annexure-I	Environment Monitoring Report
2	Annexure – II	Types and quantity of Fire Extinguishers
3	Annexure-III	Details of Mock Drills
4	Annexure-IV	Green Belt Details
5	Annexure-V	Cost Break up of Environment Expenditure
6	Annexure-VI	INCOIS Board
7	Annexure-VII	Shoreline study Report
8	Annexure-VIII	MoEFCC intimation letter
9	Annexure-IX	EMP & Action Plan Compliance
10	Annexure-X	Environmental Clearance copy to Zillaparisad
11	Annexure- XI	License and NOC from Fire Dept.
12	Annexure-XII	Advertisement in Local Newspapers intimating grant of Environmental & CRZ Clearance
13	Annexure-XIII	Environment Statement for FY 2015-16

Annexure-I

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Reference no. - CEMC/DPL/051116/A **Issued Date-05.11.16**

AMBIENT AIR QUALITY MONITORING TEST REPORT

Client Name & Address	**Dhamra Port Ltd., Bhadrak**
Work Order No.	**5700178552**
Reference No.	**CEMC-05112016**
Nature of Sampling	**Ambient Air Sample**
Sampling Location	**Near MCC-1**
Sampling By	**Mr. Biswaranjan Behera**
Sampling Duration	**01.10.2016 to 30.10.2016**

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NOx ($\mu g/m^3$)	CO (mg/m^3)	NH_3 ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	BaP (ng/m^3)
04.10.2016	53.4	25.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
08.10.2016	50.6	25.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.10.2016	52.9	23.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.10.2016	56.8	26.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.10.2016	60.2	31.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.10.2016	58.8	31.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.10.2016	54.5	30.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.10.2016	52.8	28.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.10.2016	55.0	27.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	**100**	**60**	**80**	**80**	**4**	**400**	**100**	**1.0**	**20**	**6**	**5**	**1**
Methods of Analysis	**IS: 5182 (Part-23)**	**Gravimetric Method as per CPCB method**	**IS: 5182 (Part-2)**	**IS: 5182 (Part-6)**	**IS: 5182 (Part-10)**	**Indophenol Blue Method followed by CPCB**	**IS: 5182 (Part-9)**	**IS: 5182 (Part-22)**	**As per CPCB method followed by AAS**	**As per CPCB method followed by AAS**	**IS: 5182 (Part-11)**	**IS: 5182 (Part-12)**

N.B- *NAAQ (National Ambient Air Quality Standard as per 18th Nov,2009Gatt. Notification)
BDL Value (NO_X<9.0 $\mu g/m^3$,SO_2<4.0 $\mu g/m^3$,NH_3<20 $\mu g/m^3$, As<0.44 ng/m^3,Ni<0.6 ng/m^3,Pb<0.06 $\mu g/m^3$,CO<0.1 mg/m^3, Benzo(a)pyrene<1 ng/m^3), Benzene <5 $\mu g/m^3$)

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Ms. M. Rout, Msc. Env. Sc
Govt. ANALYST
Authorized Signatory
(GAZETTE No-1332, Dt-03-06-2016)

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Reference no. - CEMC/DPL/051116/A **Issued Date-05.11.16**

AMBIENT AIR QUALITY MONITORING TEST REPORT

Client Name & Address	Dhamra Port Ltd., Bhadrak
Work Order No.	5700178552
Reference No.	CEMC-05112016
Nature of Sampling	Ambient Air Sample
Sampling Location	Near Settling Pond
Sampling By	Mr. Biswaranjan Behera
Sampling Date	01.10.2016 to 30.10.2016

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NOx ($\mu g/m^3$)	CO (mg/m^3)	NH_3 ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	BaP (ng/m^3)
04.10.2016	98.8	44.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
08.10.2016	98.1	45.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.10.2016	98.3	47.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.10.2016	98.6	58.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.10.2016	99.2	58.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.10.2016	98.5	57.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.10.2016	99.6	58.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.10.2016	95.8	52.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.10.2016	98.2	53.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	**100**	**60**	**80**	**80**	**4**	**400**	**100**	**1.0**	**20**	**6**	**5**	**1**
Methods of Analysis	**IS: 5182 (Part-23)**	**Gravimetric Method as per CPCB method**	**IS: 5182 (Part-2)**	**IS: 5182 (Part-6)**	**IS: 5182 (Part-10)**	**Indophenol Blue Method followed by CPCB**	**IS: 5182 (Part-9)**	**IS: 5182 (Part-22)**	**As per CPCB method followed by AAS**	**As per CPCB method followed by AAS**	**IS: 5182 (Part-11)**	**IS: 5182 (Part-12)**

N.B- *NAAQ (National Ambient Air Quality Standard as per 18th Nov,2009Gatt. Notification)
BDL Value (NO_X<9.0 $\mu g/m^3$,SO_2<4.0 $\mu g/m^3$,NH_3<20 $\mu g/m^3$, As<0.44 ng/m^3,Ni<0.6 ng/m^3,Pb<0.06 $\mu g/m^3$,CO<0.1 mg/m^3, Benzo(a)pyrene<1 ng/m^3) , Benzene <5 $\mu g/m^3$)

Ms. M. Rout, Msc. Env. Sc
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Reference no. - CEMC/DPL/051116/A **Issued Date-05.11.16**

AMBIENT AIR QUALITY MONITORING TEST REPORT

Client Name & Address	**Dhamra Port Ltd.,Bhadrak**
Work Order No.	**5700178552**
Reference No.	**CEMC-05112016**
Nature of Sampling	**Ambient Air Sample**
Sampling Location	**Near WTP**
Sampling By	**Mr. Biswaranjan Behera**
Sampling Date	**01.10.2016 to 30.10.2016**

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NOx ($\mu g/m^3$)	CO (mg/m^3)	NH_3 ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	BaP (ng/m^3)
03.10.2016	45.1	17.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.10.2016	48.6	25.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12.10.2016	44.6	26.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.10.2016	47.3	24.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.10.2016	50.6	26.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.10.2016	49.4	23.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.10.2016	48.6	23.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.10.2016	45.8	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.10.2016	44.9	22.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	**100**	**60**	**80**	**80**	**4**	**400**	**100**	**1.0**	**20**	**6**	**5**	**1**
Methods of Analysis	**IS: 5182 (Part-23)**	**Gravimetric Method as per CPCB method**	**IS: 5182 (Part-2)**	**IS: 5182 (Part-6)**	**IS: 5182 (Part-10)**	**Indophenol Blue Method followed by CPCB**	**IS: 5182 (Part-9)**	**IS: 5182 (Part-22)**	**As per CPCB method followed by AAS**	**As per CPCB method followed by AAS**	**IS: 5182 (Part-11)**	**IS: 5182 (Part-12)**

N.B- *NAAQ (National Ambient Air Quality Standard as per 18th Nov,2009Gatt. Notification)
BDL Value (NO_x<9.0 $\mu g/m^3$,SO_2<4.0 $\mu g/m^3$,NH_3<20 $\mu g/m^3$, As<0.44 ng/m^3,Ni<0.6 ng/m^3,Pb<0.06 $\mu g/m^3$,CO<0.1 mg/m^3, Benzo(a)pyrene<1 ng/m^3) , Benzene <5 $\mu g/m^3$)

Ms. M. Rout, Msc, Env. Sc
Authorized Signatory
(GAZETTE NO-1357, Dt-03-06-2016)

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Reference no. - CEMC/DPL/051116/A **Issued Date-05.11.16**

AMBIENT AIR QUALITY MONITORING TEST REPORT

Client Name & Address	Dhamra Port Ltd.,Bhadrak
Work Order No.	5700178552
Reference No.	CEMC-05112016
Nature of Sampling	Ambient Air Sample
Sampling Location	Near Community Hall
Sampling By	Mr. Biswaranjan Behera
Sampling Date	01.10.2016 to 30.10.2016

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NOx ($\mu g/m^3$)	CO (mg/m^3)	NH_3 ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	BaP (ng/m^3)
03.10.2016	52.6	26.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.10.2016	52.6	23.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12.10.2016	57.5	27.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.10.2016	55.3	23.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.10.2016	62.4	27.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.10.2016	57.8	28.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.10.2016	56.3	26.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.10.2016	56.8	25.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.10.2016	55.5	24.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	100	60	80	80	4	400	100	1.0	20	6	5	1
Methods of Analysis	IS: 5182 (Part-23)	Gravimetric Method as per CPCB method	IS: 5182 (Part-2)	IS: 5182 (Part-6)	IS: 5182 (Part-10)	Indophenol Blue Method followed by CPCB	IS: 5182 (Part-9)	IS: 5182 (Part-22)	As per CPCB method followed by AAS	As per CPCB method followed by AAS	IS: 5182 (Part-11)	IS: 5182 (Part-12)

N.B- *NAAQ (National Ambient Air Quality Standard as per 18th Nov,2009Gatt. Notification)
BDL Value (NO_X<9.0 $\mu g/m^3$,SO_2<4.0 $\mu g/m^3$,NH_3<20 $\mu g/m^3$, As<0.44 ng/m^3,Ni<0.6 ng/m^3,Pb<0.06 $\mu g/m^3$,CO<0.1 mg/m^3, Benzo(a)pyrene<1 ng/m^3) , Benzene <5 $\mu g/m^3$)

Ms. M. Rout, Msc. Env. Sc
Govt. Analyst
(GAZETTE NO-1397, Dt-03-06-2016)
Authorized Signatory

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Reference no. - CEMC/DPL/051116/A **Issued Date-05.11.16**

AMBIENT AIR QUALITY MONITORING TEST REPORT

Client Name & Address	**Dhamra Port Ltd.,Bhadrak**
Work Order No.	**5700178552**
Reference No.	**CEMC-05112016**
Nature of Sampling	**Ambient Air Sample**
Sampling Location	**Near Dhamra Old guest house**
Sampling By	**Mr. Biswaranjan Behera**
Sampling Date	**01.10.2016 to 30.10.2016**

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NOx ($\mu g/m^3$)	CO (mg/m^3)	NH_3 ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	BaP (ng/m^3)
03.10.2016	42.4	24.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.10.2016	43.8	24.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
12.10.2016	41.7	22.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.10.2016	46.8	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.10.2016	47.6	23.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.10.2016	45.8	22.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.10.2016	46.2	22.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.10.2016	44.4	23.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.10.2016	45.8	23.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	**100**	**60**	**80**	**80**	**4**	**400**	**100**	**1.0**	**20**	**6**	**5**	**1**
Methods of Analysis	**IS: 5182 (Part-23)**	**Gravimetric Method as per CPCB method**	**IS: 5182 (Part-2)**	**IS: 5182 (Part-6)**	**IS: 5182 (Part-10)**	**Indophenol Blue Method followed by CPCB**	**IS: 5182 (Part-9)**	**IS: 5182 (Part-22)**	**As per CPCB method followed by AAS**	**As per CPCB method followed by AAS**	**IS: 5182 (Part-11)**	**IS: 5182 (Part-12)**

N.B- *NAAQ (National Ambient Air Quality Standard as per 18th Nov,2009Gatt. Notification)
BDL Value (NO_X<9.0 $\mu g/m^3$,SO_2<4.0 $\mu g/m^3$,NH_3<20 $\mu g/m^3$, As<0.44 ng/m^3,Ni<0.6 ng/m^3,Pb<0.06 $\mu g/m^3$,CO<0.1 mg/m^3, Benzo(a)pyrene<1 ng/m^3) , Benzene <5 $\mu g/m^3$)

Ms. M. Rout, Msc Env. Sc
Authorized Signatory
(GAZETTE NO-1357, Dt-09-06-2016)

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Reference no. - CEMC/DPL/051116/N **Issued Date-05.11.16**

NOISE LEVEL MONITORING REPORT

Issued to	**Dhamra Port Ltd.,Bhadrak**
Analysis No.	**CEMC/DPL-D00N1**
Nature of Sampling	**Noise Sample**
Sampling By	**Mr. Biswaranjan Behera**
Sampling Date	**01.10.2016 to 31.10.2016**

Date	Location	NL Day Time dB (A)			NL NightTime dB (A)		
		Max	Min.	Avg.	Max.	Min.	Avg.
12.10.2016	NEAR DHAMRA GUEST HOUSE	66.8	53.2	60.0	44.5	39.3	41.9
14.10.2016	NEAR COMMUNITY HALL	68.9	62.5	65.7	52.6	45.2	48.9
17.10.2016	NEAR WTP	68.2	55.2	61.7	44.3	38.9	41.6
20.10.2016	NEAR SETTLING POND	69.9	63.3	66.6	49.8	43.2	46.5
19.10.2016	NEAR MCC-1	67.6	60.4	64.0	47.2	40.4	43.8

National Standard Noise Level

Area Code	Category of Area/Zone	Permissible Limit in dB (A)	
		Day Time	Night Time
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40

Ms. M. Rout, Msc. Env. Sc
Authorised Signatory
(GAZETTE No-1357, Dt 03-06-2016)

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Reference no. - CEMC/DPL/051116/WW **Issued Date-05.11.16**

STP REPORT

Name & Address of the Customer : **Dhamra Port Ltd., Bhadrak**
Date of Sampling : 12.10.2016
Sampling by : Biswaranjan Behera
Sampling Plan & Procedure : APHA
Sample Description : Waste Water
Sample Quantity : 1.0 Ltr
Sample Location : **STP section (15 KLD)**

SOURCE
SAMPLE 1: **STP Inlet Water**
SAMPLE 2: **STP Outlet Water**

SAMPLE 1

Sl. No.	Parameter	Units of Measurements	Sample 1	Design parameter for Raw Sewage
1	Appearance	--	Turbid	-
2	Colour	--	Blackish	-
3	Odour	--	Foul	-
4	pH	--	7.2	6-8.5
5	Total Suspended Solids	mg/l	134.2	1000
6	B.O.D	mg/l	130	300-350
7	Oil & grease	mg/l	5.1	100

SAMPLE 2

Sl. No.	Parameter	Units of Measurements	Sample 2	Design parameter for Treated Sewage
1	Appearance	--	Turbid	-
2	Colour	--	Colorless	-
3	Odour	--	Odourless	-
4	pH	--	7.8	5.5-9
5	Total Suspended Solids	mg/l	49.1	<100
6	B.O.D	mg/l	18	<30
7	Oil & grease	mg/l	1.2	<10

Ms. M. Rout, Msc. Env. Sc
GOVT. ANALYST
(GAZETTED Authorized Signatory) 3-06-2016

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PHYTOPLANKTON MONITORING DATA					
Locations		Total Count/L	No. of Species	Chlorophyll-a (µg/L)	Major Species
Station-1	SW	547	25	1.2154	*C.pentagonum, N.striata, C.furca,Ceratiu, N.longisigma*
	BW	1740	14	0.6548	*C.pentagonum, N.striata, Chaetocerous, Bacillaria*
Station-2	SW	2896	16	1.1245	*Podosira ,, Bacillaria, N.striata*
	BW	1132	18	1.0045	*C.pentagonu, Bacillaria, Podosira*
Station-3	SW	4811	20	2.1451	*Pleurosigma, C.pentagonum, N.striata*
	BW	1230	12	1.0457	*Pleurosigma, N.longisigma, C.pentagonum, N.striata*
Station-4	SW	801	21	1.1247	*C.pentagonum, Pleurosigma, N.longisigma, Bacillaria*
	BW	1645	15	1.7451	*Podosira ,C.pentagonum,N.striata*
Station-5	SW	1365	18	1.4545	*C.pentagonum, Skeletonema, N.longisigma, Bacillaria*
	BW	1021	10	1.0321	*Bacillaria, Chaetocerous, Ceratium,*
Station-6	SW	985	16	2.1540	*C.pentagonum,, C.furca, Bacillaria, Podosira, Skeletonema,*
	BW	1024	14	1.8452	*C.pentagonum, N.striata, C.furca, N.striata*
Station-7	SW	1265	10	1.2141	*Bacillaria,Chaetocerous, Podosira*
	BW	1196	20	1.2114	*N.longisigma, Podosira, Ceratium, C.furca*
Station-8	SW	1654	21	1.3412	*C.pentagonu,Bacillaria,Podosira, N.longisigma*
	BW	1146	12	1.2141	*C.pentagonum, Chaetocerous, Bacillaria, N.striata*

*SW= Surface Water, BW= Bottom Water

ZOOPLANKTON MONITORING DATA				
Locations		Total Count/L	No. of Species	Major Species
Station-1	SW	1324	19	*Protozoa, Rotifera, Nematoda, Cladocera*
	BW	1247	10	*Anostraca, Cladocera,Nematoda*
Station-2	SW	1548	10	*Crustacean Larvae, Protozoa, Nematoda*
	BW	1324	16	*Rotifera, Nematoda, Cladocera*
Station-3	SW	1754	09	*Anostraca, Cladocera, Rotifera, Copepod*
	BW	1345	17	*Rotifera, Protoza, Nematoda, Crustacean Larvae*
Station-4	SW	1212	12	*Crustacean Larvae, Protozoa, Nematoda, Rotifera*
	BW	998	10	*Protozoa, Nematoda, Copepod, Nematoda*
Station-5	SW	1847	19	*Cladocera, Nematoda, Cladocera*
	BW	1478	10	*Copepod, Rotifera, Ostracoda*
Station-6	SW	1203	20	*Rotifera, Protoza, Nematoda, Cladocera*
	BW	992	16	*Cladocera, Nematoda, Rotifera*
Station-7	SW	1247	12	*Ostracoda, Protozoa, Copepod, Rotifera*
	BW	1034	09	*Protozoa ,Rotifera, Copepod*
Station-8	SW	1265	12	*Copepod, Rotifera, Cladocera*
	BW	1458	14	*Ostracoda, Protozoa, Copepod, Rotifera*

*SW= Surface Water, BW= Bottom Water

MICROBIOLOGICAL MONITORING DATA					
Locations		Total Bacterial Count (CFU/ml)	Total Coliform (CFU/ml)	Faecal Coliform (CFU/ml)	*E.coli* (CFU/ml)
Station-1	SW	150	5.5	1.8	ND
	BW	120	25	<1.8	ND
Station-2	SW	94	11	2.0	ND
	BW	130	7.8	<1.8	ND
Station-3	SW	100	36	3.7	ND
	BW	70	15	1.8	ND
Station-4	SW	220	58	1.8	ND
	BW	100	22	<1.8	ND
Station-5	SW	540	100	1.8	ND
	BW	400	70	1.8	ND
Station-6	SW	240	34	2.0	ND
	BW	110	22	2.0	ND
Station-7	SW	120	14	3.6	ND
	BW	110	14	1.8	ND
Station-8	SW	150	13	2.0	ND
	BW	70	10	1.8	ND

*SW= Surface Water, BW= Bottom Water

MICROBIOLOGICAL MONITORING DATA					
Locations		Enterococcus (CFU/ml)	Salmonella (CFU/ml)	Shigella (CFU/ml)	Vibrio (CFU/ml)
Station-1	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-2	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-3	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-4	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-5	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-6	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-7	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-8	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND

*SW= Surface Water, BW= Bottom Water

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Reference no. - CEMC/DPL/051116/Sed **Issued Date-05.11.16**

SEA SEDIMENT ANALYSIS REPORT

Name & Address of the Customer : **Dhamra Port Ltd., Bhadrak**
Date of Sampling : 24.10.2016
Sampling by : Biswaranjan Behera
Sample Description : Sediment

SEDIMENT ANALYSIS DATA

Locations	pH	Organic Matter	Moisture Content (%)	Conductivity (µS/cm)	Iron (%)	Sodium (%)	Copper (mg/kg)	Nickel (mg/Kg)	Zinc (mg/kg)
Station-1	7.4	2.5	4.4	3.42	3.9	24.15	< 5	< 1	< 3
Station-2	7.8	5.1	5.2	4.21	3.9	21.89	< 5	< 1	< 3
Station-3	7.5	4.4	7.3	5.96	4.7	22.12	< 5	< 1	< 3
Station-4	7.0	5.9	6.3	5.14	2.8	23.54	< 5	< 1	< 3
Station-5	7.5	6.1	6.9	5.47	3.2	21.45	< 5	< 1	< 3
Station-6	7.3	5.9	5.2	5.12	3.9	22.17	< 5	< 1	< 3
Station-7	7.7	6.9	6.1	5.08	2.4	23.65	< 5	< 1	< 3
Station-8	7.8	4.6	5.2	5.15	4.2	20.12	< 5	< 1	< 3

SEDIMENT ANALYSIS DATA

Locations	Manganese (mg/kg)	Lead (mg/kg)	Boron (mg/kg)	Phosphate (mg/kg)	Chloride (mg/kg)	Sulphate (mg/kg)	Sulphide (mg/kg)	Pesticide (mg/kg)	Potassium (mg/kg)
Station-1	< 1	< 5	< 0.5	< 0.5	780	5102	ND	ND	0.89
Station-2	< 1	< 5	< 0.5	< 0.5	748	4521	ND	ND	0.62
Station-3	< 1	< 5	< 0.5	< 0.5	754	5018	ND	ND	0.75
Station-4	< 1	< 5	< 0.5	< 0.5	782	6745	ND	ND	0.63
Station-5	< 1	< 5	< 0.5	< 0.5	791	6454	ND	ND	0.75
Station-6	< 1	< 5	< 0.5	< 0.5	800	7.145	ND	ND	0.65
Station-7	< 1	< 5	< 0.5	< 0.5	947	7954	ND	ND	0.66
Station-8	< 1	< 5	< 0.5	< 0.5	981	8045	ND	ND	0.58

SEDIMENT ANALYSIS DATA

Locations	Total Chromium (mg/kg)	Petroleum Hydrocarbon (mg/kg)	Aluminium (mg/kg)	Total Nitrogen (mg/kg)	Organic Nitrogen (mg/kg)	Phosphorous (mg/kg)	Texture (%)		
							Sand	Silt	Clay
Station-1	< 1	ND	< 0.1	2.6	1.8	3.2	0.35	14.12	85.53
Station-2	< 1	ND	< 0.1	2.1	1.6	5.1	0.85	28.59	70.56
Station-3	< 1	ND	< 0.1	2.7	1.9	3.5	1.14	49.51	49.35
Station-4	< 1	ND	< 0.1	2.6	1.6	3.1	0.91	15.21	83.88
Station-5	< 1	ND	< 0.1	3.1	2.2	2.9	0.84	23.14	76.02
Station-6	< 1	ND	< 0.1	4.9	1.8	2.1	1.26	48.12	50.62
Station-7	< 1	ND	< 0.1	3.6	1.7	3.2	1.98	13.24	84.78
Station-8	< 1	ND	< 0.1	3.2	2.1	2.8	1.23	28.56	70.21

PHYTOBENTHOS MONITORING DATA					
Locations	Fungus (CFU/1 g dry wt.)	Total Count/ 50g wet sediment	No. of Species	Diversity Index	Major Species
Station-1	3052	241	9	1.0478	*Podosira, N. longsigma*
Station-2	1054	458	10	0.3657	*N. longsigma, Ditylum*
Station-3	6980	423	10	0.8956	*Podosira, Ditylum*
Station-4	4956	587	10	0.6251	*Podosira, N.longsigma, Ditylum*
Station-5	2658	302	15	0.9651	*Podosira*
Station-6	3257	210	15	0.3695	*Podosira, Ditylum*
Station-7	2654	510	9	0.6251	*Podosira, N. longsigma*
Station-8	1211	396	8	0.6559	*Podosira, N. longsigma*

TOTAL FAUNA MONITORING DATA			
Locations	Name of Phylum, Class and Number of individuals encountered	Total number of species Encountered	Total Fauna per m^3
Station-1	1.Phylum- Arthropoda Class- Malagostraca-20 2.Phylum- Annelida Class-Polychaeta-38	24	210
Station-2	1.Phylum-Annelida Class-Polchaeta-18 2.Phylum-Arthropda Class- Copepoda-10	154	120
Station-3	1.Phylum- Arthropoda Class- Malagostraca-19 2.Phylum- Annelida Class-Polychaeta-12 3.Phylum- Mollusca Class-Gastropoda-10 Class- Pelecypoda-19	121	584
Station-4	1.Phylum- Annelida Class-Polychaeta-20 2.Phylum-Mollusca Class-Gastropoda-10 Class-Pelecypoda-8 Class-Bivalvia-29	134	358
Station-5	1.Phylum- Anthropoda Class- Amphipoda-20 2.Phylum- Annelida Class- Polychaeta- 14 1.Phylum- Mollusca Class- Pelecypoda-11 Class- Bivalvia-10 Class- Gastropoda-29	65	985

Station-5	SW	1.Phylum- Anthropoda Class- Amphipoda-39 2.Phylum- Annelida Class- Polychaeta- 24 3.Phylum- Mollusca Class- Pelecypoda-22 Class- Bivalvia-11 Class- Gastropoda-8	24	988
	BW	1.Phylum- Anthropoda Class- Amphipoda-21 2.Phylum- Annelida Class- Polychaeta- 10 3.Phylum- Mollusca Class- Pelecypoda-21 Class- Bivalvia-11 Class- Gastropoda-17	54	1044
Station-6	SW	1.Phylum- Annelida Class- Polychaeta-37 2.Phylum- Mollusca Class- Bivalvia-15	54	417
	BW	1.Phylum- Annelida Class- Polychaeta-15 2.Phylum- Mollusca Class- Bivalvia-11	37	510
Station-7	SW	1.Phylum-Annelida Class- Polychaeta-22 2.Phylum- Mollusca Class- Gastropoda-17 Class-Bivalvia-19 Class- Scaphopoda-8	41	512
	BW	1.Phylum-Annelida Class- Polychaeta-19 2.Phylum- Mollusca Class- Gastropoda-11 Class-Bivalvia-24 Class- Scaphopoda-28	17	314
Station-8	SW	1.Phylum- Annelida Class- Polychaeta-24 2.Phylum- Mollusca Class- Scaphopoda-12	27	184
	BW	1.Phylum- Annelida Class- Polychaeta-26 2. Phylum- Mollusca Class- Gastropoda-11	19	398

*SW= Surface Water, BW= Bottom Water

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Ms. M. Rout, Msc. Env. Sc
Govt. Analyst
Authorized Signatory
(GAZETTE No.1357 Dt.-03.06.2016)

TOTAL FAUNA MONITORING DATA				
Locations		Name of Phylum, Class and Number of individuals encountered	Total number of species Encountered	Total Fauna per m^3
Station-1	SW	1.Phylum- Arthropoda Class- Malagostraca-32 2.Phylum- Mollusca Class-Gastropoda-02 3.Phylum- Annelida Class-Polychaeta-5	14	100
	BW	1.Phylum- Arthropoda Class- Malagostraca-19 2.Phylum- Annelida Class-Polychaeta-18	21	147
Station-2	SW	1.Phylum-Annelida Class-Polchaeta-20 2.Phylum-Arthropda Class- Copepoda-11	12	162
	BW	1.Phylum-Annelida Class-Polchaeta-14 2.Phylum-Arthropda Class- Copepoda-10	21	120
Station-3	SW	1.Phylum- Arthropoda Class- Malagostraca-22 2.Phylum- Annelida Class-Polychaeta-24 3.Phylum- Mollusca Class-Gastropoda-19 Class- Pelecypoda-11	121	947
	BW	1.Phylum- Arthropoda Class- Malagostraca-17 2.Phylum- Annelida Class-Polychaeta-18 3.Phylum- Mollusca Class-Gastropoda-19 Class- Pelecypoda-05	124	847
Station-4	SW	1.Phylum- Annelida Class-Polychaeta-21 2.Phylum-Mollusca Class-Gastropoda-19 Class-Pelecypoda-14 Class-Bivalvia-01	21	412
	BW	1.Phylum- Annelida Class-Polychaeta-15 2.Phylum-Mollusca Class-Gastropoda-30 Class-Pelecypoda-29 Class-Bivalvia-18	49	721

PRIMARY PRODUCTIVITY MONITORING DATA			
Locations		Gross Primary Productivity (mgC/ L/ day)	Net Primary Productivity (mgC/ L/ day)
Station-1	SW	1.9	1.1
	BW	1.9	1.6
Station-2	SW	2.3	1.8
	BW	2.0	1.1
Station-3	SW	1.9	1.2
	BW	2.0	1.4
Station-4	SW	2.1	1.7
	BW	1.8	1.2
Station-5	SW	2.5	1.5
	BW	2.1	1.7
Station-6	SW	2.0	1.6
	BW	2.1	1.5
Station-7	SW	2.1	1.8
	BW	1.9	1.6
Station-8	SW	1.9	1.4
	BW	1.8	1.4

*SW= Surface Water, BW= Bottom Water

PHYTOBENTHOS MONITORING DATA						
Locations		Fungus (CFU/1 g dry wt.)	Total Count/ 50g wet sediment	No. of Species	Diversity Index	Major Species
Station-1	SW	2475	196	8	0.4875	*N. longsigma*
	BW	2547	214	12	0.6547	*Ditylum*
Station-2	SW	3547	220	12	0.5986	*Podosira, N. longsigma,*
	BW	3910	120	6	0.5421	*Ditylum*
Station-3	SW	2659	134	10	0.6142	*Podosira*
	BW	2056	142	11	0.4875	*Podosira, Ditylum*
Station-4	SW	3141	210	14	0.5124	*Podosira, N. longsigma*
	BW	3514	1542	10	0.7845	*Podosira, N. longsigma, Ditylum*
Station-5	SW	1945	250	8	0.8451	*Ditylum*
	BW	1147	289	11	0.8457	*Podosira, N. longsigma*
Station-6	SW	1598	547	9	0.9121	*Podosira, Ditylum*
	BW	1544	210	12	0.9562	*Podosira, Ditylum*
Station-7	SW	2845	324	15	0.5487	*Podosira, N. longsigma, Ditylum*
	BW	2495	247	15	0.5521	*Podosira, N. longsigma, Ditylum*
Station-8	SW	3548	845	14	0.5647	*N.longsigma, Ditylum*
	BW	2957	687	15	0.7485	*Podosira*

*SW= Surface Water, BW= Bottom Water

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Station-6	1.Phylum- Annelida Class- Polychaeta-19 2.Phylum- Mollusca Class- Bivalvia-8	42	681
Station-7	1.Phylum-Annelida Class- Polychaeta-19 2.Phylum- Mollusca Class- Gastropoda-19 Class-Bivalvia-10 Class- Scaphopoda-20	48	426
Station-8	1.Phylum- Annelida Class- Polychaeta-19 2.Phylum- Mollusca Class- Gastropoda-12 Class-Bivalvia-12 Class- Scaphopoda-19	24	219

Ms. M. Roy, Msc. Env. Sc
Govt. ANALYST
Authorized Signatory
(GAZETTE NO-1[illegible] DT.03-06-2016)

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Reference no. - CEMC/DPL/051216/A **Issued Date-05.12.16**

AMBIENT AIR QUALITY MONITORING TEST REPORT

Client Name & Address	Dhamra Port Ltd., Bhadrak
Work Order No.	5700178552
Reference No.	CEMC-05122016
Nature of Sampling	Ambient Air Sample
Sampling Location	Near MCC-1
Sampling By	Mr. Biswaranjan Behera
Sampling Duration	01.11.2016 to 30.11.2016

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NOx ($\mu g/m^3$)	CO (mg/m^3)	NH_3 ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	BaP (ng/m^3)
02.11.2016	65.8	34.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
[illegible].11.2016	56.5	29.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.11.2016	58.0	31.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.11.2016	60.9	33.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.11.2016	59.1	32.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.11.2016	58.5	32.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.11.2016	57.2	30.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.11.2016	57.8	30.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
29.11.2016	56.1	30.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	100	60	80	80	4	400	100	1.0	20	6	5	1
Methods of Analysis	IS: 5182 (Part-23)	Gravimetric Method as per CPCB method	IS: 5182 (Part-2)	IS: 5182 (Part-6)	IS: 5182 (Part-10)	Indophenol Blue Method followed by CPCB	IS: 5182 (Part-9)	IS: 5182 (Part-22)	As per CPCB method followed by AAS	As per CPCB method followed by AAS	IS: 5182 (Part-11)	IS: 5182 (Part-12)

N.B- *NAAQ (National Ambient Air Quality Standard as per 18th Nov,2009Gatt. Notification)
BDL Value (NO_X<9.0 $\mu g/m^3$,SO_2<4.0 $\mu g/m^3$,NH_3<20 $\mu g/m^3$, As<0.44 ng/m^3,Ni<0.6 ng/m^3,Pb<0.[illegible] m^3,CO<0.1 mg/m^3, Benzo(a)pyrene<1 ng/m^3) , Benzene <5 $\mu g/m^3$)

Ms. M. Rout, Msg. Env. Sc
Govt. ANALYST
(GAZETTE No-1357-Dt-03-06-2016)

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MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.

Reference no. - CEMC/DPL/051216/A **Issued Date-05.12.16**

AMBIENT AIR QUALITY MONITORING TEST REPORT

Client Name & Address	**Dhamra Port Ltd., Bhadrak**
Work Order No.	5700178552
Reference No.	**CEMC-05122016**
Nature of Sampling	Ambient Air Sample
Sampling Location	**Near Settling Pond**
Sampling By	Mr. Biswaranjan Behera
Sampling Date	**01.11.2016 to 30.11.2016**

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NOx ($\mu g/m^3$)	CO (mg/m^3)	NH_3 ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	BaP (ng/m^3)
02.11.2016	92.5	44.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.11.2016	93.2	49.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
08.11.2016	91.6	42.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.11.2016	90.8	41.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.11.2016	92.3	42.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.11.2016	91.6	43.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.11.2016	90.3	47.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.11.2016	91.1	40.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
29.11.2016	90.2	42.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	**100**	**60**	**80**	**80**	**4**	**400**	**100**	**1.0**	**20**	**6**	**5**	**1**
Methods of Analysis	**IS: 5182 (Part-23)**	**Gravimetric Method as per CPCB method**	**IS: 5182 (Part-2)**	**IS: 5182 (Part-6)**	**IS: 5182 (Part-10)**	**Indophenol Blue Method followed by CPCB**	**IS: 5182 (Part-9)**	**IS: 5182 (Part-22)**	**As per CPCB method followed by AAS**	**As per CPCB method followed by AAS**	**IS: 5182 (Part-11)**	**IS: 5182 (Part-12)**

N.B- *NAAQ (National Ambient Air Quality Standard as per 18th Nov,2009Gatt. Notification)
BDL Value (NO_X<9.0 $\mu g/m^3$,SO_2<4.0 $\mu g/m^3$,NH_3<20 $\mu g/m^3$, As<0.44 ng/m^3,Ni<0.6 ng/m^3,Pb<0.06 $\mu g/m^3$,CO<0.1 mg/m^3, Benzo(a)pyrene<1 ng/m^3) , Benzene <5 $\mu g/m^3$)

Ms. M. Rout, Msc. Env. Sc
Authorized Signatory
(GAZETTE NO-1357, Dt-03-06-2016)

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Reference no. - CEMC/DPL/051216/A **Issued Date-05.12.16**

AMBIENT AIR QUALITY MONITORING TEST REPORT

Client Name & Address	**Dhamra Port Ltd., Bhadrak**
Work Order No.	**5700178552**
Reference No.	**CEMC-05122016**
Nature of Sampling	**Ambient Air Sample**
Sampling Location	**Near WTP**
Sampling By	**Mr. Biswaranjan Behera**
Sampling Date	**01.11.2016 to 30.11.2016**

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	Nox ($\mu g/m^3$)	CO (mg/m^3)	NH_3 ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	BaP (ng/m^3)
02.11.2016	49.2	30.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.11.2016	45.8	26.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
08.11.2016	46.2	29.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.11.2016	48.0	25.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.11.2016	47.5	27.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.11.2016	49.8	26.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.11.2016	46.1	26.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.11.2016	47.2	27.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
29.11.2016	45.2	24.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	**100**	**60**	**80**	**80**	**4**	**400**	**100**	**1.0**	**20**	**6**	**5**	**1**
Methods of Analysis	**IS: 5182 (Part-23)**	**Gravimetric Method as per CPCB method**	**IS: 5182 (Part-2)**	**IS: 5182 (Part-6)**	**IS: 5182 (Part-10)**	**Indophenol Blue Method followed by CPCB**	**IS: 5182 (Part-9)**	**IS: 5182 (Part-22)**	**As per CPCB method followed by AAS**	**As per CPCB method followed by AAS**	**IS: 5182 (Part-11)**	**IS: 5182 (Part-12)**

N.B- *NAAQ (National Ambient Air Quality Standard as per 18th Nov,2009Gatt. Notification)
BDL Value (NO_X<9.0 $\mu g/m^3$,SO_2<4.0 $\mu g/m^3$,NH_3<20 $\mu g/m^3$, As<0.44 ng/m^3,Ni<0.6 ng/m^3,Pb<0.06 $\mu g/m^3$,CO<0.1 mg/m^3, Benzo(a)pyrene<1 ng/m^3) , Benzene <5 $\mu g/m^3$)

Ms. M. Rout, Msc. Env. Sc
Govt. Analyst
(GAZETTE No-139, Dt-03-06-2016)
Authorised Signatory

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Reference no. - CEMC/DPL/051216/A **Issued Date-05.12.16**

AMBIENT AIR QUALITY MONITORING TEST REPORT

Client Name & Address	**Dhamra Port Ltd., Bhadrak**
Work Order No.	**5700178552**
Reference No.	**CEMC-05122016**
Nature of Sampling	**Ambient Air Sample**
Sampling Location	**Near Community Hall**
Sampling By	**Mr. Biswaranjan Behera**
Sampling Date	**01.11.2016 to 30.11.2016**

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	Nox ($\mu g/m^3$)	CO (mg/m^3)	NH_3 ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	BaP (ng/m^3)
02.11.2016	59.5	32.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.11.2016	56.2	29.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
08.11.2016	55.6	27.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.11.2016	57.4	29.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.11.2016	54.3	27.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.11.2016	58.8	28.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.11.2016	56.5	26.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.11.2016	56.8	31.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
29.11.2016	54.5	30.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	**100**	**60**	**80**	**80**	**4**	**400**	**100**	**1.0**	**20**	**6**	**5**	**1**
Methods of Analysis	**IS: 5182 (Part-23)**	**Gravimetric Method as per CPCB method**	**IS: 5182 (Part-2)**	**IS: 5182 (Part-6)**	**IS: 5182 (Part-10)**	**Indophenol Blue Method followed by CPCB**	**IS: 5182 (Part-9)**	**IS: 5182 (Part-22)**	**As per CPCB method followed by AAS**	**As per CPCB method followed by AAS**	**IS: 5182 (Part-11)**	**IS: 5182 (Part-12)**

N.B- *NAAQ (National Ambient Air Quality Standard as per 18th Nov,2009Gatt. Notification)
BDL Value (NO_X<9.0 $\mu g/m^3$,SO_2<4.0 $\mu g/m^3$,NH_3<20 $\mu g/m^3$, As<0.44 ng/m^3,Ni<0.6 ng/m^3,Pb<0.06 $\mu g/m^3$,CO<0.1 mg/m^3, Benzo(a)pyrene<1 ng/m^3) , Benzene <5 $\mu g/m^3$)

Ms. M. Rout, Msc. Env. Sc
Authorised Signatory
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Reference no. - CEMC/DPL/051216/A **Issued Date-05.12.16**

AMBIENT AIR QUALITY MONITORING TEST REPORT

Client Name & Address	**Dhamra Port Ltd., Bhadrak**
Work Order No.	**5700178552**
Reference No.	**CEMC-05122016**
Nature of Sampling	**Ambient Air Sample**
Sampling Location	**Near Dhamra Old guest house**
Sampling By	**Mr. Biswaranjan Behera**
Sampling Date	**01.11.2016 to 30.11.2016**

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	Nox ($\mu g/m^3$)	CO (mg/m^3)	NH_3 ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	BaP (ng/m^3)
02.11.2016	45.9	23.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.11.2016	41.2	25.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
08.11.2016	44.8	24.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
11.11.2016	45.5	25.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.11.2016	47.3	26.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.11.2016	42.3	24.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.11.2016	46.7	26.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
25.11.2016	43.1	23.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
29.11.2016	42.6	24.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	**100**	**60**	**80**	**80**	**4**	**400**	**100**	**1.0**	**20**	**6**	**5**	**1**
Methods of Analysis	**IS: 5182 (Part-23)**	**Gravimetric Method as per CPCB method**	**IS: 5182 (Part-2)**	**IS: 5182 (Part-6)**	**IS: 5182 (Part-10)**	**Indophenol Blue Method followed by CPCB**	**IS: 5182 (Part-9)**	**IS: 5182 (Part-22)**	**As per CPCB method followed by AAS**	**As per CPCB method followed by AAS**	**IS: 5182 (Part-11)**	**IS: 5182 (Part-12)**

N.B- *NAAQ (National Ambient Air Quality Standard as per 18th Nov,2009Gatt. Notification)
BDL Value (NO_X<9.0 $\mu g/m^3$,SO_2<4.0 $\mu g/m^3$,NH_3<20 $\mu g/m^3$, As<0.44 ng/m^3,Ni<0.6 ng/m^3,Pb<0.06 $\mu g/m^3$,CO<0.1 mg/m^3, Benzo(a)pyrene<1 ng/m^3) , Benzene <5 $\mu g/m^3$)

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Authorized Signatory
(GAZETTE No-1357, Dt-03-06-2016)

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Reference no. - CEMC/DPL/051216/N **Issued Date-05.12.16**

Issued to	**Dhamra Port Ltd., Bhadrak**
Analysis No.	**CEMC/DPL-D00N1**
Nature of Sampling	**Noise Sample**
Sampling By	**Mr. Biswaranjan Behera**
Sampling Date	**01.11.2016 to 30.11.2016**

NOISE LEVEL MONITORING REPORT

Date	Location	NL Day Time dB (A)			NL NightTime dB (A)		
		Max	Min.	Avg.	Max.	Min.	Avg.
14.11.16	NEAR DHAMRA GUEST HOUSE	66.2	63.4	64.8	42.4	37.1	39.75
15.11.16	NEAR COMMUNITY HALL	67.4	64.2	65.8	51.1	44.5	47.8
18.11.16	NEAR WTP	68.3	63.9	66.1	44.1	39.5	41.8
16.11.16	NEAR SETTLING POND	69.9	68.3	69.1	49.6	41.3	45.45
17.11.16	NEAR MCC-1	68.4	66.4	67.4	48.8	45.7	47.25

National Standard Noise Level

Area Code	Category of Area/Zone	Permissible Limit in dB (A)	
		Day Time	Night Time
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40

Ms. M. Rout, Msc. Env. Sc
Govt. ANALYST
Authorized Signatory
(GAZETTE NO-1397, D.-03-06-2016)

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Reference no. - CEMC/DPL/051216/WW **Issued Date-05.12.16**

STP REPORT

Name & Address of the Customer : **Dhamra Port Ltd., Bhadrak**
Date of Sampling : 10.11.2016
Sampling by : Biswaranjan Behera
Sampling Plan & Procedure : APHA
Sample Description : Waste Water
Sample Quantity : 1.0 Ltr
Sample Location : **STP section (15 KLD)**

SOURCE
SAMPLE 1: **STP Inlet Water**
SAMPLE 2: **STP Outlet Water**

SAMPLE 1

Sl. No.	Parameter	Units of Measurements	Sample 1	Design parameter for Raw Sewage
1	Appearance	--	Turbid	-
2	Colour	--	Blackish	-
3	Odour	--	Foul	-
4	pH	--	6.9	6-8.5
5	Total Suspended Solids	mg/l	112.5	1000
6	B.O.D	mg/l	109	300-350
7	Oil & grease	mg/l	4.6	100

SAMPLE 2

Sl. No.	Parameter	Units of Measurements	Sample 2	Design parameter for Treated Sewage
1	Appearance	--	Turbid	-
2	Colour	--	Colorless	-
3	Odour	--	Odourless	-
4	pH	--	7.5	5.5-9
5	Total Suspended Solids	mg/l	52.3	<100
6	B.O.D	mg/l	15	<30
7	Oil & grease	mg/l	1.8	<10

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Govt. ANALYST
(GAZETTE No. 1559, Dt. 03-06-2016)
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Reference no. - CEMC/DPL/051216/WW **Issued Date-05.12.16**

STP REPORT

Name & Address of the Customer : **Dhamra Port Ltd., Bhadrak**
Date of Sampling : 10.11.2016
Sampling by : Biswaranjan Behera
Sampling Plan & Procedure : APHA
Sample Description : Waste Water
Sample Quantity : 1.0 Ltr
Sample Location : **STP section (150 KLD)**

SOURCE
SAMPLE 1: **STP Inlet Water**
SAMPLE 2: **STP Outlet Water**

SAMPLE 1

Sl. No.	Parameter	Units of Measurements	Sample 1	Design parameter for Raw Sewage
1	Appearance	--	Turbid	-
2	Colour	--	Blackish	-
3	Odour	--	Foul	-
4	pH	--	7.2	6-8.5
5	Total Suspended Solids	mg/l	145.2	1000
6	B.O.D	mg/l	133	300-350
7	Oil & grease	mg/l	6.2	100

SAMPLE 2

Sl. No.	Parameter	Units of Measurements	Sample 2	Design parameter for Treated Sewage
1	Appearance	--	Turbid	-
2	Colour	--	Colorless	-
3	Odour	--	Odourless	-
4	pH	--	7.6	5.5-9
5	Total Suspended Solids	mg/l	42.8	<100
6	B.O.D	mg/l	19	<30
7	Oil & grease	mg/l	2.1	<10

Ms. M. Rout, Msc. Env. Sc
Govt. Analyst
(GAZETTED) Authorized Signatory 03-06-2016)

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Reference no. - CEMC/DPL/051216/WW **Issued Date-05.12.16**

STP REPORT

Name & Address of the Customer : **Dhamra Port Ltd., Bhadrak**
Date of Sampling : 26.11.2016
Sampling by : Biswaranjan Behera
Sampling Plan & Procedure : APHA
Sample Description : Waste Water
Sample Quantity : 1.0 Ltr
Sample Location : **STP section (15 KLD)**

SOURCE
SAMPLE 1: **STP Inlet Water**
SAMPLE 2: **STP Outlet Water**

SAMPLE 1

Sl. No.	Parameter	Units of Measurements	Sample 1	Design parameter for Raw Sewage
1	Appearance	--	Turbid	-
2	Colour	--	Blackish	-
3	Odour	--	Foul	-
4	pH	--	7.3	6-8.5
5	Total Suspended Solids	mg/l	125	1000
6	B.O.D	mg/l	100	300-350
7	Oil & grease	mg/l	5.8	100

SAMPLE 2

Sl. No.	Parameter	Units of Measurements	Sample 2	Design parameter for Treated Sewage
1	Appearance	--	Turbid	-
2	Colour	--	Colorless	-
3	Odour	--	Odourless	-
4	pH	--	7.4	5.5-9
5	Total Suspended Solids	mg/l	34.8	<100
6	B.O.D	mg/l	18	<30
7	Oil & grease	mg/l	ND	<10

N.B: ND-Not Detectable

Ms. M. Rout, Msc. Env. Sc
GAZETTE NO-1354, Dt-03-06-2016
Authorised Signatory

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Reference no. - CEMC/DPL/051216/WW **Issued Date-05.12.16**

STP REPORT

Name & Address of the Customer : **Dhamra Port Ltd., Bhadrak**
Date of Sampling : 26.11.2016
Sampling by : Biswaranjan Behera
Sampling Plan & Procedure : APHA
Sample Description : Waste Water
Sample Quantity : 1.0 Ltr
Sample Location : **STP section (150 KLD)**

SOURCE
SAMPLE 1: **STP Inlet Water**
SAMPLE 2: **STP Outlet Water**

SAMPLE 1

Sl. No.	Parameter	Units of Measurements	Sample 1	Design parameter for Raw Sewage
1	Appearance	--	Turbid	-
2	Colour	--	Blackish	-
3	Odour	--	Foul	-
4	pH	--	6.9	6-8.5
5	Total Suspended Solids	mg/l	125	1000
6	B.O.D	mg/l	120	300-350
7	Oil & grease	mg/l	8.2	100

SAMPLE 2

Sl. No.	Parameter	Units of Measurements	Sample 2	Design parameter for Treated Sewage
1	Appearance	--	Turbid	-
2	Colour	--	Colorless	-
3	Odour	--	Odourless	-
4	pH	--	7.4	5.5-9
5	Total Suspended Solids	mg/l	48.3	<100
6	B.O.D	mg/l	20	<30
7	Oil & grease	mg/l	1.8	<10

Ms. M. Rout, Msc. Env. Sc
Authorized Signatory

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Reference no. - CEMC/DPL/051216/SW **Issued Date-05.12.16**

Name & Address of the Customer : **Dhamra Port Ltd., Bhadrak**
Date of Sampling : 26.11.2016
Sampling by : Biswaranjan Behera
Sampling Plan & Procedure : APHA
Sample Description : Waste Water

STATION DESCRIPTION

SL. NO.	STATION	GPS COORDINATES
01	STATION-1	20°46'55.5" N 86°57'40.5" E
02	STATION-2	20°49'05.0" N 86°58'14.3" E
03	STATION-3	20°51'33.5" N 87°00'17.0" E
04	STATION-4	20°52'55.8" N 87°02'44.9" E
05	STATION-5	20°54'20.4" N 87°05'14.0" E
06	STATION-6	20°54'54.3" N 87°06'13.8" E
07	STATION-7	20°54'45.0" N 87°07'13.6" E
08	STATION-8	20°54'42.8" N 87°07'50.4" E

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MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.

