Vijayasankar K

From: Sathish Kumar R
Sent: Saturday, May 22, 2021 4:11 PM
To: eccompliance-tn@gov.in
Cc: monitoring-ec@nic.in; ssuresh.cpcb@nic.in; Member Secretary, TNPCB; DEE Gummidipoondi; tndoe@nic.in; Jai Khurana; Milind Sangtiani; Vijayasankar K
Subject: MIDPL - Kattupalli Port, Chennai - Bifurcation of EC&CRZ Clearance vide F. No 10-130/2007 – IA.III - Half Yearly Compliance Report for the period of October 2020 to March 2021 – Reg.
Attachments: MIDPL-HYCR- Oct'20 to Mar'21.pdf

Importance: High

MIDPL/EC-HYC/2021/95 Date: 20-05-2021

To
Additional Principal Chief Conservator of Forests (C),
Ministry of Environment, Forest and Climate Change, Regional Office (South Eastern Zone),
Ist and IInd Floor, Handloom Export Promotion Council,
34, Cathedral Garden Road, Nungambakkam,
Chennai – 600 034. Email : eccompliance-tn@gov.in

Dear Sir,

Sub : Half yearly Compliance report of Environment and CRZ Clearance for the development of proposed Port at Kattupalli, Tiruvallur District of Tamil Nadu by M/s Marine Infrastructure Developer Pvt. Limited for the period of October 2020 to March 2021 – Reg.

Ref : CRZ & Environmental Clearance for the development of proposed Port at Kattupalli, Tiruvallur District of Tamil Nadu by M/s Marine Infrastructure Developer Pvt. Limited – bifurcation of EC&CRZ Clearance vide F. No 10-130/2007 – IA.III dtd . 9th February 2018

With reference to the captioned subject and cited reference above; we are herewith submitting the Half yearly compliance report for the compliance period **October 2020 to March 2021** to the conditions stipulated in CRZ & Environment Clearance (the cited reference).

This is for your kind information and record please.

Thanking you,

for **M/s. Marine Infrastructure Developer Private Ltd**

R. Sathish Kumar
Head - Environment (Southern Ports) | Adani Ports and Special Economic Zone Limited |
Mob +91 91760 00959 | Direct: +91 44 2796 8177 | Extn. 69177 |
sathish.r@adani.com | www.adaniports.com |

Registerd Office : Ramcon Fortuna Towers, 4th floor No 1/2, Kodambakkam High Road, Nungambakkam, Chennai-600034
Port Office : Kattupalli Port, Ponneri Taluk, Tiruvallur District – 600 120.

adani
Ports and Logistics

KATTUPALLI PORT
CHENNAI's NEW GATEWAY

MIDPL/EC-HYC/2021/95 Date: 20-05-2021

To
Additional Principal Chief Conservator of Forests (C),
Ministry of Environment, Forest and Climate Change, Regional Office (South Eastern Zone),
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This is for your kind information and record please

Thanking you,

for **M/s. Marine Infrastructure Developer Private Ltd**

Jai Singh Khurana
Managing Director

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 (Email : monitoring-ec@nic.in **)**
2. Zonal Office, Central Pollution Control Board, A-Block, Nisarga Bhavan, 1st and 2nd Floors, 7th D Cross, Thimmaiah Road, Shivanagar, Bengaluru, Karnataka 5600879 (Email : ssuresh.cpcb@nic.in)
3. The Member Secretary, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai - 600 032 (Email : tnpcbmembersecretary@gmail.com)
4. The District Environmental Engineer, Tamil Nadu Pollution Control Board, No.88,SIPCOT Industrial Complex, Gummidipoondi, Tiruvallur District -601 201. (Email : deegummidipoondi@gmail.com)
5. Member Secretary TNCZMA & Director – Dept of Environment, No.1, Jeenis Road, Panagal Building, Ground Floore, Saidapet, Chennai -600 015. (Email : tndoe@nic.in)

Marine Infrastructure Developer Pvt Ltd
(Kattupalli Port)
Kattupalli Village, Ponneri Taluk,
Tirivalluvar District 600 120,
Tamil Nadu, India

Tel +91 44 2824 3062

CIN: U74999TN2016PTC103769

adani Ports and Logistics	Marine Infrastructure Developer Pvt Ltd	From: October 2020 To : March 2021
Status of Conditions Stipulated in Environmental and CRZ Clearance File no: 10-130/2007- A.III dated: 09/02/2018		

Half yearly Compliance report on conditions stipulated in Environmental & CRZ Clearance		
S. No.	**Conditions**	**Compliance Status**
Specific Conditions		
(i)	The proponent shall comply all the conditions stipulated in the letter R.C.No. P1/2004/2008, dated 21.10.2008 of the Department of Environment, Chennai.	**Complied.** Compliance to letter R.C.No. P1/2004/2008, dated 21.10.2008, is enclosed as **Annexure -I.**
(ii)	The proponent shall comply all the commitment made vide his letter No. D/Shipyard/00/07 dated 20.03.2009.	**Complied** This EC is just a bifurcation of original EC of LTSB in name of MIDPL & LTSB. All applicable commitments, w.r.t letter No. D/Shipyard/00/07 dated 20.03.2009 like provision of fire station, independent port connectivity, and no reclamation on areas outside port, non-usage of Tri Butyl Tin [TBT] and treatment of waste water in STP and recycling, disposal of hazardous waste to authorised recyclers are being complied.
(iii)	Provision shall be made for the housing of Construction labour within the site with all necessary infrastructure and facilities such as fuel or cooking, mobile toilets, mobile STP, safe drinking water, medical health care, creche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	**Complied.** All the construction works are completed, and the port is in operation phase.
(iv)	There shall be no withdrawal of groundwater in Coastal Regulation Zone area, for this project. In any case any ground water is proposed to be withdrawn from outside the CRZ area, specific prior permission from the concerned State /Central Groundwater board shall be obtained in this regard.	**Complied.** No groundwater is withdrawal from CRZ Area. Presently unit is procuring Desalinated water from M/s. Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB), Chennai. In case of Groundwater withdrawal outside CRZ area prior permission will be obtained from State/Central Groundwater Board.
(v)	No dumping of dredging materials in the sea shall be undertaken. In case of sea dumping required, an integrated Modelling study to be	**Complied.** No dumping of dredging material was carried out during the compliance period of October 2020 to March 2021.

	carried out to locate the dump site so that it does not cause any problem to Ennore port.	Dredge material dumping location has already been identified by M/s. LTSB through modelling studies.
(vi)	Shoreline changes due the project shall be monitored continuously nourishment of northern shoreline shall be carried out using the sediments from beach acceleration on the southern shoreline.	**Complied.** MIDPL has engaged Institute of Ocean Management, Anna University, Chennai for shoreline Change study. Report of the same is submitted along with Half Yearly Compliance Report for the period Oct'19-Mar'20 vide our Letter No. MIDPL / EC – HYC / 2020 / 11 dated 31.05.2020.
(vii)	Suitable Screens shall be installed between the construction area and the intakes so that operations of the intakes are not affected by the construction activity.	**Complied.** Works/construction completed, and the port is in operation phase. No impact envisaged.
(viii)	At least a distance of 100 meter shall be provided between intake of Chennai Water Desalination Ltd. (CWDL) and north edge of the northern breakwater as agreed in the meeting between the proponent and CWDL	**Complied.** Distance maintained as agreed. 

(ix)	Independent port connectivity shall be developed.	**Complied.** An independent port connectivity has been developed. Kattupalli Port is having a dedicated road connectivity connecting State Highways and National Highways. NH-5 (Chennai – Kolkata) is about 30 km from Port. The cargo handled are directly goes to the roads mentioned above which are outside the City Limits of Chennai. Handling of cargo in Kattupalli Port does not affect the regular traffic. The Outer Ring Road from NH-45 connecting NH 4 – NH 205 – NH 5 is getting take-off from Minjur. Further, the Outer ring road is proposed to be connected to Section I (NPAR Project) of Chennai Peripheral Ring Road on an extent of 134 km starting from Kattupalli to Mahabalipuram. The project is getting commenced shortly, which will further enhance the cargo carrying capacity of Kattupalli Port. Kattupalli Port is located Close proximity to majority of CFSs serving immediate hinterland and enabling faster evacuation of cargo.
(x)	Rehabilitation if any shall be carried out as per law / State Government.	**Complied.** Rehabilitation was carried out completely as per law / State Government at the time of project implementation by M/s. LTSB.

(xi)	Fire station shall be located within the project area	**Complied.** MIDPL is having: • dedicated fire station with fire tender (1 No) and 15-member fire crew (DCPO – 3 Nos, Firemen – 11 Nos. and Supervisor – 1 No). • 309 Nos of Fire Extinguishers (ABC, Foam, CO2) fixed in various locations in the port (with 10% additional stock) and 33 Sand Buckets. • Fire water pumphouse with an underground storage tank of 12 lakhs Liters capacity with 5 pumps (2 Electrical, 2 Diesel and 1 Jockey Pump). • fire hydrant points (51 Single Hydrant Points and 12 Double Hydrant Points) and 12 water monitors are placed at various strategic locations. MIDPL is facilitated with a Fire Tender with the following features: • Water Tank Capacity - 5500lts • Foam Tank Capacity - 500lts • DCP Extinguishers - 75 kg – 2nos • Co2 Extinguishers - 22.5 kg – 4nos • BA Set - 1no (Oxygen cylinder 2nos) 
(xii)	The Hazardous waste generated shall be properly collected and handled as per the provisions of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016.	**Complied.** Hazardous wastes generated are properly collected and handled inline to Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 as amended. Details of the same are submitted to TNPCB as a part of Hazardous waste annual return (Form 4) on regular basis. Annual Hazardous Waste Return for FY 2019-20 is attached as **Annexure – II.**
(xiii)	The wastewater generated from the activity shall be collected,	**Complied.**

	treated and reused properly.	Domestic wastewater generated are being collected, treated in STP's and the entire treated sewage water is reused for green belt maintenance. Inlet & outlet characteristic of Sewage water is regularly analysed by NABL accredited laboratory. The monitoring results for the period Oct-2020 to Mar-2021 is enclosed as **Annexure - III**.
(xiv)	Sewage Treatment Facility should be provided in accordance with the CRZ Notification.	**Complied.** Sewage Treatment Plants (3 Nos) with total capacity of 45 KLD are provided in accordance with the CRZ notification. Domestic wastewater generated are being collected, treated in STP's and the entire treated sewage water is reused for green belt maintenance. Inlet & outlet characteristic of Sewage water is regularly analysed by NABL accredited laboratory. The monitoring results for the period Oct-2020 to Mar-2021 is enclosed as **Annexure - III**.
(xv)	No Solid Waste will be disposed of in the Coastal Regulatory Zone area. The Solid Waste shall be properly collected segregated and disposed as per the provision of Solid Waste Management Rules, 2016.	**Complied.** No solid waste is being disposed of in the CRZ area. All the solid waste generated is properly collected, source segregation of all types of Solid Waste is practised and are disposed as per the provision of Solid Waste Management Rules 2016, as amended. Integrated waste Management system is in place and all wastes are being handled inline to 5R principle (Reduce, Reuse, Reprocess, Recycle & Recover). Following wastes are handled (inline to 5R principle) during the Compliance Period. • Metal Scraps – 84.55 MT • Wood Wastes - 32.775 MT • Used Tyres – 27.66 MT • Food Wastes – 1.398 MT

		   
(xvi)	Installation and operation of DG set if any shall comply with the guidelines of CPCB.	**Complied** Tamil Nadu Electricity Board (TNEB) Power supply is available for Port Operations. However, DG set of capacities 2000 kVA (2 Nos), 500 KVA (2 Nos) and 125 KVA (1 NO) are installed inline to CPCB guidelines as backup Power. Flue gas analysis report of the DG Set stack for the period Oct-2020 to Mar-2021 is attached as **Annexure III.**
(xvii)	Air quality including the VOC shall be monitored regularly as per the guidelines of CPCB and reported.	**Complied.** Ambient Air Quality Monitoring is being carried out through NABL accredited laboratory. Air Quality Monitoring Reports for the period Oct-2020 to Mar-2021 is enclosed as **Annexure-III.** We have also installed Continuous Ambient Air Quality Monitoring Station (Including BTX analyser to monitor VOC). CAAQMS has been connected to TNPCB server and data is transferred on real-time basis. All the parameters are well with the prescribed standards.

		 
(xviii)	The project proponent shall undertake green belt development all along the periphery of the project area and also alongside the road.	**Complied.** Greenbelt of adequate size has been developed along the periphery of the project area and alongside the road and are being maintained by MIDPL. Till date, 25,374 Nos. of trees has been planted and around 19,324 Nos of trees planted during the compliance period.  

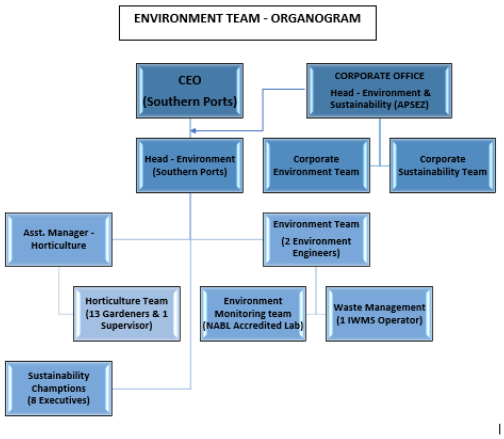
		
(xix)	All necessary clearances from the concerned agencies shall be obtained before initiating the project.	**Complied.** The project is in operation after obtaining all the necessary clearances (as applicable) from the concerned agencies as described below. • Tamil Nadu Maritime Board (TNMB) clearance – 575/S1/2008 dated 24.05.2012 • Fire and Rescue License – 159/2015 (Renewal) dated 10.06.2015. • PESO Licenses – P/SC/TN/15/2514(P266086) dated 25.05.2012 (15 KL) and P/SC/TN/14/6260(P266084) dated 16.08.2012 (50 KL).
(xx)	Project proponent shall install necessary oil spill mitigation measures in the shipyard. The details of the facilities provided shall be informed to this Ministry within 3 months from the date of receipt of this letter.	**Complied.** All necessary precaution has been taken to avoid any kind of spillages. Oil Spill Contingency Plan has been prepared and is being followed. Oil spill contingency plan along with list of available oil spill equipment submitted vide our Letter No. MIDPL/TNPCB/GMP/EC-HYC dated 14.05.2018.

Activity/Drill	Number of Persons trained	Total Man-hours Trained
OSPR Equipment Commissioning-Training / Drill - 12.10.2020	25	75

		OSPR Equipment Commissioning- Training / Drill - 13.10.2020 | 30 | 120 OSPR Equipment Quarterly Drill / Inspection - 19.01.2021 | 8 | 48 **Total** | **63** | **243**   
(xxi)	No hazardous chemicals shall be stored in the Coastal Regulation Zone area.	**Noted for Compliance**. No hazardous chemical is stored in CRZ Area.

(xxii)	The project shall not be commissioned till the requisite water supply and electricity to the project are provided by the PWD/ Electricity Department.	**Complied.** Requisite permission for Water Supply and Electricity has been obtained from Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB) and Tamil Nadu Electricity Board respectively before commissioning.
(xxiii)	Specific arrangements for rainwater harvesting shall be made in the project design and the rain water so harvested shall be optimally utilized.	**Being Complied.** MIDPL is having Rainwater Collection facilities including Storm Water drains and Rainwater Harvesting Pond. Existing Rainwater Harvesting pond is used for Greenbelt maintenance. Water table is observed to be high in and around the Port area.     
(xxiv)	The facilities to be constructed in the CRZ area as part of this project shall be strictly in conformity with the provisions of	**Complied.** All construction has been done in line to CRZ Notification, 2011 & EC&CRZ clearance obtained.

	the CRZ Notification, 2011 and its amendment. The facilities such as office building and residential buildings which do not require waterfront and foreshore facilities shall not be constructed within the Coastal Regulation Zone area.	
General Conditions:		
(i)	Construction of the proposed structures shall be undertaken meticulously conforming to the existing Central/local rules and regulations including Coastal Regulation Zone Notification 1991 & its amendments. All the construction designs /drawings relating to the proposed construction activities must have approvals of the concerned State Government Departments /Agencies.	**Complied.** Project is in operation phase. All construction activity has been done in line to the existing Central/local rules including CRZ Notification, 2011 and EC & CRZ clearance obtained
(ii)	Adequate provisions for infrastructure facilities such as water supply, fuel, sanitation etc. shall be ensured for construction workers during the construction phase of the project so as to avoid felling of trees/mangroves and pollution of water and the surroundings.	**Complied.** Project is in Operation Phase.
(iii)	The project authorities shall make necessary arrangements for disposal of solid wastes and for the treatment of effluents by providing a proper wastewater treatment plant outside the CRZ area. The quality of treated effluents, solid wastes and noise level etc. must conform to the standards laid down by the competent authorities including the Central/State Pollution Control Board and the Union Ministry of Environment and Forests under the Environment	**Complied.** No solid waste is being disposed of in the CRZ area. Integrated waste Management system is in place. All the solid waste generated is properly collected, source segregation of all types of Solid Waste is practised and are disposed as per the provision of Solid Waste Management Rules 2016, as amended. Sewage Treatment Plants (3 STPs) of total capacity of 45 KLD are provided for treatment of wastewater in line to CRZ Notification 2011. Domestic wastewater generated are being collected, treated in

	(Protection) Act, 1986, whichever are more stringent.	STP's and the entire treated sewage water is reused for green belt maintenance. Inlet & outlet characteristic of Sewage water is regularly analysed by NABL accredited laboratory. The monitoring results for the period Oct-2020 to Mar-2021 is enclosed as **Annexure - III**. Regular Environment Monitoring is being carried out through NABL accredited agency. Monitoring Reports for the period Oct-2020 to Mar-2021 are enclosed as **Annexure –III.** All the monitoring results are well within the prescribed standard.
(iv)	The proponent shall obtain the requisite consents for discharge of effluents and emissions under the Water (Prevention and Control of Pollution) Act, 1974 and the Air (prevention and Control of Pollution) Act, 1981 from the Tamil Nadu State Pollution Control Board before commissioning of the project and a copy of each of these shall be sent to this Ministry.	**Complied.** Requisite Consents for discharge of effluents and emissions under the Water (Prevention and Control of Pollution) Act, 1974 and the Air (prevention and Control of Pollution) Act, 1981 were obtained before commissioning of the project and submitted to Ministry. Project is in operation phase and Consent to Operate has been obtained from the Tamil Nadu State Pollution Control Board vide **Consent Order No. 1907125448424 & 1907225448424 dated 05/07/2019 valid till 31.03.2021.**
(v)	In order to carry out the environmental monitoring during the operational phase of the project, the project authorities shall establish an environmental laboratory well equipped with standard equipment and facilities and qualified manpower to carry out the testing of various environmental parameters.	**Complied.** MIDPL is having Environmental Management Cell, staffed with qualified personnel at site supported by team at Head Office in Ahmedabad. Environment monitoring is being carried out through NABL accredited Laboratory. 

(vi)	The proponents shall provide for a regular monitoring mechanism so as to ensure that the treated effluents conform to the prescribed standards. The records of analysis reports must be properly maintained and made available for inspection to the concerned State/Central officials during their visits.	**Complied.** Domestic Wastewater is being treated in STP's and inlet & outlet characteristic of water is regularly analysed by NABL accredited laboratory. The monitoring results for the period Oct-2020 to Mar-2021 is enclosed as **Annexure - III**. All the results are found well within the prescribed standard. Records are made available at site for inspection of concerned State / Central officials during their visit.
(vii)	The sand dunes and mangroves, if any, on the site shall not be disturbed in any way.	**Complied.** No Sand dune and mangroves are present on the site.
(viii)	A copy of the clearance letter will be marked to the concerned Panchayat / local NGO, if any, from whom any suggestion / representation has been received while processing the proposal.	**Complied.** This EC is just a bifurcation of original EC of LTSB. No representation received during the proposal stage.
(ix)	The Tamil Nadu Pollution Control Board shall display a copy of the clearance letter at the Regional Office, District Industries Centre and Collector's Office/Tehsildars Office for 30 days.	**Complied.** The condition does not pertain to project proponent
(x)	The funds earmarked for environment protection measures shall be maintained, in a separate account and there shall be no diversion of these funds for any other purpose. A year-wise expenditure on Environmental safeguards shall be reported to this ministry	**Complied.** Separate budget for the Environment Protection is earmarked every year. All the expenses are recorded in advanced accounting system of the organization. Expenditure for Environment Management measures during Oct-2020 to Mar-2021 is Rs. 159.33 Lakhs. The breakup details are as follows; **S. No.** / **Description of Work** / **Cost (Rs.) in Lakhs** 1 / Comprehensive Environmental Monitoring / 2.63 2 / Environmental studies / 52.86 3 / Integrated Waste Management & Pollution Under Check Facility / 1.15

		<table><tr><td>4</td><td>O&M of STP's</td><td>7.42</td></tr><tr><td>5</td><td>Housekeeping</td><td>41.0</td></tr><tr><td>6</td><td>Greenbelt Plantation & Maintenance</td><td>54.27</td></tr></table>
(xi)	Full support shall be extended to the officers (this Ministry's Regional Office at Chennai and the officers of the Central and State Pollution Control Boards by the project proponents during their inspection for monitoring purposes, by furnishing full details and action plans including the action taken reports in respect of mitigative measures and other environmental protection activities.	**Noted for Compliance.** Full support is extended to the officers of RO-MoEF & CC Chennai, CPCB & TNPCB during their inspection and site visit. During the compliance period, Scientist – C, RO-MoEF& CC visited the port on 04.12.20 for Compliance monitoring & inspection and monthly visit was made by TNPCB Officials. All the necessary support was extended to them and the same shall be continued in future also.
(xii)	In case of deviation or alteration in the project including the implementing agency, a fresh reference shall be made to this ministry for modification in the clearance conditions or imposition of new ones for ensuring environmental protection.	**Noted for Compliance.** There is no deviation or alteration in the project including implementing agency.
(xiii)	This Ministry reserves the right to revoke this clearance, if any of the conditions stipulated are not complied with to the satisfaction of this Ministry.	**Noted for Compliance.**
(xiv)	This Ministry or any other competent authority may stipulate any other additional conditions subsequently, if deemed necessary, for environmental protection, which shall be complied with.	**Noted for Compliance.**
(xv)	The Project proponents shall inform the Regional Office at Chennai 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.	**Complied.** The same has been Complied by LTSB before bifurcation itself.
EC & CRZ Amendment letter No. 10-130/2007- A.III dated 12.05.2010:		
(i)	The details of combined effect on both the Ports (i.e. Ennore Port and Kattupalli Port) shall be carried out to monitor the impact of the post-dumping. This model study shall be	**Complied.** M/s LTSB has already carried out detailed modelling study to understand impact of post dumping and report was submitted to Ministry.

	carried out for a period of one year.	No dumping was being carried by MIDPL during the period Oct-2020 to Mar-2021. MIDPL engaged Institute of Ocean Management, Anna University to carry out shoreline studies of the concerned area. Reports of the same is submitted along with Half Yearly Compliance Report for the period Oct'19-Mar'20 vide our Letter No. MIDPL/EC-HYC/2020/11 dated 31.05.2020.
(ii)	A comparison between model study and actual dumping shall be carried out to examine the impacts both on North-East and South-West of the Ports and shall be submitted to the Ministry,	**Complied.** Comparison between model study and actual dumping was made to examine the impacts and report was submitted to Ministry by LTSB. No dumping was being carried by MIDPL during the compliance period of Oct-2020 to Mar-2021. MIDPL engaged Institute of Ocean Management, Anna University for studies. Reports of the same is submitted along with Half Yearly Compliance Report for the period Oct'19-Mar'20 vide our Letter No. MIDPL/EC-HYC/2020/11 dated 31.05.2020.
(iii)	No reclamation of the areas outside the Port limit and Buckingham Canal shall be carried out.	**Being Complied.** No reclamation of the areas outside Port Limit and Buckingham Canal is being carried out.
EC & CRZ Extension of validity letter No. 10-130/2007- XIII dated 17.12.2014:		
(i)	The cargo should only include (i) Container 21.60 MTPA, (ii) Ro-Ro – 0.22 MTPA, (iii) Project cargo – 0.44 MTPA, (iv) Break bulk/General cargo (Barytes/Gypsum/Limestone/Granite/Steel cargo) – 1.82 MTPA and (v) Edible oil, CBFS, Base oil and Lube oil and non-hazardous liquid cargo - 0.57 MTPA	**Being Complied**.
(ii)	All the conditions stipulated by the Tamil Nadu Coastal Zone Management Authority (TNCZMA) vide letter no. 6064/EC.3/2014-1 dated 26.06.2014, shall be strictly complied with.	**Complied.** All the conditions stipulated by the Tamil Nadu Coastal Zone Management Authority (TNCZMA) vide letter no. 6064/EC.3/2014-1 dated 26.06.2014 are being complied. Compliance status of the

		same is enclosed as **Annexure – IV.**
(iii)	No additional land should be utilized for the proposed development.	**Complied**
(iv)	As committed, the local traffic should not be disturbed.	**Complied.** Separate road is available for the local Traffic. Kattupalli Port is having a dedicated road connectivity connecting State Highways and National Highways. NH-5 (Chennai – Kolkata) is about 30 km from Port. The cargo handled are directly goes to the roads mentioned above which are outside the City Limits of Chennai. Handling of cargo in Kattupalli Port does not affect the regular traffic.
5	These stipulations would be enforced among other under the provisions of water (Prevention and Control of Pollution) Act, 1974 the Air (Prevention and Control of Pollution) Act 1981, the Environment (Protection) Act, 1986, the Public Liability (Insurance) Act, 991, the Hazardous Chemical (Manufacture, storage and Import) Rules, 1989, Solid Waste Management Rules, 2016 and the Coastal Regulation Zone Notification, 2011 and its subsequent amendments made there under from time to time.	**Noted for Compliance.**
6	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.** The project is in operation after obtaining all the necessary clearances (as applicable) from the concerned agencies as described below. • Tamil Nadu Maritime Board (TNMB) clearance – 575/S1/2008 dated 24.05.2012 • Fire and Rescue License – 159/2015 (Renewal) dated 10.06.2015. • PESO Licenses – P/SC/TN/15/2514(P266086) dated 25.05.2012 (15 KL) and P/SC/TN/14/6260(P266084) dated 16.08.2012 (50 KL).

