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DPCL

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DPCL/ENV-06/01/2016 20th May 2016

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 2015 – March 2016**

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 2015 to March 2016 in both hard & soft copy for your kind reference.

Thank you,
Yours Sincerely,

(Subrat Tripathy)
Chief Executive Officer

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.

<u>Phase – I:</u> 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. Marine water quality and productivity is being monitored by MoEF accredited laboratory. The Marine Water quality report for the period Oct 2015 – Mar 2016 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. Dredging activity has been completed and at present the project i

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
		South to East. Fishing is carried out in deep sea. Therefore there shall be not be any disturbance to the fishing activity.
xx	It shall be ensured that there is no displacement of people, houses or fishing activity as a result of the project	Complied. The land covered under this project is dry mud, which falls in intertidal zone. No displacement of people or fishing activities for the project is envisaged.
xxi	No construction work other than those permitted in Coastal Regulation Zone Notification shall be carried out in Coastal Regulation Zone area.	Complied. Only permitted activities as per CRZ notification are carried out.
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 man power 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 3.34Crores has been spent for FY 2015-16. Details of the same are annexed in **Annexure-VIII**
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	Complied. Six monthly compliance report is regularly

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
	Regional Office of this Ministry at Bhubaneswar regarding the implementation of the stipulated conditions.	submitted to Regional Office of MoEF & CC, Bhubaneshwar. Last compliance report for April – September, 2015 period was submitted vide our letter dated 20.11.2015
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 Ministry.	Point Noted
vi	In the event of a change in project profile or change in the implementation agency, a fresh reference shall be made to the Ministry of Environment and Forests.	Complied. An application for revised master plan of Dhamra port is already submitted to MoEF &CC with a fresh reference and Terms of Reference for the same have been issued. Baseline Monitoring in line to the TOR is under progress.
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.
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 attached as **Annexure-XI**
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	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
	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.	
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 attached as **Annexure-XII**
10	The project proponent shall advertise in at least two local Newspapers widely circulated in the region, one of which shall be in the vernacular language informing that the project has been accorded Environmental and CRZ Clearance and copies of clearance letters are available with the Odisha State Pollution Control Board and may also be seen on the website of the Ministry of Environment and Forests at http://www.envfor.nic.in. The advertisement should be made within 10 days from the date of receipt of the Clearance letter and a copy of the same should be forwarded to the Regional Office of this Ministry at Bhubaneswar.	Complied. Advertisement copies are attached as **Annexure-XIII**
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	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
	a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.	
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 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 attached as **Annexure-XI**
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 attached as Annexures to the compliance report. Hard copy as well as soft copy of the same are submitted to all concerned authorities.
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 attached as Annexures to the compliance report. Hard copy as well as soft copy 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	Complied. Environmental statement for FY 2014-15 was submitted to OPCB with a copy to the Regional Office of MoEF & CC vide our letter no DPCL/ENV-

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**
	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.	12/01/15 dated 15th Sep 2015. Copy of the same is attached as **Annexure – XIV** 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. Water sprinkling is being done on regular basis to ensure dust suppression in Phase-I ore storage area and vehicular paths/roads. Thick greenbelt is being developed all along the periphery of the port back up area.
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 Phase-I ore storage area and vehicular paths/roads.
v	All the recommendations of EMP and Disaster Management Plan (DMP) shall be complied with	Complied. Compliance of EMP can be referred as **Annexure X**

LIST OF ANNEXURES

S. No	Annexure Number	Details
1	Annexure-I	Marine Water Quality
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	STP Monitoring Report
6	Annexure-VI	Noise Monitoring Report
7	Annexure-VII	Ambient Air Monitoring Report
8	Annexure-VIII	Cost Break up of Environment Budget V/s Expenditure
9	Annexure- IX	INCOIS Board
10	Annexure-X	EMP & Action Plan Compliance
11	Annexure-XI	Environmental Clearance copy to Zillaparisad
12	Annexure-XII	License and NOC from Fire Dept.
13	Annexure – XIII	Advertisement in Local Newspapers intimating grant of Environmental & CRZ Clearance
14	Annexure – XIV	Environment Statement for FY 2015-16

ANNEXURE I – MARINE WATER QUALITY

A. SURFACE WATER ANYALYSIS

SURFACE WATER ANYALYSIS REPORT-MARCH 16

Sl no.	Parameters	Method	Unit	KE16-1876.001 Loc: Jetty South End 30.03.2016	KE16-1876.002 Loc: Midd Jetty 30.03.2016	KE16-1876.003 Loc: Jetty North End 30.03.2016	KE16-1876.004 Loc: Turning Circle East Side 30.03.2016	KE16-1876.005 Loc: Buoy No.10 Midd Channel 30.03.2016	KE16-1876.006 Loc: Buoy No.11 Midd Channel 30.03.2016	KE16-1876.007 Loc: Buoy No.14 Midd Channel 30.03.2016	KE16-1876.008 Loc: Buoy No.15 Midd Channel 30.03.2016
1	pH	APHA 4500 B		7.12	7.15	7.12	7.2	7.18	7.25	7.15	7.22
2	Temperature	APHA 2550 B	oC	29.3	29.5	29.3	29.6	29.2	29.1	29.2	29.1
3	Total Suspended Solids	APHA 2540 D	mg/L	13	6.0	7	5	14	18	10	12.0
4	BOD	IS 3025(Part 44):	mg/L	2.5	2.5	2.5	2.7	2.5	2.5	2.5	2.7

		1993									
5	Dissolved Oxygen	APHA 4500 B	mg/ L	1.2	1.4	1.2	1	1.3	1.5	1.1	<0.5
6	Salinity	APHA 2520 B	mg/ L	32	32.1	32	31.7	32	31.7	1.6	31.7
7	Oil & Grease	APHA 5520 B		BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)
8	Nitrite as NO2	APHA 4500 B	mg/ L	1.25	0.81	0.29	1.03	0.78	0.99	0.15	0.37
9	Ammoniac Nitrogen	APHA 4500 C	mg/ L	1.4	1.1	1.3	1.3	1.5	1.6	1.5	1.4
11	Kjeldahl Nitrogen	APHA 4500 B	mg/ L	1.6	1.5	1.6	1.6	1.7	1.8	1.6	1.6
12	Total Phosphates	APHA 4500 D	mg/ L	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
13	Total Nitrogen	APHA 4500 B	mg/ L	2.2	2	2.2	2.3	2.3	2.6	2.1	2.4
14	Total Dissolved Solids	APHA 2540 C	mg/ L	34370.0	29.5	34370.0	34092.0	34371.0	34091.0	34511.0	34092.0
15	COD	APHA 5220 B	mg/ L	224.2	261.5	186.8	261.5	298.9	224.2	298.9	336.2
16	Total	IS:	cfu/	210	440	260	2500	830	5700	3400	120

	bacterial count	1622:1981(Reaff:2003)	ml								
17	Coliforms	IS:1622-1981	per 100 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
18	Eschericia coli	IS:1622-1981	per 100 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
19	Salmonella	IS15187:2002	per 250 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
20	Shigella	IS 5887 (Part - 7):1999	per 250 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
21	Vibrio cholerae	IS 5887 (Part - 5):1976	per 250 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
22	Vibrio parahaemolyticus	IS 5887 (Part - 5):1976	per 250 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
23	Enterococci	ISO 7899 (Part 2):2000	per 250 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
24	Total	USEPA	mg/	BDL (	BDL (	BDL (	BDL (DL:10)	BDL (	BDL (	BDL (	BDL (

	Petroleum Hydrocarbons	8015	L	DL:10)	DL:10)	DL:10)		DL:10)	DL:10)	DL:10)	DL:10)
25	Nitrate as No3	APHA 4500 B	mg/ L	2.18	2.27	2.53	3.08	2.8	3.34	2.4	3.56
26	Abundance of phytoplankton	SO-IN-MUL-TE-112	No./ L	100000	60000	60000	60000	86600	66600	66600	80000
27	Groups of phytoplankton	SO-IN-MUL-TE-112		Diatom dinoflagellates	Diatom, algae	Diatom	Diatom, greenalgae	Diatom,algae	Diatom,Blue Green algae	20000	Diatom,Dinoflagellates
28	Abundance of zooplankton	SO-IN-MUL-TE-113	No./ L	0	0	6600	0	20000	20000	Diatom.Algae	0
29	Groups of zooplankton	SO-IN-MUL-TE-113		Nil	Nil	Adult copepod	Nil	Adult copepod	Copepod	Adult copepod	Nil

SURFACE WATER ANYALYSIS REPORT-FEBRUARY 16

Sl no.	Parameters	Method	Unit	KE16-001071.001 Loc:Jetty South End 25.2.2016	KE16-001071.002 Loc : Midd Jetty 25.2.2016	KE16-001071.003 Loc: Jetty North End 25.2.2016	KE16-001071.004 Loc: Turning Circle East Side 25.2.2016	KE16-001071.005 Loc: Buoy No.10 Midd Channel 25.2.2016	KE16-001071.006 Loc: Buoy No.11 Midd Channel 25.2.2016	KE16-001071.007 Loc: Buoy No.14 Midd Channel 25.2.2016	KE16-001071.008 Loc: Buoy No.15 Midd Channel 25.2.2016
1	pH	APHA 4500 B		7.12	7.10	7.15	7.12	7.18	7.15	7.14	7.15
2	Temperature	APHA 2550 B	oC	29	29.3	29.2	29	29.5	29.1	29.4	29
3	Total Suspended Solids	APHA 2540 D	mg/L	97.7	50.7	91	94.4	105.9	93.7	89.2	99.4
4	BOD	IS 3025(Part 44): 1993	mg/L	4.4	4.2	3.8	4	4.0	4.2	3.6	4.9
5	Dissolved Oxygen	APHA 4500 B	mg/L	1.2	1.1	1.1	1.3	1.2	1.4	1.1	1.4
6	Salinity	APHA 2520 B	mg/L	30.2	30.2	30.2	30.2	30.2	30.2	30.3	30.3

7	Oil & Grease	APHA 5520 B		<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
8	Nitrite as NO2	APHA 4500 B	mg/L	0.2	0.15	0.18	0.19	0.07	0.05	0.08	0.06
9	Ammonical Nitrogen	APHA 4500 C	mg/L	1.7	1.1	1.1	1.2	1.6	1.2	1.7	1.7
11	Kjeldahl Nitrogen	APHA 4500 B	mg/L	2.3	1.7	1.7	1.8	2.2	1.8	2.1	2.3
12	Total Phosphates	APHA 4500 D	mg/L	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
13	Total Nitrogen	APHA 4500 B	mg/L	3.7	2.8	2.9	3	3.6	3.3	3.7	3.3
14	Total Dissolved Solids	APHA 2540 C	mg/L	3.2618.0	32550.0	32620.0	32552.0	32616.0	32621.0	32690.0	32621.0
15	COD	APHA 5220 B	mg/L	354.9	354.9	317.6	336.2	3336.2	354.9	336.2	373.6
16	Total bacterial count	IS: 1622:1981 (Reaff:2003)	cfu/ml	4300	490	370	640	140	550	620	1400
17	Coliforms	IS:1622-1981	per 100 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent

18	Eschericia coli	IS:1622-1981	per 100 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
19	Salmonella	IS15187:2002	per 250 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
20	Shigella	IS 5887 (Part - 7):1999	per 250 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
21	Vibrio cholerae	IS 5887 (Part - 5):1976	per 250 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
22	Vibrio parahaemolyticus	IS 5887 (Part - 5):1976	per 250 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
23	Enterococci	ISO 7899 (Part 2):2000	per 250 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
24	Total Petroleum Hydrocarbons	USEPA 8015	mg/L	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)
25	Nitrate as No3	APHA 4500 B	mg/L	6	4.73	5.08	5.18	5.94	6.39	5.82	4.52

26	Abundance of phytoplankton	SO-IN-MUL-TE-112	No./L	73200	66600	106600	106600	66600	80000	80000	86600
27	Groups of phytoplankton	SO-IN-MUL-TE-112		Diatom	Diatom, algae	Diatom, dinoflagellate, algae	Diatom, algae, Dinoflagellates	Diatom dinoflagellates, Algae	Diatom	Diatom	Diatom,
28	Abundance of zooplankton	SO-IN-MUL-TE-113	No./L	0	6600	20000	0	0	0	13200	20000
29	Groups of zooplankton	SO-IN-MUL-TE-113		nil	Copepod	copepod	Nil	Nil	Nil	Copepod, Nauplii of Copepod	Copepod

SURFACE WATER ANYALYSIS REPORT-JANUARY 16

Sl no.	Parameters	Method	Unit	KE16-000555.001	KE16-000555.002	KE16-000555.003	KE16-000555.004	KE16-000555.005	KE16-000555.006	KE16-000555.007	KE16-000555.008
				Loc: Jetty South End	**Loc: Midd Jetty**	**Loc: Jetty North End**	**Loc: Turning Circle East Side**	**Loc: Buoy No 10 Mid Channel**	**Loc: Buoy No 11 Mid Channel**	**Loc: Buoy No 14 Mid Channel**	**Loc: Buoy No 15 Mid Channel**
				28-01-2016	28-01-2016	28-01-2016	28-01-2016	28-01-2016	28-01-2016	28-01-2016	28-01-2016
1	pH	APHA 4500 B		7.12	7.10	7.15	7.14	7.12	7.11	7.10	7.13
2	Temperature	APHA 2550 B	oC	21.3	20.5	20.7	21.6	20.3	21.4	21.5	20.2
3	Total Suspended Solids	APHA 2540 D	mg/L	196.3	193.0	92.4	128.6	123.6	131.2	213.6	91.0
4	BOD	IS 3025(Part 44):1993	mg/L	3.6	3.8	3.5	2.6	3.0	3.4	2.7	3.0
5	Dissolved Oxygen	APHA 4500 B	mg/L	1.6	1.3	1.2	1.1	1.3	1.2	1.4	1.5

