

MIDPL/EC-HYC/2021/127

Date: 24.11.2021

Additional Principal Chief Conservator of Forests (C),
Ministry of Environment, Forest and Climate Change, Regional Office (South Eastern Zone),
1st and 11nd Floor, Handloom Export Promotion Council,
34, Cathedral Garden Road, Nungambakkam,
Chennai – 600 034. Email : eccompliance-tn@gov.in

Dear Sir/Madam,

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 April 2021 to September 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 herewith submitting the Half yearly compliance report for the compliance period **April 2021 to September 2021** to the conditions stipulated in the cited reference for your kind information.

Thanking you,

For, M/s. Marine Infrastructure Developer Private Ltd

R-SE
24/11/21
Jai Singh Khurana
Managing Director

24/11/2021



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 A, 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 Floor, Saidapet, Chennai -600 015. (Email : tndeo@nic.in)


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


Tel +91 44 2824 3062


CIN: U74999TN2016PTC103769

	Marine Infrastructure Developer Pvt Ltd	From: April 2021 To : September 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 wastewater 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 withdrawn 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	Complied.


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


	of sea dumping required, an integrated Modelling study to be carried out to locate the dump site so that it does not cause any problem to Ennore port.	There was no dumping of dredging material during the compliance period. Dredge material dumping location has already been identified by 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 are completed, and the port is in operation phase. No impact envisaged.
(viii)	At least a distance of 100 meters 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 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



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


		<p>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.</p> <p>Kattupalli Port is located Close proximity to majority of CFSS serving immediate hinterland and enabling faster evacuation of cargo.</p>
(x)	Rehabilitation if any shall be carried out as per law / State Government.	<p>Complied.</p> <p>Rehabilitation was carried out completely as per law / State Government at the time of project implementation by M/s. LTSB.</p>
(xi)	Fire station shall be located within the project area	<p>Complied.</p> <p>MIDPL is having:</p> <ul style="list-style-type: none"> • 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. <p>MIDPL having a Fire Tender with following features:</p> <ul style="list-style-type: none"> • Water Tank Capacity - 5500lts


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

		<ul style="list-style-type: none"> • Foam Tank Capacity - 500lts • DCP Extinguishers - 75 kg – 2nos • Co2 Extinguishers - 22.5 kg – 4nos • BA Set - 1no (Oxygen cylinder 2nos) 
(xii)	<p>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.</p>	<p>Complied.</p> <p>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.</p> <p>Annual Hazardous Waste Return for FY 2020-21 is attached as Annexure – II.</p>
(xiii)	<p>The wastewater generated from the activity shall be collected, treated and reused properly.</p>	<p>Complied.</p> <p>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.</p> <p>The monitoring results for the period April'21 to Sep'21 is enclosed as Annexure - III.</p>
(xiv)	<p>Sewage Treatment Facility should be provided in accordance with the CRZ Notification.</p>	<p>Complied.</p> <p>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</p>




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


		<p>regularly analysed by NABL accredited laboratory.</p> <p>The monitoring results for the period April'21 to Sep'21 is enclosed as Annexure - III.</p>
(xv)	<p>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.</p>	<p>Complied.</p> <p>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.</p> <p>Integrated waste Management system is in place and all wastes are being handled inline to 5R principle (Reduce, Reuse, Reprocess, Recycle & Recover).</p> <div data-bbox="810 1155 1098 1373">  </div> <div data-bbox="1126 1155 1410 1373">  </div>
(xvi)	<p>Installation and operation of DG set if any shall comply with the guidelines of CPCB.</p>	<p>Complied.</p> <p>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 April'21 to Sep'21 is attached as Annexure III.</p>
(xvii)	<p>Air quality including the VOC shall be monitored regularly as per the guidelines of CPCB and reported.</p>	<p>Complied.</p> <p>Ambient Air Quality Monitoring is being carried out through NABL accredited laboratory. Air Quality Monitoring Reports for the period April'21 to Sep'21 is enclosed as Annexure-III. We have also installed Continuous Ambient Air Quality Monitoring Station (Including BTX analyser to monitor</p>

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


		<p>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.</p> <div data-bbox="847 577 1361 913">  </div>
(xviii)	<p>The project proponent shall undertake green belt development all along the periphery of the project area and also alongside the road.</p>	<p>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, 37,118 Nos. of trees has been planted and around 11,744 Nos of trees planted during the compliance period.</p> <div data-bbox="815 1216 1409 2033">  </div>




Status of Conditions Stipulated in Environmental and CRZ Clearance
File no: 10-130/2007- A.III dated: 09/02/2018


		   
(xix)	All necessary clearances from the concerned agencies shall be	Complied.


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


	<p>obtained before initiating the project.</p>	<p>The project is in operation after obtaining all the necessary clearances (as applicable) from the concerned agencies as described below.</p> <ul style="list-style-type: none"> • 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)	<p>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.</p>	<p>Complied.</p> <p>All necessary precaution has been taken to avoid any kind of spillages. Oil Spill Contingency Plan has been prepared and is being followed.</p> <p>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.</p> <table border="1" data-bbox="815 1317 1385 1908"> <thead> <tr> <th>Activity/ Drill</th><th>Number of Persons trained</th><th>Total Man- hours Trained</th></tr> </thead> <tbody> <tr> <td>OSPR Equipment Commissioning- Training / Drill - 12.10.2020</td><td>25</td><td>75</td></tr> <tr> <td>OSPR Equipment Commissioning- Training / Drill - 13.10.2020</td><td>30</td><td>120</td></tr> </tbody> </table>	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
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									

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


		OSPR Equipment Quarterly Drill / Inspection - 19.01.2021 Total	8 63	48 243	  
(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	Complied.			