7	The project proponent should 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 Clearance and copies of clearance letters are available with the Tamil Nadu Pollution Control Board and may also be seen on the website of the Ministry of Environment and Forests at http://envfonnic.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 Chennai.	**Complied**. Copy of the same is already submitted along with the Compliance report for the period Oct-2018 to Mar-2019 vide our Letter No. MIDPL/TNPCB/GMP/EC-HYC dated 24.05.2019
8	Any appeal against this Environmental Clearance shall lie with the National Environment Appellate Authority, if preferred, within a period of 30 day as prescribed under section 11 of the National Environment Appellate Act, 1997.	**Noted.**
9	Status of compliance to the various stipulated environmental conditions and environmental safeguards will be uploaded by the project proponent in its website.	**Complied**. • Six monthly Compliance Report of CRZ & EC Clearance is uploaded on company website regularly (https://www.adaniports.com/ports-downloads) • Environment Statement (Form-V) for the year 2019-2020 was submitted to TNPCB vide letter No. MIDPL/TNPCB/2020-21/32 dated 21.9.2020. Copy of the same is uploaded on Company website and sent to Regional Office of MoEF&CC by e-mail on 21.09.20. Copy of the same is attached as **Annexure VII.**
10	This Environmental and CRZ Clearance is valid till 2" July, 2019.	**Noted.**
11	This issue with the approval of the Competent Authority.	**Noted.**

Enclosures:

Annexure Number	Details of Annexure
Annexure I:	Compliance to RC No. P1/2004/2008, dated 21.10.2008 of Department of Environment, Chennai
Annexure II:	Annual Hazardous Waste Returns – Form IV FY 2019-20.
Annexure III:	Environmental Monitoring reports for the period Oct-2020 to Mar-2021
Annexure IV:	Compliance to TNSCZMA conditions during Oct-2020 to Jan-2021
Annexure V:	Mock Drills carried out during Oct-2020 to Mar-2021
Annexure VI:	EMP Compliance Status
Annexure VII	Environment Statement (Form V) FY 2019-20

adani Ports and Logistics	Marine Infrastructure Developer Pvt Ltd	From : October 2020 To : March 2021

Status of Compliance to RC No. P1/2004/2008, dated 21.10.2008 of Department of Environment, Chennai

Annexure -1

Sl. No	Conditions	Compliance
i	The unit shall carry out dumping/ land filling at dredged material only on land which is not covered under CRZ	**Noted for Compliance**
ii	The unit shall not carry out any ship breaking activity	**Not applicable**
iii	The unit should design that the waste water should be recycled 100% and to be used for developing greenery etc., and there should not be any waste water let out.	**Complied** Domestic wastewater generated are being collected, treated in STP's and the entire treated sewage water is reused for green belt maintenance. Inlet & outlet characteristic of Sewage water is regularly analysed by NABL accredited laboratory. The monitoring results for the period Oct-2020 to Mar-2021 is enclosed as **Annexure - III**.
iv	The unit should tie - up with institutions like Centre for Environmental Studies or IIT for the periodical monitoring during construction phase so as to ensure the adoption of Safety measures as per the Environmental Management Plan [EMP].	**Complied.** M/s. LTSB carried out the studies during Construction Phase.
v	Before commencing construction activities, Proper resettlement for the local the unit should ensure the proper resettlement of local inhabitants residing at the project area to the satisfaction of District Collector and submit a report to the Department of Environment.	**Not applicable.** Complied by M/s. LTSB. Rehabilitation & resettlement was carried out completely as per law / State Government at the time of project implementation. Bifurcation of original CRZ & EC of LTSB obtained vide File no: 10-130/2007- A.III dated 09/02/2018.
General Conditions		
a	There should not be any extraction of Ground Water in CRZ.	**Noted for compliance.** No groundwater is withdrawal from CRZ Area. Presently unit is procuring desalinated water from M/s. Chennai Metropolitan Water Supply and Sewerage Board, Chennai.
b	The unit should obtain planning permission for their constructions from the CMDA/Department of Environment before commencing the constructions	**Not applicable.** Project is in operation phase. Bifurcation of original CRZ & EC of LTSB obtained vide File no: 10-130/2007- A.III dated 09/02/2018.

		Required permission from concerned authorities was taken by M/s. LTSB before commencing the constructions.
c	The proposed activities should not cause coastal erosion and alter the beach configuration	**Complied.** MIDPL has engaged Institute of Ocean Management, Anna University, Chennai for shoreline Change study. Report of the same is submitted along with Half Yearly Compliance Report for the period Oct'19-Mar'20 vide our Letter No. MIDPL / EC – HYC / 2020 / 11 dated 31.05.2020
d	No fencing or barricading along the pipeline alignment and parallel to the coast is permissible in CRZ.	**Agreed for compliance.** All activities permissible as per CRZ notification 2011 & EC&CRZ clearance will only be carried out.
e	No blasting or drilling activities in CRZ is permissible.	**Agreed for compliance.** No blasting or drilling activity is carried in CRZ area. All activities permissible as per CRZ notification 2011 & EC&CRZ clearance will only be carried out.
f	The proponent should not prevent public from easy access to the beach.	**Being complied.** MIDPL will not block the access point to beach for the public.
g	Chemical waste generated and the sewage generated, if any should not be discharged in to the sea.	**Complied.** No chemical waste is generated. Domestic wastewater generated are being collected, treated in STP's and the entire treated sewage water is reused for green belt maintenance. Inlet & outlet characteristic of Sewage water is regularly analysed by NABL accredited laboratory. The monitoring results for the period Oct-2020 to Mar-2021 is enclosed as **Annexure - III**.
h	The proponent should implement the EMP including the Green Belt as envisaged in the EIA report.	**Complied.** The EMP is being implemented in letter & spirit. Greenbelt of adequate size has been developed along the periphery of the project area and alongside the road and are being maintained by MIDPL. Till date, 25,374 Nos. of trees has been planted and around 19,324 Nos of trees planted during the compliance period.

		Operational Phase EMP compliance status is enclosed as **Annexure – VI.**
i	The project activity should not affect the coastal ecosystem including marine flora and fauna.	**Complied** Marine water & Sediment quality are being monitored through NABL accredited laboratory on monthly basis. There is no impact on water quality in the vicinity. The details of Marine Water quality monitoring report for the period October 2020 to March 2021 is enclosed as **Annexure-III**.
j	The proponent should not undertake any activity, which is violate of provisions of CRZ Notification 1991 and the subsequent amendments.	**Being complied.** All activities permissible as per CRZ notification 2011 & EC&CRZ clearance will only be carried out.
k	The CRZ Clearance will be revoked if any of the conditions stipulated in not complied with.	**Noted for compliance**

Annexure - II

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Ports and Logistics

KATTUPALLI PORT
CHENNAI's NEW GATEWAY

MIDPL/TNPCB/GMP/HWR-2020/15

Date: 22/06/2020

To,

The District Environmental Engineer,
Tamil Nadu Pollution Control Board,
EPIB Building, A.O Block,
Gummidipoondi Industrial Complex,
Gummidipoondi – 601 201.

Dear Sir,

Sub: Submission of Annual Hazardous Waste Returns (FORM 4) for the period April'2019 to March'2020- Reg.

With reference to captioned subject, **M/s. Marine Infrastructure Developer Private Limited** is submitting the Annual Hazardous Waste Returns in Form 4 for the period April'2019 to March'2020.

Submitted for your kind records.

Kindly acknowledge us the receipt of the same.

for, **M/s. Marine Infrastructure Developer Pvt Ltd**

R. Sathish Kumar
Head - Environment

Marine Infrastructure Developer Pvt Ltd Chennai 600 120

Encl: As above

भारतीय डाक India Post
ET025425417IN IVR:698402542[illegible]
SP NORTH CHENNAI THERMAL PP SO <600120>
Counter No:1,24/06/2020,13:08
To:THE DIST ENVI,TN POLLUTION CON
PIN:601201, Gummidipundi SO
From:SATHISHKUMA,HEAD ENVIRONMENT
Wt:110gms
Amt:41.30(Cash)Tax:6.30
<Track on www.indiapost.gov.in>
<Dial 18002666868> <Wear Masks, Stay Safe>

Marine Infrastructure Developer Pvt Ltd
(Kattupalli Port)
Kattupalli Village, Ponneri Taluk,
Tirivalluvar District 600 120,
Tamil Nadu, India

Tel +91 44 2824 3062
CIN: U74999TN2016PTC103769

FORM 4

[See rules 6(5), 13(8), 16(6) and 20 (2)]

FORM FOR FILING ANNUAL RETURNS

[To be submitted to State Pollution Control Board by 30th day of June of every year for the proceeding period April 2019 to March 2020]

1	Name and address of facility:	M/s. Marine Infrastructure Developer Pvt Ltd (MIDPL) Kattupalli Village, Ponneri Taluk, Tiruvallur District - 600120
2	Authorisation No. and Date of issue:	Authorization No. 19HFC20312718 & dated 30.04.2019
3	Name of the authorised person and full address with telephone, fax number and e-mail:	Mr. Jai Khurana Director Marine Infrastructure Developer Pvt Ltd. Kattupalli Village, Ponneri Taluk, Tiruvallur District – 600120. Tel: +91 44 2824 3062. Mail: Jai.Khurana@adani.com
4	Production during the year (product wise), wherever applicable	Not Applicable

Part A. To be filled by hazardous waste generators

1	Total quantity of waste generated category wise	**Cargo residue, washing water and sludge containing Oil**	**Waste containing oil**	**Oil contaminated filter element**
	Category	3.1	5.2	3.3
	Quantity	50.310 Tonnes	0	0
2	Quantity dispatched	-	-	-
	(i) to disposal facility	NIL	NIL	NIL
	(ii) to recycler or co-processors or pre-processor	50.310 Tonnes	0	0
	(iii) others	NIL	NIL	NIL
3	Quantity utilised in-house, if any -	Cargo residue, washing water and sludge containing Oil: **NIL** Waste containing oil: **NIL** Oil contaminated filter element: **NIL**		
4	Quantity in storage at the end of the year –	Oil Sludge: **NIL** Waste containing oil: **NIL** Oil contaminated filter element: **NIL**		

Part B. To be filled by Treatment, Storage and Disposal Facility operators

1	Total quantity received -	Not Applicable
2	Quantity in stock at the beginning of the year -	
3	Quantity treated –	
4	Quantity disposed in landfills as such and after treatment –	
5	Quantity incinerated (if applicable) -	
6	Quantity processed other than specified above -	
7	Quantity in storage at the end of the year -	

Part C. To be filled by recyclers or co-processors or other users

1	Quantity of waste received during the year – (i) domestic sources (ii) imported (if applicable)	Not Applicable
2	Quantity in stock at the beginning of the year -	
3	Quantity recycled or co-processed or used –	
4	Quantity of products dispatched (wherever applicable) –	
5	Quantity of waste generated -	
6	Quantity of waste disposed -	
7	Quantity re-exported (wherever applicable)-	
8	Quantity in storage at the end of the year -	

Metline Infrastructure Developer Pvt Ltd. Chennai 600 120

Date: 22.06.2020
Place: Chennai

Signature of the Occupier

Annexure - III

REPORT ON

COMPREHENSIVE ENVIRONMENTAL MONITORING

FOR

MARINE INFRASTRUCTURE DEVELOPER PRIVATE LIMITED (MIDPL)
KATTUPALLI VILLAGE, PONNERI TALUK,
THIRUVALLUR DISTRICT, TAMILNADU – 600 120

OCTOBER 2020 - MARCH 2021

PREPARED BY:

Green Chem Solutions Pvt. Ltd.
No.883, 11th Street,
Syndicate Bank Colony,
Anna Nagar West Extension,
Chennai - 600 101.

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Index for Table

I. INTRODUCTION

Marine Infrastructure Developer Private Limited **(MIDPL)**, subsidiary of Adani Ports and Special Economic Zone Limited (APSEZ) is operating Kattupalli Port, having the latest technology of Terminal Operating System which is the first of its kind in India, which can support the entire supply chain in doing business smoothly.

MIDPL have engaged M/s. Green Chem Solutions (P) Ltd, an Accredited Consultant by NABL to carry out the Comprehensive Environmental monitoring studies in the Port site continuously as per the norms. This report covers the monitored environmental data for the Period Oct 2020 to Mar 2021.

II. LOCATION OF THE PROJECT

The Project site is located at Port area, Kattupalli Port Area.

The location map is shown in Fig - 1

Fig – 1 – Location Map

III. SCOPE OF WORK

The scope of Comprehensive Environmental monitoring includes the following environmental components;

1. Meteorological data
2. Ambient Air Quality
3. Ambient Noise Level
4. Marine Sampling
5. Treated STP / ETP Water.
6. Potable water
7. DG Set emission

The parameters covered under the scope for each of the above attributes are given below:

SCOPE OF WORK

S.No	Attribute	Scope	Frequency
1.	Meteorological Data	Collection of micrometeorological data on hourly basis by installing an auto weather monitoring station at plant site covering the following parameters : • Wind speed • Wind direction • Rainfall • Relative Humidity • Temperature • Barometric pressure • Solar Radiation	Daily
2.	Ambient Air Quality	Sampling of ambient air at 04 stations for analyzing the following parameters: • PM10 • PM2.5 • SO_2 • NO_2 • CO • Lead • Ozone • Ammonia • Benzene • BenzoPyrene • Arsenic • Nickel	Weekly Twice
3.	Ambient Noise	Collection of Noise levels on hourly basis at 4 locations • L_{eq} – Day (Max and Min) • L_{eq} – Night (Max and Min)	Monthly Once
4.	Marine Sampling		

4a.	Surface and Bottom Water	Collection of Surface and Bottom Water analyzed for - 2 location • Temperature • pH @ 25°C • Total Suspended Solids • BOD at 27 °C for 3 days • Dissolved oxygen • Salinity at 25 °C • Oil & Grease • Nitrate as No_3 • Nitrite as No_2 • Ammonical Nitrogen as N • Ammonia as NH_3 • Kjeldahl Nitrogen as Nl • Total phosphates as PO_4 • Total Nitrogen, • Total Dissolved Solids • COD • Total bacterial count, • Coliforms • Escherichia coli • Salmonella • Shigella • Vibrio cholera • Vibrio parahaemolyticus • Enterococci • Colour • Odour • Taste • Turbidity • Calcium as Ca • Chloride as Cl • Cyanide as CN • Fluoride as F • Magnesium as Mg • Total Iron as Fe • Residual Free Chlorine • Phenolic Compounds as $C_6 H_5 OH$ • Total Hardness as $CaCO_3$ • Total Alkalinity as $CaCO_3$ • Sulphide as H_2S • Sulphate as SO_4 • Anionic surfactants as MBAS • Monocrotophos • Atrazine • Ethion • Chiorpyrifos • Phorate • Mehyle parathion • Malathion • DDT (o,p and p,p-Isomers of • DDT,DDE and DDD • Gamma HCH (Lindane) • Alppha HCH • Beta HCH	Monthly Once

		• Delta HCH • Endosulfan (Alpha,betaandsulphate) • Butachlor • Alachlor • Aldrin/Dieldrin • Isoproturon • 2,4-D • Polychlorinated Biphenyls(PCB) • Polynuclear aromatic • hydrocarbons (PAH) • Arsenic as As • Mercury as Hg • Cadmium as Cd • Total Chromium as C • Copper as Cu • Lead as Pb • Manganese as Mn • Nickel as Ni • Selenium as Se • Barium as Ba • Silver as Ag • Molybdenum as Mo • Octane • Nonane • Decane • Undecane • Tridecane • Tetradecane • Pentadecane • Hexadecane • Heptadecane • Octadecane • Nonadecane • Elcosan	
4b.	Sea Sediment	Collection of sea sediment analyzed for - 2 location • pH • Organic Matter • Moisture Content • Conductivity • Iron • Sodium • Copper • Nickel • Zinc • Manganese • Lead • Boron • Phosphate • Chloride • Sulphate • Sulphide • Pesticide	Monthly Once

		• Potassium • Total Chromium • Petroleum Hydrocarbon • Aluminium • Total Nitrogen • Organic Nitrogen • Phosphorus • Texture	
4c.	Phytoplankton Monitoring	• Total Count • No. of species • Chlorophyll-a • Major Species	Monthly Once
4d.	Zooplankton Monitoring	• Total Count • No. of species • Major	Monthly Once
4e.	Microbiological Monitoring	• Total Bacteria count • Total Coliform • Faecal Coliform • E.Coli • Enterococcus • Salmonella • Sheigella • Vibrio	Monthly Once
4f.	Primary Productivity Monitoring	• Gross primary productivity • Net Primary productivity	Monthly Once
4g.	Phytobenthos Monitoring data	• Fungus • Total Count • No. of species • Diversity Index • Major species	Monthly Once
4h.	Total Fauna Monitoring	• Name of phylum • Class • Number of Individuals encountered • Total no. of species encountered • Total fauna	Monthly Once
5.	STP Treated Water	Collection of STP Treated water analyzed for – 2 locations • pH • TSS • BOD • Faecal Coliforms	Monthly Once
6.	Potable Water analysis	Collection of Drinking water analyzed for – 1 locations - As per IS 10500 2012 – 36 Parameters	Monthly Once
7	DG Set Emissions – 3Nos & Liquid Terminal oil Generator	Sampling of Emission at 04 stations for analyzing the following parameters: • PM • Carbon Monoxide • NO_x – NO_2 • SO_2	Monthly Once

IV. METHODOLOGY

Methodologies adopted for sampling and analysis for each of the above parameters are detailed below

1	**Meteorological parameters**	
	Auto weather station	
2	**Ambient Air Quality**	
	Parameters	**Method**
	RespirableSuspendedParticulateMatter(PM10)	IS5182Part23:2006
	ParticulateMatter PM2.5	GCS/Lab/SOP/087, CPCB Guidelines
	SulphurdioxideasSO$_2$	IS5182 Part2 :2001(Reaff.2006)
	OxidesofNitrogenas NO$_2$	IS5182 Part6 :2006
	LeadasPb	IS5182 Part22:2004(Reaff.2009)
	ArsenicasAs	GCS/Lab/SOP/089, CPCB Guidelines
	NickelasNi	GCS/Lab/SOP/090, CPCB Guidelines
	Carbonmonoxide as CO	IS5182Part10:1999(Reaff.2009
	OzoneasO$_3$	IS5182Part9:1974[Reaff.2009]
	AmmoniaasNH$_3$	GCS/Lab/SOP/086, CPCB Guidelines
	Benzene (α) pyrene	IS 5182 – Part 12
	BenzeneasC$_6$H$_6$	IS5182Part11:2006
3	**Ambient Noise Monitoring**	
	L_{eq} Day & Night	InstrumentManual, GCS/LAB/SOP/Noise/001
4	**Marine Sampling**	
	Surface and Bottom Water	APHA Methods 23rd Edition, 2017 Standard Methods for examination of Water and Waste water and IS 3025 & USEPA Test Methods
	Sea Sediment	
	Phytoplankton Monitoring	
	Zooplankton Monitoring	
	Microbiological Monitoring	
	Primary Productivity Monitoring	
	Phytobenthos Monitoring data	
	Total Fauna Monitoring	
5	**STP Water Analysis**	
	pH , TSS, BOD , Faecal Coliforms	APHA Methods 23rd Edition, 2017 Standard Methods for examination of Water and Waste water and IS 3025
6	**New Water Analysis**	
	As per IS 10500 : 2012–36 Parameters	APHA Methods 23rd Edition, 2017 Standard Methods for examination of Water and Waste water and IS 3025
7	**Emission Monitoring**	
	PM, Carbon Monoxide, NO_x – NO_2, SO_2	IS 11255 Methods of measurement of emissions from Stationary source

V. ENVIRONMENTAL MONITORING: Oct 2020 - Mar2021

S.No	ATTRIBUTE	SCOPE
1.	Meteorological parameters	Collection of micrometeorological data at project site on daily basis with hourly frequency
2.	Ambient Air Quality	Collection of ambient air at 4 locations.
3.	STP water	Collection of STP outlet water at two locations
4.	Ambient Noise	Collection of Ambient noise levels for day and night at 4 locations
5.	Drinking Water	Collection of Drinking water at Canteen Building
6.	Marine Water and Marine Sediments	Collection of Marine water and Marine Sediments at Three locations
7	DG Set Emissions	Collection of DG Set Emissions.

i. METEOROLOGICAL DATA

Meteorological data was collected on hourly basis by installing an auto weather monitoring station at Plant site. The report depicted here under represents the data for the period Oct 2020 to Mar 2021.

The following parameters were recorded

- Wind speed
- Wind direction
- Ambient Temperature
- Ambient Pressure
- Relative humidity
- Rainfall

ANNEXURE – 1 MICROMETEOROLOGY DATA OCT - 2020

Date	Ambient Temperature (°C)			Atmospheric Pressure (mbar)			Predominant wind Direction (Blowing From)	Wind Speed (m/s)			Relative Humidity (%)			Rainfall mm
	Min	Max	Avg	Min	Max	Avg		Min	Max	Avg	Min	Max	Avg	
01.10.20	25.5	33.1	28.8	1001.8	1006.3	1004.2	W	0	2.7	0.9	67	91	81.0	0.2
02.10.20	26.6	34.8	29.6	1002.4	1006.2	1004.4	SW	0	3.1	1.2	61	91	80.8	0.0
03.10.20	26.2	32.7	29.6	1003	1006.4	1004.6	WSW	0	5.4	1.8	71	91	81.2	0.8
04.10.20	27.3	31.9	29.6	1003.7	1007.7	1005.5	SW	0.4	4	1.2	72	84	79.3	0.0
05.10.20	26.8	35.3	30.4	1002.6	1007	1005.0	W	0	3.1	1.3	56	83	73.9	0.0
06.10.20	27.2	34.7	29.7	1002.7	1006.8	1004.9	SW	0	2.7	1.7	63	90	81.2	0.0
07.10.20	27.3	34.3	29.5	1003.7	1007.7	1005.9	SE	1.3	4.5	2.5	66	90	85.0	0.0
08.10.20	28.1	31.3	29.3	1003.7	1008.1	1006.2	SSE	0	3.1	1.8	78	93	87.3	0.0
09.10.20	28.2	29.9	29.1	1004	1008.3	1006.4	SE	0	3.1	1.6	83	90	87.3	0.0
10.10.20	26.7	30.6	28.4	1004	1007.3	1005.8	NW	0	1.3	0.3	79	90	85.5	0.8
11.10.20	24.7	30.7	27.7	1001.4	1006.1	1003.8	WNW	0	2.2	1.1	74	93	85.4	2.0
12.10.20	25.7	31.8	27.4	999.1	1004.3	1001.8	W	0	1.3	0.5	69	93	86.2	9.6
13.10.20	26	32.7	29.0	997.3	1001.8	999.9	SW	0	3.1	1.9	69	94	80.8	0.2
14.10.20	27	33.1	29.4	999.9	1003.7	1001.6	SW	1.3	4	2.6	65	85	75.9	0.0
15.10.20	27.3	32.6	29.4	1001.5	1005.5	1003.4	N	0.9	3.1	2.0	61	86	73.7	0.0
16.10.20	26.9	31.5	29.4	1001.4	1005.7	1003.7	ENE	0	1.3	0.5	79	92	85.8	0.0
17.10.20	24.5	27.1	25.8	1003.2	1008.5	1005.8	NW	0	0.9	0.1	81	96	93.8	16.0
18.10.20	24.7	27.1	25.8	1003.7	1008.5	1005.8	W	0	0.9	0.1	89	96	93.8	16.6
19.10.20	25.5	32.1	28.2	1002.9	1007.7	1005.1	WSW	0	1.3	0.2	72	96	87.4	0.2
20.10.20	25.1	28.5	26.7	1002.9	1006.9	1004.8	WNW	0	1.8	0.3	86	95	91.3	5.2
21.10.20	25.1	29.9	27.3	1003.2	1007.8	1005.5	WNW	0	3.6	1.4	82	95	88.8	0.2
22.10.20	25.4	33.5	28.0	1002.2	1006.8	1004.9	SW	0	2.7	1.0	72	93	87.3	0.2
23.10.20	23.8	32.3	27.4	1002.8	1007.5	1005.3	WSW	0	2.7	1.1	78	96	89.3	8.8
24.10.20	25.7	32.1	28.3	1004.7	1009	1006.6	WSW	0	1.3	0.6	76	90	84.5	0.0
25.10.20	26.8	31.3	29.0	1006.6	1010.1	1008.6	NNE	0	1.3	0.2	77	92	84.3	0.0
26.10.20	25.8	31.2	28.6	1007.2	1011.8	1009.4	NNE	0	1.8	0.6	74	94	84.9	0.0
27.10.20	26.3	30.8	28.7	1006.3	1010.8	1008.7	NNE	0	2.2	0.8	77	94	84.7	0.0
28.10.20	23.9	28.4	26.3	1007.7	1012	1009.5	WNW	0	2.7	1.1	80	93	88.3	11.6
29.10.20	23.1	28.3	25.7	1007.9	1013.2	1009.8	NNE	0.4	2.2	1.3	78	96	88.6	67.2

30.10.20	24.9	30.6	27.6	1007.1	1010.9	1009.2	NNE	0	2.7	1.3	70	89	81.5	0.0
31.10.20	24.4	31.4	28.1	1007.1	1011	1009.4	NNE	0	1.8	0.4	68	94	82.0	0.0