6	Salinity	APHA 2520 B	mg/L	22.7	22.7	23.2	23.2	22.8	22.8	23.1	23.1
7	Oil & Grease	APHA 5520 B		<2	<2	<2	<2	<2	<2	<2	<2
8	Nitrite	APHA 4500 B	mg/L	1.67	1.63	0.53	1.31	0.22	0.11	0.14	0.37
9	Ammoniac Nitrogen	APHA 4500 C	mg/L	1.7	0.8	0.8	1.1	0.8	1.1	1.4	1.1
10	Ammonia	APHA 4500 C	mg/L	2.063	0.968	0.968	1.335	0.968	1.335	1.69	1.335
11	Kjeldahl Nitrogen	APHA 4500 B	mg/L	2.2	1.4	1.4	1.7	1.4	1.7	2	2
12	Total Phosphates	APHA 4500 D	mg/L	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
13	Total Nitrogen	APHA 4500 B	mg/L	2.7	2.5	2.1	2.5	2.5	2.0	2.5	2.5
14	Total Dissolved Solids	APHA 2540 C	mg/L	28842.0	28908.0	28905.0	28910.0	28907.0	28904.0	28980.0	28977.0
15	COD	APHA 5220 B	mg/L	313.2	365.4	330.6	208.8	278.4	330.6	243.6	278.4
16	Total bacterial count	IS: 1622:1981(	cfu/ml	19000	15000	24000	38000	8000	12000	6500	5800

		Reaff:2003)									
17	Coliforms	IS:1622-1981	per 100ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
18	Escherichia coli	IS:1622-1981	per 100ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
19	Salmonella	IS15187:2002	per 250ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
20	Shigella	IS 5887 (Part - 7):1999	per 250ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
21	Vibrio cholerae	IS 5887 (Part - 5):1976	per 250ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
22	Vibrio parahaemolyticus	IS 5887 (Part - 5):1976	per 250ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
23	Enterococci	ISO 7899 (Part 2):2000	per 250ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
24	Total Petrolium Hydrocarbon	USEPA 8015	mg/L	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)

	s										
25	Nitrate	APHA 4500 B	mg/L	2.18	-	1.96	2.26	1.87	2.16	2.53	1.86

SURFACE WATER ANYALYSIS REPORT-DECEMBER 15

Sl no	Parameters	Method	Unit	KE15-5435.001 Loc: Jetty South End 18.12.2015	KE15-5435.002 Loc : Midd Jetty 18.12.2015	KE15-5435.003 Loc: Jetty North End 18.12.2015	KE15-5435.004 Loc: Turning Circle East Side 18.12.2015	KE15-5435.005 Loc: Buoy No.10 Midd Channel 18.12.2015	KE15-5435.006 Loc: Buoy No.11 Midd Channel 18.12.2015	KE15-5435.007 Loc: Buoy No.14 Midd Channel 18.12.2015	KE15-5435.008 Loc: Buoy No.15 Midd Channel 18.12.2015
1	pH	APHA 4500 B		7.12	7.15	7.23	7.18	7.15	7.16	7.21	7.15
2	Temperature	APHA 2550 B	°C	25	25.2	24	25	25	23	24	23
3	Total Suspended Solids	APHA 2540 D	mg/L	139.6	117.5	115.1	45.3	79.3	48	41.7	45.4
4	BOD	IS 3025(Part 44):1993	mg/L	2.9	3.2	2.9	3.3	3	2.4	3.4	3.5
5	Dissolved Oxygen	APHA 4500 B	mg/L	1.2	1.1	1.5	1.3	1.2	1.1	1.1	1.2
6	Salinity	APHA 2520 B	mg/L	24.9	24.8	24.8	25.1	25.1	25	25	25.1

7	Oil & Grease	APHA 5520 B		BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)
8	Nitrite as NO_2	APHA 4500 B	mg/L	0.09	0.05	0.24	0.05	0.05	0.04	0.04	0.04
9	Ammonical Nitrogen	APHA 4500 C	mg/L	3	4.4	3	3	3	3	4.4	3
11	Kjeldahl Nitrogen	APHA 4500 B	mg/L	10.3	10.3	8.9	8.9	10.3	8.9	8.9	8.9
12	Total Phosphates	APHA 4500 D	mg/L	<0.25	<0.25	0.54	<0.25	<0.25	<0.25	<0.25	<0.25
13	Total Nitrogen	APHA 4500 B	mg/L	10.8	11.1	9.6	9.5	11	9.4	9.5	9.4
14	Total Dissolved Solids	APHA 2540 C	mg/L	27440	27304	37443	27584	26955	27512	27583	27515
15	COD	APHA 5220 B	mg/L	263.4	281	263.4	298.5	263.4	228.3	281	298.5
16	Total bacterial count	IS: 1622:1981(Reaff:2003)	cfu/ml	740	470	500	690	6400	3800	250	400
17	Coliforms	IS:1622-1981	per 100ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
18	Escherichia coli	IS:1622-1981	per 100ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
19	Salmonella	IS15187:2002	per 250ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
20	Shigella	IS 5887 (Part	per	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent

		- 7):1999	250ml								
21	Vibrio cholerae	IS 5887 (Part - 5):1976	per 250ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
22	Vibrio parahaemolyticus	IS 5887 (Part - 5):1976	per 250ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
23	Enterococci	ISO 7899 (Part 2):2000	per 250ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
24	Total Petroleum Hydrocarbons	USEPA 8015	mg/L	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)
25	Nitrate as No3	APHA 4500 B	mg/L	2.14	3.43	2.64	2.51	2.82	2.17	2.71	2.2
26	Abundance of phytoplankton	SO-IN-MUL-TE-112	No./L	$7.34x10^4$	$1.0x10^5$	$1.2x10^5$	$6 x10^4$	$6x10^4$	$1.8 x 10^5$	$8 x 10^4$	$5.34 x 10^4$
27	Groups of phytoplankton	SO-IN-MUL-TE-112		Diatom, dinoflagellates	Diatom, Flagellates	Diatom, blue green algae	Diatom, dinoflagellates	Diatom, dinoflagellates	Diatom, dinoflagellates, green and blue green algae	Diatom, green algae	Diatom, dinoflagellates
28	Abundance of zooplankton	SO-IN-MUL-TE-113	No./L	$6.6x10^3$	$3.34x10^4$	$4x10^4$	$1 x 10^4$	Nil	$6.6 x 10^4$	$4 x 10^4$	Nil
29	Groups of zooplankton	SO-IN-MUL-TE-113		Adult copepod	Adult copepod and decapods	Nauplii copepod and decaposds	Decapods and copepod	Nil	Copepod and decapods crustacean	Nauplius and mysid of Copepod	Nil

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SURFACE WATER ANYALYSIS REPORT-NOVEMBER 15

Sl no.	Parameters	Method	Unit	KE15-5055.001 Loc: Jetty South End 27.11.2015	KE15-5055.002 Loc : Midd Jetty 27.11.2015	KE15-5055.003 Loc: Jetty North End 27.11.2015	KE15-5055.004 Loc: Turning Circle East Side 27.11.2015	KE15-5055.005 Loc: Buoy No.10 Midd Channel 27.11.2015	KE15-5055.006 Loc: Buoy No.11 Midd Channel 27.11.2015	KE15-5055.007 Loc: Buoy No.14 Midd Channel 27.11.2015	KE15-5055.008 Loc: Buoy No.15 Midd Channel 27.11.2015
1	pH	APHA 4500 B		7.56	7.75	7.62	7.52	7.55	7.72	7.62	7.65
2	Temperature	APHA 2550 B	oC	26	26	25	26	25	24	25	25
3	Total Suspended Solids	APHA 2540 D	mg/L	97.6	100.2	97.9	107.3	43.8	52.8	102.1	107.9
4	BOD	IS 3025(Part 44):1993	mg/L	3.8	3.5	3.9	4.1	3.5	4	3.9	3.5
5	Dissolved Oxygen	APHA 4500 B	mg/L	2.1	1.1	1.3	1.2	1.6	1.9	2.4	2.3
6	Salinity	APHA 2520 B	mg/L	23.1	23.4	22.7	22.6	22.9	23.4	23.3	23.2
7	Oil & Grease	APHA 5520 B		BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)
8	Nitrite as NO2	APHA 4500 B	mg/L	0.18	0.29	0.02	<0.01	<0.01	0.04	0.03	0.01
9	Ammonical Nitrogen	APHA 4500 C	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
11	Kjeldahl Nitrogen	APHA 4500 B	mg/L	<1	<1	<1	<1	<1	<1	<1	<1

12	Total Phosphates	APHA 4500 D	mg/L	0.3	<0.25	0.31	0.53	0.32	0.64	0.28	0.49
13	Total Nitrogen	APHA 4500 B	mg/L	<1.00	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
14	Total Dissolved Solids	APHA 2540 C	mg/L	25550	25900	25130	25200	25340	25970	25760	25758
15	COD	APHA 5220 B	mg/L	363.4	346.9	363.4	380	363.4	380	380	363.4
16	Total baterial count	IS: 1622:1981(Reaff:2003)	cfu/ml	160	120	650	95	290	700	180	270
17	Coliforms	IS:1622-1981	per 100ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
18	Eschericia coli	IS:1622-1981	per 100ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
19	Salmonella	IS15187:2002	per 250ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
20	Shigella	IS 5887 (Part - 7):1999	per 250ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
21	Vibrio cholerae	IS 5887 (Part - 5):1976	per 250ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
22	Vibrio parahaemolyticus	IS 5887 (Part - 5):1976	per 250ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
23	Enterococci	ISO 7899 (Part 2):2000	per 250ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
24	Total Petrolium Hydrocarbons	USEPA 8015	mg/L	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)
25	Nitrate as No3	APHA 4500 B	mg/L	3.35	3.26	3.07	4.02	2.6	1.79	2.88	3.1
26	Abundance of	SO-IN-MUL-	No./L	4.66x104	6.66x104	8x104	1 x105	6x104	6 x 104	8 x 104	6.66 x 104

	phytoplankton	TE-112									
27	Groups of phytoplankton	SO-IN-MUL-TE-112		Diatom dinoflagellates	Alqae Diatom	Diatom	Diatom dinoflagellates	Diatom dinoflagellates	Alqae Diatom	Alqae Diatom	Diatom dinoflagellates
28	Abundance of zooplankton	SO-IN-MUL-TE-113	No./L	1.34x104	3.34x104	2.66x104	4 x 104	6.6x103	6.6 x 103	2 x 104	1.34x104
29	Groups of zooplankton	SO-IN-MUL-TE-113		Nil	Copepod	Copepod	Copepod	Adult and mysid of copepod	Copepod nauplii	Copepod	Copepod

SURFACE WATER ANYALYSIS REPORT-OCTOBER 15

Sl no.	Parameters	Method	Unit	KE15-4584.001	KE15-4584.002	KE15-4584.003	KE15-4584.004	KE15-4584.005	KE15-4584.006	KE15-4584.007	KE15-4584.008
				Loc: Jetty South End	**Loc: Midd Jetty**	**Loc: Jetty North End**	**Loc: Turning Circle East Side**	**Loc: Buoy No 10 Mid Channel**	**Loc: Buoy No 11 Mid Channel**	**Loc: Buoy No 14 Mid Channel**	**Loc: Buoy No 15 Mid Channel**
				28-10-2015	28-10-2015	28-10-2015	28-10-2015	28-10-2015	28-10-2015	28-10-2015	28-10-2015
1	pH	APHA 4500 B		7.34	7.46	7.59	7.35	7.47	7.49	7.25	7.34
2	Temperature	APHA 2550 B	oC	29.8	31.5	30.8	32.7	32.9	32.8	33.7	32.8

3	Total Suspended Solids	APHA 2540 D	mg/L	149.5	202	77.8	97.6	158	174.4	176.8	169.9
4	BOD	IS 3025(Part 44):1993	mg/L	3.5	3.6	3.4	4.6	4.3	4.5	4.9	5
5	Dissolved Oxygen	APHA 4500 B	mg/L	3.3	3.1	3.6	2.1	2.4	3.5	2.8	3.1
6	Salinity	APHA 2520 B	mg/L	22.7	22.8	22.8	22.8	22.8	22.9	22.8	23
7	Oil & Grease	APHA 5520 B		<2	<2	<2	<2	<2	<2	<2	<2
8	Nitrite	APHA 4500 B	mg/L	<0.01	0.06	0.03	0.03	0.05	0.02	0.02	0.03
9	Ammoniacal Nitrogen	APHA 4500 C	mg/L	0.8	0.8	0.6	0.6	1.1	0.6	0.8	1.1
10	Ammonia	APHA 4500 C	mg/L	0.97	0.97	0.73	0.73	1.34	0.73	0.97	1.34
11	Kjeldahl Nitrogen	APHA 4500 B	mg/L	1.4	1.4	BDL	BDL	1.4	BDL	1.1	1.4
12	Total Phosphates	APHA 4500 D	mg/L	0.28	<0.25	<0.25	<0.25	<0.25	0.26	<0.25	<0.25