WATER ANALYSIS DATA

Locations		Temp. (°C)	Turbidity (NTU)	Conductivity (µS/cm)	pH	Salinity (ppt)	DO (mg/l)	BOD (mg/l)	COD (mg/l)
Station-1	SW	26	40	40.9	8.2	27.45	7.2	< 3	20
	BW	24	30	40.1	8.2	26.34	6.6	< 3	< 10
Station-2	SW	25	39	45.2	8.0	27.59	6.6	3.2	10
	BW	24	32	42.1	8.3	26.98	6.9	< 3	<10
Station-3	SW	26	42	45.7	8.2	28.59	7.2	< 3	20
	BW	24	30	44.3	7.9	26.96	6.6	< 3	<10
Station-4	SW	26	39	42.7	8.2	26.54	7.1	< 3	20
	BW	26	32	40.2	7.9	27.96	6.9	< 3	<10
Station-5	SW	25	38	45.1	8.3	26.59	6.9	< 3	20
	BW	24	36	42.7	7.8	24.48	6.5	< 3	<10
Station-6	SW	26	37	46.1	7.9	27.15	7.2	3.6	20
	BW	24	35	45.8	7.6	28.44	6.9	< 3	< 10
Station-7	SW	25	40	43.1	8.1	22.10	6.9	3.3	10
	BW	24	38	39.7	7.5	21.48	6.7	< 3	< 10
Station-8	SW	25	37	40.5	8.2	26.96	7.1	3.1	20
	BW	24	35	35.4	7.8	23.15	6.6	< 3	< 10

*SW= Surface Water, BW= Bottom Water

WATER ANALYSIS DATA

Locations		Copper (mg/l)	Cadmium (mg/l)	Mercury (mg/l)	Phosphate (mg/l)	Sulphate (mg/l)	Nitrite (mg/i)	Nitrate (mg/l)	TSS (mg/l)
Station-1	SW	< 0.05	< 0.01	< 0.001	< 0.05	1792	0.51	8.2	288.1
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1759	0.66	7.0	150.4
Station-2	SW	< 0.05	< 0.01	< 0.001	< 0.05	1822	0.44	8.1	241.5
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1859	0.51	7.5	200.1
Station-3	SW	< 0.05	< 0.01	< 0.001	< 0.05	1714	0.34	7.3	319.4
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1801	0.47	8.1	152.1
Station-4	SW	< 0.05	< 0.01	< 0.001	< 0.05	1823	0.35	7.2	331.8
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1644	0.47	7.6	210.1
Station-5	SW	< 0.05	< 0.01	< 0.001	< 0.05	1754	0.52	7.3	292.9
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1699	0.75	9.0	163.5
Station-6	SW	< 0.05	< 0.01	< 0.001	< 0.05	1682	0.45	7.8	320.2
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1694	0.82	8.1	110.3
Station-7	SW	< 0.05	< 0.01	< 0.001	< 0.05	1623	0.74	6.5	254.3
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1503	0.69	8.9	131.4
Station-8	SW	< 0.05	< 0.01	< 0.001	< 0.05	1544	0.98	7.6	285.2
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1603	0.75	8.6	108.3

*SW= Surface Water, BW= Bottom Water

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WATER ANALYSIS DATA							
Locations		Calcium Hardness (mg/l)	Magnesium Hardness (mg/l)	Total Hardness (mg/l)	Total Dissolved Solids (mg/l)	Ammonical Nitrogen (mg/l)	Total Nitrogen (mg/l)
Station-1	SW	2410	890	3300	32651	ND	12.1
	BW	2740	740	3480	31028	ND	11.2
Station-2	SW	2550	810	3360	34512	ND	12.9
	BW	2740	830	3570	31498	ND	10.1
Station-3	SW	2860	850	3710	32651	ND	11.2
	BW	2890	810	3700	28796	ND	10.2
Station-4	SW	2940	820	3760	31652	ND	11.6
	BW	2570	790	3360	29652	ND	9.9
Station-5	SW	2890	910	3800	30056	ND	10.2
	BW	2790	870	3660	30012	ND	9.6
Station-6	SW	3110	920	4030	31524	ND	10.3
	BW	2880	810	3690	29995	ND	11.1
Station-7	SW	2590	920	3510	30321	ND	12.3
	BW	2540	880	3420	30748	ND	10.9
Station-8	SW	2310	870	3180	32011	ND	12.1
	BW	2790	880	3670	30112	ND	10.9

*SW= Surface Water, BW= Bottom Water

WATER ANALYSIS DATA							
Locations		Total Chromium (mg/l)	Phenolic Compounds (mg/l)	Hexavalent Chromium (mg/l)	Petroleum Hydrocarbon (mg/l)	Chlorinity (‰)	Oil and Grease (mg/l)
Station-1	SW	< 0.05	< 0.001	< 0.05	1.9	12.51	5.9
	BW	< 0.05	< 0.001	< 0.05	ND	12.02	ND
Station-2	SW	< 0.05	< 0.001	< 0.05	1.3	13.24	5.3
	BW	< 0.05	< 0.001	< 0.05	ND	12.62	ND
Station-3	SW	< 0.05	< 0.001	< 0.05	1.9	12.99	5.2
	BW	< 0.05	< 0.001	< 0.05	ND	11.63	ND
Station-4	SW	< 0.05	< 0.001	< 0.05	2.1	13.02	4.1
	BW	< 0.05	< 0.001	< 0.05	ND	11.69	ND
Station-5	SW	< 0.05	< 0.001	< 0.05	1.8	13.05	5.9
	BW	< 0.05	< 0.001	< 0.05	ND	13.88	ND
Station-6	SW	< 0.05	< 0.001	< 0.05	1.6	10.26	4.5
	BW	< 0.05	< 0.001	< 0.05	ND	14.25	ND
Station-7	SW	< 0.05	< 0.001	< 0.05	1.4	12.58	3.3
	BW	< 0.05	< 0.001	< 0.05	ND	11.29	ND
Station-8	SW	< 0.05	< 0.001	< 0.05	2.5	12.33	2.8
	BW	< 0.05	< 0.001	< 0.05	ND	12.49	ND

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PHYTOPLANKTON MONITORING DATA					
Locations		Total Count/L	No. of Species	Chlorophyll-a (µg/L)	Major Species
Station-1	SW	1024	19	1.0214	*Pleurosigma, C.pentagonum, N.striata*
	BW	1247	12	0.8451	*Pleurosigma, N.longisigma, C.pentagonum, N.striata, Skeletonema*
Station-2	SW	2111	13	1.1475	*Podosira ,, Bacillaria, N.striata*
	BW	1003	11	1.0021	*C.pentagonu, Bacillaria, Podosira*
Station-3	SW	2365	21	2.1124	*Bacillaria,Chaetocerous, Podosira*
	BW	1255	15	1.0217	*N.longisigma, Podosira, Ceratium, C.furca*
Station-4	SW	2441	20	1.2424	*C.pentagonum, Skeletonema, N.longisigma, Bacillaria*
	BW	2896	15	1.5128	*Podosira ,C.pentagonum,N.striata*
Station-5	SW	1020	22	1.0111	*C.pentagonum, N.striata, C.furca,Ceratiu, N.longisigma*
	BW	984	10	0.9965	*C.pentagonum, N.striata, Chaetocerous, Bacillaria*
Station-6	SW	1232	11	1.3211	*C.pentagonum, N.striata, C.furca, N.striata*
	BW	1249	13	1.0014	*C.pentagonum, Pleurosigma, N.longisigma, Bacillaria*
Station-7	SW	1023	21	1.0199	*C.pentagonu,Bacillaria,Podosira, N.longisigma*
	BW	1956	14	1.2238	*C.pentagonum, Chaetocerous, Bacillaria, N.striata*
Station-8	SW	1452	23	1.0396	*Bacillaria, Chaetocerous, Ceratium,*
	BW	2457	12	1.2347	*C.pentagonum,, C.furca, Bacillaria, Podosira,*

*SW= Surface Water, BW= Bottom Water

ZOOPLANKTON MONITORING DATA				
Locations		Total Count/L	No. of Species	Major Species
Station-1	SW	1295	14	*Ostracoda, Protozoa, Copepod, Rotifera*
	BW	1051	10	*Protozoa ,Rotifera, Copepod*
Station-2	SW	1596	13	*Cladocera, Nematoda, Cladocera*
	BW	1284	14	*Copepod, Rotifera, Ostracoda*
Station-3	SW	1638	12	*Protozoa, Rotifera, Nematoda*
	BW	1032	16	*Anostraca, Cladocera,Nematoda*
Station-4	SW	1298	21	*Crustacean Larvae, Protozoa, Nematoda*
	BW	1954	18	*Rotifera, Nematoda, Cladocera*
Station-5	SW	1659	20	*Rotifera, Protoza, Nematoda, Cladocera*
	BW	1895	14	*Cladocera, Nematoda, Rotifera*
Station-6	SW	1496	15	*Crustacean Larvae, Protozoa, Nematoda, Rotifera*
	BW	1021	13	*Protozoa, Nematoda, Copepod*
Station-7	SW	1879	14	*Anostraca, Cladocera, Rotifera*
	BW	1365	18	*Rotifera, Protoza, Nematoda, Crustacean Larvae*
Station-8	SW	1274	13	*Copepod, Rotifera, Cladocera*
	BW	1498	19	*Ostracoda, Protozoa, Copepod, Rotifera*

*SW= Surface Water, BW= Bottom Water

MICROBIOLOGICAL MONITORING DATA					
Locations		Total Bacterial Count (CFU/ml)	Total Coliform (CFU/ml)	Faecal Coliform (CFU/ml)	*E.coli* (CFU/ml)
Station-1	SW	220	24	1.8	ND
	BW	220	15	6.1	ND
Station-2	SW	210	15	<1.8	ND
	BW	210	32	3.6	ND
Station-3	SW	120	21	3.6	ND
	BW	270	14	2.0	ND
Station-4	SW	110	11	2.0	ND
	BW	120	25	1.8	ND
Station-5	SW	110	21	2.0	ND
	BW	270	33	<1.8	ND
Station-6	SW	250	13	3.7	ND
	BW	110	21	2.0	ND
Station-7	SW	140	13	2.0	ND
	BW	250	17	2.0	ND
Station-8	SW	280	21	1.8	ND
	BW	390	24	<1.8	ND

*SW= Surface Water, BW= Bottom Water

MICROBIOLOGICAL MONITORING DATA					
Locations		Enterococcus (CFU/ml)	Salmonella (CFU/ml)	Shigella (CFU/ml)	Vibrio (CFU/ml)
Station-1	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-2	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-3	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-4	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-5	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-6	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-7	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-8	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND

*SW= Surface Water, BW= Bottom Water

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PRIMARY PRODUCTIVITY MONITORING DATA			
Locations		Gross Primary Productivity (mgC/ L/ day)	Net Primary Productivity (mgC/ L/ day)
Station-1	SW	2.3	1.6
	BW	1.7	1.3
Station-2	SW	2.2	1.6
	BW	2.0	1.4
Station-3	SW	2.6	1.9
	BW	2.4	1.2
Station-4	SW	2.3	1.9
	BW	2.1	1.8
Station-5	SW	2.3	1.7
	BW	1.9	1.3
Station-6	SW	1.1	0.9
	BW	0.8	0.6
Station-7	SW	1.6	1.4
	BW	1.5	1.3
Station-8	SW	2.1	1.6
	BW	1.8	1.3

*SW= Surface Water, BW= Bottom Water

PHYTOBENTHOS MONITORING DATA						
Locations		Fungus (CFU/1 g dry wt.)	Total Count/ 50g wet sediment	No. of Species	Diversity Index	Major Species
Station-1	SW	2451	189	8	0.8954	*N.longsigma, Podosira*
	BW	2475	249	12	0.9885	*Podosira, Ditylum*
Station-2	SW	3547	210	9	0.6457	*Podosira, N. longsigma*
	BW	2512	142	7	0.5421	*Podosira, N. longsigma, Ditylum*
Station-3	SW	2201	130	9	0.4579	*Ditylum*
	BW	2145	145	12	0.5217	*Podosira, N. longsigma*
Station-4	SW	3069	128	12	0.5148	*Podosira*
	BW	3621	1124	11	0.5214	*Ditylum*
Station-5	SW	1845	247	9	0.8511	*Podosira, Ditylum*
	BW	998	314	11	0.8547	*Podosira, N. longsigma*
Station-6	SW	1985	475	8	0.9654	*Podosira, Ditylum*
	BW	1478	314	11	0.9987	*Podosira*
Station-7	SW	2415	285	14	0.4875	*Podosira, N. longsigma,*
	BW	2644	267	8	0.4458	*Podosira, N. longsigma, Ditylum*
Station-8	SW	3854	754	11	0.8695	*N. longsigma, Ditylum*
	BW	2154	784	14	0.5864	*Ditylum, N. longsigma,*

*SW= Surface Water, BW= Bottom Water

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TOTAL FAUNA MONITORING DATA				
Locations		Name of Phylum, Class and Number of individuals encountered	Total number of species Encountered	Total Fauna per m^3
Station-1	SW	1.Phylum- Arthropoda Class- Malagostraca-15 2.Phylum- Annelida Class-Polychaeta-4	15	85
	BW	1.Phylum- Arthropoda Class- Malagostraca-11 2.Phylum- Annelida Class-Polychaeta-22	21	147
Station-2	SW	1.Phylum-Annelida Class-Polchaeta-16 2.Phylum-Arthropda Class- Copepoda-08	13	147
	BW	1.Phylum-Annelida Class-Polchaeta-12 2.Phylum-Arthropda Class- Copepoda-14	24	120
Station-3	SW	1.Phylum- Arthropoda Class- Malagostraca-14 2.Phylum- Annelida Class-Polychaeta-22 3.Phylum- Mollusca Class-Gastropoda-14 Class- Pelecypoda-11	186	957
	BW	1.Phylum- Arthropoda Class- Malagostraca-19 2.Phylum- Annelida Class-Polychaeta-16 3.Phylum- Mollusca Class-Gastropoda-20 Class- Pelecypoda-09	144	784
Station-4	SW	1.Phylum- Annelida Class-Polychaeta-11 2.Phylum-Mollusca Class-Gastropoda-12 Class-Pelecypoda-19 Class-Bivalvia-06	32	347
	BW	1.Phylum- Annelida Class-Polychaeta-20 2.Phylum-Mollusca Class-Gastropoda-27 Class-Pelecypoda-21 Class-Bivalvia-16	45	845

Station-5	SW	1.Phylum- Anthropoda Class- Amphipoda-23 2.Phylum- Annelida Class- Polychaeta- 40 3.Phylum- Mollusca Class- Pelecypoda-09 Class- Bivalvia-16 Class- Gastropoda-19	24	987
	BW	1.Phylum- Anthropoda Class- Amphipoda-11 2.Phylum- Annelida Class- Polychaeta- 12 3.Phylum- Mollusca Class- Pelecypoda-11 Class- Bivalvia-19 Class- Gastropoda-14	60	1024
Station-6	SW	1.Phylum- Annelida Class- Polychaeta-27 2.Phylum- Mollusca Class- Bivalvia-35	87	541
	BW	1.Phylum- Annelida Class- Polychaeta-21 2.Phylum- Mollusca Class- Bivalvia-14	32	418
Station-7	SW	1.Phylum-Annelida Class- Polychaeta-16 2.Phylum- Mollusca Class- Gastropoda-11 Class-Bivalvia-17 Class- Scaphopoda-12	41	527
	BW	1.Phylum-Annelida Class- Polychaeta-16 2.Phylum- Mollusca Class- Gastropoda-12 Class-Bivalvia-20 Class- Scaphopoda-04	15	310
Station-8	SW	1.Phylum- Annelida Class- Polychaeta-20	28	247
	BW	1.Phylum- Annelida Class- Polychaeta-21	16	412

*SW= Surface Water, BW= Bottom Water

Ms. M. Rout, Msc. Env. Sc
GOVT. ANALYST
(GAZETTED Authorized Signatory) 03-06-2016

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Reference no. - CEMC/DPL/051216/Sed Issued Date-05.12.16

SEA SEDIMENT ANALYSIS REPORT

Name & Address of the Customer : **Dhamra Port Ltd., Bhadrak**
Date of Sampling : 26.11.2016
Sampling by : Biswaranjan Behera
Sampling Plan & Procedure : APHA
Sample Description : Sediment

SEDIMENT ANALYSIS DATA

Locations	pH	Organic Matter	Moisture Content (%)	Conductivity (µS/cm)	Iron (%)	Sodium (%)	Copper (mg/kg)	Nickel (mg/Kg)	Zinc (mg/kg)
Station-1	7.6	2.4	4.9	3.24	3.9	24.15	< 5	< 1	< 3
Station-2	7.7	5.2	5.1	3.86	3.9	21.85	< 5	< 1	< 3
Station-3	7.6	5.1	7.1	5.12	3.9	29.54	< 5	< 1	< 3
Station-4	7.2	5.7	6.9	8.12	4.2	21.45	< 5	< 1	< 3
Station-5	7.3	5.7	6.3	4.89	3.2	23.89	< 5	< 1	< 3
Station-6	7.4	4.9	5.2	4.33	4.2	22.84	< 5	< 1	< 3
Station-7	7.1	6.9	4.9	4.98	2.3	25.49	< 5	< 1	< 3
Station-8	7.6	4.9	4.8	5.23	3.7	20.57	< 5	< 1	< 3

SEDIMENT ANALYSIS DATA

Locations	Manganese (mg/kg)	Lead (mg/kg)	Boron (mg/kg)	Phosphate (mg/kg)	Chloride (mg/kg)	Sulphate (mg/kg)	Sulphide (mg/kg)	Pesticide (mg/kg)	Potassium (mg/kg)
Station-1	< 1	< 5	< 0.5	< 0.5	784	4896	ND	ND	0.77
Station-2	< 1	< 5	< 0.5	< 0.5	762	4521	ND	ND	0.56
Station-3	< 1	< 5	< 0.5	< 0.5	715	5024	ND	ND	0.65
Station-4	< 1	< 5	< 0.5	< 0.5	845	5986	ND	ND	1.22
Station-5	< 1	< 5	< 0.5	< 0.5	795	5868	ND	ND	0.89
Station-6	< 1	< 5	< 0.5	< 0.5	795	7054	ND	ND	0.56
Station-7	< 1	< 5	< 0.5	< 0.5	952	7954	ND	ND	1.21
Station-8	< 1	< 5	< 0.5	< 0.5	854	8245	ND	ND	1.12

SEDIMENT ANALYSIS DATA

Locations	Total Chromium (mg/kg)	Petroleum Hydrocarbon (mg/kg)	Aluminium (mg/kg)	Total Nitrogen (mg/kg)	Organic Nitrogen (mg/kg)	Phosphorous (mg/kg)	Texture (%)		
							Sand	Silt	Clay
Station-1	< 1	ND	< 0.1	2.6	1.4	3.1	0.65	15.24	84.11
Station-2	< 1	ND	< 0.1	2.9	1.4	4.2	0.75	32.51	66.74
Station-3	< 1	ND	< 0.1	2.7	1.9	2.5	0.87	49.25	49.88
Station-4	< 1	ND	< 0.1	2.9	1.3	3.3	0.88	15.01	84.11
Station-5	< 1	ND	< 0.1	2.9	2.7	2.3	0.94	25.44	73.62
Station-6	< 1	ND	< 0.1	3.9	2.0	1.9	2.9	48.21	48.89
Station-7	< 1	ND	< 0.1	3.3	1.4	3.3	0.97	26.48	72.55
Station-8	< 1	ND	< 0.1	3.3	2.1	2.7	1.69	33.84	64.47

PHYTOBENTHOS MONITORING DATA					
Locations	Fungus (CFU/1 g dry wt.)	Total Count/ 50g wet sediment	No. of Species	Diversity Index	Major Species
Station-1	3157	299	10	1.0054	*Podosira, Ditylum*
Station-2	986	754	12	0.6843	*Podosira, N. longsigma*
Station-3	5329	440	10	1.0214	*Podosira*
Station-4	3751	428	9	0.5261	*Podosira, N. longsigma*
Station-5	1635	320	12	0.8754	*Podosira, N. longsigma*
Station-6	2657	201	12	0.2455	*Podosira, N.longsigma, Ditylum*
Station-7	2981	510	11	0.5214	*N. longsigma; Ditylum*
Station-8	1257	398	8	0.5111	*Podosira, Ditylum*

TOTAL FAUNA MONITORING DATA			
Locations	Name of Phylum, Class and Number of individuals encountered	Total number of species Encountered	Total Fauna per m^3
Station-1	1.Phylum- Arthropoda Class- Malagostraca-18 2.Phylum- Annelida Class-Polychaeta-35	21	209
Station-2	1.Phylum-Annelida Class-Polchaeta-21 2.Phylum-Arthropda Class- Copepoda-14	124	163
Station-3	1.Phylum- Arthropoda Class- Malagostraca-10 2.Phylum- Annelida Class-Polychaeta-15 3.Phylum- Mollusca Class-Gastropoda-11 Class- Pelecypoda-19	101	857
Station-4	1.Phylum- Annelida Class-Polychaeta-20 2.Phylum-Mollusca Class-Gastropoda-8 Class-Pelecypoda-14 Class-Bivalvia-19	131	429
Station-5	1.Phylum- Anthropoda Class- Amphipoda-15 2.Phylum- Annelida Class- Polychaeta- 16 1.Phylum- Mollusca Class- Pelecypoda-11 Class- Bivalvia-12 Class- Gastropoda-13	85	986

Station-6	1.Phylum- Annelida Class- Polychaeta-19 2.Phylum- Mollusca Class- Bivalvia-12	47	884
Station-7	1.Phylum-Annelida Class- Polychaeta-11 2.Phylum- Mollusca Class- Gastropoda-15 Class-Bivalvia-11 Class- Scaphopoda-18	33	511
Station-8	1.Phylum- Annelida Class- Polychaeta-21 2.Phylum- Mollusca Class- Gastropoda-09 Class-Bivalvia-12 Class- Scaphopoda-11	29	327

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Reference no. - CEMC/DPL/040117/A **Issued Date-04.01.17**

AMBIENT AIR QUALITY MONITORING TEST REPORT

Client Name & Address	**Dhamara Port Ltd., Bhadrak**
Work Order No.	**5700178552**
Reference No.	**CEMC-04012017**
Nature of Sampling	**Ambient Air Sample**
Sampling Location	**Near MCC-1**
Sampling By	**Mr. Biswaranjan Behera**
Sampling Duration	**01.12.2016 to 31.12.2016**

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NOx ($\mu g/m^3$)	CO (mg/m^3)	NH_3 ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	BaP (ng/m^3)
02.12.2016	57.5	27.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.12.2016	59.2	28.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
08.12.2016	56.4	26.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.12.2016	58.3	27.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16.12.2016	57.4	26.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.12.2016	56.9	24.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23.12.2016	56.8	25.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.12.2016	57.9	27.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
30.12.2016	56.5	26.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	**100**	**60**	**80**	**80**	**4**	**400**	**100**	**1.0**	**20**	**6**	**5**	**1**
Methods of Analysis	**IS: 5182 (Part-23)**	**Gravimetric Method as per CPCB method**	**IS: 5182 (Part-2)**	**IS: 5182 (Part-6)**	**IS: 5182 (Part-10)**	**Indophenol Blue Method followed by CPCB**	**IS: 5182 (Part-9)**	**IS: 5182 (Part-22)**	**As per CPCB method followed by AAS**	**As per CPCB method followed by AAS**	**IS: 5182 (Part-11)**	**IS: 5182 (Part-12)**

N.B- *NAAQ (National Ambient Air Quality Standard as per 18th Nov,2009Gatt. Notification)
BDL Value (NO_X<9.0 $\mu g/m^3$,SO_2<4.0 $\mu g/m^3$,NH_3<20 $\mu g/m^3$, As<0.44 ng/m^3,Ni<0.6 ng/m^3,Pb<0.06 $\mu g/m^3$,CO<0.1 mg/m^3, Benzo(a)pyrene<1 ng/m^3), Benzene <5 $\mu g/m^3$)

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AMBIENT AIR QUALITY MONITORING TEST REPORT

Client Name & Address	**Dhamara Port Ltd., Bhadrak**
Work Order No.	**5700178552**
Reference No.	**CEMC-04012017**
Nature of Sampling	**Ambient Air Sample**
Sampling Location	**Near Settling Pond**
Sampling By	**Mr. Biswaranjan Behera**
Sampling Date	**01.12.2016 to 31.12.2016**

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NOx ($\mu g/m^3$)	CO (mg/m^3)	NH_3 ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	BaP (ng/m^3)
02.12.2016	89.5	48.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.12.2016	87.3	45.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
08.12.2016	88.9	46.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.12.2016	89.2	47.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16.12.2016	87.1	44.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.12.2016	86.3	45.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23.12.2016	87.6	46.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.12.2016	88.5	47.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
30.12.2016	86.8	46.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	**100**	**60**	**80**	**80**	**4**	**400**	**100**	**1.0**	**20**	**6**	**5**	**1**
Methods of Analysis	**IS: 5182 (Part-23)**	**Gravimetric Method as per CPCB method**	**IS: 5182 (Part-2)**	**IS: 5182 (Part-6)**	**IS: 5182 (Part-10)**	**Indophenol Blue Method followed by CPCB**	**IS: 5182 (Part-9)**	**IS: 5182 (Part-22)**	**As per CPCB method followed by AAS**	**As per CPCB method followed by AAS**	**IS: 5182 (Part-11)**	**IS: 5182 (Part-12)**

N.B- *NAAQ (National Ambient Air Quality Standard as per 18th Nov,2009Gatt. Notification)
BDL Value (NO_X<9.0 $\mu g/m^3$,SO_2<4.0 $\mu g/m^3$,NH_3<20 $\mu g/m^3$, As<0.44 ng/m^3,Ni<0.6 ng/m^3,Pb<0.06 $\mu g/m^3$,CO<0.1 mg/m^3, Benzo(a)pyrene<1 ng/m^3), Benzene <5 $\mu g/m^3$)

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AMBIENT AIR QUALITY MONITORING TEST REPORT

Client Name & Address	**Dhamara Port Ltd., Bhadrak**
Work Order No.	**5700178552**
Reference No.	**CEMC-04012017**
Nature of Sampling	**Ambient Air Sample**
Sampling Location	**Near WTP**
Sampling By	**Mr. Biswaranjan Behera**
Sampling Date	**01.12.2016 to 31.12.2016**

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NOx ($\mu g/m^3$)	CO (mg/m^3)	NH_3 ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	BaP (ng/m^3)
02.12.2016	48.6	23.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.12.2016	46.9	22.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
08.12.2016	48.6	25.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.12.2016	47.5	25.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16.12.2016	49.3	26.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.12.2016	45.7	23.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23.12.2016	49.8	25.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.12.2016	48.6	24.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
30.12.2016	49.8	24.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	**100**	**60**	**80**	**80**	**4**	**400**	**100**	**1.0**	**20**	**6**	**5**	**1**
Methods of Analysis	**IS: 5182 (Part-23)**	**Gravimetric Method as per CPCB method**	**IS: 5182 (Part-2)**	**IS: 5182 (Part-6)**	**IS: 5182 (Part-10)**	**Indophenol Blue Method followed by CPCB**	**IS: 5182 (Part-9)**	**IS: 5182 (Part-22)**	**As per CPCB method followed by AAS**	**As per CPCB method followed by AAS**	**IS: 5182 (Part-11)**	**IS: 5182 (Part-12)**

N.B- *NAAQ (National Ambient Air Quality Standard as per 18th Nov,2009Gatt. Notification)
BDL Value (NO_X<9.0 $\mu g/m^3$,SO_2<4.0 $\mu g/m^3$,NH_3<20 $\mu g/m^3$, As<0.44 ng/m^3,Ni<0.6 ng/m^3,Pb<0.06 $\mu g/m^3$,CO<0.1 mg/m^3, Benzo(a)pyrene<1 ng/m^3) , Benzene <5 $\mu g/m^3$)

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AMBIENT AIR QUALITY MONITORING TEST REPORT

Client Name & Address	**Dhamara Port Ltd., Bhadrak**
Work Order No.	**5700178552**
Reference No.	**CEMC-04012017**
Nature of Sampling	**Ambient Air Sample**
Sampling Location	**Near Community Hall**
Sampling By	**Mr. Biswaranjan Behera**
Sampling Date	**01.12.2016 to 31.12.2016**

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NOx ($\mu g/m^3$)	CO (mg/m^3)	NH_3 ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	BaP (ng/m^3)
02.12.2016	55.7	31.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.12.2016	56.2	32.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
08.12.2016	57.9	33.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.12.2016	54.0	32.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16.12.2016	57.5	34.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.12.2016	56.8	33.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23.12.2016	58.9	36.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.12.2016	56.8	35.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
30.12.2016	57.4	34.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	**100**	**60**	**80**	**80**	**4**	**400**	**100**	**1.0**	**20**	**6**	**5**	**1**
Methods of Analysis	**IS: 5182 (Part-23)**	**Gravimetric Method as per CPCB method**	**IS: 5182 (Part-2)**	**IS: 5182 (Part-6)**	**IS: 5182 (Part-10)**	**Indophenol Blue Method followed by CPCB**	**IS: 5182 (Part-9)**	**IS: 5182 (Part-22)**	**As per CPCB method followed by AAS**	**As per CPCB method followed by AAS**	**IS: 5182 (Part-11)**	**IS: 5182 (Part-12)**

N.B- *NAAQ (National Ambient Air Quality Standard as per 18th Nov,2009Gatt. Notification)
BDL Value (NO_X<9.0 $\mu g/m^3$,SO_2<4.0 $\mu g/m^3$,NH_3<20 $\mu g/m^3$, As<0.44 ng/m^3,Ni<0.6 ng/m^3,Pb<0.06 $\mu g/m^3$,CO<0.1 mg/m^3, Benzo(a)pyrene<1 ng/m^3) , Benzene <5 $\mu g/m^3$)

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Reference no. - CEMC/DPL/040117/A **Issued Date-04.01.17**

AMBIENT AIR QUALITY MONITORING TEST REPORT

Client Name & Address	**Dhamara Port Ltd., Bhadrak**
Work Order No.	**5700178552**
Reference No.	**CEMC-04012017**
Nature of Sampling	**Ambient Air Sample**
Sampling Location	**Near Dhamra Old guest house**
Sampling By	**Mr. Biswaranjan Behera**
Sampling Date	**01.12.2016 to 31.12.2016**

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NOx ($\mu g/m^3$)	CO (mg/m^3)	NH_3 ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	BaP (ng/m^3)
02.12.2016	43.2	22.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.12.2016	46.4	24.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
08.12.2016	45.8	23.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.12.2016	47.3	25.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
16.12.2016	44.9	23.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.12.2016	46.5	24.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23.12.2016	47.8	24.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.12.2016	46.7	25.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
30.12.2016	47.2	26.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	**100**	**60**	**80**	**80**	**4**	**400**	**100**	**1.0**	**20**	**6**	**5**	**1**
Methods of Analysis	**IS: 5182 (Part-23)**	**Gravimetric Method as per CPCB method**	**IS: 5182 (Part-2)**	**IS: 5182 (Part-6)**	**IS: 5182 (Part-10)**	**Indophenol Blue Method followed by CPCB**	**IS: 5182 (Part-9)**	**IS: 5182 (Part-22)**	**As per CPCB method followed by AAS**	**As per CPCB method followed by AAS**	**IS: 5182 (Part-11)**	**IS: 5182 (Part-12)**

N.B- *NAAQ (National Ambient Air Quality Standard as per 18th Nov,2009Gatt. Notification)
BDL Value (NO_x<9.0 $\mu g/m^3$,SO_2<4.0 $\mu g/m^3$,NH_3<20 $\mu g/m^3$, As<0.44 ng/m^3,Ni<0.6 ng/m^3,Pb<0.06 $\mu g/m^3$,CO<0.1 mg/m^3, Benzo(a)pyrene<1 ng/m^3) , Benzene <5 $\mu g/m^3$)

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Reference no. - CEMC/DPL/040117/N **Issued Date-04.01.17**

NOISE LEVEL MONITORING REPORT

Issued to	**Dhamara Port Ltd., Bhadrak**
Analysis No.	**CEMC/DPL-D00N1**
Nature of Sampling	**Noise Sample**
Sampling By	**Mr. Biswaranjan Behera**
Sampling Date	**01.12.2016 to 31.12.2016**

Date	Location	NL Day Time dB (A)			NL NightTime dB (A)		
		Max	Min.	Avg.	Max.	Min.	Avg.
12.12.2016	NEAR DHAMRA OLD GUEST HOUSE	64.2	61.2	62.7	41.9	36.8	39.35
13.12.2016	NEAR COMMUNITY HALL	65.8	61.7	63.75	42.3	43.8	43.05
14.12.2016	NEAR WTP	66.2	61.8	64	43.9	38.2	41.05
15.12.2016	NEAR MCC-1	65.4	62.2	63.8	46.5	44.2	45.35
16.12.2016	NEAR SETTLING POND	66.7	63.7	65.2	48.8	40.6	44.7

National Standard Noise Level

Area Code	Category of Area/Zone	Permissible Limit in dB (A)	
		Day Time	Night Time
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40

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Reference no. - CEMC/DPL/040117/WW **Issued Date-04.01.17**

STP REPORT

Name & Address of the Customer : **Dhamra Port Ltd., Bhadrak**
Date of Sampling : 09.12.2016
Sampling by : Biswaranjan Behera
Sampling Plan & Procedure : APHA
Sample Description : Waste Water
Sample Quantity : 1.0 Ltr
Sample Location : **STP section (15 KLD)**

SOURCE
SAMPLE 1: **STP Inlet Water**
SAMPLE 2: **STP Outlet Water**

SAMPLE 1

Sl. No.	Parameter	Units of Measurements	Sample 1	Design parameter for Raw Sewage
1	Appearance	--	Turbid	-
2	Colour	--	Blackish	-
3	Odour	--	Foul	-
4	pH	--	6.9	6-8.5
5	Total Suspended Solids	mg/l	94.8	1000
6	B.O.D	mg/l	120	300-350
7	Oil & grease	mg/l	5.8	100

SAMPLE 2

Sl. No.	Parameter	Units of Measurements	Sample 2	Design parameter for Treated Sewage
1	Appearance	--	Clear	-
2	Colour	--	Colorless	-
3	Odour	--	Odourless	-
4	pH	--	7.3	5.5-9
5	Total Suspended Solids	mg/l	22.9	<100
6	B.O.D	mg/l	16	<30
7	Oil & grease	mg/l	ND	<10

*ND-Not Detectable

Envotech & Management Consultancy Pvt. Ltd. Environmental Laboratory Seal of Lab

Ms. M. Rout, Msc. Env. Sc
Authorised Signatory
(GAZETTE NO-1357(E):03-06-2016)

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Reference no. - CEMC/DPL/040117/WW **Issued Date-04.01.17**

STP REPORT

Name & Address of the Customer : **Dhamra Port Ltd., Bhadrak**
Date of Sampling : 09.12.2016
Sampling by : Biswaranjan Behera
Sampling Plan & Procedure : APHA
Sample Description : Waste Water
Sample Quantity : 1.0 Ltr
Sample Location : **STP section (150KLD)**

SOURCE
SAMPLE 1: **STP Inlet Water**
SAMPLE 2: **STP Outlet Water**

SAMPLE 1

Sl. No.	Parameter	Units of Measurements	Sample 1	Design parameter for Raw Sewage
1	Appearance	--	Turbid	-
2	Colour	--	Blackish	-
3	Odour	--	Foul	-
4	pH	--	7.4	6-8.5
5	Total Suspended Solids	mg/l	80.4	1000
6	B.O.D	mg/l	90	300-350
7	Oil & grease	mg/l	6.4	100

SAMPLE 2

Sl. No.	Parameter	Units of Measurements	Sample 2	Design parameter for Treated Sewage
1	Appearance	--	Clear	-
2	Colour	--	Colorless	-
3	Odour	--	Odourless	-
4	pH	--	7.2	5.5-9
5	Total Suspended Solids	mg/l	20.4	<100
6	B.O.D	mg/l	14	<30
7	Oil & grease	mg/l	ND	<10

***ND-Not Detectable**

For Envotech & Management Consultancy Pvt. Ltd. Environmental Laboratory Seal of lab

Ms. M. Rout, Msc. Env. Sc
Govt. ANALYST
(GAZETTE Authorised Signatory 08-06-2016)

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Reference no. - CEMC/DPL/040117/WW **Issued Date-04.01.17**

STP REPORT

Name & Address of the Customer	**: Dhamra Port Ltd., Bhadrak**
Date of Sampling	: 27.12.2016
Sampling by	: Biswaranjan Behera
Sampling Plan & Procedure	: APHA
Sample Description	: Waste Water
Sample Quantity	: 1.0 Ltr
Sample Location	**: STP section (15 KLD)**

SOURCE
SAMPLE 1: **STP Inlet Water**
SAMPLE 2: **STP Outlet Water**

SAMPLE 1

Sl. No.	Parameter	Units of Measurements	Sample 1	Design parameter for Raw Sewage
1	Appearance	--	Turbid	-
2	Colour	--	Blackish	-
3	Odour	--	Foul	-
4	pH	--	7.2	6-8.5
5	Total Suspended Solids	mg/l	84.6	1000
6	B.O.D	mg/l	100	300-350
7	Oil & grease	mg/l	5.3	100

SAMPLE 2

Sl. No.	Parameter	Units of Measurements	Sample 2	Design parameter for Treated Sewage
1	Appearance	--	Clear	-
2	Colour	--	Colorless	-
3	Odour	--	Odourless	-
4	pH	--	8.0	5.5-9
5	Total Suspended Solids	mg/l	18.7	<100
6	B.O.D	mg/l	15	<30
7	Oil & grease	mg/l	ND	<10

N.B: ND-Not Detectable

Ms. M. Rout, Msc. Env. Sc
Govt. ANALYST
(GAZETTE NO. [illegible] DT-03-06-2016)
Authorized Signatory

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Reference no. - CEMC/DPL/040117/WW **Issued Date-04.01.17**

STP REPORT

Name & Address of the Customer : **Dhamra Port Ltd., Bhadrak**
Date of Sampling : 27.12.2016
Sampling by : Biswaranjan Behera
Sampling Plan & Procedure : APHA
Sample Description : Waste Water
Sample Quantity : 1.0 Ltr
Sample Location : **STP section (150 KLD)**

SOURCE
SAMPLE 1: **STP Inlet Water**
SAMPLE 2: **STP Outlet Water**

SAMPLE 1

Sl. No.	Parameter	Units of Measurements	Sample 1	Design parameter for Raw Sewage
1	Appearance	--	Turbid	-
2	Colour	--	Blackish	-
3	Odour	--	Foul	-
4	pH	--	6.9	6-8.5
5	Total Suspended Solids	mg/l	110.4	1000
6	B.O.D	mg/l	110	300-350
7	Oil & grease	mg/l	7.2	100

SAMPLE 2

Sl. No.	Parameter	Units of Measurements	Sample 2	Design parameter for Treated Sewage
1	Appearance	--	Clear	-
2	Colour	--	Colorless	-
3	Odour	--	Odourless	-
4	pH	--	7.4	5.5-9
5	Total Suspended Solids	mg/l	23.2	<100
6	B.O.D	mg/l	17	<30
7	Oil & grease	mg/l	ND	<10

*ND-Not Detectable

For Envotech & Management Consultancy Pvt. Ltd. Environmental Laboratory Signature of Tester

Ms. M. Rout, Msc. Env. Sc.
(Authorized Signatory)
Date: 03.06.2016

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Reference no. - CEMC/DPL/040117/SW **Issued Date-04.01.17**

SEA WATER ANALYSIS REPORT

Name & Address of the Customer : **Dhamra Port Ltd., Bhadrak**
Date of Sampling : 27.12.2016
Sampling by : Biswaranjan Behera
Sampling Plan & Procedure : APHA
Sample Description : Sea Water

STATION DESCRIPTION

SL. NO.	STATION	GPS COORDINATES
01	STATION-1	20°46'55.5" N 86°57'40.5" E
02	STATION-2	20°49'05.0" N 86°58'14.3" E
03	STATION-3	20°51'33.5" N 87°00'17.0" E
04	STATION-4	20°52'55.8" N 87°02'44.9" E
05	STATION-5	20°54'20.4" N 87°05'14.0" E
06	STATION-6	20°54'54.3" N 87°06'13.8" E
07	STATION-7	20°54'45.0" N 87°07'13.6" E
08	STATION-8	20°54'42.8" N 87°07'50.4" E

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WATER ANALYSIS DATA

Locations		Temp. (°C)	Turbidity (NTU)	Conductivity (µS/cm)	pH	Salinity (ppt)	DO (mg/l)	BOD (mg/l)	COD (mg/l)
Station-1	SW	24	37	42.1	8.1	26.57	7.0	< 3	10
	BW	23	35	41.8	8.0	25.78	6.5	< 3	< 10
Station-2	SW	24	38	44.8	7.9	26.88	6.7	< 3	10
	BW	23	31	42.7	8.0	25.47	6.6	< 3	< 10
Station-3	SW	25	38	44.6	8.1	26.74	7.0	< 3	10
	BW	24	33	43.2	7.9	25.11	6.9	< 3	< 10
Station-4	SW	26	35	41.5	8.1	24.88	7.0	< 3	10
	BW	25	33	38.1	7.6	25.49	6.2	< 3	< 10
Station-5	SW	24	33	42.9	8.1	24.75	6.8	< 3	30
	BW	24	35	42.8	7.9	25.16	6.6	< 3	< 10
Station-6	SW	25	35	42.1	7.5	26.41	6.1	3.2	30
	BW	24	36	43.5	7.2	24.56	6.8	< 3	< 10
Station-7	SW	24	41	42.9	8.2	21.49	6.0	3.2	20
	BW	25	39	40.2	7.6	23.41	6.7	< 3	< 10
Station-8	SW	25	37	40.5	8.2	26.96	6.1	3.1	20
	BW	24	36	34.7	7.9	24.27	6.5	< 3	< 10

*SW= Surface Water, BW= Bottom Water

WATER ANALYSIS DATA

Locations		Copper (mg/l)	Cadmium (mg/l)	Mercury (mg/l)	Phosphate (mg/l)	Sulphate (mg/l)	Nitrite (mg/l)	Nitrate (mg/l)	TSS (mg/l)
Station-1	SW	< 0.05	< 0.01	< 0.001	< 0.05	1654	0.53	8.0	244.3
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1721	0.58	7.3	149.7
Station-2	SW	< 0.05	< 0.01	< 0.001	< 0.05	1698	0.51	8.0	203.9
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1774	0.49	7.3	198.4
Station-3	SW	< 0.05	< 0.01	< 0.001	< 0.05	1633	0.74	7.9	281.2
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1751	0.48	8.3	145.8
Station-4	SW	< 0.05	< 0.01	< 0.001	< 0.05	1754	0.33	7.7	305.4
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1542	0.38	7.1	201.6
Station-5	SW	< 0.05	< 0.01	< 0.001	< 0.05	1695	0.50	7.2	293.1
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1544	0.74	8.6	161.9
Station-6	SW	< 0.05	< 0.01	< 0.001	< 0.05	1601	0.51	7.9	310.5
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1574	0.85	8.0	103.5
Station-7	SW	< 0.05	< 0.01	< 0.001	< 0.05	1601	0.44	6.6	203.8
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1433	0.68	8.4	136.2
Station-8	SW	< 0.05	< 0.01	< 0.001	< 0.05	1611	0.74	7.9	251.4
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1459	0.58	8.8	112.3

*SW= Surface Water, BW= Bottom Water

WATER ANALYSIS DATA							
Locations		Calcium Hardness (mg/l)	Magnesium Hardness (mg/l)	Total Hardness (mg/l)	Total Dissolved Solids (mg/l)	Ammonical Nitrogen (mg/l)	Total Nitrogen (mg/l)
Station-1	SW	2540	910	3450	31251	ND	13.6
	BW	2650	780	3430	30215	ND	12.9
Station-2	SW	2510	830	3340	33695	ND	12.1
	BW	2660	790	3450	31054	ND	10.6
Station-3	SW	2810	880	3690	32154	ND	11.1
	BW	2750	800	3550	28984	ND	10.5
Station-4	SW	2890	830	3720	31547	ND	11.1
	BW	2620	760	3380	29965	ND	10.3
Station-5	SW	2870	920	3790	30001	ND	10.3
	BW	2810	850	3660	30124	ND	10.6
Station-6	SW	3090	960	4050	31523	ND	11.2
	BW	2890	840	3730	29845	ND	9.2
Station-7	SW	2610	910	3520	30459	ND	11.3
	BW	2470	890	3360	30413	ND	10.4
Station-8	SW	2150	810	2960	32312	ND	12.6
	BW	2740	840	3580	30214	ND	10.5

*SW= Surface Water, BW= Bottom Water

WATER ANALYSIS DATA							
Locations		Total Chromium (mg/l)	Phenolic Compounds (mg/l)	Hexavalent Chromium (mg/l)	Petroleum Hydrocarbon (mg/l)	Chlorinity (‰)	Oil and Grease (mg/l)
Station-1	SW	< 0.05	< 0.001	< 0.05	1.5	12.12	5.6
	BW	< 0.05	< 0.001	< 0.05	ND	12.36	ND
Station-2	SW	< 0.05	< 0.001	< 0.05	1.6	13.04	5.1
	BW	< 0.05	< 0.001	< 0.05	ND	11.98	ND
Station-3	SW	< 0.05	< 0.001	< 0.05	1.8	12.41	5.6
	BW	< 0.05	< 0.001	< 0.05	ND	12.96	ND
Station-4	SW	< 0.05	< 0.001	< 0.05	1.9	13.21	4.3
	BW	< 0.05	< 0.001	< 0.05	ND	10.59	ND
Station-5	SW	< 0.05	< 0.001	< 0.05	1.8	13.95	5.4
	BW	< 0.05	< 0.001	< 0.05	ND	12.87	ND
Station-6	SW	< 0.05	< 0.001	< 0.05	1.5	11.21	4.4
	BW	< 0.05	< 0.001	< 0.05	ND	13.52	ND
Station-7	SW	< 0.05	< 0.001	< 0.05	1.8	11.69	3.2
	BW	< 0.05	< 0.001	< 0.05	ND	10.99	ND
Station-8	SW	< 0.05	< 0.001	< 0.05	2.7	13.36	2.9
	BW	< 0.05	< 0.001	< 0.05	ND	13.02	ND

*SW= Surface Water, BW= Bottom Water

PHYTOPLANKTON MONITORING DATA					
Locations		Total Count/L	No. of Species	Chlorophyll-a (µg/L)	Major Species
Station-1	SW	997	15	1.0321	*C.pentagonum, Skeletonema, N.longisigma, Bacillaria*
	BW	1054	13	0.8512	*Podosira ,C.pentagonum,N.striata*
Station-2	SW	2102	14	1.0142	*C.pentagonum, N.striata, C.furca,Ceratiu, N.longisigma*
	BW	1030	12	1.0214	*C.pentagonum, N.striata, Chaetocerous, Bacillaria*
Station-3	SW	2352	20	2.1031	*Pleurosigma, C.pentagonum, N.striata*
	BW	1251	14	1.0351	*Pleurosigma, N.longisigma, C.pentagonum, N.striata, Skeletonema*
Station-4	SW	2549	18	1.2113	*Podosira ,, Bacillaria, N.striata*
	BW	2641	16	1.4213	*C.pentagonu, Bacillaria, Podosira*
Station-5	SW	1002	18	1.0021	*C.pentagonu,Bacillaria,Podosira, N.longisigma*
	BW	990	12	0.9996	*C.pentagonum, Chaetocerous, Bacillaria, N.striata*
Station-6	SW	1241	12	1.310	*Bacillaria, Chaetocerous, Ceratium,*
	BW	1127	14	1.0201	*C.pentagonum,, C.furca, Bacillaria, Podosira,*
Station-7	SW	1021	22	1.0332	*Bacillaria,Chaetocerous, Podosira*
	BW	1874	16	1.2114	*N.longisigma, Podosira, Ceratium, C.furca*
Station-8	SW	1426	22	1.0002	*C.pentagonum, N.striata, C.furca, N.striata*
	BW	2154	13	1.1298	*C.pentagonum, Pleurosigma, N.longisigma, Bacillaria*

*SW= Surface Water, BW= Bottom Water

ZOOPLANKTON MONITORING DATA				
Locations		Total Count/L	No. of Species	Major Species
Station-1	SW	1196	13	*Anostraca, Cladocera, Rotifera*
	BW	1050	11	*Rotifera, Protoza, Nematoda, Crustacean Larvae*
Station-2	SW	1458	12	*Copepod, Rotifera, Cladocera*
	BW	1236	15	*Ostracoda, Protozoa, Copepod, Rotifera*
Station-3	SW	1457	10	*Rotifera, Protoza, Nematoda, Cladocera*
	BW	1023	18	*Cladocera, Nematoda, Rotifera*
Station-4	SW	1477	20	*Ostracoda, Protozoa, Copepod, Rotifera*
	BW	1845	16	*Protozoa ,Rotifera, Copepod*
Station-5	SW	1784	19	*Cladocera, Nematoda, Cladocera*
	BW	1642	12	*Copepod, Rotifera, Ostracoda*
Station-6	SW	1532	16	*Crustacean Larvae, Protozoa, Nematoda, Rotifera*
	BW	1002	14	*Protozoa, Nematoda, Copepod*
Station-7	SW	1684	12	*Protozoa, Rotifera, Nematoda*
	BW	1369	14	*Anostraca, Cladocera,Nematoda*
Station-8	SW	1478	12	*Crustacean Larvae, Protozoa, Nematoda*
	BW	1365	17	*Rotifera, Nematoda, Cladocera*