NOV - 2020

Date	Ambient Temperature (°C)			Atmospheric Pressure (mbar)			Predominant wind Direction (Blowing From)	Wind Speed (m/s)			Relative Humidity (%)			Rainfall mm
	Min	Max	Avg	Min	Max	Avg		Min	Max	Avg	Min	Max	Avg	
01.11.20	24.9	31.2	28.3	1007.7	1011.9	1010.0	NE	0	0.4	0.1	74	94	84.9	0.0
02.11.20	25.1	31.1	28.4	1008.9	1012.6	1010.8	NNE	0	1.3	0.3	76	95	86.4	0.0
03.11.20	26.4	31.6	29.0	1008.6	1012.7	1010.7	NNE	0	1.3	0.5	78	95	86.2	0.0
04.11.20	26.5	30.8	28.8	1007.9	1012.6	1010.5	NNE	0	1.3	0.3	81	92	87.2	1.8
05.11.20	25.7	30.7	28.7	1008.7	1012.9	1010.9	NNE	0	1.8	0.4	81	92	86.5	1.4
06.11.20	28.6	31.7	29.8	1010.7	1014.2	1012.3	NE	0	0.9	0.3	78	87	83.0	0.0
07.11.20	26.7	30.7	28.5	1011.5	1014.9	1012.8	NE	0	2.7	0.6	80	90	85.3	5.4
08.11.20	26.3	30.1	29.0	1011.5	1014.8	1013.0	NNE	0.9	2.2	1.8	75	90	79.6	3.4
09.11.20	27.4	30.5	28.6	1009.6	1014.4	1012.0	NNE	0.9	1.8	1.3	65	76	71.8	0.0
10.11.20	25.8	30.1	28.0	1007.2	1012.1	1010.0	NNE	0	1.3	0.9	64	82	71.0	0.0
11.11.20	22.6	27.8	25.6	1007.4	1011.9	1009.6	NW	0.4	4	2.3	78	95	87.1	5.6
12.11.20	24.1	27.4	25.1	1009.1	1013.7	1011.1	NE	0	2.2	1.0	89	97	95.5	37.6
13.11.20	26.8	29.7	28.5	1008.7	1012.6	1010.8	NNE	0.4	2.2	1.4	82	91	86.2	0.0
14.11.20	27.6	30.1	28.9	1007.6	1012.5	1009.9	NNE	1.3	2.2	1.9	78	87	83.2	0.0
15.11.20	25.9	28.5	27.5	1006.8	1011	1008.9	NNE	0	2.2	1.1	85	94	89.9	18.2
16.11.20	24.2	29.3	26.0	1008.7	1012.7	1010.7	E	0	2.7	1.3	83	97	92.5	33.6
17.11.20	23.7	30.1	27.7	1007.6	1012.4	1010.5	ENE	0	1.3	0.4	80	96	88.6	15.6
18.11.20	24.7	30.1	27.7	1008.8	1012.4	1010.5	NE	0	1.3	0.4	81	96	88.6	0.6
19.11.20	27.7	30.8	28.8	1009.1	1012.9	1010.8	ENE	0	1.3	0.4	79	88	83.6	0.0
20.11.20	25.6	29.6	27.8	1009.5	1013.5	1011.3	NNE	0	0.9	0.2	76	91	81.5	0.0
21.11.20	23.7	29.4	26.9	1009.7	1013.8	1011.6	NNE	0	1.3	0.4	72	93	81.0	0.0
22.11.20	22.2	29.3	26.2	1010.1	1013.7	1011.9	NNE	0	1.8	0.6	73	94	83.8	0.0
23.11.20	25.1	30.2	28.1	1009.1	1013.2	1011.2	NNE	0.9	1.8	1.2	76	92	81.9	6.2
24.11.20	24.7	28.1	26.4	1006.9	1011.8	1009.4	N	0.9	2.7	1.8	81	95	89.2	44.6
25.11.20	24.2	26.4	25.4	1002.8	1008.3	1005.6	NNE	1.3	2.7	2.2	89	96	93.5	84.0
26.11.20	21.1	27.2	24.7	999.2	1006.5	1001.9	SSE	2.2	15.2	7.1	85	97	91.3	10.4
27.11.20	20.3	26.8	23.5	1004.9	1012.5	1008.5	WSW	0	3.1	1.8	78	97	87.3	0.4
28.11.20	22.7	29	26.0	1010.1	1014	1012.1	WNW	0	2.2	0.4	81	94	87.5	0.0
29.11.20	23.8	27.7	25.2	1010.7	1014.4	1012.6	WNW	0.9	3.6	2.3	87	97	93.4	4.4
30.11.20	24.3	28.9	27.1	1010.7	1014.3	1012.3	NNE	0.4	2.7	1.5	78	96	85.5	1.2

DEC - 2020

Marine Infrastructure Developer Pvt Ltd							
Report Type:Average Report							
From: 01-12-2020 00:00:00 To: 31-12-2020 23:59:59							
Created By: glensAdmin Created At: 2021-01-05 12:52:12							
Date	Wind Speed (km/h)	Wind Direction (Degree)	Atm. Temperature (Degree C)	Relative Humidity (%)	Rainfall (mm)	Atm Pressure (mBar)	Solar Radiation (w/m2)
01-12-2020	11.09	60.64	29.58	84.06	0	1009.51	154.24
02-12-2020	12.81	79.97	29.06	96.8	0.2	1007.71	55.27
03-12-2020	6.7	81.23	28.49	99.9	27.46	1006.49	90.67
04-12-2020	5.48	82.12	27.8	99.9	24.46	1006.23	38.17
05-12-2020	4.73	68.65	28.38	99.9	11.55	1006.57	94.33
06-12-2020	0.72	50	28.8	99.9	0	1007.2	22.01
07-12-2020	1.89	92.3	29.19	99.9	20.44	1011.67	17
08-12-2020	0.61	87.79	29.52	98.64	0.55	1010.5	188.65
09-12-2020	0.6	104.8	29.1	90.69	15.94	1010.01	248.76
10-12-2020	0.13	108.77	28.68	85.76	0	1009.94	4.17
11-12-2020	0.39	156.57	27.97	89.88	0	1009.99	3.94
12-12-2020	0.32	101.47	28.62	84.7	0	1009.34	4.31
13-12-2020	1.37	167.22	28.1	92.33	0	1008.63	4.2
14-12-2020	1.52	90.61	28.99	79.96	0	1008.41	3.9
15-12-2020	4.38	67	29.54	88.07	0	1009.4	3.8
16-12-2020	6.46	73.36	29.31	96.52	3.57	1010.04	2.1
17-12-2020	6.18	72.12	29.54	94.04	0	1009.97	3.39
18-12-2020	7.33	66.54	29.28	92.7	0	1009.94	3.14
19-12-2020	3.58	84.89	29.63	86.21	0	1010.69	3.69
20-12-2020	6.49	81.1	29.31	74.77	0	1010.87	4.11
21-12-2020	5.16	69.52	28.6	70.23	0	1010.17	3.91
22-12-2020	3.69	78.37	28.13	73.63	0	1009.48	3.68
23-12-2020	4.2	82.59	28.21	74.36	0	1008.66	4.12
24-12-2020	6.09	140.95	27.61	80.79	0	1008.04	4.03
25-12-2020	6.51	138.68	27.52	82.77	0	1008.81	4.4
26-12-2020	7.88	123.56	28.09	83.43	0	1009.41	4.26
27-12-2020	8.78	93.91	28.26	86.49	0	1008.77	3.87
28-12-2020	7.79	103.12	28.03	83.43	0	1008.57	4.18
29-12-2020	8.76	96.62	28.59	90.85	0	1008.3	3.06
30-12-2020	7.41	69.32	28.93	93.56	0	1008.5	2.13
31-12-2020	8.73	82.46	29.23	87.71	0	1009.04	3.79

JAN - 2021

Marine Infrastructure Developer Pvt Ltd							
Report Type:Average Report							
From: 01-01-2021 00:00:00 To: 31-01-2021 23:59:59							
Created By: glensAdmin Created At: 2021-02-05 11:27:48							
Date-(DD-MM-YYYY)	Wind Speed (km/h)	Wind Direction (Degree)	Atm Temperature (Degree C)	Relative Humidity (%)	Total Rainfall (mm)	Atm Pressure (mBar)	Solar Radiation (w/m2)
01-01-2021	7.74	69.12	29	82	0	1009.45	3.54
02-01-2021	8.33	67.91	28.35	95.38	0	1009.28	1.15
03-01-2021	7.82	75.53	28.76	96.81	0	1007.89	2.39
04-01-2021	8.41	63.93	28.88	94.95	0.09	1008.19	3.18
05-01-2021	5.28	101.12	27.51	99.9	31.94	1008.73	0.65
06-01-2021	3.1	94.08	28.54	99.83	5.48	1007.67	3.23
07-01-2021	3.99	143.29	27.88	99.84	35.33	1006.77	3.06
08-01-2021	2.94	169.89	27.57	99.81	1.06	1006.38	1.92
09-01-2021	4.81	77.39	28.88	98.81	0	1006.91	3.78
10-01-2021	8.01	57.8	28.96	99.74	0	1007.4	3.09
11-01-2021	9.85	67.26	29.12	99.13	0	1008.15	4.41
12-01-2021	11.45	59.99	28.92	98.53	0	1008.34	3.82
13-01-2021	7.85	54.08	29.24	94.63	0	1008.36	4.32
14-01-2021	7.37	64.47	29.24	96.12	0	1007.89	3.9
15-01-2021	5.24	71.08	29.34	84.46	0	1007.64	4.31
16-01-2021	4.49	70.72	28.99	82.39	0	1007.03	4.72
17-01-2021	4.4	118.67	28.47	78.16	0	1008.28	4.94
18-01-2021	5.35	75.31	29.32	75.27	0	1008.87	4.7
19-01-2021	7.68	68.05	29.01	82.43	0	1008.47	4.51
20-01-2021	5.88	106.66	28.48	94.73	0	1008.98	2.87
21-01-2021	3.76	115.84	29.08	98.79	0	1008.36	4.66
22-01-2021	3.29	157.08	29.18	94.77	0	1008.38	4.26
23-01-2021	3.84	87.1	29.41	86.27	0	1008.69	4.86
24-01-2021	4.28	147.86	28.32	89.9	0	1009.39	4.71
25-01-2021	3.98	117.11	28.81	84.94	0	1009.96	4.81
26-01-2021	4.01	137.29	28.76	80.08	0	1009.4	5.01
27-01-2021	3.39	134.19	28.28	84.54	0	1009.61	4.35
28-01-2021	6.12	83.9	29.7	82.43	0	1009.69	4
29-01-2021	6.44	85.47	29.89	81.38	0	1010.04	4.43
30-01-2021	5.25	80.61	29.62	85.61	0	1009.53	4.66
31-01-2021	5.5	78.85	29.48	85.93	0	1010.06	4.78

FEB - 2021

Marine Infrastructure Developer Pvt Ltd							
Report Type:Average Report							
From: 01-02-2021 00:00:00 To: 28-02-2021 23:59:59							
Created By: ADANI Created At: 2021-03-03 12:09:53							
Date-(DD-MM-YYYY)	Wind Speed- (km/h)	Wind Direction- (Degree)	Atm Temperature (Degree C)	Relative Humidity (%)	Total Raainfall (mm)	Atm Pressure (mBar)	Solar Radiation (w/m2)
01-02-2021	7.4	74.87	29.67	81.78	0	1011.73	5.17
02-02-2021	6.32	82.99	29.73	84.12	0.78	1011.78	4.21
03-02-2021	6.37	75.84	29.37	75.11	0	1011.42	4.73
04-02-2021	5.83	81.96	29.27	68.84	0	1011.25	5.1
05-02-2021	6.04	116.9	28.36	73.14	0	1010.47	4.93
06-02-2021	5.51	108.67	28.35	76.5	0	1009.39	5.05
07-02-2021	6.78	148.15	27.52	87.21	0	1009.85	5.11
08-02-2021	6.19	67.56	29.14	77.56	0	1010.62	4.92
09-02-2021	7.42	79.57	29.35	69.26	0	1009.85	5.04
10-02-2021	4.69	75.52	28.61	70.78	0	1009.08	5.17
11-02-2021	4.12	121.68	28	72.4	0	1008.72	4.95
12-02-2021	4.62	116.63	28.2	71.48	0	1009.3	5.4
13-02-2021	5.26	128.4	27.81	83.11	0	1010.3	5.24
14-02-2021	4.15	138.03	27.86	82.86	0	1010.18	5.5
15-02-2021	3.8	164.58	27.39	86.84	0	1009.28	5.53
16-02-2021	4.8	147.89	27.74	84.65	0	1008.53	5.33
17-02-2021	5.45	114.05	29.13	76.4	0	1008.37	5.54
18-02-2021	7.19	90.4	29.51	74.9	0	1009.39	4.66
19-02-2021	6.29	136.8	28.91	92.16	0	1009.73	4.26
20-02-2021	10.26	111.42	27.97	92.88	0	1009.8	4.56
21-02-2021	7.8	85.15	28.88	92.46	0	1010.26	3.17
22-02-2021	6.31	70.9	29.68	91.17	0	1010.29	5.28
23-02-2021	4.8	120.09	28.89	91.54	0	1009.06	5.15
24-02-2021	3.87	154.55	28.65	85.72	0	1008.15	5.3
25-02-2021	3.29	164.61	28.6	87.26	0	1007.93	5.36
26-02-2021	3.83	213.47	28.68	91.78	0	1006.29	8.62
27-02-2021	4.65	234.68	28.7	92.59	0	1005.52	5.07
28-02-2021	3.23	232.61	28.61	92.93	0	1006.58	5.26

MAR - 2021

Marine Infrastructure Developer Pvt Ltd							
Report Type:Average Report							
From: 01-03-2021 00:00:00 To: 31-03-2021 23:59:59							
Created By: glensAdmin Created At: 2021-04-02 13:21:29							
Date-(DD-MM-YYYY)	Wind - Speed (km/h)	Wind - Direction (Degree)	Atm Temperature (Degree C)	Relative Humidity (%)	Total Rainfall (mm)	Atm Pressure (mBar)	Solar Radiation (w/m2)
01-03-2021	4.07	253.2	29.11	92.15	0	1009.09	5.14
02-03-2021	3.38	234.1	29.24	90.99	0	1009.51	140.17
03-03-2021	3.68	207.18	28.48	88.54	0	1008.6	247.86
04-03-2021	3.96	180.54	28.75	84.6	0	1009.07	263.88
05-03-2021	4.65	158.14	28.58	88.64	0	1009.8	265.1
06-03-2021	3.51	211.08	29.18	91.15	0	1009.23	261.48
07-03-2021	4.76	187.67	29.77	92.24	0	1008.44	250.88
08-03-2021	4.61	162.33	29.97	89.59	0	1009.2	264.72
09-03-2021	4.47	128.24	30.35	89.87	0	1009.84	255.99
10-03-2021	4.95	146.47	30.63	92.42	0	1009.52	254.07
11-03-2021	4.16	204.77	30.63	87.04	0	1009.49	248.64
12-03-2021	4.33	183.43	29.48	86.49	0	1010.68	255.58
13-03-2021	4.99	152.39	29.19	88.26	0	1010.07	257.13
14-03-2021	5.45	157.09	30.08	87.05	0	1008.45	247.8
15-03-2021	4.26	148.58	29.69	92.14	0	1007.71	244.63
16-03-2021	3.68	172.44	29.61	92.24	0	1007.62	241.15
17-03-2021	2.7	202.12	29.49	91.59	0	1006.84	217.95
18-03-2021	3.15	166.72	30.13	84.33	0	1007.11	215.39
19-03-2021	3.71	171.72	30.21	83.58	0	1006.73	229.57
20-03-2021	3.83	174.46	29.5	90.95	0	1005.65	222.91
21-03-2021	4.1	168.91	29.99	90.16	0	1005.24	218.06
22-03-2021	4.22	161.22	30.71	87.88	0	1006.79	230.82
23-03-2021	4.63	121.61	31.07	85.53	0	1007.54	228.63
24-03-2021	4.07	148.86	30.39	92.39	0	1007.56	232.16
25-03-2021	3.22	191.59	30.48	93.11	0	1006.44	258.19
26-03-2021	3.33	190.64	30.37	94.09	0	1005.96	219.21
27-03-2021	3.37	214.97	31.05	91.34	0	1005.41	223.36
28-03-2021	3.61	235.7	31.03	93.22	0	1004.9	171.33
29-03-2021	4.68	252.13	32.41	92.15	0	1004.1	226.51
30-03-2021	6.73	228.93	32.41	89.24	0	1002.4	223.5
31-03-2021	5.72	227.76	32.38	93.09	0	1000.65	220.46

ii. AMBIENT AIR QUALITY

Ambient air quality monitoring is required to determine the existing quality of air, evaluation of the effectiveness of control system and to identify areas in need of restoration and their prioritization. In order to generate background data, air quality monitoring is conducted to assess existing level of contamination and to assess possible effects of air contamination occurring in future.

Frequency of Monitoring

The frequency of monitoring that has been followed for sampling of ambient air quality is that one sample per weekly twice at four locations.

DETAILS OF AMBIENT AIR QUALITY MONITORING LOCATIONS

Station code	Location	Geographical location	Environmental setting
AAQ1	Near Marine Control Tower	13^0 18’55” N 80^0 20’ 45” E	Industrial
AAQ2	Near Port Main Gate	13^0 18’51” N 80^0 19’ 28” E	Industrial
AAQ3	Kattupalli village	13^0 18’18” N 80^0 19’ 48” E	Village
AAQ4	Kalanji village	13^0 20’8” N 80^0 20’ 0” E	Village
CAAQM 1	Port Operating Building	13°18'45.68"N 80°20'25.50"E	Industrial

Fig – 2. AMBIENT AIR SAMPLING STATIONS LOCATION MAP

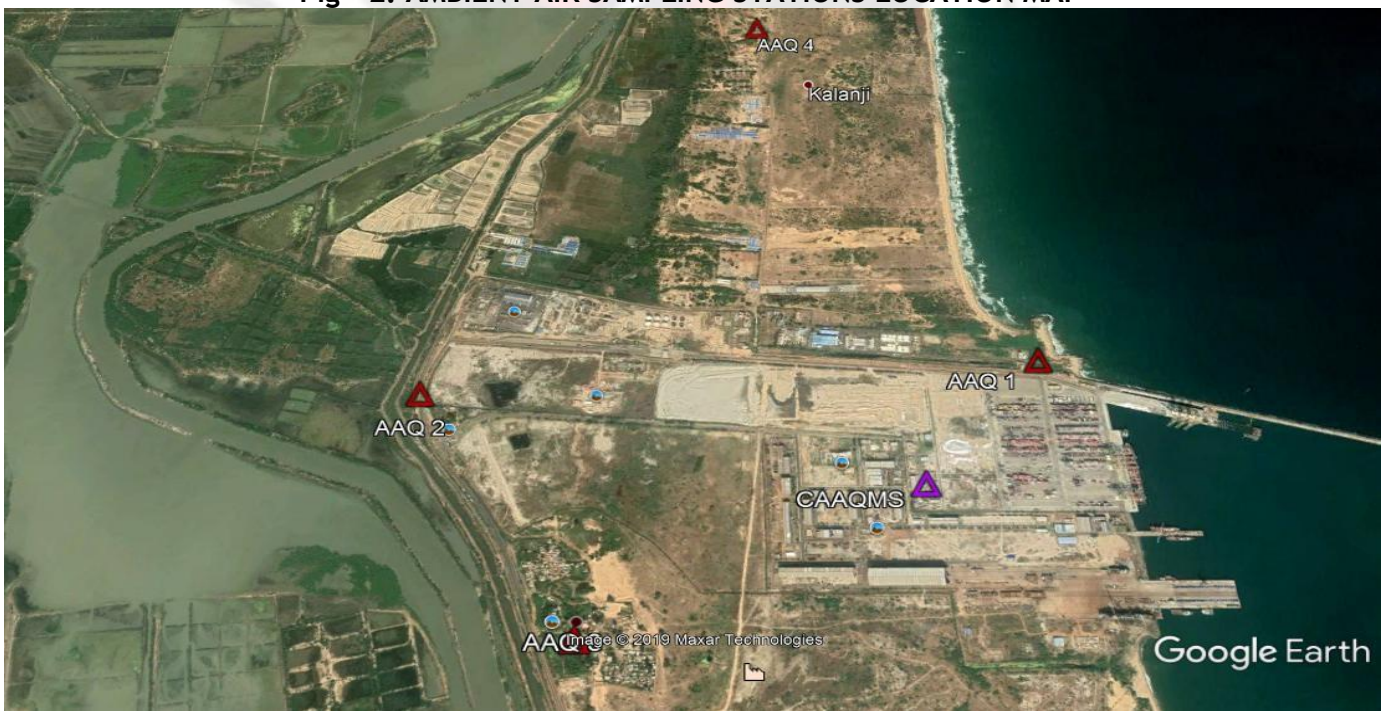
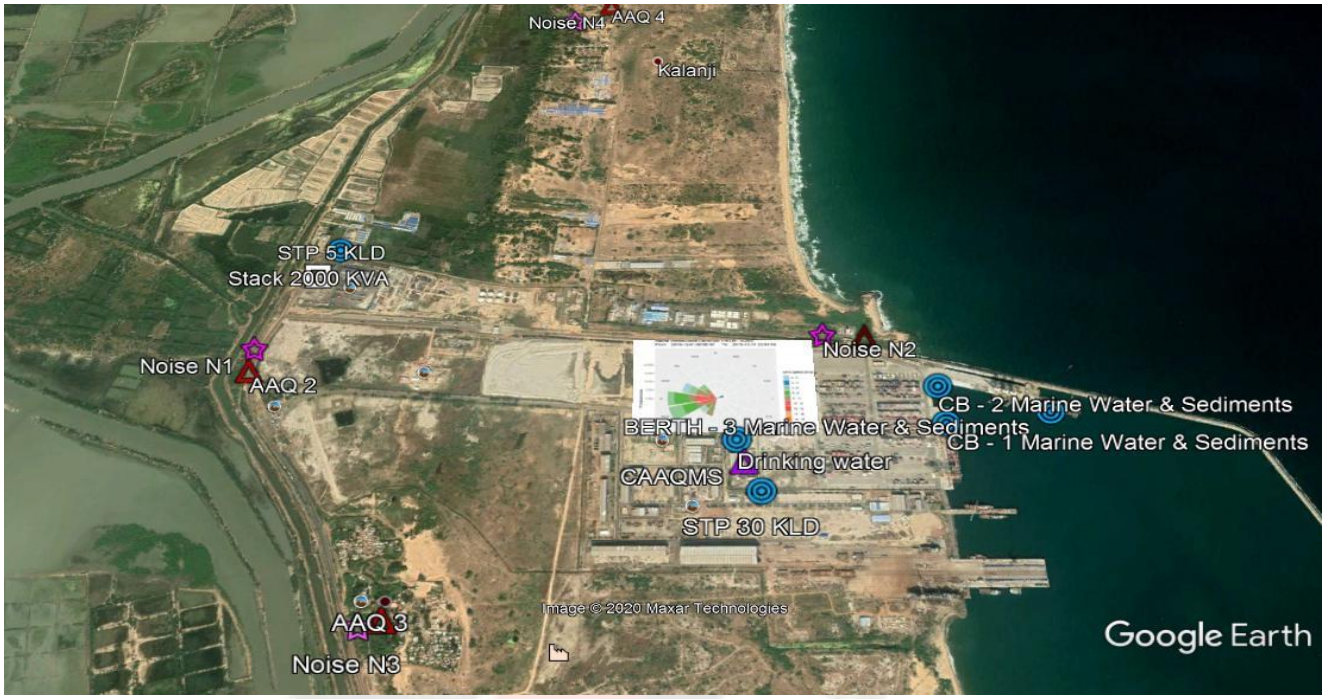


Fig.3. Environmental Monitoring Locations with respect to Wind rose



TECHNIQUES USED FOR AMBIENT AIR QUALITY MONITORING

S.No	Parameter	Technique	Unit	Minimum Detectable Limit
1	PM_{10}	Respirable Dust Sampler (Gravimetric method)	$\mu g/m^3$	1.0
2	$PM_{2.5}$	Fine particle Sampler (Gravimetric method)	$\mu g/m^3$	5.0
3	Sulphur Dioxide	Modified West and Gaeke method	$\mu g/m^3$	4.0
4	Nitrogen Oxide	Jacob &Hochheiser method	$\mu g/m^3$	6.0
5	Lead	Atomic Absorption Spectrometry	$\mu g/m^3$	0.5
6	Carbon Monoxide	Draggers Tube	mg/m^3	0.1
7	Ozone	UV Photometric	$\mu g/m^3$	2.0
8	Ammonia	Indophenol blue method	$\mu g/m^3$	2.0
9	Benzene	Gas Chromatography	$\mu g/m^3$	1.0
10	Benzene (α) pyrene	Gas Chromatography	ng/m^3	0.1
11	Arsenic	Atomic Absorption Spectrometry	ng/m^3	1.0
12	Nickel	Atomic Absorption Spectrometry	ng/m^3	5.0

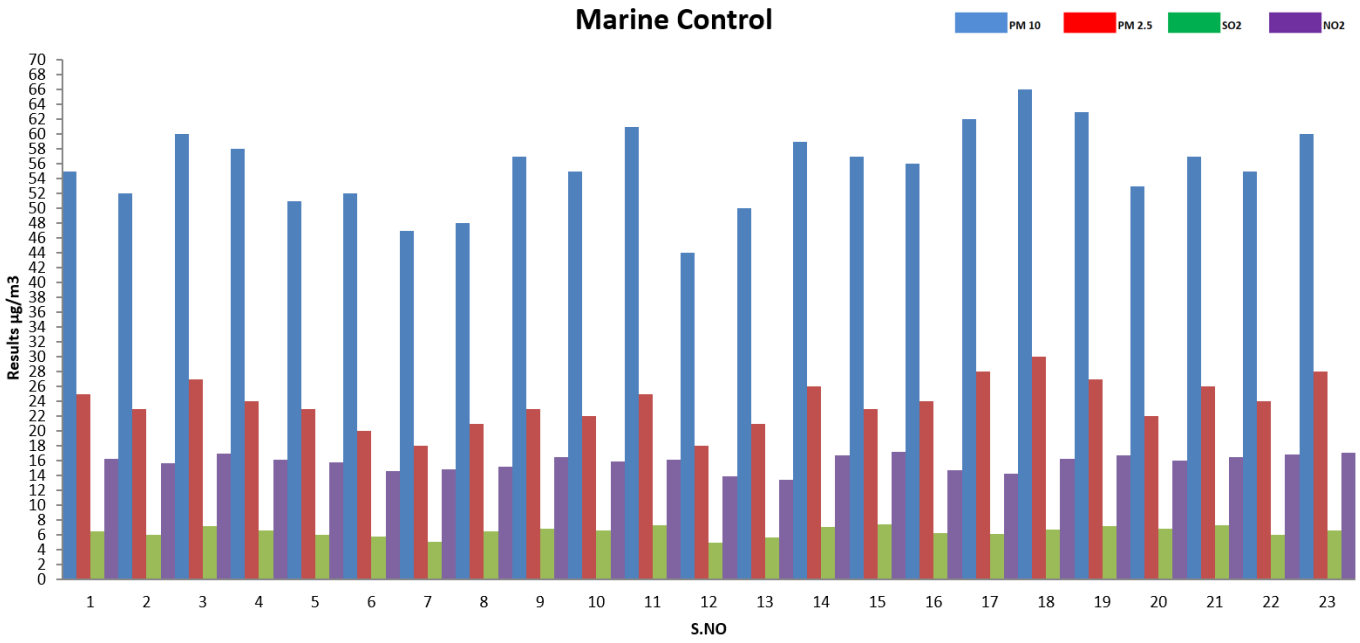
Results and Discussion

The results of the ambient air quality for the study period are submitted. The minimum, maximum 98^{th} percentile and average values have been computed from the observed raw data for all the AAQ monitoring stations. The summary of these results for all the locations is presented in the Table and the detailed analytical results are shown in Annexure - 2. These are compared with the standards prescribed by Central Pollution Control Board (CPCB) for "Industrial, Rural, Residential and other areas"