13	Total Nitrogen	APHA 4500 B	mg/L	2.1	2	1.3	1.3	1.8	1.3	1.6	1.9
14	Total Dissolved Solids	APHA 2540 C	mg/L	25200	25270	25273	25268	25340	25337	252.71	25411
15	COD	APHA 5220 B	mg/L	327.1	365.6	346.3	423.3	404	404	457	476
16	Total bacterial count	IS: 1622:1981(Reaff:2003)	cfu/ml	3300	3800	2700	5600	150	8700	7400	25000
17	Coliforms	IS:1622-1981	per 100ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
18	Eschericia coli	IS:1622-1981	per 100ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
19	Salmonella	IS15187:2002	per 250ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
20	Shigella	IS 5887 (Part - 7):1999	per 250ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
21	Vibrio cholerae	IS 5887 (Part - 5):1976	per 250ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent

22	Vibrio parahaemolyticus	IS 5887 (Part - 5):1976	per 250ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
23	Enterococci	ISO 7899 (Part 2):2000	per 250ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
24	Total Petrolium Hydrocarbons	USEPA 8015	mg/L	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)
25	Nitrate	APHA 4500 B	mg/L	3.09	2.73	2.33	2.03	1.61	2.03	2.16	2.32
26	Abundance of phytoplankton	SO-IN-MUL-TE-112	No./L	$9.34x10^4$	$7.34x10^4$	$8x10^4$	$2.66 x10^4$	$6x10^4$	$1.2x10^5$	$1.47 x 10^5$	$4.66 x 10^4$
27	Groups of phytoplankton	SO-IN-MUL-TE-112		Diatom	Diatom	Diatom	Diatom	Diatom	Diatom	Diatom	Diatom
28	Abundance of zooplankton	SO-IN-MUL-TE-113	No./L	Nil	$3.34x10^4$	$2x10^4$	Nil	$6.6x10^3$	$2 x 10^4$	$3.34x10^4$	$1.34x10^4$
29	Groups of zooplankton	SO-IN-MUL-TE-113		Nil	Copepod	Mysid of Copepod	Nil	Nauplii of copepod	Copepod nauplii	Copepod Nauplii	Copepod

B. BOTTOM WATER ANYALYSIS

BOTTOM WATER ANYALYSIS REPORT-MARCH 16

Sl no.	Parameters	Method	Unit	KE16-001865.001 Loc: Jetty South End 30.03.2016	KE16-001865.002 Loc: Midd Jetty 30.03.2016	KE16-001865.003 Loc: Jetty North End 30.03.2016	KE16-001865.004 Loc: Turning Circle East Site 30.03.2016	KE16-001865.005 Loc: Buoy No.10 Midd Channel 30.03.2016	KE16-001865.006 Loc: Buoy No.11 Midd Channel 30.03.2016	KE16-001865.007 Loc: Buoy No.14 Midd Channel 30.03.2016	KE16-001865.008 Loc: Buoy No.15 Midd Channel 30.03.2016
1	pH	APHA 4500 B		7.45	7.52	7.55	7.65	7.45	7.35	7.40	7.52
2	Temperature	APHA 2550 B	oC	27.5	27.2	27.4	27.3	27.1	27.2	27.3	27.4
3	Total Suspended Solids	APHA 2540 D	mg/L	9	5	8	15	22	20	19	20.0
4	BOD	IS 3025(Part 44):1993	mg/L	2.5	2.2	2.5	2.3	2.7	2.5	2.5	2.4

5	Dissolved Oxygen	APHA 4500 B	mg/ L	2.1	2.2	2.1	2.3	2.1	2.2	2.3	2.1
6	Salinity	APHA 2520 B	mg/ L	32.2	32.4	32.2	32.1	32.1	32.1	32.1	32
7	Oil & Grease	APHA 5520 B		BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)
8	Nitrite	APHA 4500 B	mg/ L	0.84	0.55	0.44	0.45	0.61	0.36	0.11	0.35
9	Ammonical Nitrogen	APHA 4500 C	mg/ L	1.3	1.3	1.1	1.1	1.3	1.3	1.4	1.3
10	Total Phosphates	APHA 4500 D	mg/ L	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
11	Total Nitrogen	APHA 4500 B	mg/ L	1.9	1.9	1.8	1.8	1.9	2.1	2.3	2.1
12	Total Dissolved Solids	APHA 2540 C	mg/ L	34510.0	34652.0	34650.0	34511.0	34509.0	34512.0	34440.0	34438.0
13	COD	APHA 5220 B	mg/ L	261.5	298.9	261.5	224.0	336.2	298.9	262	186.8
14	Total baterial count	IS: 1622:1981(Reaff:2003)	cfu/ ml	240	400	1800	280	200	140	480	3700

15	Coliforms	IS:1622-1981	per 100 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
16	Eschericia coli	IS:1622-1981	per 100 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
17	Salmonella	IS15187: 2002	per 250 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
18	Shigella	IS 5887 (Part - 7):1999	per 250 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
19	Vibrio cholerae	IS 5887 (Part - 5):1976	per 250 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
20	Vibrio parahaemolyticus	IS 5887 (Part - 5):1976	per 250 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
21	Enterococci	ISO 7899 (Part 2):2000	per 250 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
22	Total Petrolium Hydrocarbons	USEPA 8015	mg/L	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)

23	Nitrate	APHA 4500 B	mg/L	2.20	2.4	2.19	2.05	2.43	2.59	2.92	2.91
24	Abundance of phytoplankton	SO-IN-MUL-TE-112	No./L	26600	6600	20000	40000	33400	20000	40000	46600
25	Groups of phytoplankton	SO-IN-MUL-TE-112		Diatom	Diatom	Diatom	Diatom dinoflagellates	Diatom,Algae	Diatom	Diatom	Diatom
26	Abundance of zooplankton	SO-IN-MUL-TE-113	No./L	0	0	0	0	0	0	13400	6600
27	Groups of zooplankton	SO-IN-MUL-TE-113		Nil	Nil	Nil	Nil	Nil	Nil	Copepod	Copepod

BOTTOM WATER ANYALYSIS REPORT-FEBRUARY 16

Sl no.	Parameters	Method	Unit	KE16-001051.001	KE16-001051.002	KE16-001051.003	KE16-001051.004	KE16-001051.005	KE16-001051.006	KE16-001051.007	KE16-001051.008
				Loc: Jetty South End	Loc: Midd Jetty	Loc: Jetty North End	Loc: Turning Circle East Site	Loc: Buoy No.10 Midd Channel	Loc :Buoy No.11 Midd Channel	Loc: Buoy No.14 Midd Channel	Loc: Buoy No.15 Midd Channel
				25.02.2016	25.02.2016	25.02.2016	25.02.2016	25.02.2016	25.02.2016	25.02.2016	25.02.2016
1	pH	APHA 4500 B		7.65	7.52	7.45	7.55	7.75	7.62	7.65	7.52
2	Temperature	APHA 2550 B	oC	28.7	28.2	28.5	28.2	28.4	28.2	28.4	28.3
3	Total Suspended Solids	APHA 2540 D	mg/L	243.9	228.6	236.6	226.4	222.2	219.8	206.2	255.4
4	BOD	IS 3025 (Part 44):1993	mg/L	2.6	3.2	3	3.3	3.2	3.8	3	4.2
5	Dissolved Oxygen	APHA 4500 B	mg/L	2.1	1.4	2.3	2.2	2.1	1.7	1.2	2.1

6	Salinity	APHA 2520 B	mg/L	30.3	30.2	30.3	30.3	30.2	30.3	30.3	30.2
7	Oil & Grease	APHA 5520 B		<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
8	Nitrite	APHA 4500 B	mg/L	0.04	0.03	0.08	0.07	0.07	0.07	0.05	2.9
9	Ammonical Nitrogen	APHA 4500 C	mg/L	1.7	1.2	0.9	1.3	1.0	1.4	1.6	32619
10	Total Phosphates	APHA 4500 D	mg/L	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
11	Total Nitrogen	APHA 4500 B	mg/L	3.2	2.3	2.2	2.7	2.4	2.7	2.8	2.9
12	Total Dissolved Solids	APHA 2540 C	mg/L	32687.0	32619.0	32685.0	3268.0	32689.0	32686.0	32760.0	32619.0
13	COD	APHA 5220 B	mg/L	283.2	321	292.6	321.0	321	339.8	302.1	339.8
14	Total baterial count	IS: 1622:1981(Reaff:2003)	cfu/ml	1400	880	220	260	590	350	360	54
15	Coliforms	IS:1622-1981	per 100	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent

			ml								
16	Eschericia coli	IS:1622-1981	per 100 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
17	Salmonella	IS15187: 2002	per 250 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
18	Shigella	IS 5887 (Part - 7):1999	per 250 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
19	Vibrio cholerae	IS 5887 (Part - 5):1976	per 250 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
20	Vibrio parahaemolyticus	IS 5887 (Part - 5):1976	per 250 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
21	Enterococci	ISO 7899 (Part 2):2000	per 250 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
22	Total Petroleum Hydrocarbons	USEPA 8015	mg/L	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)
23	Nitrate	APHA	mg/	2.65	2.55	2.56	3.07	3.16	2.90	2.69	3.09

		4500 B	L								
24	Abundance of phytoplankton	SO-IN-MUL-TE-112	No./L	60000	26600	53400	60000	66600	33400	40000	46600
25	Groups of phytoplankton	SO-IN-MUL-TE-112		Diatom dinoflagellates	Diatom	Diatom ,algae	Diatom , Algae	Diatom, green and blue green algae	Diatom , Algae	Diatom	Diatom, Algae
26	Abundance of zooplankton	SO-IN-MUL-TE-113	No./L	0	6600	20000	20000	40000	0	0	20000
27	Groups of zooplankton	SO-IN-MUL-TE-113		nil	copepod	Copepod	Copepod	copepod	Nil	Nil	Copepod

BOTTOM WATER ANYALYSIS REPORT-JANUARY 16

Sl no.	Parameters	Method	Unit	KE16-000554.001	KE16-000554.002	KE16-000554.003	KE16-000554.004	KE16-000554.005	KE16-000554.006	KE16-000554.007	KE16-000554.008
				Loc: Jetty South End	Loc: Midd Jetty	Loc: Jetty North End	Loc: Turning Circle East Side	Loc: Buoy No 10 Mid Channel	Loc: Buoy No 11 Mid Channel	Loc: Buoy No 14 Mid Channel	Loc: Buoy No 15 Mid Channel
				28.01.2016	28.01.2016	28.01.2016	28.01.2016	28.01.2016	28.01.2016	28.01.2016	28.01.2016
1	pH	APHA 4500 B		7.65	7.72	7.55	7.62	7.58	7.68	7.70	7.65
2	Temperature	APHA 2550 B	oC	19.2	18.6	19.5	19.7	18.3	19.3	18.2	19.6
3	Total Suspended Solids	APHA 2540 D	mg/L	192.1	167.1	164.8	294.3	198.8	160.3	151.4	200.0
4	BOD	IS 3025(Part 44):1993	mg/L	3.0	3.4	2.8	2.3	2.8	3.2	2.3	2.8
5	Dissolved Oxygen	APHA 4500 B	mg/L	1.2	1.1	1.3	1.1	1.4	1.6	1.2	1.4
6	Salinity	APHA	mg/	26.4	26.5	26.6	26.5	26.6	26.5	26.5	26.6

		2520 B	L								
7	Oil & Grease	APHA 5520 B		BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)
8	Nitrite	APHA 4500 B	mg/ L	0.09	0.15	0.04	0.18	0.25	0.03	0.11	0.06
9	Ammoniacal Nitrogen	APHA 4500 C	mg/ L	1.8	1.1	1.0	1.3	1.0	1.3	1.5	1.3
10	Total Phosphates	APHA 4500 D	mg/ L	0.39	<0.25	<0.25	<0.25	0.32	<0.25	<0.25	0.39
11	Total Nitrogen	APHA 4500 B	mg/ L	3.3	2.3	2.3	3.0	2.4	2.6	3.4	3.0
12	Total Dissolved Solids	APHA 2540 C	mg/ L	28908.0	28910.0	29050.0	28906.0	29048.0	28981.0	28976.0	29047.0
13	COD	APHA 5220 B	mg/ L	295.8	313.2	295.8	174.0	243.6	313.2	226.2	261.0
14	Total bacterial count	IS: 1622:1 981(Reaff:2 003)	cfu/ ml	37000	25000	32000	18000	43000	16000	17000	26000
15	Coliforms	IS:1622 -1981	per 100 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent

16	Eschericia coli	IS:1622-1981	per 100 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
17	Salmonella	IS15187:2002	per 250 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
18	Shigella	IS 5887 (Part - 7):1999	per 250 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
19	Vibrio cholerae	IS 5887 (Part - 5):1976	per 250 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
20	Vibrio parahaemolyticus	IS 5887 (Part - 5):1976	per 250 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
21	Enterococci	ISO 7899 (Part 2):2000	per 250 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
22	Total Petroleum Hydrocarbons	USEPA 8015	mg/L	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)
23	Nitrate	APHA	mg/	3.30	2.86	3.16	4.41	3.10	3.00	5.39	3.79

		4500 B	L								
24	Abundance of phytoplankton	SO-IN-MUL-TE-112	No./L	$6.00X10^4$	$1.00X10^5$	$1.27X10^5$	$6.66X10^4$	$6.00X10^4$	$3.34X10^4$	$4.66X10^4$	$8.00X10^4$
25	Groups of phytoplankton	SO-IN-MUL-TE-112		Diatom, Dinoflagellates	Dinoflagellates, algae	Dinoflagellates, algae	Diatom, Dinoflagellates	Dinoflagellates, blue green algae	Diatom, Dinoflagellates	Diatom, Dinoflagellates	Diatom
26	Abundance of zooplankton	SO-IN-MUL-TE-113	No./L	$6.6x10^3$	$2.66x10^4$	$2.66x10^4$	$2.00x10^4$	$1.34x10^4$	Nil	Nil	Nil
27	Groups of zooplankton	SO-IN-MUL-TE-113		Copepod nauplii, mysid	Copepod nauplii, mysid	Copepod nauplii, mysid of copepod	Nauplius and mysid and decapods crustaceans	Nauplii and mysid of copepod	Nil	Nil	Nil