*SW= Surface Water, BW= Bottom Water

MICROBIOLOGICAL MONITORING DATA					
Locations		Total Bacterial Count (CFU/ml)	Total Coliform (CFU/ml)	Faecal Coliform (CFU/ml)	*E.coli* (CFU/ml)
Station-1	SW	110	21	2.0	ND
	BW	270	33	2.0	ND
Station-2	SW	280	21	1.8	ND
	BW	390	24	1.8	ND
Station-3	SW	220	24	2.0	ND
	BW	220	15	3.7	ND
Station-4	SW	250	13	6.1	ND
	BW	110	21	2.0	ND
Station-5	SW	140	13	2.0	ND
	BW	250	17	2.0	ND
Station-6	SW	210	15	1.8	ND
	BW	210	32	3.6	ND
Station-7	SW	120	21	2.0	ND
	BW	270	14	1.8	ND
Station-8	SW	110	11	2.0	ND
	BW	120	25	1.8	ND

*SW= Surface Water, BW= Bottom Water

MICROBIOLOGICAL MONITORING DATA					
Locations		Enterococcus (CFU/ml)	Salmonella (CFU/ml)	Shigella (CFU/ml)	Vibrio (CFU/ml)
Station-1	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-2	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-3	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-4	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-5	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-6	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-7	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-8	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND

*SW= Surface Water, BW= Bottom Water

PRIMARY PRODUCTIVITY MONITORING DATA			
Locations		Gross Primary Productivity (mgC/ L/ day)	Net Primary Productivity (mgC/ L/ day)
Station-1	SW	1.6	1.0
	BW	0.8	0.6
Station-2	SW	1.6	1.4
	BW	1.5	1.3
Station-3	SW	2.1	1.6
	BW	1.8	1.3
Station-4	SW	2.3	1.6
	BW	1.7	1.3
Station-5	SW	2.2	1.6
	BW	2.0	1.4
Station-6	SW	2.3	1.9
	BW	2.1	1.8
Station-7	SW	2.3	1.7
	BW	1.9	1.3
Station-8	SW	2.6	1.9
	BW	2.4	1.2

*SW= Surface Water, BW= Bottom Water

PHYTOBENTHOS MONITORING DATA						
Locations		Fungus (CFU/1 g dry wt.)	Total Count/ 50g wet sediment	No. of Species	Diversity Index	Major Species
Station-1	SW	2365	196	7	0.8477	*Ditylum*
	BW	2514	251	13	0.9661	*Podosira, N. longsigma*
Station-2	SW	3421	219	11	0.8574	*Podosira*
	BW	2487	143	9	0.5719	*Ditylum*
Station-3	SW	2018	121	10	0.4874	*Podosira, N. longsigma,*
	BW	2051	139	13	0.5142	*Podosira, N. longsigma, Ditylum*
Station-4	SW	2958	127	11	0.4187	*N. longsigma, Ditylum*
	BW	3587	974	9	0.5119	*Ditylum, N. longsigma,*
Station-5	SW	1651	251	13	0.5471	*Podosira, Ditylum*
	BW	1210	308	7	0.8452	*Podosira, N. longsigma*
Station-6	SW	1782	410	9	0.8944	*Podosira, Ditylum*
	BW	1511	308	15	0.8759	*Podosira*
Station-7	SW	2210	247	12	0.5123	*N.longsigma, Podosira*
	BW	2514	214	9	0.4117	*Podosira, Ditylum*
Station-8	SW	3217	548	10	0.8111	*Podosira, N. longsigma*
	BW	2032	749	12	0.6120	*Podosira, N. longsigma, Ditylum*

*SW= Surface Water, BW= Bottom Water

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E-mail: cemclab@yahoo.in, Mobile: 7752014842

TOTAL FAUNA MONITORING DATA				
Locations		Name of Phylum, Class and Number of individuals encountered	Total number of species Encountered	Total Fauna per m^3
Station-1	SW	1.Phylum- Arthropoda Class- Malagostraca-19 2.Phylum- Annelida Class-Polychaeta-6	19	84
	BW	1.Phylum- Arthropoda Class- Malagostraca-11 2.Phylum- Annelida Class-Polychaeta-20	20	151
Station-2	SW	1.Phylum-Annelida Class-Polchaeta-11 2.Phylum-Arthropda Class- Copepoda-09	14	165
	BW	1.Phylum-Annelida Class-Polchaeta-14 2.Phylum-Arthropda Class- Copepoda-15	21	136
Station-3	SW	1.Phylum- Arthropoda Class- Malagostraca-19 2.Phylum- Annelida Class-Polychaeta-20 3.Phylum- Mollusca Class-Gastropoda-16 Class- Pelecypoda-10	184	952
	BW	1.Phylum- Arthropoda Class- Malagostraca-16 2.Phylum- Annelida Class-Polychaeta-18 3.Phylum- Mollusca Class-Gastropoda-21 Class- Pelecypoda-10	152	745
Station-4	SW	1.Phylum- Annelida Class-Polychaeta-13 2.Phylum-Mollusca Class-Gastropoda-14 Class-Pelecypoda-18 Class-Bivalvia-09	36	320
	BW	1.Phylum- Annelida Class-Polychaeta-21 2.Phylum-Mollusca Class-Gastropoda-24 Class-Pelecypoda-29 Class-Bivalvia-12	39	851

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Station-5	SW	1.Phylum- Anthropoda Class- Amphipoda-21 2.Phylum- Annelida Class- Polychaeta- 32 3.Phylum- Mollusca Class- Pelecypoda-10 Class- Bivalvia-12 Class- Gastropoda-13	26	844
	BW	1.Phylum- Anthropoda Class- Amphipoda-14 2.Phylum- Annelida Class- Polychaeta- 19 3.Phylum- Mollusca Class- Pelecypoda-14 Class- Bivalvia-16 Class- Gastropoda-11	38	954
Station-6	SW	1.Phylum- Annelida Class- Polychaeta-21 2.Phylum- Mollusca Class- Bivalvia-30	78	498
	BW	1.Phylum- Annelida Class- Polychaeta-30 2.Phylum- Mollusca Class- Bivalvia-16	40	482
Station-7	SW	1.Phylum-Annelida Class- Polychaeta-18 2.Phylum- Mollusca Class- Gastropoda-14 Class-Bivalvia-16 Class- Scaphopoda-19	38	502
	BW	1.Phylum-Annelida Class- Polychaeta-17 2.Phylum- Mollusca Class- Gastropoda-23 Class-Bivalvia-21 Class- Scaphopoda-24	14	322
Station-8	SW	1.Phylum- Annelida Class- Polychaeta-25	30	251
	BW	1.Phylum- Annelida Class- Polychaeta-27	18	407

*SW= Surface Water, BW= Bottom Water

Ms. M. Rout, Msc, Env. Sc
Govt. ANALYST
(GAZETTE No-1155 Dt-03-06-2016)
Authorized Signatory

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Reference no. - CEMC/DPL/040117/A **Issued Date-04.01.17**

SEA SEDIMENT ANALYSIS REPORT

Name & Address of the Customer : **Dhamra Port Ltd., Bhadrak**
Date of Sampling : 27.12.2016
Sampling by : Biswaranjan Behera
Sampling Plan & Procedure : APHA
Sample Description : Sediment

SEDIMENT ANALYSIS DATA

Locations	pH	Organic Matter	Moisture Content (%)	Conductivity (µS/cm)	Iron (%)	Sodium (%)	Copper (mg/kg)	Nickel (mg/Kg)	Zinc (mg/kg)
Station-1	7.5	2.6	5.1	6.11	3.5	21.35	< 5	< 1	< 3
Station-2	7.6	4.9	5.0	7.61	3.5	20.45	< 5	< 1	< 3
Station-3	7.4	4.6	7.2	6.12	3.9	25.74	< 5	< 1	< 3
Station-4	7.3	5.4	6.8	7.15	4.0	20.51	< 5	< 1	< 3
Station-5	7.4	5.2	5.9	8.14	3.9	24.11	< 5	< 1	< 3
Station-6	7.5	4.7	5.0	7.99	4.1	20.85	< 5	< 1	< 3
Station-7	7.0	6.5	4.7	9.01	2.9	24.15	< 5	< 1	< 3
Station-8	7.4	5.0	4.1	5.22	3.6	21.74	< 5	< 1	< 3

SEDIMENT ANALYSIS DATA

Locations	Manganese (mg/kg)	Lead (mg/kg)	Boron (mg/kg)	Phosphate (mg/kg)	Chloride (mg/kg)	Sulphate (mg/kg)	Sulphide (mg/kg)	Pesticide (mg/kg)	Potassium (mg/kg)
Station-1	< 1	< 5	< 0.5	< 0.5	754	4741	ND	ND	0.74
Station-2	< 1	< 5	< 0.5	< 0.5	748	4622	ND	ND	0.58
Station-3	< 1	< 5	< 0.5	< 0.5	698	5140	ND	ND	0.45
Station-4	< 1	< 5	< 0.5	< 0.5	789	5844	ND	ND	1.05
Station-5	< 1	< 5	< 0.5	< 0.5	784	5747	ND	ND	0.91
Station-6	< 1	< 5	< 0.5	< 0.5	791	7047	ND	ND	0.57
Station-7	< 1	< 5	< 0.5	< 0.5	893	7848	ND	ND	1.24
Station-8	< 1	< 5	< 0.5	< 0.5	811	7812	ND	ND	1.02

SEDIMENT ANALYSIS DATA

Locations	Total Chromium (mg/kg)	Petroleum Hydrocarbon (mg/kg)	Aluminium (mg/kg)	Total Nitrogen (mg/kg)	Organic Nitrogen (mg/kg)	Phosphorous (mg/kg)	Texture (%)		
							Sand	Silt	Clay
Station-1	< 1	ND	< 0.1	2.4	1.6	3.3	0.69	16.21	83.1
Station-2	< 1	ND	< 0.1	2.1	1.6	4.4	0.87	33.11	66.02
Station-3	< 1	ND	< 0.1	2.8	2.1	2.5	0.89	47.52	51.59
Station-4	< 1	ND	< 0.1	2.6	1.4	3.1	0.98	14.78	84.24
Station-5	< 1	ND	< 0.1	2.6	3.1	2.5	0.79	24.89	74.32
Station-6	< 1	ND	< 0.1	3.6	2.2	1.8	2.4	49.51	48.09
Station-7	< 1	ND	< 0.1	3.1	1.9	3.1	0.91	30.98	68.11
Station-8	< 1	ND	< 0.1	3.2	2.8	2.4	1.54	38.14	60.32

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SEA SEDIMENT ANALYSIS REPORT

PHYTOBENTHOS MONITORING DATA					
Locations	Fungus (CFU/1 g dry wt.)	Total Count/ 50g wet sediment	No. of Species	Diversity Index	Major Species
Station-1	3157	299	10	1.0054	*Podosira, Ditylum*
Station-2	986	754	12	0.6843	*Podosira, N. longsigma*
Station-3	5329	440	10	1.0214	*Podosira*
Station-4	3751	428	9	0.5261	*Podosira, N. longsigma*
Station-5	1635	320	12	0.8754	*Podosira, N. longsigma*
Station-6	2657	201	12	0.2455	*Podosira, N.longsigma, Ditylum*
Station-7	2981	510	11	0.5214	*N. longsigma, Ditylum*
Station-8	1257	398	8	0.5111	*Podosira, Ditylum*

TOTAL FAUNA MONITORING DATA			
Locations	Name of Phylum, Class and Number of individuals encountered	Total number of species Encountered	Total Fauna per m^3
Station-1	1.Phylum- Arthropoda Class- Malagostraca-18 2.Phylum- Annelida Class-Polychaeta-35	21	209
Station-2	1.Phylum-Annelida Class-Polchaeta-21 2.Phylum-Arthropda Class- Copepoda-14	124	163
Station-3	1.Phylum- Arthropoda Class- Malagostraca-10 2.Phylum- Annelida Class-Polychaeta-15 3.Phylum- Mollusca Class-Gastropoda-11 Class- Pelecypoda-19	101	857
Station-4	1.Phylum- Annelida Class-Polychaeta-20 2.Phylum-Mollusca Class-Gastropoda-8 Class-Pelecypoda-14 Class-Bivalvia-19	131	429
Station-5	1.Phylum- Anthropoda Class- Amphipoda-15 2.Phylum- Annelida Class- Polychaeta- 16 1.Phylum- Mollusca Class- Pelecypoda-11 Class- Bivalvia-12 Class- Gastropoda-13	85	986

Station-6	1.Phylum- Annelida Class- Polychaeta-19 2.Phylum- Mollusca Class- Bivalvia-12	47	884
Station-7	1.Phylum-Annelida Class- Polychaeta-11 2.Phylum- Mollusca Class- Gastropoda-15 Class-Bivalvia-11 Class- Scaphopoda-18	33	511
Station-8	1.Phylum- Annelida Class- Polychaeta-21 2.Phylum- Mollusca Class- Gastropoda-09 Class-Bivalvia-12 Class- Scaphopoda-11	29	327

Ms. M. Rout, Msc, Env. Sc
Authorised Signatory
(GAZETTE No-1357, Dt-03-06-2016)

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Reference no. - CEMC/DPCL/040217/A **Issued Date-04.02.17**

AMBIENT AIR QUALITY MONITORING TEST REPORT

Client Name & Address	**The Dhamra Port Company Ltd., Doshinga,Bhadrak**
Work Order No.	**5700178552**
Reference No.	**CEMC-04022017**
Nature of Sampling	**Ambient Air Sample**
Sampling Location	**Near MCC-1**
Sampling By	**Mr. Biswaranjan Behera**
Sampling Duration	**01.01.2017 to 31.01.2017**

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NOx ($\mu g/m^3$)	CO (mg/m^3)	NH_3 ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	BaP (ng/m^3)
03.01.2017	58.3	28.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.01.2017	56.5	27.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.01.2017	57.8	27.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.01.2017	55.4	24.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.01.2017	56.3	25.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.01.2017	59.5	29.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.01.2017	58.7	27.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.01.2017	57.0	25.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.01.2017	56.9	26.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	**100**	**60**	**80**	**80**	**4**	**400**	**100**	**1.0**	**20**	**6**	**5**	**1**
Methods of Analysis	**IS: 5182 (Part-23)**	**Gravimetric Method as per CPCB method**	**IS: 5182 (Part-2)**	**IS: 5182 (Part-6)**	**IS: 5182 (Part-10)**	**Indophenol Blue Method followed by CPCB**	**IS: 5182 (Part-9)**	**IS: 5182 (Part-22)**	**As per CPCB method followed by AAS**	**As per CPCB method followed by AAS**	**IS: 5182 (Part-11)**	**IS: 5182 (Part-12)**

N.B- *NAAQ (National Ambient Air Quality Standard as per 18th Nov,2009Gatt. Notification)
BDL Value (NO_X<9.0 $\mu g/m^3$,SO_2<4.0 $\mu g/m^3$,NH_3<20 $\mu g/m^3$, As<0.44 ng/m^3,Ni<0.6 ng/m^3,Pb<0.06 $\mu g/m^3$,CO<0.1 mg/m^3, Benzo(a)pyrene<1 ng/m^3) , Benzene <5 $\mu g/m^3$)

Ms. M. Rout, Msc. Env. Sc
ANALYST
Authorized Signatory
(GAZETTE No. 1357, Dt-03-06-2016)

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Reference no. - CEMC/DPCL/040217/A **Issued Date-04.02.17**

AMBIENT AIR QUALITY MONITORING TEST REPORT

Client Name & Address	**The Dhamra Port Company Ltd., Doshinga,Bhadrak**
Work Order No.	**5700178552**
Reference No.	**CEMC-04022017**
Nature of Sampling	**Ambient Air Sample**
Sampling Location	**Near Settling Pond**
Sampling By	**Mr. Biswaranjan Behera**
Sampling Date	**01.01.2017 to 31.01.2017**

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NOx ($\mu g/m^3$)	CO (mg/m^3)	NH_3 ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	BaP (ng/m^3)
03.01.2017	87.8	48.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.01.2017	88.1	49.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.01.2017	85.3	48.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.01.2017	83.7	44.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.01.2017	83.1	43.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.01.2017	84.3	44.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.01.2017	86.4	49.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.01.2017	81.8	43.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.01.2017	82.6	42.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	**100**	**60**	**80**	**80**	**4**	**400**	**100**	**1.0**	**20**	**6**	**5**	**1**
Methods of Analysis	**IS: 5182 (Part-23)**	**Gravimetric Method as per CPCB method**	**IS: 5182 (Part-2)**	**IS: 5182 (Part-6)**	**IS: 5182 (Part-10)**	**Indophenol Blue Method followed by CPCB**	**IS: 5182 (Part-9)**	**IS: 5182 (Part-22)**	**As per CPCB method followed by AAS**	**As per CPCB method followed by AAS**	**IS: 5182 (Part-11)**	**IS: 5182 (Part-12)**

N.B- *NAAQ (National Ambient Air Quality Standard as per 18th Nov,2009Gatt. Notification)
BDL Value (NO_X<9.0 $\mu g/m^3$,SO_2<4.0 $\mu g/m^3$,NH_3<20 $\mu g/m^3$, As<0.44 ng/m^3,Ni<0.6 ng/m^3,Pb<0.06 $\mu g/m^3$,CO<0.1 mg/m^3, Benzo(a)pyrene<1 ng/m^3) , Benzene <5 $\mu g/m^3$)

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ANALYST
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(GAZETTE No-1557, Dt-03-06-2016)

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Reference no. - CEMC/DPCL/040217/A **Issued Date-04.02.17**

AMBIENT AIR QUALITY MONITORING TEST REPORT

Client Name & Address	The Dhamra Port Company Ltd., Doshinga,Bhadrak
Work Order No.	5700178552
Reference No.	CEMC-04022017
Nature of Sampling	Ambient Air Sample
Sampling Location	Near WTP
Sampling By	Mr. Biswaranjan Behera
Sampling Date	01.01.2017 to 31.01.2017

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NOx ($\mu g/m^3$)	CO (mg/m^3)	NH_3 ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	BaP (ng/m^3)
03.01.2017	47.3	25.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.01.2017	45.8	24.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.01.2017	48.0	25.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.01.2017	46.5	25.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.01.2017	48.2	23.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.01.2017	49.5	27.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.01.2017	45.7	22.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.01.2017	50.3	26.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.01.2017	51.4	25.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	100	60	80	80	4	400	100	1.0	20	6	5	1
Methods of Analysis	IS: 5182 (Part-23)	Gravimetric Method as per CPCB method	IS: 5182 (Part-2)	IS: 5182 (Part-6)	IS: 5182 (Part-10)	Indophenol Blue Method followed by CPCB	IS: 5182 (Part-9)	IS: 5182 (Part-22)	As per CPCB method followed by AAS	As per CPCB method followed by AAS	IS: 5182 (Part-11)	IS: 5182 (Part-12)

N.B- *NAAQ (National Ambient Air Quality Standard as per 18th Nov,2009Gatt. Notification)
BDL Value (NO_X<9.0 $\mu g/m^3$,SO_2<4.0 $\mu g/m^3$,NH_3<20 $\mu g/m^3$, As<0.44 ng/m^3,Ni<0.6 ng/m^3,Pb<0.06 $\mu g/m^3$,CO<0.1 mg/m^3, Benzo(a)pyrene<1 ng/m^3) , Benzene <5 $\mu g/m^3$)

Ms. M. Rout ... Env. Sc
... ST
Authorized Signatory
(GAZETTE No-... Dt-03-06-2016)

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Reference no. - CEMC/DPCL/040217/A **Issued Date-04.02.17**

AMBIENT AIR QUALITY MONITORING TEST REPORT

Client Name & Address	**The Dhamra Port Company Ltd., Doshinga,Bhadrak**
Work Order No.	**5700178552**
Reference No.	**CEMC-04022017**
Nature of Sampling	**Ambient Air Sample**
Sampling Location	**Near Community Hall**
Sampling By	**Mr. Biswaranjan Behera**
Sampling Date	**01.01.2017 to 31.01.2017**

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NOx ($\mu g/m^3$)	CO (mg/m^3)	NH_3 ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	BaP (ng/m^3)
03.01.2017	58.5	30.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.01.2017	56.3	28.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.01.2017	55.7	27.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.01.2017	57.2	26.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.01.2017	58.5	27.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.01.2017	56.2	24.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.01.2017	56.8	24.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.01.2017	57.7	27.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.01.2017	58.1	27.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	**100**	**60**	**80**	**80**	**4**	**400**	**100**	**1.0**	**20**	**6**	**5**	**1**
Methods of Analysis	**IS: 5182 (Part-23)**	**Gravimetric Method as per CPCB method**	**IS: 5182 (Part-2)**	**IS: 5182 (Part-6)**	**IS: 5182 (Part-10)**	**Indophenol Blue Method followed by CPCB**	**IS: 5182 (Part-9)**	**IS: 5182 (Part-22)**	**As per CPCB method followed by AAS**	**As per CPCB method followed by AAS**	**IS: 5182 (Part-11)**	**IS: 5182 (Part-12)**

N.B- *NAAQ (National Ambient Air Quality Standard as per 18th Nov,2009Gatt. Notification)
BDL Value (NO_X<9.0 $\mu g/m^3$,SO_2<4.0 $\mu g/m^3$,NH_3<20 $\mu g/m^3$, As<0.44 ng/m^3,Ni<0.6 ng/m^3,Pb<0.06 $\mu g/m^3$,CO<0.1 mg/m^3, Benzo(a)pyrene<1 ng/m^3) , Benzene <5 $\mu g/m^3$)

Ms. M. Rout, Msc. Env. Sc
CHEMICAL ANALYST
Authorized Signatory
(GAZETTE No-1957, Dt-03-06-2016)

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Reference no. - CEMC/DPCL/040217/A **Issued Date-04.02.17**

AMBIENT AIR QUALITY MONITORING TEST REPORT

Client Name & Address	**The Dhamra Port Company Ltd., Doshinga,Bhadrak**
Work Order No.	**5700178552**
Reference No.	**CEMC-04022017**
Nature of Sampling	**Ambient Air Sample**
Sampling Location	**Near Dhamra Old guest house**
Sampling By	**Mr. Biswaranjan Behera**
Sampling Date	**01.01.2017 to 31.01.2017**

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NOx ($\mu g/m^3$)	CO (mg/m^3)	NH_3 ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	BaP (ng/m^3)
03.01.2017	46.5	24.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
06.01.2017	48.3	25.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.01.2017	45.3	22.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
13.01.2017	43.5	21.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.01.2017	47.8	26.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.01.2017	48.0	24.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.01.2017	46.8	22.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
27.01.2017	47.2	24.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
31.01.2017	46.5	23.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	**100**	**60**	**80**	**80**	**4**	**400**	**100**	**1.0**	**20**	**6**	**5**	**1**
Methods of Analysis	**IS: 5182 (Part-23)**	**Gravimetric Method as per CPCB method**	**IS: 5182 (Part-2)**	**IS: 5182 (Part-6)**	**IS: 5182 (Part-10)**	**Indophenol Blue Method followed by CPCB**	**IS: 5182 (Part-9)**	**IS: 5182 (Part-22)**	**As per CPCB method followed by AAS**	**As per CPCB method followed by AAS**	**IS: 5182 (Part-11)**	**IS: 5182 (Part-12)**

N.B- *NAAQ (National Ambient Air Quality Standard as per 18th Nov,2009Gatt. Notification)
BDL Value (NO_X<9.0 $\mu g/m^3$,SO_2<4.0 $\mu g/m^3$,NH_3<20 $\mu g/m^3$, As<0.44 ng/m^3,Ni<0.6 ng/m^3,Pb<0.06 $\mu g/m^3$,CO<0.1 mg/m^3, Benzo(a)pyrene<1 ng/m^3) , Benzene <5 $\mu g/m^3$)

Ms. M. Rout, Msc. Env. Sc
Govt. Approved Analyst
(GAZETTE No-4357, Dt-03-06-2016)

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Reference no. - CEMC/DPCL/040217/N **Issued Date-04.02.17**

NOISE LEVEL MONITORING REPORT

Issued to	**The Dhamra Port Company Ltd., Doshinga,Bhadrak**
Analysis No.	**CEMC/DPL-D00N1**
Nature of Sampling	**Noise Sample**
Sampling By	**Mr. Biswaranjan Behera**
Sampling Date	**01.01.2017 to 31.01.2017**

Date	Location	NL Day Time dB (A)			NL Night Time dB (A)		
		Max	Min.	Avg.	Max.	Min.	Avg.
09.01.2017	NEAR DHAMRA OLD GUEST HOUSE	63.9	60.1	62.0	42.3	37.1	39.7
10.01.2017	NEAR COMMUNITY HALL	64.8	60.8	62.8	41.9	40.1	41.0
11.01.2017	NEAR WTP	65.8	62.0	63.9	44.2	42.8	43.5
12.01.2017	NEAR MCC-1	64.7	61.7	63.2	46.8	45.0	45.9
13.01.2017	NEAR SETTLING POND	66.1	62.9	64.5	49.1	46.3	47.7

National Standard Noise Level

Area Code	Category of Area/Zone	Permissible Limit in dB (A)	
		Day Time	Night Time
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40

Ms. M. Rout, Msc. Env. Sc
ANALYST
(GAZETTE No-1857, Dt-03-06-2016)
Authorized Signatory

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Reference no. - CEMC/DPCL/040217/WW **Issued Date-04.02.17**

STP REPORT

Name & Address of the Customer : **The Dhamra Port Company Ltd., Doshinga,Bhadrak**
Date of Sampling : 11.01.2017
Sampling by : Biswaranjan Behera
Sampling Plan & Procedure : APHA
Sample Description : Waste Water
Sample Quantity : 1.0 Ltr
Sample Location : **STP section (15 KLD)**

SOURCE
SAMPLE 1: **STP Inlet Water**
SAMPLE 2: **STP Outlet Water**

SAMPLE 1

Sl. No.	Parameter	Units of Measurements	Sample 1	Design parameter for Raw Sewage
1	Appearance	--	Turbid	-
2	Colour	--	Blackish	-
3	Odour	--	Foul	-
4	pH	--	6.82	6-8.5
5	Total Suspended Solids	mg/l	92.5	1000
6	B.O.D	mg/l	100	300-350
7	Oil & grease	mg/l	5.1	100

SAMPLE 2

Sl. No.	Parameter	Units of Measurements	Sample 2	Design parameter for Treated Sewage
1	Appearance	--	Clear	-
2	Colour	--	Colorless	-
3	Odour	--	Odourless	-
4	pH	--	7.22	5.5-9
5	Total Suspended Solids	mg/l	20.5	<100
6	B.O.D	mg/l	15	<30
7	Oil & grease	mg/l	ND	<10

***ND-Not Detectable**

Ms. M. Rout, Msc. Env. Sc
Govt. ANALYST
Authorised Signatory
(GAZETTE No-1257, Dt-03-06-2016)

For Envotech & M.S. Pvt. Consultancy
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Reference no. - CEMC/DPCL/040217/WW **Issued Date-04.02.17**

STP REPORT

Name & Address of the Customer : **The Dhamra Port Company Ltd., Doshinga,Bhadrak**
Date of Sampling : 11.01.2017
Sampling by : Biswaranjan Behera
Sampling Plan & Procedure : APHA
Sample Description : Waste Water
Sample Quantity : 1.0 Ltr
Sample Location : **STP section (150KLD)**

SOURCE
SAMPLE 1: **STP Inlet Water**
SAMPLE 2: **STP Outlet Water**

SAMPLE 1

Sl. No.	Parameter	Units of Measurements	Sample 1	Design parameter for Raw Sewage
1	Appearance	--	Turbid	-
2	Colour	--	Blackish	-
3	Odour	--	Foul	-
4	pH	--	7.33	6-8.5
5	Total Suspended Solids	mg/l	75.6	1000
6	B.O.D	mg/l	82	300-350
7	Oil & grease	mg/l	5.9	100

SAMPLE 2

Sl. No.	Parameter	Units of Measurements	Sample 2	Design parameter for Treated Sewage
1	Appearance	--	Clear	-
2	Colour	--	Colorless	-
3	Odour	--	Odourless	-
4	pH	--	7.23	5.5-9
5	Total Suspended Solids	mg/l	21.6	<100
6	B.O.D	mg/l	16	<30
7	Oil & grease	mg/l	ND	<10

*ND-Not Detectable

Ms. M. Rout, Msc. Env. Sc
Govt. ANALYST
(Authorized Signatory)

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Reference no. - CEMC/DPCL/040217/WW **Issued Date-04.02.17**

STP REPORT

Name & Address of the Customer : **The Dhamra Port Company Ltd., Doshinga,Bhadrak**
Date of Sampling : 27.01.2017
Sampling by : Biswaranjan Behera
Sampling Plan & Procedure : APHA
Sample Description : Waste Water
Sample Quantity : 1.0 Ltr
Sample Location : **STP section (15 KLD)**

SOURCE
SAMPLE 1: **STP Inlet Water**
SAMPLE 2: **STP Outlet Water**

SAMPLE 1

Sl. No.	Parameter	Units of Measurements	Sample 1	Design parameter for Raw Sewage
1	Appearance	--	Turbid	-
2	Colour	--	Blackish	-
3	Odour	--	Foul	-
4	pH	--	7.14	6-8.5
5	Total Suspended Solids	mg/l	88.8	1000
6	B.O.D	mg/l	110	300-350
7	Oil & grease	mg/l	5.1	100

SAMPLE 2

Sl. No.	Parameter	Units of Measurements	Sample 2	Design parameter for Treated Sewage
1	Appearance	--	Clear	-
2	Colour	--	Colorless	-
3	Odour	--	Odourless	-
4	pH	--	7.62	5.5-9
5	Total Suspended Solids	mg/l	19.4	<100
6	B.O.D	mg/l	16	<30
7	Oil & grease	mg/l	ND	<10

N.B: ND-Not Detectable

Ms. M. Rout, Msc. Env. Sc
Govt. ANALYST
(GAZETTE NO- 1937, Dt-03-06-2016)

Environmental Laboratory
Seal of Lab

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Reference no. - CEMC/DPCL/040217/WW **Issued Date-04.02.17**

STP REPORT

Name & Address of the Customer : **The Dhamra Port Company Ltd., Doshinga,Bhadrak**
Date of Sampling : 27.01.2017
Sampling by : Biswaranjan Behera
Sampling Plan & Procedure : APHA
Sample Description : Waste Water
Sample Quantity : 1.0 Ltr
Sample Location : **STP section (150 KLD)**

SOURCE
SAMPLE 1: **STP Inlet Water**
SAMPLE 2: **STP Outlet Water**

SAMPLE 1

Sl. No.	Parameter	Units of Measurements	Sample 1	Design parameter for Raw Sewage
1	Appearance	--	Turbid	-
2	Colour	--	Blackish	-
3	Odour	--	Foul	-
4	pH	--	6.83	6-8.5
5	Total Suspended Solids	mg/l	105.6	1000
6	B.O.D	mg/l	90	300-350
7	Oil & grease	mg/l	6.8	100

SAMPLE 2

Sl. No.	Parameter	Units of Measurements	Sample 2	Design parameter for Treated Sewage
1	Appearance	--	Clear	-
2	Colour	--	Colorless	-
3	Odour	--	Odourless	-
4	pH	--	7.42	5.5-9
5	Total Suspended Solids	mg/l	22.6	<100
6	B.O.D	mg/l	16	<30
7	Oil & grease	mg/l	ND	<10

***ND-Not Detectable**

Ms. M. Rout, Msc. Env. Sc
ANALYST
Authorised Signatory
(GAZETTE No-1357. Dt-03-06-2016)

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Reference no. - CEMC/DPCL/040217/SW **Issued Date-04.02.17**

SEA WATER ANALYSIS REPORT

Name & Address of the Customer : **The Dhamra Port Company Ltd., Doshinga,Bhadrak**
Date of Sampling : 12.01.2017
Sampling by : Biswaranjan Behera
Sampling Plan & Procedure : APHA
Sample Description : Sea Water

STATION DESCRIPTION

SL. NO.	STATION	GPS COORDINATES
01	STATION-1	20°46'55.5" N 86°57'40.5" E
02	STATION-2	20°49'05.0" N 86°58'14.3" E
03	STATION-3	20°51'33.5" N 87°00'17.0" E
04	STATION-4	20°52'55.8" N 87°02'44.9" E
05	STATION-5	20°54'20.4" N 87°05'14.0" E
06	STATION-6	20°54'54.3" N 87°06'13.8" E
07	STATION-7	20°54'45.0" N 87°07'13.6" E
08	STATION-8	20°54'42.8" N 87°07'50.4" E

WATER ANALYSIS DATA

Locations		Temp. (°C)	Turbidity (NTU)	Conductivity (µS/cm)	pH	Salinity (ppt)	DO (mg/l)	BOD (mg/l)	COD (mg/l)
Station-1	SW	20	32	40.9	7.8	27.11	6.7	< 3	20
	BW	19	30	39.3	7.9	26.47	6.3	< 3	< 10
Station-2	SW	20	30	42.5	7.9	26.65	6.5	< 3	20
	BW	20	29	43.7	7.9	25.05	6.7	< 3	< 10
Station-3	SW	21	30	41.8	8.0	25.41	6.6	< 3	30
	BW	19	29	40.1	7.8	26.01	6.6	< 3	< 10
Station-4	SW	21	31	42.0	7.9	25.12	6.8	< 3	10
	BW	19	30	38.9	7.9	24.98	6.5	< 3	< 10
Station-5	SW	22	30	41.7	8.0	23.98	6.6	< 3	20
	BW	20	31	43.8	7.8	23.14	6.8	< 3	< 10
Station-6	SW	21	33	40.5	7.8	25.48	6.9	< 3	10
	BW	20	31	42.1	7.6	25.15	6.9	< 3	< 10
Station-7	SW	21	31	41.7	8.0	24.23	6.8	< 3	10
	BW	22	30	41.1	7.9	25.51	6.8	< 3	< 10
Station-8	SW	20	29	39.7	8.0	24.56	6.9	< 3	10
	BW	19	27	36.8	7.8	25.18	6.7	< 3	< 10

*SW= Surface Water, BW= Bottom Water

WATER ANALYSIS DATA

Locations		Copper (mg/l)	Cadmium (mg/l)	Mercury (mg/l)	Phosphate (mg/l)	Sulphate (mg/l)	Nitrite (mg/l)	Nitrate (mg/l)	TSS (mg/l)
Station-1	SW	< 0.05	< 0.01	< 0.001	< 0.05	1602	0.62	8.2	241.1
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1659	0.61	7.5	151.8
Station-2	SW	< 0.05	< 0.01	< 0.001	< 0.05	1698	0.53	8.2	198.5
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1761	0.51	7.6	147.6
Station-3	SW	< 0.05	< 0.01	< 0.001	< 0.05	1619	0.87	7.1	214.5
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1684	0.51	8.4	151.7
Station-4	SW	< 0.05	< 0.01	< 0.001	< 0.05	1702	0.35	7.1	299.5
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1695	0.29	6.9	206.7
Station-5	SW	< 0.05	< 0.01	< 0.001	< 0.05	1712	0.42	7.1	289.6
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1648	0.49	7.5	178.5
Station-6	SW	< 0.05	< 0.01	< 0.001	< 0.05	1662	0.68	7.5	241.2
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1598	0.75	7.9	159.7
Station-7	SW	< 0.05	< 0.01	< 0.001	< 0.05	1609	0.58	6.4	199.5
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1578	0.61	8.9	136.5
Station-8	SW	< 0.05	< 0.01	< 0.001	< 0.05	1452	0.88	6.8	222.5
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1369	0.47	7.5	135.4

*SW= Surface Water, BW= Bottom Water

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WATER ANALYSIS DATA							
Locations		Calcium Hardness (mg/l)	Magnesium Hardness (mg/l)	Total Hardness (mg/l)	Total Dissolved Solids (mg/l)	Ammonical Nitrogen (mg/l)	Total Nitrogen (mg/l)
Station-1	SW	2580	890	3470	30014	ND	12.4
	BW	2480	770	3250	30098	ND	11.5
Station-2	SW	2690	810	3500	32565	ND	10.1
	BW	2640	820	3460	31124	ND	11.1
Station-3	SW	2740	810	3550	31059	ND	12.2
	BW	2790	780	3570	29658	ND	10.9
Station-4	SW	2970	850	3820	30658	ND	11.4
	BW	2840	790	3630	29995	ND	10.9
Station-5	SW	2910	870	3780	30055	ND	10.8
	BW	2860	840	3700	30021	ND	9.8
Station-6	SW	3110	850	3960	30254	ND	10.9
	BW	2940	810	3750	29487	ND	10.1
Station-7	SW	2780	990	3770	30142	ND	10.5
	BW	2570	910	3480	30512	ND	9.9
Station-8	SW	2210	870	3080	32214	ND	11.9
	BW	2140	900	3040	30019	ND	10.8

*SW= Surface Water, BW= Bottom Water

WATER ANALYSIS DATA							
Locations		Total Chromium (mg/l)	Phenolic Compounds (mg/l)	Hexavalent Chromium (mg/l)	Petroleum Hydrocarbon (mg/l)	Chlorinity (‰)	Oil and Grease (mg/l)
Station-1	SW	< 0.05	< 0.001	< 0.05	1.9	12.10	5.4
	BW	< 0.05	< 0.001	< 0.05	ND	11.21	ND
Station-2	SW	< 0.05	< 0.001	< 0.05	1.1	12.56	5.0
	BW	< 0.05	< 0.001	< 0.05	ND	10.57	ND
Station-3	SW	< 0.05	< 0.001	< 0.05	1.8	12.59	5.2
	BW	< 0.05	< 0.001	< 0.05	ND	12.16	ND
Station-4	SW	< 0.05	< 0.001	< 0.05	1.4	12.69	4.9
	BW	< 0.05	< 0.001	< 0.05	ND	11.24	ND
Station-5	SW	< 0.05	< 0.001	< 0.05	1.9	13.58	5.2
	BW	< 0.05	< 0.001	< 0.05	ND	11.49	ND
Station-6	SW	< 0.05	< 0.001	< 0.05	1.7	10.32	4.1
	BW	< 0.05	< 0.001	< 0.05	ND	12.98	ND
Station-7	SW	< 0.05	< 0.001	< 0.05	1.7	10.39	3.4
	BW	< 0.05	< 0.001	< 0.05	ND	11.02	ND
Station-8	SW	< 0.05	< 0.001	< 0.05	2.5	10.58	3.9
	BW	< 0.05	< 0.001	< 0.05	ND	12.01	ND

*SW= Surface Water, BW= Bottom Water

PHYTOPLANKTON MONITORING DATA					
Locations		Total Count/L	No. of Species	Chlorophyll-a (µg/L)	Major Species
Station-1	SW	1002	18	1.0021	*Podosira ,, Bacillaria, N.striata*
	BW	990	12	0.9996	*C.pentagomu, Bacillaria, Podosira*
Station-2	SW	1241	12	1.310	*C.pentagonu,Bacillaria,Podosira, N.longisigma*
	BW	1127	14	1.0201	*C.pentagonum, Chaetocerous, Bacillaria, N.striata*
Station-3	SW	1021	22	1.0332	*Bacillaria, Chaetocerous, Ceratium,*
	BW	1874	16	1.2114	*C.pentagonum,, C.furca, Bacillaria, Podosira,*
Station-4	SW	1426	22	1.0002	*C.pentagonum, Skeletonema, N.longisigma, Bacillaria*
	BW	2154	13	1.1298	*Podosira ,C.pentagonum,N.striata*
Station-5	SW	997	15	1.0321	*C.pentagonum, N.striata, C.furca,Ceratiu, N.longisigma*
	BW	1054	13	0.8512	*C.pentagonum, N.striata, Chaetocerous, Bacillaria*
Station-6	SW	2102	14	1.0142	*Pleurosigma, C.pentagonum, N.striata*
	BW	1030	12	1.0214	*Pleurosigma, N.longisigma, C.pentagonum, N.striata, Skeletonema*
Station-7	SW	2352	20	2.1031	*Bacillaria,Chaetocerous, Podosira*
	BW	1251	14	1.0351	*N.longisigma, Podosira, Ceratium, C.furca*
Station-8	SW	2549	18	1.2113	*C.pentagonum, N.striata, C.furca, N.striata*
	BW	2641	16	1.4213	*C.pentagonum, Pleurosigma, N.longisigma, Bacillaria*

*SW= Surface Water, BW= Bottom Water

ZOOPLANKTON MONITORING DATA				
Locations		Total Count/L	No. of Species	Major Species
Station-1	SW	1784	19	*Crustacean Larvae, Protozoa, Nematoda, Rotifera*
	BW	1642	12	*Protozoa, Nematoda, Copepod*
Station-2	SW	1532	16	*Protozoa, Rotifera, Nematoda*
	BW	1002	14	*Anostraca, Cladocera,Nematoda*
Station-3	SW	1457	10	*Crustacean Larvae, Protozoa, Nematoda*
	BW	1023	18	*Rotifera, Nematoda, Cladocera*
Station-4	SW	1477	20	*Anostraca, Cladocera, Rotifera*
	BW	1845	16	*Rotifera, Protoza, Nematoda, Crustacean Larvae*
Station-5	SW	1196	13	*Copepod, Rotifera, Cladocera*
	BW	1050	11	*Ostracoda, Protozoa, Copepod, Rotifera*
Station-6	SW	1458	12	*Rotifera, Protoza, Nematoda, Cladocera*
	BW	1236	15	*Cladocera, Nematoda, Rotifera*
Station-7	SW	1684	12	*Ostracoda, Protozoa, Copepod, Rotifera*
	BW	1369	14	*Protozoa ,Rotifera, Copepod*
Station-8	SW	1478	12	*Cladocera, Nematoda, Cladocera*
	BW	1365	17	*Copepod, Rotifera, Ostracoda*

*SW= Surface Water, BW= Bottom Water

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E-mail- cemc_consultancy@yahoo.co.in, cemc122@gmail.com, website: www.cemc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,
E-mail: cemclab@yahoo.in, Mobile: 7752014842

MICROBIOLOGICAL MONITORING DATA					
Locations		Total Bacterial Count (CFU/ml)	Total Coliform (CFU/ml)	Faecal Coliform (CFU/ml)	*E.coli* (CFU/ml)
Station-1	SW	140	13	2.0	ND
	BW	250	17	2.0	ND
Station-2	SW	210	15	1.8	ND
	BW	210	32	3.6	ND
Station-3	SW	280	21	2.0	ND
	BW	390	14	1.8	ND
Station-4	SW	220	21	2.0	ND
	BW	220	33	1.8	ND
Station-5	SW	110	21	2.0	ND
	BW	120	24	2.0	ND
Station-6	SW	120	24	1.8	ND
	BW	270	15	1.8	ND
Station-7	SW	250	13	2.0	ND
	BW	110	21	3.7	ND
Station-8	SW	110	11	6.1	ND
	BW	270	25	2.0	ND

*SW= Surface Water, BW= Bottom Water

MICROBIOLOGICAL MONITORING DATA					
Locations		Enterococcus (CFU/ml)	Salmonella (CFU/ml)	Shigella (CFU/ml)	Vibrio (CFU/ml)
Station-1	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-2	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-3	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-4	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-5	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-6	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-7	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-8	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND

*SW= Surface Water, BW= Bottom Water

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E-mail- cemc_consultancy@yahoo.co.in, cemc122@gmail.com, website: www.cemc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,
E-mail: cemclab@yahoo.in, Mobile: 7752014842

PRIMARY PRODUCTIVITY MONITORING DATA			
Locations		Gross Primary Productivity (mgC/ L/ day)	Net Primary Productivity (mgC/ L/ day)
Station-1	SW	1.9	1.2
	BW	1.1	0.9
Station-2	SW	1.8	1.5
	BW	1.5	1.0
Station-3	SW	2.0	1.8
	BW	1.4	1.2
Station-4	SW	2.5	1.4
	BW	1.6	1.5
Station-5	SW	2.3	1.8
	BW	2.1	1.5
Station-6	SW	2.4	1.8
	BW	2.0	1.5
Station-7	SW	2.4	1.9
	BW	1.5	1.1
Station-8	SW	2.9	2.0
	BW	2.1	1.5

*SW= Surface Water, BW= Bottom Water

PHYTOBENTHOS MONITORING DATA						
Locations		Fungus (CFU/1 g dry wt.)	Total Count/ 50g wet sediment	No. of Species	Diversity Index	Major Species
Station-1	SW	2958	127	11	0.4187	*Podosira, Ditylum*
	BW	3587	974	9	0.5119	*Podosira, N. longsigma*
Station-2	SW	1651	251	13	0.5471	*Podosira, Ditylum*
	BW	1210	308	7	0.8452	*Podosira*
Station-3	SW	1782	410	9	0.8944	*N.longsigma, Podosira*
	BW	1511	308	15	0.8759	*Podosira, Ditylum*
Station-4	SW	2365	196	7	0.8477	*Podosira, N. longsigma*
	BW	2514	251	13	0.9661	*Podosira, N. longsigma, Ditylum*
Station-5	SW	2210	247	12	0.5123	*Ditylum*
	BW	2514	214	9	0.4117	*Podosira, N. longsigma*
Station-6	SW	3217	548	10	0.8111	*Podosira*
	BW	2032	749	12	0.6120	*Ditylum*
Station-7	SW	3421	219	11	0.8574	*Podosira, N. longsigma,*
	BW	2487	143	9	0.5719	*Podosira, N. longsigma, Ditylum*
Station-8	SW	2018	121	10	0.4874	*N. longsigma, Ditylum*
	BW	2051	139	13	0.5142	*Ditylum, N. longsigma,*

*SW= Surface Water, BW= Bottom Water

TOTAL FAUNA MONITORING DATA				
Locations		Name of Phylum, Class and Number of individuals encountered	Total number of species Encountered	Total Fauna per m^3
Station-1	SW	1.Phylum- Arthropoda Class- Malagostraca-22 2.Phylum- Annelida Class-Polychaeta-7	144	652
	BW	1.Phylum- Arthropoda Class- Malagostraca-21 2.Phylum- Annelida Class-Polychaeta-22	152	745
Station-2	SW	1.Phylum-Annelida Class-Polchaeta-13 2.Phylum-Arthropda Class- Copepoda-08	16	320
	BW	1.Phylum-Annelida Class-Polchaeta-21 2.Phylum-Arthropda Class- Copepoda-19	30	721
Station-3	SW	1.Phylum- Arthropoda Class- Malagostraca-29 2.Phylum- Annelida Class-Polychaeta-21 3.Phylum- Mollusca Class-Gastropoda-11 Class- Pelecypoda-13	19	84
	BW	1.Phylum- Arthropoda Class- Malagostraca-19 2.Phylum- Annelida Class-Polychaeta-11 3.Phylum- Mollusca Class-Gastropoda-20 Class- Pelecypoda-12	25	121
Station-4	SW	1.Phylum- Annelida Class-Polychaeta-14 2.Phylum-Mollusca Class-Gastropoda-16 Class-Pelecypoda-19 Class-Bivalvia-21	19	95
	BW	1.Phylum- Annelida Class-Polychaeta-11 2.Phylum-Mollusca Class-Gastropoda-20 Class-Pelecypoda-22 Class-Bivalvia-19	21	116

Station-5	SW	1.Phylum- Anthropoda Class- Amphipoda-22 2.Phylum- Annelida Class- Polychaeta- 30 3.Phylum- Mollusca Class- Pelecypoda-10 Class- Bivalvia-14 Class- Gastropoda-19	38	502
	BW	1.Phylum- Anthropoda Class- Amphipoda-17 2.Phylum- Annelida Class- Polychaeta- 11 3.Phylum- Mollusca Class- Pelecypoda-18 Class- Bivalvia-11 Class- Gastropoda-11	14	322
Station-6	SW	1.Phylum- Annelida Class- Polychaeta-31 2.Phylum- Mollusca Class- Bivalvia-28	37	301
	BW	1.Phylum- Annelida Class- Polychaeta-30 2.Phylum- Mollusca Class- Bivalvia-11	18	407
Station-7	SW	1.Phylum-Annelida Class- Polychaeta-17 2.Phylum- Mollusca Class- Gastropoda-11 Class-Bivalvia-12 Class- Scaphopoda-19	26	844
	BW	1.Phylum-Annelida Class- Polychaeta-12 2.Phylum- Mollusca Class- Gastropoda-21 Class-Bivalvia-21 Class- Scaphopoda-22	38	954
Station-8	SW	1.Phylum- Annelida Class- Polychaeta-21	79	491
	BW	1.Phylum- Annelida Class- Polychaeta-21	21	472

*SW= Surface Water, BW= Bottom Water

Ms. M. Rout, Msc. Env. Sc
Govt. ANALYST
(GAZETTE Notification Dt-03-06-2016)

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Reference no. - CEMC/DPCL/040217/Sed **Issued Date-04.02.17**

SEA SEDIMENT ANALYSIS REPORT

Name & Address of the Customer : **The Dhamra Port Company Ltd., Doshinga,Bhadrak**
Date of Sampling : 12.01.2017
Sampling by : Biswaranjan Behera
Sampling Plan & Procedure : APHA
Sample Description : Sediment

SEDIMENT ANALYSIS DATA

Locations	pH	Organic Matter	Moisture Content (%)	Conductivity (µS/cm)	Iron (%)	Sodium (%)	Copper (mg/kg)	Nickel (mg/Kg)	Zinc (mg/kg)
Station-1	7.4	2.5	5.5	6.98	3.4	20.44	< 5	< 1	< 3
Station-2	7.8	4.8	5.2	7.45	3.6	21.85	< 5	< 1	< 3
Station-3	7.1	4.4	7.1	6.98	3.2	24.18	< 5	< 1	< 3
Station-4	7.2	5.5	6.9	7.21	4.11	20.51	< 5	< 1	< 3
Station-5	7.8	5.4	5.4	8.12	3.6	25.11	< 5	< 1	< 3
Station-6	7.8	4.9	5.2	8.01	4.5	21.88	< 5	< 1	< 3
Station-7	7.3	6.8	4.8	9.09	2.1	23.14	< 5	< 1	< 3
Station-8	7.8	5.2	4.2	5.32	3.5	22.14	< 5	< 1	< 3

SEDIMENT ANALYSIS DATA

Locations	Manganese (mg/kg)	Lead (mg/kg)	Boron (mg/kg)	Phosphate (mg/kg)	Chloride (mg/kg)	Sulphate (mg/kg)	Sulphide (mg/kg)	Pesticide (mg/kg)	Potassium (mg/kg)
Station-1	< 1	< 5	< 0.5	< 0.5	748	4725	ND	ND	0.77
Station-2	< 1	< 5	< 0.5	< 0.5	754	4602	ND	ND	0.51
Station-3	< 1	< 5	< 0.5	< 0.5	659	5232	ND	ND	0.48
Station-4	< 1	< 5	< 0.5	< 0.5	799	5812	ND	ND	1.01
Station-5	< 1	< 5	< 0.5	< 0.5	796	5721	ND	ND	0.95
Station-6	< 1	< 5	< 0.5	< 0.5	789	7051	ND	ND	0.59
Station-7	< 1	< 5	< 0.5	< 0.5	845	7548	ND	ND	1.20
Station-8	< 1	< 5	< 0.5	< 0.5	802	7910	ND	ND	0.99

SEDIMENT ANALYSIS DATA

Locations	Total Chromium (mg/kg)	Petroleum Hydrocarbon (mg/kg)	Aluminium (mg/kg)	Total Nitrogen (mg/kg)	Organic Nitrogen (mg/kg)	Phosphorous (mg/kg)	Texture (%)		
							Sand	Silt	Clay
Station-1	< 1	ND	< 0.1	2.5	1.8	3.2	0.71	18.91	80.38
Station-2	< 1	ND	< 0.1	2.1	1.5	4.4	0.88	31.11	68.01
Station-3	< 1	ND	< 0.1	2.8	2.8	2.1	0.91	41.42	57.67
Station-4	< 1	ND	< 0.1	2.5	1.9	3.2	0.90	14.78	84.32
Station-5	< 1	ND	< 0.1	2.0	3.2	2.4	0.89	21.19	77.92
Station-6	< 1	ND	< 0.1	3.9	2.5	1.9	1.91	46.21	51.88
Station-7	< 1	ND	< 0.1	3.6	2.1	2.9	1.20	28.88	69.92
Station-8	< 1	ND	< 0.1	3.0	2.9	2.1	1.03	34.19	64.78

PHYTOBENTHOS MONITORING DATA					
Locations	Fungus (CFU/1 g dry wt.)	Total Count/ 50g wet sediment	No. of Species	Diversity Index	Major Species
Station-1	2657	201	12	0.2455	*Podosira, N. longsigma*
Station-2	2981	510	11	0.5214	*Podosira, N.longsigma, Ditylum*
Station-3	1257	398	8	0.5111	*N. longsigma, Ditylum*
Station-4	3157	299	10	1.0054	*Podosira, Ditylum*
Station-5	986	754	12	0.6843	*Podosira, Ditylum*
Station-6	5329	440	10	1.0214	*Podosira, N. longsigma*
Station-7	3751	428	9	0.5261	*Podosira*
Station-8	1635	320	12	0.8754	*Podosira, N. longsigma*

TOTAL FAUNA MONITORING DATA			
Locations	Name of Phylum, Class and Number of individuals encountered	Total number of species Encountered	Total Fauna per m^3
Station-1	1.Phylum- Arthropoda Class- Malagostraca-19 2.Phylum- Annelida Class-Polychaeta-30	31	219
Station-2	1.Phylum-Annelida Class-Polchaeta-25 2.Phylum-Arthropda Class- Copepoda-15	105	169
Station-3	1.Phylum- Arthropoda Class- Malagostraca-18 2.Phylum- Annelida Class-Polychaeta-12 3.Phylum- Mollusca Class-Gastropoda-18 Class- Pelecypoda-16	98	812
Station-4	1.Phylum- Annelida Class-Polychaeta-26 2.Phylum-Mollusca Class-Gastropoda-10 Class-Pelecypoda-16 Class-Bivalvia-21	136	401
Station-5	1.Phylum- Anthropoda Class- Amphipoda-19 2.Phylum- Annelida Class- Polychaeta- 14 1.Phylum- Mollusca Class- Pelecypoda-16 Class- Bivalvia-16 Class- Gastropoda-21	84	912

Station-6	1.Phylum- Annelida Class- Polychaeta-18 2.Phylum- Mollusca Class- Bivalvia-15	49	901
Station-7	1.Phylum-Annelida Class- Polychaeta-10 2.Phylum- Mollusca Class- Gastropoda-19 Class-Bivalvia-15 Class- Scaphopoda-11	39	508
Station-8	1.Phylum- Annelida Class- Polychaeta-20 2.Phylum- Mollusca Class- Gastropoda-11 Class-Bivalvia-19 Class- Scaphopoda-10	30	314

Ms. M. Rout, Msc Env. Sc
Authorized Signatory
(GAZETTE No-1357, dt-03-06-2016)

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MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.