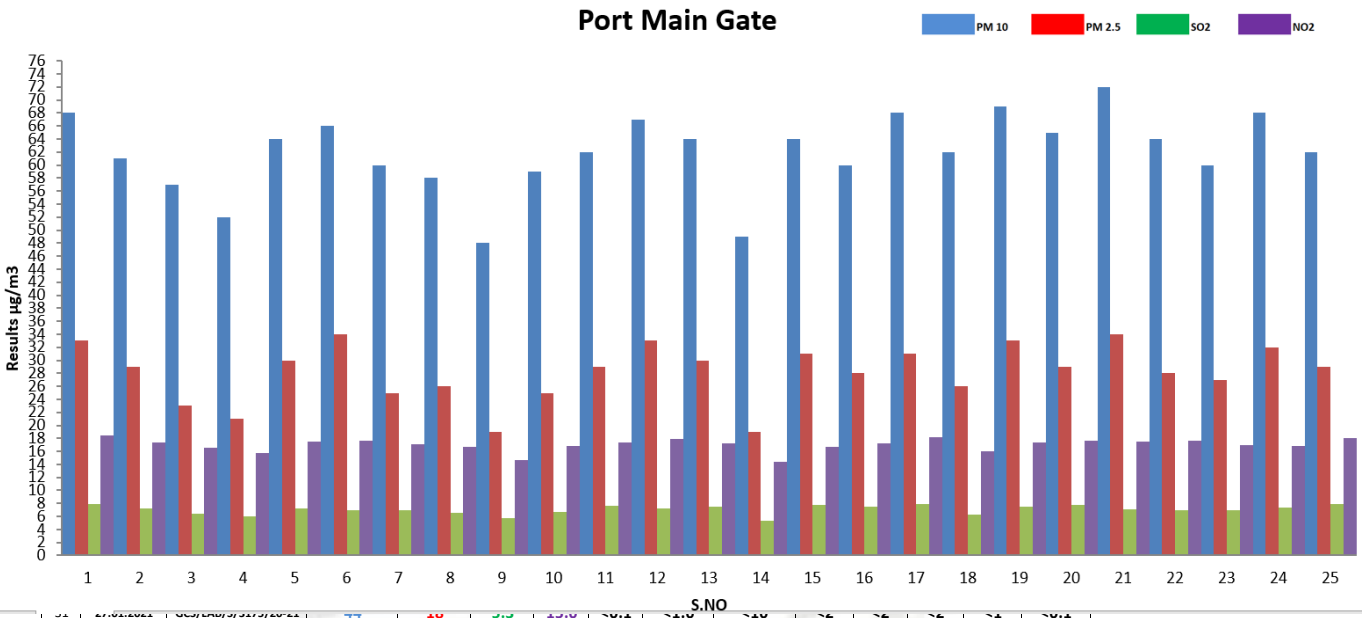
ANNEXURE - 2 RESULTS OF AMBIENTAIRQUALITYMONITORING DATA

MARINE CONTROL (AAQ1)

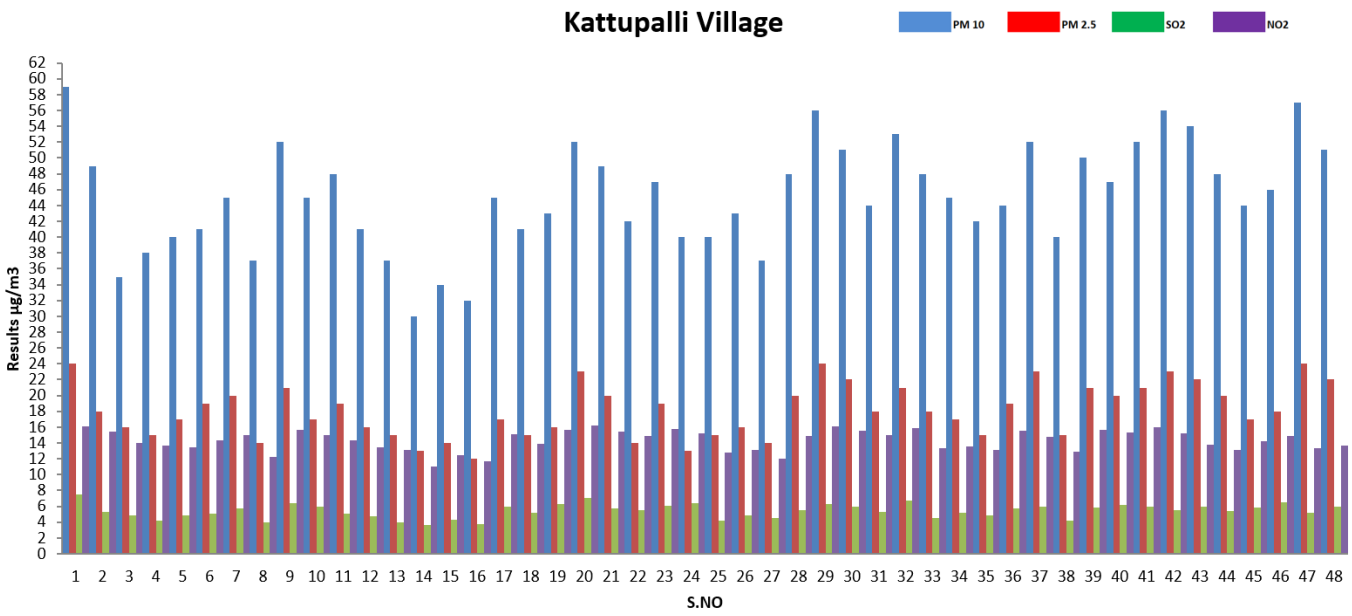
Parameters			Particular matter PM_{10}	Particular matter $PM_{2.5}$	Sulphur dioxide as SO_2	Nitrogen dioxide	Lead as Pb	Carbon monoxide as CO	Ozone as O_3	Ammonia as NH_3	Arsenic as As	Nickel as Ni	Benzene as C_6H_6	Benzo (a) pyrene as BaP
Unit			µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	mg/m³	µg/m³	µg/m³	ng/m³	ng/m³	µg/m³	ng/m³
National AAQM Standard			100	60	80	80	1	4	180	400	6	20	5	1
S.No.	Sampling Date	Report Number												
1	12.10.2020	GCS/LAB/S/2978/20-21	55	25	6.5	16.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
2	16.10.2020	GCS/LAB/S/2978/20-21	52	23	6.0	15.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
3	27.10.2020	GCS/LAB/S/2978/20-21	60	27	7.2	17.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
4	30.10.2020	GCS/LAB/S/2978/20-21	58	24	6.7	16.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
5	09.11.2020	GCS/LAB/S/3040/20-21	51	23	6.0	15.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
6	23.11.2020	GCS/LAB/S/3040/20-21	52	20	5.8	14.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
7	27.11.2020	GCS/LAB/S/3040/20-21	47	18	5.1	14.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
8	07.12.2020	GCS/LAB/S/3110/20-21	48	21	6.5	15.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
9	11.12.2020	GCS/LAB/S/3110/20-21	57	23	6.9	16.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
10	21.12.2020	GCS/LAB/S/3110/20-21	55	22	6.7	15.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
11	28.12.2020	GCS/LAB/S/3110/20-21	61	25	7.3	16.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
12	04.01.2021	GCS/LAB/S/3175/20-21	44	18	5.0	13.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
13	08.01.2021	GCS/LAB/S/3175/20-21	50	21	5.7	13.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
14	18.01.2021	GCS/LAB/S/3175/20-21	59	26	7.1	16.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
15	22.01.2021	GCS/LAB/S/3175/20-21	57	23	7.5	17.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
16	08.02.2021	GCS/LAB/S/3218/20-21	56	24	6.3	14.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
17	12.02.2021	GCS/LAB/S/3218/20-21	62	28	6.2	14.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
18	22.02.2021	GCS/LAB/S/3218/20-21	66	30	6.8	16.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
19	26.02.2021	GCS/LAB/S/3218/20-21	63	27	7.2	16.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
20	08.03.2021	GCS/LAB/S/3312/20-21	53	22	6.9	16.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
21	12.03.2021	GCS/LAB/S/3312/20-21	57	26	7.4	16.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
22	22.03.2021	GCS/LAB/S/3312/20-21	55	24	6.0	16.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
23	26.03.2021	GCS/LAB/S/3312/20-21	60	28	6.6	17.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1

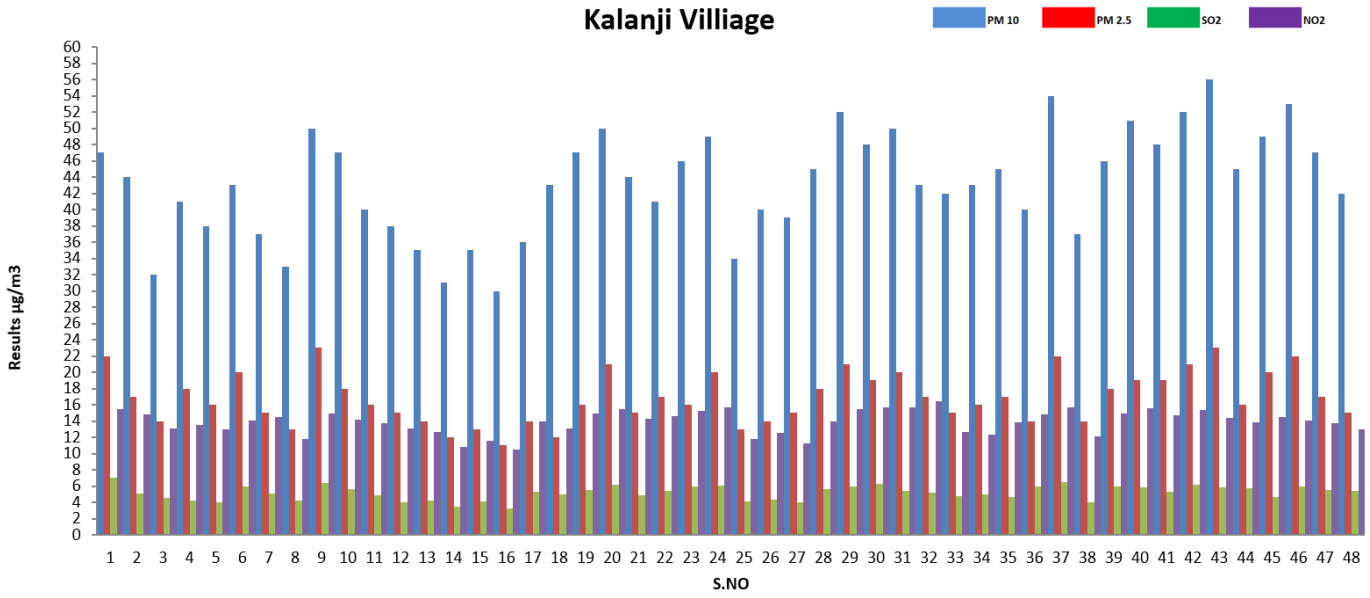


PORT MAIN GATE (AAQ2)														
Parameters			Particular matter PM_{10}	Particular matter	Sulphur dioxid	Nitrogen dioxid	Lead as Pb	Carbon monoxide as CO	Ozone as O_3	Ammonia as NH_3	Arsenic as As	Nickel as Ni	Benzene as C_6H_6	Benzo (a) pyrene
Unit			$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	mg/m^3	$\mu g/m^3$	$\mu g/m^3$	ng/m^3	ng/m^3	$\mu g/m^3$	ng/m^3
National AAQM Standard			100	60	80	80	1	4	180	400	6	20	5	1
S.No.	Sampling Dat	Report Number												
1	05.10.2020	GCS/LAB/S/2978/20-21	68	33	7.9	18.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
2	09.10.2020	GCS/LAB/S/2978/20-21	61	29	7.2	17.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
3	19.10.2020	GCS/LAB/S/2978/20-21	57	23	6.4	16.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
4	23.10.2020	GCS/LAB/S/2978/20-21	52	21	6.0	15.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
5	02.11.2020	GCS/LAB/S/3040/20-21	64	30	7.2	17.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
6	06.11.2020	GCS/LAB/S/3040/20-21	66	34	7.0	17.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
7	16.11.2020	GCS/LAB/S/3040/20-21	60	25	6.9	17.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
8	20.11.2020	GCS/LAB/S/3040/20-21	58	26	6.5	16.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
9	29.11.2020	GCS/LAB/S/3040/20-21	48	19	5.7	14.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
10	02.12.2020	GCS/LAB/S/3110/20-21	59	25	6.7	16.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
11	09.12.2020	GCS/LAB/S/3110/20-21	62	29	7.6	17.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
12	14.12.2020	GCS/LAB/S/3110/20-21	67	33	7.2	17.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
13	18.12.2020	GCS/LAB/S/3110/20-21	64	30	7.5	17.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
14	06.01.2021	GCS/LAB/S/3175/20-21	49	19	5.3	14.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
15	11.01.2021	GCS/LAB/S/3175/20-21	64	31	7.8	16.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
16	27.01.2021	GCS/LAB/S/3175/20-21	60	28	7.5	17.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
17	29.01.2021	GCS/LAB/S/3175/20-21	68	31	7.9	18.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
18	01.02.2021	GCS/LAB/S/3218/20-21	62	26	6.3	16.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
19	05.02.2021	GCS/LAB/S/3218/20-21	69	33	7.5	17.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
20	15.02.2021	GCS/LAB/S/3218/20-21	65	29	7.8	17.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
21	19.02.2021	GCS/LAB/S/3218/20-21	72	34	7.1	17.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
22	01.03.2021	GCS/LAB/S/3312/20-21	64	28	7.0	17.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
23	05.03.2021	GCS/LAB/S/3312/20-21	60	27	6.9	17.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
24	15.03.2021	GCS/LAB/S/3312/20-21	68	32	7.4	16.8	<0.2	<1.1	<10	<2	<2	<2	<1	<0.2
25	19.03.2021	GCS/LAB/S/3312/20-21	62	29	7.9	18.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1



Parameters	matter PM_{10}	matter $PM_{2.5}$	dioxide as SO	dioxide as NO	Pb	monoxide as CO	Ozone as O_3	as NH_3	as As	Ni	as C_6H_6	pyrene as BaP
32	29.01.2021	GCS/LAB/S/3175/20-21	53	21	6.7	15.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
33	01.02.2021	GCS/LAB/S/3218/20-21	48	18	4.5	13.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
34	05.02.2021	GCS/LAB/S/3218/20-21	45	17	5.2	13.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
35	08.02.2021	GCS/LAB/S/3218/20-21	42	15	4.9	13.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
36	12.02.2021	GCS/LAB/S/3218/20-21	44	19	5.7	15.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
37	15.02.2021	GCS/LAB/S/3218/20-21	52	23	6.0	14.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
38	19.02.2021	GCS/LAB/S/3218/20-21	40	15	4.2	12.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
39	22.02.2021	GCS/LAB/S/3218/20-21	50	21	5.8	15.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
40	26.02.2021	GCS/LAB/S/3218/20-21	47	20	6.2	15.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
41	01.03.2021	GCS/LAB/S/3312/20-21	52	21	5.9	16.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
42	05.03.2021	GCS/LAB/S/3312/20-21	56	23	5.5	15.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
43	08.03.2021	GCS/LAB/S/3312/20-21	54	22	6.0	13.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
44	12.03.2021	GCS/LAB/S/3312/20-21	48	20	5.4	13.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
45	15.03.2021	GCS/LAB/S/3312/20-21	44	17	5.8	14.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
46	19.03.2021	GCS/LAB/S/3312/20-21	46	18	6.5	14.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
47	22.03.2021	GCS/LAB/S/3312/20-21	57	24	5.2	13.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
48	26.03.2021	GCS/LAB/S/3312/20-21	51	22	5.9	13.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1


Kattupalli Village
PM 10
PM 2.5
SO2
NO2
Results µg/m3
S.NO


Kalanji Villiage
PM 10
PM 2.5
SO2
NO2
Results µg/m3
S.NO

NATIONAL AMBIENT AIR QUALITY STANDARDS
CENTRAL POLLUTION CONTROL BOARD
NOTIFICATION
New Delhi, the 18th November, 2009

No.B-29016/20/90/PCI-L—In exercise of the powers conferred by Sub-section (2) (h) of section 16 of the Air (Prevention and Control of Pollution) Act, 1981 (Act No. 14 of 1981), and in super session of the Notification No(s). S.O. 384(E), dated 11th April, 1994 and S.O. 935(E), dated 14th October, 1998, the Central Pollution Control Board hereby notify the National Ambient Air Quality Standards with immediate effect, namely:-

NATIONAL AMBIENT AIR QUALITY STANDARDS

S. No.	Pollutant	Time Weighted average	Concentration in Ambient Air		Methods of Measurement
			Industrial, Residential, Rural and Other Area	Ecologically sensitive area (notified by Central Govt.)	
(1)	(2)	(3)	(4)	(5)	(6)
1	Sulphur Dioxide (SO_2), µg/m³	Annual*	50	20	• Improved West and Geake • Ultraviolet fluorescence
		24 hours**	80	80	
2	Nitrogen Dioxide (NO_2), µg/m³	Annual*	40	30	• Modified Jacob & Hochheiser (Na-Arsenite) • Chemiluminescence
		24 hours**	80	80	
3	Particulate Matter (size less than 10 µm) or PM_{10} µg/m³	Annual*	60	60	• Gravimetric • TOEM • Beta attenuation
		24 hours**	100	100	
4	Particulate Matter (size less than 2.5 microns) or $PM_{2.5}$ µg/m³	Annual*	40	40	• Gravimetric • TOEM • Beta attenuation
		24 hours**	60	60	
5	Ozone (O_3) µg/m³	8 hours **	100	100	• UV photometric • Chemiluminescence • Chemical method
		1 hour **	180	180	
6	Lead (Pb) µg/m³	Annual*	0.5	0.5	• ASS / ICP method after sampling on EPM 2000 or equivalent filter paper • ED – XRF using Teflon filter
		24 hours**	1.0	1.0	
7	Carbon Monoxide (CO) mg/m³	8 hours**	2	2	Non Dispersive Infra RED (NDIR) Spectroscopy
		1 hour**	4	4	
8	Ammonia (NH_3) µg/m³	Annual*	100	100	• Chemiluminescence • Indophenol blue method
		24 hours**	400	400	
9	Benzene (C_6H_6) µg/m³	Annual*	5	5	• Gas chromatography based continuous analyser • Adsorption and desorption followed by GC analysis
10	Benzo (a) Pyrene (BaP) – particulate phase only ng/m³	Annual*	1	1	Solvent extraction followed by HPLC / GC analysis
11	Arsenic (As) ng/m³	Annual*	6	6	AAS / ICP method after sampling on EPM 2000 or equivalent filter paper
12	Nickel (Ni) ng/m³	Annual*	20	20	AAS / ICP method after sampling on EPM 2000 or equivalent filter paper

* Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

** 24 hourly or 8 hourly or 1 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

Note: Whenever and wherever monitoring results on two consecutive days of monitoring exceed the limits specified above for the respective category, it shall be considered adequate reason to institute regular or continuous monitoring and further investigation.

iii. AMBIENT NOISE LEVEL INTENSITY

Collection of ambient noise levels at four locations. Spot noise levels where measured with a precalibrated Noise Level Meter – SL- 4023 SD for day and night periods.

DETAILS OF NOISE MONITORING LOCATIONS

STATION CODE	LOCATIONS	Category	Geographical Location
N1	Port main gate	Industrial	N 13^0 18.856’ E 080^0 19.478’
N2	Marine control tower	Industrial	N 13^0 18.909’ E 080^0 20.756’

N3	Kattupalli village	Residential	N 13^0 18.342' E 080^0 19.806'
N4	Kalanji village	Residential	N 13^0 20.156' E 080^0 20.023'

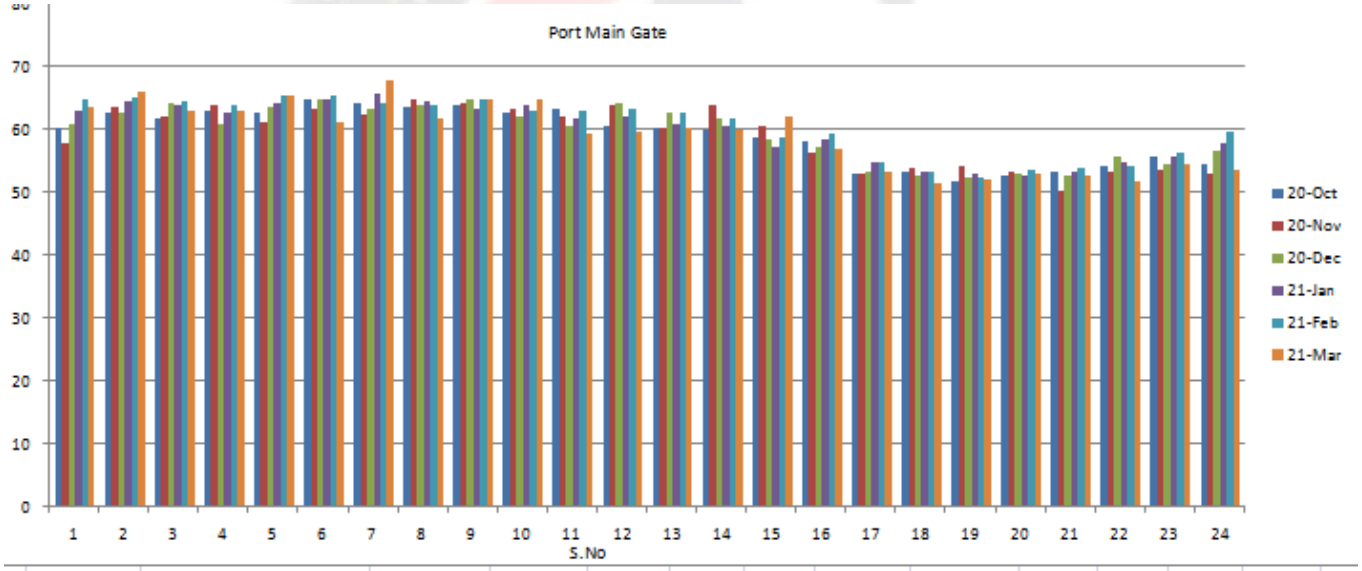
Fig – 4. Noise Level Sampling Locations

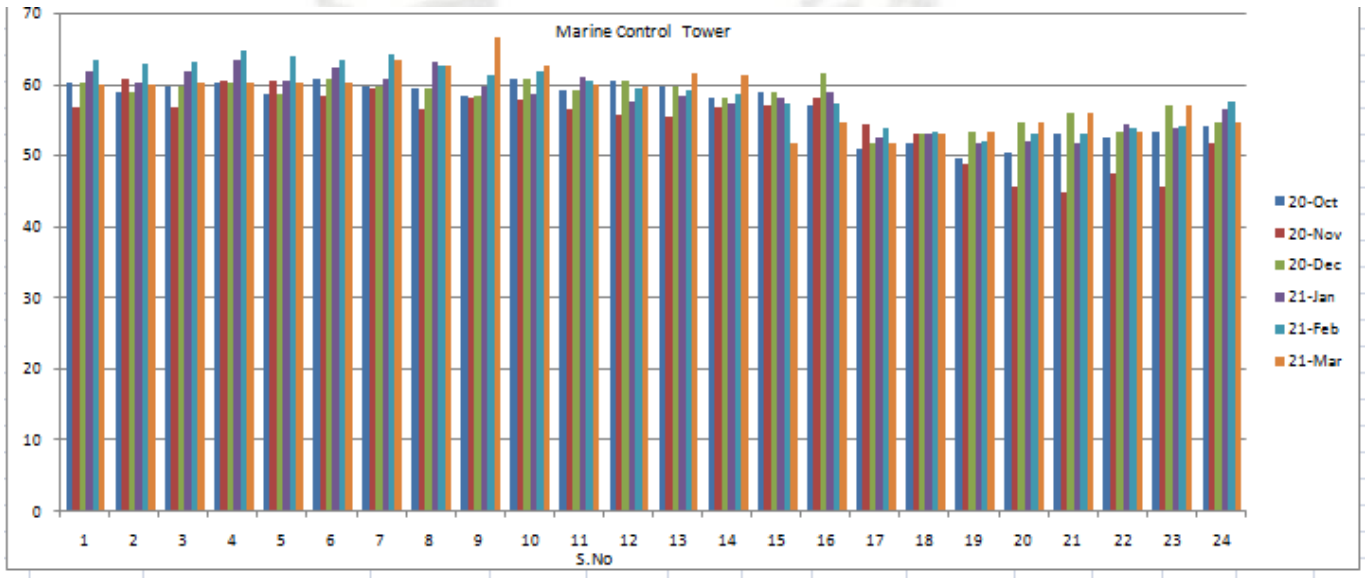
The noise levels monitored during the study period are given hereunder in form of Leq day, Leq night compared with CPCB Standards.