BOTTOM WATER ANYALYSIS REPORT-DECEMBER 15

Sl no.	Parameters	Method	Unit	KE15-5436.001 Loc: Jetty South End 18.12.2015	KE15-5436.002 Loc: Midd Jetty 18.12.2015	KE15-5436.003 Loc: Jetty North End 18.12.2015	KE15-5436.004 Loc: Turning Circle East Site 18.12.2015	KE15-5436.005 Loc: Buoy No.10 Midd Channel 18.12.2015	KE15-5436.006 Loc: Buoy No.11 Midd Channel 18.12.2015	KE15-5436.007 Loc: Buoy No.14 Midd Channel 18.12.2015	KE15-5436.008 Loc: Buoy No.15 Midd Channel 18.12.2015
1	pH	APHA 4500 B		7.35	7.33	7.45	7.32	7.3	7.5	7.4	7.32
2	Temperature	APHA 2550 B	°C	22	21	23	21	23	22	21	22
3	Total Suspended Solids	APHA 2540 D	mg/L	41.1	40.5	59.5	58.9	45.2	55.2	42.1	46
4	BOD	IS 3025(Part 44):1993	mg/L	2.4	2.9	2.4	2.9	2.2	2.2	2.9	2.8
5	Dissolved Oxygen	APHA 4500 B	mg/L	1.2	1.5	1.3	1.2	1.1	1.4	1.3	1.4
6	Salinity	APHA 2520 B	mg/L	23.5	23.5	24.9	24.8	23.6	23.5	23.4	23.4

7	Oil & Grease	APHA 5520 B		BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)
8	Nitrite	APHA 4500 B	mg/L	0.04	0.07	0.08	0.11	0.16	0.18	0.15	0.1
9	Ammonical Nitrogen	APHA 4500 C	mg/L	4.4	4.4	3	3	3	3	3	3
10	Total Phosphates	APHA 4500 D	mg/L	<0.25	<0.25	0.59	<0.25	<0.25	<0.25	<0.25	<0.25
11	Total Nitrogen	APHA 4500 B	mg/L	11	11	10.8	9.5	9.4	9.5	9.6	9.7
12	Total Dissolved Solids	APHA 2540 C	mg/L	26044	25970	27511	27443	26255	25971	26042	25973
13	COD	APHA 5220 B	mg/L	228.3	263.4	228.3	245.8	193.2	210.7	245.8	245.8
14	Total baterial count	IS: 1622:1981(Reaff:2003)	cfu/ml	1400	530	680	120	630	190	220	550
15	Coliforms	IS:1622-1981	per 100 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
16	Eschericia	IS:1622	per	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent

	coli	-1981	100 ml								
17	Salmonella	IS15187 :2002	per 250 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
18	Shigella	IS 5887 (Part - 7):1999	per 250 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
19	Vibrio cholerae	IS 5887 (Part - 5):1976	per 250 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
20	Vibrio parahaemolyticus	IS 5887 (Part - 5):1976	per 250 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
21	Enterococci	ISO 7899 (Part 2):2000	per 250 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
22	Total Petrolium Hydrocarbons	USEPA 8015	mg/L	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)
23	Nitrate	APHA 4500 B	mg/L	2.93	3.15	2.29	2.65	2.22	2.38	2.71	3.21

24	Abundance of phytoplankton	SO-IN-MUL-TE-112	No./L	2.66 x104	1.34 x104	2.00 x 104	2.66 x104	3.34x104	5.34x104	Nil	3.34x104
25	Groups of phytoplankton	SO-IN-MUL-TE-112		Diatom	Diatom	Diatom	Diatom dinoflagellates	Diatom dinoflagellates	Alqae Diatom	Nil	Diatom
26	Abundance of zooplankton	SO-IN-MUL-TE-113	No./L	Nil	Nil	6.6 x 103	Nil	6.6 x 103	2x104	Nil	Nil
27	Groups of zooplankton	SO-IN-MUL-TE-113		Nil	Nil	Nil	Nil	Nil	Copepod	Nil	Nil

BOTTOM WATER ANALYSIS REPORT-NOVEMBER 15

Sl no.	Parameters	Method	Unit	KE15-5054.001	KE15-5054.002	KE15-5054.003	KE15-5054.004	KE15-5054.005	KE15-5054.006	KE15-5054.007	KE15-5054.008
				Loc: Jetty South End	Loc: Midd Jetty	Loc: Jetty North End	Loc: Turning Circle East Site	Loc: Buoy No.10 Midd Channel	Loc: Buoy No.11 Midd Channel	Loc: Buoy No.14 Midd Channel	Loc: Buoy No.15 Midd Channel
				27.11.2015	27.11.2015	27.11.2015	27.11.2015	27.11.2015	27.11.2015	27.11.2015	27.11.2015
1	pH	APHA 4500 B		7.24	7.15	7.25	7.35	7.32	7.21	7.23	7.35
2	Temperature	APHA 2550 B	°C	23	23	22	23	22	23	24	22
3	Total Suspended Solids	APHA 2540 D	mg/L	23.2	32.1	27.2	34.7	29.2	22.1	28.8	22.9
4	BOD	IS 3025(Part 44):1993	mg/L	3.4	2.8	2.9	3.5	2.8	3.1	3.6	3.4
5	Dissolved Oxygen	APHA 4500 B	mg/L	1.3	1.6	2.1	2.2	2.3	2.1	1.6	1.3
6	Salinity	APHA 2520 B	mg/L	23.8	23.8	23.6	23.6	23.6	23.5	23.7	23.6
7	Oil & Grease	APHA 5520 B		BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)
8	Nitrite	APHA 4500 B	mg/L	0.29	0.41	0.54	0.21	0.01	0.57	<0.01	0.08
9	Ammonical Nitrogen	APHA 4500 C	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
10	Total	APHA 4500 D	mg/L	0.31	0.48	<0.25	0.33	<0.25	0.34	0.35	0.26

	Phosphates										
11	Total Nitrogen	APHA 4500 B	mg/L	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
12	Total Dissolved Solids	APHA 2540 C	mg/L	26392	26251	26112	26115	26114	26040	26110	26118
13	COD	APHA 5220 B	mg/L	313.9	297.4	297.4	330.4	297.4	297.4	330.4	330.4
14	Total bacterial count	IS: 1622:1981(Reaff:2003)	cfu/ml	360	510	310	530	350	2200	910	5800
15	Coliforms	IS:1622-1981	per 100ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
16	Eschericia coli	IS:1622-1981	per 100ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
17	Salmonella	IS15187:2002	per 250ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
18	Shigella	IS 5887 (Part - 7):1999	per 250ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
19	Vibrio cholera	IS 5887 (Part - 5):1976	per 250ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
20	Vibrio parahaemolyticus	IS 5887 (Part - 5):1976	per 250ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
21	Enterococci	ISO 7899 (Part 2):2000	per 250ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
22	Total Petroleum	USEPA 8015	mg/L	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL

	Hydrocarbons										(DL:10)
23	Nitrate	APHA 4500 B	mg/L	2.08	2.52	2.3	2.75	2.28	2.46	2.24	2.98
24	Abundance of phytoplankton	SO-IN-MUL-TE-112	No./L	2.66 x10^4	1.34 x10^4	2.00 x 10^4	2.66 x10^4	3.34x10^4	5.34x10^4	Nil	3.34x10^4
25	Groups of phytoplankton	SO-IN-MUL-TE-112		Diatom	Diatom	Diatom	Diatom dinoflagellates	Diatom dinoflagellates	Algae Diatom	Nil	Diatom
26	Abundance of zooplankton	SO-IN-MUL-TE-113	No./L	Nil	Nil	6.6 x 103	Nil	6.6 x 103	2x104	Nil	Nil
27	Groups of zooplankton	SO-IN-MUL-TE-113		Nil	Nil	Nil	Nil	Nil	Copepod	Nil	Nil

BOTTOM WATER ANYALYSIS REPORT-OCTOBER15

Sl no.	Parameters	Method	Unit	KE15-4583.001 Loc: Jetty South End 28.10.2015	KE15-4583.002 Loc : Midd Jetty 28.10.2015	KE15-4583.003 Loc: Jetty North End 28.10.2015	KE15-4583.004 Loc: Turning Circle East Side 28.10.2015	KE15-4583.005 Loc: Buoy No.10 Midd Channel 28.10.2015	KE15-4583.006 Loc: Buoy No.11 Midd Channel 28.10.2015	KE15-4583.007 Loc: Buoy No.14 Midd Channel 28.10.2015	KE15-4583.008 Loc: Buoy No.15 Midd Channel 28.10.2015
1	pH	APHA 4500 B		7.4	7.32	7.68	7.45	7.5	7.68	7.45	7.48
2	Temperature	APHA 2550 B	°C	27.3	30.1	28.2	30.2	30.2	29.7	30.5	31.2
3	Total Suspended Solids	APHA 2540 D	mg/L	49.4	48.9	18.3	15.4	18.7	49.2	17.9	12.5

4	BOD	IS 3025(Part 44):1993	mg/L	2.8	3.4	3	4.4	4.1	3.9	4.6	4.3
5	Dissolved Oxygen	APHA 4500 B	mg/L	3.2	3	3.3	2.5	2.4	3.1	2.8	3
6	Salinity	APHA 2520 B	mg/L	23	23	22.9	23	22.9	22.9	22.9	22.9
7	Oil & Grease	APHA 5520 B		BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)
8	Nitrite as NO2	APHA 4500 B	mg/L	0.01	0.01	0.01	0.01	0.03	0.03	0.07	0.02
9	Ammonical Nitrogen	APHA 4500 C	mg/L	0.6	0.8	0.8	0.6	0.8	0.6	0.8	0.11
10	Total Phosphates	APHA 4500 D	mg/L	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
11	Kjeldahl Nitrogen	APHA 4500 B	mg/L	<1	<1	<1	<1	<1	<1	<1	<1
12	Total Nitrogen	APHA 4500 B	mg/L	1.7	2	2	1.7	2	1.6	2	2.2
13	Total Dissolved Solids	APHA 2540 C	mg/L	25550	25481	25484	25411	25480	25409	25476	25410
14	COD	APHA 5220 B	mg/L	269.4	307.8	269.4	404	384.8	384.8	423.3	423.3
15	Total bacterial count	IS: 1622:1981(Reaff:2003)	cfu/ml	570	410	890	740	1700	2700	4900	330
16	Coliforms	IS:1622-1981	per 100ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
17	Eschericia coli	IS:1622-1981	per 100ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
18	Salmonella	IS15187:2002	per 250ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
19	Shigella	IS 5887 (Part - 7):1999	per 250ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent

20	Vibrio cholerae	IS 5887 (Part - 5):1976	per 250ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
21	Vibrio parahaemolyticus	IS 5887 (Part - 5):1976	per 250ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
22	Enterococci	ISO 7899 (Part 2):2000	per 250ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent	Absent
23	Total Petrolium Hydrocarbons	USEPA 8015	mg/L	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)
24	Nitrate as No3	APHA 4500 B	mg/L	2.47	2.54	2.56	2.55	2.84	2.07	2.74	2.12
25	Abundance of phytoplankton	SO-IN-MUL-TE-112	No./L	$4x10^4$	$4.66x10^4$	$2.66x10^4$	$3.34 x10^4$	$3.34x10^4$	$3.34x10^4$	$2.67 x 10^4$	$3.34 x 10^4$
26	Groups of phytoplankton	SO-IN-MUL-TE-112		Diatom	dinoflagellates	Diatom	Diatom	Diatom	Diatom	Diatom	Diatom
27	Abundance of zooplankton	SO-IN-MUL-TE-113	No./L	$1.32x10^4$	$2.66x10^4$	Nil	Nil	Nil	$2 x 10^4$	Nil	$6.6x10^3$
28	Groups of zooplankton	SO-IN-MUL-TE-113		Copepod	Copepod	Nil	Nil	Nil	Copepod	Nil	Copepod

C. SEDIMENT ANYALYSIS

SEDIMENT ANYALYSIS REPORT-MARCH 16

Sl no.	Parameters	Method	Unit	KE16-001910.001 Loc: Jetty South end 30.03.2016	KE16-001910.002 Loc: Midd Jetty 30.03.2016	KE16-001910.003 Loc: Jetty North end 30.03.2016	KE16-001910.004 Loc:- Turning Circle East Side 30.03.2016	KE16-001910.005 Loc:- Buoy No.10 Midd Channel 30.03.2016	KE16-001910.006 Loc:- Buoy No.11, Midd Channel 30.03.2016	KE16-001910.007 Loc:- Buoy No.14 Outer Channel 30.03.2016	KE16-001910.008 Loc:- Buoy No.15 Outer Channel 30.03.2016
1	Total Organic matter	Walkely and Black, 1934	%	0.78	0.77	0.72	1.07	0.77	1	0.99	0.94
2	% Sand	Hydrometer Method	%	54.7	52.7	51.8	46.8	52.8	37.2	46.6	46.3
3	% Silt	Hydrometer Method	%	10.0	14.0	12.0	22.9	15.9	32.0	25.8	22.0
4	% Clay	Hydrometer Method	%	35.3	33.3	36.3	30.2	31.2	30.8	27.6	31.8
5	Total Phosphorus as P	APHA 4500 D	mg/L	489	497	516	551	544	595	529	550
6	Iron (as Fe)	USEPA 3052/3051A	mg/kg	23122.78	24312.25	28548.39	36202.55	27055.2	32653.69	28816.62	29184.89