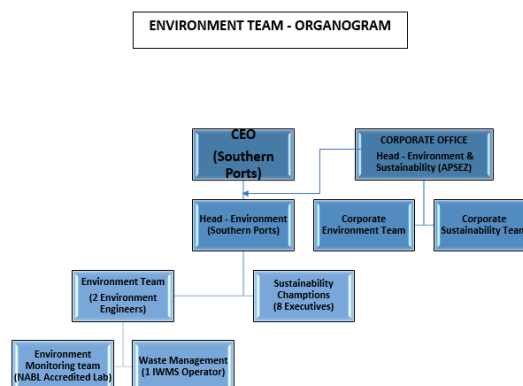
	Marine Infrastructure Developer Pvt Ltd	From: April 2021 To : September 2021
Status of Conditions Stipulated in Environmental and CRZ Clearance File no: 10-130/2007- A.III dated: 09/02/2018		


	<p>water supply and electricity to the project are provided by the PWD/ Electricity Department.</p>	<p>Requisite permission for Water Supply and Electricity has been obtained from Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB) and Tamil Nadu Electricity Board (TNEB) respectively before commissioning.</p>
(xxiii)	<p>Specific arrangements for rainwater harvesting shall be made in the project design and the rain water so harvested shall be optimally utilized.</p>	<p>Being Complied.</p> <p>MIDPL is having Rainwater Collection facilities including Storm Water drains and Rainwater Harvesting Pond.</p> <p>Existing Rainwater Harvesting pond is used for Greenbelt maintenance.</p> <p>Water table is observed to be high in and around the Port area. Feasibility of rainwater harvesting will be explored.</p> <div data-bbox="815 1077 1406 1899">  </div>
(xxiv)	<p>The facilities to be constructed in the CRZ area as part of this project shall be strictly in conformity with the provisions of the CRZ</p>	<p>Complied.</p> <p>All construction has been done in line to CRZ Notification, 2011 & EC&CRZ clearance</p>

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


	<p>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.</p>	<p>obtained.</p>
General Conditions:		
(i)	<p>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.</p>	<p>Complied.</p> <p>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</p>
(ii)	<p>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.</p>	<p>Complied.</p> <p>Project is in Operation Phase.</p>
(iii)	<p>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 (Protection) Act, 1986, whichever</p>	<p>Complied.</p> <p>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.</p> <p>Sewage Treatment Plants (3 STPs) of total capacity of 45 KLD are provided for treatment of wastewater in line to CRZ Notification 2011.</p>

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


	are more stringent.	<p>Regular Environment Monitoring is being carried out through NABL accredited agency. Monitoring Reports for the period April'21 to Sep'21 is enclosed as Annexure – III.</p> <p>All the monitoring results are well within the prescribed standard.</p>
(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.	<p>Complied.</p> <p>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. 2105136876761 (water Act) & 2105236876761 (Air Act) dated 13/09/2021 valid till 31.03.2026. Copies of CTO Orders attached as Annexure - V</p>
(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.	<p>Complied.</p> <p>MIDPL is having Environmental Management Cell, staffed with qualified personnel at site supported by team at Head Office in Ahmedabad.</p> <p>Environment monitoring is being carried out through NABL accredited Laboratory.</p> <div data-bbox="818 1666 1343 2051" data-label="Diagram"> <p style="text-align: center;">ENVIRONMENT TEAM - ORGANOGRAM</p>  <pre> graph TD CEO[CEO (Southern Ports)] --> HES[Head - Environment (Southern Ports)] CEO --> CO[CORPORATE OFFICE Head - Environment & Sustainability (APSEZ)] CO --> CET[Corporate Environment Team] CO --> CST[Corporate Sustainability Team] HES --> ET[Environment Team (2 Environment Engineers)] HES --> SC[Sustainability Champions (8 Executives)] ET --> EML[Environment Monitoring team (NABL Accredited Lab)] SC --> WM[Waste Management (1 IWMS Operator)] </pre> </div>

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


(vi)	<p>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.</p>	<p>Complied.</p> <p>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 April'2021 to Sep'21 is enclosed as Annexure - III. All the results are found well within the prescribed standard.</p> <p>Records are made available at site for inspection of State / Central officials during their visit.</p>
(vii)	<p>The sand dunes and mangroves, if any, on the site shall not be disturbed in any way.</p>	<p>Complied.</p> <p>No Sand dune and mangroves are present on the site.</p>
(viii)	<p>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.</p>	<p>Complied.</p> <p>This EC is just a bifurcation of original EC of LTSB.</p>
(ix)	<p>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.</p>	<p>Complied.</p> <p>The condition does not pertain to project proponent</p>