ANNEXURE - 3 RESULTS OF AMBIENT NOISE LEVEL MONITORING DATA

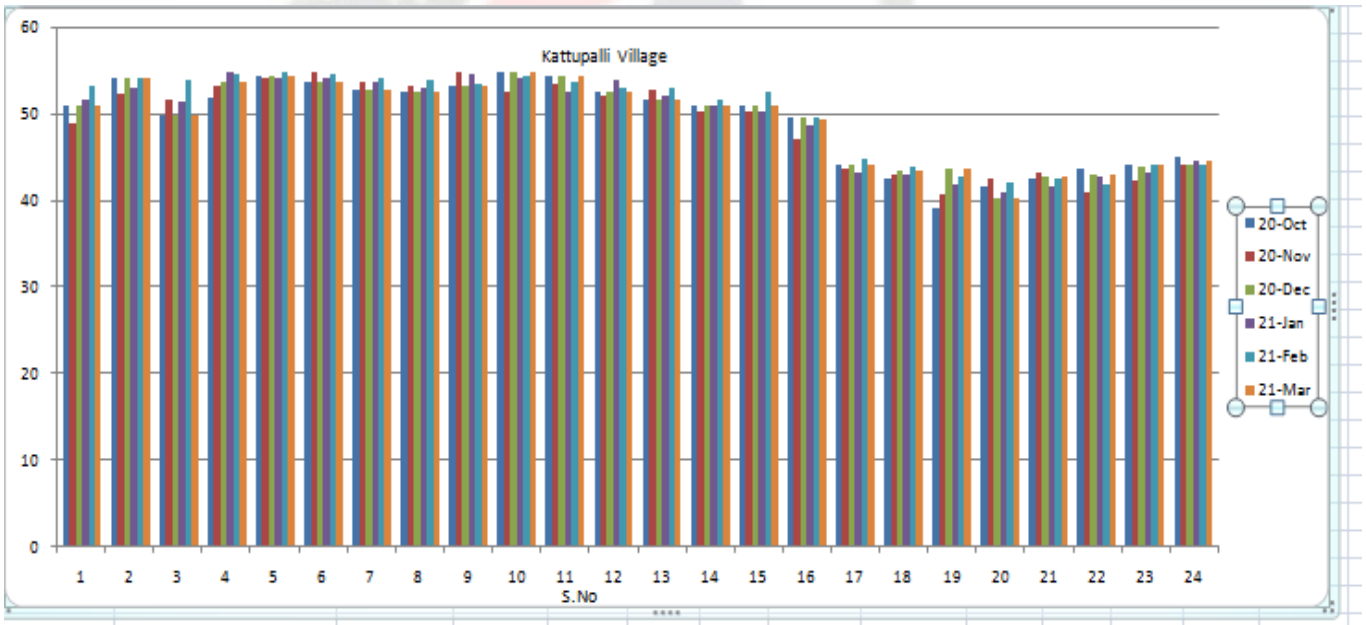
AMBIENT NOISE LEVEL MONITORING

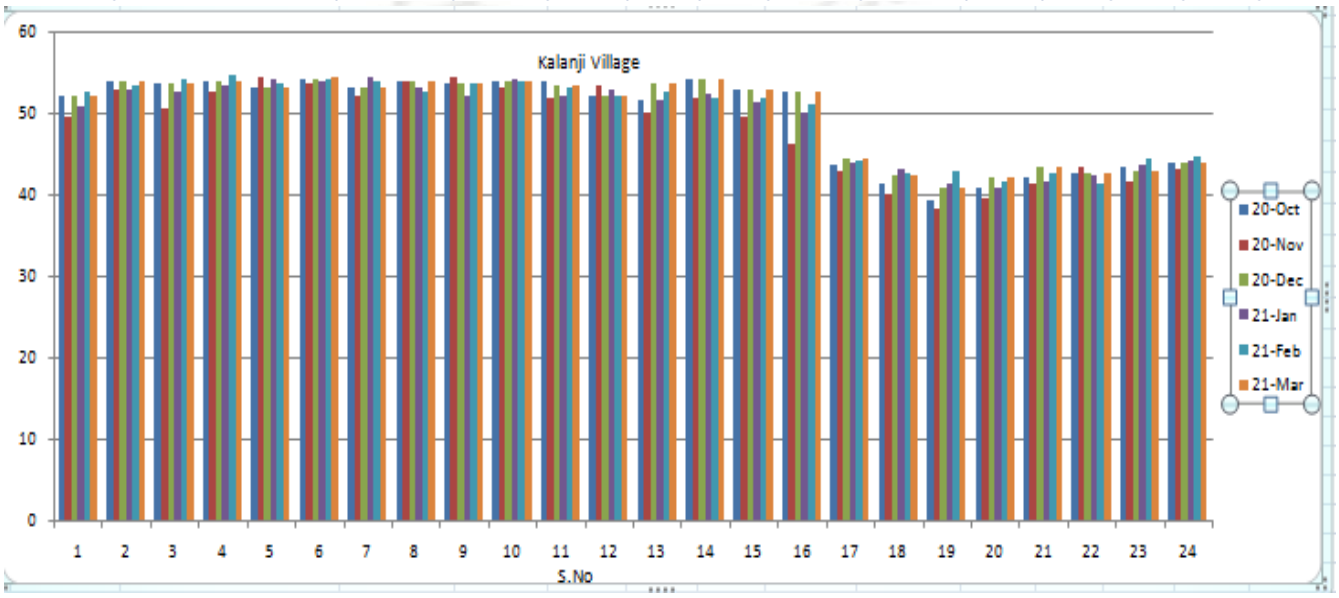
Location		PORT MAIN GATE						MARINE CONTROL					
Month & Year		Oct-20	Nov-20	Dec-20	Jan-21	Feb-	Mar-21	Oct-20	Nov-	Dec-	Jan-21	Feb-21	Mar-21
Parameter & Unit		Leq dB(A)	Leq dB(A)	Leq dB(A)	Leq dB(A)	Leq dB(A)	Leq dB(A)	Leq dB(A)	Leq dB(A)	Leq dB(A)	Leq dB(A)	Leq dB(A)	Leq dB(A)
S.No.	Time of Sampling												
1	06.00 – 07.00 (Day)	60.3	58.0	61.0	63.1	64.8	63.6	60.3	56.8	60.3	61.7	63.5	59.8
2	07.00 –08.00	62.7	63.5	62.8	64.5	65.2	66.1	58.9	60.6	58.9	60.3	62.8	59.9
3	08.00 – 09.00	61.9	62.2	64.3	63.9	64.5	63.1	59.7	56.7	59.7	61.9	63.2	60.1
4	09.00 – 10.00	63.1	63.8	60.9	62.7	64.0	63.0	60.3	60.4	60.3	63.4	64.7	60.2
5	10.00 – 11.00	62.6	61.2	63.5	64.2	65.4	65.6	58.5	60.4	58.5	60.5	63.9	60.2
6	11.00 – 12.00	64.8	63.4	64.7	64.9	65.6	61.2	60.8	58.3	60.8	62.2	63.4	60.3
7	12.00 – 13.00	64.2	62.3	63.4	65.7	64.3	67.8	59.6	59.5	59.6	60.8	64.1	63.3
8	13.00 – 14.00	63.5	64.7	64.0	64.5	63.8	61.9	59.3	56.6	59.3	63.1	62.6	62.6
9	14.00 – 15.00	64.0	64.3	64.9	63.2	64.7	65.0	58.4	58.2	58.4	59.7	61.3	66.5
10	15.00 – 16.00	62.8	63.2	62.1	63.8	63.1	64.9	60.6	57.7	60.6	58.6	61.8	62.7
11	16.00 – 17.00	63.4	62.1	60.7	61.7	62.9	59.3	59.1	56.6	59.1	61.0	60.5	59.9
12	17.00 – 18.00	60.7	63.8	64.3	62.0	63.4	59.7	60.4	55.8	60.4	57.5	59.3	59.7
13	18.00 – 19.00	60.3	60.2	62.6	60.8	62.6	60.3	59.6	55.5	59.6	58.3	59.0	61.6
14	19.00 –20.00	60.1	64.0	61.8	60.5	61.9	60.1	58.2	56.7	58.2	57.4	58.5	61.3
15	20.00 – 21.00	58.9	60.6	58.5	57.3	58.7	62.0	58.9	56.9	58.9	58.1	57.2	51.6
16	21.00 – 22.00	58.2	56.3	57.2	58.4	59.3	57.0	57.1	58.2	61.4	58.9	57.4	54.5
17	22.00 – 23.00 (Night)	52.9	53.1	53.4	54.7	55.0	53.4	51.0	54.4	51.6	52.5	53.8	51.6
18	23.00 – 00.00	53.3	54.0	52.8	53.4	53.2	51.6	51.7	53.0	52.9	53.1	53.4	52.9
19	00.00 – 01.00	51.7	54.1	52.3	53.0	52.4	52.0	49.6	48.7	53.4	51.8	52.0	53.4
20	01.00 – 02.00	52.6	53.3	53.1	52.8	53.5	53.1	50.3	45.6	54.5	52.0	53.1	54.5
21	02.00 – 03.00	53.4	50.4	52.6	53.2	53.8	52.6	52.9	44.9	55.9	51.7	52.9	55.9
22	03.00 – 04.00	54.1	53.2	55.8	54.9	54.1	51.8	52.6	47.5	53.2	54.3	53.7	53.2
23	04.00 – 05.00	55.8	53.5	54.5	55.7	56.3	54.5	53.4	45.6	56.9	53.9	54.2	56.9
24	05.00 – 06.00	54.5	53.0	56.7	58.0	59.7	53.7	54.1	51.6	54.7	56.4	57.6	54.7





Location		KATTUPALLI VILLAGE						KALANJI VILLAGE					
Month & Year		Oct-20	Nov-20	Dec-20	Jan-21	Feb-	Mar-21	Oct-20	Nov-	Dec-	Jan-21	Feb-21	Mar-21
Parameter & Unit		Leq dB(A)	Leq dB(A)	Leq dB(A)	Leq dB(A)	Leq dB(A)	Leq dB(A)	Leq dB(A)	Leq dB(A)	Leq dB(A)	Leq dB(A)	Leq dB(A)	Leq dB(A)
S.No.	Time of Sampling												
1	06.00 – 07.00 (Day)	50.9	48.9	50.9	51.5	53.1	50.9	52.2	49.6	52.2	50.9	52.8	52.2
2	07.00 –08.00	54.2	52.3	54.2	52.9	54.0	54.2	54.0	53.0	54.0	53.1	53.6	54.0
3	08.00 – 09.00	49.7	51.5	49.7	51.3	53.8	49.7	53.8	50.8	53.8	52.7	54.3	53.8
4	09.00 – 10.00	51.9	53.2	53.6	54.8	54.5	53.6	54.1	52.9	54.1	53.6	54.8	54.1
5	10.00 – 11.00	54.4	54.0	54.4	54.0	54.7	54.4	53.3	54.5	53.3	54.3	53.9	53.3
6	11.00 – 12.00	53.6	54.8	53.6	54.1	54.6	53.6	54.4	53.7	54.4	54.0	54.4	54.7
7	12.00 – 13.00	52.8	53.6	52.8	53.7	54.2	52.8	53.2	52.4	53.2	54.5	54.2	53.2
8	13.00 – 14.00	52.5	53.1	52.5	53.0	53.9	52.5	54.1	54.0	54.1	53.2	52.8	54.1
9	14.00 – 15.00	53.1	54.7	53.1	54.6	53.4	53.1	53.9	54.6	53.9	52.4	53.7	53.9
10	15.00 – 16.00	54.8	52.4	54.7	54.2	54.3	54.8	54.2	53.3	54.2	54.4	54.0	54.2
11	16.00 – 17.00	54.3	53.5	54.3	52.5	53.7	54.3	54.0	52.1	53.6	52.3	53.3	53.6
12	17.00 – 18.00	52.6	52.0	52.6	53.8	53.0	52.6	52.4	53.5	52.4	53.1	52.2	52.4
13	18.00 – 19.00	51.7	52.8	51.7	52.1	52.9	51.7	51.8	50.3	53.9	51.8	52.7	53.9
14	19.00 –20.00	51.0	50.3	51.0	50.8	51.7	51.0	54.3	52.0	54.3	52.6	52.0	54.3
15	20.00 – 21.00	50.9	50.2	50.9	50.3	52.4	50.9	53.0	49.8	53.0	51.5	51.9	53.0
16	21.00 – 22.00	49.6	47.0	49.6	48.7	49.6	49.4	52.8	46.4	52.8	50.2	51.3	52.8
17	22.00 – 23.00 (Night)	44.2	43.7	44.2	43.2	44.7	44.2	43.7	42.9	44.6	44.0	44.4	44.6
18	23.00 – 00.00	42.4	42.9	43.4	43.0	43.9	43.4	41.5	40.1	42.4	43.2	42.8	42.4
19	00.00 – 01.00	39.0	40.6	43.6	41.9	42.7	43.6	39.3	38.3	40.9	41.5	43.1	40.9
20	01.00 – 02.00	41.5	42.4	40.2	40.8	42.1	40.2	40.9	39.7	42.3	40.9	41.6	42.3
21	02.00 – 03.00	42.6	43.2	42.7	41.5	42.4	42.7	42.2	41.5	43.4	41.7	42.7	43.4
22	03.00 – 04.00	43.7	40.8	43.0	42.7	41.8	43.0	42.8	43.4	42.7	42.4	41.4	42.7
23	04.00 – 05.00	44.1	42.3	43.9	43.1	44.1	44.1	43.6	41.8	43.1	43.8	44.5	43.1
24	05.00 – 06.00	44.9	44.1	44.2	44.6	44.0	44.5	44.1	43.3	44.0	44.3	44.8	44.0





Ambient Air Quality Standards in respect of Noise

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

Note:- 1. Day time shall mean from 6.00 a.m. to 10.00 p.m.
2. Night time shall mean from 10.00 p.m. to 6.00 a.m.
3. Silence zone is an area comprising not less than 100 metres around hospitals, educational institutions, courts, religious places or any other area which is declared as such by the competent authority
4. Mixed categories of areas may be declared as one of the four above mentioned categories by the competent authority.

* dB(A) Leq denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.

A "decibel" is a unit in which noise is measured.

"A", in dB(A) Leq, denotes the frequency weighting in the measurement of noise and corresponds to frequency response characteristics of the human ear.

Leq: It is an energy mean of the noise level over a specified period.

iv. DG SET EMISSIONS

Sampling of Flue gas emission of 2000 KVA DG Set was done and its emissions were determined along with its noise intensity. The Detailed report has been is enclosed as Annexure - 4

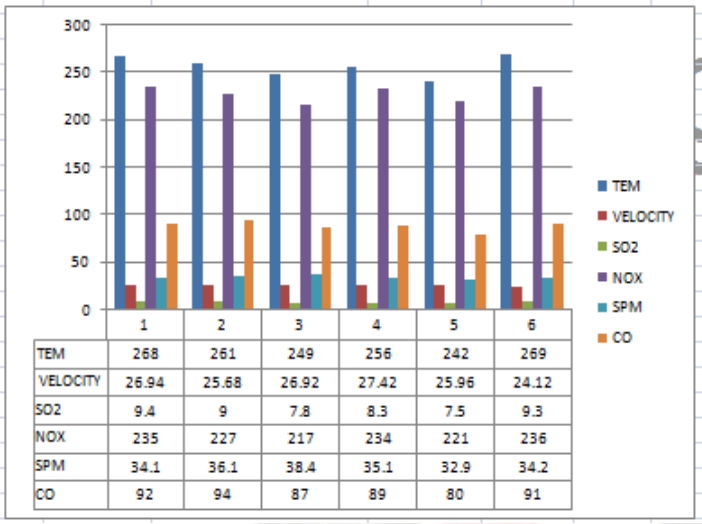
DETAILS OF EMISSION MONITORING LOCATIONS

STATION CODE	LOCATIONS	Geographical Location
SM – 1	DG – 1 2000 KVA	13^0 19'6" N 80^0 19' 34" E
SM – 2	DG – 2 2000 KVA	
SM - 3	DG 125 KVA	13^0 18'36" N 80^0 20' 25" E
SM - 3	Liquid Terminal Hot Oil Generator Stack	13^0 19'2.38" N 80^0 20' 6.81" E

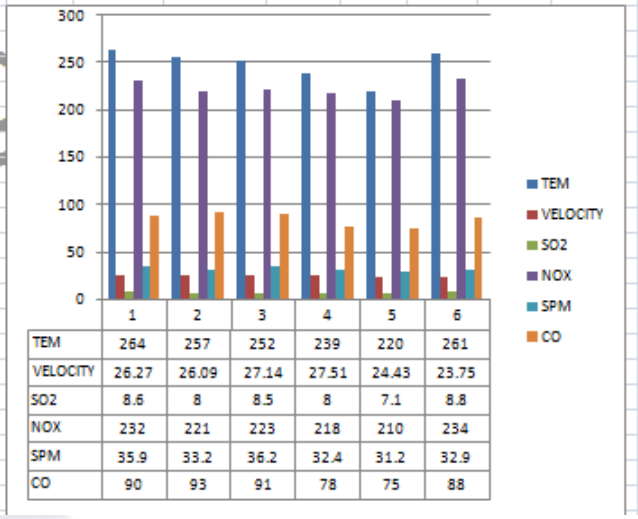
ANNEXURE - 4 RESULTS OF SOURCE EMISSION MONITORING DATA

STACK MONITORING

Location		DG 2000KVA – 1						DG 2000KVA – 2					
Month & Year		Oct-20	Nov-20	Dec-20	Jan-21	Feb-	Mar-21	Oct-20	Nov-	Dec-	Jan-21	Feb-21	Mar-21
S.No.	Parameters												
1	Stack Temperature, °C	268	261	249	256	242	269	264	257	252	239	220	261
2	Flue Gas Velocity, m/s	26.94	25.68	26.92	27.42	25.96	24.12	26.27	26.09	27.14	27.51	24.43	23.75
3	Sulphur Dioxide, mg/Nm3	9.4	9	7.8	8.3	7.5	9.3	8.6	8	8.5	8	7.1	8.8
4	NOX (as NO2) in ppmv	235	227	217	234	221	236	232	221	223	218	210	234
5	Particular matter, mg/Nm3	34.1	36.1	38.4	35.1	32.9	34.2	35.9	33.2	36.2	32.4	31.2	32.9
6	Carbon Monoxide, mg/Nm3	92	94	87	89	80	91	90	93	91	78	75	88
7	Gas Discharge, Nm3/hr	6670	6442	6908	6943	6753	5961	6553	6594	6925	7197	6638	5957

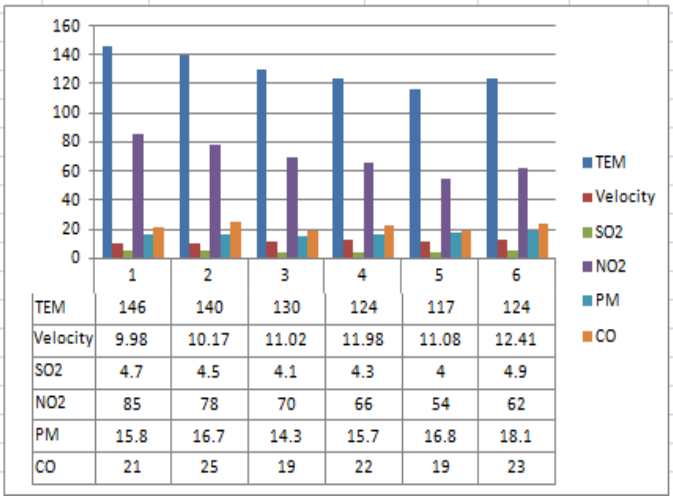


	1	2	3	4	5	6
TEM	268	261	249	256	242	269
VELOCITY	26.94	25.68	26.92	27.42	25.96	24.12
SO2	9.4	9	7.8	8.3	7.5	9.3
NOX	235	227	217	234	221	236
SPM	34.1	36.1	38.4	35.1	32.9	34.2
CO	92	94	87	89	80	91

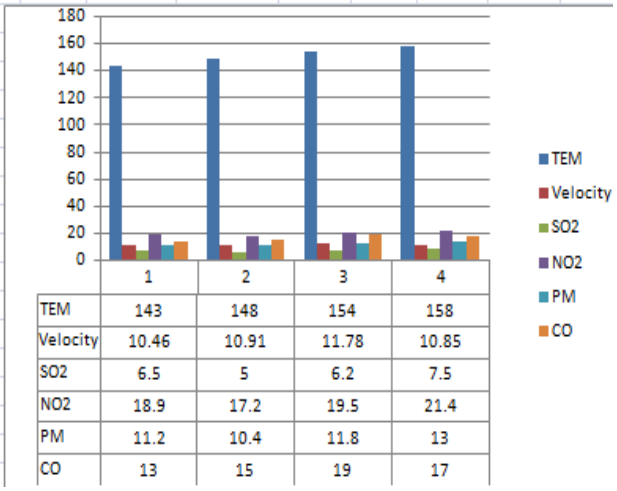


	1	2	3	4	5	6
TEM	264	257	252	239	220	261
VELOCITY	26.27	26.09	27.14	27.51	24.43	23.75
SO2	8.6	8	8.5	8	7.1	8.8
NOX	232	221	223	218	210	234
SPM	35.9	33.2	36.2	32.4	31.2	32.9
CO	90	93	91	78	75	88

Location		DG 125 KVA						Liquid Terminal Hot Oil Generator			
Month & Year		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Oct-20	Nov-20	Feb-21	Mar-21
S.No.	Parameters										
1	Stack Temperature, °C	146	140	130	124	117	124	143	148	154	158
2	Flue Gas Velocity, m/s	9.98	10.17	11.02	11.98	11.08	12.41	10.46	10.91	11.78	10.85
3	Sulphur Dioxide, mg/Nm3	4.7	4.5	4.1	4.3	4	4.9	6.5	5	6.2	7.5
4	NOX (as NO2) in ppmv	85	78	70	66	54	62	18.9	17.2	19.5	21.4
5	Particular matter, mg/Nm3	15.8	16.7	14.3	15.7	16.8	18.1	11.2	10.4	11.8	13
6	Carbon Monoxide, mg/Nm3	21	25	19	22	19	23	13	15	19	17
7	Gas Discharge, Nm3/hr	449	463	515	569	535	592	38367	39542	42096	38581



	1	2	3	4	5	6
TEM	146	140	130	124	117	124
Velocity	9.98	10.17	11.02	11.98	11.08	12.41
SO2	4.7	4.5	4.1	4.3	4	4.9
NO2	85	78	70	66	54	62
PM	15.8	16.7	14.3	15.7	16.8	18.1
CO	21	25	19	22	19	23



	1	2	3	4
TEM	143	148	154	158
Velocity	10.46	10.91	11.78	10.85
SO2	6.5	5	6.2	7.5
NO2	18.9	17.2	19.5	21.4
PM	11.2	10.4	11.8	13
CO	13	15	19	17

Parameter		Area Category	Total engine rating of the plant (includes existing as well as new generator sets)	Generator sets commissioning date		
				Before 1.7.2003	Between 1.7.2003 and 1.7.2005	On or after 1.7.2005
NO_X (as NO_2) (At 15% O_2, dry basis, in ppmv		A	Up to 75 MW	1100	970	710
		B	Up to 150 MW			
		A	More than 75 MW	1100	710	360
		B	More than 150 MW			
NMHC (as C) (at 15% O_2), mg/Nm^3		Both A and B		150	100	
PM (at 15% O_2), mg/Nm^3	Diesel Fuels- HSD & LDO	Both A and B		75	75	
	Furnace Oils- LSHS & FO	Both A and B		150	100	
CO (at 15% O_2), mg/Nm^3		Both A and B		150	150	

[1] Inserted by Rule 2(b) of the Environment (Protection) Second Amendment Rules, 2008 notified by G.S.R.280(E), dated 11.4.2008.

[2] Serial No.96 and entries relating thereto inserted by Rule 2 of the Environment (Protection) Third Amendment Rules, 2002 notified vide Notification G.S.R.489(E), dated 9.7.2002.

v. STP WATER SAMPLE ANALYSIS

Water samples were collected at the following points.

- 30 KLD Treated Water Outlet
- 5 KLD Treated Water Outlet

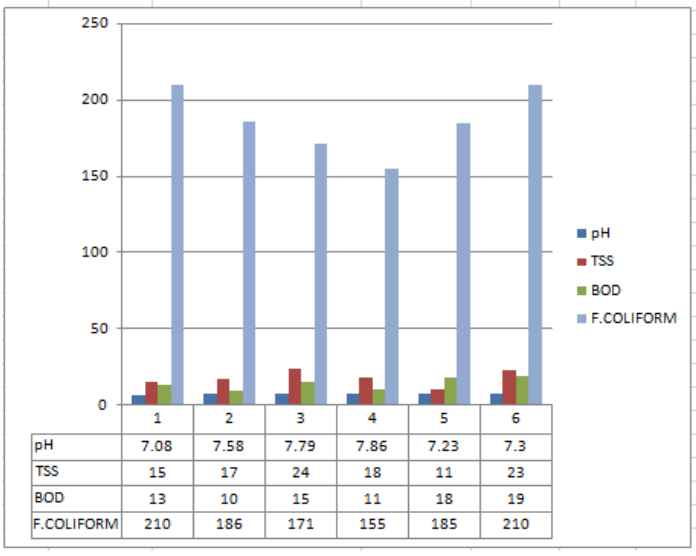
DETAILS OF STP WATER LOCATIONS

STATION CODE	LOCATIONS	Geographical Location
STP – 1	30 KLD	13^0 18'36" N 80^0 20' 25" E
STP – 2	5 KLD	13^0 19'6" N 80^0 19' 35" E

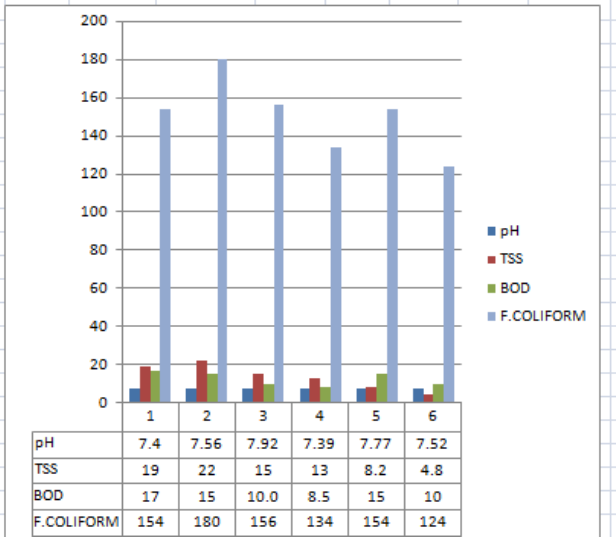
Analysis results of the water sample collected from the above location are enclosed as Annexure – 5.

ANNEXURE – 5 RESULTS OF STP WATER QUALITY DATA

Location		STP 30KLD OUTLET						STP 5KLD OUTLET					
Month & Year		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21
S.No.	Parameters												
1	pH @ 25°C	7.08	7.58	7.79	7.86	7.23	7.3	7.4	7.56	7.92	7.39	7.77	7.52
2	Total Suspended Solids, mg/L	15	17	24	18	11	23	19	22	15	13	8.2	4.8
3	BOD at 27°C for 3 days, mg/L	13	10	15	11	18	19	17	15	10.0	8.5	15	10
4	Fecal Coliform, MPN/100ml	210	186	171	155	185	210	154	180	156	134	154	124



	1	2	3	4	5	6
pH	7.08	7.58	7.79	7.86	7.23	7.3
TSS	15	17	24	18	11	23
BOD	13	10	15	11	18	19
F.COLIFORM	210	186	171	155	185	210



	1	2	3	4	5	6
pH	7.4	7.56	7.92	7.39	7.77	7.52
TSS	19	22	15	13	8.2	4.8
BOD	17	15	10.0	8.5	15	10
F.COLIFORM	154	180	156	134	154	124

MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

NOTIFICATION

New Delhi, the 13th October, 2017

G.S.R. 1265(E).—In exercise of the powers conferred by sections 6 and 25 of the Environment (Protection) Act, 1986 (29 of 1986), the Central Government hereby makes the following rules further to amend the Environment (Protection) Rules, 1986, namely:-

1. **Short title and commencement.**—(1) These rules may be called the Environment (Protection) Amendment Rules, 2017.

(2) They shall come into force on the date of their publication in the Official Gazette.