Reference no. - CEMC/DPCL/060317/A **Issued Date-06.03.17**

AMBIENT AIR QUALITY MONITORING TEST REPORT

Client Name & Address	Dhamra Port Company Ltd.,Doshinga, Bhadrak
Work Order No.	5700178552
Reference No.	CEMC-06032017A
Nature of Sampling	Ambient Air Sample
Sampling Location	Near MCC-1
Sampling By	Mr. Biswaranjan Behera
Sampling Duration	01.02.2017 to 28.02.2017

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NOx ($\mu g/m^3$)	CO (mg/m^3)	NH_3 ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	BaP (ng/m^3)
03.02.2017	57.5	29.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.02.2017	55.3	26.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.02.2017	58.2	27.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.02.2017	59.8	30.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.02.2017	57.3	24.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.02.2017	56.8	27.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23.02.2017	58.0	29.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.02.2017	57.8	28.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	100	60	80	80	4	400	100	1.0	20	6	5	1
Methods of Analysis	IS: 5182 (Part-23)	Gravimetric Method as per CPCB method	IS: 5182 (Part-2)	IS: 5182 (Part-6)	IS: 5182 (Part-10)	Indophenol Blue Method followed by CPCB	IS: 5182 (Part-9)	IS: 5182 (Part-22)	As per CPCB method followed by AAS	As per CPCB method followed by AAS	IS: 5182 (Part-11)	IS: 5182 (Part-12)

N.B- *NAAQ (National Ambient Air Quality Standard as per 18th Nov,2009Gatt. Notification)
BDL Value (NO_X<9.0 $\mu g/m^3$,SO_2<4.0 $\mu g/m^3$,NH_3<20 $\mu g/m^3$, As<0.44 ng/m^3,Ni<0.6 ng/m^3,Pb<0.06 $\mu g/m^3$,CO<0.1 mg/m^3, Benzo(a)pyrene<1 ng/m^3) , Benzene <5 $\mu g/m^3$)

Ms. M. Rout, Msc. Env. Sc
GOVT. ANALYST
(GAZETTE No-1337, Dt-03-06-2016)
Authorized Signatory

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Reference no. - CEMC/DPCL/060317/A **Issued Date-06.03.17**

AMBIENT AIR QUALITY MONITORING TEST REPORT

Client Name & Address	**Dhamra Port Company Ltd.,Doshinga, Bhadrak**
Work Order No.	**5700178552**
Reference No.	**CEMC-06032017A**
Nature of Sampling	**Ambient Air Sample**
Sampling Location	**Near Settling Pond**
Sampling By	**Mr. Biswaranjan Behera**
Sampling Date	**01.02.2017 to 28.02.2017**

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NOx ($\mu g/m^3$)	CO (mg/m^3)	NH_3 ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	BaP (ng/m^3)
03.02.2017	86.2	44.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.02.2017	85.4	43.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.02.2017	82.6	40.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.02.2017	80.8	38.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.02.2017	84.3	41.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.02.2017	83.7	41.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23.02.2017	81.5	40.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.02.2017	80.2	39.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	**100**	**60**	**80**	**80**	**4**	**400**	**100**	**1.0**	**20**	**6**	**5**	**1**
Methods of Analysis	**IS: 5182 (Part-23)**	**Gravimetric Method as per CPCB method**	**IS: 5182 (Part-2)**	**IS: 5182 (Part-6)**	**IS: 5182 (Part-10)**	**Indophenol Blue Method followed by CPCB**	**IS: 5182 (Part-9)**	**IS: 5182 (Part-22)**	**As per CPCB method followed by AAS**	**As per CPCB method followed by AAS**	**IS: 5182 (Part-11)**	**IS: 5182 (Part-12)**

N.B- *NAAQ (National Ambient Air Quality Standard as per 18th Nov,2009Gatt. Notification)
BDL Value (NO_X<9.0 $\mu g/m^3$,SO_2<4.0 $\mu g/m^3$,NH_3<20 $\mu g/m^3$, As<0.44 ng/m^3,Ni<0.6 ng/m^3,Pb<0.06 $\mu g/m^3$,CO<0.1 mg/m^3, Benzo(a)pyrene<1 ng/m^3) , Benzene <5 $\mu g/m^3$)

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Govt. ANALYST
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Reference no. - CEMC/DPCL/060317/A **Issued Date-06.03.17**

AMBIENT AIR QUALITY MONITORING TEST REPORT

Client Name & Address	**Dhamra Port Company Ltd.,Doshinga, Bhadrak**
Work Order No.	**5700178552**
Reference No.	**CEMC-06032017A**
Nature of Sampling	**Ambient Air Sample**
Sampling Location	**Near WTP**
Sampling By	**Mr. Biswaranjan Behera**
Sampling Date	**01.02.2017 to 28.02.2017**

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NOx ($\mu g/m^3$)	CO (mg/m^3)	NH_3 ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	BaP (ng/m^3)
03.02.2017	48.7	23.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.02.2017	46.9	22.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.02.2017	45.3	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.02.2017	46.2	24.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.02.2017	47.7	24.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.02.2017	46.6	24.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23.02.2017	47.2	23.7	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.02.2017	49.5	22.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	**100**	**60**	**80**	**80**	**4**	**400**	**100**	**1.0**	**20**	**6**	**5**	**1**
Methods of Analysis	**IS: 5182 (Part-23)**	**Gravimetric Method as per CPCB method**	**IS: 5182 (Part-2)**	**IS: 5182 (Part-6)**	**IS: 5182 (Part-10)**	**Indophenol Blue Method followed by CPCB**	**IS: 5182 (Part-9)**	**IS: 5182 (Part-22)**	**As per CPCB method followed by AAS**	**As per CPCB method followed by AAS**	**IS: 5182 (Part-11)**	**IS: 5182 (Part-12)**

N.B- *NAAQ (National Ambient Air Quality Standard as per 18th Nov,2009Gatt. Notification)
BDL Value (NO_X<9.0 $\mu g/m^3$,SO_2<4.0 $\mu g/m^3$,NH_3<20 $\mu g/m^3$, As<0.44 ng/m^3,Ni<0.6 ng/m^3,Pb<0.06 $\mu g/m^3$,CO<0.1 mg/m^3, Benzo(a)pyrene<1 ng/m^3) , Benzene <5 $\mu g/m^3$)

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AMBIENT AIR QUALITY MONITORING TEST REPORT

Client Name & Address	**Dhamra Port Company Ltd.,Doshinga, Bhadrak**
Work Order No.	**5700178552**
Reference No.	**CEMC-06032017A**
Nature of Sampling	**Ambient Air Sample**
Sampling Location	**Near Community Hall**
Sampling By	**Mr. Biswaranjan Behera**
Sampling Date	**01.02.2017 to 28.02.2017**

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NOx ($\mu g/m^3$)	CO (mg/m^3)	NH_3 ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	BaP (ng/m^3)
03.02.2017	56.3	24.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.02.2017	58.5	26.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.02.2017	57.4	26.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.02.2017	55.8	25.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.02.2017	57.0	25.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.02.2017	59.7	30.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23.02.2017	56.9	29.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.02.2017	55.8	28.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	**100**	**60**	**80**	**80**	**4**	**400**	**100**	**1.0**	**20**	**6**	**5**	**1**
Methods of Analysis	**IS: 5182 (Part-23)**	**Gravimetric Method as per CPCB method**	**IS: 5182 (Part-2)**	**IS: 5182 (Part-6)**	**IS: 5182 (Part-10)**	**Indophenol Blue Method followed by CPCB**	**IS: 5182 (Part-9)**	**IS: 5182 (Part-22)**	**As per CPCB method followed by AAS**	**As per CPCB method followed by AAS**	**IS: 5182 (Part-11)**	**IS: 5182 (Part-12)**

N.B- *NAAQ (National Ambient Air Quality Standard as per 18th Nov,2009Gatt. Notification)
BDL Value (NO_X<9.0 $\mu g/m^3$,SO_2<4.0 $\mu g/m^3$,NH_3<20 $\mu g/m^3$, As<0.44 ng/m^3,Ni<0.6 ng/m^3,Pb<0.06 $\mu g/m^3$,CO<0.1 mg/m^3, Benzo(a)pyrene<1 ng/m^3) , Benzene <5 $\mu g/m^3$)

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AMBIENT AIR QUALITY MONITORING TEST REPORT

Client Name & Address	**Dhamra Port Company Ltd.,Doshinga, Bhadrak**
Work Order No.	**5700178552**
Reference No.	**CEMC-06032017A**
Nature of Sampling	**Ambient Air Sample**
Sampling Location	**Near Dhamra Old guest house**
Sampling By	**Mr. Biswaranjan Behera**
Sampling Date	**01.01.2017 to 31.01.2017**

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NOx ($\mu g/m^3$)	CO (mg/m^3)	NH_3 ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	BaP (ng/m^3)
03.02.2017	47.2	25.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.02.2017	46.3	24.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.02.2017	48.8	25.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.02.2017	45.4	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.02.2017	44.7	24.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
20.02.2017	45.9	25.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
23.02.2017	47.6	26.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.02.2017	46.8	25.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	**100**	**60**	**80**	**80**	**4**	**400**	**100**	**1.0**	**20**	**6**	**5**	**1**
Methods of Analysis	**IS: 5182 (Part-23)**	**Gravimetric Method as per CPCB method**	**IS: 5182 (Part-2)**	**IS: 5182 (Part-6)**	**IS: 5182 (Part-10)**	**Indophenol Blue Method followed by CPCB**	**IS: 5182 (Part-9)**	**IS: 5182 (Part-22)**	**As per CPCB method followed by AAS**	**As per CPCB method followed by AAS**	**IS: 5182 (Part-11)**	**IS: 5182 (Part-12)**

N.B- *NAAQ (National Ambient Air Quality Standard as per 18th Nov,2009Gatt. Notification)
BDL Value (NO_X<9.0 $\mu g/m^3$,SO_2<4.0 $\mu g/m^3$,NH_3<20 $\mu g/m^3$, As<0.44 ng/m^3,Ni<0.6 ng/m^3,Pb<0.06 $\mu g/m^3$,CO<0.1 mg/m^3, Benzo(a)pyrene<1 ng/m^3) , Benzene <5 $\mu g/m^3$)

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Govt. ANALYST
(GAZETTE NO 1357 DT-03-06-2016)
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Reference no. - CEMC/DPCL/280217/N **Issued Date-28.02.17**

NOISE LEVEL MONITORING REPORT

Issued to	**Dhamra Port Company Ltd.,Doshinga, Bhadrak**
Analysis No.	**CEMC06032017N**
Nature of Sampling	**Noise Sample**
Sampling By	**Mr. Biswaranjan Behera**
Sampling Date	**01.02.2017 to 28.02.2017**

Date	Location	NL Day Time dB (A)			NL NightTime dB (A)		
		Max	Min.	Avg.	Max.	Min.	Avg.
06.02.2017	NEAR DHAMRA OLD GUEST HOUSE	63.4	60.8	62.1	42.8	37.6	40.2
07.02.2017	NEAR COMMUNITY HALL	64.4	60.6	62.4	41.6	40.4	41.0
08.02.2017	NEAR WTP	65.6	62.4	64.0	44.6	42.6	43.6
09.02.2017	NEAR MCC-1	64.8	61.6	63.2	46.4	45.4	45.9
10.02.2017	NEAR SETTLING POND	66.6	62.8	64.7	49.8	46.2	48.0

National Standard Noise Level

Area Code	Category of Area/Zone	Permissible Limit in dB (A)	
		Day Time	Night Time
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40

Ms. M. Rout, Msc. Env. Sc
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Reference no. - CEMC/DPCL/280217/WW **Issued Date-28.02.17**

STP REPORT

Name & Address of the Customer : **Dhamra Port Company Ltd.,Doshinga, Bhadrak**
Date of Sampling : 10.02.2017
Sampling by : Biswaranjan Behera
Sampling Plan & Procedure : APHA
Sample Description : Waste Water
Sample Quantity : 1.0 Ltr
Sample Location : **STP section (15 KLD)**

SOURCE
SAMPLE 1: **STP Inlet Water**
SAMPLE 2: **STP Outlet Water**

SAMPLE 1

Sl. No.	Parameter	Units of Measurements	Sample 1	Design parameter for Raw Sewage
1	Appearance	--	Turbid	-
2	Colour	--	Blackish	-
3	Odour	--	Foul	-
4	pH	--	6.78	6-8.5
5	Total Suspended Solids	mg/l	90.6	1000
6	B.O.D	mg/l	98	300-350
7	Oil & grease	mg/l	4.9	100

SAMPLE 2

Sl. No.	Parameter	Units of Measurements	Sample 2	Design parameter for Treated Sewage
1	Appearance	--	Clear	-
2	Colour	--	Colorless	-
3	Odour	--	Odourless	-
4	pH	--	7.16	5.5-9
5	Total Suspended Solids	mg/l	21.2	<100
6	B.O.D	mg/l	14	<30
7	Oil & grease	mg/l	ND	<10

*ND-Not Detectable

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Reference no. - CEMC/DPCL/280217/WW **Issued Date-28.02.17**

STP REPORT

Name & Address of the Customer : **Dhamra Port Company Ltd.,Doshinga, Bhadrak**
Date of Sampling : 10.02.2017
Sampling by : Biswaranjan Behera
Sampling Plan & Procedure : APHA
Sample Description : Waste Water
Sample Quantity : 1.0 Ltr
Sample Location : **STP section (150KLD)**

SOURCE
SAMPLE 1: **STP Inlet Water**
SAMPLE 2: **STP Outlet Water**

SAMPLE 1

Sl. No.	Parameter	Units of Measurements	Sample 1	Design parameter for Raw Sewage
1	Appearance	--	Turbid	-
2	Colour	--	Blackish	-
3	Odour	--	Foul	-
4	pH	--	7.26	6-8.5
5	Total Suspended Solids	mg/l	76.2	1000
6	B.O.D	mg/l	80	300-350
7	Oil & grease	mg/l	5.1	100

SAMPLE 2

Sl. No.	Parameter	Units of Measurements	Sample 2	Design parameter for Treated Sewage
1	Appearance	--	Clear	-
2	Colour	--	Colorless	-
3	Odour	--	Odourless	-
4	pH	--	7.12	5.5-9
5	Total Suspended Solids	mg/l	20.8	<100
6	B.O.D	mg/l	15	<30
7	Oil & grease	mg/l	ND	<10

*ND-Not Detectable

Ms. M. Rout, Msc. Env. Sc
Govt. ANALYST
(GAZETTE Notified Dt-03-06-2016)
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Reference no. - CEMC/DPCL/280217/WW **Issued Date-28.02.17**

STP REPORT

Name & Address of the Customer : **Dhamra Port Company Ltd.,Doshinga, Bhadrak**
Date of Sampling : 20.02.2017
Sampling by : Biswaranjan Behera
Sampling Plan & Procedure : APHA
Sample Description : Waste Water
Sample Quantity : 1.0 Ltr
Sample Location : **STP section (15 KLD)**

SOURCE
SAMPLE 1: **STP Inlet Water**
SAMPLE 2: **STP Outlet Water**

SAMPLE 1

Sl. No.	Parameter	Units of Measurements	Sample 1	Design parameter for Raw Sewage
1	Appearance	--	Turbid	-
2	Colour	--	Blackish	-
3	Odour	--	Foul	-
4	pH	--	7.2	6-8.5
5	Total Suspended Solids	mg/l	83.6	1000
6	B.O.D	mg/l	90	300-350
7	Oil & grease	mg/l	4.7	100

SAMPLE 2

Sl. No.	Parameter	Units of Measurements	Sample 2	Design parameter for Treated Sewage
1	Appearance	--	Clear	-
2	Colour	--	Colorless	-
3	Odour	--	Odourless	-
4	pH	--	7.53	5.5-9
5	Total Suspended Solids	mg/l	20.1	<100
6	B.O.D	mg/l	14	<30
7	Oil & grease	mg/l	ND	<10

N.B: ND-Not Detectable

Ms. M. Rout, Msc. Env. Sc
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Reference no. - CEMC/DPCL/280217/WW **Issued Date-28.02.17**

STP REPORT

Name & Address of the Customer : **Dhamra Port Company Ltd.,Doshinga, Bhadrak**
Date of Sampling : 20.02.2017
Sampling by : Biswaranjan Behera
Sampling Plan & Procedure : APHA
Sample Description : Waste Water
Sample Quantity : 1.0 Ltr
Sample Location : **STP section (150 KLD)**

SOURCE
SAMPLE 1: **STP Inlet Water**
SAMPLE 2: **STP Outlet Water**

SAMPLE 1

Sl. No.	Parameter	Units of Measurements	Sample 1	Design parameter for Raw Sewage
1	Appearance	--	Turbid	-
2	Colour	--	Blackish	-
3	Odour	--	Foul	-
4	pH	--	6.86	6-8.5
5	Total Suspended Solids	mg/l	102.9	1000
6	B.O.D	mg/l	94	300-350
7	Oil & grease	mg/l	6.1	100

SAMPLE 2

Sl. No.	Parameter	Units of Measurements	Sample 2	Design parameter for Treated Sewage
1	Appearance	--	Clear	-
2	Colour	--	Colorless	-
3	Odour	--	Odourless	-
4	pH	--	7.35	5.5-9
5	Total Suspended Solids	mg/l	21.8	<100
6	B.O.D	mg/l	15	<30
7	Oil & grease	mg/l	ND	<10

***ND-Not Detectable**

Ms. M. Rout, Msc. Env. Sc
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Reference no. - CEMC/DPCL/280217/SW **Issued Date-28.02.17**

SEA WATER ANALYSIS REPORT

Name & Address of the Customer : **Dhamra Port Ltd., Bhadrak**
Date of Sampling : 09.02.2017
Sampling by : Biswaranjan Behera
Sample Description : Sea Water

STATION DESCRIPTION

SL. NO.	STATION	GPS COORDINATES
01	STATION-1	20°46'55.5" N 86°57'40.5" E
02	STATION-2	20°49'05.0" N 86°58'14.3" E
03	STATION-3	20°51'33.5" N 87°00'17.0" E
04	STATION-4	20°52'55.8" N 87°02'44.9" E
05	STATION-5	20°54'20.4" N 87°05'14.0" E
06	STATION-6	20°54'54.3" N 87°06'13.8" E
07	STATION-7	20°54'45.0" N 87°07'13.6" E
08	STATION-8	20°54'42.8" N 87°07'50.4" E

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SEA WATER ANALYSIS REPORT

WATER ANALYSIS DATA

Locations		Temp. (°C)	Turbidity (NTU)	Conductivity (µS/cm)	pH	Salinity (ppt)	DO (mg/l)	BOD (mg/l)	COD (mg/l)
Station-1	SW	25	42	47.1	8.3	26.45	7.0	< 3	< 10
	BW	24	36	45.7	8.0	25.99	6.7	< 3	< 10
Station-2	SW	25	38	49.3	8.2	29.54	7.4	< 3	10
	BW	24	35	46.9	7.9	28.45	6.9	< 3	< 10
Station-3	SW	25	40	41.9	8.2	24.40	7.0	< 3	10
	BW	24	39	40.8	8.2	24.51	6.8	< 3	< 10
Station-4	SW	25	41	42.1	8.3	26.15	7.1	3.0	20
	BW	24	39	39.2	8.0	25.12	6.9	< 3	< 10
Station-5	SW	25	46	43.8	8.3	27.48	7.0	< 3	< 10
	BW	24	32	42.9	8.4	26.88	6.9	< 3	< 10
Station-6	SW	25	49	46.5	8.2	28.41	6.9	< 3	10
	BW	24	30	44.6	8.1	29.65	6.7	< 3	< 10
Station-7	SW	26	42	43.9	8.3	28.49	7.2	< 3	20
	BW	24	31	43.4	7.9	28.41	6.9	< 3	< 10
Station-8	SW	24	37	45.6	8.2	26.54	7.1	< 3	10
	BW	24	30	42.3	7.5	27.89	6.5	< 3	< 10

*SW= Surface Water, BW= Bottom Water

WATER ANALYSIS DATA

Locations		Copper (mg/l)	Cadmium (mg/l)	Mercury (mg/l)	Phosphate (mg/l)	Sulphate (mg/l)	Nitrite (mg/l)	Nitrate (mg/l)	TSS (mg/l)
Station-1	SW	< 0.05	< 0.01	< 0.001	< 0.05	1811	0.51	8.6	254.6
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1710	0.44	8.1	109.4
Station-2	SW	< 0.05	< 0.01	< 0.001	< 0.05	1806	0.41	7.3	260.1
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1745	0.62	8.0	98.4
Station-3	SW	< 0.05	< 0.01	< 0.001	< 0.05	1621	0.71	6.6	241.8
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1509	0.59	8.4	111.4
Station-4	SW	< 0.05	< 0.01	< 0.001	< 0.05	1613	0.89	7.1	204.8
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1504	0.73	7.5	99.1
Station-5	SW	< 0.05	< 0.01	< 0.001	< 0.05	1890	0.59	9.2	280.1
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1801	0.63	7.9	101.5
Station-6	SW	< 0.05	< 0.01	< 0.001	< 0.05	1796	0.52	8.9	257.9
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1689	0.48	8.1	112.4
Station-7	SW	< 0.05	< 0.01	< 0.001	< 0.05	1744	0.54	7.9	289.5
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1709	0.47	8.4	100.2
Station-8	SW	< 0.05	< 0.01	< 0.001	< 0.05	1785	0.49	8.1	274.6
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1710	0.42	7.9	105.1

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WATER ANALYSIS DATA							
Locations		Calcium Hardness (mg/l)	Magnesium Hardness (mg/l)	Total Hardness (mg/l)	Total Dissolved Solids (mg/l)	Ammonical Nitrogen (mg/l)	Total Nitrogen (mg/l)
Station-1	SW	3040	900	3940	30457	ND	10.4
	BW	2750	810	3560	29945	ND	9.3
Station-2	SW	2320	910	3230	30512	ND	10.5
	BW	2410	820	3230	30742	ND	9.3
Station-3	SW	2390	850	3240	30982	ND	11.3
	BW	2810	780	3590	30041	ND	9.2
Station-4	SW	2140	870	3010	31547	ND	10.9
	BW	2220	740	2960	30254	ND	9.8
Station-5	SW	2480	810	3290	34579	ND	11.5
	BW	2670	790	3460	31542	ND	10.8
Station-6	SW	2740	810	3550	31114	ND	10.2
	BW	2810	770	3580	29845	ND	8.6
Station-7	SW	2880	800	3680	30014	ND	10.1
	BW	2310	770	3080	29845	ND	9.9
Station-8	SW	3060	890	3950	30009	ND	9.8
	BW	2910	710	3620	30102	ND	8.6

*SW= Surface Water, BW= Bottom Water

WATER ANALYSIS DATA							
Locations		Total Chromium (mg/l)	Phenolic Compounds (mg/l)	Hexavalent Chromium (mg/l)	Petroleum Hydrocarbon (mg/l)	Chlorinity ($^{o}/_{oo}$)	Oil and Grease (mg/l)
Station-1	SW	< 0.05	< 0.001	< 0.05	1.3	12.47	4.8
	BW	< 0.05	< 0.001	< 0.05	ND	10.5	ND
Station-2	SW	< 0.05	< 0.001	< 0.05	1.5	12.47	4.1
	BW	< 0.05	< 0.001	< 0.05	ND	11.29	ND
Station-3	SW	< 0.05	< 0.001	< 0.05	2.1	13.78	3.7
	BW	< 0.05	< 0.001	< 0.05	ND	10.26	ND
Station-4	SW	< 0.05	< 0.001	< 0.05	1.5	13.94	5.4
	BW	< 0.05	< 0.001	< 0.05	ND	15.47	ND
Station-5	SW	< 0.05	< 0.001	< 0.05	1.3	12.05	3.9
	BW	< 0.05	< 0.001	< 0.05	ND	14.23	ND
Station-6	SW	< 0.05	< 0.001	< 0.05	1.2	11.47	3.2
	BW	< 0.05	< 0.001	< 0.05	ND	11.56	ND
Station-7	SW	< 0.05	< 0.001	< 0.05	1.3	14.12	3.2
	BW	< 0.05	< 0.001	< 0.05	ND	11.09	ND
Station-8	SW	< 0.05	< 0.001	< 0.05	1.1	12.99	5.4
	BW	< 0.05	< 0.001	< 0.05	ND	10.56	ND

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SEA WATER ANALYSIS REPORT

PHYTOPLANKTON MONITORING DATA					
Locations		Total Count/L	No. of Species	Chlorophyll-a (µg/L)	Major Species
Station-1	SW	1365	18	1.4545	*C.pentagonum, Skeletonema, N.longisigma, Bacillaria*
	BW	1021	10	1.0321	*Bacillaria, Chaetocerous, Ceratium,*
Station-2	SW	985	16	2.1540	*C.pentagonum,, C.furca, Bacillaria, Podosira, Skeletonema,*
	BW	1024	14	1.8452	*C.pentagonum, N.striata, C.furca, N.striata*
Station-3	SW	1265	10	1.2141	*Bacillaria,Chaetocerous, Podosira*
	BW	1196	20	1.2114	*N.longisigma, Podosira, Ceratium, C.furca*
Station-4	SW	1654	21	1.3412	*C.pentagonu,Bacillaria,Podosira, N.longisigma*
	BW	1146	12	1.2141	*C.pentagonum, Chaetocerous, Bacillaria, N.striata*
Station-5	SW	547	25	1.2154	*C.pentagonum, N.striata, C.furca,Ceratiu, N.longisigma*
	BW	1740	14	0.6548	*C.pentagonum, N.striata, Chaetocerous, Bacillaria*
Station-6	SW	2896	16	1.1245	*Podosira ,, Bacillaria, N.striata*
	BW	1132	18	1.0045	*C.pentagonu, Bacillaria, Podosira*
Station-7	SW	4811	20	2.1451	*Pleurosigma, C.pentagonum, N.striata*
	BW	1230	12	1.0457	*Pleurosigma, N.longisigma, C.pentagonum, N.striata*
Station-8	SW	801	21	1.1247	*C.pentagonum, Pleurosigma, N.longisigma, Bacillaria*
	BW	1645	15	1.7451	*Podosira ,C.pentagonum,N.striata*

*SW= Surface Water, BW= Bottom Water

ZOOPLANKTON MONITORING DATA				
Locations		Total Count/L	No. of Species	Major Species
Station-1	SW	1847	19	*Cladocera, Nematoda, Cladocera*
	BW	1478	10	*Copepod, Rotifera, Ostracoda*
Station-2	SW	1203	20	*Rotifera, Protoza, Nematoda, Cladocera*
	BW	992	16	*Cladocera, Nematoda, Rotifera*
Station-3	SW	1247	12	*Ostracoda, Protozoa, Copepod, Rotifera*
	BW	1034	09	*Protozoa ,Rotifera, Copepod*
Station-4	SW	1265	12	*Copepod, Rotifera, Cladocera*
	BW	1458	14	*Ostracoda, Protozoa, Copepod, Rotifera*
Station-5	SW	1324	19	*Protozoa, Rotifera, Nematoda, Cladocera*
	BW	1247	10	*Anostraca, Cladocera,Nematoda*
Station-6	SW	1548	10	*Crustacean Larvae, Protozoa, Nematoda*
	BW	1324	16	*Rotifera, Nematoda, Cladocera*
Station-7	SW	1754	09	*Anostraca, Cladocera, Rotifera, Copepod*
	BW	1345	17	*Rotifera, Protoza, Nematoda, Crustacean Larvae*
Station-8	SW	1212	12	*Crustacean Larvae, Protozoa, Nematoda, Rotifera*
	BW	998	10	*Protozoa, Nematoda, Copepod, Nematoda*

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MICROBIOLOGICAL MONITORING DATA					
Locations		Total Bacterial Count (CFU/ml)	Total Coliform (CFU/ml)	Faecal Coliform (CFU/ml)	*E.coli* (CFU/ml)
Station-1	SW	240	34	2.0	ND
	BW	110	22	2.0	ND
Station-2	SW	120	14	3.6	ND
	BW	110	14	1.8	ND
Station-3	SW	150	13	2.0	ND
	BW	70	10	1.8	ND
Station-4	SW	150	5.5	1.8	ND
	BW	120	25	<1.8	ND
Station-5	SW	94	11	2.0	ND
	BW	130	7.8	<1.8	ND
Station-6	SW	100	36	3.7	ND
	BW	70	15	1.8	ND
Station-7	SW	220	58	1.8	ND
	BW	100	22	<1.8	ND
Station-8	SW	540	100	1.8	ND
	BW	400	70	1.8	ND

*SW= Surface Water, BW= Bottom Water

MICROBIOLOGICAL MONITORING DATA					
Locations		Enterococcus (CFU/ml)	Salmonella (CFU/ml)	Shigella (CFU/ml)	Vibrio (CFU/ml)
Station-1	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-2	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-3	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-4	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-5	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-6	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-7	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-8	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND

*SW= Surface Water, BW= Bottom Water

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SEA WATER ANALYSIS REPORT

PRIMARY PRODUCTIVITY MONITORING DATA			
Locations		Gross Primary Productivity (mgC/ L/ day)	Net Primary Productivity (mgC/ L/ day)
Station-1	SW	2.0	1.6
	BW	2.1	1.5
Station-2	SW	2.1	1.8
	BW	1.9	1.6
Station-3	SW	1.9	1.4
	BW	1.8	1.4
Station-4	SW	1.9	1.1
	BW	1.9	1.6
Station-5	SW	2.3	1.8
	BW	2.0	1.1
Station-6	SW	1.9	1.2
	BW	2.0	1.4
Station-7	SW	2.1	1.7
	BW	1.8	1.2
Station-8	SW	2.5	1.5
	BW	2.1	1.7

*SW= Surface Water, BW= Bottom Water

SEA WATER ANALYSIS REPORT

PHYTOBENTHOS MONITORING DATA						
Locations		Fungus (CFU/1 g dry wt.)	Total Count/ 50g wet sediment	No. of Species	Diversity Index	Major Species
Station-1	SW	3141	210	14	0.5124	*Podosira, N. longsigma*
	BW	3514	1542	10	0.7845	*Podosira, N. longsigma, Ditylum*
Station-2	SW	1945	250	8	0.8451	*Ditylum*
	BW	1147	289	11	0.8457	*Podosira, N. longsigma*
Station-3	SW	1598	547	9	0.9121	*Podosira, Ditylum*
	BW	1544	210	12	0.9562	*Podosira, Ditylum*
Station-4	SW	2845	324	15	0.5487	*Podosira, N. longsigma, Ditylum*
	BW	2495	247	15	0.5521	*Podosira, N. longsigma, Ditylum*
Station-5	SW	3548	845	14	0.5647	*N.longsigma, Ditylum*
	BW	2957	687	15	0.7485	*Podosira*
Station-6	SW	2475	196	8	0.4875	*N. longsigma*
	BW	2547	214	12	0.6547	*Ditylum*
Station-7	SW	3547	220	12	0.5986	*Podosira, N. longsigma,*
	BW	3910	120	6	0.5421	*Ditylum*
Station-8	SW	2659	134	10	0.6142	*Podosira*
	BW	2056	142	11	0.4875	*Podosira, Ditylum*

*SW= Surface Water, BW= Bottom Water

TOTAL FAUNA MONITORING DATA				
Locations		Name of Phylum, Class and Number of individuals encountered	Total number of species Encountered	Total Fauna per m^3
Station-1	SW	1.Phylum- Anthropoda Class- Amphipoda-39 2.Phylum- Annelida Class- Polychaeta- 24 3.Phylum- Mollusca Class- Pelecypoda-22 Class- Bivalvia-11 Class- Gastropoda-8	24	988
	BW	1.Phylum- Anthropoda Class- Amphipoda-21 2.Phylum- Annelida Class- Polychaeta- 10 3.Phylum- Mollusca Class- Pelecypoda-21 Class- Bivalvia-11 Class- Gastropoda-17	54	1044
Station-2	SW	1.Phylum- Annelida Class- Polychaeta-37 2.Phylum- Mollusca Class- Bivalvia-15	54	417
	BW	1.Phylum- Annelida Class- Polychaeta-15 2.Phylum- Mollusca Class- Bivalvia-11	37	510
Station-3	SW	1.Phylum-Annelida Class- Polychaeta-22 2.Phylum- Mollusca Class- Gastropoda-17 Class-Bivalvia-19 Class- Scaphopoda-8	41	512
	BW	1.Phylum-Annelida Class- Polychaeta-19 2.Phylum- Mollusca Class- Gastropoda-11 Class-Bivalvia-24 Class- Scaphopoda-28	17	314
Station-4	SW	1.Phylum- Annelida Class- Polychaeta-24 2.Phylum- Mollusca Class- Scaphopoda-12	27	184
	BW	1.Phylum- Annelida Class- Polychaeta-26 2. Phylum- Mollusca Class- Gastropoda-11	19	398

Station-5	SW	1.Phylum- Arthropoda Class- Malagostraca-32 2.Phylum- Mollusca Class-Gastropoda-02 3.Phylum- Annelida Class-Polychaeta-5	14	100
	BW	1.Phylum- Arthropoda Class- Malagostraca-19 2.Phylum- Annelida Class-Polychaeta-18	21	147
Station-6	SW	1.Phylum-Annelida Class-Polchaeta-20 2.Phylum-Arthropda Class- Copepoda-11	12	162
	BW	1.Phylum-Annelida Class-Polchaeta-14 2.Phylum-Arthropda Class- Copepoda-10	21	120
Station-7	SW	1.Phylum- Arthropoda Class- Malagostraca-22 2.Phylum- Annelida Class-Polychaeta-24 3.Phylum- Mollusca Class-Gastropoda-19 Class- Pelecypoda-11	121	947
	BW	1.Phylum- Arthropoda Class- Malagostraca-17 2.Phylum- Annelida Class-Polychaeta-18 3.Phylum- Mollusca Class-Gastropoda-19 Class- Pelecypoda-05	124	847
Station-8	SW	1.Phylum- Annelida Class-Polychaeta-21 2.Phylum-Mollusca Class-Gastropoda-19 Class-Pelecypoda-14 Class-Bivalvia-01	21	412
	BW	1.Phylum- Annelida Class-Polychaeta-15 2.Phylum-Mollusca Class-Gastropoda-30 Class-Pelecypoda-29 Class-Bivalvia-18	49	721

*SW= Surface Water, BW= Bottom Water

Ms. M. Rout, Msc. Env. Sc
Govt. ANALYST
(GAZETTE Notified Scientist) 03-06-2016)

For Envotech & Management Consultancy Pvt. Ltd.
Environmental Laboratory
Seal of Lab

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Reference no. - CEMC/DPCL/280217/Sed **Issued Date-28.02.17**

SEA SEDIMENT ANALYSIS REPORT

Name & Address of the Customer : **Dhamra Port Ltd., Bhadrak**
Date of Sampling : 09.02.2017
Sampling by : Biswaranjan Behera
Sample Description : Sediment

SEA SEDIMENT ANALYSIS REPORT

SEDIMENT ANALYSIS DATA

Locations	pH	Organic Matter	Moisture Content (%)	Conductivity (µS/cm)	Iron (%)	Sodium (%)	Copper (mg/kg)	Nickel (mg/Kg)	Zinc (mg/kg)
Station-1	7.3	5.9	5.2	5.12	3.9	22.17	< 5	< 1	< 3
Station-2	7.7	6.9	6.1	5.08	2.4	23.65	< 5	< 1	< 3
Station-3	7.8	4.6	5.2	5.15	4.2	20.12	< 5	< 1	< 3
Station-4	7.4	2.5	4.4	3.42	3.9	24.15	< 5	< 1	< 3
Station-5	7.8	5.1	5.2	4.21	3.9	21.89	< 5	< 1	< 3
Station-6	7.5	4.4	7.3	5.96	4.7	22.12	< 5	< 1	< 3
Station-7	7.0	5.9	6.3	5.14	2.8	23.54	< 5	< 1	< 3
Station-8	7.5	6.1	6.9	5.47	3.2	21.45	< 5	< 1	< 3

SEDIMENT ANALYSIS DATA

Locations	Manganese (mg/kg)	Lead (mg/kg)	Boron (mg/kg)	Phosphate (mg/kg)	Chloride (mg/kg)	Sulphate (mg/kg)	Sulphide (mg/kg)	Pesticide (mg/kg)	Potassium (mg/kg)
Station-1	< 1	< 5	< 0.5	< 0.5	800	7.145	ND	ND	0.65
Station-2	< 1	< 5	< 0.5	< 0.5	947	7954	ND	ND	0.66
Station-3	< 1	< 5	< 0.5	< 0.5	981	8045	ND	ND	0.58
Station-4	< 1	< 5	< 0.5	< 0.5	780	5102	ND	ND	0.89
Station-5	< 1	< 5	< 0.5	< 0.5	748	4521	ND	ND	0.62
Station-6	< 1	< 5	< 0.5	< 0.5	754	5018	ND	ND	0.75
Station-7	< 1	< 5	< 0.5	< 0.5	782	6745	ND	ND	0.63
Station-8	< 1	< 5	< 0.5	< 0.5	791	6454	ND	ND	0.75

SEDIMENT ANALYSIS DATA

Locations	Total Chromium (mg/kg)	Petroleum Hydrocarbon (mg/kg)	Aluminium (mg/kg)	Total Nitrogen (mg/kg)	Organic Nitrogen (mg/kg)	Phosphorous (mg/kg)	Texture (%)		
							Sand	Silt	Clay
Station-1	< 1	ND	< 0.1	3.1	2.2	2.9	0.84	23.14	76.02
Station-2	< 1	ND	< 0.1	4.9	1.8	2.1	1.26	48.12	50.62
Station-3	< 1	ND	< 0.1	3.6	1.7	3.2	1.98	13.24	84.78
Station-4	< 1	ND	< 0.1	3.2	2.1	2.8	1.23	28.56	70.21
Station-5	< 1	ND	< 0.1	2.6	1.8	3.2	0.35	14.12	85.53
Station-6	< 1	ND	< 0.1	2.1	1.6	5.1	0.85	28.59	70.56
Station-7	< 1	ND	< 0.1	2.7	1.9	3.5	1.14	49.51	49.35
Station-8	< 1	ND	< 0.1	2.6	1.6	3.1	0.91	15.21	83.88

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SEA SEDIMENT ANALYSIS REPORT

PHYTOBENTHOS MONITORING DATA

Locations	Fungus (CFU/1 g dry wt.)	Total Count/ 50g wet sediment	No. of Species	Diversity Index	Major Species
Station-1	2658	302	15	0.9651	*Podosira*
Station-2	3257	210	15	0.3695	*Podosira, Ditylum*
Station-3	2654	510	9	0.6251	*Podosira, N. longsigma*
Station-4	1211	396	8	0.6559	*Podosira, N. longsigma*
Station-5	3052	241	9	1.0478	*Podosira, N. longsigma*
Station-6	1054	458	10	0.3657	*N. longsigma, Ditylum*
Station-7	6980	423	10	0.8956	*Podosira, Ditylum*
Station-8	4956	587	10	0.6251	*Podosira, N.longsigma, Ditylum*

TOTAL FAUNA MONITORING DATA

Locations	Name of Phylum, Class and Number of individuals encountered	Total number of species Encountered	Total Fauna per m^3
Station-1	1.Phylum- Anthropoda Class- Amphipoda-20 2.Phylum- Annelida Class- Polychaeta- 14 1.Phylum- Mollusca Class- Pelecypoda-11 Class- Bivalvia-10 Class- Gastropoda-29	65	985
Station-2	1.Phylum- Annelida Class- Polychaeta-19 2.Phylum- Mollusca Class- Bivalvia-8	42	681
Station-3	1.Phylum-Annelida Class- Polychaeta-19 2.Phylum- Mollusca Class- Gastropoda-19 Class-Bivalvia-10 Class- Scaphopoda-20	48	426
Station-4	1.Phylum- Annelida Class- Polychaeta-19 2.Phylum- Mollusca Class- Gastropoda-12 Class-Bivalvia-12 Class- Scaphopoda-19	24	219

Station-5	1.Phylum- Arthropoda Class- Malagostraca-20 2.Phylum- Annelida Class-Polychaeta-38	24	210
Station-6	1.Phylum-Annelida Class-Polchaeta-18 2.Phylum-Arthropda Class- Copepoda-10	154	120
Station-7	1.Phylum- Arthropoda Class- Malagostraca-19 2.Phylum- Annelida Class-Polychaeta-12 3.Phylum- Mollusca Class-Gastropoda-10 Class- Pelecypoda-19	121	584
Station-8	1.Phylum- Annelida Class-Polychaeta-20 2.Phylum-Mollusca Class-Gastropoda-10 Class-Pelecypoda-8 Class-Bivalvia-29	134	358

Ms. M. Rout, Msc. Env. Sc
Govt. Analyst
Authorized Signatory
(GAZETTE NO-1357, Dt-03-06-2016)

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Reference no. - CEMC/DPCL/010417/A **Issued Date-01.04.17**

AMBIENT AIR QUALITY MONITORING TEST REPORT

Client Name & Address	**Dhamra Port Company Ltd.,Doshinga, Bhadrak**
Work Order No.	**5700178552**
Reference No.	**CEMC-01042017**
Nature of Sampling	**Ambient Air Sample**
Sampling Location	**Near MCC-1**
Sampling By	**Mr. Biswaranjan Behera**
Sampling Duration	**01.03.2017 to 31.03.2017**

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NOx ($\mu g/m^3$)	CO (mg/m^3)	NH_3 ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	BaP (ng/m^3)
02.03.2017	58.7	26.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.03.2017	59.2	24.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.03.2017	51.3	26.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2017	49.9	23.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.03.2017	52.7	25.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2017	56.3	24.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.03.2017	48.2	22.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2017	54.0	25.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.03.2017	58.5	26.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	**100**	**60**	**80**	**80**	**4**	**400**	**100**	**1.0**	**20**	**6**	**5**	**1**
Methods of Analysis	**IS: 5182 (Part-23)**	**Gravimetric Method as per CPCB method**	**IS: 5182 (Part-2)**	**IS: 5182 (Part-6)**	**IS: 5182 (Part-10)**	**Indophenol Blue Method followed by CPCB**	**IS: 5182 (Part-9)**	**IS: 5182 (Part-22)**	**As per CPCB method followed by AAS**	**As per CPCB method followed by AAS**	**IS: 5182 (Part-11)**	**IS: 5182 (Part-12)**

N.B- *NAAQ (National Ambient Air Quality Standard as per 18th Nov,2009Gatt. Notification)
BDL Value (NO_X<9.0 $\mu g/m^3$,SO_2<4.0 $\mu g/m^3$,NH_3<20 $\mu g/m^3$, As<0.44 ng/m^3,Ni<0.6 ng/m^3,Pb<0.06 $\mu g/m^3$,CO<0.1 mg/m^3, Benzo(a)pyrene<1 ng/m^3) , Benzene <5 $\mu g/m^3$)

Envotech & Management Consultancy Pvt. Ltd. Environmental Laboratory

Authorized Signatory

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AMBIENT AIR QUALITY MONITORING TEST REPORT

Client Name & Address	**Dhamra Port Company Ltd.,Doshinga, Bhadrak**
Work Order No.	**5700178552**
Reference No.	**CEMC-01042017**
Nature of Sampling	**Ambient Air Sample**
Sampling Location	**Near Settling Pond**
Sampling By	**Mr. Biswaranjan Behera**
Sampling Date	**01.03.2017 to 31.03.2017**

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NOx ($\mu g/m^3$)	CO (mg/m^3)	NH_3 ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	BaP (ng/m^3)
02.03.2017	86.3	45.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.03.2017	88.7	42.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.03.2017	79.5	36.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2017	79.9	35.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.03.2017	75.0	34.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2017	80.3	41.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.03.2017	73.8	35.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2017	84.7	46.1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.03.2017	81.2	38.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	**100**	**60**	**80**	**80**	**4**	**400**	**100**	**1.0**	**20**	**6**	**5**	**1**
Methods of Analysis	**IS: 5182 (Part-23)**	**Gravimetric Method as per CPCB method**	**IS: 5182 (Part-2)**	**IS: 5182 (Part-6)**	**IS: 5182 (Part-10)**	**Indophenol Blue Method followed by CPCB**	**IS: 5182 (Part-9)**	**IS: 5182 (Part-22)**	**As per CPCB method followed by AAS**	**As per CPCB method followed by AAS**	**IS: 5182 (Part-11)**	**IS: 5182 (Part-12)**

N.B- *NAAQ (National Ambient Air Quality Standard as per 18th Nov,2009Gatt. Notification)
BDL Value (NO_X<9.0 $\mu g/m^3$,SO_2<4.0 $\mu g/m^3$,NH_3<20 $\mu g/m^3$, As<0.44 ng/m^3,Ni<0.6 ng/m^3,Pb<0.06 $\mu g/m^3$,CO<0.1 mg/m^3, Benzo(a)pyrene<1 ng/m^3) , Benzene <5 $\mu g/m^3$)

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Reference no. - CEMC/DPCL/010417/A **Issued Date-01.04.17**