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


(x)	<p>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</p>	<p>Complied.</p> <p>Separate budget for the Environment Protection is earmarked every year. All the expenses are recorded in advanced accounting system of the organization.</p> <p>Expenditure for Environment Management measures during April'21 to Sep'21 is Rs. 66.92 Lakhs. The breakup details are as follows;</p> <table border="1" data-bbox="815 846 1385 1182"> <thead> <tr> <th>S. No.</th><th>Description of Work</th><th>Cost (Rs.) in Lakhs</th></tr> </thead> <tbody> <tr> <td>1</td><td>Comprehensive Environmental Monitoring</td><td>2.98</td></tr> <tr> <td>2</td><td>Integrated Waste Management & Pollution Under Check Facility</td><td>0.73</td></tr> <tr> <td>3</td><td>O&M of STP's</td><td>7.77</td></tr> <tr> <td>4</td><td>Housekeeping</td><td>27.07</td></tr> <tr> <td>5</td><td>Greenbelt Maintenance</td><td>28.37</td></tr> </tbody> </table>	S. No.	Description of Work	Cost (Rs.) in Lakhs	1	Comprehensive Environmental Monitoring	2.98	2	Integrated Waste Management & Pollution Under Check Facility	0.73	3	O&M of STP's	7.77	4	Housekeeping	27.07	5	Greenbelt Maintenance	28.37
S. No.	Description of Work	Cost (Rs.) in Lakhs																		
1	Comprehensive Environmental Monitoring	2.98																		
2	Integrated Waste Management & Pollution Under Check Facility	0.73																		
3	O&M of STP's	7.77																		
4	Housekeeping	27.07																		
5	Greenbelt Maintenance	28.37																		
(xi)	<p>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.</p>	<p>Noted for Compliance.</p> <p>Full support is extended to the officers of RO-MoEF & CC Chennai, CPCB & TNPCB during their inspection and site visit. During the compliance period monthly visit was made by TNPCB Officials to monitor the compliance and all the necessary support were extended and the same shall be continued in future also.</p>																		
(xii)	<p>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.</p>	<p>Noted for Compliance.</p> <p>There is no deviation or alteration in the project including implementing agency.</p>																		
(xiii)	<p>This Ministry reserves the right to revoke this clearance, if any of the conditions stipulated are not complied with to the satisfaction of</p>	<p>Noted for Compliance.</p>																		

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


	this Ministry.	
(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 carried out for a period of one year.	Complied. M/s LTSB has already carried out detailed modelling study to understand impact of post dumping and report was submitted to Ministry. No dumping was being carried by MIDPL during the period April'21 to Sep'21. 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 period April'21 to Sep'21. MIDPL engaged Institute of Ocean Management, Anna University for studies. Reports of the same was submitted along

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


		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.
<u>EC & CRZ Extension of validity letter No. 10-130/2007- XIII dated 17.12.2014:</u>		
(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. TNPCB Vide their Lr. No: T1 / TNPCB / F.022882 / RL / GMP / NIPL / 2021 dated 12.01.2021, granted "No increase in Pollution Load Certificate" for Kattupalli Port, MIDPL for Change in Product Mix for additional handling of Rock Phosphate, Dolomite, Bauxite Cargos and increase the Non-Hazardous Liquid cargo capacity from 0.57 MMTPA to 0.72 MMTPA by optimally deploying the port infrastructure being developed without change in the overall handling capacity approved in the EC & CRZ by MoEF & CC. Copy of the same attached as Annexure – IV. Subsequently, TNPCB granted Consent to Operate – Direct Orders (Consent Order No. 2105136876761 - water Act & 2105236876761 - Air Act dated 13/09/2021) for the period of 5 years (valid till 31st March 2026). Copies of CTO Orders attached as Annexure - V
(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

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

		same is enclosed as Annexure – VI.
(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, 1991, 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. <ul style="list-style-type: none"> • 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	Complied.


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

	<p>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.</p>	<p>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.</p>
8	<p>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.</p>	<p>Noted.</p>
9	<p>Status of compliance to the various stipulated environmental conditions and environmental safeguards will be uploaded by the project proponent in its website.</p>	<p>Complied.</p> <ul style="list-style-type: none"> • 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 2020-2021 was submitted to TNPCB vide letter No. MIDPL/TNPCB/2021-22/119 dated 23.09.2021. Copy of the same is uploaded on Company website and sent to Regional Office of MoEF&CC by e-mail on 23.09.21. Copy of the same is attached as Annexure VIII.
10	<p>This Environmental and CRZ Clearance is valid till 2nd July, 2019.</p>	<p>Noted.</p>
11	<p>This issue with the approval of the Competent Authority.</p>	<p>Noted.</p>

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


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 2020-21
Annexure III:	Environmental Monitoring reports for the period April'21 to Sep'21
Annexure IV:	No Increase in Pollution Load Certificate Issued by TNPCB dated 12.01.2021
Annexure V:	TNPCB CTO Direct orders dated 13.09.2021 under Air & Water Act for the period of 5 years (valid till 31st March 2026).
Annexure VI:	Compliance to TNSCZMA conditions during April'21 to Sep'21
Annexure VII:	Mock Drills carried out during April'21 to Sep-2021
Annexure VIII:	EMP Compliance Status
Annexure IX:	Environment Statement (Form V) FY 2020-21