2. In the Environment (Protection) Rules, 1986, in Schedule – I, after serial number 104 and the entries relating thereto, the following serial number and entries shall be inserted, namely:—

Sl. No.	Industry	Parameters	Standards	
1	2	3	4	
		Effluent discharge standards (applicable to all mode of disposal)		
"105	Sewage Treatment Plants (STPs)		Location	Concentration not to exceed
			(a)	(b)
		pH	Anywhere in the country	6.5-9.0
		Bio-Chemical Oxygen Demand (BOD)	Metro Cities*, all State Capitals except in the State of Arunachal Pradesh, Assam, Manipur, Meghalaya Mizoram, Nagaland, Tripura Sikkim, Himachal Pradesh, Uttarakhand, Jammu and Kashmir, and Union territory of Andaman and Nicobar Islands, Dadar and Nagar Haveli Daman and Diu and Lakshadweep	20
			Areas/regions other than mentioned above	30
		Total Suspended Solids (TSS)	Metro Cities*, all State Capitals except in the State of Arunachal Pradesh, Assam, Manipur, Meghalaya Mizoram, Nagaland, Tripura Sikkim, Himachal Pradesh, Uttarakhand, Jammu and Kashmir and Union territory of Andaman and Nicobar Islands, Dadar and Nagar Haveli Daman and Diu and Lakshadweep	<50
			Areas/regions other than mentioned above	<100
		Fecal Coliform (FC) (Most Probable Number per 100 milliliter, MPN/100ml	Anywhere in the country	<1000
*Metro Cities are Mumbai, Delhi, Kolkata, Chennai, Bengaluru, Hyderabad, Ahmedabad and Pune.				

vi. DRINKING WATER SAMPLE ANALYSIS

Drinking Water samples were collected at the Canteen or Office Building. Analysis results of the water sample collected from the above location are enclosed as Annexure – 6.

vii. Rain WATER SAMPLE ANALYSIS

Rain water harvesting samples were collected at the Pond. Analysis results of the water sample collected from the above location are enclosed as Annexure – 7.

ANNEXURE – 6 RESULTS OF WATER SAMPLE (DRINKING WATER) QUALITY DATA

Drinking Water									
Month & Year		Unit	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	IS: 10500-1991 R.2012 PERMISSIBLE LIMIT IN THE
S.No.	Parameters								
1	pH @ 25°C	-	6.97	6.61	7.08	7.08	6.76	7.32	6.5 - 8.5
2	as CaCo3	mg/L	7.14	20	12.0	44	4	24	600
3	Chloride as Cl	mg/L	14.6	38	11	117	16	20	1000
4	Total Dissolved	mg/L	27	60	34	220	29	56	2000
5	Calcium as Ca	mg/L	1.4	2.4	1.8	3.2	0.8	4.8	200
6	Sulphate as SO4	mg/L	1.12	5.5	1.7	14	1.46	1.21	400
7	Nitrate as No3	mg/L		BDL (DL:1.0)					45
8	Total Alkalinity a:	mg/L	10.6	5.1	6	10	5	20	600
9	Magnesium as Mg	mg/L	0.87	3.36	1.8	8.64	0.48	2.88	100
10	Color	Hazen	<1.0						15
11	Odour	–	Unobjectionable						Unobjectionable
12	Taste	–	Agreeable						Agreeable
13	Turbidity	NTU	0.7	<0.5					5
14	Iron as Fe	mg/L	BDL(DL 0.05)						0.3
15	Total Residual Cl	mg/L	BDL(DL 0.1)						1
16	Copper as Cu	mg/L	BDL(DL 0.05)						1.5
17	Manganese as	mg/L	BDL(DL 0.05)						0.3
18	Fluoride as F	mg/L	BDL(DL 0.1)						1.5
19	Phenolic	mg/L	BDL(DL 0.001)						0.002
20	Mercury as Hg	mg/L	BDL(DL 0.001)						0.001
21	Cadmium as Cd	mg/L	BDL(DL 0.003)						0.003
22	Selenium as Se	mg/L	BDL(DL 0.01)						0.01
23	Arsenic as As	mg/L	BDL(DL 0.01)						0.05
24	Lead as Pb	mg/L	BDL(DL 0.01)						0.01
25	Zinc as Zn	mg/L	BDL(DL 0.05)						15
26	Anionic	mg/L	Nil						1
27	Total Chromium	mg/L	BDL(DL 0.05)						0.05
28	Phenolphthalei	mg/L	Nil						-
29	Aluminium as Al	mg/L	BDL(DL 0.05)						0.2
30	Boron as B	mg/L	BDL(DL 0.1)						1
31	Mineral Oil	mg/L	Nil						0.5
32	Polynuclear	mg/L	Nil						0.0001
33	Pesticides	mg/L	Nil						-
34	Cyanide as CN	mg/L	BDL (DL : 0.01)						0.05
35	E. coli	MPN/100	Absence						Absence
36	Total Coliform	MPN/100	Absence						Absence

ANNEXURE – 7RESULTS OF RAINWATER HARVESTING POND WATER SAMPLE QUALITY DATA

Rain Water Harvesting Pond Water									
Month & Year		Unit	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	IS: 10500-1991 R.2012 PERMISSIBLE LIMIT IN THE
S.No.	Parameters								
1	pH @ 25°C	-	8.28	7.85	7.93	7.93	7.96	7.48	6.5 - 8.5
2	as CaCo3	mg/L	260	276	180	124	188	182	600
3	Chloride as Cl	mg/L	626	228	92	103	104	106	1000
4	Total Dissolved	mg/L	1481	744	488	320	372	386	2000
5	Calcium as Ca	mg/L	44	58	42	26	46	45	200
6	Sulphate as SO4	mg/L	182	116	40	33	47	16	400
7	Nitrate as No3	mg/L	4.39	2.98	1.74	2.05	2.81	3.12	45
8	Total Alkalinity a	mg/L	314	167	134	100	140	182	600
9	Magnesium as Mg	mg/L	36	32	18	14.4	17	23	100
10	Color	Hazen	5	10	10	10	15	15	15
11	Odour	–	Unobjectionable						Unobjectionable
12	Taste	–	Dis Agreeable						Agreeable
13	Turbidity	NTU	1.4	3.5	1.5	3.8	4.2	4.7	5
14	Iron as Fe	mg/L	0.18	0.13	0.15	0.19	0.24	0.21	0.3
15	Total Residual Cl	mg/L	BDL(DL 0.1)						1
16	Copper as Cu	mg/L	BDL(DL 0.05)						1.5
17	Manganese as	mg/L	BDL(DL 0.05)						0.3
18	Fluoride as F	mg/L	0.46	0.53	0.62	0.78	0.64	0.58	1.5
19	Phenolic	mg/L	BDL(DL 0.001)						0.002
20	Mercury as Hg	mg/L	BDL(DL 0.001)						0.001
21	Cadmium as Cd	mg/L	BDL(DL 0.003)						0.003
22	Selenium as Se	mg/L	BDL(DL 0.01)						0.01
23	Arsenic as As	mg/L	BDL(DL 0.01)						0.05
24	Lead as Pb	mg/L	BDL(DL 0.01)						0.01
25	Zinc as Zn	mg/L	BDL(DL 0.05)						15
26	Anionic	mg/L	Nil						1
27	Total Chromium	mg/L	BDL(DL 0.05)						0.05
28	Phenolphthalei	mg/L	Nil						-
29	Aluminium as Al	mg/L	BDL(DL 0.05)						0.2
30	Boron as B	mg/L	0.28	0.21	0.25	0.37	0.42	0.47	1
31	Mineral Oil	mg/L	Nil						0.5
32	Polynuclear	mg/L	Nil						0.0001
33	Pesticides	mg/L	Nil						-
34	Cyanide as CN	mg/L	BDL (DL : 0.01)						0.05
35	E. coli	MPN/100	Absence						Absence
36	Total Coliform	MPN/100	Absence						Absence

viii. Marine Sampling

Marine Water samples and sediment samples were collected at locations South side berth and North side berth. Analysis data of Marine and sediments as represented in Annexure – 8 & 9.

DETAILS OF MARINE WATER AND SEDIMENT LOCATIONS

STATION CODE	LOCATIONS	Geographical Location
MW – 1 / MS – 1	CB – 1	13^0 18'50" N 80^0 20' 51" E
MW – 2 / MS – 2	CB – 2	13^0 18'46" N 80^0 20' 49" E
MW – 3 / MS – 3	BERTH – 3	13^0 18'41" N 80^0 21' 4" E

Fig – 5. Water and Marine Sampling Locations

ANNEXURE – 8 RESULTS OF MARINE WATER QUALITY DATA

Location		CB - 1 Surface Water						CB - 2 Surface Water					
Month & Year		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21
S.No.	Parameters	Unit											
1	pH @ 25°C	-	7.8	7.72	7.81	7.19	7.93	8.04	7.79	7.54	7.75	7.32	8.04	8.11
2	Temperature	°C	29	29	29	29	29	29	29	29	29	29	29	29
3	Total Suspended Solids	mg/L	18	14	16	19	14	11	21	17	13	21	17	13
4	BOD at 27 °C for 3 days	mg/L	14	11	10	12	5	4.6	17	13	11	17	4.5	4.8
5	Dissolved oxygen	mg/L	3.8	4	3.9	3.5	3.9	2.2	3.9	4.1	3.8	4.2	4	2.2
6	Salinity at 25 °C	-	38.9	35.6	33.2	42.3	33.5	33.1	39.4	36.8	33.7	43.5	32.7	33.6
7	Oil & Grease	mg/L	BDL(DL 1.0)						BDL(DL 1.0)					
8	Nitrate as No_3	mg/L	7.86	6.45	5.14	7.4	5.81	4.63	6.98	6.03	6.35	6.21	6.48	5.15
9	Nitrite as No_2	mg/L	2.52	2.78	2.12	4.11	3.18	2.18	2.25	2.96	1.9	3.36	3.02	1.97
10	Ammonical Nitrogen as N	mg/L	BDL(DL 1.0)						BDL(DL 1.0)					
11	Ammonia as NH3	mg/L	BDL(DL 0.01)						BDL(DL 0.01)					
12	Kieldahl Nitrogen as N	mg/L	BDL(DL 1.0)						BDL(DL 1.0)					
13	Total phosphates as PO4	mg/L	5.08	5.54	4.23	3.98	4.75	5.64	4.17	4.88	4.16	4.25	5.29	5.88
14	Total Nitrogen	mg/L	--	BDL(DL 1.0)					BDL(DL 1.0)					
15	Total Dissolved Solids	mg/L	38964	31890	34127	39714	36530	37146	39005	32680	34720	41089	36440	37641
16	COD	mg/L	171	158	141	73	124	120	149	163	137	82	136	128
17	Total bacterial count	cfu/ml	120	114	102	58	70	74	104	109	96	66	85	79
18	Coliforms	Per 100 ml	Absence						Absence					
19	Escherichia coli	Per 100 ml	Absence						Absence					
20	Salmonella	Per 100 ml	Absence						Absence					
21	Shigella	Per 100 ml	Absence						Absence					
22	Vibrio cholerae	Per 100 ml	Absence						Absence					
23	Vibrio parahaemoluticus	Per 100 ml	Absence						Absence					
24	Enterococci	Per 100 ml	Absence						Absence					
25	Octane	µg/L	118	131	156	158	164	148	125	134	162	142	155	160
26	Nonane	µg/L	BDL(DL 0.1)						BDL(DL 0.1)					
27	Decane	µg/L	BDL(DL 0.1)						BDL(DL 0.1)					
28	Undecane	µg/L	BDL(DL 0.1)						BDL(DL 0.1)					
29	Tridecane	µg/L	8	8.5	9.2	7.5	8.6	7.3	7.2	7.9	8.7	7	7.7	8.2
30	Tetradecane	µg/L	BDL(DL 0.1)						BDL(DL 0.1)					
31	Pentadecane	µg/L	BDL(DL 0.1)						BDL(DL 0.1)					
32	Hexadecane	µg/L	BDL(DL 0.1)						BDL(DL 0.1)					
33	Octadecane	µg/L	BDL(DL 0.1)						BDL(DL 0.1)					
34	Nonadecane	µg/L	BDL(DL 0.1)						BDL(DL 0.1)					
35	Elcosane	µg/L	BDL(DL 0.1)						BDL(DL 0.1)					
36	Primary Productivity	mg C/m^3 /hr	8.7	0.12	7.86	9.12	8.05	8.19	8.83	8.43	6.98	10.71	9.27	10.26
37	Chlorophyll a	mg $/m^3$	4.23	4.08	5.24	7.31	6.58	7.28	4.91	4.47	4.02	8.05	8.35	7.47
38	Phaeophytin	mg $/m^3$	0.77	0.79	0.7	0.6	0.74	0.8	0.89	0.83	0.87	0.72	0.78	0.94
39	Oxidisable Paticular	mg /L	6.25	5.49	3.18	7.54	6.96	7.24	5.72	5.18	5.86	8.16	6.01	6.53

	PHYTOPLANKTON													
40	Bacteriastrum hyalinum	nos/ml	17	14	13	17	12	15	18	16	19	20	14	17
41	Bacteriastrum varians	nos/ml	13	16	18	14	9	12	14	10	11	17	12	15
42	Chaetoceros didymus	nos/ml	14	9	7	10	7	10	12	14	15	12	10	11
43	Chaetoceros decipiens	nos/ml	10	12	14	9	14	8	7	11	10	16	18	13
44	Biddulphia mobiliensis	nos/ml	22	13	16	15	17	19	19	15	17	19	22	16
45	Ditylum brightwellii	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
46	Gyrosigma sp	nos/ml	Nil	Nil	Nil	5	8	11	Nil	Nil	Nil	8	6	10
47	Cladophyxis sps	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
48	Coscinodiscus centralis	nos/ml	12	11	12	16	10	14	5	13	16	13	15	18
49	Coscinodiscus granii	nos/ml	15	9	10	9	11	19	17	7	9	10	7	12
50	Cylcotella sps	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
51	Hemidiscus	nos/ml	7	8	7	22	18	16	10	12	14	15	17	20
52	Laudaria annulata	nos/ml	16	14	11	12	15	6	11	19	21	18	21	17
53	Pyrophacus horologicum	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
54	Pleurosigma angulatum	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
55	Leptocylindrus danicus	nos/ml	5	10	9	18	21	17	7	8	7	21	16	9
56	Guinardia flaccida	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
57	Rhizosolenia alata	nos/ml	11	12	15	11	16	13	16	9	12	7	11	14
58	Rhizosolena impricata	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
59	Rhizosolena semispina	nos/ml	18	11	17	16	19	21	15	16	18	17	23	20
60	Thalassionema	nos/ml	23	17	21	13	6	10	24	18	23	11	9	15
61	Triceratium reticulatum	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
62	Ceratium trichoceros	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
63	Ceratium furca	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
64	Ceratium macroceros	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
65	Ceracium longipes	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
	ZOOPLANKTONS													
66	Acrocalanus gracilis	nos/ml	8	12	14	10	13	15	14	15	17	13	15	11
67	Acrocalanus sp	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
68	Paracalanus parvus	nos/ml	14	17	19	15	18	10	10	12	14	12	16	13
69	Eutintinus sps	nos/ml	11	14	13	14	10	17	12	10	9	15	9	14
70	Centropages furcatus	nos/ml	9	15	17	16	9	11	7	16	18	13	14	16
71	Corycaeus dana	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
72	Oithona brevicornis	nos/ml	10	11	12	13	8	12	11	13	15	20	12	18
73	Euterpina acutifrons	nos/ml	15	13	16	12	14	16	15	11	12	16	19	23
74	Metacalanus aurivilli	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
75	Copipod nauplii	nos/ml	12	10	9	18	11	14	8	14	13	14	8	7
76	Cirripede nauplii	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
77	Bivalve veliger	nos/ml	15	18	21	19	16	13	17	9	10	18	21	18
78	Gastropod veliger	nos/ml	19	16	20	17	20	9	21	17	21	10	17	10

Location			CB - 1 Bottom Water						CB - 2 Bottom Water					
Month & Year		Unit	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21
S.No.	Parameters													
1	pH @ 25°C	-	7.83	7.86	7.74	7.55	8.18	8.31	7.71	8.03	7.65	7.5	8.22	8.28
2	Temperature	°C	29	29	29	29	29	29	29	29	29	29	29	29
3	Total Suspended Solids	mg/L	22	18	19	33	18	13	25	21	22	30	18	15
4	BOD at 27 °C for 3 days	mg/L	16	14	13	14	5	4.6	20	17	15	18	4.5	4.3
5	Dissolved oxygen	mg/L	3.9	3.8	3.7	3	3.4	2.7	3.6	3.9	3.6	2.6	3.1	2.4
6	Salinity at 25 °C	-	35.4	30.7	31.8	38.6	35.3	34.1	36.3	32.4	33.1	40.8	33.5	34.8
7	Oil & Grease	mg/L	BDL(DL 1.0)						BDL(DL 1.0)					
8	Nitrate as NO_3	mg/L	6.21	6.9	6.03	6.81	6.17	5.44	5.37	5.86	5.42	7.33	6.31	6.05
9	Nitrite as NO_2	mg/L	2.74	3.02	2.15	4.02	2.98	2.17	2.05	2.71	2.27	4.95	3.73	2.03
10	Ammonical Nitrogen as N	mg/L	BDL(DL 1.0)						BDL(DL 1.0)					
11	Ammonia as NH3	mg/L	BDL(DL 0.01)						BDL(DL 0.01)					
12	Kjeldahl Nitrogen as N	mg/L	BDL(DL 1.0)						BDL(DL 1.0)					
13	Total phosphates as PO4	mg/L	5.43	5.86	5.18	5.16	5.84	6.22	5.96	6.45	4.51	4.3	5.17	5.96
14	Total Nitrogen	mg/L	BDL(DL 1.0)						BDL(DL 1.0)					
15	Total Dissolved Solids	mg/L	37025	32840	35650	38190	35960	36854	38922	34678	36879	40985	36110	36926
16	COD	mg/L	180	154	167	123	174	150	171	143	155	118	182	164
17	Total bacterial count	cfu/ml	102	115	128	85	98	91	98	109	137	90	95	87
18	Coliforms	Per 100 ml	Absence						Absence					
19	Escherichia coli	Per 100 ml	Absence						Absence					
20	Salmonella	Per 100 ml	Absence						Absence					
21	Shigella	Per 100 ml	Absence						Absence					
22	Vibrio cholerae	Per 100 ml	Absence						Absence					
23	Vibrio parahaemolyticus	Per 100 ml	Absence						Absence					
24	Enterococci	Per 100 ml	Absence						Absence					
25	Colour	Hazen	20	25	20	10	15	20	15	20	30	15	15	25
26	Odour	-	Unobjectionable						Unobjectionable					
27	Taste	-	Disagreeable						Disagreeable					
28	Turbidity	NTU	10	7.9	8.5	17	9.4	8.5	13	9.5	9.8	13	8.7	8
29	Calcium as Ca	mg/L	336	800	852	538	400	426	462	780	871	577	458	471
30	Chloride as Cl	mg/L	19568	16989	17602	21340	19568	18876	20126	17969	18322	22582	18589	19263
31	Cyanide as CN	mg/L	BDL(DL 0.01)						BDL(DL 0.01)					
32	Fluoride as F	mg/L	0.85	0.92	0.79	0.32	0.32	0.49	0.74	0.83	0.81	0.37	0.37	0.51
33	Magnesium as Mg	mg/L	705	2160	2254	1042	1014	426	555	1440	2010	1156	1092	1102
34	Total Iron as Fe	mg/L	1.41	1.87	1.55	0.57	0.63	18876	1.29	1.57	1.42	0.53	0.71	0.8
35	Residual Free Chlorine	mg/L	BDL(DL 0.1)						BDL(DL 0.1)					
36	Phenolic Compounds as C6H5OH	mg/L	BDL(DL 1.0)						BDL(DL 1.0)					
37	Total Hardness as CaCO3	mg/L	3774	11000	11522	5687	5425	5544	3468	7950	10553	6260	5695	5770
38	Total Alkalinity as CaCO3	mg/L	106	85	119	289	110	107	120	98	114	317	116	112
39	Sulphide as H2S	mg/L	BDL(DL 0.5)						BDL(DL 0.5)					
40	Sulphate as SO4	mg/L	2490	1771	2401	2540	2518	2592	2514	1756	2262	2673	2612	2864

41	Anionic surfactants as MBAS	mg/L	BDL(DL 0.1)						BDL(DL 0.1)					
42	Monocrotophos	µg/L	BDL(DL 0.01)						BDL(DL 0.01)					
43	Atrazine	µg/L	BDL(DL 0.01)						BDL(DL 0.01)					
44	Ethion	µg/L	BDL(DL 0.01)						BDL(DL 0.01)					
45	Chlorpyrifos	µg/L	BDL(DL 0.01)						BDL(DL 0.01)					
46	Phorate	µg/L	BDL(DL 0.01)						BDL(DL 0.01)					
47	Mehyle parathion	µg/L	BDL(DL 0.01)						BDL(DL 0.01)					
48	Malathion	µg/L	BDL(DL 0.01)						BDL(DL 0.01)					
49	DDT (o,p and p,p-Isomers of DDT,DDE and DDD	µg/L	BDL(DL 0.01)						BDL(DL 0.01)					
50	Gamma HCH (Lindane)	µg/L	BDL(DL 0.01)						BDL(DL 0.01)					
51	Alppha HCH	µg/L	BDL(DL 0.01)						BDL(DL 0.01)					
52	Beta HCH	µg/L	BDL(DL 0.01)						BDL(DL 0.01)					
53	Delta HCH	µg/L	BDL(DL 0.01)						BDL(DL 0.01)					
54	Endosulfan (Alpha,beta and	µg/L	BDL(DL 0.01)						BDL(DL 0.01)					
55	Butachlor	µg/L	BDL(DL 0.01)						BDL(DL 0.01)					
56	Alachlor	µg/L	BDL(DL 0.01)						BDL(DL 0.01)					
57	Aldrin/Dieldrin	µg/L	BDL(DL 0.01)						BDL(DL 0.01)					
58	Isoproturon	µg/L	BDL(DL 0.01)						BDL(DL 0.01)					
59	2,4-D	µg/L	BDL(DL 0.01)						BDL(DL 0.01)					
60	Polychlorinated Biphenyls (PCB)	µg/L	BDL(DL 0.01)						BDL(DL 0.01)					
61	Polynuclear aromatic hydrocarbons (PAH)	µg/L	BDL(DL 0.01)						BDL(DL 0.01)					
62	Arsenic as As	mg/L	BDL(DL 0.01)						BDL(DL 0.01)					
63	Mercury as Hg	mg/L	BDL(DL 0.001)						BDL(DL 0.001)					
64	Cadmium as Cd	mg/L	BDL(DL 0.003)						BDL(DL 0.003)					
65	Total Chromium as Cr	mg/L	BDL(DL 0.05)						BDL(DL 0.05)					
66	Copper as Cu	mg/L	BDL(DL 0.05)						BDL(DL 0.05)					
67	Lead as Pb	mg/L	BDL(DL 0.01)						BDL(DL 0.01)					
68	Manganese as Mn	mg/L	BDL(DL 0.05)						BDL(DL 0.05)					
69	Nickel as Ni	mg/L	BDL(DL 0.05)						BDL(DL 0.05)					
70	Selenium as Se	mg/L	BDL(DL 0.01)						BDL(DL 0.01)					
71	Barium as Ba	mg/L	BDL(DL 0.1)						BDL(DL 0.1)					
72	Silver as Ag	mg/L	BDL(DL 0.01)						BDL(DL 0.01)					
73	Molybdenum as Mo	mg/L	BDL(DL 0.01)						BDL(DL 0.01)					
74	Octane	µg/L	144	158	170	175	191	170	160	152	159	172	184	181
75	Nonane	µg/L	BDL(DL 0.01)						BDL(DL 0.01)					
76	Decane	µg/L	BDL(DL 0.01)						BDL(DL 0.01)					
77	Undecane	µg/L	7.5	8.9	8	8.4	8.7	8.1	7.9	8.6	7.1	7.8	8.3	8.5
78	Tridecane	µg/L	BDL(DL 0.1)						BDL(DL 0.1)					
79	Tetradecane	µg/L	BDL(DL 0.1)						BDL(DL 0.1)					
80	Pentadecane	µg/L	BDL(DL 0.1)						BDL(DL 0.1)					
81	Hexadecane	µg/L	BDL(DL 0.1)						BDL(DL 0.1)					
	Month & Year	Unit	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21
S.No.	Parameters													
82	Heptadecane	µg/L	BDL(DL 0.1)						BDL(DL 0.1)					
83	Octadecane	µg/L	BDL(DL 0.1)						BDL(DL 0.1)					
84	Nonadecane	µg/L	BDL(DL 0.1)						BDL(DL 0.1)					
85	Eicosane	µg/L	BDL(DL 0.1)						BDL(DL 0.1)					
86	Primary Productivity	mg C/m^3 /hr	9.14	8.09	8.42	9.56	9.14	9.45	9.47	8.91	7.65	10.46	9.81	10.45
87	Chlorophyll a	mg /m^3	5.09	5.73	6.18	7.05	7.71	8.09	5.7	5.26	4.89	7.94	8.79	8.01
88	Phaeophytin	mg /m^3	0.82	0.71	0.86	0.69	0.85	0.87	0.95	0.67	0.73	0.85	0.9	0.98
89	Oxidisable Paticular	mg /L	5.77	5.05	4.25	8.01	7.23	8.31	5.08	4.93	6.01	8.92	6.98	7.69
	PHYTOPLANKTON													
90	Bacteriastrum hyalinum	nos/ml	19	17	20	15	11	13	22	18	14	16	18	21
91	Bacteriastrum varians	nos/ml	10	15	17	16	17	10	16	12	16	18	14	18
92	Chaetoceros didymus	nos/ml	11	7	9	13	9	14	15	10	8	15	8	12
93	Chaetoceros decipiens	nos/ml	8	10	11	7	10	16	6	14	13	14	17	15
94	Biddulphia mobiliensis	nos/ml	20	16	18	14	20	23	17	9	12	17	24	20
95	Ditylum brightwellii	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
96	Gyrosigma sp	nos/ml	Nil	Nil	Nil	6	4	8	Nil	Nil	Nil	7	9	13
97	Cladophyxis sps	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
98	Coscinodiscus centralis	nos/ml	14	9	8	12	9	11	8	13	15	14	19	22
99	Coscinodiscus granii	nos/ml	21	12	13	8	12	19	14	17	20	12	10	14
100	Cylcotella sps	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
101	Hemidiscus	nos/ml	9	6	9	19	15	18	5	15	17	18	21	23
102	Laudaria annulata	nos/ml	17	11	12	8	13	7	18	16	19	14	20	24
103	Pyropacus horologicum	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
104	Pleurosigma angulatum	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
105	Leptocylindrus danicus	nos/ml	4	5	6	17	20	15	9	8	10	22	13	11
106	Guinardia flaccida	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
107	Rhizosolenia alata	nos/ml	8	11	10	9	14	18	18	11	13	6	15	17
108	Rhizosolena impricata	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
109	Rhizosolena semispina	nos/ml	16	10	8	18	21	24	13	17	21	20	25	27
110	Thalassionema	nos/ml	25	19	24	11	7	17	27	21	26	8	12	19
111	Triceratium reticulatum	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
112	Ceratium trichoceros	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
113	Ceratium furca	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
114	Ceratium macroceros	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
115	Ceracium longipes	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