7	Aluminium (as Al)	USEPA 3050 B/3051A/3052	mg/kg	16116.12	17170.17	18665.01	28554.93	18569.23	36280.95	19907.53	21296.06
8	Chromium (aa Cr)	USEPA 3050 B/3051A/3052	mg/kg	77.76	84.78	91.98	131.28	91.7	105.23	91.44	90.74
9	Copper (as Cu)	USEPA 3050 B/3051A/3052	mg/kg	22.64	45.95	28.86	36.95	33.28	26.4	22.92	26.65
10	Manganese (as Mn)	USEPA 3050 B/3051A/3052	mg/kg	346.51	378.47	387.49	515.98	417.33	537.52	571.91	534.11
11	Nickel (as Ni)	USEPA 3050 B/3051A/3052	mg/kg	31.68	34.24	36.17	54.46	37.39	45.52	38.37	38.81
12	Lead (as Pb)	USEPA 3050 B/3051A/3052	mg/kg	12.71	13.08	14.24	19.52	14.84	16.16	14.39	14.04
13	Zinc (as Zn)	USEPA 3050 B/3051A/3052	mg/kg	38.61	40	63.42	58.82	50.68	51.77	47.65	47.36
14	Mercury (as Hg)	USEPA 3050 B/3051A/3052	mg/kg	<0.50	0.89	2.24	<0.50	2.4	<0.50	2.88	1.52
15	Total Petrolium Hydrocarbons	USEPA 8015	mg/kg	<150	<150	<150	<150	<150	<150	<150	<150
16	Abundance of Macro Benthic Organism	SO-IN-MUL-TE-111	per gm	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
17	Abundance of Micro Benthic Organism	SO-IN-MUL-TE-111	cfu/gm	10000	70000	5000	60000	10000	130000	12000	110000

SEDIMENT ANYALYSIS REPORT-FEBRUARY 16

Sl. no.	Parameters	Method	Unit	KE16-001099.001 Loc:- Jetty South end 25.02.2016	KE16-001099.002 Loc:- Midd Jetty 25.02.2016	KE16-001099.003 Loc:- Jetty North end 25.02.2016	KE16-001099.004 Loc:- Turning Circle East Side 25.02.2016	KE16-001099.005 Loc:- Buoy No.10 Midd Channel 25.02.2016	KE16-001099.006 Loc:- Buoy No.11, Midd Channel 25.02.2016	KE16-001099.007 Loc:-Buoy No.14 Outer Channel 25.02.2016	KE16-001099.008 Loc:- Boy No.15 Outer Channel 25.02.2016
1	Total Organic matter	Walkely and Black, 1934	%	1.01	0.77	0.99	1.52	1.37	1.35	1.28	1.35
2	% Sand	Hydrometer Method	%	46.6	46.7	52.6	46.9	48.7	46.1	42.9	43.5
3	% Silt	Hydrometer Method	%	24.0	23.9	21.0	24.8	20.9	25.8	22.9	24.6
4	% Clay	Hydrometer Method	%	29.4	29.4	26.4	28.2	30.3	28.1	34.2	31.8
5	Total Phosphorus as P	APHA 4500 D	mg/L	301	310	317	324	329	336	224	322
6	Iron (as Fe)	USEPA 3052/3051A	mg/kg	24144.34	23031.24	22041.47	25852.75	25200.61	22644.20	16232.77	22821.14
7	Aluminium (as Al)	USEPA 3050	mg/kg	15781.18	15053.85	14654.05	17506.92	16928.04	14970.98	10991.6	15402.18

		B/3051A/3052									
8	Chromium (aa Cr)	USEPA 3050 B/3051A/3052	mg/kg	84.87	72.69	80.65	83.54	113.88	71.17	56.24	63.93
9	Copper (as Cu)	USEPA 3050 B/3051A/3052	mg/kg	29.72	26.63	88.79	29.26	40.78	34.41	410.41	15.38
10	Manganese (as Mn)	USEPA 3050 B/3051A/3052	mg/kg	519.71	499.9	485.06	561.63	544.66	497.49	352.25	491.9
11	Nickel (as Ni)	USEPA 3050 B/3051A/3052	mg/kg	26.67	26.26	25.75	28.65	39.57	24.78	18.13	25.19
12	Lead (as Pb)	USEPA 3050 B/3051A/3052	mg/kg	11.35	10.66	27.86	12.25	11.33	10.64	85.1	11.01
13	Zinc (as Zn)	USEPA 3050 B/3051A/3052	mg/kg	42.03	39.44	42.24	46.26	42.44	39.57	47.7	40.36

14	Mercury (as Hg)	USEPA 3050 B/3051A/3052	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
15	Total Petrolium Hydrocarbons	USEPA 8015	mg/kg	<150	<150	<150	<150	<150	<150	<150	<150
16	Abundance of Macro Benthic Organism	SO-IN-MUL-TE-111	per gm	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
17	Abundance of Micro Benthic Organism	SO-IN-MUL-TE-111	cfu/gm	7x104	18x103	11x104	5x104	14x104	6x104	44x103	15x104

SEDIMENT ANYALYSIS REPORT-JANUARY 16

Sl. no.	Parameters	Method	Unit	KE16-000557.001	KE16-000557.002	KE16-000557.003	KE16-000557.004	KE16-000557.005	KE16-000557.006	KE16-000557.007	KE16-000557.008
				Loc: Jetty South end	Loc: Midd Jetty	Loc: Jetty North End	Loc: Turning Circle East Side	Loc: Buoy No 10 Mid Channel	Loc: Buoy No 11 Mid Channel	Loc: Buoy No 14 Mid Channel	Loc: Buoy No 15 Mid Channel
				28.01.2016	28.01.2016	28.01.2016	28.01.2016	28.01.2016	28.01.2016	28.01.2016	28.01.2016
1	Total Organic Matter	Walkely and black, 1934	%	0.78	0.79	0.94	0.86	0.79	0.92	1.17	1.07
2	% Sand	Hydrometer Method	%	41.7	56.7	42.7	40.7	52.8	52.8	52.8	53.8
3	% Silt	Hydrometer Method	%	8.0	7.0	9.0	15.0	7.0	10.0	11.0	8.0
4	% Clay	Hydrometer Method	%	50.3	36.3	48.3	44.3	40.2	37.2	36.2	38.2
5	Total Phosphorus as P	APHA 4500D	mg/L	BDL (DL:1)	BDL (DL: 1)	BDL (DL: 1)	BDL (DL: 1)	BDL (DL:1)	1.87	BDL (DL:1)	3.56
6	Iron (as Fe)	USEPA3052/ 3051A	mg/kg	16019.56	15707.85	25940.58	23085.5	25075.09	22649.00	22961.10	25478.80
7	Aluminium (as Al)	USEPA3050 B/3051A/3052	mg/kg	7961.60	7727.81	14576.05	11759.15	13233.53	11616.65	12344.63	13840.26

8	Chromium (as Cr)	USEPA3050 B/3051A/3052	mg/kg	60.50	59.80	98.98	88.89	93.98	86.92	90.92	98.67
9	Copper (as Cu)	USEPA3050 B/3051A/3052	mg/kg	8.74	8.59	18.10	14.92	17.27	15.45	17.75	17.17
10	Manganese (as Mn)	USEPA3050 B/3051A/3052	mg/kg	227.10	215.57	405.98	319.24	424.48	378.22	355.37	397.99
11	Nickel (as Ni)	USEPA3050 B/3051A/3052	mg/kg	19.06	18.46	34.68	29.32	32.03	28.59	30.57	32.32
12	Lead (as Pb)	USEPA3050 B/3051A/3052	mg/kg	8.12	8.02	11.77	10.52	11.87	10.77	11.19	11.81
13	Zinc (as Zn)	USEPA3050 B/3051A/3052	mg/kg	24.62	23.13	42.57	34.74	38.30	35.06	36.59	38.21
14	Mercury (as Hg)	USEPA3050 B/3051A/3052	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
15	Total Petrolium Hydrocarbons	USEPA 8015	mg/kg	<150	<150	<150	<150	<150	<150	<150	<150
16	Abundance	SO-IN-MUL-	Per	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

	of Macro Benthic Organism	TE-111	gm								
17	Abundance of Micro Benthic Organism	SO-IN-MUL-TE-111	Cfu/gm	$12X10^4$	$4X10^5$	$16X10^5$	$12X10^4$	$8X10^4$	$21X10^4$	$8X10^4$	$16X10^4$

SEDIMENT ANYALYSIS REPORT-DECEMBER 15

Sl no.	Parameters	Method	Unit	KE15-5437.001 Location:- Jetty Southend Date of sampling 18.12.2015	KE15-5437.002 Location:- Midd Jetty Date of sampling 18.12.2015	KE15-5437.003 Location:- Jetty North end Date of sampling 18.12.2015	KE15-5437.004 Location:- Turning Circle East Side Date of sampling 18.12.2015	KE15-5437.005 Location:- Boy No.10 Midd Channel Date of sampling 18.12.2015	KE15-5437.006 Location:- Boy No.11, Midd Channel Date of sampling 18.12.2015	KE15-5437.007 Location:- Boy No.14 Outer Channel Date of sampling 18.12.2015	KE15-5437.008 Location:- Boy No.15 Outer Channel Date of sampling 18.12.2015
1	Total Organic matter	Walkely and Black, 1934	%	0.33	0.36	0.39	0.23	0.38	0.2	0.27	0.19
2	% Sand	Hydrometer Method	%	50.2	56.2	54.2	58.2	53.2	53.2	56.2	57.2
3	% Silt	Hydrometer Method	%	12	10	12	9	14	14	9	7

4	% Clay	Hydrometer Method	%	37.8	33.8	33.8	32.8	32.8	32.8	34.8	35.8
5	Total Phosphorus as P	APHA 4500 D	mg/L	1.92	3.72	5.71	4.61	5.4	2.01	1.08	6.82
6	Iron (as Fe)	USEPA 3052/3051A	mg/kg	15249.06	16371.66	16713.31	14322.12	14714.74	15923.67	14153.23	15712.74
7	Aluminium (as Al)	USEPA 3050 B/3051A/3052	mg/kg	9700.57	10796.75	11104.47	8874.35	9269.34	9949.96	8900.28	1004.56
8	Chromium (aa Cr)	USEPA 3050 B/3051A/3052	mg/kg	75.89	78.46	76.14	67.65	69.75	78.88	68.77	75.96
9	Copper (as Cu)	USEPA 3050 B/3051A/3052	mg/kg	16.79	15.49	25.32	13.36	16.44	50.37	16.08	81.52
10	Manganese (as Mn)	USEPA 3050 B/3051A/3052	mg/kg	363.89	367.09	413.29	351.93	342.58	383.71	333.29	356.04
11	Nickel (as Ni)	USEPA 3050 B/3051A/3052	mg/kg	25.89	27.55	27.4	23.05	24.68	25.88	23.03	25.8
12	Lead (as Pb)	USEPA 3050 B/3051A/3052	mg/kg	16.57	16.48	18.8	15.51	16.33	24.5	15.68	31.94
13	Zinc (as Zn)	USEPA 3050 B/3051A/3052	mg/kg	42.98	43.92	45.92	37.84	39.76	44.77	37.35	45.17
14	Mercury (as Hg)	USEPA 3050 B/3051A/3052	mg/kg	<0.50	0.73	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
15	Total Petroleum Hydrocarbons	USEPA 8015	mg/kg	<150	<150	<150	<150	<150	<150	<150	<150

16	Abundance of Macro Benthic Organism	SO-IN-MUL-TE-111	per gm	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
17	Abundance of Micro Benthic Organism	SO-IN-MUL-TE-111	cfu/gm	22 x10^3	6 x 10^4	58x10^3	6x10^4	9x10^4	13 x 10^4	11 x 10^4	17 x 10^4

SEDIMENT ANALYSIS REPORT-NOVEMBER 15

Sl no.	Parameters	Method	Unit	KE15-5053.001 Location:- Jetty South end Date of sampling 27.11.2015	KE15-5053.002 Location:- Midd Jetty Date of sampling 27.11.2015	KE15-5053.003 Location:- Jetty North end Date of sampling 27.11.2015	KE15-5053.004 Location:- Turning Circle East Side Date of sampling 27.11.2015	KE15-5053.005 Location:- Boy No.10 Midd Channel Date of sampling 27.11.2015	KE15-5053.006 Location:- Boy No.11, Midd Channel Date of sampling 27.11.2015	KE15-5053.007 Location:- Boy No.14 Outer Channel Date of sampling 27.11.2015	KE15-5053.008 Location:- Boy No.15 Outer Channel Date of sampling 27.11.2015
1	Total Organic matter	Walkely and Black, 1934	%	1.04	0.87	0.95	1.06	1.14	0.86	0.76	0.43
2	% Sand	Hydrometer Method	%	33.8	27.6	32	29.6	31.6	28	32.7	31
3	% Silt	Hydrometer Method	%	6	20	19.9	18	24	19.8	16.9	20.8