AMBIENT AIR QUALITY MONITORING TEST REPORT

Client Name & Address	**Dhamra Port Company Ltd.,Doshinga, Bhadrak**
Work Order No.	**5700178552**
Reference No.	**CEMC-01042017**
Nature of Sampling	**Ambient Air Sample**
Sampling Location	**Near WTP**
Sampling By	**Mr. Biswaranjan Behera**
Sampling Date	**01.03.2017 to 31.03.2017**

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NOx ($\mu g/m^3$)	CO (mg/m^3)	NH_3 ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	BaP (ng/m^3)
02.03.2017	49.0	25.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.03.2017	47.5	24.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.03.2017	42.3	22.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2017	40.8	20.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.03.2017	42.4	22.8	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2017	47.8	23.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.03.2017	38.5	20.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2017	43.7	22.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.03.2017	45.2	23.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	**100**	**60**	**80**	**80**	**4**	**400**	**100**	**1.0**	**20**	**6**	**5**	**1**
Methods of Analysis	**IS: 5182 (Part-23)**	**Gravimetric Method as per CPCB method**	**IS: 5182 (Part-2)**	**IS: 5182 (Part-6)**	**IS: 5182 (Part-10)**	**Indophenol Blue Method followed by CPCB**	**IS: 5182 (Part-9)**	**IS: 5182 (Part-22)**	**As per CPCB method followed by AAS**	**As per CPCB method followed by AAS**	**IS: 5182 (Part-11)**	**IS: 5182 (Part-12)**

N.B- *NAAQ (National Ambient Air Quality Standard as per 18th Nov,2009Gatt. Notification)
BDL Value (NO_X<9.0 $\mu g/m^3$,SO_2<4.0 $\mu g/m^3$,NH_3<20 $\mu g/m^3$, As<0.44 ng/m^3,Ni<0.6 ng/m^3,Pb<0.06 $\mu g/m^3$,CO<0.1 mg/m^3, Benzo(a)pyrene<1 ng/m^3) , Benzene <5 $\mu g/m^3$)

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Reference no. - CEMC/DPCL/010417/A **Issued Date-01.04.17**

AMBIENT AIR QUALITY MONITORING TEST REPORT

Client Name & Address	Dhamra Port Company Ltd.,Doshinga, Bhadrak
Work Order No.	5700178552
Reference No.	CEMC-01042017
Nature of Sampling	Ambient Air Sample
Sampling Location	Near Community Hall
Sampling By	Mr. Biswaranjan Behera
Sampling Date	01.03.2017 to 31.03.2017

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NOx ($\mu g/m^3$)	CO (mg/m^3)	NH_3 ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	BaP (ng/m^3)
02.03.2017	58.7	28.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.03.2017	60.2	30.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.03.2017	52.5	26.9	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2017	53.9	27.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.03.2017	50.3	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2017	55.7	25.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.03.2017	47.4	22.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2017	54.5	28.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.03.2017	52.9	27.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	**100**	**60**	**80**	**80**	**4**	**400**	**100**	**1.0**	**20**	**6**	**5**	**1**
Methods of Analysis	**IS: 5182 (Part-23)**	**Gravimetric Method as per CPCB method**	**IS: 5182 (Part-2)**	**IS: 5182 (Part-6)**	**IS: 5182 (Part-10)**	**Indophenol Blue Method followed by CPCB**	**IS: 5182 (Part-9)**	**IS: 5182 (Part-22)**	**As per CPCB method followed by AAS**	**As per CPCB method followed by AAS**	**IS: 5182 (Part-11)**	**IS: 5182 (Part-12)**

N.B- *NAAQ (National Ambient Air Quality Standard as per 18th Nov,2009Gatt. Notification)
BDL Value (NO_X<9.0 $\mu g/m^3$,SO_2<4.0 $\mu g/m^3$,NH_3<20 $\mu g/m^3$, As<0.44 ng/m^3,Ni<0.6 ng/m^3,Pb<0.06 $\mu g/m^3$,CO<0.1 mg/m^3, Benzo(a)pyrene<1 ng/m^3) , Benzene <5 $\mu g/m^3$)

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Reference no. - CEMC/DPCL/010417/A **Issued Date-01.04.17**

AMBIENT AIR QUALITY MONITORING TEST REPORT

Client Name & Address	**Dhamra Port Company Ltd.,Doshinga, Bhadrak**
Work Order No.	**5700178552**
Reference No.	**CEMC-01042017**
Nature of Sampling	**Ambient Air Sample**
Sampling Location	**Near Dhamra Old guest house**
Sampling By	**Mr. Biswaranjan Behera**
Sampling Date	**01.03.2017 to 31.03.2017**

Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	NOx ($\mu g/m^3$)	CO (mg/m^3)	NH_3 ($\mu g/m^3$)	O_3 ($\mu g/m^3$)	Pb ($\mu g/m^3$)	Ni (ng/m^3)	As (ng/m^3)	Benzene ($\mu g/m^3$)	BaP (ng/m^3)
02.03.2017	48.9	23.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
04.03.2017	51.3	26.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
07.03.2017	46.2	24.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
10.03.2017	41.5	22.4	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
14.03.2017	42.2	23.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
17.03.2017	45.3	24.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
21.03.2017	36.7	20.3	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
24.03.2017	42.9	21.6	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
28.03.2017	38.8	20.2	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	**100**	**60**	**80**	**80**	**4**	**400**	**100**	**1.0**	**20**	**6**	**5**	**1**
Methods of Analysis	**IS: 5182 (Part-23)**	**Gravimetric Method as per CPCB method**	**IS: 5182 (Part-2)**	**IS: 5182 (Part-6)**	**IS: 5182 (Part-10)**	**Indophenol Blue Method followed by CPCB**	**IS: 5182 (Part-9)**	**IS: 5182 (Part-22)**	**As per CPCB method followed by AAS**	**As per CPCB method followed by AAS**	**IS: 5182 (Part-11)**	**IS: 5182 (Part-12)**

N.B- *NAAQ (National Ambient Air Quality Standard as per 18th Nov,2009Gatt. Notification)
BDL Value (NO_X<9.0 $\mu g/m^3$,SO_2<4.0 $\mu g/m^3$,NH_3<20 $\mu g/m^3$, As<0.44 ng/m^3,Ni<0.6 ng/m^3,Pb<0.06 $\mu g/m^3$,CO<0.1 mg/m^3, Benzo(a)pyrene<1 ng/m^3) , Benzene <5 $\mu g/m^3$)

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Reference no. - CEMC/DPCL/010417/A **Issued Date-01.04.17**

NOISE LEVEL MONITORING REPORT

Issued to	**Dhamra Port Company Ltd.,Doshinga, Bhadrak**
Analysis No.	**CEMC/DPL-D00N1**
Nature of Sampling	**Noise Sample**
Sampling By	**Mr. Biswaranjan Behera**
Sampling Date	**01.03.2017 to 31.03.2017**

Date	Location	NL Day Time dB (A)			NL NightTime dB (A)		
		Max	Min.	Avg.	Max.	Min.	Avg.
06.03.2017	NEAR DHAMRA OLD GUEST HOUSE	63.6	61.2	62.4	43.6	38.4	41
07.03.2017	NEAR COMMUNITY HALL	64.8	60.2	62.5	42.2	41.2	41.7
09.03.2017	NEAR WTP	64.6	61	62.8	43.6	42.8	43.2
10.03.2017	NEAR MCC-1	63.9	60.5	62.2	47.1	46.5	46.8
14.03.2017	NEAR SETTLING POND	66.8	63.8	65.3	48.6	47.2	47.9

National Standard Of Noise Level

Area Code	Category of Area/Zone	Permissible Limit in dB (A)	
		Day Time	Night Time
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone	50	40

Ms. M. Rout, Msc. Env. Sc
Chief ANALYST
(GAZETTE No- 1332, Dt- 03-06-2016)
Authorized Signatory

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Environmental Laboratory
Seal of Lab

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Reference no. - CEMC/DPCL/010417/WW **Issued Date-01.04.17**

STP REPORT

Name & Address of the Customer : **Dhamra Port Company Ltd.,Doshinga, Bhadrak**
Date of Sampling : 02.03.2017
Sampling by : Biswaranjan Behera
Sampling Plan & Procedure : APHA
Sample Description : Waste Water
Sample Quantity : 1.0 Ltr
Sample Location : **STP section (15 KLD)**

SOURCE
SAMPLE 1: **STP Inlet Water**
SAMPLE 2: **STP Outlet Water**

SAMPLE 1

Sl. No.	Parameter	Units of Measurements	Sample 1	Design parameter for Raw Sewage
1	Appearance	--	Turbid	-
2	Colour	--	Blackish	-
3	Odour	--	Foul	-
4	pH	--	6.67	6-8.5
5	Total Suspended Solids	mg/l	110.2	1000
6	B.O.D	mg/l	84	300-350
7	Oil & grease	mg/l	5.2	100

SAMPLE 2

Sl. No.	Parameter	Units of Measurements	Sample 2	Design parameter for Treated Sewage
1	Appearance	--	Clear	-
2	Colour	--	Colorless	-
3	Odour	--	Odourless	-
4	pH	--	7.32	5.5-9
5	Total Suspended Solids	mg/l	24.8	<100
6	B.O.D	mg/l	16	<30
7	Oil & grease	mg/l	ND	<10

***ND-Not Detectable**

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Authorised Signatory
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(GAZETTE No.1367, Dt.03.06.2016)

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Reference no. - CEMC/DPCL/010417/WW **Issued Date-01.04.17**

STP REPORT

Name & Address of the Customer : **Dhamra Port Company Ltd.,Doshinga, Bhadrak**
Date of Sampling : 02.03.2017
Sampling by : Biswaranjan Behera
Sampling Plan & Procedure : APHA
Sample Description : Waste Water
Sample Quantity : 1.0 Ltr
Sample Location : **STP section (150KLD)**

SOURCE
SAMPLE 1: **STP Inlet Water**
SAMPLE 2: **STP Outlet Water**

SAMPLE 1

Sl. No.	Parameter	Units of Measurements	Sample 1	Design parameter for Raw Sewage
1	Appearance	--	Turbid	-
2	Colour	--	Blackish	-
3	Odour	--	Foul	-
4	pH	--	6.94	6-8.5
5	Total Suspended Solids	mg/l	92.8	1000
6	B.O.D	mg/l	106	300-350
7	Oil & grease	mg/l	5.7	100

SAMPLE 2

Sl. No.	Parameter	Units of Measurements	Sample 2	Design parameter for Treated Sewage
1	Appearance	--	Clear	-
2	Colour	--	Colorless	-
3	Odour	--	Odourless	-
4	pH	--	7.28	5.5-9
5	Total Suspended Solids	mg/l	26.6	<100
6	B.O.D	mg/l	13	<30
7	Oil & grease	mg/l	ND	<10

*ND-Not Detectable

Ms. M. Rout. Msc. Env. Sc
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Reference no. - CEMC/DPCL/010417/WW **Issued Date-01.04.17**

STP REPORT

Name & Address of the Customer	**: Dhamra Port Company Ltd.,Doshinga, Bhadrak**
Date of Sampling	: 23.03.2017
Sampling by	: Biswaranjan Behera
Sampling Plan & Procedure	: APHA
Sample Description	: Waste Water
Sample Quantity	: 1.0 Ltr
Sample Location	**: STP section (150 KLD)**

SOURCE
SAMPLE 1: **STP Inlet Water**
SAMPLE 2: **STP Outlet Water**

SAMPLE 1

Sl. No.	Parameter	Units of Measurements	Sample 1	Design parameter for Raw Sewage
1	Appearance	--	Turbid	-
2	Colour	--	Blackish	-
3	Odour	--	Foul	-
4	pH	--	6.74	6-8.5
5	Total Suspended Solids	mg/l	115.4	1000
6	B.O.D	mg/l	106	300-350
7	Oil & grease	mg/l	5.8	100

SAMPLE 2

Sl. No.	Parameter	Units of Measurements	Sample 2	Design parameter for Treated Sewage
1	Appearance	--	Clear	-
2	Colour	--	Colorless	-
3	Odour	--	Odourless	-
4	pH	--	7.22	5.5-9
5	Total Suspended Solids	mg/l	26.4	<100
6	B.O.D	mg/l	17	<30
7	Oil & grease	mg/l	ND	<10

*ND-Not Detectable

Ms. M. Rout, Msc. Env. Sc
Govt. ANALYST
(GAZETTE NO-1367 Dt-03-06-2016)
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Reference no. - CEMC/DPCL/010417/WW **Issued Date-01.04.17**

STP REPORT

Name & Address of the Customer	**: Dhamra Port Company Ltd.,Doshinga, Bhadrak**
Date of Sampling	: 23.03.2017
Sampling by	: Biswaranjan Behera
Sampling Plan & Procedure	: APHA
Sample Description	: Waste Water
Sample Quantity	: 1.0 Ltr
Sample Location	**: STP section (15 KLD)**

SOURCE
SAMPLE 1: **STP Inlet Water**
SAMPLE 2: **STP Outlet Water**

SAMPLE 1

Sl. No.	Parameter	Units of Measurements	Sample 1	Design parameter for Raw Sewage
1	Appearance	--	Turbid	-
2	Colour	--	Blackish	-
3	Odour	--	Foul	-
4	pH	--	7.14	6-8.5
5	Total Suspended Solids	mg/l	96.2	1000
6	B.O.D	mg/l	76	300-350
7	Oil & grease	mg/l	4.2	100

SAMPLE 2

Sl. No.	Parameter	Units of Measurements	Sample 2	Design parameter for Treated Sewage
1	Appearance	--	Clear	-
2	Colour	--	Colorless	-
3	Odour	--	Odourless	-
4	pH	--	7.46	5.5-9
5	Total Suspended Solids	mg/l	18.8	<100
6	B.O.D	mg/l	20	<30
7	Oil & grease	mg/l	ND	<10

N.B: ND-Not Detectable

Ms. M. Rout, Msc. Env. Sc
Govt. ANALYST
(GAZETTE No. 1357, Dt-03-06-2016)
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Reference no. - CEMC/DPCL/010417/SW **Issued Date-01.04.17**

SEA WATER ANALYSIS REPORT

Name & Address of the Customer : **Dhamra Port Ltd., Bhadrak**
Date of Sampling : 09.03.2017
Sampling by : Biswaranjan Behera
Sample Description : Sea Water

STATION DESCRIPTION

SL. NO.	STATION	GPS COORDINATES
01	STATION-1	20°46'55.5" N 86°57'40.5" E
02	STATION-2	20°49'05.0" N 86°58'14.3" E
03	STATION-3	20°51'33.5" N 87°00'17.0" E
04	STATION-4	20°52'55.8" N 87°02'44.9" E
05	STATION-5	20°54'20.4" N 87°05'14.0" E
06	STATION-6	20°54'54.3" N 87°06'13.8" E
07	STATION-7	20°54'45.0" N 87°07'13.6" E
08	STATION-8	20°54'42.8" N 87°07'50.4" E

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SEA WATER ANALYSIS REPORT

WATER ANALYSIS DATA

Locations		Temp. (°C)	Turbidity (NTU)	Conductivity (µS/cm)	pH	Salinity (ppt)	DO (mg/l)	BOD (mg/l)	COD (mg/l)
Station-1	SW	26	40	47.1	8.3	26.43	7.1	< 3	< 10
	BW	25	35	45.7	8.0	25.96	6.2	< 3	< 10
Station-2	SW	26	36	49.3	8.2	29.55	7.6	< 3	10
	BW	25	32	46.9	7.9	28.42	6.5	< 3	< 10
Station-3	SW	26	39	41.9	8.2	24.46	7.1	< 3	10
	BW	25	38	40.8	8.2	24.55	6.9	< 3	< 10
Station-4	SW	26	40	42.1	8.3	26.14	7.3	3.0	20
	BW	25	38	39.2	8.0	25.16	6.5	< 3	< 10
Station-5	SW	26	45	43.8	8.3	27.42	7.2	< 3	< 10
	BW	25	31	42.9	8.4	26.86	6.8	< 3	< 10
Station-6	SW	26	48	46.5	8.2	28.45	6.1	< 3	10
	BW	25	29	44.6	8.1	29.63	6.6	< 3	< 10
Station-7	SW	27	40	43.9	8.3	28.44	7.1	< 3	20
	BW	25	30	43.4	7.9	28.45	6.6	< 3	< 10
Station-8	SW	25	36	45.6	8.2	26.56	7.0	< 3	10
	BW	25	31	42.3	7.5	27.87	6.9	< 3	< 10

*SW= Surface Water, BW= Bottom Water

WATER ANALYSIS DATA

Locations		Copper (mg/l)	Cadmium (mg/l)	Mercury (mg/l)	Phosphate (mg/l)	Sulphate (mg/l)	Nitrite (mg/l)	Nitrate (mg/l)	TSS (mg/l)
Station-1	SW	< 0.05	< 0.01	< 0.001	< 0.05	1815	0.56	8.2	254.2
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1719	0.48	8.3	109.6
Station-2	SW	< 0.05	< 0.01	< 0.001	< 0.05	1801	0.48	7.4	260.5
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1746	0.66	8.2	98.8
Station-3	SW	< 0.05	< 0.01	< 0.001	< 0.05	1622	0.74	6.8	241.3
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1508	0.58	8.6	111.1
Station-4	SW	< 0.05	< 0.01	< 0.001	< 0.05	1614	0.86	7.4	204.2
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1508	0.72	7.3	99.6
Station-5	SW	< 0.05	< 0.01	< 0.001	< 0.05	1895	0.52	9.4	280.5
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1806	0.66	7.6	101.6
Station-6	SW	< 0.05	< 0.01	< 0.001	< 0.05	1795	0.58	8.2	257.4
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1682	0.45	8.5	112.2
Station-7	SW	< 0.05	< 0.01	< 0.001	< 0.05	1745	0.59	7.6	289.6
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1706	0.44	8.6	100.4
Station-8	SW	< 0.05	< 0.01	< 0.001	< 0.05	1782	0.46	8.2	274.8
	BW	< 0.05	< 0.01	< 0.001	< 0.05	1716	0.48	7.6	105.6

*SW= Surface Water, BW= Bottom Water

WATER ANALYSIS DATA							
Locations		Calcium Hardness (mg/l)	Magnesium Hardness (mg/l)	Total Hardness (mg/l)	Total Dissolved Solids (mg/l)	Ammonical Nitrogen (mg/l)	Total Nitrogen (mg/l)
Station-1	SW	3030	920	3930	30450	ND	10.8
	BW	2740	830	3550	29946	ND	9.6
Station-2	SW	2330	920	3240	30513	ND	10.4
	BW	2420	830	3260	30741	ND	9.8
Station-3	SW	2380	860	3250	30985	ND	11.6
	BW	2820	790	3580	30046	ND	9.4
Station-4	SW	2150	880	3030	31548	ND	10.6
	BW	2230	760	2950	30255	ND	9.2
Station-5	SW	2470	830	3260	34576	ND	11.8
	BW	2680	780	3480	31545	ND	10.4
Station-6	SW	2780	820	3560	31112	ND	10.6
	BW	2830	780	3540	29846	ND	8.4
Station-7	SW	2870	860	3660	30013	ND	10.6
	BW	2320	760	3090	29842	ND	9.8
Station-8	SW	3070	880	3960	30008	ND	9.4
	BW	2930	730	3640	30109	ND	8.2

*SW= Surface Water, BW= Bottom Water

WATER ANALYSIS DATA							
Locations		Total Chromium (mg/l)	Phenolic Compounds (mg/l)	Hexavalent Chromium (mg/l)	Petroleum Hydrocarbon (mg/l)	Chlorinity ($^{o}/_{oo}$)	Oil and Grease (mg/l)
Station-1	SW	< 0.05	< 0.001	< 0.05	1.3	12.42	4.6
	BW	< 0.05	< 0.001	< 0.05	ND	10.6	ND
Station-2	SW	< 0.05	< 0.001	< 0.05	1.5	12.49	4.3
	BW	< 0.05	< 0.001	< 0.05	ND	11.22	ND
Station-3	SW	< 0.05	< 0.001	< 0.05	2.1	13.76	3.8
	BW	< 0.05	< 0.001	< 0.05	ND	10.28	ND
Station-4	SW	< 0.05	< 0.001	< 0.05	1.5	13.9	5.8
	BW	< 0.05	< 0.001	< 0.05	ND	15.44	ND
Station-5	SW	< 0.05	< 0.001	< 0.05	1.3	12.08	3.6
	BW	< 0.05	< 0.001	< 0.05	ND	14.26	ND
Station-6	SW	< 0.05	< 0.001	< 0.05	1.2	11.42	3.5
	BW	< 0.05	< 0.001	< 0.05	ND	11.58	ND
Station-7	SW	< 0.05	< 0.001	< 0.05	1.3	14.14	3.6
	BW	< 0.05	< 0.001	< 0.05	ND	11.04	ND
Station-8	SW	< 0.05	< 0.001	< 0.05	1.1	12.92	5.8
	BW	< 0.05	< 0.001	< 0.05	ND	10.54	ND

*SW= Surface Water, BW= Bottom Water

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SEA WATER ANALYSIS REPORT

PHYTOPLANKTON MONITORING DATA					
Locations		Total Count/L	No. of Species	Chlorophyll-a (µg/L)	Major Species
Station-1	SW	1368	16	1.4542	*C.pentagonum, Skeletonema, N.longisigma, Bacillaria*
	BW	1026	14	1.0323	*Bacillaria, Chaetocerous, Ceratium,*
Station-2	SW	982	13	2.1544	*C.pentagonum,, C.furca, Bacillaria, Podosira, Skeletonema,*
	BW	1023	18	1.8456	*C.pentagonum, N.striata, C.furca, N.striata*
Station-3	SW	1268	12	1.2142	*Bacillaria,Chaetocerous, Podosira*
	BW	1192	22	1.2115	*N.longisigma, Podosira, Ceratium, C.furca*
Station-4	SW	1653	26	1.3416	*C.pentagonu,Bacillaria,Podosira, N.longisigma*
	BW	1141	13	1.2142	*C.pentagonum, Chaetocerous, Bacillaria, N.striata*
Station-5	SW	542	28	1.2156	*C.pentagonum, N.striata, C.furca,Ceratiu, N.longisigma*
	BW	1746	16	0.6547	*C.pentagonum, N.striata, Chaetocerous, Bacillaria*
Station-6	SW	2892	14	1.1246	*Podosira ,, Bacillaria, N.striata*
	BW	1135	19	1.0042	*C.pentagonu, Bacillaria, Podosira*
Station-7	SW	4813	22	2.1452	*Pleurosigma, C.pentagonum, N.striata*
	BW	1235	16	1.0458	*Pleurosigma, N.longisigma, C.pentagonum, N.striata*
Station-8	SW	803	22	1.1246	*C.pentagonum, Pleurosigma, N.longisigma, Bacillaria*
	BW	1641	16	1.7452	*Podosira ,C.pentagonum,N.striata*

*SW= Surface Water, BW= Bottom Water

ZOOPLANKTON MONITORING DATA				
Locations		Total Count/L	No. of Species	Major Species
Station-1	SW	1846	18	*Cladocera, Nematoda, Cladocera*
	BW	1472	12	*Copepod, Rotifera, Ostracoda*
Station-2	SW	1206	21	*Rotifera, Protoza, Nematoda, Cladocera*
	BW	992	17	*Cladocera, Nematoda, Rotifera*
Station-3	SW	1246	11	*Ostracoda, Protozoa, Copepod, Rotifera*
	BW	1038	08	*Protozoa ,Rotifera, Copepod*
Station-4	SW	1262	11	*Copepod, Rotifera, Cladocera*
	BW	1453	15	*Ostracoda, Protozoa, Copepod, Rotifera*
Station-5	SW	1324	18	*Protozoa, Rotifera, Nematoda, Cladocera*
	BW	1242	12	*Anostraca, Cladocera,Nematoda*
Station-6	SW	1543	11	*Crustacean Larvae, Protozoa, Nematoda*
	BW	1325	17	*Rotifera, Nematoda, Cladocera*
Station-7	SW	1752	08	*Anostraca, Cladocera, Rotifera, Copepod*
	BW	1342	12	*Rotifera, Protoza, Nematoda, Crustacean Larvae*
Station-8	SW	1218	13	*Crustacean Larvae, Protozoa, Nematoda, Rotifera*
	BW	993	18	*Protozoa, Nematoda, Copepod, Nematoda*

*SW= Surface Water, BW= Bottom Water

MICROBIOLOGICAL MONITORING DATA					
Locations		Total Bacterial Count (CFU/ml)	Total Coliform (CFU/ml)	Faecal Coliform (CFU/ml)	*E.coli* (CFU/ml)
Station-1	SW	230	36	2.0	ND
	BW	120	24	2.0	ND
Station-2	SW	130	18	3.6	ND
	BW	120	16	1.8	ND
Station-3	SW	140	14	2.0	ND
	BW	80	12	1.8	ND
Station-4	SW	160	5.6	1.8	ND
	BW	130	28	<1.8	ND
Station-5	SW	98	13	2.0	ND
	BW	140	7.6	<1.8	ND
Station-6	SW	110	32	3.7	ND
	BW	70	17	1.8	ND
Station-7	SW	210	56	1.8	ND
	BW	120	24	<1.8	ND
Station-8	SW	530	102	1.8	ND
	BW	410	76	1.8	ND

*SW= Surface Water, BW= Bottom Water

MICROBIOLOGICAL MONITORING DATA					
Locations		Enterococcus (CFU/ml)	Salmonella (CFU/ml)	Shigella (CFU/ml)	Vibrio (CFU/ml)
Station-1	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-2	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-3	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-4	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-5	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-6	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-7	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND
Station-8	SW	ND	ND	ND	ND
	BW	ND	ND	ND	ND

*SW= Surface Water, BW= Bottom Water

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SEA WATER ANALYSIS REPORT

PRIMARY PRODUCTIVITY MONITORING DATA			
Locations		Gross Primary Productivity (mgC/ L/ day)	Net Primary Productivity (mgC/ L/ day)
Station-1	SW	2.0	1.6
	BW	2.1	1.5
Station-2	SW	2.1	1.8
	BW	1.9	1.6
Station-3	SW	1.9	1.4
	BW	1.8	1.4
Station-4	SW	1.9	1.1
	BW	1.9	1.6
Station-5	SW	2.3	1.8
	BW	2.0	1.1
Station-6	SW	1.9	1.2
	BW	2.0	1.4
Station-7	SW	2.1	1.7
	BW	1.8	1.2
Station-8	SW	2.5	1.5
	BW	2.1	1.7

*SW= Surface Water, BW= Bottom Water

SEA WATER ANALYSIS REPORT

PHYTOBENTHOS MONITORING DATA						
Locations		Fungus (CFU/1 g dry wt.)	Total Count/ 50g wet sediment	No. of Species	Diversity Index	Major Species
Station-1	SW	3143	212	13	0.5125	*Podosira, N. longsigma*
	BW	3512	1546	12	0.7846	*Podosira, N. longsigma, Ditylum*
Station-2	SW	1943	256	9	0.8453	*Ditylum*
	BW	1144	285	12	0.8454	*Podosira, N. longsigma*
Station-3	SW	1592	546	14	0.9122	*Podosira, Ditylum*
	BW	1542	212	12	0.9563	*Podosira, Ditylum*
Station-4	SW	2843	326	16	0.5488	*Podosira, N. longsigma, Ditylum*
	BW	2494	242	18	0.5523	*Podosira, N. longsigma, Ditylum*
Station-5	SW	3545	846	16	0.5646	*N.longsigma, Ditylum*
	BW	2952	688	16	0.7487	*Podosira*
Station-6	SW	2473	193	10	0.4873	*N. longsigma*
	BW	2545	212	14	0.6545	*Ditylum*
Station-7	SW	3542	222	14	0.5988	*Podosira, N. longsigma,*
	BW	3913	125	8	0.5425	*Ditylum*
Station-8	SW	2654	136	12	0.6143	*Podosira*
	BW	2053	143	13	0.4876	*Podosira, Ditylum*

*SW= Surface Water, BW= Bottom Water

TOTAL FAUNA MONITORING DATA				
Locations		Name of Phylum, Class and Number of individuals encountered	Total number of species Encountered	Total Fauna per m^3
Station-1	SW	1.Phylum- Anthropoda Class- Amphipoda-39 2.Phylum- Annelida Class- Polychaeta- 24 3.Phylum- Mollusca Class- Pelecypoda-22 Class- Bivalvia-11 Class- Gastropoda-8	28	984
	BW	1.Phylum- Anthropoda Class- Amphipoda-21 2.Phylum- Annelida Class- Polychaeta- 10 3.Phylum- Mollusca Class- Pelecypoda-21 Class- Bivalvia-11 Class- Gastropoda-17	56	1042
Station-2	SW	1.Phylum- Annelida Class- Polychaeta-37 2.Phylum- Mollusca Class- Bivalvia-15	55	416
	BW	1.Phylum- Annelida Class- Polychaeta-15 2.Phylum- Mollusca Class- Bivalvia-11	38	518
Station-3	SW	1.Phylum-Annelida Class- Polychaeta-22 2.Phylum- Mollusca Class- Gastropoda-17 Class-Bivalvia-19 Class- Scaphopoda-8	42	514
	BW	1.Phylum-Annelida Class- Polychaeta-19 2.Phylum- Mollusca Class- Gastropoda-11 Class-Bivalvia-24 Class- Scaphopoda-28	19	316
Station-4	SW	1.Phylum- Annelida Class- Polychaeta-24 2.Phylum- Mollusca Class- Scaphopoda-12	28	188
	BW	1.Phylum- Annelida Class- Polychaeta-26 2. Phylum- Mollusca Class- Gastropoda-11	18	396

Station-5	SW	1.Phylum- Arthropoda Class- Malagostraca-32 2.Phylum- Mollusca Class-Gastropoda-02 3.Phylum- Annelida Class-Polychaeta-5	16	100
	BW	1.Phylum- Arthropoda Class- Malagostraca-19 2.Phylum- Annelida Class-Polychaeta-18	22	147
Station-6	SW	1.Phylum-Annelida Class-Polchaeta-20 2.Phylum-Arthropda Class- Copepoda-11	14	162
	BW	1.Phylum-Annelida Class-Polchaeta-14 2.Phylum-Arthropda Class- Copepoda-10	22	120
Station-7	SW	1.Phylum- Arthropoda Class- Malagostraca-22 2.Phylum- Annelida Class-Polychaeta-24 3.Phylum- Mollusca Class-Gastropoda-19 Class- Pelecypoda-11	129	947
	BW	1.Phylum- Arthropoda Class- Malagostraca-17 2.Phylum- Annelida Class-Polychaeta-18 3.Phylum- Mollusca Class-Gastropoda-19 Class- Pelecypoda-05	125	847
Station-8	SW	1.Phylum- Annelida Class-Polychaeta-21 2.Phylum-Mollusca Class-Gastropoda-19 Class-Pelecypoda-14 Class-Bivalvia-01	26	412
	BW	1.Phylum- Annelida Class-Polychaeta-15 2.Phylum-Mollusca Class-Gastropoda-30 Class-Pelecypoda-29 Class-Bivalvia-18	45	721

*SW= Surface Water, BW= Bottom Water

Ms. M. Rout, Msc. Env. Sc.
Govt. ANALY.
(GAZETTED) 1357 Dt-03 [illegible]
Authorized Signatory

Centre for Envotech & Management Consultancy Pvt. Ltd.
Environmental Laboratory
Seal of Lab

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Reference no. - CEMC/DPCL/010417/Sed **Issued Date-01.04.17**

SEA SEDIMENT ANALYSIS REPORT

Name & Address of the Customer : **Dhamra Port Ltd., Bhadrak**
Date of Sampling : 09.03.2017
Sampling by : Biswaranjan Behera
Sample Description : Sediment

SEA SEDIMENT ANALYSIS REPORT

SEDIMENT ANALYSIS DATA									
Locations	pH	Organic Matter	Moisture Content (%)	Conductivity (µS/cm)	Iron (%)	Sodium (%)	Copper (mg/kg)	Nickel (mg/Kg)	Zinc (mg/kg)
Station-1	7.2	5.8	5.4	5.12	3.8	22.19	< 5	< 1	< 3
Station-2	7.6	6.8	6.3	5.06	2.6	23.65	< 5	< 1	< 3
Station-3	7.7	4.7	5.3	5.18	4.5	20.16	< 5	< 1	< 3
Station-4	7.3	2.6	4.8	3.43	3.8	24.18	< 5	< 1	< 3
Station-5	7.7	5.2	5.4	4.24	3.3	21.86	< 5	< 1	< 3
Station-6	7.4	4.5	7.5	5.92	4.6	22.13	< 5	< 1	< 3
Station-7	7.1	5.8	6.4	5.12	2.9	23.55	< 5	< 1	< 3
Station-8	7.6	6.3	6.8	5.48	3.3	21.41	< 5	< 1	< 3

SEDIMENT ANALYSIS DATA									
Locations	Manganese (mg/kg)	Lead (mg/kg)	Boron (mg/kg)	Phosphate (mg/kg)	Chloride (mg/kg)	Sulphate (mg/kg)	Sulphide (mg/kg)	Pesticide (mg/kg)	Potassium (mg/kg)
Station-1	< 1	< 5	< 0.5	< 0.5	810	7146	ND	ND	0.63
Station-2	< 1	< 5	< 0.5	< 0.5	927	7953	ND	ND	0.67
Station-3	< 1	< 5	< 0.5	< 0.5	961	8046	ND	ND	0.55
Station-4	< 1	< 5	< 0.5	< 0.5	780	5103	ND	ND	0.85
Station-5	< 1	< 5	< 0.5	< 0.5	748	4522	ND	ND	0.66
Station-6	< 1	< 5	< 0.5	< 0.5	754	5017	ND	ND	0.74
Station-7	< 1	< 5	< 0.5	< 0.5	772	6746	ND	ND	0.66
Station-8	< 1	< 5	< 0.5	< 0.5	771	6455	ND	ND	0.78

SEDIMENT ANALYSIS DATA									
Locations	Total Chromium (mg/kg)	Petroleum Hydrocarbon (mg/kg)	Aluminium (mg/kg)	Total Nitrogen (mg/kg)	Organic Nitrogen (mg/kg)	Phosphorous (mg/kg)	Texture (%)		
							Sand	Silt	Clay
Station-1	< 1	ND	< 0.1	3.2	2.4	2.8	0.83	23.15	76.06
Station-2	< 1	ND	< 0.1	4.8	1.6	2.2	1.27	48.13	50.64
Station-3	< 1	ND	< 0.1	3.5	1.8	3.4	1.95	13.25	84.79
Station-4	< 1	ND	< 0.1	3.3	2.2	2.6	1.26	28.57	70.23
Station-5	< 1	ND	< 0.1	2.4	1.6	3.4	0.32	14.15	85.56
Station-6	< 1	ND	< 0.1	2.3	1.4	5.3	0.83	28.58	70.58
Station-7	< 1	ND	< 0.1	2.6	1.8	3.6	1.12	49.53	49.36
Station-8	< 1	ND	< 0.1	2.4	1.4	3.4	0.92	15.22	83.86

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SEA SEDIMENT ANALYSIS REPORT

PHYTOBENTHOS MONITORING DATA					
Locations	Fungus (CFU/1 g dry wt.)	Total Count/ 50g wet sediment	No. of Species	Diversity Index	Major Species
Station-1	2656	303	14	0.9652	*Podosira*
Station-2	3255	214	14	0.3696	*Podosira, Ditylum*
Station-3	2653	516	10	0.6254	*Podosira, N. longsigma*
Station-4	1213	392	9	0.6556	*Podosira, N. longsigma*
Station-5	3055	246	9	1.0477	*Podosira, N. longsigma*
Station-6	1053	459	10	0.3653	*N. longsigma, Ditylum*
Station-7	6984	426	10	0.8955	*Podosira, Ditylum*
Station-8	4957	582	10	0.6256	*Podosira, N.longsigma, Ditylum*

TOTAL FAUNA MONITORING DATA			
Locations	Name of Phylum, Class and Number of individuals encountered	Total number of species Encountered	Total Fauna per m^3
Station-1	1.Phylum- Anthropoda Class- Amphipoda-20 2.Phylum- Annelida Class- Polychaeta- 14 1.Phylum- Mollusca Class- Pelecypoda-11 Class- Bivalvia-10 Class- Gastropoda-29	64	982
Station-2	1.Phylum- Annelida Class- Polychaeta-19 2.Phylum- Mollusca Class- Bivalvia-8	43	686
Station-3	1.Phylum-Annelida Class- Polychaeta-19 2.Phylum- Mollusca Class- Gastropoda-19 Class-Bivalvia-10 Class- Scaphopoda-20	47	422
Station-4	1.Phylum- Annelida Class- Polychaeta-19 2.Phylum- Mollusca Class- Gastropoda-12 Class-Bivalvia-12 Class- Scaphopoda-19	26	222

Station-5	1.Phylum- Arthropoda Class- Malagostraca-20 2.Phylum- Annelida Class-Polychaeta-38	23	216
Station-6	1.Phylum-Annelida Class-Polchaeta-18 2.Phylum-Arthropda Class- Copepoda-10	144	125
Station-7	1.Phylum- Arthropoda Class- Malagostraca-19 2.Phylum- Annelida Class-Polychaeta-12 3.Phylum- Mollusca Class-Gastropoda-10 Class- Pelecypoda-19	131	583
Station-8	1.Phylum- Annelida Class-Polychaeta-20 2.Phylum-Mollusca Class-Gastropoda-10 Class-Pelecypoda-8 Class-Bivalvia-29	124	355

Ms. M. Rout. Msc. Env. Sc
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Authorized Signatory
(GAZETTE No 1557, Dt-03-06-2016)

Centre for Envotech & Management Consultancy Pvt. Ltd. ★ Environmental Laboratory
Seal of Lab

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Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,
E-mail: cemclab@yahoo.in, Mobile: 7752014842

ANNEXURE II – TYPES AND QUANTITY OF FIRE EXTINGUISHERS

The Dhamra Port Company Limited		
Fire Extinguisher Details		
Sl No	Location	Type of Extinguishers & Quantity
1	SWITCH YARD	DCP-5KG-4nos
2	MCC -1	(CO2-4.5KG)-4nos (CO2 -3KG)-2nos
3	MCC -2	(CO2-4.5KG)-2nos
4	MCC -2(A)	(CO2-4.5KG)-1nos (CO2 -3KG)-1nos
5	MCC -3	(CO2-4.5KG)-2nos (CO2 -3KG)-1no
6	MCC -4	(CO2-4.5KG)-02 (DCP- 5KG)-1nos
7	TP - 1(A)	CO2-4.5KG-1no
8	TP - 1(B)	CO2-4.5KG-1nos
9	TP - 2	CO2-4.5KG-1no
10	TP - 2(A)	CO2-4.5KG-1no
11	TP - 3	CO2 -4.5KG-1no
12	TP - 3(A)	CO2 -4.5KG-1no
13	NEW TP-3	CO2 -4.5KG-1no
14	TP - 4	CO2 -4.5KG-1no
15	TP - 4 (A)	CO2 -4.5KG-1no
16	TP - 5	CO2 -4.5KG-1no
17	TP - 6	CO2 -4.5KG-1no
18	TP-7	CO2 -4.5KG-1nos
19	TP-8	CO2 -4.5KG-1no
20	TP-9	CO2 -4.5KG-1no
21	TP-10	CO2 -4.5KG-1no
22	TP-11	CO2 -4.5KG-1nos
23	TP - 12	CO2 -4.5KG-1no
24	TP - 13	CO2 -4.5KG-1no
25	JETTY	CO2 -4.5KG-2nos DCP-5KG-6nos
26	SL	CO2 -4.5KG-3nos DCP-5KG-1no
27	SUL-1	CO2 -4.5KG-5nos (CO2 -3KG)-1no
28	SUL-2	CO2 -4.5KG-6nos (CO2 -3KG)-1no
29	LIBHERR-11	CO2 -4.5KG-2no, DCP-10KG-1no, DCP-5KG-1no DCP-2KG-2no
30	LIBHERR-12	CO2 -4.5KG-2no, DCP-10KG-1no, DCP-5KG-1no DCP-2KG-1no
31	SILO - 1	CO2 -4.5KG-3nos
32	SILO - 2	CO2 -4.5KG-2nos DCP-5KG-1no
33	FIRE PUMP HOUSE	CO2 -4.5KG-2nos
34	WTC -1	CO2 -4.5KG-1no DCP-5KG-1Nos,CO2 -3KG-2no
35	WTC -2	CO2 -4.5KG-1no DCP-5KG-2nos CO2 -3KG-2no
36	SR -1	CO2 -4.5KG-1nos DCP-5KG-1nos
37	R - 1	CO2 -4.5KG-1no
38	SR -2	CO2 -4.5KG-1nos & CO2 -3KG-1no, DCP-5KG-1no

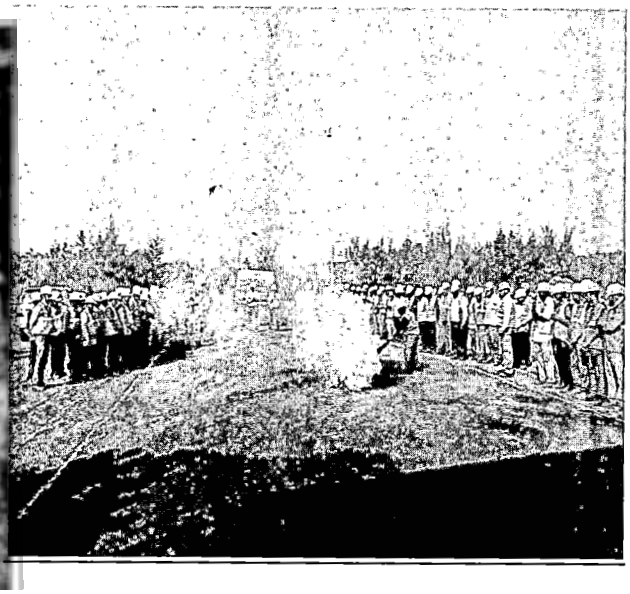
39	SR -3	CO2 -4.5KG-2no
40	SR -4	CO2 -4.5KG-2no
41	F.L SMIDTH OFFICE	CO2-4.5KG-2No
42	PSS	CO2 -4.5KG-3nos
43	BMH WORK SHOP	DCP-5KG-1nos CO2 -4.5KG-2nos
44	All Equipment	DCP-5KG-11nos
45	LOCO SHED	DCP-5KG-2nos CO2 -4.5KG-1nos
46	TRANSFORMER HOUSE	CO2 -4.5KG-2nos DCP-5KG-2nos
47	IMWB Office	CO2 -4.5KG-1no
48	DIESEL FILLING STATION	Foam-9ltr-1no
49	IOCL	Foam-9ltr-1no
50	WTP	CO2 -4.5KG-3nos
51	DPCL OFFICE(SALANDI)	CO2-9KG-1no DCP-5KG-2nos,
52	REWA OFFICE	CO2-4.5KG-3No DCP-5KG-1No
53	CUSTOMS OFFICE	CO2-4.5KG-1No DCP-5KG-1No
54	BAITARANI OFFICE	CO2-4.5KG-1No, DCP -5KG-3Nos
55	DPCL STORE	CO2 -4.5KG-1no
56	SS-01	CO2 -4.5KG-1no
57	SS-02	CO2 -4.5KG-1no
58	SS-03	CO2 -4.5KG-1no
59	SS-04	CO2 -4.5KG-1no
60	SS-05	CO2 -4.5KG-1no
61	NEW CANTEEN	CO2 -3KG-01no DCP-5KG-1no
62	DHAMRA HOUSE	DCP-5KG-5nos DCP-2KG-01no
	KANIKA GUEST HOUSE	CO2 -4.5KG-01no DCP-5KG-2nos
63	DAV SCHOOL	CO2 -4.5KG-03nos DCP-5KG-2no
64	TOWNSHIP	CO2 -4.5KG-11nos
65	COMMUNITY HALL	CO2 -4.5KG-2nos DCP-5KG-1no
66	DHAMRA GUEST HOUSE	CO2 -4.5KG-2nos CO2 -3KG-2nos
67	RAILWAY OFFICE	CO2 -4.5KG-02noS DCP-5KG-3nos
68	BHATATIRA STATION	CO2(4.5kg)-2Nos DCP-5KG-1no
69	BHATATIRA LC-5	DCP-5KG-1no
70	BHATATIRA- SP	CO2(4.5kg)-1Nos
71	GURUDASPUR STATION	CO2-4.5KG-1No DCP-5KG-1No
72	GURUDAS PUR TSS	CO2 -4.5KG-1no DCP-10KG-2nos
73	INTAKE	CO2 -4.5KG-3nos DCP-5KG-1nos
74	RANITAL	CO2 -4.5KG-1nos
75	GURUDAS PUR LC-19	DCP-5KG-1no
76	PMC OFFICE(HR)	CO2 -4.5KG-1nos
77	KOCHILA PMC OFFICE	CO2 -4.5KG-1nos DCP-5KG-2nos
78	PREFEB	CO2 -4.5KG-4nos DCP-5KG-4nos
79	TOWER WAGON	DCP-5KG-3nos
80	TIHIDI STATION	DCP-5KG-2nos

81	PASS SECTION	C02-4.5KG-1Nos
82	BRAMHANI OFFICE	CO2 -4.5KG-1nos DCP-5KG-1nos
83	KANIKA TRANSFORMER	CO2 -4.5KG-1no
84	SECURITY CONTAINER, NEAR MAIN GATE	CO2 -4.5KG-1nos
85	FIRST AID CENTER	CO2 -4.5KG-1nos
86	HEALTH CENTER	CO2 -4.5KG-2nos DCP-5KG-1nos
87	DPCL AMBULANCE (OLD & NEW)	DCP-5KG-2nos
88	RAILWAY GSS	CO2 -4.5KG-1no DCP-5KG-1no
89	RUNNING ROOM	CO2 -4.5KG-1no DCP-5KG-1no
90	INDUCTION HALL	CO2 -4.5KG-1no
91	STOCK BALANCE WITH FIRE STORE	DCP(ABC)-6KG-43nos, DCP(ABC)-5KG-20nos, DCP(BC)-5kg-05nos CO2(4.5kg) - 54nos, CO2-3kg-2nos Foam-9 ltrs-01no & Foam(50 ltrs)-01no

ANNEXURE III – DETAILS OF MOCK DRILLS

Sl. No.	Description of mock drills and training	Numbers of training & mock drill conducted	Numbers of participants
1	Emergency Rescue mock drill	4	104
2	Safety Induction Training	182	1466
3	Portable fire Extinguishers training	33	1197
4	Contractor safety training	25	710
5	Defensive driving training	43	682
6	Tool box training	25792	183283
7	On the Job Safety Awareness	122	2329

FIRE EXTINGUISHER TRAINING



FIRE MOCK DRILL AT SITE

ANNEXURE IV – GREEN BELT DETAILS

Fig 1 : Nursery with 1 Lakh Sapling Stock

Fig 2: Railway Corridor Edge Plantation

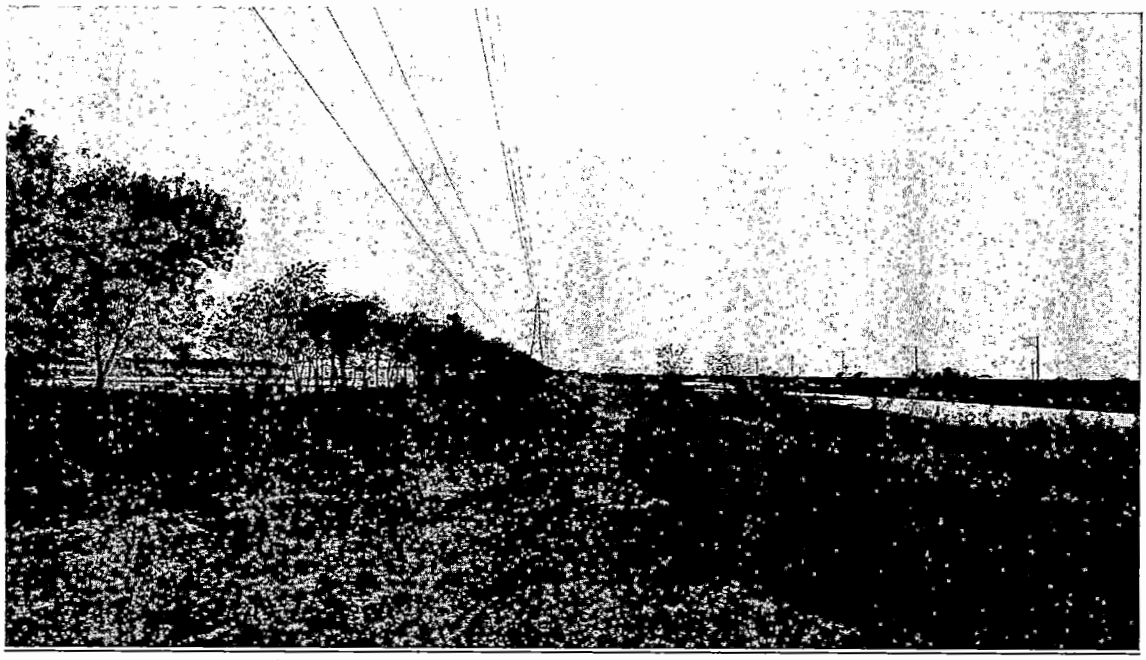


Fig 3: Railway Corridor Edge Plantation

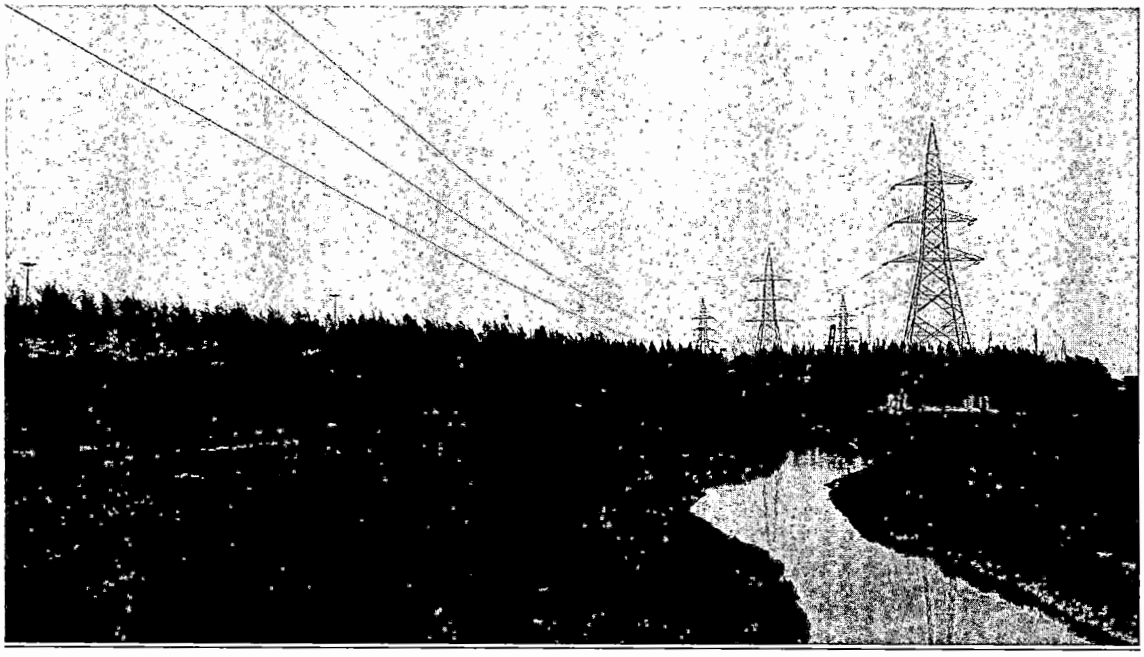


Fig 4: Greenbelt around the Port

Fig 6: Greenbelt around the Port

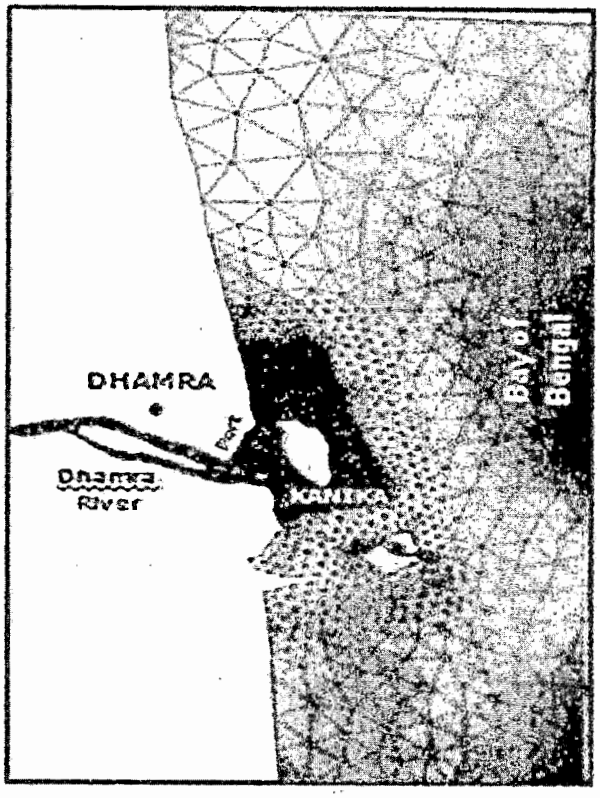
ANNEXURE-V – ENVIRONMENT EXPENSES

ENVIRONMEN PROTECTION EXPENDITURES FY 2016-17		
S. No.	Activity/ Category	Expenditure in lacs
1	Environmental Study / Audit	64.61
2	Legal & Statutory Expenses	21.83
3	Environmental Monitoring Services	19.23
4	Hazardous Waste Management & Disposal	25.36
5	Environment Day Celebration	0.15
6	Mangrove conservation	5.25
7	Horticulture/Plantation	69.30
8	O&M of Sewage Treatment Plant	11.99
9	Capital Cost of renovation	3.16
10	Water Treatment Plant	45.22
11	Dust suppression	23.74
12	Online display board	3.88
13	Turtle conservation (Trawler for patrolling)	20.80
Total Environmental Expenditures (in Lakhs)		**314.52**

ANNEXURE- VI – PICTURE OF INCOIS ELECTRONIC DISPLAY BOARD INSTALLED AT DHAMRA FISHING HARBOUR

Annexure-VII

THE IMPACT OF DREDGING AND DUMPING OF SEDIMENT ON DHAMRA SHORELINE CHANGE AND ON THE ECOLOGICALLY SENSITIVE AREAS INCLUDING KANIKA ISLAND



Submitted to

adani

THE DHAMRA PORT COMPANY PORT PVT. LTD.,
DHAMRA, ODISHA.