						ZOOPLANKTONS								
116	Acrocalanus gracilis	nos/ml	6	10	9	12	17	20	14	16	13	15	19	14
117	Acrocalanus sp	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
118	Paracalanus parvus	nos/ml	18	20	22	11	14	8	10	11	10	14	17	11
119	Eutintinus sps	nos/ml	15	12	11	17	12	15	12	5	7	8	11	18
120	Centropages furcatus	nos/ml	17	18	20	10	7	10	7	13	15	11	16	19
121	Corycaeus dana	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
122	Oithona brevicornis	nos/ml	13	9	10	9	6	14	11	15	18	11	15	21
123	Euterpina acutifrons	nos/ml	19	17	19	15	18	21	15	10	14	10	14	25
124	Metacalanus aurivilli	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
125	Copipod nauplii	nos/ml	14	16	17	16	10	13	8	19	20	17	12	9
126	Cirripede nauplii	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
127	Bivalve veliger	nos/ml	11	14	15	13	19	16	17	17	9	16	23	15
128	Gastropod veliger	nos/ml	20	11	13	19	22	12	21	12	17	18	21	13

Location		Berth - 3 Surface Water					
Month & Year		Unit	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21
S.No.	Parameters							
1	pH @ 25°C	-	7.66	7.98	8.21	7.93	8.41	8.29
2	Temperature	°C	29	29	29	29	29	29
3	Total Suspended Solids	mg/L	14	11	10	20	17	15
4	BOD at 27 °C for 3 days	mg/L	11	13	11	9	4.8	4.4
5	Dissolved oxygen	mg/L	4	3.8	4	3.7	3.9	2.9
6	Salinity at 25 °C	-	35.2	33.7	33.1	43.5	31.8	32.3
7	Oil & Grease	mg/L	BDL(DL 1.0)					
8	Nitrate as No_3	mg/L	6.45	6.74	6.89	6.27	5.42	4.54
9	Nitrite as No_2	mg/L	2.01	2.61	2.13	3.91	3.05	1.98
10	Ammonical Nitrogen as N	mg/L	BDL(DL 1.0)					
11	Ammonia as NH3	mg/L	BDL(DL 0.01)					
12	Kjeldahl Nitrogen as N	mg/L	BDL(DL 1.0)					
13	Total phosphates as PO4	mg/L	5.96	4.89	4.27	3.19	4.83	5.61
14	Total Nitrogen	mg/L	BDL(DL 1.0)					
15	Total Dissolved Solids	mg/L	37148	33127	34055	40842	37860	38150
16	COD	mg/L	163	139	128	109	151	135
17	Total bacterial count	cfu/ml	95	103	114	84	89	71
18	Coliforms	Per 100 ml	Absence					
19	Escherichia coli	Per 100 ml	Absence					
20	Salmonella	Per 100 ml	Absence					
21	Shigella	Per 100 ml	Absence					
22	Vibrio cholerae	Per 100 ml	Absence					
23	Vibrio parahaemolyticus	Per 100 ml	Absence					
24	Enterococci	Per 100 ml	Absence					
25	Octane	µg/L	160	142	150	163	170	155
26	Nonane	µg/L	BDL(DL 0.1)					
27	Decane	µg/L	BDL(DL 0.1)					
28	Undecane	µg/L	BDL(DL 0.1)					
29	Tridecane	µg/L	7.7	8	8.6	9.2	8.5	7.4
30	Tetradecane	µg/L	BDL(DL 0.1)					
31	Pentadecane	µg/L	BDL(DL 0.1)					
32	Hexadecane	µg/L	BDL(DL 0.1)					
33	Octadecane	µg/L	BDL(DL 0.1)					
34	Nonadecane	µg/L	BDL(DL 0.1)					
35	Elcosane	µg/L	BDL(DL 0.1)					

36	Primary Productivity	mg C/m^3 /hr	8.67	8.54	8.32	9.2	8.05	8.91
37	Chlorophyll a	mg /m^3	5.43	6.21	6.46	7.83	6.27	7.43
38	Phaeophytin	mg /m^3	0.75	0.73	0.89	0.73	0.63	0.79
39	Oxidisable Paticular	mg /L	5.86	5.38	5.71	5.99	6.42	7.06
	PHYTOPLANKTON							
40	Bacteriastrum hyalinum	nos/ml	16	12	16	19	16	14
41	Bacteriastrum varians	nos/ml	10	16	14	15	11	16
42	Chaetoceros didymus	nos/ml	8	10	9	16	8	10
43	Chaetoceros decipiens	nos/ml	13	11	13	10	15	12
44	Biddulphia mobiliensis	nos/ml	9	13	10	9	12	17
45	Ditylum brightwellii	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
46	Gyrosigma sp	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
47	Cladophyxis sps	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
48	Coscinodiscus centralis	nos/ml	5	9	11	17	10	13
49	Coscinodiscus granii	nos/ml	19	15	17	15	7	9
50	Cylcotella sps	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
51	Hemidiscus	nos/ml	11	8	13	18	14	18
52	Laudaria annulata	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
53	Pyropacus horologicum	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
54	Pleurosigma angulatum	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
55	Leptocylindrus danicus	nos/ml	18	14	12	14	19	21
56	Guinardia flaccida	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
57	Rhizosolenia alata	nos/ml	10	6	8	20	17	23
58	Rhizosolena impricata	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
59	Rhizosolena semispina	nos/ml	19	23	21	12	9	19
60	Thalassionema	nos/ml	17	16	18	21	24	20
61	Triceratium reticulatum	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
62	Ceratium trichoceros	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
63	Ceratium furca	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
64	Ceratium macroceros	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
65	Ceracium longipes	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
	ZOOPLANKTONS							
66	Acrocalanus gracilis	nos/ml	15	13	16	11	17	14
67	Acrocalanus sp	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
68	Paracalanus parvus	nos/ml	18	19	21	16	10	16
69	Eutintinus sps	nos/ml	14	11	13	17	14	21
70	Centropages furcatus	nos/ml	11	15	12	14	8	13
71	Corycaeus dana	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
72	Oithona brevicornis	nos/ml	22	18	15	18	11	18
73	Euterpina acutifrons	nos/ml	10	12	17	10	13	10
74	Metacalanus aurivilli	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
75	Copipod nauplii	nos/ml	9	17	20	15	18	12
76	Cirripede nauplii	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
77	Bivalve veliger	nos/ml	6	8	10	13	7	17
78	Gastropod veliger	nos/ml	19	23	26	21	19	22

Location		Berth - 3 Bottom Water					
Month & Year		Unit	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21
S.No.	Parameters							
1	pH @ 25°C	-	7.39	8.02	8.12	7.84	8.34	8.45
2	Temperature	°C	29	29	29	29	29	29
3	Total Suspended Solids	mg/L	18	13	15	27	21	17
4	BOD at 27 °C for 3 days	mg/L	13	15	14	16	4.6	5
5	Dissolved oxygen	mg/L	3.8	3.7	3.8	3.5	3.8	3
6	Salinity at 25 °C	ppt	34.5	32.9	33.9	39.1	32.7	33.1
7	Oil & Grease	mg/L	BDL(DL 1.0)					
8	Nitrate as NO_3	mg/L	5.98	5.15	5.82	8.43	6.84	5.14
9	Nitrite as NO_2	mg/L	2.46	2.78	2.09	5.99	3.22	2.05
10	Ammonical Nitrogen as N	mg/L	BDL(DL 1.0)					
11	Ammonia as NH3	mg/L	BDL(DL 0.01)					
12	Kjeldahl Nitrogen as N	mg/L	BDL(DL 1.0)					
13	Total phosphates as PO4	mg/L	4.76	5.31	5.45	4.05	5.86	6.48
14	Total Nitrogen	mg/L	BDL(DL 1.0)					
15	Total Dissolved Solids	mg/L	37892	32985	34903	42157	36810	38127
16	COD	mg/L	174	161	149	128	160	140
17	Total bacterial count	cfu/ml	116	107	122	102	95	74
18	Coliforms	Per 100 ml	Absence					
19	Escherichia coli	Per 100 ml	Absence					
20	Salmonella	Per 100 ml	Absence					
21	Shigella	Per 100 ml	Absence					
22	Vibrio cholerae	Per 100 ml	Absence					
23	Vibrio parahaemolyticus	Per 100 ml	Absence					
24	Enterococci	Per 100 ml	Absence					
25	Colour	Hazen	15	25	15	25	20	15
26	Odour	-	Unobjectionable					
27	Taste	-	Disagreeable					
28	Turbidity	NTU	14	10.3	9.7	18.3	14	10
29	Calcium as Ca	mg/L	462	695	756	501	400	415
30	Chloride as Cl	mg/L	19079	18211	18765	21646	18101	18322
31	Cyanide as CN	mg/L	BDL(DL 0.01)					
32	Fluoride as F	mg/L	0.7	0.86	0.94	0.66	0.79	0.84
33	Magnesium as Mg	mg/L	1398	1580	1916	1510	1408	1451
34	Total Iron as Fe	mg/L	1.55	1.74	1.88	0.52	0.56	0.59
35	Residual Free Chlorine	mg/L	BDL(DL 0.1)					
36	Phenolic Compounds as C_6H_5OH	mg/L	BDL(DL 1.0)					
37	Total Hardness as CaCO3	mg/L	6978	8321	9873	7544	6867	7083
38	Total Alkalinity as CaCO3	mg/L	127	102	125	290	105	117
39	Sulphide as H2S	mg/L	BDL(DL 0.5)					
40	Sulphate as SO4	mg/L	2410	1699	1848	2147	2038	2209
41	Anionic surfactants as MBAS	mg/L	BDL(DL 1.0)					
42	Monocrotophos	µg/L	BDL(DL 0.01)					
43	Atrazine	µg/L	BDL(DL 0.01)					
44	Ethion	µg/L	BDL(DL 0.01)					
45	Chlorpyrifos	µg/L	BDL(DL 0.01)					
46	Phorate	µg/L	BDL(DL 0.01)					
47	Mehyle parathion	µg/L	BDL(DL 0.01)					
48	Malathion	µg/L	BDL(DL 0.01)					
49	DDT,DDE and DDD	µg/L	BDL(DL 0.01)					
50	Gamma HCH (Lindane)	µg/L	BDL(DL 0.01)					

49	DDT,DDE and DDD	µg/L	BDL(DL 0.01)					
50	Gamma HCH (Lindane)	µg/L	BDL(DL 0.01)					
51	Alppha HCH	µg/L	BDL(DL 0.01)					
52	Beta HCH	µg/L	BDL(DL 0.01)					
53	Delta HCH	µg/L	BDL(DL 0.01)					
54	sulphate)	µg/L	BDL(DL 0.01)					
55	Butachlor	µg/L	BDL(DL 0.01)					
56	Alachlor	µg/L	BDL(DL 0.01)					
57	Aldrin/Dieldrin	µg/L	BDL(DL 0.01)					
58	Isoproturon	µg/L	BDL(DL 0.01)					
59	2,4-D	µg/L	BDL(DL 0.01)					
60	Polychlorinated Biphenyls (PCB)	µg/L	BDL(DL 0.01)					
61	hydrocarbons (PAH)	µg/L	BDL(DL 0.01)					
62	Arsenic as As	mg/L	BDL(DL 0.01)					
63	Mercury as Hg	mg/L	BDL(DL 0.001)					
64	Cadmium as Cd	mg/L	BDL(DL 0.003)					
65	Total Chromium as Cr	mg/L	BDL(DL 0.05)					
66	Copper as Cu	mg/L	BDL(DL 0.05)					
67	Lead as Pb	mg/L	BDL(DL 0.01)					
68	Manganese as Mn	mg/L	BDL(DL 0.05)					
69	Nickel as Ni	mg/L	BDL(DL 0.05)					
70	Selenium as Se	mg/L	BDL(DL 0.01)					
71	Barium as Ba	mg/L	BDL(DL 0.1)					
72	Silver as Ag	mg/L	BDL(DL 0.01)					
73	Molybdenum as Mo	mg/L	BDL(DL 0.01)					
74	Octane	µg/L	163	174	162	175	151	164
75	Nonane	µg/L	BDL(DL 0.1)					
76	Decane	µg/L	BDL(DL 0.1)					
77	Undecane	µg/L	8.2	8.7	7.6	7.9	7.0	8.2
78	Tridecane	µg/L	BDL(DL 0.1)					
79	Tetradecane	µg/L	BDL(DL 0.1)					
80	Pentadecane	µg/L	BDL(DL 0.1)					
81	Hexadecane	µg/L	BDL(DL 0.1)					
82	Heptadecane	µg/L	BDL(DL 0.1)					
83	Octadecane	µg/L	BDL(DL 0.1)					
84	Nonadecane	µg/L	BDL(DL 0.1)					
85	Eicosane	µg/L	BDL(DL 0.1)					
86	Primary Productivity	mg C/m³ /hr	9.49	9.37	9.48	10.23	9.48	10.08
87	Chlorophyll a	mg /m³	6.12	7.9	7.79	8.46	8.01	8.26
88	Phaeophytin	mg /m³	0.84	0.86	0.78	0.81	0.69	0.73
89	Oxidisable Paticular Organic	mg /L	6.37	5.88	5.39	6.57	7.36	8.05

			PHYTOPLANKTON					
90	Bacteriastrum hyalinum	nos/ml	18	15	12	15	18	16
91	Bacteriastrum varians	nos/ml	15	17	20	17	13	10
92	Chaetoceros didymus	nos/ml	10	13	15	14	11	14
93	Chaetoceros decipiens	nos/ml	16	14	11	13	19	17
94	Biddulphia mobiliensis	nos/ml	12	10	16	14	16	21
95	Ditylum brightwellii	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
96	Gyrosigma sp	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
97	Cladophyxis sps	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
98	Coscinodiscus centralis	nos/ml	7	8	7	12	8	15
99	Coscinodiscus granii	nos/ml	23	22	23	20	12	18
100	Cylcotella sps	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
101	Hemidiscus hardmanianus	nos/ml	14	11	10	16	10	13
102	Laudaria annulata	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
103	Pyropacus horologicum	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
104	Pleurosigma angulatum	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
105	Leptocylindrus danicus	nos/ml	22	23	29	25	21	24
106	Guinardia flaccida	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
107	Rhizosolenia alata	nos/ml	13	12	14	22	20	25
108	Rhizosolena impricata	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
109	Rhizosolena semispina	nos/ml	21	19	21	10	7	16
110	Thalassionema nitzschioides	nos/ml	20	24	27	21	25	22
111	Triceratium reticulatum	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
112	Ceratium trichoceros	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
113	Ceratium furca	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
114	Ceratium macroceros	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
115	Ceracium longipes	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
			ZOOPLANKTONS					
116	Acrocalanus gracilis	nos/ml	11	9	8	14	20	17
117	Acrocalanus sp	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
118	Paracalanus parvus	nos/ml	13	14	12	19	13	15
119	Eutintinus sps	nos/ml	17	13	18	21	16	19
120	Centropages furcatus	nos/ml	8	10	9	12	19	10
121	Corycaeus dana	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
122	Oithona brevicornis	nos/ml	25	22	23	20	15	21
123	Euterpina acutifrons	nos/ml	14	15	14	8	17	13
124	Metacalanus aurivilli	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
125	Copipod nauplii	nos/ml	12	20	22	19	22	16
126	Cirripede nauplii	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
127	Bivalve veliger	nos/ml	5	7	11	16	11	23
128	Gastropod veliger	nos/ml	16	19	25	23	14	20

ANNEXURE – 9 RESULTS OF MARINE SEDIMENT QUALITY DATA

Location		CB - 1 Sea Sediment						CB - 2 Sea Sediment					
Month & Year		Unit	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21
S.No.	Parameters													
1	Total organic matter	%	0.55	0.58	0.51	0.5	0.62	0.64	0.51	0.56	0.57	0.61	0.57	0.6
2	% Sand	%	20	23	21	25	27	29	18	25	23	28	25	28
3	%silt	%	27	33	34	20	22	25	29	35	36	22	23	27
4	%Clay	%	53	44	45	55	51	46	53	40	41	50	52	45
5	Iron (as Fe)	mg/kg	29.3	27.1	29.2	14.2	16.7	18.1	25.6	28.7	26.9	19	11.4	14.9
6	Aluminium (as Al)	mg/kg	11012	9886	9948	10917	10126	9983	11196	10071	10102	12080	11086	10041
7	Chromium (as cr)	mg/kg	59	52	58	44	39	32	64	57	51	69	55	40
8	Copper (as cu)	mg/kg	88	75	81	60	65	78	74	70	77	62	84	73
9	Manganese (as Mn)	mg/kg	242	220	214	306	286	215	235	217	225	314	317	266
10	Nickel (as Ni)	mg/kg	15.4	16.1	17.5	15.7	12.8	10.3	14.7	14	16.2	13.6	16.2	13.4
11	Lead (as Pb)	mg/kg	37	34	32	28	29	24	35	38	42	58	40	35
12	Zinc (as Zn)	mg/kg	268	240	256	245	291	317	270	253	264	261	259	288
13	Mercury(as Hg)	mg/kg	0.41	0.46	0.41	0.38	0.32	0.3	0.43	0.45	0.47	0.6	0.41	0.37
14	Total phosphorus as P	mg/kg	139	155	139	121	117	123	141	149	141	159	138	131
15	Octane	mg/kg	BDL(DL 0.1)						BDL(DL 0.1)					
16	Nonane	mg/kg	BDL(DL 0.1)						BDL(DL 0.1)					
17	Decane	mg/kg	BDL(DL 0.1)						BDL(DL 0.1)					
18	Undecane	mg/kg	0.84	0.77	0.7	0.63	0.52	0.59	0.79	0.72	0.78	0.71	0.57	0.55
19	Dodecane	mg/kg	BDL(DL 0.1)						BDL(DL 0.1)					
20	Tridecane	mg/kg	BDL(DL 0.1)						BDL(DL 0.1)					
21	Tetradecane	mg/kg	BDL(DL 0.1)						BDL(DL 0.1)					
22	Phntadecane	mg/kg	BDL(DL 0.1)						BDL(DL 0.1)					
23	Hexadecane	mg/kg	BDL(DL 0.1)						BDL(DL 0.1)					
24	Heptadecane	mg/kg	BDL(DL 0.1)						BDL(DL 0.1)					
25	Octadecane	mg/kg	BDL(DL 0.1)						BDL(DL 0.1)					
26	Nonadecane	mg/kg	BDL(DL 0.1)						BDL(DL 0.1)					
27	Elcosane	mg/kg	BDL(DL 0.1)						BDL(DL 0.1)					
I. Nematoda														
28	Oncholaimussp	nos/m²	14	11	13	15	13	15	10	12	15	19	15	11
29	Tricomasp	nos/m²	12	16	17	20	17	19	17	15	12	15	18	15
II. Foraminifera														
30	Ammoniabeccarii	nos/m²	17	14	11	18	14	11	13	17	19	13	12	16
31	Quinqulinasp	nos/m²	10	9	8	11	19	14	15	10	13	17	16	18
32	Discorbinellasp..	nos/m²	11	12	14	17	15	17	18	19	21	14	11	14
33	Bolivinaspathulata	nos/m²	18	17	20	12	18	13	7	11	17	16	19	10
34	Elphidiumsp	nos/m²	22	21	23	16	12	16	24	20	24	18	14	17
35	Nonlondepressula	nos/m²	26	20	19	13	16	20	20	24	21	25	23	21
III. Molluscs-Bivalvia														
36	Meretrixveligers	nos/m²	13	15	16	9	17	18	18	13	15	18	19	22
37	Anadoraveligers	nos/m²	21	24	27	19	15	10	26	21	23	20	13	25
	Total No. of individuals	nos/m²	164	165	168	150	156	153	168	162	180	175	160	169
	Shanon Weaver Diversity		2.26	2.27	2.25	2.27	2.29	2.28	2.24	2.26	2.28	2.29	2.28	2.27

Location		Berth – 3 Sea Sediment					
Month & Year		Unit	Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21
S.No.	Parameters							
1	Total organic matter	%	0.59	0.54	0.59	0.54	0.58	0.54
2	% Sand	%	22	24	25	35	29	28
3	%silt	%	31	37	35	23	21	24
4	%Clay	%	47	39	40	42	50	48
5	Iron (as Fe)	mg/kg	27.5	25.9	27.2	18.7	153	17.5
6	Aluminium (as Al)	mg/kg	10893	9156	9417	11946	10084	8967
7	Chromium (as cr)	mg/kg	70	49	45	67	52	35
8	Copper (as cu)	mg/kg	79	68	74	71	77	81
9	Manganese (as Mn)	mg/kg	251	236	230	303	273	301
10	Nickel (as Ni)	mg/kg	14.3	15.7	16.8	12.9	13.6	11.8
11	Lead (as Pb)	mg/kg	42	40	44	50	43	47
12	Zinc (as Zn)	mg/kg	255	221	239	285	242	296
13	Mercury(as Hg)	mg/kg	0.47	0.42	0.45	0.64	0.58	0.44
14	Total phosphorus as P	mg/kg	156	151	158	147	120	137
15	Octane	mg/kg	BDL(DL 0.1)					
16	Nonane	mg/kg	BDL(DL 0.1)					
17	Decane	mg/kg	BDL(DL 0.1)					
18	Undecane	mg/kg	0.88	0.8	0.83	0.78	0.63	0.66
19	Dodecane	mg/kg	BDL(DL 0.1)					
20	Tridecane	mg/kg	BDL(DL 0.1)					
21	Tetradecane	mg/kg	BDL(DL 0.1)					
22	Phntadecane	mg/kg	BDL(DL 0.1)					
23	Hexadecane	mg/kg	BDL(DL 0.1)					
24	Heptadecane	mg/kg	BDL(DL 0.1)					
25	Octadecane	mg/kg	BDL(DL 0.1)					
26	Nonadecane	mg/kg	BDL(DL 0.1)					
27	Elcosane	mg/kg	BDL(DL 0.1)					
II. Foraminifera								
30	Ammoniabeccarii	nos/m^2	10	16	13	16	18	20
31	Quinqulinasp	nos/m^2	14	12	17	13	15	17
32	Discorbinellasp.,	nos/m^2	16	18	15	11	14	11
33	Bolivinaspathulata	nos/m^2	11	14	19	12	16	19
34	Elphidiumsp	nos/m^2	21	23	20	24	13	20
35	Noniondepressula	nos/m^2	24	19	16	19	22	15
III. Molluscs-Bivalvia								
36	Meretrixveligers	nos/m^2	17	21	24	17	20	23
37	Anadoraveligers	nos/m^2	25	27	22	25	21	26
	Total No. of individuals	nos/m^2	165	176	178	179	168	180
	Shanon Weaver Diversity Index		2.26	2.27	2.29	2.27	2.28	2.27

adani Ports and Logistics	Marine Infrastructure Developer Pvt Ltd	From : October 2020 To : March 2021

Compliance to Tamil Nadu Coastal Zone Management Authority (TNCZMA) Conditions vide letter no. 6064/EC.3/2014-1 dated 26.06.2014

Annexure – 4

Sl. No	Conditions	Compliance
i	The unit shall compliance with all the conditions stipulated in Environment Clearance issued in No. 10-130/2007-IA-III, Ministry of Environment & Forest, Government of India, dated 3rd July 2009	**Being complied**
ii	The proposed activities should not cause coastal erosion and alter the beach configuration. The shoreline changes shall be monitored continuously	**Being Complied.** In past, LTSB has been continuously monitoring shoreline studies through Institute of Ocean Management, Anna University, Chennai. Further, MIDPL also engaged Institute of Ocean Management, Anna University, Chennai. for shoreline studies of the concerned area. Shoreline Change Monitoring Report is submitted along with the Half Yearly Compliance Report for the period Oct'19-Mar'20 vide our Letter No. MIDPL/EC-HYC/2020/11 dated 31.05.2020.
iii	Chemical waste generated and the sewage generated, if any should not be discharged into the sea and shall be properly handled	**Complied** No chemical waste is generated. Domestic wastewater generated are being collected, treated in STP's and the entire treated sewage water is reused for green belt maintenance. Inlet & outlet characteristic of Sewage water is regularly analysed by NABL accredited laboratory. The monitoring results for the period Oct-2020 to Mar-2021 is enclosed as **Annexure - III**.
iv	The wastewater generated shall be collected, treated and reused properly	**Complied.** Domestic wastewater generated are being collected, treated in STP's and the entire treated sewage water is reused for green belt maintenance. Inlet & outlet characteristic of Sewage water is regularly analysed by NABL accredited laboratory. The monitoring results for the period Oct-2020 to Mar-2021 is enclosed as **Annexure - III**.
v	The proponent shall implement oil spill mitigation measures without fail	**Complied.** Oil Spill contingency plan (OSCP) has been prepared and is being implemented at site. OSCP along with list of Oil spill control equipment already submitted vide our Letter No. MIDPL/TNPCB/GMP/EC-HYC dated 14.05.2018.
vi	Disaster management plan shall be implemented, and mock drills shall be carried out properly and periodically.	**Complied** MIDPL has already formulated detailed Disaster Preparedness & Management Plan to handle any Natural and industrial hazards at site. Regular Mock Drills are conducted as per the Crisis Management Plan. The details of drills conducted for the period Oct-2020 to Mar-2021 is enclosed as **Annexure- 5.**

Annexure – V

MOCK DRILL DETAILS

Mock Drills - Oct-2020 to Mar-2021				
S. No.	**Date**	**Time**	**Scenario**	**Participants**
1	30.10.2020	14:50 hrs	A Minor fire broke out the backside of the CFS warehouse	8
2	28.12.2020	15:15hrs	Rescue of personnel who got stuck inside the Tank-2	36

Annexure – VI

EMP COMPLIANCE STATUS

EMP (OPERATIONAL PHASE) - COMPLIANCE STATUS				
S.No.	**Activity**	**Relevant Environmental components likely to be impacted**	**Proposed Mitigation Measures**	**Compliance Status**
1.	Cargo handling and Inland Cargo movement and storage areas	Air Quality	• Use of dust suppression system etc., • Use of low Sulphur diesel fuel is proposed • Dust suppression measures at loading/unloading points, storage area and at internal roads • Regularization of truck movement • Periodic cleaning of cargo spills, • Speed regulations for vehicles engaged in transportation • Greenbelt Development	**Complied.** The Major air pollution generated by port activities include vehicle movements, dry cargos operations and other port activities. The following is practiced controlling of air pollutions at port premises: • Water sprinkling on truck path • Mobile Hopper during cargo handling • Road cleaning with sweeping machines • Installed Vehicle Pollution Under Control (PUC) checking facility at Port. • Tarpaulin cover over the dry cargo materials at open yard • Using the closed warehouse for fine dry cargos materials. • Trucks covered with Tarpaulin for dry cargo vehicle movements • Using low Sulphur diesel fuel for DG sets. • Greenbelt of adequate size has been developed along the periphery of the project area and alongside the road and are being maintained by MIDPL. Till date, 25,374 Nos. of trees has been planted and around 19,324 Nos of trees planted during the compliance period.