4	% Clay	Hydrometer Method	%	60.2	52.4	50.2	52.5	44.5	52.1	50.3	48.2
5	Total Phosphorus as P	APHA 4500 D	mg/L	17.13	29.2	65.26	67.23	36.86	42.41	62.78	11.25
6	Iron (as Fe)	USEPA 3052/3051A	mg/kg	35359.83	33770.78	34553.33	37150.48	33514.87	34197.48	32160.78	36075.24
7	Aluminium (as Al)	USEPA 3050 B/3051A/3052	mg/kg	25915.24	238783.54	24182.75	26750.08	23919.38	25825.06	23389.69	26825
8	Chromium (aa Cr)	USEPA 3050 B/3051A/3052	mg/kg	123.65	121.95	122.96	135.39	123.56	137.34	125.82	135.87
9	Copper (as Cu)	USEPA 3050 B/3051A/3052	mg/kg	34.26	88.06	32.09	34.52	65.07	51.86	34.99	39.01
10	Manganese (as Mn)	USEPA 3050 B/3051A/3052	mg/kg	674.92	699.04	644.64	721.62	690.62	627.79	609.54	678.83
11	Nickel (as Ni)	USEPA 3050 B/3051A/3052	mg/kg	53.48	50.4	54.89	57.53	50.48	53.95	48.5	55.14
12	Lead (as Pb)	USEPA 3050 B/3051A/3052	mg/kg	22.42	32.56	21.56	22.59	27.93	24.87	21.57	22.45
13	Zinc (as Zn)	USEPA 3050 B/3051A/3052	mg/kg	78.99	74.02	69.27	73.6	70.48	69.57	63.25	72
14	Mercury (as Hg)	USEPA 3050 B/3051A/3052	mg/kg	1.11	1.66	1.26	1.47	1.28	1.23	0.97	0.91
15	Total Petrolium Hydrocarbons	USEPA 8015	mg/kg	<150	<150	<150	<150	<150	<150	<150	<150

16	Abundance of Macro Benthic Organism	SO-IN-MUL-TE-111	per gm	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
17	Abundance of Micro Benthic Organism	SO-IN-MUL-TE-111	Cfu/gm	5×10^4	8×10^4	7×10^4	4×10^5	14×10^3	5×10^4	12×10^5	12×10^4

SEDIMENT ANYALYSIS REPORT-OCTOBER 15

Sl no.	Parameters	Method	Unit	KE15-4582.001 Location:- Jetty South end Date of sampling 28.10.2015	KE15-4582.002 Location:- Midd Jetty Date of sampling 28.10.2015	KE15-4582.003 Location:- Jetty North end Date of sampling 28.10.2015	KE15-4582.004 Location:- Turning Circle East Side Date of sampling 28.10.2015	KE15-4582.005 Location:- Buoy No.10 Midd Channel Date of sampling 28.10.2015	KE15-4582.006 Location:- Buoy No.11, Midd Channel Date of sampling 28.10.2015	KE15-4582.007 Location:- Buoy No.14 Outer Channel Date of sampling 28.10.2015	KE15-4582.008 Location:- Buoy No.15 Outer Channel Date of sampling 28.10.2015
1	Total Organic matter	Walkely and Black, 1934	%	0.81	1.26	1.09	0.54	10.03	1.1	1.17	0.82
2	% Sand	Hydrometer Method	%	40.9	44.7	47.1	66.8	46.9	48.8	33.8	42
3	% Silt	Hydrometer Method	%	28.9	24	23.8	9	21.9	27.8	32.6	26

4	% Clay	Hydrometer Method	%	30.2	31.3	29.1	24.2	31.2	23.5	33.6	32
5	Total Phosphorus as P	APHA 4500 D	mg/L	39.81	40.14	28.06	27.08	113.56	128.91	10.03	24.72
6	Iron (as Fe)	USEPA 3052/3051A	mg/kg	27877.47	26075.17	29616.69	15792.25	27065.62	27075	26555.2	24433.18
7	Aluminium (as Al)	USEPA 3050 B/3051A/3052	mg/kg	14108.99	13213.62	15194.17	6836.97	13745.88	13737.57	13385.23	11632.29
8	Chromium (aa Cr)	USEPA 3050 B/3051A/3052	mg/kg	79.93	81.85	93.97	54.81	79.84	80.68	76.08	77.45
9	Copper (as Cu)	USEPA 3050 B/3051A/3052	mg/kg	21.1	20.72	22.78	9.94	18.36	19.38	19.34	18.32
10	Manganese (as Mn)	USEPA 3050 B/3051A/3052	mg/kg	625.69	459.62	523.07	440.15	586.52	590.38	604.92	429.7
11	Nickel (as Ni)	USEPA 3050 B/3051A/3052	mg/kg	31.12	31.39	37.01	17.89	31.02	31.1	30.92	35.56
12	Lead (as Pb)	USEPA 3050 B/3051A/3052	mg/kg	12.67	12.41	14.15	8.07	12.44	12.01	12.58	12.1
13	Zinc (as Zn)	USEPA 3050 B/3051A/3052	mg/kg	48.54	42.22	49.75	24.32	46.83	47.93	47.69	39.75
14	Mercury (as Hg)	USEPA 3050 B/3051A/3052	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
15	Total Petroleum Hydrocarbons	USEPA 8015	mg/kg	<150	<150	<150	<150	<150	<150	<150	<150

16	Abundance of Macro Benthic Organism	SO-IN-MUL-TE-111	per gm	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
17	Abundance of Micro Benthic Organism	SO-IN-MUL-TE-111	cfu/gm	11×10^4	15×10^4	18×10^3	12×10^4	21×10^3	5×10^4	9×10^4	6×10^4

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-5nos
2	MCC -1	(CO_2-4.5KG)-4nos (CO_2 -3KG)-2nos
3	MCC -2	(CO_2-4.5KG)-2nos
4	MCC -2(A)	(CO_2-4.5KG)-2nos
5	MCC -3	(CO_2-4.5KG)-2nos (CO_2 -3KG)-1no
6	MCC -4	(CO_2-4.5KG)-02
7	TP - 1(A)	CO_2-4.5KG-1no
8	TP - 1(B)	CO_2-4.5KG-1nos
9	TP - 2	CO_2-4.5KG-1no
10	TP - 2(A)	CO_2-4.5KG-1no
11	TP - 3	CO_2 -4.5KG-1no
12	TP - 3(A)	CO_2 -4.5KG-1no DCP-5KG-1nos
13	NEW TP-3	CO_2 -4.5KG-1no
14	TP - 4	CO_2 -4.5KG-1no
15	TP - 4 (A)	CO_2 -4.5KG-1no
16	TP - 5	CO_2 -4.5KG-1no
17	TP - 6	CO_2 -4.5KG-1no
18	TP-7	CO_2 -4.5KG-1nos
19	TP-8	CO_2 -4.5KG-1no
20	TP-9	CO_2 -4.5KG-1no
21	TP-10	CO_2 -4.5KG-1no
22	TP-11	CO_2 -4.5KG-1nos
23	TP - 12	CO_2 -4.5KG-1no
24	TP - 13	CO_2 -4.5KG-1no
25	JETTY	CO_2 -4.5KG-2nos DCP-5KG-5nos
26	SL	CO_2 -4.5KG-3nos DCP-5KG-1no
27	SUL-1	CO_2 -4.5KG-5nos
28	SUL-2	CO_2 -4.5KG-7nos
29	DRIVE HOUSE	CO_2 -4.5KG-1no DCP-5KG-1no
30	SILO - 1	CO_2 -4.5KG-3nos
31	SILO - 2	CO_2 -4.5KG-1nos
32	FIRE PUMP HOUSE	CO_2 -4.5KG-2nos
33	WTC -1	CO_2 -4.5KG-1no DCP-5KG-1nos CO_2 -3KG-2no
34	WTC -2	CO_2 -4.5KG-1no DCP-5KG-2nos CO_2 -3KG-1no
35	SR -1	CO_2 -4.5KG-1nos DCP-5KG-1nos
36	R - 1	CO_2 -4.5KG-1no
37	SR -2	CO_2 -4.5KG-1nos & CO_2 -3KG-1no, DCP-5KG-

		1no
38	SR -3	CO_2 -4.5KG-1no
39	SR -4	CO_2 -4.5KG-02no
40	F.L Smdith Office	CO_2-4.5KG-2No
41	PSS	CO_2 -4.5KG-3nos
42	BMH WORK SHOP	DCP-5KG-1nos
43	Equipment	DCP-5KG-09nos Foam(09ltrs)=01nos
44	LOCO SHED	DCP-5KG-1nos
45	TRANSFORMER HOUSE	CO_2 -4.5KG-2nos DCP-5KG-2no
46	IMWB Office	CO_2 -4.5KG-1no
47	DIESEL FILLING STATION	DCP-5KG-1no
48	WTP	CO_2 -4.5KG-3nos
49	DPCL OFFICE	CO_2 -4.5KG-2nos & CO_2-9KG-1no DCP-5KG-3nos,
50	CUSTOMS OFFICE	CO_2-4.5KG-1No DCP-5KG(BC)-1No
51	BAITARANI OFFICE	CO_2-4.5KG-1No, DCP -5KG-3Nos
52	DPCL STORE	CO_2 -4.5KG-1no
53	NEW CANTEEN	CO_2 -3KG-01no DCP-5KG-1no
54	DHAMRA HOUSE	DCP-5KG-4nos CO_2 -4.5KG-01no
55	KANIKA GUEST HOUSE	CO_2 -4.5KG-01no DCP-5KG-2nos
56	DAV SCHOOL	CO_2 -4.5KG-02nos DCP-5KG-1no
57	TOWNSHIP	CO_2 -4.5KG-11nos
58	COMMUNITY HALL	CO_2 -4.5KG-2nos DCP-5KG-1no
59	DHAMRA GUEST HOUSE	DCP-5KG-5nos
60	RAILWAY OFFICE	CO_2 -4.5KG-02no DCP-5KG-3nos
61	BHATATIRA STATION	CO_2(4.5kg)-2Nos DCP-5KG(BC)-1no
62	BHATATIRA LC-5	DCP-5KG-1no
63	GURUDASPUR STATION	CO_2-4.5KG-1No DCP-5KG-1No
64	GURUDAS PUR TSS	CO_2 -4.5KG-2nos DCP-10KG-2nos
65	INTAKE	CO_2 -4.5KG-3nos DCP-5KG-2nos
66	Ranital	CO_2 -4.5KG-2nos
67	GURUDAS PUR LC-19	DCP-5KG-1no
68	PMC OFFICE	CO_2 -4.5KG-1nos
69	PMC OFFICE-2 H.R	CO_2 -4.5KG-1nos
70	KOCHILA PMC OFFICE	CO_2 -4.5KG-1nos DCP-5KG-2nos
71	PREFEB	CO_2 -4.5KG-4nos DCP-5KG-5nos
72	Security ContainerNear Main Gate	CO_2 -4.5KG-1nos
73	Stock Balance with Fire Store	Foam 50ltr-1no,DCP-50,CO_2-30

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	01	18
2	Safety Induction Training	150	1922
3	Portable fire Extinguishers training	20	566
4	Contractor Owner safety training	01	8
5	Defensive driving training	13	247
6	Tool box training	11996	92164
7	On the Job Safety Awareness	56	1202

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 – STP MONITORING REPORT

11th March 2016

Sl. No	Parameters	Unit	Testing Method	Results			
				Inlet	Design parameter for raw sewage	Outlet	Prescribed limit
1	Appearance	--	--	Turbid	-	Clear	-
2	Colour	--	APHA 2120 B,C	Blackish	-	Colorless	-
3	Odour	--	APHA 2150 B	Foul	-	Odorless	-
4	pH	--	APHA 4500H B	7.12	6-8.5	7.75	5.5-9
5	Total Suspended Solids	mg/l	APHA 2540 D	66.7	1000	20	100
6	BOD for 3 days at 27°C	mg/l	IS 3025 (Part 44)	91	300-350	26	30
7	Residual free chlorine	mg/l	IS 3025 (Part 26)	<0.10	-	<0.10	-

12th February 2016

Sl. No	Parameters	Unit	Testing Method	Results			
				Inlet	Design parameter for raw sewage	Outlet	Prescribed limit
1	Appearance	--	--	Turbid	-	Clear	-
2	Colour	--	APHA 2120 B,C	Blackish	-	Colorless	-
3	Odour	--	APHA 2150 B	Foul	-	Odorless	-
4	pH	--	APHA 4500H B	6.95	6-8.5	7.72	5.5-9
5	Total Suspended Solids	mg/l	APHA 2540 D	44.8	1000	6	100
6	BOD for 3 days at 27°C	mg/l	IS 3025 (Part 44)	110.82	300-350	3.4	30
7	Residual free chlorine	mg/l	IS 3025 (Part 26)	<0.10	-	<0.10	-

Status of the conditions stipulated in Environment Clearance

15th January 2016

Sl. No	Parameters	Unit	Testing Method	Results			
				Inlet	Design parameter for raw sewage	Outlet	Prescribed limit
1	Appearance	--	--	Turbid	-	Clear	-
2	Colour	--	APHA 2120 B,C	Blackish	-	Colorless	-
3	Odour	--	APHA 2150 B	Foul	-	Odorless	-
4	pH	--	APHA 4500H B	6.98	6-8.5	7.15	5.5-9
5	Total Suspended Solids	mg/l	APHA 2540 D	33.4	1000	<2.0	100
6	BOD for 3 days at 27°C	mg/l	IS 3025 (Part 44)	100.8	300-350	4.7	30
7	Residual free chlorine	mg/l	IS 3025 (Part 26)	<0.10	-	<0.10	-