	Marine Infrastructure Developer Pvt Ltd	From : April 2021 To : September 2021
<u>Status of Compliance to RC No. P1/2004/2008, dated 21.10.2008 of Department of Environment, Chennai</u>		

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 There was no dredging and dumping/land filling of dredged material during the compliance period.
ii	The unit shall not carry out any ship breaking activity	Not applicable
iii	The unit should design that the wastewater should be recycled 100% and to be used for developing greenery etc., and there should not be any wastewater 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 April 2021 to September 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. There was no construction activity during the compliance period. 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 Construction is completed and project is in operation phase.
General Conditions		
a	There should not be any extraction of Ground Water in CRZ.	Noted for compliance. No groundwater is withdrawn from CRZ Area. Presently unit is procuring desalinated water from M/s. Chennai Metropolitan Water Supply and Sewerage

	Marine Infrastructure Developer Pvt Ltd	From : April 2021 To : September 2021
<u>Status of Compliance to RC No. P1/2004/2008, dated 21.10.2008 of Department of Environment, Chennai</u>		

		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 LTSP obtained vide File no: 10-130/2007- A.III dated 09/02/2018. Required permission from concerned authorities was taken by M/s. LTSP 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 are only 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 are only 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 into 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 April'21 to Sep'21 is enclosed as Annexure - III.

	Marine Infrastructure Developer Pvt Ltd	From : April 2021 To : September 2021
<u>Status of Compliance to RC No. P1/2004/2008, dated 21.10.2008 of Department of Environment, Chennai</u>		

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, 37,118 Nos. of trees has been planted and around 11,744 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 April'21 to Sep'21 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



KATTUPALLI PORT
CHENNAI'S NEW GATEWAY

MIDPL/TNPCB/GMP/HWR-2021/90

Date: 24/06/2021

To,

The District Environmental Engineer,
Tamil Nadu Pollution Control Board,
88A, First Cross Road,
SIPCOT Industrial Complex,
Gummidipoondi - 601201.

Dear Sir,

Sub: Submission of Annual Hazardous Waste Returns (FORM 4) for the period
April 2020 to March 2021- 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 2020 to March 2021.

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

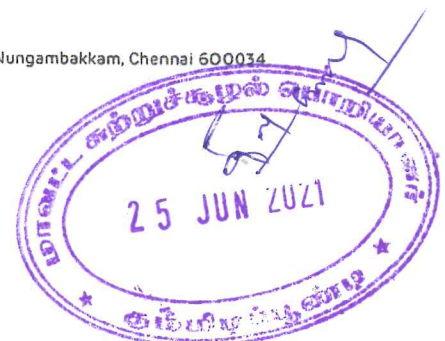
Encl: As above

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

Tel +91 44 2824 3062

CIN: U74999TN2016PTC103769

Registered Office: Ramcon Fortuna Towers, 4th floor No 1/2, Kodambakkam High Road, Nungambakkam, Chennai 600034



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 2020 to March 2021]

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 Managing 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	Discarded Containers / Barrels	Used / Waste / Spent Oil
	Category	3.1	33.1	5.1
	Quantity	44.42 MT	3.57 MT	5.4 MT
2	Quantity dispatched	-	-	-
	(i) to disposal facility	NIL	NIL	NIL
	(ii) to recycler or co-processors or pre-processor	44.42 MT	3.57 MT	5.4 MT
	(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 -	

Date: 24.06.2021
Place: Chennai


Signature of the Occupier



REPORT ON
COMPREHENSIVE ENVIRONMENTAL MONITORING
FOR
MARINE INFRASTRUCTURE DEVELOPER PRIVATE LIMITED (MIDPL)
KATTUPALLI VILLAGE, PONNERI TALUK,
THIRUVALLUR DISTRICT, TAMILNADU - 600 120
APRIL 2021 - SEPTEMBER 2021



PREPARED BY:



Green Chem Solutions Pvt. Ltd.

No.883, 11th Street,
Syndicate Bank Colony,
Anna Nagar West Extension,
Chennai - 600 101.

Index for Table

S.No	Index
I.	Introduction
II.	Location of the project
III.	Scope of work
IV.	Methodology
V.	Environmental studies
i.	Meteorological Data
ii.	Ambient Air Quality
iii.	Ambient Noise Level Intensity
iv.	DG Set Emission
v.	STP Water Sample Analysis
vi.	Drinking water Sample Analysis
vii.	Rainwater harvesting pond Water Sample Analysis
viii.	Raw water Sample Analysis
ix.	Marine sampling
x.	Sea Sediment
Fig.No	Description
1	Location Map
2	Ambient Air Sampling Station Location Map
3	Results of AAQ at Marine Control Tower
4	Results of AAQ at Port Main Gate
5	Results of AAQ at Kattupalli Village
6	Results of AAQ at Kalanji Village
7	Noise Level Sampling Location Map
8	Results of Ambient Noise Level Monitoring Data at Port Main Gate
9	Results of Ambient Noise Level Monitoring Data at Marine Control Tower
10	Results of Ambient Noise Level Monitoring Data at Kattupalli Port
11	Results of Ambient Noise Level Monitoring Data at Kattupalli Port
12	Results of Source Emission Monitoring Data at DG - 1 2000 KVA, DG - 2 2000 KVA
13	Results of Source Emission Monitoring Data at DG-125 KVA and DG- 500 KVA
14	Results f Source Emission Monitoring Data at Liquid Terminal-Hot Oil Generator Stack
15	Water and Marine Sampling Locations

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.