ESSO

NIOT

National Institute of Ocean Technology
Ministry of Earth Sciences, Govt. of India
Chennai – 600100

March 2017

EXECUTIVE SUMMARY

The Dhamra port is located on the northern side of the Dhamra river mouth, between the shoreline and the Kanika Island. Ministry of Surface Transport (MoST), Government of India accorded the Environmental Clearance (Phase I) for Dhamra Port vide their Office Memorandum No. PD/26017/8/98-PDZ (CRZ) dated 4th January,2000. DPCL has implemented Phase I facility by construction and operation of 2 berths.

Later, M/s DPCL had further applied for Environment & CRZ clearance for Phase – II expansion of port which consists of material handling area, cargo storage area, operational and utility area, internal connectivity, drainage, greenbelt and buildings etc. Under this process, M/s DPCL had obtained State CRZ recommendation with specific conditions, based on which, MoEF & CC has accorded EC & CRZ clearance to M/s DPCL vide letter dated 1st January, 2014 for Phase – II.

As a part of this issued Environment & CRZ Clearance for Phase –II and inline to comply the condition of State CRZ recommendation, it is required to access the impact of dredging and dumping of the sediment on Dhamra Shore line change and on ecologically sensitive areas, including Kanika Island. In this regards, M/s DPCL hired the services of National Institute of Ocean Technology (NIOT) to carry out the above said studies.

The main objective of the study is to determine the effect of the dredging and land reclamation on the coastal areas including ecosystems. The general coastal processes along Dhamra coastline were investigated using numerical model, MIKE 21 to simulate the wave transformation in the study area for one year incident wave heights and wave directions before and after the reclamation which is being carried out as per Environmental clearance. Wave transformation for incoming waves after reclamation is slightly changed. Local sediment transport pattern also changed with reclamation, mainly because of the change in shore angle. However, there were no significant differences concerning the local sediment transport direction along the coast after reclamation. The study showed that there are no significant changes on the wave transformation, sediment transport in the vicinity of the land reclamation.

Dr. SATHEESH C.SHENOI

DIRECTOR

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1. INTRODUCTION

Coastal reclamation is a kind of human activity that creates land or water areas by filling in or enclosing shallow coastal space, including creation of land, freshwater reservoir, port and harbor, and other forms of enclosed uses of the coastal space. Large-scale land reclamation may results in significant alteration of topography, which may lead to changes of hydrodynamics in the tidal estuaries, thus finally affecting the shoreline evolution. Consideration of hydrodynamic issues is important when major development is proposed in estuarine or coastal settings, particularly as coastal developments may result in changes to wave climate which can impact areas remote from the development site.

The report presents the modelling investigations of waves, currents, sediment transport along Dhamra coast. As a part of issued Environment & CRZ Clearance for Phase –II and inline to comply the condition of State CRZ recommendation, it is required to assess the impact of dredging and dumping of the sediment on Dhamra Shore line change and on ecologically sensitive areas, including Kanika Island.

The investigation is carried out using 2D modelling techniques to represent the hydrodynamics and sediment transport patterns prevalent at the site. This study aims to build a two-dimensional Numerical model based on MIKE 21 using the coastline and bathymetry data and to validate the model with available measured data. The study focuses on the effect of dredging and reclamation on the hydrodynamics based on the model simulation, including high water level, flow velocity and wave climate.

2. STUDY AREA

The Dhamra port is located at approximately 20°49'20" N and 86°57'47" E on Bay of Bengal. The naturally protected Dhamra port (Bhadrak district) is located on the mainland along northern part of the Orissa coast, north of the Dhamra River mouth and west of Kanika island. The port is protected from direct waves by Kanika islands which acts as a natural breakwater, Gahirmatha sanctuary and surrounding mangroves and is only partially open to the waves from NNE to NE and from ESE to SE. The river mouth area exhibits a silty shelf, which slopes up in a low gradient to form coastal wetlands in the intertidal zone. The mangroves on Kanika islands

provide protection and stabilisation of the inter-tidal landscape from natural calamities and cyclonic floods. The diameter ranges of sand along Dhamra Port belonging to the classification of fine sand (0.125 - 0.25), silt (0.0039 - 0.0625) and clay (0.00006 - 0.0039). The channel sediments tend to be finer with dominance of silt/clay.

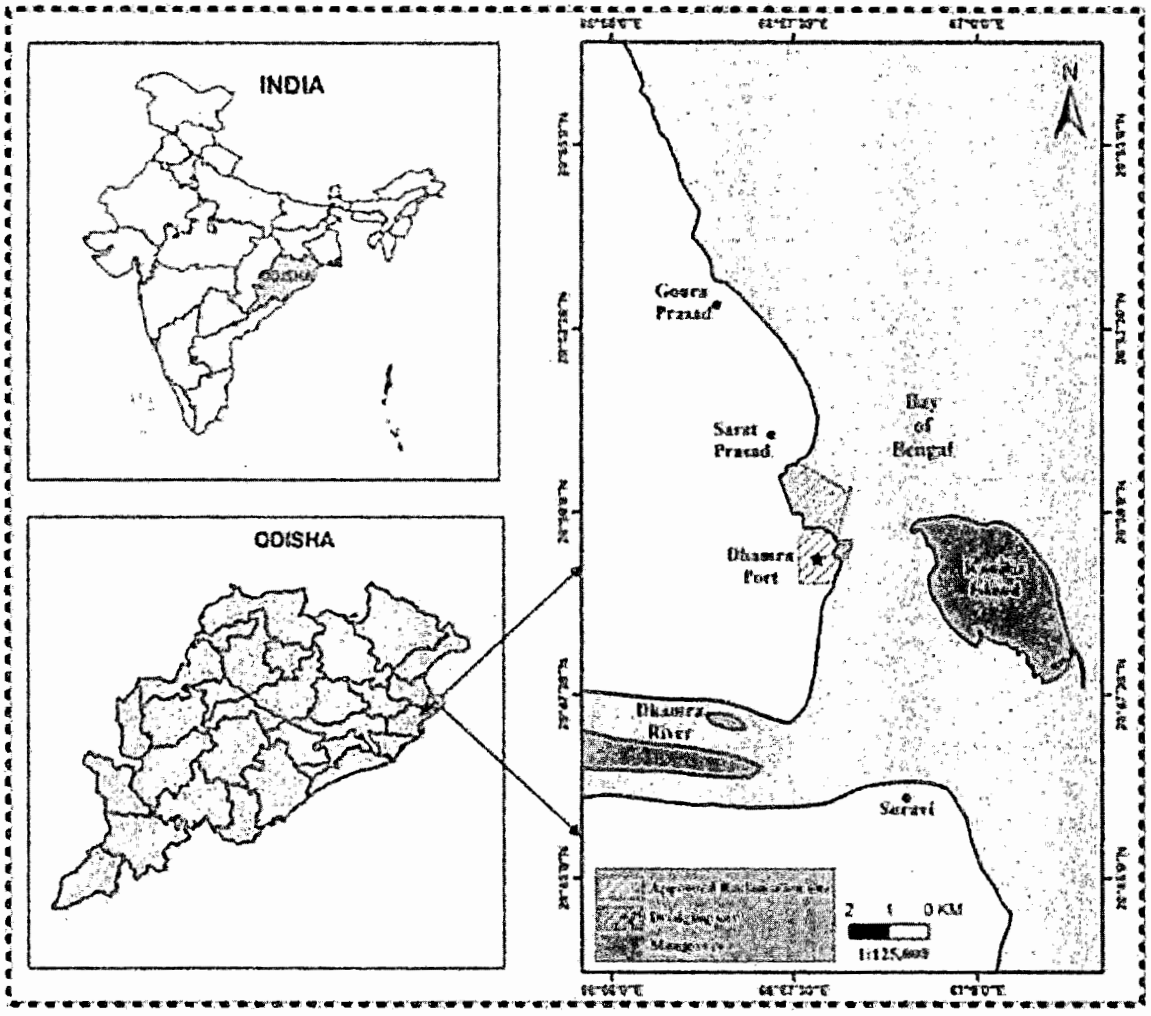


Figure 1 Study Area

The mean high water spring tides is 3.4 m and mean low water spring tides is 0.8 m. The form factor from the tidal analysis is less than 0.25, showing tide type near the Dhamra region are semi-diurnal i.e., characterized by occurrence of two high and two low waters every day. The Kanika island not only provides good protection from direct wave impact, but also creates a calm and wide sheltered area where various marine creatures grow in a special ecological

environment. Wave transformation along open coasts and semi-enclosed regions, diffracted waves are predominantly observed at the port and the inner channel.

M/s DPCL had applied for Environment & CRZ clearance for Phase – II expansion of port which consists of material handling area, cargo storage area, Operational and utility area, internal connectivity, drainage, greenbelt and buildings etc. Under this process, M/s DPCL had obtained State CRZ recommendation with specific conditions, based on which, MoEF & CC has accorded EC &CRZ clearance to M/s DPCL vide letter dated 1st January, 2014 for Phase – II. As a part of this issued Environment & CRZ Clearance for Phase –II and inline to comply the condition of State CRZ recommendation, it is required to access the impact of dredging and dumping of the sediment on Dhamra Shore line change and on ecologically sensitive areas, including Kanika Island.

In this regard, NIOT was requested to study the impact of dredging and dumping of the sediment on Dhamra shoreline and eco sensitive areas including Kanika Island. The layout map of approved dredging and reclamation site at Dhamra port is shown in Figure 2.

3. DATA USED

The study utilizes different types of data such as sea charts, wind data collected from various sources. The hydrodynamic parameters tides, waves and currents collected along Dhamra coast during Monsoon and Non monsoon campaign for the year 2012 is used for the study. Two bathymetric data sets for Dhamra Port area before and after dredging and reclamation were used for this study. A numerical model, MIKE 21, was used to simulate prevalent flow pattern and wave climate in the study area.

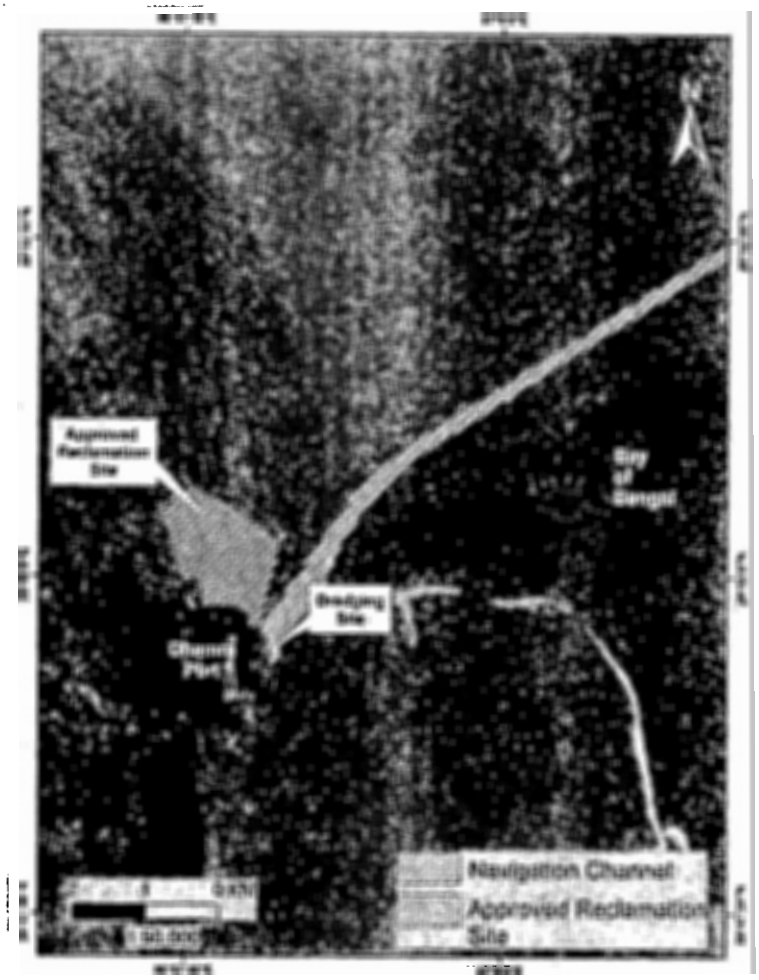


Figure 2 Dredging and Reclamation site

4.MODELLING APPROACH

Investigations were undertaken by numerical computer modelling and included assessment of wave climate, currents and coastal processes. Potential changes considering the dredging and reclamation completed as per Phase II clearance were assessed. Modelling included the following,

i. Waves - Two different scale Numerical models both using MIKE 21 Spectral Wave module to determine the wave climate in Dhamra.

- The regional wind to wave model was carried out for the Indian Ocean with the aim of hind casting offshore wave characteristics using available wind data.

- The Local wave to wave model was carried out with smaller and much refined mesh to arrive at an understanding of the near shore wave climate.

ii. Currents - Numerical model was developed using MIKE 21 Flow Module to understand the flow pattern and tidal currents.

iii. The stability of coastal sediment was assessed using Analytical approach and the results from the wave and current modelling. In addition, the LITPACK coastal processes model was applied to determine potential impacts on sediment transport rates in the project site.

The modelling systems are described in more detail in the following sections.

5. MODELLING OF WAVES

Scientific Background

MIKE 21 SW is a state-of-the-art numerical tool for prediction and analysis of wave climates in offshore and coastal areas. It includes a new generation spectral wind-wave model based on unstructured meshes. The model simulates the growth, decay and transformation of wind-generated waves and swells in offshore and coastal areas. MIKE 21 SW includes the following physical phenomena,

1. Wave growth by action of wind
2. Non-linear wave-wave interaction
3. Dissipation due to white-capping
4. Dissipation due to bottom friction
5. Dissipation due to depth-induced wave breaking
6. Refraction and shoaling due to depth variations
7. Effect of time varying water depth and flooding and drying

Basic Formulation

Spectral Wave Model in MIKE 21 has two spectral formulations:

1. Directionally decoupled parametric formulation
2. Fully spectral formulation

Directionally decoupled parametric formulation is typically used for the assessment of wave conditions in nearshore and coastal areas which often involves transformation of known offshore wave statistics. Fully spectral formulation is usually used for simultaneous wave prediction and analysis on large and local scale.

The governing equation is the wave action conservation equation formulated in either Cartesian co-ordinates or Spherical co-ordinates. In horizontal Cartesian co-ordinates, the conservation equation for wave action can be written as

$$\frac{\partial N}{\partial t} + \nabla.(\tilde{v}.N) = \frac{S}{\sigma}$$

where N ($\underset{x}{\rightarrow}$, σ, θ, t) is the action density, t is the time, $\underset{x}{\rightarrow}$ = (x, y) is the Cartesian co-ordinates, $\tilde{v}$ = (c_x, c_y, c_σ, c_θ) is the propagation velocity of a wave group in the four dimensional phase space $\underset{x}{\rightarrow}$, σ and θ, and S is the source term for the energy balance equation.

5.1 REGIONAL WIND TO WAVE MODEL

5.1.1 Model Domain and Bathymetry

In order to simulate waves in the Indian Ocean, a large domain, which ranges from 0° to 25° N Latitude and 60°E to 120°E Longitude was selected. An unstructured triangulated mesh is generated with varying sizes of triangles elements; 0.5° (Indian Ocean), 0.125° (Coastal).

C-MAP data for deep water regions along Indian Ocean and bathymetry data sets of measured data are applied to shallow water regions in the study area, by interpolating them to each element in the flexible mesh bathymetry. The horizontal datum is referenced to World Geodetic System 1984 (WGS-84) and the vertical datum is referenced to Mean Sea Level (MSL). Figure 3 shows the model domain, flexible mesh and bathymetry used for wave simulations in the Indian Ocean.

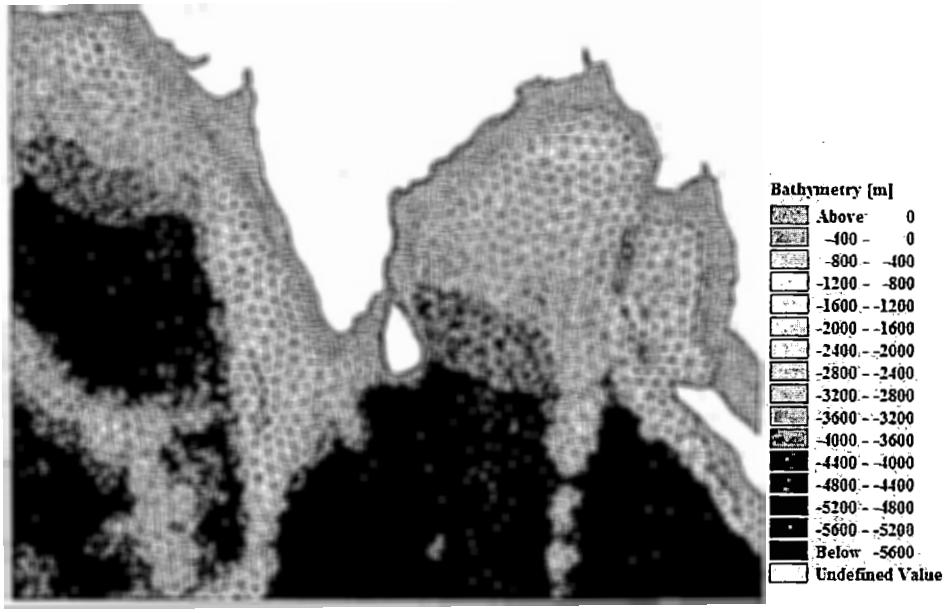


Figure 3 Model domain and Bathymetry of Indian Ocean

5.1.2 Wind Forcing

Wind is the basic input parameter for wave simulation. Successful wave hindcast and forecast depend on accurate wind fields deduced from meteorological models and analysis.

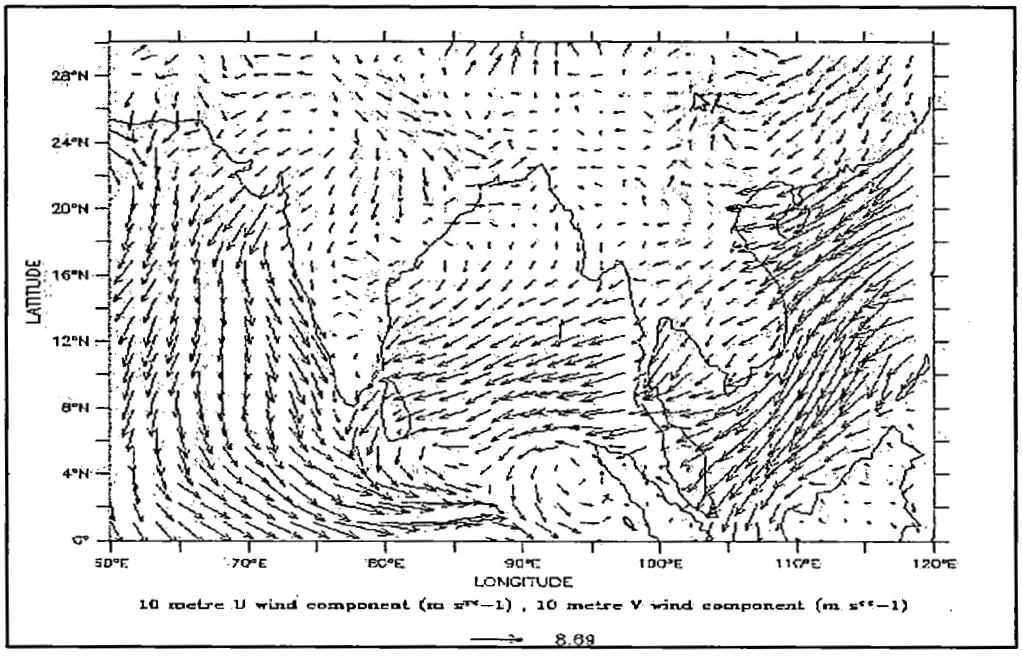


Figure 4 10 m wind component vectors as on 01-Jan-2012

In the present study, wind data is obtained from the database of ECMWF's interim reanalysis (ERA-Interim). Wind data for Indian Ocean region (60°E to 120°E and 0° to 25°N) was collected from ECMWF database for regional wave modelling. The wind data was obtained for a period from January 2012 to December 2012 with spatial resolution of 0.25 × 0.25 degree and temporal resolution of 3 hours. The data for wind was obtained as U & V components of wind velocity (m/s) at 10 m height. U and V components of the wind velocity are calculated from decomposing the wind magnitude and direction along the two horizontal axes: x and y and the typical wind pattern is shown in Figure 4.

5.1.3 Regional Model Validation

The wave rider buoy data of year 2012 deployed at BD08 and BD11 location at water depth of 2116m and 3270m deployed off Andhra Pradesh and Pamanji coast respectively as shown in Figure 5 was used for the validation of regional model.

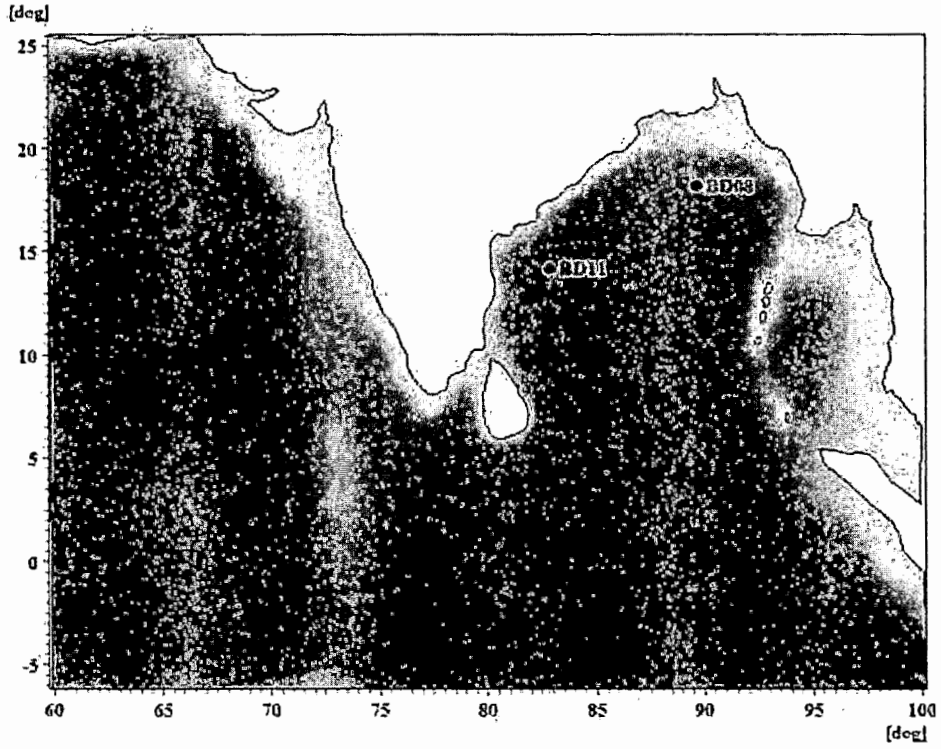


Figure 5 Location of Wave rider Buoy(BD08 & BD11)

The regional model results were extracted at BD08 and BD11 location and compared with the wave rider buoy data. The modeled wave heights are in good agreement with observed wave

heights with the correlation coefficient of 0.93 at BD08 location (Figure 6) and with correlation coefficient of 0.92 at BD11 location (Figure 7). This proves the reliability of the model for extraction of boundary conditions to the local wave to wave model.

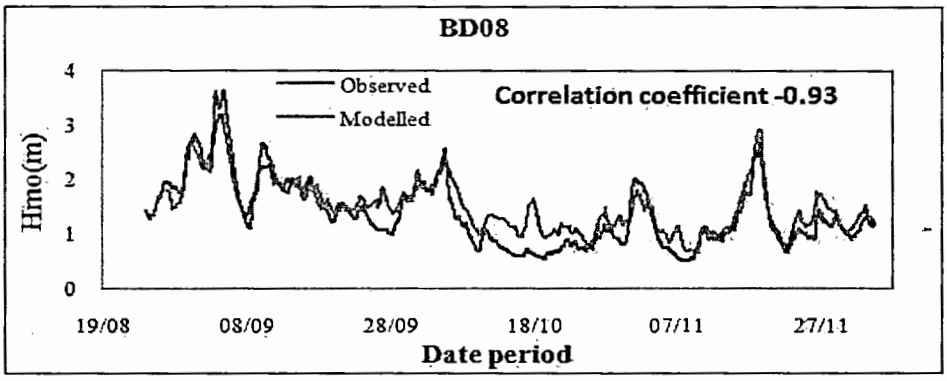


Figure 6 Comparison between modeled and observed wave heights at BD08 location

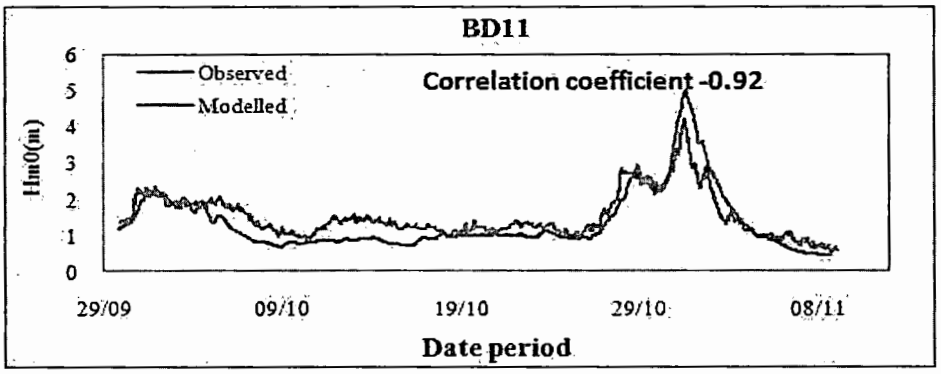


Figure 7 Comparison between modeled and observed wave heights at BD11 location

From regional model, it is observed, the wave heights in the deep water ranges from 1 m to 2 m with wave periods of 8 to 12 seconds.

5.2 LOCAL WAVE TO WAVE MODEL

The MIKE-21 SW model was used to model swell waves propagating into the Dhamra port area and adjacent coastal regions. A nested approach was used in creating the mesh to minimize the errors in calculating the results. The local model domain ranges from Latitude 20.6°N to 21.12° N and Longitude 86.8° E to 87°E. The bathymetry and topography from field survey data carried out (DHI, 2012) was applied to Dhamra and nearby coastal areas. For the larger domain in the mesh, a resolution of 3 km was used (Figure 8) progressively reducing to 800m and for the

coastline of interest a resolution of 250 m was applied. The total number of elements used in the mesh is 4788 with 2613 nodes. The Courant–Friedrichs–Lewy (CFL) number was chosen as 0.8 for stability as recommended.

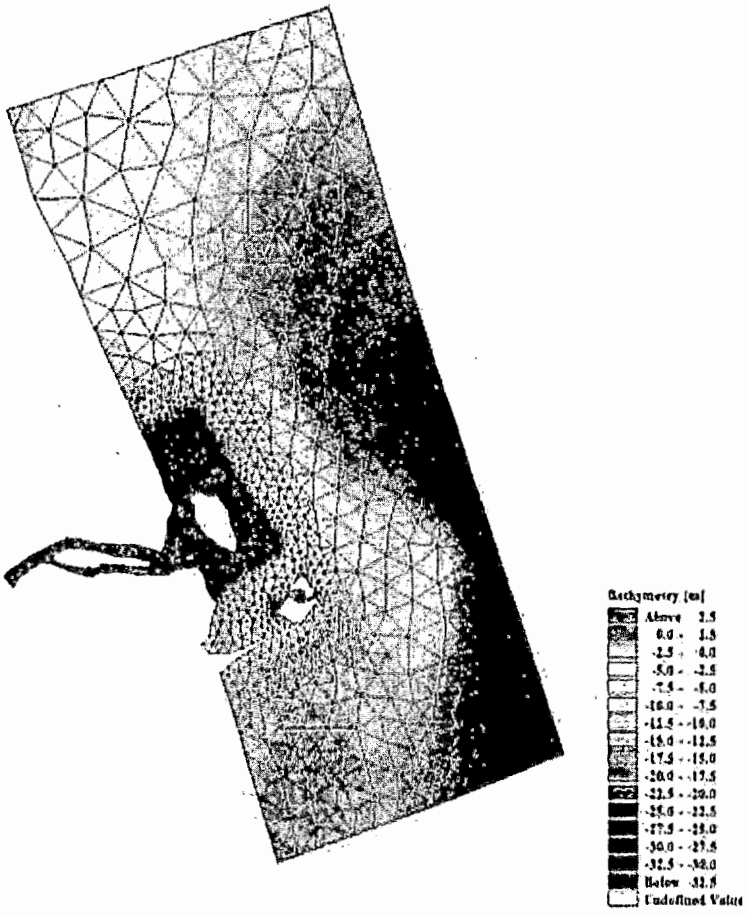


Figure 8 Local wave to wave Model mesh

The model is simulated for 1 year during the period of 01-01-2012 to 31-12-2012 with a time step of 3600 seconds. The directionally decoupled parametric formulation is generally adopted for the assessment of wave conditions in nearshore and coastal areas which usually involves the transformation of known offshore wave characteristics derived from regional scale wind to wave model. The directionally decoupled parametric formulation is based on a parameterization of the wave action conservation equation. The solution technique chosen for quasi stationary formulation was Newton-Raphson iteration.

For the simulations, wave climate extracted from the regional wind to wave model was given as offshore boundary condition (Figure 9). The North and South boundary of the model is considered as open boundary with 'Lateral Boundary' condition.

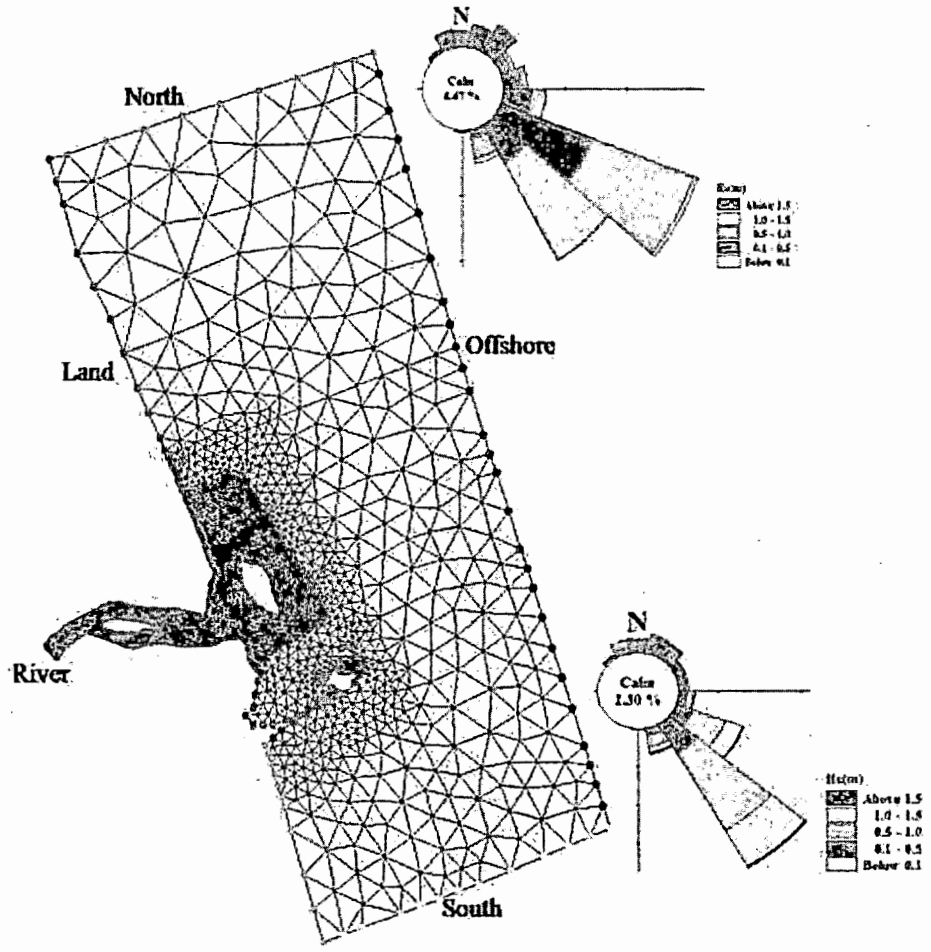


Figure 9 Boundary conditions for Local Wave model

5.2.1 Local model Validation

The results from the local Spectral Wave model was validated with the data well wave rider buoy data deployed at the end of the entrance channel as shown in Figure 10.The wave buoy recorded significant wave height (Hm0), Peak Wave period (Tp), Mean Wave direction (Dm) from 22nd July to 22nd August, 2012.Wave heights are in the range from 0.4m to 1.40m coming almost constantly from south-eastern directions (135 Degrees).

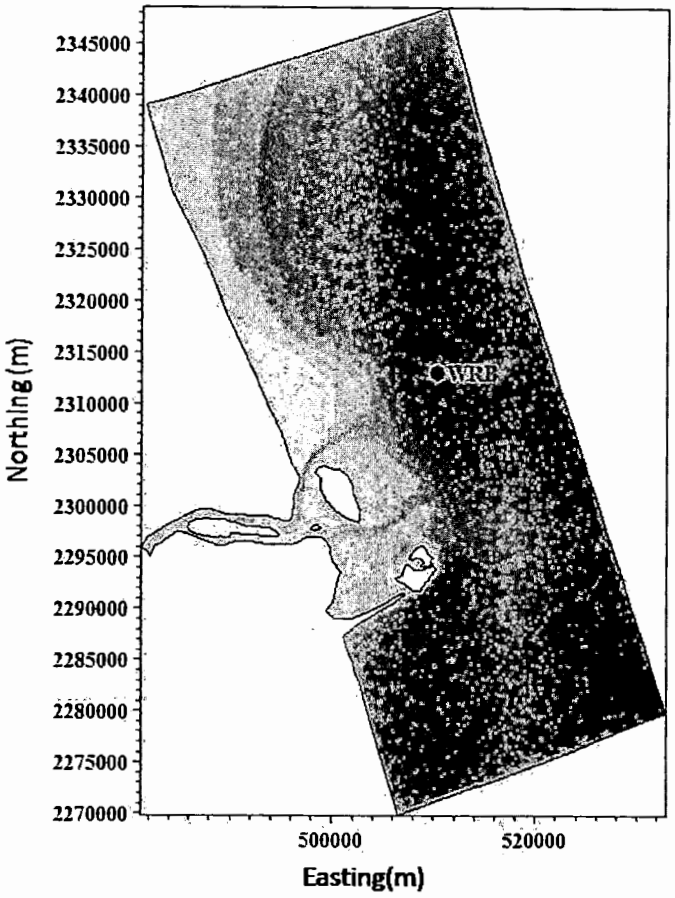


Figure 10 Location of Datawell waverider Buoy

Figures 11, 12 and 13 shows the comparison of significant wave height, peak wave period and mean wave direction of the modelled wave and observed wave from wave rider buoy. The model is in good agreement with the observed wave parameters.

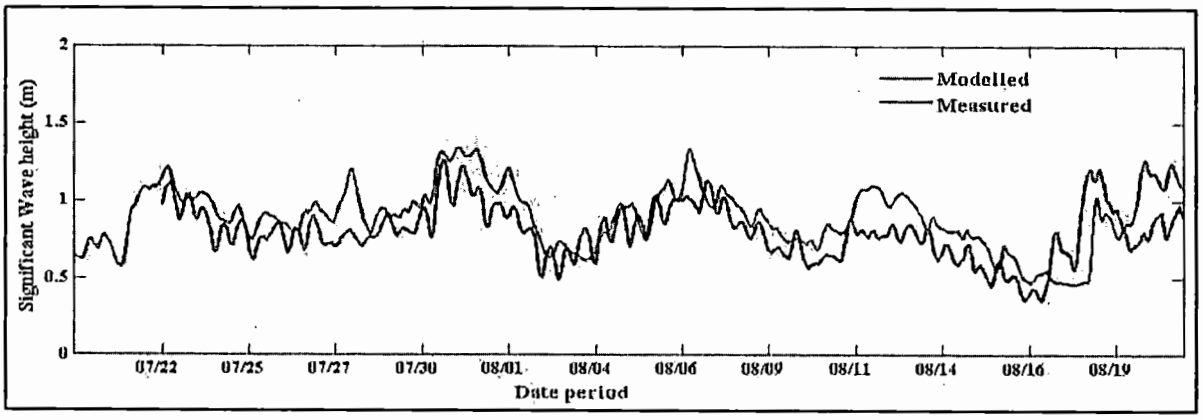


Figure 11 Comparison of measured and modelled Significant wave height

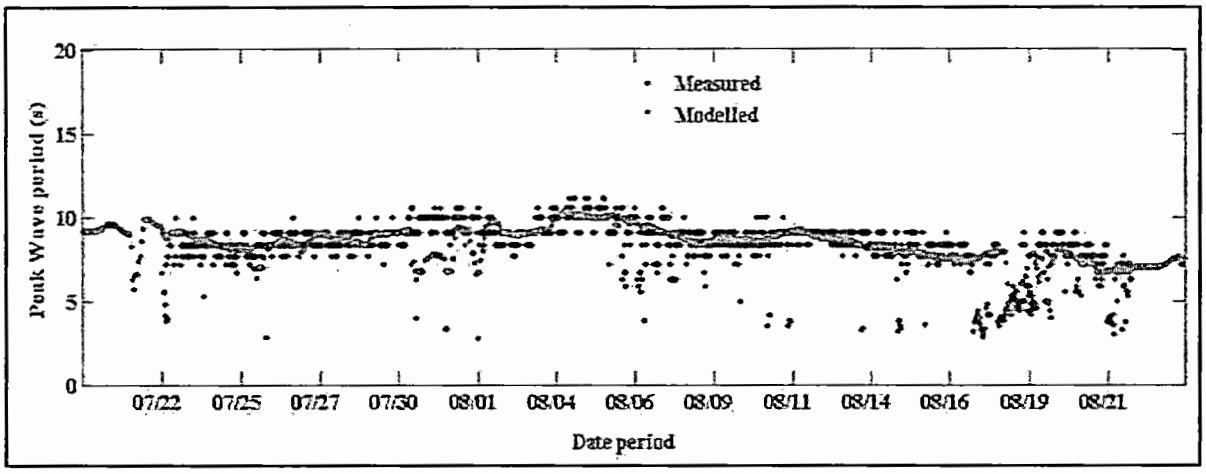


Figure 12 Comparison of measured and modelled Peak wave periods

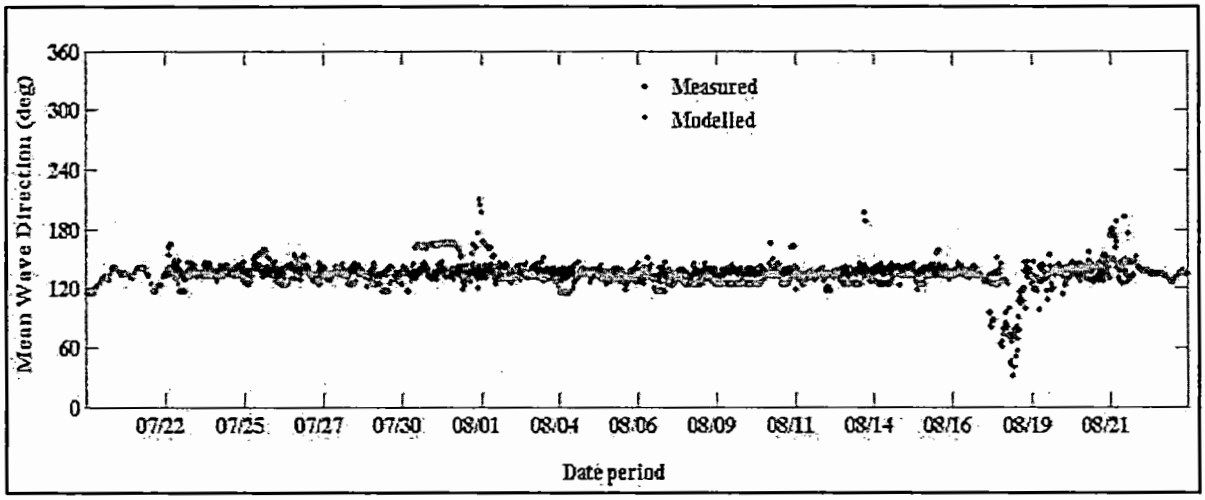


Figure 13 Comparison of measured and modelled Mean wave direction

6. MODELLING OF CURRENTS

Scientific background

The MIKE21 Flow model FM-HD module simulates water level variations and flows in response to a variety of forcing functions in lakes, estuaries and in coastal regions. It simulates unsteady two dimensional flows in one layer (vertically homogeneous) fluids and has been applied in a large number of studies (DHI 2007b).

Basic formulation

The Hydrodynamic module is based on the numerical solution of two dimensional shallow water equations i.e. the depth integrated incompressible Reynolds averaged Navier-Stokes equations. Thus the model consists of continuity, momentum, temperature, salinity and density equations. The local continuity equation integrated over a depth (2D) can be written as:

$$\frac{\partial z}{\partial t} + \frac{\partial uh}{\partial x} + \frac{\partial vh}{\partial y} = 0$$

The depth averaged horizontal momentum equations for x and y directions are, respectively:

$$\frac{\partial u}{\partial t} + u\frac{\partial u}{\partial x} + v\frac{\partial u}{\partial y} + g\frac{\partial z}{\partial x} - C_{fv} + \tau_{bx} - E_C\nabla^2 u = 0.$$

$$\frac{\partial v}{\partial t} + u\frac{\partial v}{\partial x} + v\frac{\partial v}{\partial y} + g\frac{\partial z}{\partial y} - C_{fu} + \tau_{by} - E_C\nabla^2 u = 0.$$

Where

z - Water surface elevation above the datum

u - X-component of velocity

v - Y-component of velocity

d - Depth of flow below datum

h – Total depth of flow (d+z)

C_f - Coriolis force

τ_b – Bed shear stress

E_C – Eddy viscosity coefficient

The spatial discretization of the primitive equations is performed using a cell centered finite volume method. The spatial domain is discretized by subdivision of the continuum into non-overlapping elements or cells. In the horizontal plane an unstructured grid is used comprising of triangles or quadrilateral element. An approximate Riemann solver is used for computation of convective fluxes, which makes it possible to handle discontinuous solutions. For the time integration, an explicit scheme is used.

The Dhamra Flow model was developed using a flexible mesh structure generally consistent with the major tidal flows in the Bay. The model was driven using tides and river discharge from Dhamra River. The discharge data was measured using ADCP transects (source: DHI 2012). A low order, fast algorithm solution technique was applied with a CFL number of 0.8. The minimum and maximum time step was given as 0.01s and 3600s respectively. Eddy viscosity was applied using Smagorinsky formulation with the default constant coefficient of 0.28. The North and south boundaries were given the time series of predicted water level data based on the tidal constituents and river boundary is given with discharge measured from field.

6.1 Hydrodynamic model Validation

Calibration of the models was undertaken to provide confidence that the modelling systems can realistically reproduce observed current structure. The model is validated with measured water level and currents measured at the locations as shown in Figure 14 respectively.

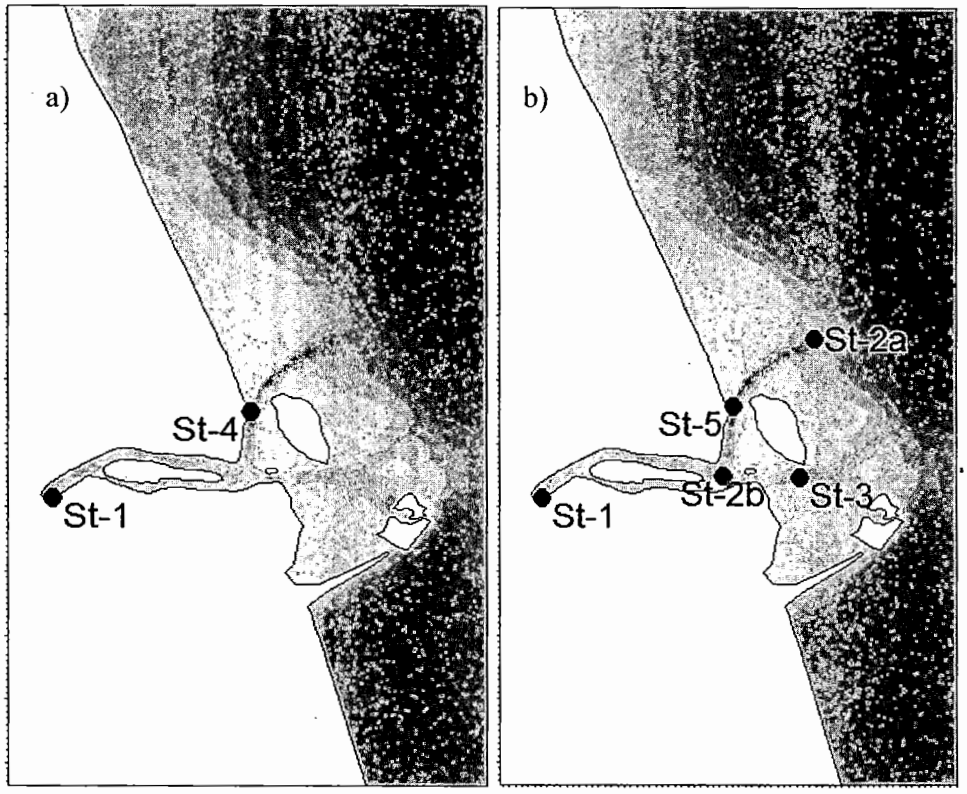


Figure 14 Location of field Measurement stations a) Water level b) Currents

6.1.1 Validation of Water level

The water level variations measured at Station 1 and 4 were compared with modelling data as shown in Figure 15 and 16 respectively. The observed water level variations are in good agreement with the measured data at station 1 and station 4 with the correlation coefficient of 0.80and 0.85 respectively.