11th December, 2015

Sl. No	Parameters	Unit	Testing Method	Results			
				Inlet	Design parameter for raw sewage	Outlet	Prescribed limit
1	Appearance	--		Turbid	-	Clear	-
2	Colour	--	APHA 2120 B,C	Blackish	-	Colorless	-
3	Odour	--	APHA 2150 B	Foul	-	Odorless	-
4	pH	--	APHA 4500H B	6.98	6-8.5	7.55	5.5-9
5	Total Suspended Solids	mg/l	APHA 2540 D	120.8	1000	10.5	100
6	BOD for 3 days at 27°C	mg/l	APHA 5210 B	105.2	300-350	27.9	30
7	Residual free chlorine	mg/l	APHA 5220 B	BDL (DL:0.1)	-	BDL (DL:0.1)	-

13th November, 2015

Sl. No	Parameters	Unit	Testing Method	Results			
				Inlet	Design parameter for raw sewage	Outlet	Prescribed limit
1	Appearance	--		Turbid	-	Clear	-
2	Colour	--	APHA 2120 B,C	Blackish	-	Colorless	-
3	Odour	--	APHA 2150 B	Foul	-	Odorless	-
4	pH	--	APHA 4500H B	6.98	6-8.5	7.32	5.5-9
5	Total Suspended Solids	mg/l	APHA 2540 D	26.8	1000	11	100
6	BOD for 3 days at 27°C	mg/l	APHA 5210 B	40.2	300-350	3.2	30
7	Residual free chlorine	mg/l	APHA 5220 B	BDL (DL:0.1)	-	BDL (DL:0.1)	-

16th October, 2015

Sl. No	Parameters	Unit	Testing Method	Results			
				Inlet	Design parameter for raw sewage	Outlet	Prescribed limit
1	Appearance	--		Turbid	-	Clear	-
2	Colour	--	APHA 2120 B,C	Blackish	-	Colorless	-
3	Odour	--	APHA 2150 B	Foul	-	Odorless	-
4	pH	--	APHA 4500H B	7.9	6-8.5	7.54	5.5-9
5	Total Suspended Solids	mg/l	APHA 2540 D	48	1000	19.1	100
6	BOD for 3 days at 27°C	mg/l	APHA 5210 B	123.7	300-350	5.2	30
7	Residual free chlorine	mg/l	APHA 5220 B	BDL (DL:0.1)	-	BDL (DL:0.1)	-

ANNEXURE VI – NOISE MONITORING REPORT

Sl. No.	Location	23-24 March 2016		26-27 February 2016		20-21 January, 2016		Noise Standards	
		Max.	Min.	Max.	Min.	Max.	Min.	Day Time	Night Time
1	Near MCC 1	74	68	75	68	75	68	75	70
2	Near Settling Pond	75	68	75	68	75	68	75	70
3	Near WTP	72	63	72	60	72	60	75	70
4	Near Community Hall	63	53	59	49	59	49	75	70
5	Near Dhamra Guest House	56	49	58	48	58	48	65	55

Note: All values in dB (A)

Sl. No.	Location	23-24 December 2015		25-26 November 2015		28-29 October 2015		Noise Standards	
		Max.	Min.	Max.	Min.	Max.	Min.	Day Time	Night Time
1	Near MCC 1	74	63	74	70	74	60	75	70
2	Near Settling Pond	74	63	75	70	75	62	75	70
3	Near WTP	71	60	70	68	70	61	75	70
4	Near Community Hall	66	54	63	56	66	52	75	70
5	Near Dhamra Guest House	55	48	53	47	57	48	65	55

Note: All values in dB (A)

ANNEXURE VII – AMBIENT AIR MONITORING REPORT

AMBIENT AIR QUALITY MONITORING REPORT-MARCH 16

Air Quality Parameters	MCC 1	MCC 3	WTP	Community Hall	Old Guest House	NAAQS Standards
Sulphur Dioxide (SO_2) in µg/m^3	BDL (DL:5)	BDL (DL:5)	BDL (DL:5)	BDL (DL:5)	BDL (DL:5)	80
Nitrogen Dioxide (NO_2) in µg/m^3	BDL (DL:7)	BDL (DL:7)	BDL (DL:7)	BDL (DL:7)	BDL (DL:7)	80
PM10 in µg/m^3	37.4	39.5	23.6	26.1	24.5	100
PM2.5 in µg/m^3	19.7	15.5	10.3	18.2	11	60
Ozone (O_3) in µg/m^3	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	100
Benzene (C_6H_6) in µg/m^3	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	5
Lead (Pb) in µg/m^3	0.01	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	0.02	1
Carbon Monoxide (CO) in mg/m^3	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	02
Benzo (alpha) Pyrene in ng/m^3	BDL (DL: 0.2)	BDL (DL:0.2)	BDL (DL:0.2)	BDL (DL:0.2)	BDL (DL: 0.2)	1
Ammonia (NH_3) in µg/m^3	BDL (DL:20)	BDL (DL:20)	BDL (DL:20)	BDL (DL:20)	BDL (DL:20)	400
Arsenic (As) in ng/m^3	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	3.1	BDL (DL:2)	6
Nickel as Ni in ng/m^3	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	20

AMBIENT AIR QUALITY MONITORING REPORT-FEBRUARY 16

Air Quality Parameters	MCC 1	MCC 3	WTP	Community Hall	Old Guest House	NAAQS Standards
Sulphur Dioxide (SO_2) in µg/m^3	BDL (DL:5)	BDL (DL:5)	BDL (DL:5)	BDL (DL:5)	BDL (DL:5)	80
Nitrogen Dioxide (NO_2) in µg/m^3	BDL (DL:7)	BDL (DL:7)	BDL (DL:7)	BDL (DL:7)	BDL (DL:7)	80
PM10 in µg/m^3	67.7	39.2	38.9	31	26.1	100
PM2.5 in µg/m^3	16.5	22.4	15.2	14.1	12.9	60
Ozone (O_3) in µg/m^3	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	100
Benzene (C_6H_6) in µg/m^3	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	5
Lead (Pb) in µg/m^3	BDL	BDL	BDL	BDL	BDL	1

	(DL:0.01)	(DL:0.01)	(DL:0.01)	(DL:0.01)	(DL:0.01)	
Carbon Monoxide (CO) in mg/m³	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	**02**
Benzo (alpha) Pyrene in ng/m³	BDL (DL: 0.2)	BDL (DL:0.2)	BDL (DL:0.2)	BDL (DL:0.2)	BDL (DL: 0.2)	**1**
Ammonia (NH_3) in µg/m³	BDL (DL:20)	BDL (DL:20)	BDL (DL:20)	BDL (DL:20)	BDL (DL:20)	**400**
Arsenic (As) in ng/m³	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	3.1	BDL (DL:2)	**6**
Nickel as Ni in ng/m³	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	**20**

AMBIENT AIR QUALITY MONITORING REPORT-JANUARY 16

Air Quality Parameters	**MCC 1**	**MCC 3**	**WTP**	**Community Hall**	**Old Guest House**	**NAAQS Standards**
Sulphur Dioxide (SO_2) in µg/m³	BDL (DL:5)	BDL (DL:5)	BDL (DL:5)	BDL (DL:5)	BDL (DL:5)	**80**
Nitrogen Dioxide (NO_2) in µg/m³	BDL (DL:7)	BDL (DL:7)	BDL (DL:7)	BDL (DL:7)	BDL (DL:7)	**80**
PM10 in µg/m³	61.4	45.3	38.2	35.5	27.6	**100**
PM2.5 in µg/m³	23.3	16.0	17.7	19.0	17.7	**60**
Ozone (O_3) in µg/m³	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	**100**
Benzene (C_6H_6) in µg/m³	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	**5**
Lead (Pb) in µg/m³	0.011	0.021	0.014	0.032	0.015	**1**
Carbon Monoxide (CO) in mg/m³	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	**02**
Benzo (alpha) Pyrene in ng/m³	BDL (DL: 2)	BDL (DL:0.2)	BDL (DL:0.2)	BDL (DL:0.2)	BDL (DL:0.2)	**1**
Ammonia (NH_3) in µg/m³	BDL (DL:20)	BDL (DL:20)	BDL (DL:20)	BDL (DL:20)	BDL (DL:20)	**400**
Arsenic (As) in ng/m³	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	3.1	BDL (DL:2)	**6**
Nickel as Ni in ng/m³	2.9	3.3	6.1	9.9	2.1	**20**

AMBIENT AIR QUALITY MONITORING REPORT-DECEMBER 15

Air Quality Parameters	**MCC 1**	**MCC 3**	**WTP**	**Community Hall**	**Old Guest House**	**NAAQS Standards**
Sulphur Dioxide (SO_2) in µg/m³	BDL (DL:5)	BDL (DL:5)	BDL (DL:5)	BDL (DL:5)	BDL (DL:5)	**80**
Nitrogen Dioxide	BDL (DL:7)	BDL (DL:7)	BDL (DL:7)	BDL (DL:7)	BDL (DL:7)	**80**

(NO2) in µg/m³						
PM10 in µg/m³	82.4	59.3	63.4	65.3	44.7	100
PM2.5 in µg/m³	34.2	31	39	32	29.8	60
Ozone (O_3) in µg/m³	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	100
Benzene (C_6H_6) in µg/m³	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	5
Lead (Pb) in µg/m³	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	1
Carbon Monoxide (CO) in mg/m³	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	02
Benzo (alpha) Pyrene in ng/m³	BDL (DL:0.2)	BDL (DL:0.2)	BDL (DL:0.2)	BDL (DL:0.2)	BDL (DL:0.2)	1
Ammonia (NH_3) in µg/m³	BDL (DL:20)	BDL (DL:20)	BDL (DL:20)	BDL (DL:20)	BDL (DL:20)	400
Arsenic (As) in ng/m³	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	6
Nickel as Ni in ng/m³	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	20

AMBIENT AIR QUALITY MONITORING REPORT-NOVEMBER 15

Air Quality Parameters	MCC 1	MCC 3	WTP	Community Hall	Old Guest House	NAAQS Standards
Sulphur Dioxide (SO2) in µg/m³	BDL (DL:5)	5.5	7.7	5.6	7.1	80
Nitrogen Dioxide (NO2) in µg/m³	16	8.2	10	9.3	7.9	80
PM10 in µg/m³	41.7	50	44.5	36.9	31.8	100
PM2.5 in µg/m³	27.4	22.6	26.3	24.2	22.8	60
Ozone (O_3) in µg/m³	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	100
Benzene (C_6H_6) in µg/m³	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	5
Lead (Pb) in µg/m³	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	1
Carbon Monoxide (CO) in mg/m³	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	02
Benzo (alpha) Pyrene in ng/m³	BDL (DL:2)	BDL (DL:0.2)	BDL (DL:0.2)	BDL (DL:0.2)	BDL (DL:0.2)	1
Ammonia (NH_3) in µg/m³	BDL (DL:20)	BDL (DL:20)	BDL (DL:20)	BDL (DL:20)	BDL (DL:20)	400
Arsenic (As) in ng/m³	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	6

Nickel as Ni in ng/m³	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	**20**

AMBIENT AIR QUALITY MONITORING REPORT-OCTOBER 15

Air Quality Parameters	**MCC 1**	**MCC 3**	**WTP**	**Community Hall**	**Old Guest House**	**NAAQS Standards**
Sulphur Dioxide (SO_2) in µg/m³	BDL (DL:5)	BDL (DL:5)	BDL (DL:5)	BDL (DL:5)	BDL (DL:5)	**80**
Nitrogen Dioxide (NO_2) in µg/m³	BDL (DL:7)	BDL (DL:7)	BDL (DL:7)	BDL (DL:7)	BDL (DL:7)	**80**
PM10 in µg/m³	41	45.3	38.2	35.5	27.6	**100**
PM2.5 in µg/m³	26.1	16.0	17.7	19.0	17.7	**60**
Ozone (O_3) in µg/m³	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	BDL (DL:10)	**100**
Benzene (C_6H_6) in µg/m³	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	**5**
Lead (Pb) in µg/m³	BDL (DL:0.01)	0.021	0.014	0.032	0.015	**1**
Carbon Monoxide (CO) in mg/m³	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	**02**
Benzo (alpha) Pyrene in ng/m³	BDL (DL:0.2)	BDL (DL:0.2)	BDL (DL:0.2)	BDL (DL:0.2)	BDL (DL:0.2)	**1**
Ammonia (NH_3) in µg/m³	BDL (DL:20)	BDL (DL:20)	BDL (DL:20)	BDL (DL:20)	BDL (DL:20)	**400**
Arsenic (As) in ng/m³	BDL (DL:2)	BDL (DL:2)	BDL (DL:2)	3.1	BDL (DL:2)	**6**
Nickel as Ni in ng/m³	BDL (DL:2)	3.3	6.1	9.9	2.1	**20**

ANNEXURE-VIII COST BREAK UP OF ENVIRONMENT BUDGET V/S EXPENDITURE

S. No	Item Description	Allocation In Crores	Expenditure In Crores
		2015-16	
1	Monitoring of Environment Parameters by third party	0.2078	0.16355
2	WTP	0.7019	0.7019
3	STP	0.138	0.138
4	Solid Waste Management	0.3	0.1805738
5	Water Drainage Management	0.1898	0.1848
6	Providing Trawler to Forest Dept. for Patrolling	0.35	0.10622
7	Plantation	0.3288	0.3188
8	Contingent expenses for Phase II	0.08	0.08
9	Water Sprinkling on Road	0.422	0.422
10	Safety, Fire Tenders & Fire Fighting System	0.89	0.62
11	Kitchen Waste Converter	0.05	0.039
12	Dark Sky Lighting	0.344	0.344
13	Online Electronics Board	0	0.0415
	Total	**4.00**	**3.34**