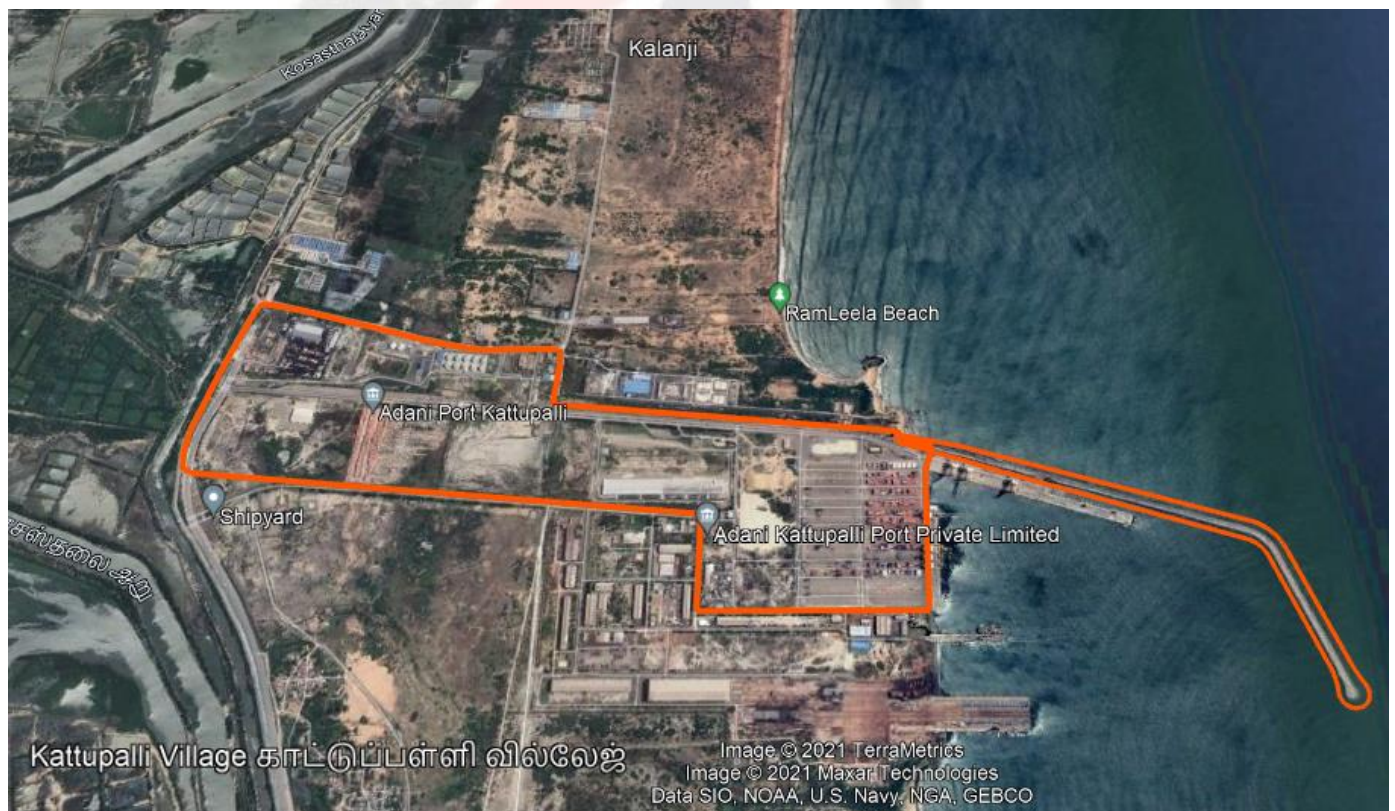
MIDPL have engaged M/s. Green Chem Solutions (P) Ltd, an Accredited Consultant by NABL to carry out the Comprehensive Environmental monitoring studies in the Port site continuously as per the norms. This report covers the monitored environmental data for the Period **Apr 2021 to Sep 2021**.

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 : <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • PM10 • PM2.5 • SO₂ • NO₂ • CO • Lead • Ozone • Ammonia • Benzene • BenzoPyrene • Arsenic • Nickel 	Weekly Twice
3.	Ambient Noise	Collection of Noise levels on hourly basis at 4 locations <ul style="list-style-type: none"> • L_{eq} - Day (Max and Min) • L_{eq} - Night (Max and Min) 	Monthly Once
4.	Marine Sampling		

4a.	Surface and Bottom Water	<p>Collection of Surface and Bottom Water analyzed for - 2 location</p> <ul style="list-style-type: none"> • 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 $\text{C}_6\text{H}_5\text{OH}$ • 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) • Alpha HCH • Beta HCH 	Monthly Once
-----	--------------------------	---	--------------