				 Water sprinkling Mobile Hopper Road cleaning "Pollution Under Check (PUC)" CENTER closed warehouse Covered with Tarpaulin

				
		Noise	• Personal Protecting Equipment (PPE) • Greenbelt Development • Counselling and traffic regulation	**Complied.** Traffic and noise level control measures is monitored regularly for all vehicle movements like containers, trucks movements and dumpers & other road equipment operating for import /export of cargos at various locations of port premises. Following control measures are implemented at Kattupalli Port for Noise Control. • Adequate Greenbelt development with avenue plantation • DG sets are having acoustic enclosures as per the standard practice. • Musical Horns are completely banned inside the port premises • Vehicle speed are restricted to 20 Km/ Hr. • Adopting latest technology operation to control the vehicular movements inside terminal  

		Traffic Addition	• The existing Kattupalli Port site is well connected by existing road and rail. In addition port approach road is developed as a part of initial development. All the roads are in good condition to accommodate traffic.	**Complied.** Kattupalli Port is having a dedicated road connectivity connecting State Highways and National Highways. NH-5 (Chennai – Kolkata) is about 30 km from Port. The cargo handled are directly goes to the roads mentioned above which are outside the City Limits of Chennai. Handling of cargo in Kattupalli Port does not affect the regular traffic. The Outer Ring Road from NH-45 connecting NH 4 – NH 205 – NH 5 is getting take-off from Minjur. Further, the Outer ring road is proposed to be connected to Section I (NPAR Project) of Chennai Peripheral Ring Road on an extent of 134 km starting from Kattupalli to Mahabalipuram. The project is getting commenced shortly, which will further enhance the cargo carrying capacity of Kattupalli Port. Kattupalli Port is located Close proximity to majority of CFSs serving immediate hinterland and enabling faster evacuation of cargo.
2	Aqueous discharges in harbour basin	Marine water quality and ecology	• Ships are prohibited from discharging wastewater, bilge, oil wastes, etc. into the near-shore as well as harbour waters. • Ships would also comply with the MARPOL convention. • As a part of mitigation measure for accidental spillage of Oil, Construction Contractor/ Kattupalli Port n Oil spill contingency plan is prepared and in place. • Provision of waste reception facility Ballast Water • Management Guideline as issued by Ministry of Shipping – India Shall be adhered.	**Complied.** • Ships/vessels calling at port are not permitted to dump any wastes/bilge water/ballast water during the berthing period. The waste reception facilities developed at Kattupalli Port as per the Guidelines issued by Government of India (GoI) and MARPOL regulation is strictly implemented. • Hazardous wastes are handled as per Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 (as amended). Hazardous wastes are disposed through approved TNPCB /CPCB vendor. • Oil Spill contingency Plan is in place and MIDPL is maintaining oil spill equipments as per Coast Guard guidelines and conducting oil spill mock drills at regular intervals.

				• Management Guideline as issued by Ministry of Shipping – India are being adhered to.
3	Cargo and Oil spills	Marine water quality and ecology	• 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. • Response time for shutting down the fuelling, containment and recovery will be quicker.	• Oil Spill contingency Plan is in place and MIDPL is maintaining oil spill equipments as per Coast Guard guidelines and conducting oil spill mock drills at regular intervals.   

				
4	Maintenance dredging	Maintenance dredging Marine Ecology	• Maintenance dredging material is being disposed of at identified disposal location at sea. • It will be ensured that dumping of the excess/unusable dredge material would be uniform. • Additional Environmental Monitoring Program 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 carried out during the dredging period.	**Complied.** • There was no maintenance dredging activity during the compliance period. • However Marine Water, sediment & ecology is being monitored on regular basis and reports of the same are being submitted to all the concerned authorities. Monitoring Reports for the period Oct-2020 to Mar-2021 are enclosed as **Annexure –III.**
5	Water Supply	Water resources	• The water requirement proposed activities shall be met by existing water supply as it was considered during initial development	**Complied.** The main source of raw water is from existing Chennai Metropolitan Water Supply and Sewage Board (CMWSSB), Desalination plant, Kattupalli, which is located adjacent to Kattupalli Port.
6	Wastewater Discharge	Water Quality	• Collection of runoff from stock piles and directing into settling tanks • Available Sewage treatment plant within port area will be utilized. • Treated wastewater from STP will be used for irrigating the greenbelt	**Complied.** Domestic wastewater generated are being collected, treated in STP's and the entire treated sewage water is reused for green belt maintenance. Inlet & outlet characteristic of Sewage water is regularly analysed by NABL accredited laboratory. The monitoring

				results for the period Oct-2020 to Mar-2021 is enclosed as Annexure - III.
7	Solid Waste Management	Groundwater and Soil quality	• Composted biodegradable waste will be used as manure in greenbelt. • Other recyclable wastes will be sold.	**Complied.** • 100% utilization of STP sludge for greenbelt maintenance as manure. • All the non-hazardous wastes like paper, wood, metal scraps generated from the terminal are also collected, stored in the Integrated Waste Management Shed (IWMS) and are handled as per 5R principle. • The recyclable and the bio-degradable waste are recycled by the composting method. The compost is used in the nursery and for the gardening purposes • Kitchen waste is being disposed to the biogas facility (6 m3/Day) available on site. Gas output will be 3 Kg/Day. Following wastes are handled (inline to 5R principle) during the Compliance Period. • Metal Scraps – 84.55 MT • Wood Wastes - 32.775 MT • Used Tyres – 27.66 MT • Food Wastes – 1.398 MT  

				 
8	Handling of hazardous wastes	Fire accidents due to products handling	• No Hazardous cargo Handling /storage is envisaged • Hazardous wastes (used oil & used battery if any) will be sent to TSDF located at Gummidipoondi, along with other shipyard wastes. The consent for the same was already obtained and the same can be extended. • Medical facilities including first aid will be available for attending to injured workers • Emergency alarms, provision of fire hydrant system and fire station.	**Complied.** • No Hazardous cargo is handled. • Hazardous wastes are handled as per Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 (as amended). Hazardous wastes are disposed through approved TNPCB /CPCB vendor. MIDPL has obtained Hazardous Waste Authorization from TNPCB for handling and disposal of the wastes. Details of the same are submitted to TNPCB as a part of Hazardous waste annual return (Form 4) on regular basis. Annual Hazardous Waste Return for FY 2019-20 is attached as **Annexure – II.**

			• Effective Disaster Management Plan (DMP) which covers onsite and offsite emergency plans. • Recovery of spills to the extent possible.	• Occupational Health Centre is available at Kattupalli Port on 24 X 7 basis. • Emergency alarms, fire hydrant system and Fire station equipped with Fire Tender and Fire crew are available at Kattupalli Port. • Disaster Management Plan (DMP) is in place which covers both onsite and offsite emergency plans. • MIDPL is equipped with adequate facility for recovery of spills.  
9	Fishing activity	Fishermen livelihood	• The cargo handling activities involved in operation phase are confined to the project area and hence no hindrance to fishing is anticipated Continuing to Educate the fishermen about Port activities • Regular Interactions will be carried out with the fishing community • Conflicts if any with fishing community will be amicably resolved in all cases	**Complied.** Our activities are confined to approved Port Limits and there is no hindrance to fishing activity.
10	Operation of port – Handling of Proposed Traffic	Socio-economic conditions of the region	The present employment potential of Port is around 250 Nos. and Total Shipyard cum Port is around 2000 nos. The employment potential will increase about 20 nos as direct employment due to proposed activity and will also enhance indirect employment potential in the region. Together with this employment potential, project will help to enhance the socio economic conditions of	**Being Complied.** Major CSR activities carried out during the compliance period are as follows; **1. Education:** • 300 nos of Bicycle distribution to Govt. School (Kattuapalli, Koraikuppam, Pulicat, Kattur & Thiruvellavoyal) • Conducted Fun class w.r.t Science, mathematics, GK, sports & others - 10 sessions at 10 villages

			the area with better schooling, communication and transport facilities that will be developed/ triggered as a part of overall economic development of the region.	**2. Community Health** • Hearing aid kit of 20 for Govt. hospital, Pulicat • Provided PHC (Kattur & MInjur) Refrigerator, chair, table mask & sanitizer • Water filter distribution to 110 families (Sengazhaneermedu colony) • Distribution of Tarpaulin to 500 families for 4 panchayats (Kattur, Vayalor, Vellore & Thangal Perumpulam) • Distribution of Sweater for 500 members at 2 villages (Kattur & Thangal Perunpulam) • Conducted Health awareness session for 150 members at Vayalor, Thiruvellaivoyal & Kattur) **3. Sustainable Livelihood Development** • Workshop renovation and distribution of workshop accessories to differently abled person, Kottai kuppam. • Provided organic training session for 150 farmers (Neithavayal, Vayalor & Thiruvellaivoyal & Kattur) • Provided training on palm leaf products for SHG women- 35 at Zamilapath village, Kottai Kuppam. • Distribution of ice box to 240 families (Thangal Perumpulam & kattupalli) • Conducted veterinary camp 500 (Vellore, Thiruvellaivoyal, Neiyathaval & Vayalor) **4. Community Infrastructure Development** • Provided streetlight and High mast for 5 villages (Sengazhaneermedu, Kattur, Neiyathavoyal, Thiruvellavoyal and sathan kuppam)

				  REDMI NOTE 8 PRO AI QUAD CAMERA  adani Foundation adani Foundation adani Foundation

				 adani wilmar fortune Suposhan adani  adani REDMI NOTE 8 PRO AI QUAD CAMERA  Skill India

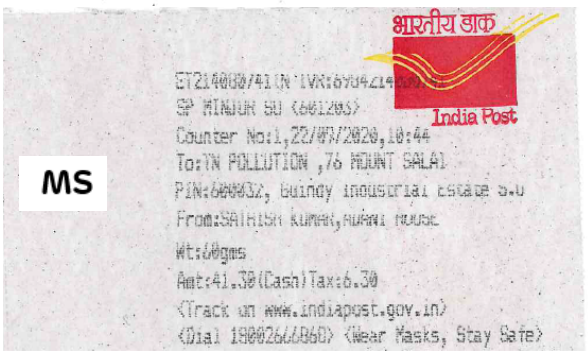
		Natural Hazards	The existing Disaster Management Plan (DMP) will be implemented at the time of disaster; COO will act as the overall in-charge of the control of educative, protective and rehabilitation activities to ensure least damage to life and property.	**Noted for Compliance.** Disaster Management Plan (DMP) is in place which covers both onsite and offsite emergency plans. Regular Mock Drills are conducted as per the Disaster Management Plan. The details of drills conducted for the period Oct-2020 to Mar-2021 is enclosed as **Annexure- 5.**
		Induced Development	Offers an efficient and cost-effective supply chain/ value proposition to the local importers and exporters in states of Tamil Nadu, Andhra Pradesh, Kerala and Karnataka.	**Being Complied.** Kattupalli Port is having a dedicated road connectivity connecting State Highways and National Highways, which offers an efficient and cost-effective supply chain/ value proposition to the local importers and exporters in the states of Tamil Nadu, Andhra Pradesh, Kerala and Karnataka. We are presently moving Inland Container Depot (ICD) rail bound Containers ex Kattupalli through Concor's ICD at Tondiarpet to ICD Bangalore. The containers are road bridged by Concor to/from Kattupalli Port to Tondiarpet and vice versa. This service the customers and facilitate the EXIM trade.

adani
Ports and Logistics

KATTUPALLI PORT
CHENNAI's NEW GATEWAY

Annexure - VII

MIDPL/TNPCB/2020-21/32 **Date: 21/09/2020**



MS

To,
The Member Secretary,
Tamil Nadu Pollution Control Board,
76, Mount Salai,
Guindy,
Chennai – 600 032

Dear Sir,

Sub: Submission of Environmental Statement (Form V) for the financial year ending 31st March, 2020 of Marine Infrastructure Developer Private Limited, Kattupalli Port, Chennai

Ref: 1. Consent Order No. 1907125448424 under Water Act dated 05.07.2019
2. Consent Order No. 1907225448424 under Air Act dated 05.07.2019

With reference to the captioned subject and cited references above, we submit herewith the Environmental Statement of **M/s Marine Infrastructure Developer Private Limited,** in Form-V prescribed under Rule 14 of the Environment (Protection) Rules 1986 for the financial year ending 31st March 2020.

Submitted for your kind information and records.

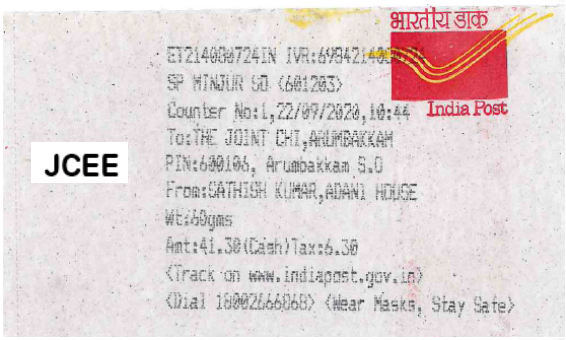
Thanking you,

For, **M/s. Marine Infrastructure Developer Private Limited**

21-09-2020

Jai Khurana
Director

Marine Infrastructure Developer Pvt. Ltd. Chennai 600 120



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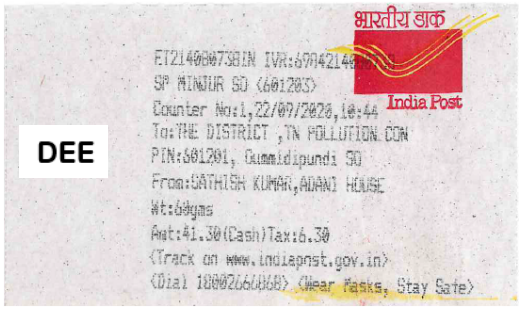

DEE

Enclosures: As above

Copy To:

1) The Joint Chief Environmental Engineer, Tamilnadu Pollution Control Board, First Floor, 950/1, Poonamallee High Road, Arumbakkam, Chennai-600 106
2) The District Environmental Engineer, Tamil Nadu Pollution Control Board, Gummidipoondi – 601201.

Marine Infrastructure Developer Pvt Ltd
(Kattupalli Port)
Kattupalli Village, Ponneri Taluk,
Tirivalluvar District 600 120,
Tamil Nadu, India

Tel +91 44 2824 3062

CIN: U74999TN2016PTC103769

Form-V

(See rule 14 of Environment (Protection) Rules, 1986)

Environmental Statement for the financial year ending 31st March 2020

Part-A

i)	**Name and Address of the owner/occupier of the industry operation or process**	:	**Mr. Jai Khurana** **Director** Marine Infrastructure Developer Private Limited Kattupalli Port, Kattupalli Village, Ponneri Taluk, Thiruvallur District – 600 120 Tamil Nadu, India
ii)	**Industry Category**	:	**Primary** : Red **Secondary:** 1065- Ports & Harbour, Jetties and Dredging Operations.
iii)	**Production Capacity**	:	**Cargo Handling Capacity :** 24.65 MMTPA • Containers - 21.60 MTPA • Ro-Ro (automobiles) - 0.22 MTPA • Project cargo - 0.44 MTPA • Breakbulk / General Cargo (Barytes/ Gypsum/ Limestone/ Granite/ Steel Cargo) - 1.82 MTPA • Edible oil, CBFS, Base Oil, Lube Oil and Non-Hazardous Liquid Cargo - 0.57 MMTPA.
iv)	**Year of establishment**	:	2009 with the issue of Environmental Clearance to L&T Ship Building. Bifurcation of Environmental Clearance of L&T Ship Building to Marine Infrastructure Developer Private Limited on 09th February 2018.
v)	**Date of the last environmental statement submitted**	:	Vide our Letter No. MIDPL/TNPCB/2019-20/09 dated 20.09.2019.

Marine Infrastructure Developer Pvt. Ltd. Chennai 600 120

Part –B

WATER AND RAW MATERIAL CONSUMPTION

(i) Water Consumption

S. No	Water Consumption (m^3/ Day)	During the previous financial year (2018-2019)	During the Current financial year (2019-2020)
1.	Process	NIL	NIL
2.	Cooling	NIL	NIL
3.	Domestic	134.85	138.25

(ii) Raw Material Consumption

S. No	Name of the Raw Material	Name of the Product	Consumption during the financial year 2018 – 19.	Consumption during the financial year 2019 – 20.
1	Not Applicable	Not Applicable	NIL	NIL
The unit does not undergo any manufacturing process. The water consumed is mainly for Firefighting, dust suppression on roads, Green belt development and maintenance, etc.				

Part-C

POLLUTION DISCHARGE TO ENVIRONEMENT/ UNIT OF OUTPUT
(Parameters as specified in the consent issued)

Pollutants	Quality of Pollutants Discharged (Mass/day)	Concentration of Pollutants discharges (mass/volume)	Percentage of variation from prescribed standards with reasons
a) Water	STP Treated Water Characteristics:-		

Parameter	Consent Limit	Actual		% Variation with prescribed standard
		30 KLD	5 KLD	
pH	5.5-9	7.41	7.58	-Nil-
Total Suspended Solids (mg/l)	30	17.08	17.75	-Nil-
BOD (3 days at 27°C) (mg/l)	20	12.42	14.42	-Nil-

Marine Infrastructure Developer Pvt Ltd. Chennai 600 120

b) Air	DG sets are provided as standby power source and were used during power failure. The Height of DG stacks as per CPCB/TNPCB Standards. All the monitored parameters are within prescribed standards.
Particulate Matter (mg/Nm3)	DG stack emission report is enclosed as **Annexure 1.**
Sulphur Dioxide (ppm)	
Nitrogen Oxide (ppm)	

Part-D
HAZARDOUS WASTES
(As specified under Hazardous Waste Management and Handling Rules 1989)

Hazardous Wastes	Total Quantity (Kg)	
	During the previous financial Year (2018-19)	During the current financial Year (2019-20)
(a) From Process	• Used oil (5.1) - 19,600 Liters • Sludge and filters contaminated with oil (3.3) - 2.23 MT	• Cargo residue, washing water and sludge containing oil (3.1) - 50.310 T
(b) From Pollution control facilities	NA	NA

Part-E
SOLID WASTES

Total Quantity Generated			
Solid Waste		During the previous financial Year (2018-19)	During the current financial Year (2019-20)
a)	From process	NIL	NIL
b)	From pollution control facilities- STP	180 kgs	192 kgs
c)	1. Quantity recycled or reutilized within the Unit	180 kgs	192 kgs
	2. Sold	NIL	NIL
	3. Disposed	NIL	NIL

Marine Infrastructure Developer Pvt Ltd. Chennai 600 120

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.

- Hazardous waste includes Cargo residue, washing water and sludge containing oil . All the hazardous wastes are collected and stored properly in Integrated Waste Management Shed & are being disposed to TNPCB authorized /registered recyclers in line to Hazardous and Other Waste (Management & Transboundary Movement) Rules, 2016 (As amended).
- The used batteries and E–waste are stored in Integrated Waste Management Shed and disposed through TNPCB approved vendor.
- Hazardous waste Annual returns in Form 4 was submitted in line with the Hazardous and Other Wastes (Management & Transboundary Movement) Rules, 2016.
- E-waste returns in Form 3 was submitted in line with the E-waste Management Rules, 2016.
- 100% utilization of STP sludge for greenbelt maintenance as manure.
- All the non-hazardous wastes like paper, wood, metal scraps generated from the port are also collected, stored in the Integrated Waste Management Shed and are handled as per 5R principle.

Part-G

Impact on pollution control measures on conservation of natural resources and consequently on the cost of production

- Solar panels of 450 kW were installed at MIDPL and the power generated from solar panel ranges between 55,000-65,000 units per months. MIDPL has invested nearly Rs.2 Crs. for developing this solar plant there by achieved reduction of conventional energy and contributed for resource conservation.
- 15RTGs retrofitted into Electrical power driven system at the project cost of Rs.44 Crs. Key Cost benefits includes reduction in diesel consumption and emission level.
- Sewage Treatment Plants (30 KLD and 5 KLD STPs) are in continuous operation and the treated effluent water quality is meeting the TNPCB norms. STP treated water is

Marine Infrastructure Developer Pvt. Ltd. Chennai 600 120

used for Gardening purpose, thereby reducing freshwater consumption. The total cost spent on STP operation and maintenance during the year 2019-20 is Rs. 14.49 Lakhs.

- Biogas facility was setup at MIDPL to convert the kitchen waste to useful heat energy. The biogas unit generates output of 3kg / day. The plant capacity is 6 cubic meter / day.
- Unit is undertaking Regular Environmental Monitoring in port through NABL accredited laboratory. We have also installed and operating Continuous Ambient Air Quality Monitoring Station (SO2, NOx, CO, PM10&2.5, BTX analyser to monitor VOC) and meteorological station (Wind Speed, Wind Direction, Ambient Temperature, Atmospheric Pressure, Relative Humidity, Rainfall and Solar Radiation). Real time data of CAAQMS is connected to TNPCB server. All the monitored environmental parameters are well within the prescribed standards and the details of monitored data is regularly submitting to TNPCB, CPCB, MoEF&CC and other concerned authorities.
- All the domestic effluent generated at port is treated at existing sewage treatment plants (30 KLD and 5 KLD) and the entire treated sewage water is being reused within port premises for gardening.
- Unit is continuously developing and maintaining green belt within port premises.
- Motion sensor and timers installed at buildings to reduce energy consumption.
- Installation of water saver (water tap filter nozzles) in all wash basin taps – achieved around 4% reduction in water consumption.
- Integrated Waste Management Shed (IWMS) constructed to handle wastes as per 5R principle.
- Installed and operating Vehicle Pollution Under Control (PUC) checking facility to control vehicular emission in port premises.
- RTG Stack monitoring system implemented and achieved energy saving up to 18000 Units per year amounting to Rs. 1.35 L /Year.
- Air conditioners fitted with energy saving device.
- Street light and High mast lighting controlled by light intensity sensor.
- Carried out mass Tree Plantation of 1000 saplings through "Woodlot Planting Technique".

Marine Infrastructure Developer Pvt Ltd. Chennai 600 120

Part-H

Additional investment proposal for environment protection including abatement of pollution, prevention of pollution

Regular Expenditure (cost in INR lakhs/year)		
S. No	**Description**	**Cost**
1	Environmental monitoring of MOEF recognized third party	9.0
2	Green belt & Horticulture development	29.85
3	Annual maintenance contractor of STP operation	14.50
4	Operation & Maintenance of Integrated Waste Management System	2.40

Part-I

ANY OTHER PARTICULARS IN RESPECT TO ENVIRONMENT

- Working towards achieving "Zero Waste Inventory" as per our Group Environment Policy and all wastes are being handled in line with 5R Principle.
- Energy Conservation Committee to measure the amount of energy consumed and to actions to reduce the energy consumed through port operations
- Carried out mass Tree Plantation of 1000 saplings through "Woodlot Planting Technique".
- Water Warriors committee to identify and reduce the water consumption. The committee would propose innovative water solutions
- Integrated Management System (ISO 9001:2015, 14001:2015 and 45001:2018) certified Port
- Single use and throwaway plastics completely banned inside the port premises.

Date: 21.09.2020

(Signature of a person carrying out an industry operation or process)

Marine Infrastructure Developer Pvt Ltd. Chennai 600 120

Name : Jai Khurana
Designation : Director
Address : Marine Infrastructure Developer Private Limited (MIDPL)
Kattupalli Village, Ponneri Taluk,
Thiruvallur District – 600 120
Tamil Nadu, India.

Annexure-1

MIDPL- STACK MONITORING (April'2019 to March'2020)													
Location		DG 2000KVA - 1											
Month & Year		Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20
S.No.	Parameters												
1	Stack Temperature, °C	241	247	238	245	253	259	267	253	262	269	280	269
2	Flue Gas Velocity, m/s	21.98	19.95	21.63	22.18	22.81	23.57	21.98	23.05	23.68	24.12	25.14	26.35
3	Sulphur Dioxide, mg/Nm3	7.5	8.6	9.1	8.7	9.4	8.8	7.5	7.9	8.5	9.3	8.3	6.9
4	NOX (as NO2) in ppmv	180	188	175	186	195	210	226	220	231	236	248	233
5	Particular matter, mg/Nm3	34.4	31.5	34.1	35.8	32.7	34	32.9	34.3	31	34.2	36.7	34
6	Carbon Monoxide, mg/Nm3	76	81	87	92	98	92	87	80	87	91	98	93
7	Gas Discharge, Nm3/hr	5728	5139	5670	5736	5809	5935	5452	5871	5929	5961	6090	6512

MIDPL- STACK MONITORING (April'2019 to March'2020)													
Location		DG 2000KVA - 2											
Month & Year		Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20
S.No.	Parameters												
1	Stack Temperature, °C	238	243	231	240	247	252	259	250	257	261	273	260
2	Flue Gas Velocity, m/s	20.87	20.21	20.98	21.73	22.36	22.9	22.16	22.87	23.19	23.75	24.86	25.98
3	Sulphur Dioxide, mg/Nm3	7	7.9	8.4	7.9	8.6	8	8.6	7.4	8	8.8	8	7.2
4	NOX (as NO2) in ppmv	175	182	170	182	191	203	214	218	225	230	242	228
5	Particular matter, mg/Nm3	32.8	33.6	32.3	34	36.2	33.2	31.5	35.7	33.4	31.6	34.3	32.7
6	Carbon Monoxide, mg/Nm3	79	85	89	95	90	96	91	84	89	93	96	90
7	Gas Discharge, Nm3/hr	5471	5246	5576	5674	5760	5843	5580	5858	5861	5957	6099	6529

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