ANNEXURE-IX Picture of INCOIS Electronic Display Board installed at Dhamra Fishing Harbour

ANNEXURE-X EMP and Action Plan

S. No.	Activity	Relevant Environmental components likely to be impacted	Likely Impacts in absence of Mitigation Measures	Mitigation Measures	Compliance
Construction 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 50 m 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 material Diesel run engines of construction machinery and dredgers Pile driving activities during construction of cargo berths	Procurement of machinery / construction equipment will be done in accordance with specifications conforming to source noise levels less than 85 dB (A) Well-maintained construction equipment, which meets the regulatory standards for source noise levels, will be used Noise attenuation will be practiced for noisy equipment by employing suitable techniques such as acoustic controls, insulation and vibration dampers Personnel exposed to noise levels beyond threshold limits will be provided with protective gear like earplugs, muffs, etc. Ambient noise levels will be monitored	We have a strict maintenance regimen for all plant machinery and equipment which is reviewed by the management everyday. PPE's like Earplug, muffs are being used in noise prone areas. 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 strengthened to cater the increased traffic	Government of Odisha has already 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.	Construction waste generated was used in low lying areas as a standard practice

				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.	Bio- degradable waste is being used a manure for horticulture activities and fo development of nursery Waste Segregation is being done at Poir of Generation and Color Coded bins ar in use in the Port Residential Area Burning of wastes is prohibited within th 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

				Necessary marker buoys will be installed. Regular Interactions with the fishing communities	
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 Periodic cleaning of cargo spills and speed regulations for vehicles engaged in transportation	Operational Phase (Phase –II)shall commence only after completion of the construction phase
		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. Oil spill control equipment such as booms / barriers will be provided for containment and skimmers will be provided for recovery	Operational Phase (Phase –II) yet to commence Oil Spill Containment equipment in readiness. Oil Spill drills are conducted on a regular basis

S. No.	Activity	Relevant Environmental components likely to be impacted	Likely Impacts in absence of Mitigation Measures	Mitigation Measures	Compliance
				Response time for shutting down the fueling, containment and recovery will be quicker.	
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 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.	Operational Phase (Phase –II) yet to commence

DPCL	**Dhamra Port Company Limited**	**From : Oct,15** **To : Mar,16**
Status of the conditions stipulated in Environment Clearance		

S. No.	Activity	Relevant Environmental components likely to be impacted	Likely Impacts in absence of Mitigation Measures	Mitigation Measures	Compliance
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

DPCL	**Dhamra Port Company Limited**	**From : Oct,15** **To : Mar,16**
Status of the conditions stipulated in Environment Clearance		

S. No.	Activity	Relevant Environmental components likely to be impacted	Likely Impacts in absence of Mitigation Measures	Mitigation Measures	Action Plan
9.	Handling of hazardous materials	Accidents due to products handling	Human life and loss of property	Hazardous materials will be stored as per the prescribed/approved (MSIHC) safety norms. Operation areas will be secured by fencing with controlled/limited entry points. Hazardous wastes (used oil & used battery) will be sent to OPCB approved recyclers. Medical facilities including first aid will be available for attending to injured workers. Regular check of pipelines and tank farms Emergency alarms, provision of fire hydrant system and fire station. Effective Disaster Management Plan (DMP) which covers onsite and offsite emergency plans.	Used Oil is the only hazardous wast e being handled currently and it is being recycled through authorized 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-XI 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 S. Sahoo
AGM – CC & CSR
Dhamra Port Company Limited
Mob - 9777453847

24.1.2014

(Jagannath Swain)
President, Zilla Parishad

ANNEXURE-XII 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)

E-mail : dyccebhub@explosives.gov.in
Phone/Fax No : 0674-2433370,2433390 Fax 2430656

संख्या /No. : P/EC/OR/14/1587 (P237780) दिनांक /Dated : 09/04/2015

सेवा में /To,

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

9 APR 2015

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 संदर्भ 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 DPCL/commercial/peso/346 दिनांक 04/12/2014 का संदर्भ ग्रहण करें ।

Please refer to your letter No. DPCL/commercial/peso/346 dated 04/12/2014 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 31/12/2016.

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 31/12/2016 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 31/12/2016.

कृपया पावती दें । Please acknowledge the receipt.

भवदीय /Yours faithfully,

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

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

OFS
WE SERVE TO SAVE

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.

The following fire protection measures have been provided in the above mentioned areas as indicated against each.

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

2

water to the fire fighting system. Besides 34 nos Co_2 (4.5 kg), 22 nos Co_2(3.2 kg), 08 nos DCP (5 kg) and 10 nos DCP(10 kg) fire extinguishers have been installed at required places.

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,

05/4/13

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-XIII Advertisement in Local Newspapers intimating grant of Environmental & CRZ Clearance

SAMBAD, Bhubaneswar
17 Jan 2014, P.5

ବିଜ୍ଞପ୍ତି

ଧାମରା ପୋର୍ଟର ଦ୍ୱିତୀୟ ପର୍ଯ୍ୟାୟ ଅନୁସାରେ ପାଇଁ ଭାରତ ସରକାରଙ୍କ ପରିବେଶ ଓ ଜଙ୍ଗଲ ବିଭାଗ ଦ୍ୱାରା F.No. 11-104/2009-IA-III(G) ତାରିଖ ୨୩.୧.୨୦୧୪ ରେ ପରିବେଶ ଓ ଉପକୂଳ ଅଞ୍ଚଳୀୟ ଅନୁମତି ପ୍ରଦାନ କରିଛନ୍ତି। ଏହାର ବିବରଣୀ ଏଥି http://www.envfor.nic.in ରେ ଉପଲବ୍ଧ ଅଛି।

SAMBAD
ସମ୍ବାଦ

SAMAJ - 16.01.14
P.5
୧୬ ଜାନୁୟାରୀ ୨୦୧୪

ବିଜ୍ଞପ୍ତି

ଧାମରା ପୋର୍ଟର ଦ୍ୱିତୀୟ ପର୍ଯ୍ୟାୟ ଅନୁସାରେ ପାଇଁ ଭାରତ ସରକାରଙ୍କ ପରିବେଶ ଓ ଜଙ୍ଗଲ ବିଭାଗ ଦ୍ୱାରା F.No. 11-104/2009-IA-III(G) ତାରିଖ ୨୩.୧.୨୦୧୪ ରେ ପରିବେଶ ଓ ଉପକୂଳ ଅଞ୍ଚଳୀୟ ଅନୁମତି ପ୍ରଦାନ କରିଛନ୍ତି। ଏହାର ବିବରଣୀ ଏଥି http://www.envfor.nic.in ରେ ଉପଲବ୍ଧ ଅଛି।

ANNEXURE-XIV ENVIRONMENT STATEMENT FOR FY 2015-16

DPCL/ENV-12/01/15 **12th September, 2015**

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

Dear Sir,

Kind Attn: Shri Rajiv Kumar (IFS)

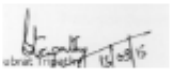
Sub: Environmental Statement for the financial year ending 31st March, 2015 for M/s Dhamra Port Company Ltd.

Ref: Consent Order No. 8540/INC-I-CON-6348 dated 25th May 2015

With reference to the above mentioned subject and reference, Please find enclosed Environmental Statement in Form V prescribed under Rule 14 of the Environment (Protection) Rules 1986, for M/s Dhamra Port Company Ltd, Village-Dosinga, Tahasil-Chandbali, Dist-Bhadrak for the financial year ending 31st March 2015.

Thank you,

Yours faithfully,
For **Dhamra Port Company Ltd.**



Subrat Tripathy
(Chief Executive Officer)

Encl: As above.

Copy to:

Dr. TEJINDER SINGH, IFS
Additional Principal Chief Conservator of Forests (C),
Ministry of Environment, Forest and Climate Change,
Regional Office (EZ),
A/3, Chandersekharpur,
Bhubaneswar – 751023

Environment Statement for 2014-15 for M/s Dhamra Port Company Ltd.

FORM V
(See Rule 14)

Environmental Statement for the Financial Year ending 31st March 2015

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, Tehsil-Chandbali, 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	:	21st October, 2014

Environment Statement for 2014-15 for M/s Dhamra Port Company Ltd.

PART – B

Water and Raw Material Consumption

(i) Water Consumption

Water Consumption Cu. Mtr./Day	
Process	Nil
Cooling	Nil
Domestic	972.7 m^3/day

Name of Products	Process Water Consumption per unit of Product Output	
	During the previous financial year (2013-14)	During the current financial year (2014-15)
Handling of Iron Ore, Coal, Limestone*	0.0224m3/Ton	0.0229 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 (2013-14)	During the current financial year (2014-15)
NIL*	Not Applicable	Nil	Nil

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

Environment Statement for 2014-15 for M/s Dhamra Port Company Ltd.

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 (2013-14)	During the current financial year (2014-15)
(a) From Process	*28.296KL	*10.159KL
(b) From Pollution Control facilities	Nil	Nil

Environment Statement for 2014-15 for M/s Dhamra Port Company Ltd.

PART – E

Solid Waste

Solid Waste	Total Quantity Generated (MT/Annum)	
	During the previous financial year (2013-14)	During the current financial year (2014-15)
(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 waste recycler, M/s Good Luck Petroleum Pvt. Ltd.
- Composted bio-degradable waste is used as a manure in Green Belt
- E- Waste is supplied to OPCB authorized E-Waste Collection Centre for recycling.

Environment Statement for 2014-15 for M/s Dhamra Port Company Ltd.

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 2014-15, the total of Rs. 3.22 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, 60,000 plants have been planted along the north & south edges of the corridor. Plantation of suitable species has been taken up in and around the port bulb and admin/Residential area with effect from 2010 & is continuing. So far 1, 90,500 plants suitable for the site have been planted at Port site apart from the rail road corridor plantation mentioned above.

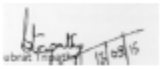
- Scattered mangroves near southern boundary of port in phase I development were excluded by fencing & steps taken for conserving them. Mangrove plantation programme is taken up at suitable places in consultation with the forest department.

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.

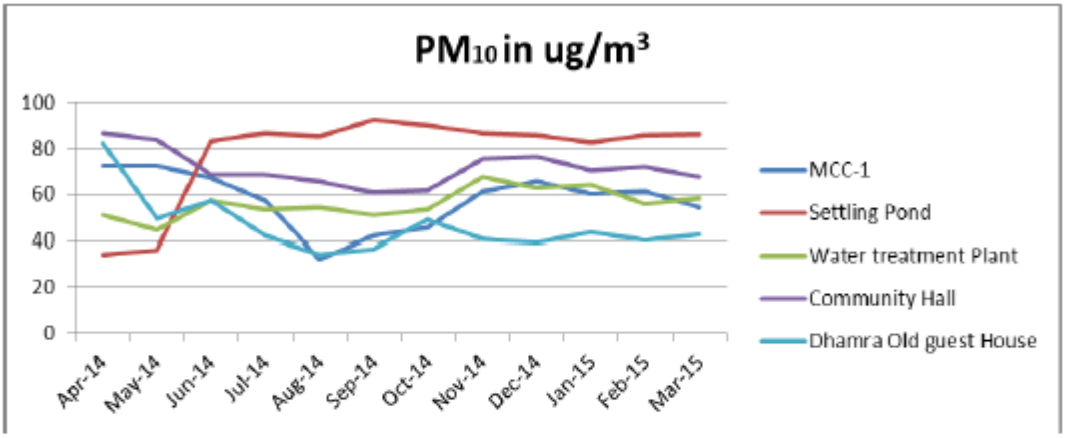


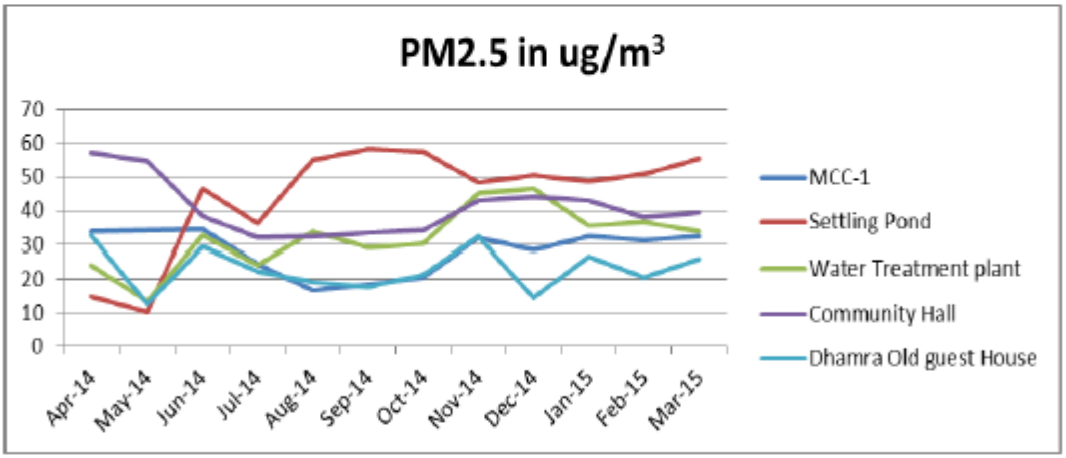
Date : 12-09-2015

(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, Tahasil- Chandbali, Dist- Bhadrak

Environment Statement for 2014-15 for M/s Dhamra Port Company Ltd.

Annexure 1





Environment Statement for 2014-15 for M/s Dhamra Port Company Ltd.