		<ul style="list-style-type: none"> • 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	<p>Collection of sea sediment analyzed for - 2 location</p> <ul style="list-style-type: none"> • pH • Organic Matter • Moisture Content • Conductivity • Iron • Sodium • Copper • Nickel • Zinc • Manganese • Lead • Boron • Phosphate • Chloride • Sulphate • Sulphide • Pesticide 	Monthly Once

		<ul style="list-style-type: none"> • Potassium • Total Chromium • Petroleum Hydrocarbon • Aluminium • Total Nitrogen • Organic Nitrogen • Phosphorus • Texture 	
4c.	Phytoplankton Monitoring	<ul style="list-style-type: none"> • Total Count • No. of species • Chlorophyll-a • Major Species 	Monthly Once
4d.	Zooplankton Monitoring	<ul style="list-style-type: none"> • Total Count • No. of species • Major 	Monthly Once
4e.	Microbiological Monitoring	<ul style="list-style-type: none"> • Total Bacteria count • Total Coliform • Faecal Coliform • E.Coli • Enterococcus • Salmonella • Sheigella • Vibrio 	Monthly Once
4f.	Primary Productivity Monitoring	<ul style="list-style-type: none"> • Gross primary productivity • Net Primary productivity 	Monthly Once
4g.	Phytobenthos Monitoring data	<ul style="list-style-type: none"> • Fungus • Total Count • No. of species • Diversity Index • Major species 	Monthly Once
4h.	Total Fauna Monitoring	<ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • PM • Carbon Monoxide • NO_x - NO₂ • SO₂ 	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
	Respirable Suspended Particulate Matter(PM10)	IS5182Part23:2006
	Particulate Matter PM2.5	GCS/Lab/SOP/087, CPCB Guidelines
	Sulphurdioxide as SO ₂	IS5182 Part2 :2001(Reaff.2006)
	Oxides of Nitrogen as NO ₂	IS5182 Part6 :2006
	Lead as Pb	IS5182 Part22:2004(Reaff.2009)
	Arsenic as As	GCS/Lab/SOP/089, CPCB Guidelines
	Nickel as Ni	GCS/Lab/SOP/090, CPCB Guidelines
	Carbonmonoxide as CO	IS5182Part10:1999(Reaff.2009
	Ozone as O ₃	IS5182Part9:1974[Reaff.2009]
	Ammonia as NH ₃	GCS/Lab/SOP/086, CPCB Guidelines
	Benzene (α) pyrene	IS 5182 - Part 12
	BenzeneasC ₆ H ₆	IS5182Part11:2006
3	Ambient Noise Monitoring	
	Leq Day & Night	Instrument Manual, GCS/LAB/SOP/Noise/001
4	Marine Sampling	
	Surface and Bottom Water	APHA Methods 23 rd 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 23 rd 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 23 rd Edition, 2017 Standard Methods for examination of Water and Wastewater 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 STUDIES - Apr 2021 - Sep2021

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 hereunder represents the data for the period Apr2021 to Sep 2021.

The following parameters were recorded

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

ANNEXURE - 1 MICROMETEOROLOGY DATA

Apr - 2021

Marine Infrastructure Developer Pvt Ltd							
Report Type:Average Report							
From: 01-04-2021 00:00:00 To: 30-04-2021 23:59:59							
Created By: glensAdmin Created At: 2021-05-04 10:05:05							
Date-(DD-MM-YYYY)	Wind Speed (km/h)	Wind Direction (Degree)	Atm Temperature (Degree C)	Relative Humidity (%)	Total Rainfall (mm)	Atm Pressure (mBar)	Solar Radiaton (w/m2)
Avg	3.98	212.85	32.35	91.71	0.22	1005.29	249.39
Min	2.98	159.54	30.11	84.77	0	1000.23	146.97
Max	5.9	244.05	33.59	96.49	6.62	1008.16	284.67
01-04-2021	5.1	228.11	32.79	92.35	0	1000.23	227.78
02-04-2021	5.77	215.08	33.59	86.09	0	1000.41	223.52
03-04-2021	5.9	224.42	32.64	91.62	0	1001.76	229.42
04-04-2021	3.92	202.17	32.39	96.49	0	1003.62	194.55
05-04-2021	4.69	164.52	32.16	95.03	0	1005.07	246.27
06-04-2021	3.29	187.64	31.8	89.88	0	1006.42	236.77
07-04-2021	3.47	240.33	31.71	89.21	0	1006.86	228.68
08-04-2021	4.61	239.21	31.21	89.3	0	1005.28	236.78
09-04-2021	4.12	228.94	31.38	84.77	0	1005.12	236.12
10-04-2021	4.06	198.76	31.56	88.27	0	1006.65	274.66
11-04-2021	4.39	159.54	31.72	91.83	0	1007.96	271.9
12-04-2021	3.66	193.23	32.61	88.01	0	1008.16	269.83
13-04-2021	3.7	201.6	32.36	89.92	0	1007.58	248.45
14-04-2021	3.05	212.55	31.65	93.31	0	1006.81	146.97
15-04-2021	4.07	176.32	30.11	91.52	6.62	1006.44	198.32
16-04-2021	4.1	220.39	31.25	93.13	0	1005.71	283.72
17-04-2021	4.25	211.81	32.36	92	0	1006.22	274.01
18-04-2021	3.94	237.91	32.61	93.13	0	1007.01	275.44
19-04-2021	3.76	234.45	32.96	93.96	0	1004.73	277.04
20-04-2021	4.04	233.37	32.98	92.68	0	1003.92	265.46
21-04-2021	3.81	238.4	32.88	93.33	0	1005.51	269.56
22-04-2021	4.21	235.02	32.78	93.05	0	1005.85	268.13
23-04-2021	3.26	217.8	32.75	93.24	0	1005.55	228.72
24-04-2021	2.98	212.94	32.61	95.51	0	1005.32	231.64
25-04-2021	3.23	233.12	32.81	93.08	0	1005.16	269.76
26-04-2021	3.53	244.05	32.77	89.37	0	1004.71	284.67
27-04-2021	3.22	219.08	32.85	92.39	0	1005.27	281.77
28-04-2021	3.51	218.4	32.88	94.39	0	1005.59	259.79
29-04-2021	3.82	190.46	33.01	92.47	0	1004.96	264.46
30-04-2021	3.94	165.76	33.18	91.94	0	1004.73	277.46