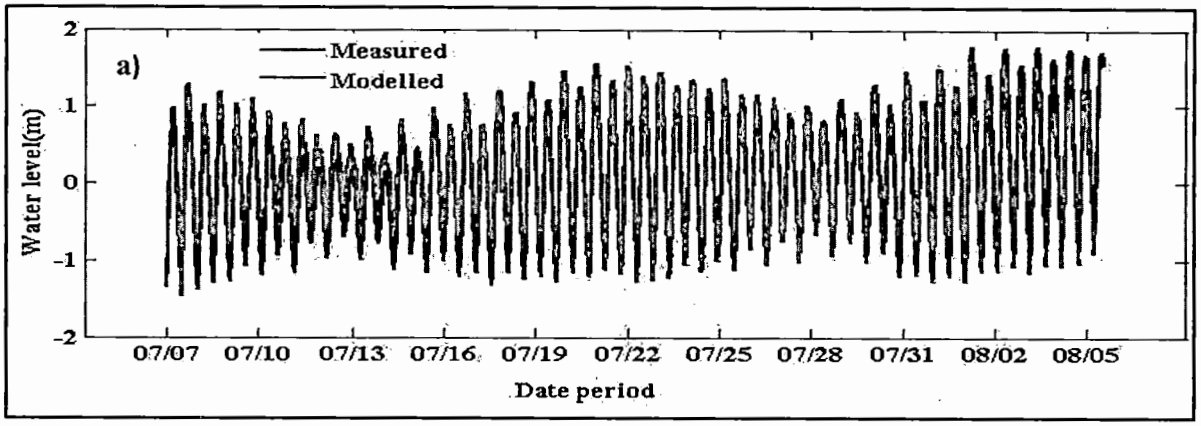


Figure 15 Comparison of measured and modelled water level variations at Station 1

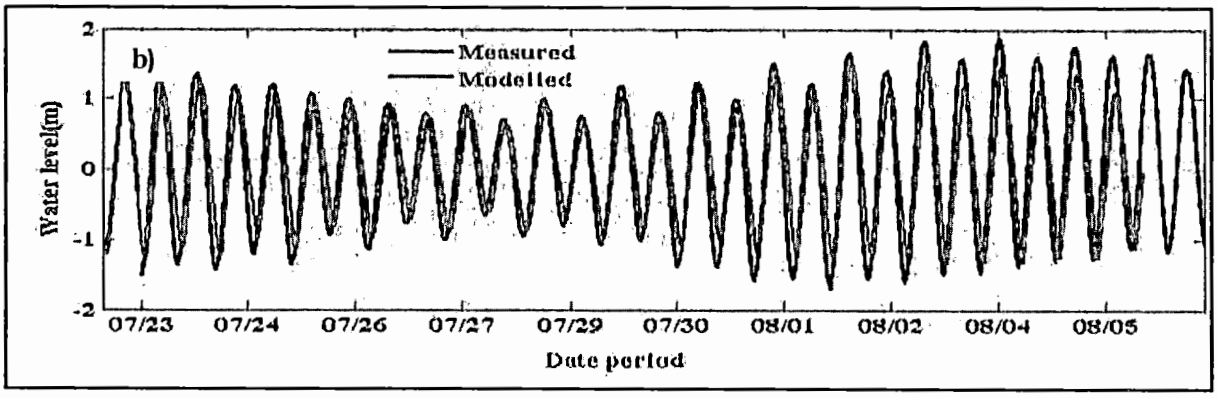


Figure 16 Comparison of measured and modelled water level variations at Station 4

6.1.2 Validation of currents

The measured and observed tidal current components along East and North direction are compared at station 1 as shown in Figure 17.Station 1 is located in the Dhamra River approximately 15 km west of the river mouth as shown in Figure 14.The alongshore component of current velocity (V velocity component) is observed to be less compared with the measured values with current speed correlation coefficient of 0.70.

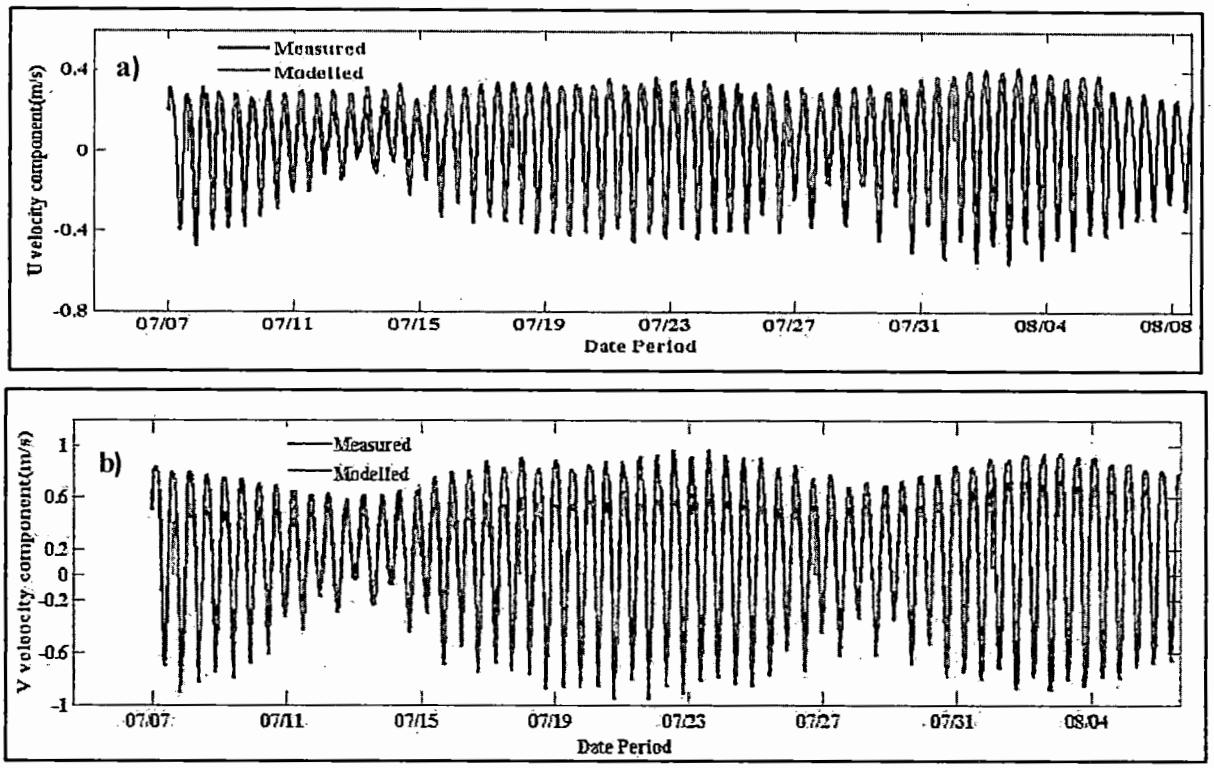


Figure 17 Comparison of measured and modelled a) u velocity component and b) v- velocity component at station 1.

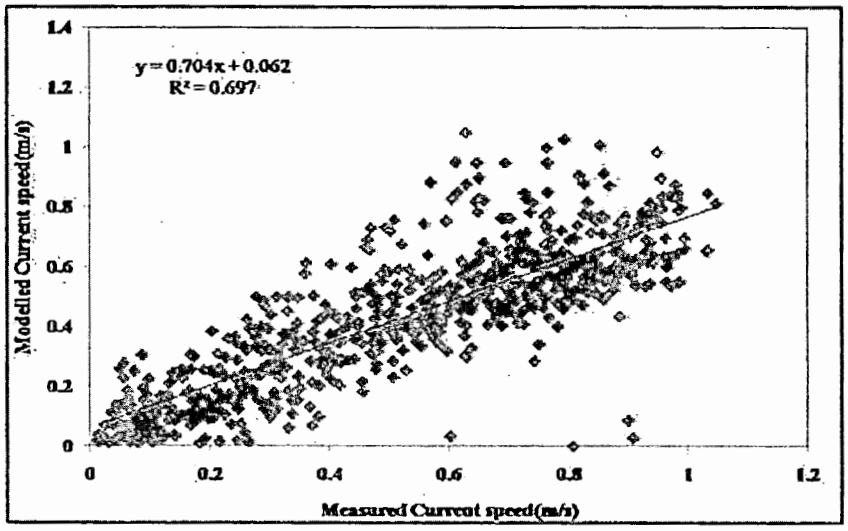


Figure 18 Scatter plot for observed and measured current speed at station 1

Station 2b located near the Dhamra river mouth is validated with modelled currents at same location. Due to lack of long term discharge data and non availability of discharge in Maipura

River, it is found the modelled v -velocity component is less than the measured with the current speed correlation of 0.56.

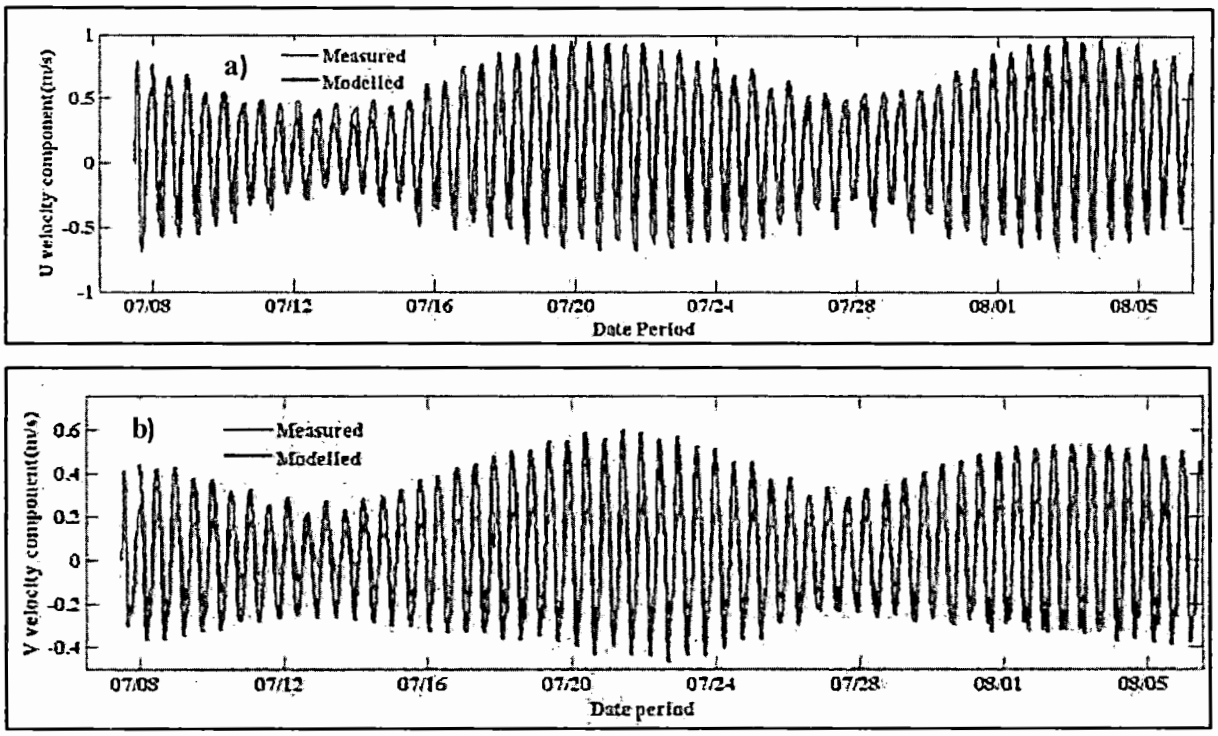


Figure 19 Comparison of measured and modelled a)u velocity component and b)v- velocity component at station 2b.

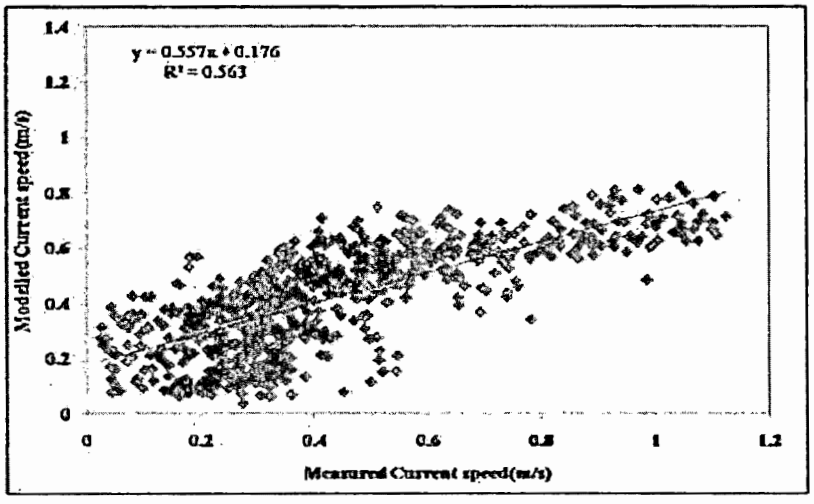


Figure 20 Scatter plot for observed and measured current speed at station 2b

Station 5 deployed in the port area approximately 200 m south of the jetty shows better agreement with correlation coefficient of 0.66.

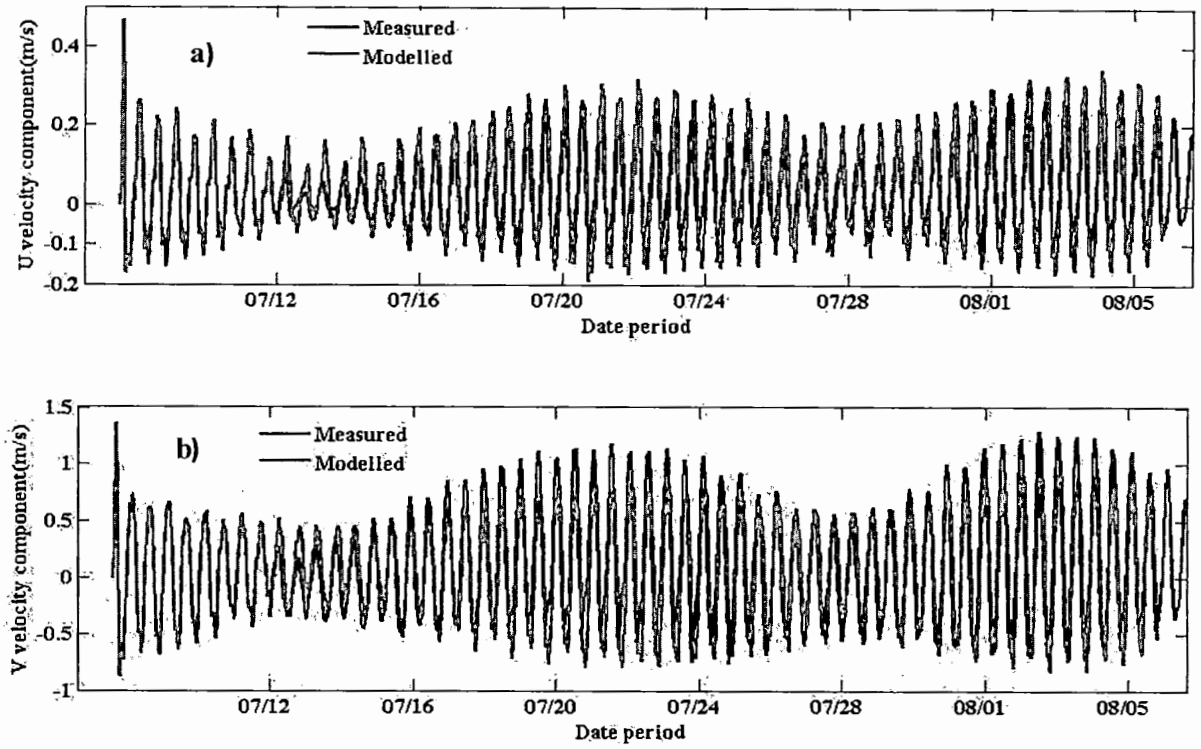


Figure 21 Comparison of measured and modelled a) u velocity component and b) v- velocity component at station 5.

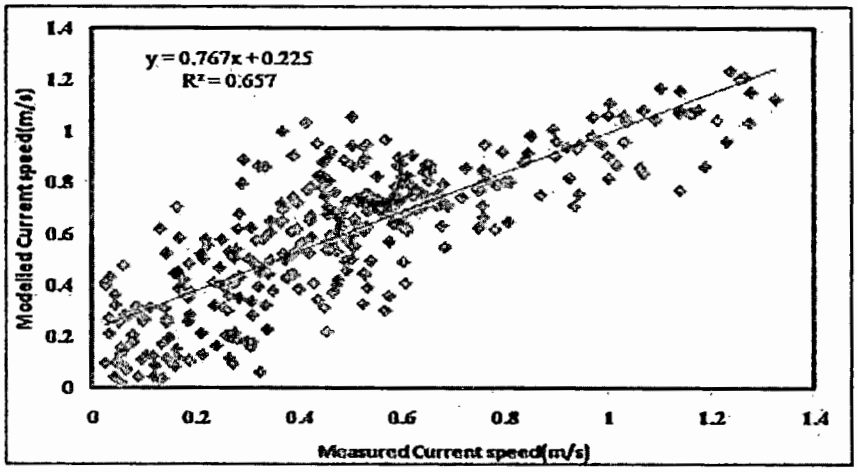


Figure 22 Scatter plot for observed and measured current speed at station 5

Similarly Station 2a which was deployed approximately 4.5 km north east of Kanika Island, on the edge of the dredged entrance channel is validated with modelled currents. The observed and and the measured current speeds are in good agreement with correlation coefficient of 0.88.

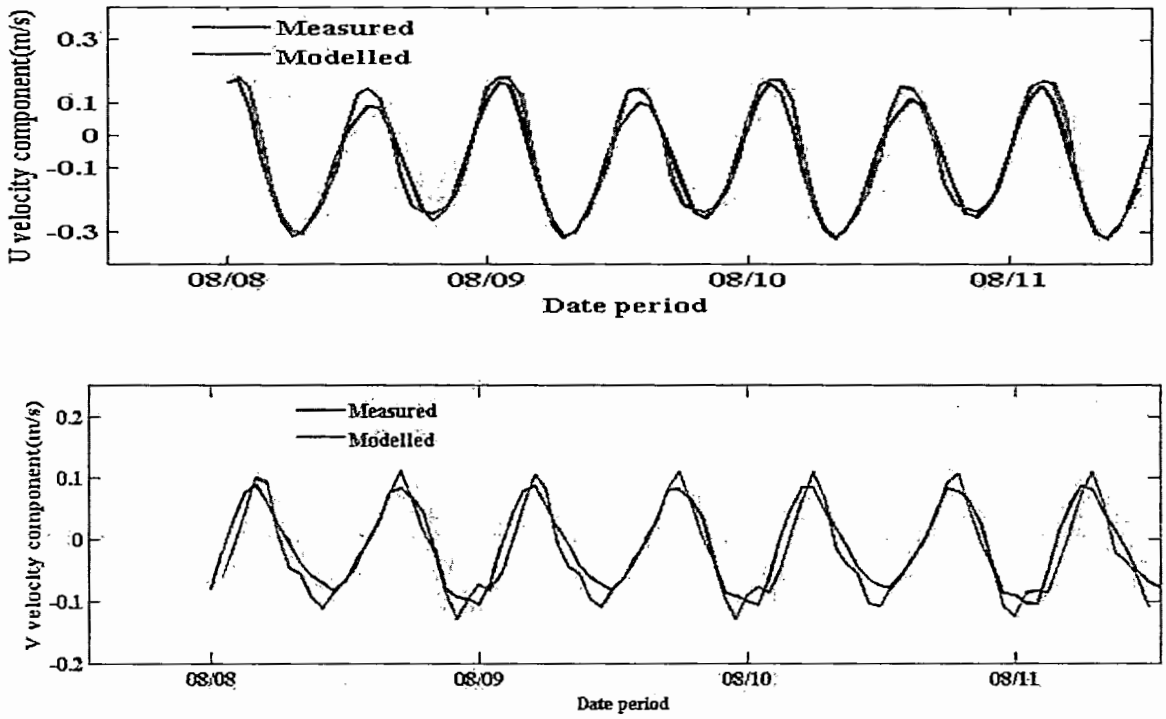


Figure 23 Comparison of measured and modelled a)u velocity component and b)v- velocity component at station 2a.

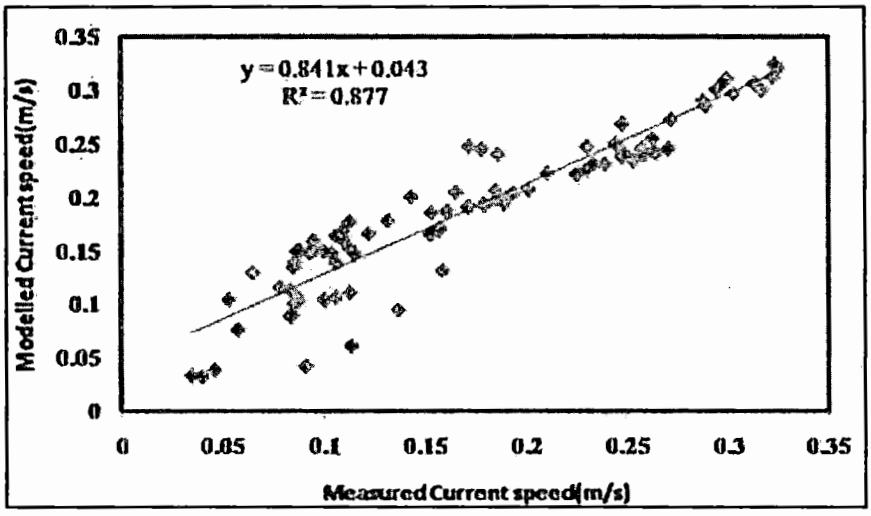


Figure 24 Scatter plot for observed and measured current speed at station 2a

While it is difficult to reproduce current pattern near the mouth of Dhamra river (at station 2b) due to non availability of long term discharge data at Dhamra and Maipura river, the outcome of these calibration processes demonstrates that the models provide a generally reliable description of currents within Dhamra Coast.

7.EFFECTS OF DREDGING AND LAND RECLAMATION

With the overall aim to study the effects of the dredging and land reclamation on waves and sediment transport, simulations were done considering the dredging and reclamation completed, as per phase II clearance. Nearshore wave simulations were carried out using the MIKE 21 Coupled model which has been validated for waves, water level and currents. The domain created for before and after dredging & reclamation scenarios were shown in Figure 25.

Dredging at proposed berthing areas and for widening of existing approach channel as shown in Figure 26 is used for reclamation of proposed backup yard and level rising upto 5 to 7 m CD.

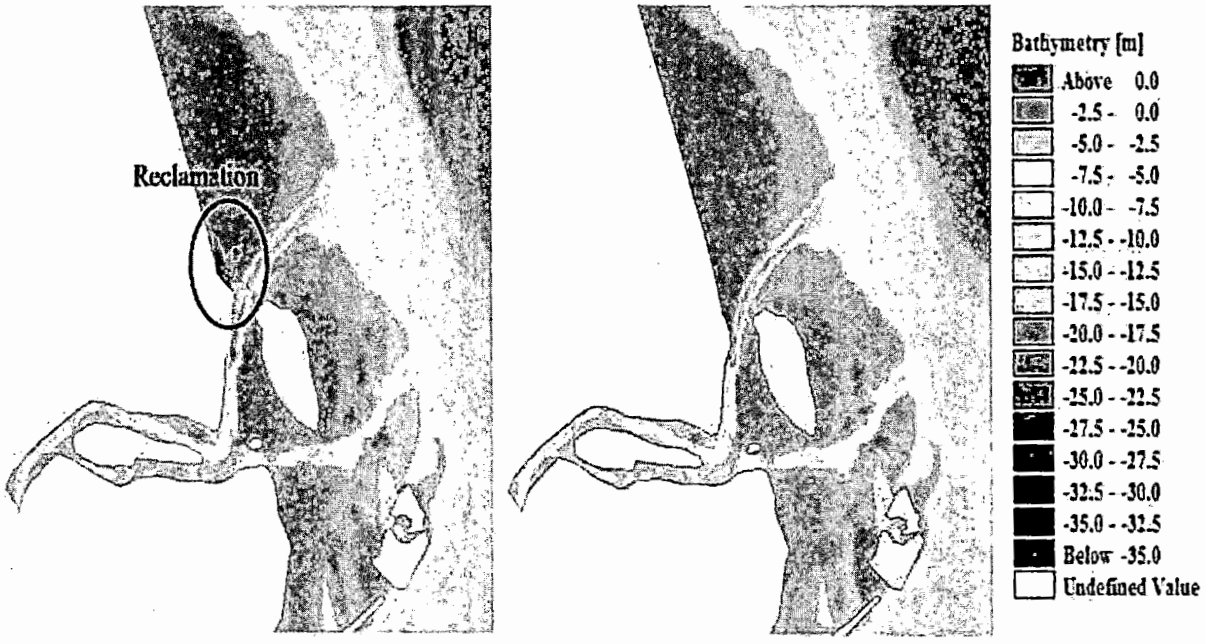


Figure 25 Bathymetry for scenario with and without dredging and reclamation

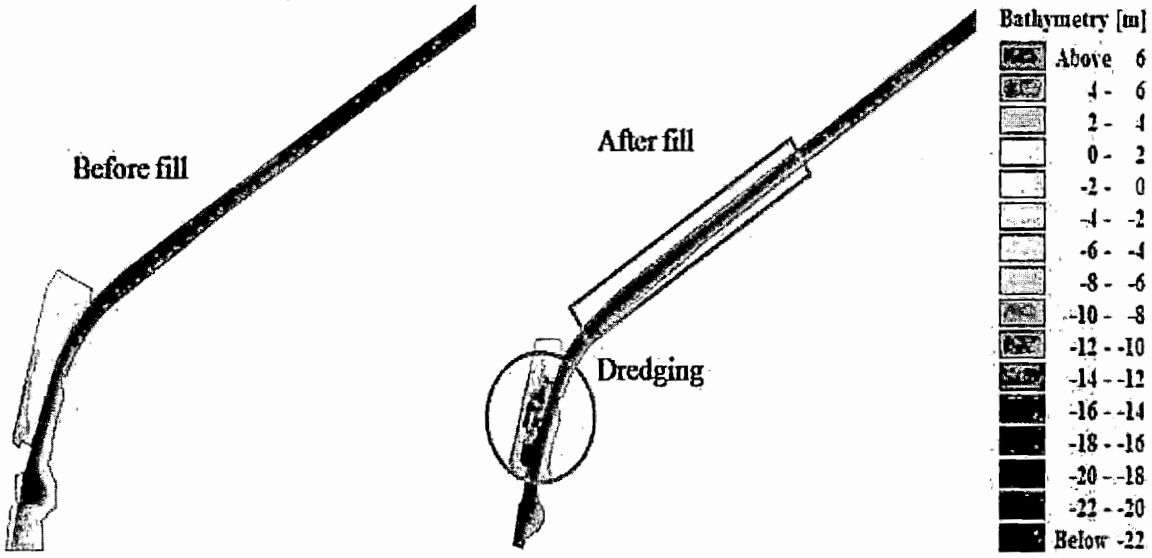


Figure 26 Dredging scenario incorporated in Bathymetry before and after fill

MIKE 21/3 Coupled Model Flexible mesh is used for modelling the hydrodynamics with dredging and reclamation completed on the North of Dhamra Port as per Phase II environmental clearance. The model is based on the solution of the three-dimensional incompressible Reynolds averaged Navier-Stokes equations, subject to the assumptions of Boussinesq and of hydrostatic pressure. The mutual interaction between waves and currents using a dynamic coupling between the hydrodynamic module and the spectral wave module is carried out with this module.

7.1. Impact of Dredging and dumping on Hydrodynamics along Dhamra Shoreline

In order to estimate the longshore drift for the Dhamra coast, the curvilinear stretch of coastline has been divided into nine segments, according to its orientation to the north as shown in Figure 27. Each of these segments has been approximated by a straight line according to the coastline orientation The segment 1 is south of the Dhamra river at a angle of 42.3° from North and segment 2 to 4 is almost a straight coastline with angle of 10°.The segment 5,6 and part of 7 forms the port area whereas remaining 7 and 8 forms the reclamation part.

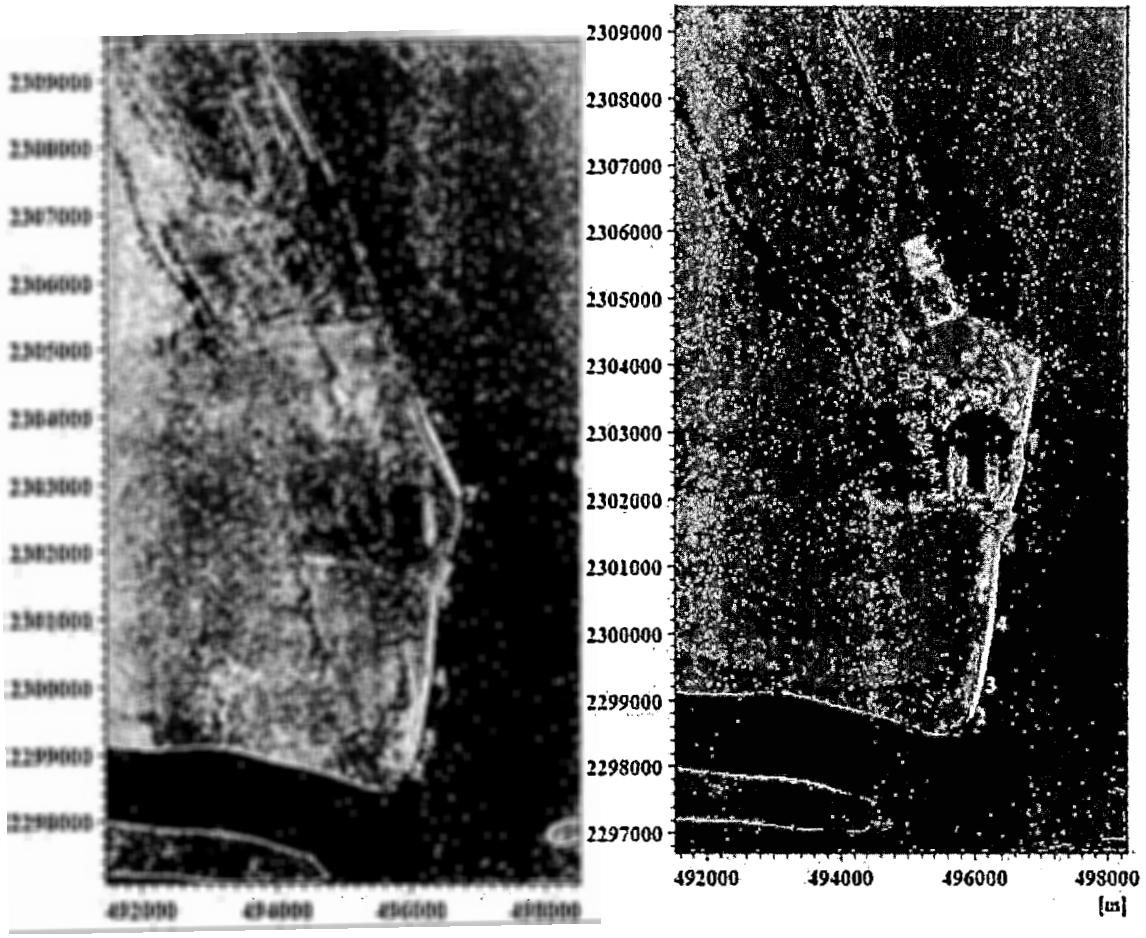
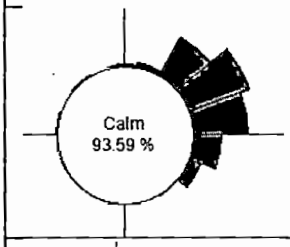
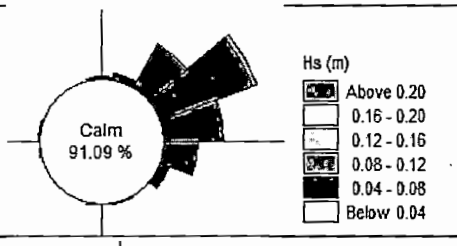
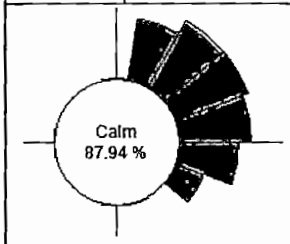
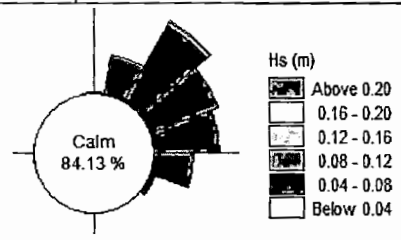
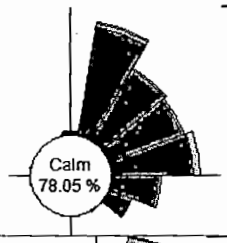
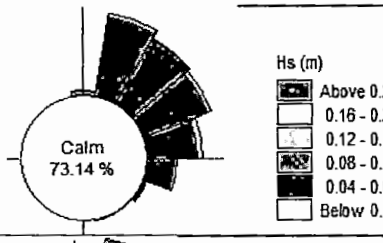
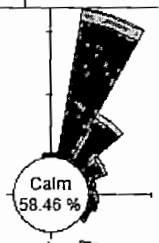
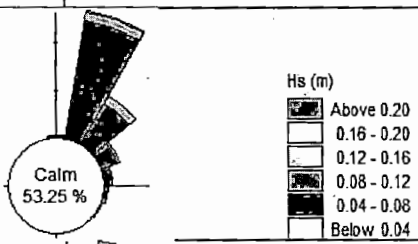
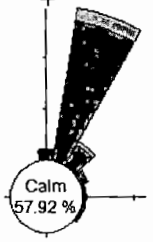
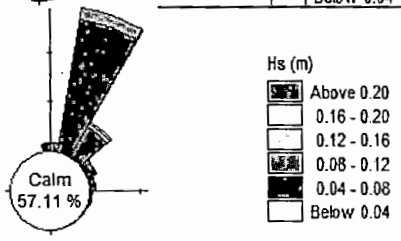


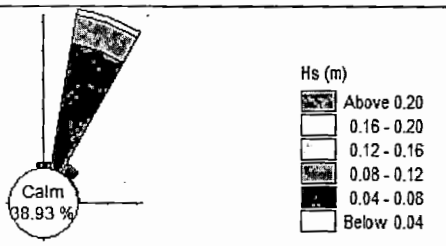
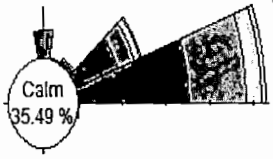
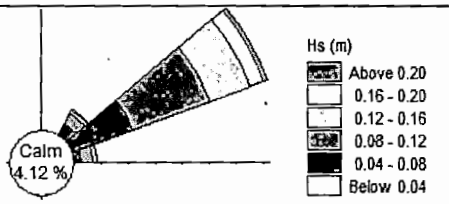
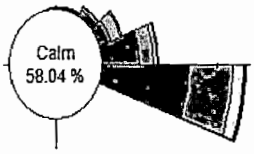
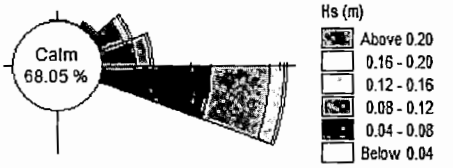
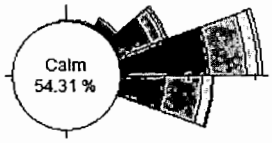
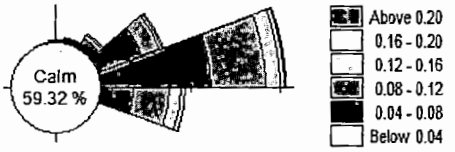
Figure 27 Shoreline orientations with and without dredging and reclamation

The nearshore wave characteristics in front of each segment before and after dredging and reclamation, corresponding to offshore wave condition from regional wind to wave model are assessed.

Table 1 shows the wave rose plots plotted for significant wave height against mean wave direction at each segment before and after the dredging and reclamation.

Table 1 Significant wave height along Dhamra Shoreline before and after dredging and reclamation

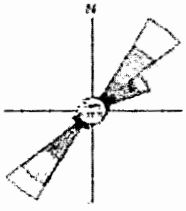
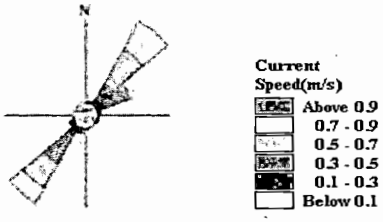
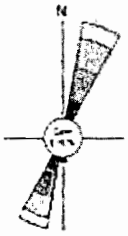
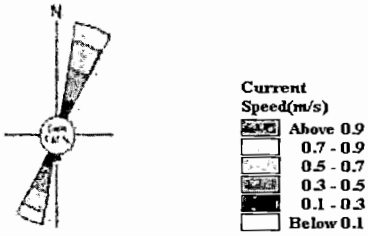
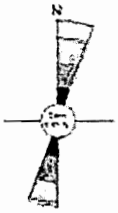
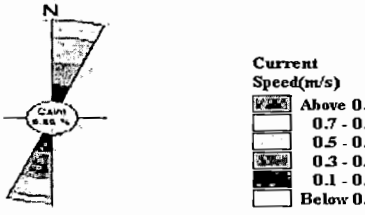
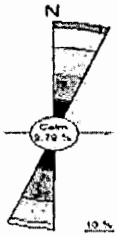
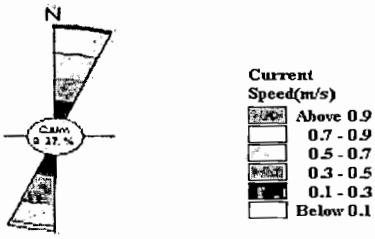
Before dredging and Reclamation	After dredging and Reclamation	Remarks
		Segment 1
		Segment 2
		Segment 3
		Segment 4
		Segment 5

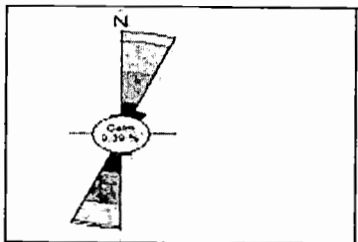
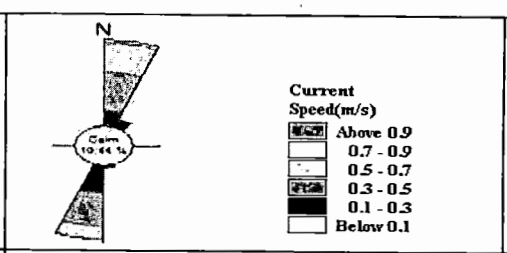
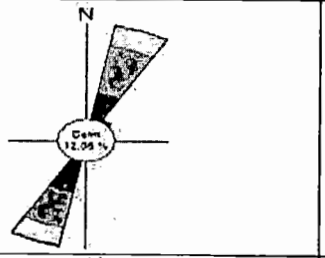
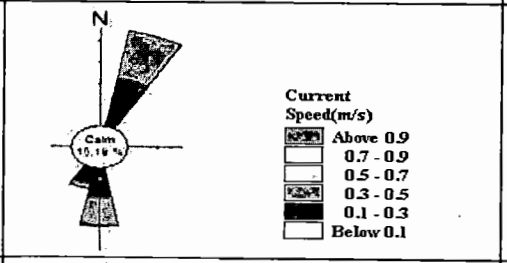
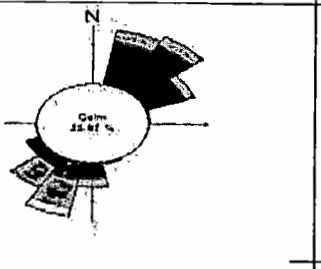
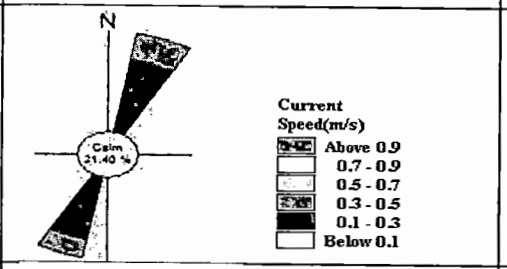
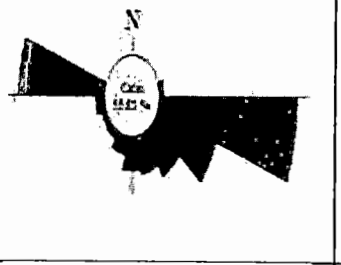
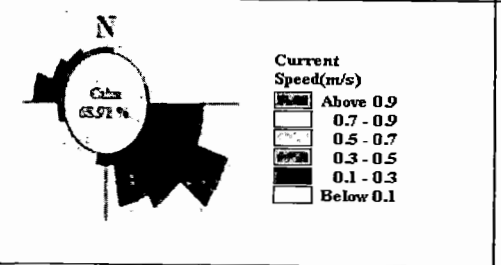
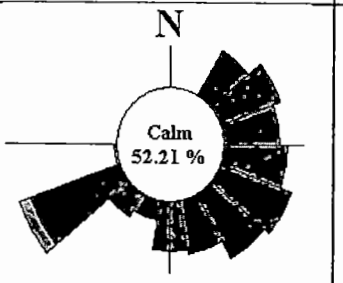
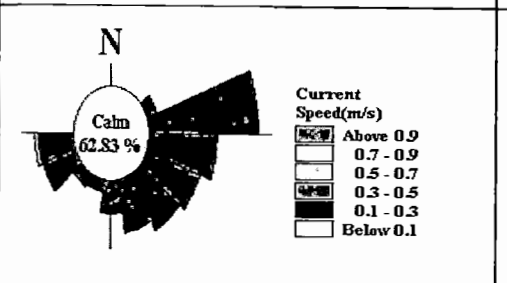
		Segment 6
		Segment 7
		Segment 8
		Segment 9

Very less wave heights of maximum 0.08m is observed in front of the segments 1 to 6 as the complete area is sheltered by Kanika Island. The wave approach the segments 1 to 6 at an angle of 10° to 20° which remains almost same even after reclamation. The reclamation carried out north of the Port as per Phase II expansion environmental clearance by enlarging the land area towards the sea at the segment 7 cause changed wave conditions, due to change in shore angle. The segment 7 experiences 35% of calm waves less than 0.04m before dredging and reclamation whereas the calm waves have reduced to 4% with high waves of 0.2m after dredging and reclamation, which is not a significant change.

The shoreline alignment and the bottom topography, after dredging and reclamation being carried out as per phase II clearance have changed the wave transformation from deep water to nearshore at segment 7. These changes in the wave characteristics because of the land reclamation may influence sediment transport pattern. Similarly the tidal currents at 9 segments were analysed and the results were presented in Table 2 to identify the significant changes in flow pattern due to the land reclamation.

Table 2 Tidal currents along the Dhamra Shoreline before and after dredging and reclamation

Before dredging and Reclamation	After dredging and Reclamation	Remarks
		Segment 1
		Segment 2
		Segment 3
		Segment 4

		Segment 5
		Segment 6
		Segment7
		Segment8
		Segment 9

From the plots it is understood that there is no major variations in tidal currents after the dredging and reclamation except minor changes in the direction of tidal currents at segment 6,7, 8 and 9 due to change in bathymetry and shoreline alignment. It is also observed that there is a considerable reduction in magnitude of tidal currents at segments 6,7,8 and 9 after dredging and reclamation.

Figure 28 and 29 shows the current vector plots during spring tide at pre and post reclamation respectively. Similarly, Figure 30 and 31 shows the current vector plots during neap tide at before and after dredging and reclamation respectively.

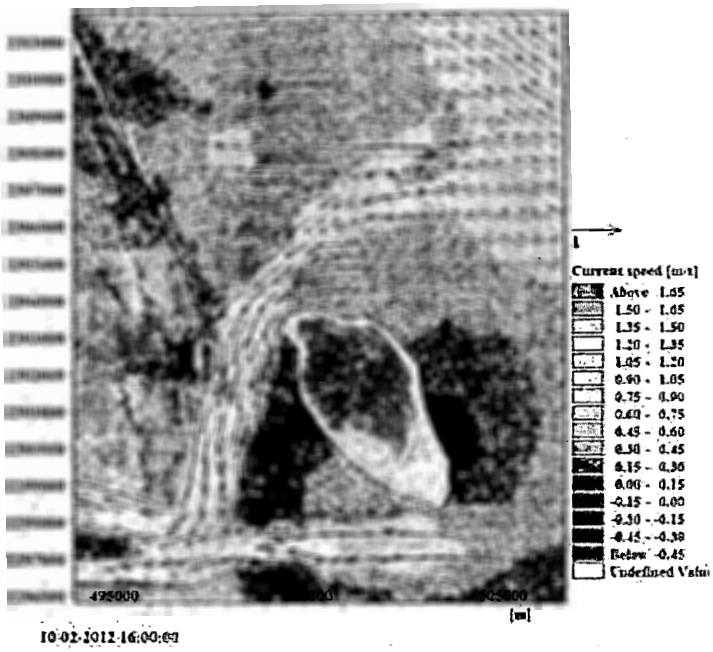


Figure 28 Vector plot of current speed before dredging and reclamation during spring tide

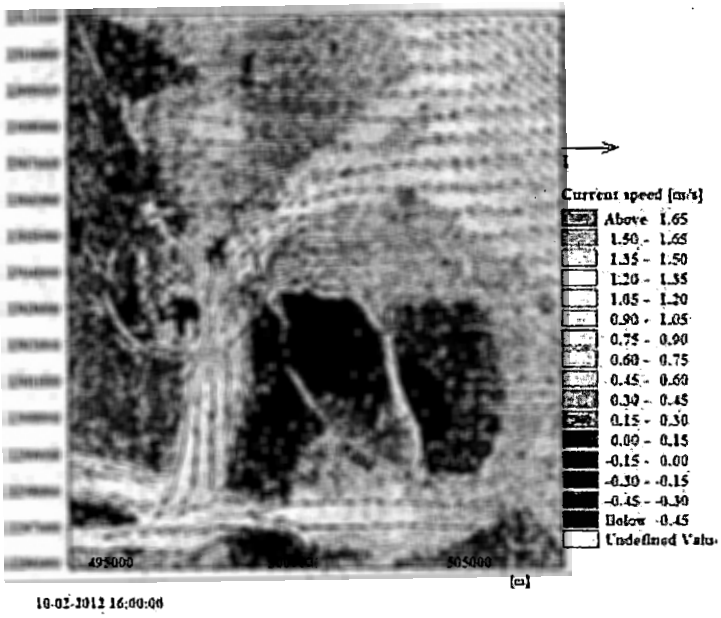


Figure 29 Vector plot of current speed after dredging and reclamation during spring tide

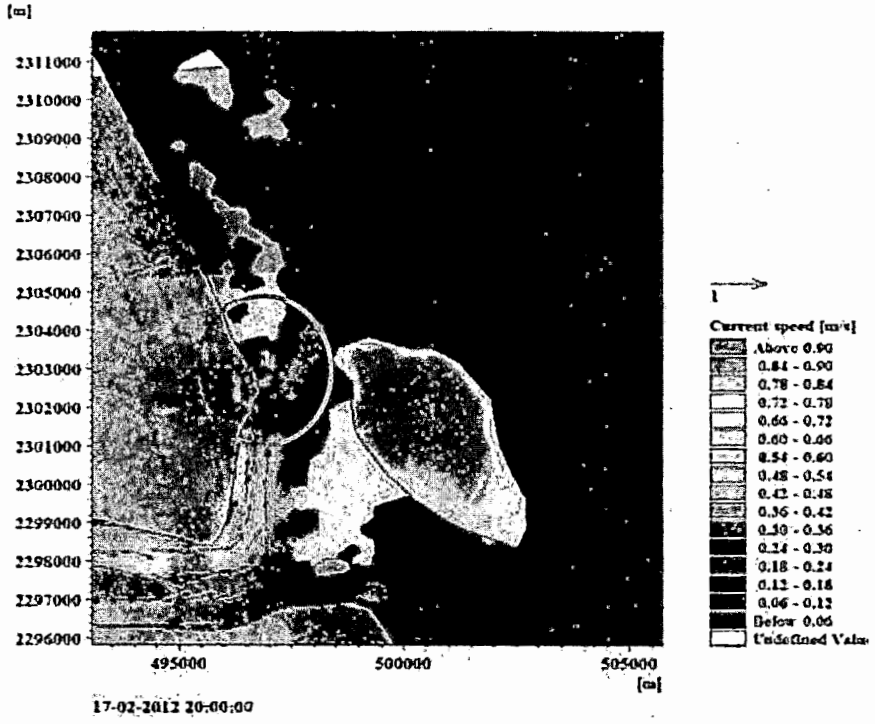


Figure 30 Vector plot of current speed before dredging and reclamation during neap tide

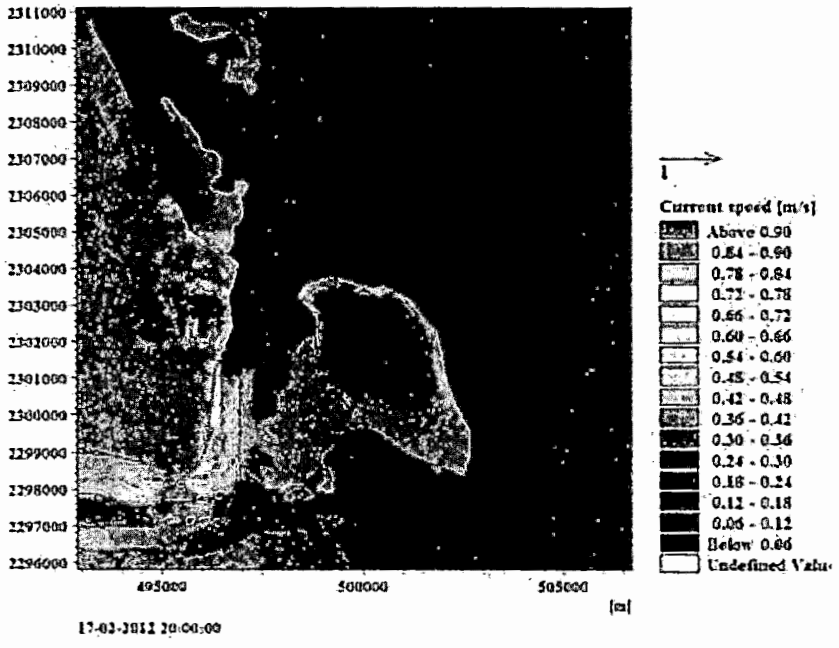


Figure 31 Vector plot of current speed after dredging and reclamation during neap tide

From the current field during flood and ebb, a small variation in current magnitude is observed after dredging and reclamation which is evident from Table 2 at segment 6,7,8 and 9.