May - 2021

Marine Infrastructure Developer Pvt Ltd							
Report Type: Average Report							
From: 01-05-2021 00:00:00 To: 31-05-2021 23:59:59							
Created By: glensAdmin Created At: 2021-06-07 17:27:31							
Date (DD-MM-YYYY)	AQMS-Wind - Speed (km/h)	AQMS-Wind - Direction (Degree)	AQMS-Atm- (Degree C)	AQMS-RH- (%)	AQMS-Total - (mm)	AQMS-Atm- (mBar)	AQMS-SR- (w/m2)
Avg	5.21	216.31	33.3	86.55	0.16	1002.35	264.66
Min	3.84	158.97	31.04	68.11	0	997.83	106.13
Max	8.17	246.8	35.05	94.1	4.57	1006.08	343.84
01-05-2021	4.89	181.11	32.8	90.88	0	1005.15	280.68
02-05-2021	4.1	170.84	32.61	89.54	0	1005.29	289.37
03-05-2021	4.85	158.97	32.8	86.89	0	1004.64	303.99
04-05-2021	4.04	201.97	32.89	85.52	0	1004.65	309.31
05-05-2021	4.58	203.97	33.19	86.3	0	1004.17	277.91
06-05-2021	3.88	202.1	33.61	85.55	0	1005.39	303.75
07-05-2021	3.84	210.73	33.74	86.28	0	1006.08	289.76
08-05-2021	4.53	183.86	33.17	87.08	0	1005.34	310.24
09-05-2021	4.6	178.96	33.18	87.85	0	1004.02	298.8
10-05-2021	4	226.37	33.66	87.08	0	1003.47	299.8
11-05-2021	5.4	234.42	33.7	88.86	0	1002.66	277.99
12-05-2021	4.95	220.93	32.71	94.1	0.29	1002.2	199.23
13-05-2021	4.8	236.86	33.86	92.06	0	1001.12	282.23
14-05-2021	4.88	210.62	33.52	93.14	0	1000.66	262.26
15-05-2021	5.5	233.53	33.46	86.8	0	1000.01	275.82
16-05-2021	5.48	230.73	32.92	90.76	0	1001.43	244.56
17-05-2021	4.64	234.98	33.35	90.97	0	1002.51	308.78
18-05-2021	5.01	234.04	33.27	93.93	0	1002.97	309.75
19-05-2021	5.21	228.54	33.3	93.41	0	1002.31	343.84
20-05-2021	5.66	200.51	32.46	87.17	0	1002.57	340.62
21-05-2021	7.61	240.25	31.04	92.07	4.57	1002.6	174.28
22-05-2021	4.37	246.8	31.42	91.73	0	1001.83	106.13
23-05-2021	4.54	233.31	32.59	88.26	0	1001.38	132.59
24-05-2021	4.55	234.91	33.57	84.97	0	1000.52	121.99
25-05-2021	8.17	238.07	34.66	74.11	0	998.59	157.83
26-05-2021	8.08	231.8	34.14	75.28	0.14	997.83	267.85
27-05-2021	7.41	240.02	35.05	68.11	0	998.72	264.22
28-05-2021	5.09	221.92	33.89	79.76	0	1000.86	289.6
29-05-2021	5.19	218.61	33.78	82.26	0	1001.95	290.98
30-05-2021	4.88	197.07	34.22	78.87	0	1001.51	290.04
31-05-2021	6.79	218.96	33.77	83.37	0	1000.43	300.14