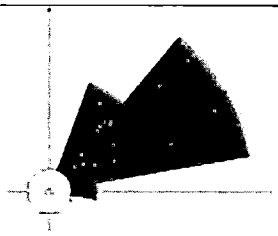
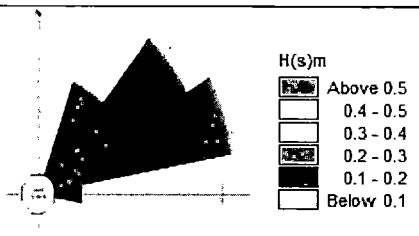
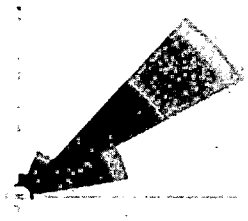
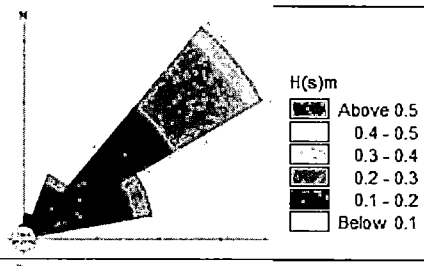
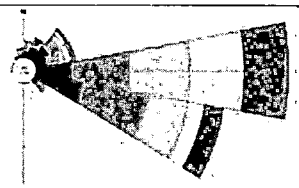
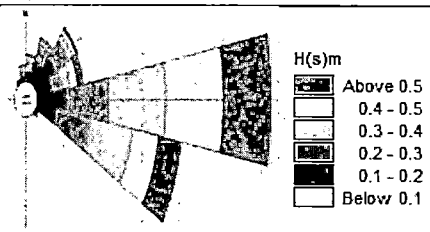
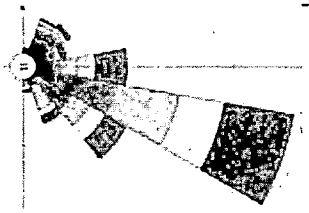
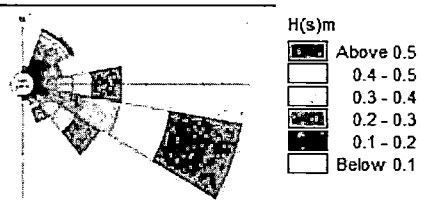
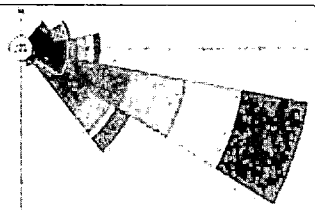
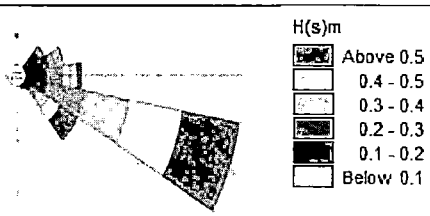
7.2. Impact of Dredging and dumping on Hydrodynamics along Eco sensitive areas

To understand the impact of dredging and reclamation along eco-sensitive areas ,the wave parameters and the currents were extracted near eco sensitive areas as shown in Figure 32.

Figure 32 Eco sensitive areas around Gahirmatha coast

The significant wave height and tidal currents around eco-sensitive areas such as Gahirmatha coast and Bhitarkanika before and after dredging and reclamation is tabulated in Table 3 and Table 4 respectively. It is clearly evident the significant wave height and Tidal currents remains same before and after dredging and reclamation which proves that there is no significant influence of dredging and reclamation on the eco-sensitive areas.

Table 3 Significant wave height around eco sensitive areas before and after dredging and reclamation

Before dredging and Reclamation	After dredging and Reclamation	Remarks
		Location 1
		Location 2
		Location 3
		Location 4
		Location 5

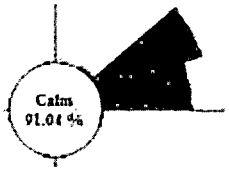
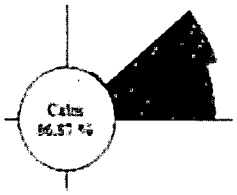
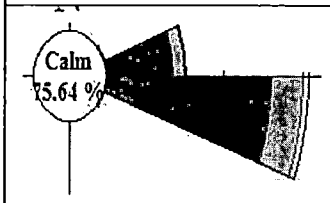
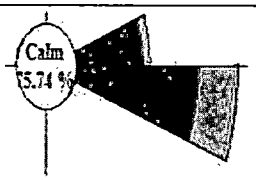
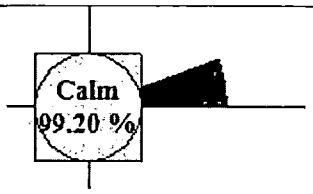
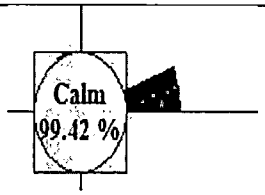
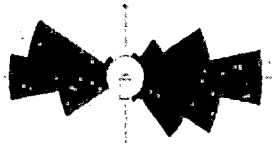
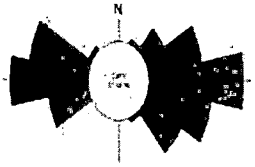
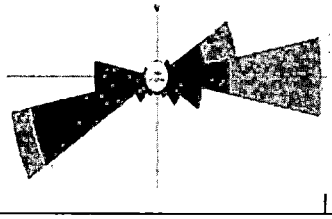
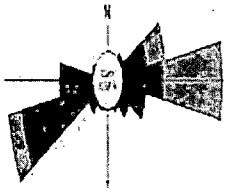
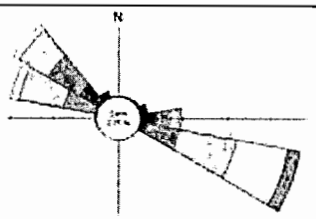
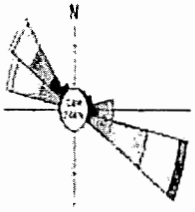
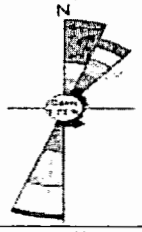
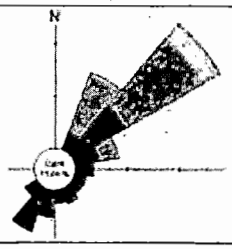
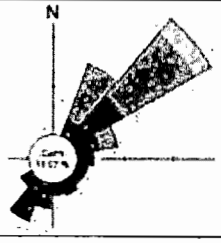
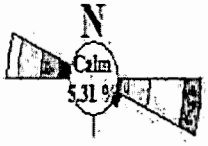
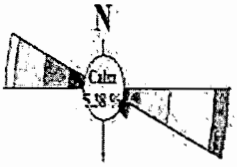
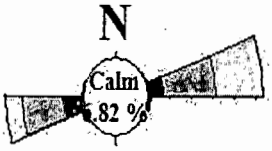
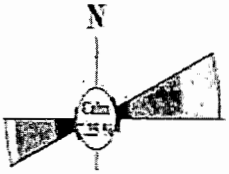
		Location 6
		Location 7
		Location 8

Table 4 Tidal currents around eco sensitive areas before and after dredging and reclamation

Before dredging and Reclamation	After dredging and Reclamation	Remarks
		Location 1
		Location 2

		Location 3
		Location 4
		Location 5
		Location 6
		Location 7
		Location 8

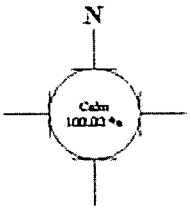
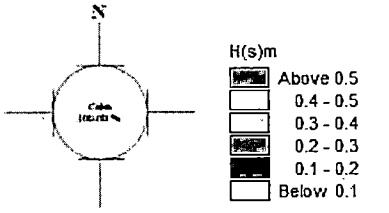
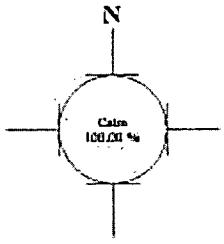
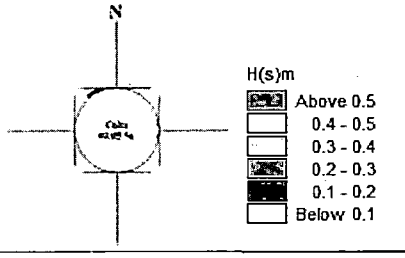
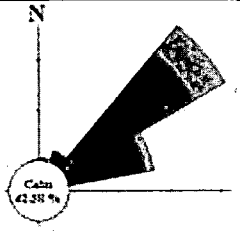
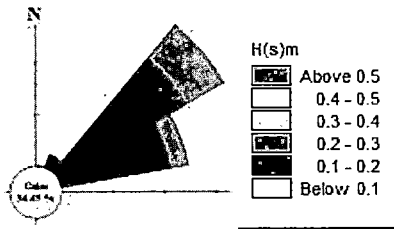
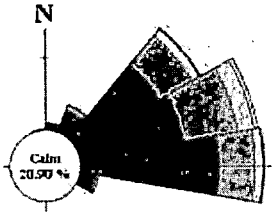
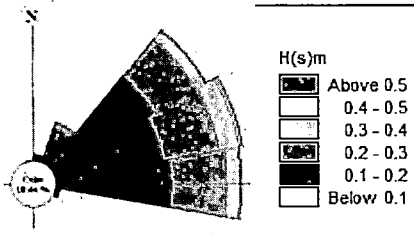
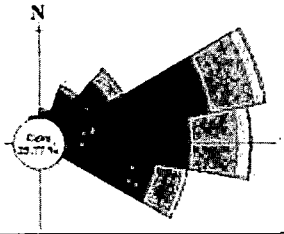
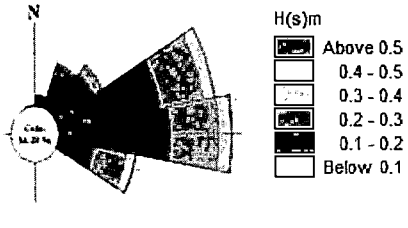
7.3. Impact of Dredging and dumping on Hydrodynamics around Kanika Island

To study the impact of dredging and reclamation on Kanika island the significant wave height and current speed around Kanika island as shown in Figure 33.

Figure 33 Locations around Kanika island for result extraction

The significant wave height and tidal currents around Kanika island before and after dredging and reclamation is tabulated in Table 5 and Table 6 respectively. There is no prominent change in magnitude or direction of significant wave height and Tidal currents before and after dredging and reclamation which proves that there is no significant influence of dredging and reclamation on the Kanika island.

Table 5 Significant wave height around Kanika island before and after dredging and reclamation.

Before dredging and Reclamation	After dredging and Reclamation	Remarks
		Location 1
		Location 2
		Location 3
		Location 4
		Location 5

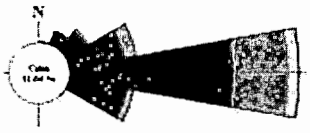
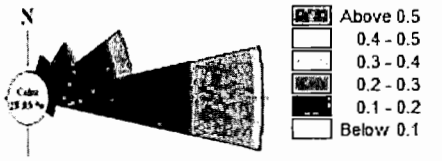
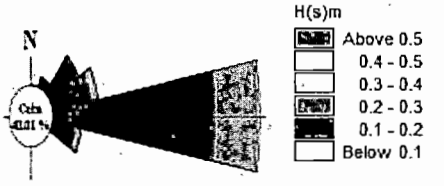
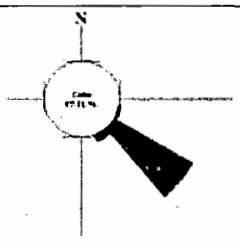
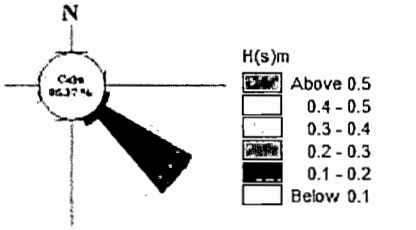
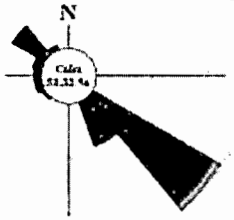
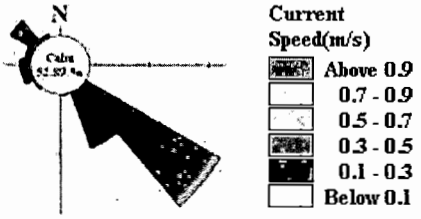
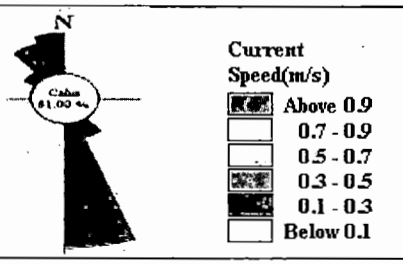
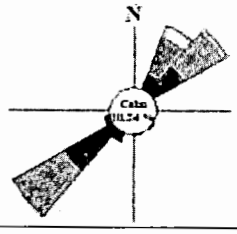
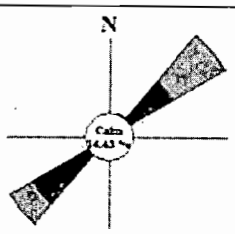
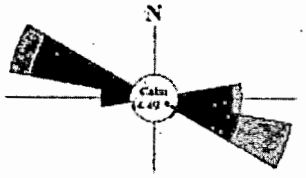
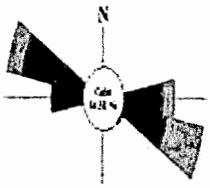
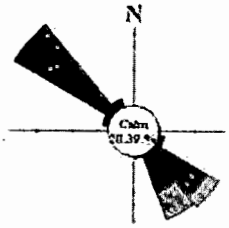
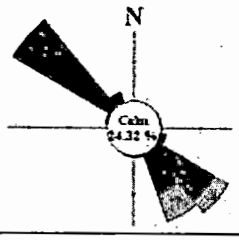
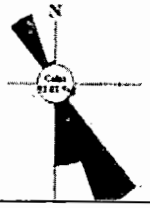
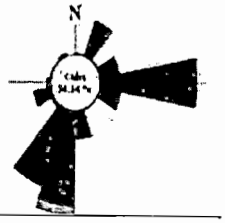
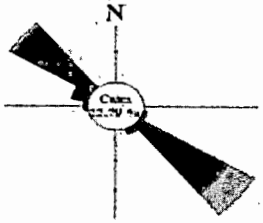
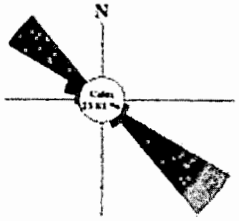
		Location 6
		Location 7
		Location 8

Table 6 Tidal currents around Kanika Island before and after dredging and reclamation

Before dredging and Reclamation	After dredging and Reclamation	Remarks
		Location 1
		Location 2

		Current Speed(m/s) Above 0.9 0.7 - 0.9 0.5 - 0.7 0.3 - 0.5 0.1 - 0.3 Below 0.1	Location 3
		Current Speed(m/s) Above 0.9 0.7 - 0.9 0.5 - 0.7 0.3 - 0.5 0.1 - 0.3 Below 0.1	Location 4
		Current Speed(m/s) Above 0.9 0.7 - 0.9 0.5 - 0.7 0.3 - 0.5 0.1 - 0.3 Below 0.1	Location 5
		Current Speed(m/s) Above 0.9 0.7 - 0.9 0.5 - 0.7 0.3 - 0.5 0.1 - 0.3 Below 0.1	Location 6
		Current Speed(m/s) Above 0.9 0.7 - 0.9 0.5 - 0.7 0.3 - 0.5 0.1 - 0.3 Below 0.1	Location 7
		Current Speed(m/s) Above 0.9 0.7 - 0.9 0.5 - 0.7 0.3 - 0.5 0.1 - 0.3 Below 0.1	Location 8

8. NEARSHORE SEDIMENT TRANSPORT

When waves approach the coast they will break and lose their energy. As a consequence of this, sediment may be resuspended and a wave driven current along the coast will be generated. Based on information about the waves and the local bathymetry and sedimentological conditions it is possible to estimate the annual sediment drift by computations with a numerical model.

Figure 34 Sediment Transport pattern before dredging and reclamation

Figure 35 Sediment Transport pattern after dredging and reclamation

In assessing the sediment transport behaviour for the study area, the sediment transport rate patterns for the northern area was computed as well as the transport pattern in the land reclamation area before and after the fill. Along the stretch, the littoral drift is modelled through 10 individual shore normal transects. The littoral drift is modelled based on detailed wave

climates, for two situations, before and after the dredging and reclamation scenarios. It is found the divergence point observed between segment 8 and 9 before dredging and reclamation scenario has moved between segment 7 and 8 after dredging and reclamation.

9. CONCLUSION

The impact of dredging and dumping of sediment on Dhamra Shoreline, eco-sensitive areas including Kanika island was analysed using Numerical model validated with site specific data provided by Dhamra Port, collected during the year 2012.The coastal processes affecting the sediment transport and the changes on coastal morphology before and after dredging and reclamation scenarios were simulated and the major observations are as follows,

- The major part of the Dhamra coastline is protected by Kanika island from direct wave impact and forms a shadow region west of the island. Maximum wave heights of only 0.08m is observed (Table 1) along the Dhamra coast, south of the Port as the complete area is sheltered by Kanika island and hence the sediment movement along the Dhamra coast is not majorly influenced by the waves.

- The impact of dredging and reclamation on Dhamra coastline indicate no significant change on hydrodynamics (waves and currents) except minor variation in nearshore currents due to change in orientation of shoreline (Table 2) due to dredging and reclamation carried out north of the Port as per Phase II expansion environmental clearance.

- Numerical model was established to study the impact of change in shoreline angle on sediment transport pattern .Numerical model before dredging and reclamation indicate divergence in sediment transport to the north of reclamation(Figure 34). However after dredging and reclamation the divergence nodal point moved away from mangroves (Figure 35) which may reduce the impact on mangroves.

- The dredging and reclamation do not show any major variation in hydrodynamic parameters around eco-sensitive areas (Table 3&4). No changes at Kanika island is noticed from the Numerical model results (Table 5& 6).

The proposed dredging and dumping of sediment for reclamation as per phase II clearance has no significant influence on the Dhamra shoreline, eco sensitive areas and Kanika island. However, it is ensured that disposal sites need to be monitored for suspended sediment concentration at the time of dredging and reclamation.

Annexure - VIII

adani

DPCL
(A wholly owned subsidiary of APSEZ)

DPCL/ENV 06/02/2015 20th Nov 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

Dear Sir,

Sub : Half yearly Compliance report of Environment and CRZ Clearance for expansion of Dhamra Port at Dhamra, Bhadrak District of Odisha 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/26027/8/98-PDZ (CRZ), F. No. 11-104/2009-IA-III dt. 1st Jan, 2014 & subsequent amendment dt. 25th March, 2015 and OCZMA recommendation vide letter no. OCZMA-1/2018-13/No.17 dt. 20th December, 2012

With reference to the above mentioned letter for the said subject matter, please find enclosed herewith the compliance to the conditions stipulated in the letters for the period of Apr' to Sep'15 in both hard & soft copy for your kind reference.

Thank you,
Yours Sincerely,

(Subrat Tripathy) 20/11/15
Chief Executive Officer

GOVT. OF INDIA MoEF & CC, Eastern R.O Bhubaneswar-751023
26 NOV 2015
RECEIVED

Encl: As above

Copy to:

1) The Director (Monitoring –IA-III 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, Parivesh Bhawan, A/118, Unit 8, Nilakantha Nagar, Nayapalli, Bhubneswar-751012
4) The Regional Officer, State Pollution Control Board, Odisha, Plot. Sahadev Khunta, Balasore - 756001

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	Compliance
			Constructional Phase		
1.	Development / Expansion of Port	Existing land use	Impact on nearby mangrove areas	Scattered mangroves identified near southern boundary of the port in phase I development needs to be conserved. 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	Scattered mangroves identified near southern boundary of Phase I development spread over an area of 9 ha. are being conserved by fencing. A buffer of 50m is being maintained between the project boundary and mangrove vegetation. Awareness programs for mangrove conservation for port workers are being undertaken
		Impact on turtle nesting	Glare of Port Light may cause disturbance to hatchlings	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	DPCL has already implemented the suggested mitigation measures during Phase I and these measures shall also be implemented during Phase II Expansion of port.
2.	Capital dredging and reclamation	Marine water quality	Increase in turbidity Change in marine water	Checking of turbidity levels with baseline levels as reference during entire monitoring programme	DPCL regularly monitors the turbidity levels as a part of marine Environmental monitoring by NABL accredited organization to ensure that the turbidity levels are well within the

					baseline level..
3	Material transport and construction activities	Air Quality	Exhaust emissions from vehicles Dust suspension during site preparation and construction	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	We have a regular air monitoring protocol twice a week to ensure air quality parameters never exceed the prescribed limits. Vehicular Traffic Speed is kept limited to 20 kmph Regular water sprinkling on roads are done by water tankers.
		Noise	Noise from following activities Vehicles transporting construction	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	We have a strict maintenance regimen for all plant machinery and equipment which is reviewed by the management every day. PPE's like Earplug, muffs are being used in noise prone areas.

			material Diesel run engines of construction machinery and dredgers Pile driving activities during construction of cargo berths	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	Noise level monitoring is being carried out by a MoEF & CC accredited agency.
		Disturbance to Natural Drainage pattern	Impact to natural flow of runoff due to blockage and change of drainage course	Adequate storm water drainage system will be provided. If natural drainage disturbed, it will be reinstated	Project activities are being carried out at DPCL in such a way that, creek and drainage pattern of the area are not being disturbed, However DPCL is in the process of preparing detailed storm water drainage pattern to address dredging pattern of the area around the project and implementation will be done accordingly
		Vegetation and Strain on existing	Loss of vegetation and strain on existing infrastructure	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	Worker Camps have been provided with sufficient infrastructure and electricity and tree cutting is forbidden within the port
		Existing Traffic	Traffic addition	The existing road will be	Government of Odisha has already

				strengthened to cater the increased traffic	started widening this road to a two lane road with paved shoulder which shall cater the increased traffic
4	Land Reclamation	Existing Water Resources like Groundwater and surface water	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	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.	Reclamation activity is being done within reclamation bunds and it is physically separated from the adjoining land mass.
5	Solid Waste Management	Soil quality	Impacts due to disposal of solid waste on ground	Construction waste will be used within port site for filling of low lying areas. Composted bio-degradable waste will be used as manure in greenbelt. Other recyclable wastes will be sold. 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.	Construction waste generated was used in low lying areas as a standard practice Bio- degradable waste is being used as manure for horticulture activities and for development of nursery Waste Segregation is being done at Point of Generation and Color Coded bins are in use in the Port Residential Area Burning of wastes is prohibited within the premises

6	Handling of hazardous wastes	Human safety and property loss	Accidents during construction	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.	We have a strict safety regimen with the motto "Safety First" Safety Observations are mandatory from every department of the port and immediate measures are undertaken to rectify the shortcoming. OHSAS Guidelines and MSIHC Guidelines are followed for Hazardous wastes
7	Fishing	Fishermen and fishing villages	Impact on fishing due to Construction works	Signboards will be placed at the construction sites in order to make fishermen aware of the ongoing activities	Our navigational channel is well marked with marker buoys and fishermen community are regularly sensitized via our well-staffed CSR Team on Port Activities
Operational Phase					
1.	Cargo handling and Inland Cargo movement and storage areas	Air Quality	Emissions from loading/unloading equipment, DG sets, vehicular dust emissions, fugitive emissions from storage areas, spillage of cargo	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	Operational Phase (Phase –II)shall commence only after completion of the construction phase

				Periodic cleaning of cargo spills and speed regulations for vehicles engaged in transportation	
		Noise	Due to equipment handling and vehicular movement Ship (un)loading operations	Acoustic Barriers and Enclosures Personal Protection Equipment (PPE) Counseling and traffic regulation	Operational Phase (Phase –II) yet to commence
		Traffic Addition	Cargo movement from/to port	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	Operational Phase (Phase –II) yet to commence
2.	Aqueous discharges in harbor basin	Marine water quality and ecology	Change in marine water quality/ ecology due to discharge of ship wastes, sewage, ballast water, bilge water, solid waste etc.	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 harbor Provision of waste reception facility for bilge oily water and waste oil will be provided	Operational Phase (Phase –II) yet to commence All visiting ships are MARPOL Compliant
3.	Accidental Cargo and Oil spills	Marine water quality and ecology	Change in marine water quality	In case of any cargo spillage during transfer from/to ships, it will be attempted to recover the spills.	Operational Phase (Phase –II) yet to commence

				Oil spill control equipment such as booms / barriers will be provided for containment and skimmers will be provided for recovery Response time for shutting down the fueling, containment and recovery will be quicker.	Oil Spill Containment equipment in readiness. Oil Spill drills are conducted on a regular basis
4.	Maintenance dredging	Marine water quality	Increase in turbidity	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.	Operational Phase (Phase –II) yet to commence
		Marine Ecology	Due to decrease in DO levels which effect marine ecology and disturbance to benthic communities.		
5.	Water Supply	Water resources	Impact on existing water resources	Government of Odisha has accorded permission for water intake of 5 MLD from Matai River which can cater requirement for port expansion. Water	Operational Phase (Phase –II) yet to commence

				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.	
6.	Wastewater Discharge	Water Quality	Impact due to discharge of runoff from stock piles and disposal of untreated sewage	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	Operational Phase (Phase –II) yet to commence
7.	Solid Waste Management	Groundwater and Soil quality	Impact due to disposal of untreated solid waste on ground	Composted bio-degradable waste will be used as manure in greenbelt. Other recyclable wastes will be sold.	Garbage Yard Space allocated for Phase II Operational Phase. Solid Waste Management would be done by Segregation at Generation Points
8.	Cargo Movement	Existing infrastructure	Increase in Traffic Addition	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	Rail Road Corridor infrastructure would be augmented to cater the increased traffic
9.	Handling of hazardous materials	Accidents due to products handling	Human life and loss of property	Hazardous materials will be stored as per the prescribed/approved (MSIHC) safety norms.	Used Oil is the only hazardous waste being handled currently and it is being recycled through authorized

				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.	recyclers. Proper Care is taken when handling of this waste and a well-marked storage shed is used for storage of used oil. Hazardous Waste Storage and Handling Facilities will be upgraded during the Operational Phase
10.	Fishing activity	Fishermen livelihood	Impact on fishing due to vessel movement	Creation of awareness among the fisher folk about orientation of approach channel	Fishermen Community are a part of the port community and we have regular and positive interactions with them. Oriental of Navigational Channel is well marked with marker buoys and known to the fishing community

ANNEXURE-X ENVIRONMENT CLEARANCE COPY TO ZILLAPARISAD

The Dhamra Port Company Limited
Second Floor, Fortune Towers, Chandrasekharpur, Bhubaneswar - 751023.
Tel : 0674 - 2303829, Fax : 0674-2303828, E-mail : dpcl@dhamraport.com
Website : www.dhamraport.com, CIN-U45205OR1998PLC005448

DPCL

23.01.2014

To

The Chairman, Zilla Parishada, Bhadrak / Sarpanch, Dosinga Panchayat / NGO (Local)

Sub: Environmental Clearance for Phase- II Expansion of Dhamra Port

Dear Sir,

The Dhamra Port has been granted Environmental Clearance by the Government of India on 1st Jan 2014 for its second phase expansion. The copy of the EC is enclosed here with for your kind reference.

Yours Sincerely,

Himansu Shekhar Sahoo

Himansu S. Sahoo
AGM – CC & CSR
Dhamra Port Company Limited
Mob - 9777453847

J. Swain 24.1.2014

(Jagannath Swain)
President, Zilla Parishad

ANNEXURE-XI - LICENSE AND NOC FROM FIRE DEPT

LICENSE OF STORAGE OF EXPLOSIVES

भारत सरकार
Government of India
वाणिज्य और उद्योग मंत्रालय
Ministry of Commerce & Industry
पेट्रोलियम तथा विस्फोटक सुरक्षा संगठन (पैसो)
Petroleum & Explosives Safety Organisation (PESO)
F-35/A, बी. जे. बी. नगर,
भुवनेश्वर - 751014
F-35/A, BJB Nagar,
Bhubaneswar - 751014

E-mail : dyccobhub@explosives.gov.in
Phone/Fax No : 0674-2433370,2433390 Fax 2430056

संख्या /No : P/EC/OR/14/1587 (P237780)

दिनांक /Dated : 27/12/2016

27 DEC 2016

सेवा में /To,

The Dhamra Port Company Limited,
2nd. Floor, Fortune Towers,
Chandrasekharpur,
Bhubaneswar (M. Corp.).
Taluka: Bhubaneswar (M. Corp.).
District: KHURDA,
State: Odisha
PIN: 751023

विषय /Sub : Plot No, Plot No.696(P), Khata No.183, Mouza - Doshinga, Tahasil - Chandabali, District: BHADRAK, State: Odisha, PIN: 999999 में स्थित विद्यमान पेट्रोलियम वर्ग A,B Consumer Pump की अनुज्ञप्ति संख्या P/EC/OR/14/1587 (P237780) - नवीकरण के कदम में ।
Existing Petroleum Class A,B Consumer Pump at Plot No, Plot No.696(P), Khata No.183, Mouza - Doshinga, Tahasil - Chandabali, District: BHADRAK, State: Odisha, PIN: 999999 - Licence No. P/EC/OR/14/1587 (P237780) - Reg Renewal of Licence.

महोदय /Sir
(s).

कृपया आपके उपर्युक्त विषय से संबंधित पत्र संख्या DIN93748 दिनांक 27/12/2016 का संदर्भ ग्रहण करें ।

Please refer to your letter No. DIN93748 dated 27/12/2016 on the subject.

अनुज्ञप्ति सं P/EC/OR/14/1587 (P237780) दिनांक 04/10/2010 दिनांक 31/12/2016 तक नवीनीकृत कर लौटाई जा रही है

Licence No. P/EC/OR/14/1587 (P237780) dated 04/10/2010 is returned herewith duly renewed upto 31/12/2018.

कृपया पेट्रोलियम नियम,2002 के अधीन बनाए गए नियम 148 में दी गई प्रक्रिया का कड़ाई से पालन करें । अनुज्ञप्ति के नवीकरण हेतु समस्त दस्तावेजों को दिनांक 31/12/2018 या उससे पहले इस कार्यालय में प्रस्तुत करें ।

Please follow the procedure strictly as laid down in rule 148 of the Petroleum Rules, 2002 and submit complete documents for the Renewal of the licence so as to reach this office on or before 31/12/2018.

कृपया पावती दें । Please acknowledge the receipt.

भवदीय /Yours faithfully

(सुबासिश रे)
(Subasis Ray)
विस्फोटक नियंत्रक
Controller of Explosives
कृते उप मुख्य विस्फोटक नियंत्रक
For Dy. Chief Controller of Explosives
भुवनेश्वर
Bhubaneswar

(आधिक जानकारी जैसे आवेदन की स्थिति, शुल्क तथा अन्य विवरण के लिए हमारी वेबसाइट : http://peso.gov.in देखें)
(For more information regarding status,fees and other details please visit our website http://peso.gov.in)

NO OBJECTION CERTIFICATE FROM OFS, ODISHA GOVT. TO DPCL ON FIRE SAFETY

OFFICE OF THE FIRE PREVENTION OFFICER;
ODISHA, BHUBANESWAR

No 293 /FPW,BBSR Dt. 05.04.2013

To

The Manager Environment Health Safety,
The Dhamra Port Company Ltd.

Ref:- Your letter No. DPCL/EHS/SO-287 dtd.08.12.2010.

Sub:- Grant of NOC from fire safety point of view to Dhamra Port.

***

Dear Sir,

With reference to the letter on the subject cited above this is to intimate that on your request the fire protection system of Dhamra Port was inspected on 09.03.2013 by a joint team comprising of Deputy Fire Officer, Fire Prevention Wing, Bhubaneswar and Deputy Fire Officer, Bhubaneswar Circle. The observations are as under.

Observations

The team inspected the following establishments/areas of Dhamra Port which are important from fire safety point of view.

1. Motor Control Center-1,2,3,4(Single storied).
2. Fire water Pump house- Single floor.
3. Water treatment Plant-G+1 floor.
4. Administrative Office-Single floor.
5. Rail loading system for coal.
6. Rail loading system for Lime stone.
7. Switch yard.
8. Coal stack pile area.
9. Jetty area.
10. Transfer points.

[illegible] protection [illegible] provided [illegible] mentioned [illegible] indicated against [illegible].

Sl No.	Name of area	No. of external hydrant	No. of internal hydrant.	No. of Monitors	Smoke detectors	Manual call point with hooters
01	Motor Control Center-1	1 no.	-----	----	32 nos	02 nos
02	Motor Control Center-2	2nos	-----	-----	18 nos	02 nos
03	Motor Control Center-3	2nos	-----	----	09 nos	01 no.
04	Motor Control Center-4	2nos	----	----	06 nos	01 no.
05	Fire water Pump house	01 no.	----	---	--	-----
06	Water treatment Plant	-----	-----	---	---	---
07	Administrative Office	04 nos	06 nos	---	----	---
08	Rail loading system for Coal	---	06 nos	01 no.	-----	---
09	Rail loading system for Lime stone	---	05 nos	01 no.	--	--
10	Switch yard.	01 no.	---	---	---	---
11	Coal stack pile area	59 nos	----	13 nos	---	----
12	Jetty area.	16 nos	----	---	----	----
13	Transfer points	-----	03nos. in each	---	----	---

The entire Port area have been provided with hydrant system. Near each external/ internal hydrant point 01 hose box containing 02 delivery hoses of 15 mtrs length each and 01 branch pipe has been provided. Besides the entire Coal stack pile area has been provided with water sprinkling system. The control room has been set up and a panel board connecting all the Smoke detectors has been installed there. One fire pump house has been setup where one electric pump and one diesel pump of 4555 ltrs/min capacity each and one Jockey pump of 450 ltrs/min capacity have been installed to supply water to the hydrant and sprinkling system. Two nos. Fire water reservoir of 6,00,000 ltrs capacity each have been provided to supply

[illegible] required points.

All the above mentioned fire protection measures were test checked and found working properly.

The stacking of coal in the pile area should be done as per IS: 3595/2002

Yours sincerely,

Fire Prevention Officer
Odisha, Bhubaneswar

Memo No._____/FPW,BBSR Date .03.2013

Copy submitted to the I/C Chief Fire Officer, Odisha, Cuttack/D.G & I.G of Police, Fire Service, Odisha, Cuttack for favour of information.

Sd/-

Fire Prevention Officer
Odisha, Bhubaneswar

ANNEXURE-XII – ADVERTISEMENT IN LOCAL NEWSPAPER INTIMATING GRANT OF ENVIRONMENTAL & CRZ CLEARANCE

SAMBAD, Bhubaneswar
17 Jan 2014, P. 5

ବିଜ୍ଞପ୍ତି

ଧାମରା ପୋର୍ଟର ଦ୍ୱିତୀୟ ପର୍ଯ୍ୟାୟ ସମ୍ପ୍ରସାରଣ ପାଇଁ ଭାରତ ସରକାରଙ୍କ ପରିବେଶ ଓ ଜଙ୍ଗଲ ବିଭାଗ ଚିଠି ସଂଖ୍ୟା F.No. 11-104/2009-IA-IIIରେ ତା୧.୧.୨୦୧୪ରିଖରେ ପରିବେଶ ଓ ଉପକୂଳ ସମ୍ବନ୍ଧୀୟ ମଞ୍ଜୁରି ପ୍ରଦାନ କରିଛନ୍ତି । ଏଥିନେଇ ସବିଶେଷ ତଥ୍ୟ http://www.envfor.nic.inରେ ଉପଲବ୍ଧ ଅଛି ।

SAMBAD
ସମ୍ବାଦ

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P. 5
୧୬ ଜାନୁୟାରୀ ୨୦୧୪

ବିଜ୍ଞପ୍ତି

ଧାମରା ପୋର୍ଟର ଦ୍ୱିତୀୟ ପର୍ଯ୍ୟାୟ ସମ୍ପ୍ରସାରଣ ପାଇଁ ଭାରତ ସରକାରଙ୍କ ପରିବେଶ ଓ ଜଙ୍ଗଲ ବିଭାଗ ଚିଠି ସଂଖ୍ୟା F.No. 11-104/2009-IA-IIIରେ ତା୧.୧.୨୦୧୪ରିଖରେ ପରିବେଶ ଓ ଉପକୂଳ ସମ୍ବନ୍ଧୀୟ ମଞ୍ଜୁରି ପ୍ରଦାନ କରିଛନ୍ତି । ଏଥିନେଇ ସବିଶେଷ ତଥ୍ୟ http://www.envfor.nic.inରେ ଉପଲବ୍ଧ ଅଛି ।

Annexure- XIII

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DPCL/ENV-12/01/16

15th September, 2016

To
The Member Secretary
State Pollution Control Board, Odisha
A/118, Nilakantha Nagar, Unit –VIII,
Bhubaneswar - 751012

Dear Sir,

Sub: Environmental Statement for the financial year ending 31st March, 2016 for M/s Dhamra Port Company Limited.

Ref: Consent Order No. 6441/IND-I-CON-6348 dated 04.04.2016

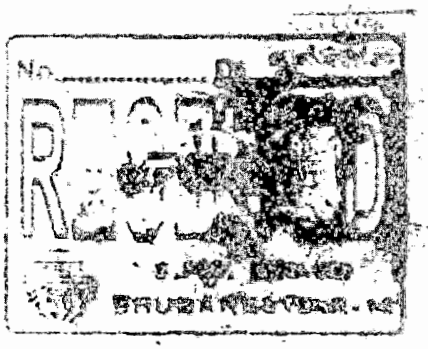
With reference to the above mentioned subject, please find enclosed Environmental Statement in Form V prescribed under Rule 14 of the Environment (Protection) Rules 1986, for M/s Dhamra Port Company Limited for the financial year ending 31st March 2016.

Thanking you,

Yours faithfully,
For Dhamra Port Company Limited

Subrat Tripathy
Chief Executive Officer

Encl: As above.



17-09-16

Copy to: The Regional Officer,
State Pollution Control Board, Odisha,
160, Sahadev Khunta,
Balasore, Odisha

The Dhamra Port Company Limited

At: Dosinga, Po. Dhamra
Dist: Bhadrak
PIN: 756171
Odisha, India
CIN: U45205OR1998PLC005448

Tel + 91 674 2304500 (Bhubaneswar)
+ 91 6786 270100 (Dhamra)
Fax + 91 674 2303828
reach.dhamraport@adani.com
www.adani.com
www.dhamraport.com

Registered Office: H/0-20, BDA Colony, Jayadev Vihar, Bhubaneswar – 751 013, Odisha, India

FORM V
(See Rule 14)

Environmental Statement for the Financial Year ending 31st March 2016

PART – A

(i)	Name and address of the Owner/ Occupier of the Industry Operation or Process	:	Subrat Tripathy Chief Executive Officer M/s The Dhamra Port Company Limited (DPCL) Village-Dosinga, Po.-Dhamra, Dist-Bhadrak
(ii)	Industry Category Primary (STC Code) Secondary (STC Code)	:	Red-B NA NA
(iii)	Production Capacity	:	25 MTPA
(iv)	Year of Establishment	:	2000
(v)	Date of last Environment Statement submitted	:	12th September, 2015

PART – B

Water and Raw Material Consumption

(i) Water Consumption

Water Consumption Cu. Mtr./Day	
Process	Nil
Cooling	Nil
Domestic	265.6 m^3/day
Dust suppression	145.7 m^3/day
Fire fighting	1057.4 m^3/day

Name of Products	**Process Water Consumption per unit of Product Output**	
	During the current financial year (2014-15)	**During the current financial year (2015-16)**
Handling of Iron Ore, Coal, Limestone*	0.0229 m^3/Ton	0.0299 m^3/Ton

(ii) Raw Material Consumption

Name of Raw Material	**Name of Products**	**Consumption of Raw Material per Unit of output**	
		During the previous financial year (2014-15)	**During the current financial year (2015-16)**
NIL*	Not Applicable	Nil	Nil

*** Unit does not undertake any manufacturing process; hence there is no consumption of raw material**

PART – C

Pollutants discharged to Environment/Unit of Output
(Parameters as specified in consent issued)

Pollutants	Quantity of pollutants discharged (Mass/day)	Concentrations of pollutants in discharges (mass/volume)	Percentage of variation from prescribed standards with reasons
(a) Water	Nil*		
(b) Air	Monitoring data attached as Annexure-1		

*Unit does not manufacture anything, as it is a service industry (Port) engaged in handling and storage of cargo. No effluents are generated from the port. Treated water from the STP is used for horticulture purposes.

PART – D

Hazardous Wastes
(As specified under Hazardous Wastes Management and Handling Rules 1989)

Hazardous Wastes	Total Quantity (Kg)	
	During the previous financial year (2014-15)	During the current financial year (2015-16)
(a) From Process (Used oil)	10.159 KL	10.516 KL
(b) From Pollution Control facilities	Nil	Nil

PART – E

Solid Waste

Solid Waste	Total Quantity Generated (MT/Annum)	
	During the previous financial year (2014-15)	During the current financial year (2015-16)
(a) From Process (Ash)	Nil	Nil
(b) From Pollution Control facilities	Nil	Nil
(C-1) Quantity recycled or reutilized within the unit	Nil	Nil
(C-2) Sold	Nil	Nil
(C-3) Disposed	Nil	Nil

PART - F

Please specify the characterization (in terms of Composition and quantum) of Hazardous as well as solid wastes and indicate disposal practice adopted for both these categories of wastes:

- Generated used oil is disposed off through OPCB / CPCB authorized recycler (M/s Sri Laxmi Narayana Industries, East Godavari District, Andhra Pradesh).
- Composted bio-degradable waste is used as a manure in Green Belt

PART – G

Impact of the pollution abatement measures taken on conservation of natural resources and on the cost of production

Unit has installed Sewage Treatment Plant for treatment of the Sewage water being generated at site. The treated water is being reused within port premises. Full cut off lighting has effectively negated the sky ward light pollution in the vicinity of the port.

During the financial year 2015-16, the total of Rs. 0.93 Crores was incurred on environmental protection measures.

PART – H

Additional measures /investment/ proposal for environmental protection including abatement of pollution, prevention of pollution.

- Green belt has been developed at the port site and along the 62 km Rail/Road corridor of DPCL. Strip plantation on both the edges of railway corridor has been taken up and 1,79,500 plants have been planted along the north & south edges of the corridor till date. Plantation of suitable species has been taken up in and around the port area and admin/Residential area with effect from 2010 & is continuing. So far 1,93,500 plants suitable for the site have been planted at Port site apart from the rail road corridor plantation mentioned above.

- Scattered mangroves near southern boundary of port in phase I development were excluded by protection & steps taken for conserving them.

PART – I

Any other particulars for improving the quality of environment:

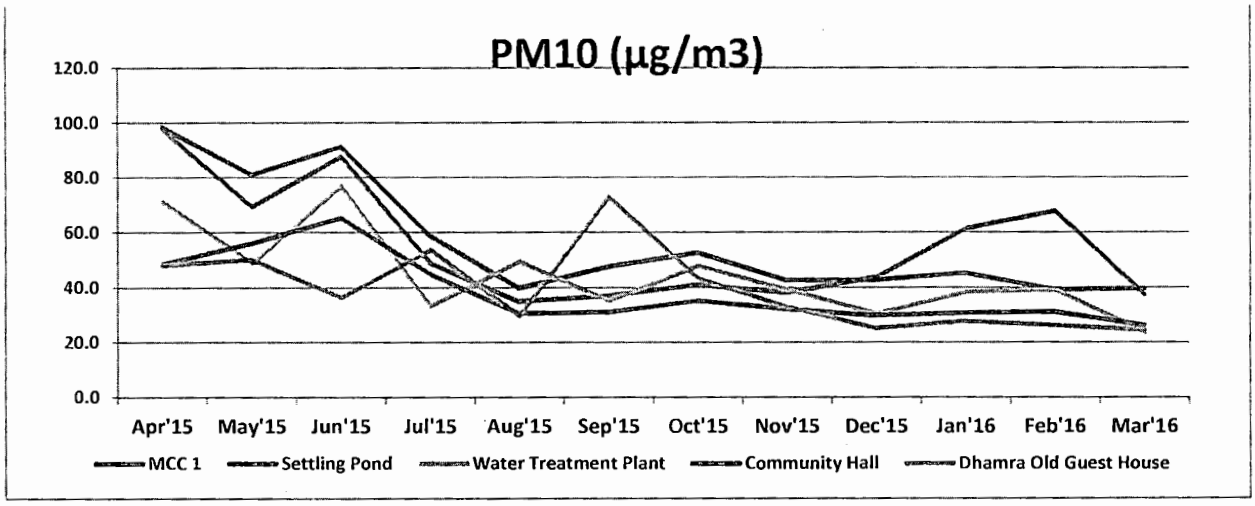
- Specialized illumination system in line with "International Dark Sky Association (IDA)" has been installed to avoid illuminating the sky or focusing light towards sea. Sodium vapour lamps are being used instead of mercury lamp. All area lighting, roadway lighting and lighting mounted on masts or other elevated structures are of full cutoff luminaries.

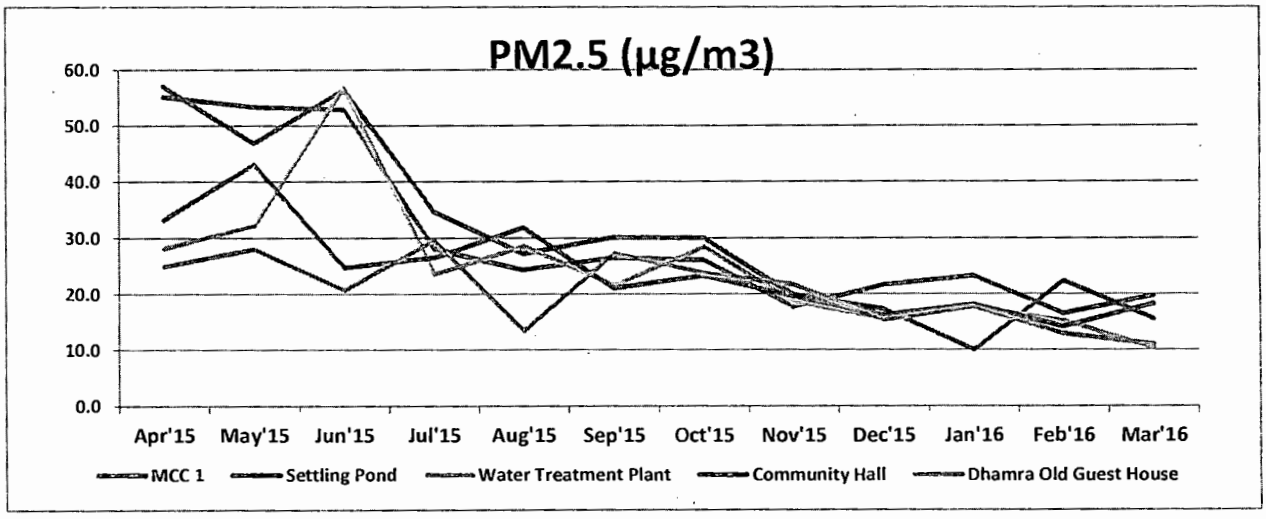
- Deflectors are installed on drag-head of dredgers to keep turtles out of path of dredger. Screens are also installed in inflow/overflow pipes of dredgers to monitor turtle entrainment. There are observers on Dredgers to ensure implementation of IUCN Dredging Protocol.

Date : 15-09-2016

(Signature of a person carrying out an industry, operation or process)
Name : Subrat Tripathy
Designation : CEO
Address : M/s The Dhamra Port Company Limited
Village-Dosinga, Po. Dhamra,
Dist- Bhadrak, Odisha

Annexure 1





Note: Other parameters monitored as per AAQ standard were found to be BDL during monitoring.