June - 2021

Marine Infrastructure Developer Pvt Ltd							
Report Type: Average Report							
From: 01-06-2021 00:00:00 To: 30-06-2021 23:59:59							
Created By: ADANI Created At: 2021-07-05 14:47:04							
Date (DD-MM-YYYY)	AQMS-Wind - Speed (km/h)	AQMS-Wind - Direction (Degree)	AQMS-RH- (%)	AQMS-Rainfall- (mm)	AQMS-Total - (mm)	AQMS-Atm- (mBar)	AQMS-SR- (w/m2)
Avg	6.19	229.12	82.97	0.05	1.25	1001.87	238.11
Min	3.89	193.79	66.8	0	0	998.78	127.82
Max	10.27	244.37	93.88	0.57	17.31	1004.51	305.28
01-06-2021	5.1	206.99	84.42	0	0	1000.95	305.28
02-06-2021	4.63	219.79	89.95	0	0	1001.78	296.18
03-06-2021	4.7	230.26	90.79	0	0	1003.3	259.75
04-06-2021	3.89	219.25	92.65	0	0	1004.51	299.93
05-06-2021	4.25	216.6	90.74	0	0	1004.01	285.74
06-06-2021	5.06	193.79	88.4	0	0	1003.68	276.69
07-06-2021	5.11	226.33	84.81	0.01	0.01	1003.06	288.4
08-06-2021	4.98	234.42	93.88	0.57	17.31	1002.44	280.67
09-06-2021	6.12	217.7	83.62	0.01	0.11	1000.9	262.94
10-06-2021	5.78	223.15	81.16	0	0	999.72	209.77
11-06-2021	7.35	242.27	70.54	0	0	999.76	169.3
12-06-2021	8.07	233.14	72.66	0.08	0.78	999.72	288.09
13-06-2021	10.27	244.37	73.29	0.04	1.41	999.55	178.91
14-06-2021	9.54	244.18	66.8	0	0	998.93	160.29
15-06-2021	8.88	239.18	74.65	0	0	998.78	267.34
16-06-2021	7.5	237.9	71.47	0	0	1000.07	205.58
17-06-2021	7.89	235.23	76.64	0	0	1001.02	217.76
18-06-2021	7.93	237	75.9	0	0	1002.59	192.57
19-06-2021	7.55	239.69	74.51	0	0	1003.95	246.88
20-06-2021	6.35	230.08	79.62	0.02	0.49	1004.06	238.9
21-06-2021	5.63	217.39	80.44	0	0	1002.84	294.46
22-06-2021	6.71	228.37	87.31	0	0	1002.39	191.87
23-06-2021	4.87	215.79	90.2	0.14	1.44	1002.47	227.27
24-06-2021	6.59	232.87	89.21	0.4	12.62	1003.1	205.81
25-06-2021	4.34	222.53	84.49	0	0	1001.27	242.59
26-06-2021	5.16	244.3	79.45	0	0	1000.9	127.82
27-06-2021	5.66	240.59	84.28	0	0	1002.41	141.91
28-06-2021	5.28	236.8	93.82	0.09	3.38	1003.18	195.92
29-06-2021	5.35	231.25	90.77	0	0	1002.86	297.85
30-06-2021	5.15	232.4	92.67	0	0	1001.95	286.88

July - 2021

Marine Infrastructure Developer Private Ltd							
Report Type: Average Report							
From: 01-07-2021 00:00:00 To: 31-07-2021 23:59:59							
Created By: ADANI Created At: 2021-08-09 11:05:45							
Date	AQMS-Wind_Speed (km/h)	AQMS-Wind_Direction (Degree)	AQMS-RH (%)	AQMS Total Rain Fall (mm)	AQMS-Atm. Pressure (mBar)	AQMS-Atm. Temperature (Degree)	AQMS-Solar_Radiation (w/m2)
Avg	6.41	231	87.00	195.00	1001.0	31.8	229.7
Min	3.20	172	77.31	-	998.1	30.2	105.8
Max	10.40	247	95.67	-	1002.9	33.6	364.0
01-07-2021	6.91	234	91.67	0.00	1001.2	32.0	210.8
02-07-2021	6.75	233	89.84	20.00	1002.0	31.4	297.0
03-07-2021	3.46	231	93.76	0.00	1002.8	30.9	196.7
04-07-2021	3.97	206	93.83	0.00	1002.5	31.9	178.5
05-07-2021	6.71	209	85.77	0.00	1001.4	32.6	312.1
06-07-2021	4.41	240	90.61	0.00	1000.9	32.8	291.8
07-07-2021	5.94	232	87.54	0.00	1000.8	33.1	272.6
08-07-2021	6.83	172	88.22	62.00	1001.2	31.6	282.9
09-07-2021	6.72	234	94.61	6.50	999.9	30.3	141.0
10-07-2021	6.91	241	88.27	1.00	998.4	31.2	234.0
11-07-2021	6.16	215	85.57	0.50	998.6	31.2	165.5
12-07-2021	4.26	243	90.42	0.00	998.8	31.8	129.8
13-07-2021	5.61	239	85.19	0.50	999.6	31.7	130.8
14-07-2021	6.53	237	84.73	25.50	1000.5	31.6	210.7
15-07-2021	7.12	234	88.25	0.50	1000.7	30.9	242.7
16-07-2021	5.45	234	92.65	7.50	1002.5	31.0	180.8
17-07-2021	3.20	239	95.67	0.50	1002.6	30.2	200.0
18-07-2021	7.74	236	93.35	14.00	1001.2	30.3	216.0
19-07-2021	7.13	223	87.23	18.00	1001.0	31.6	298.7
20-07-2021	6.25	229	88.85	6.50	1002.5	30.9	224.6
21-07-2021	5.34	229	91.02	3.50	1001.8	30.7	148.9
22-07-2021	6.44	247	88.85	0.00	998.9	30.7	105.8
23-07-2021	8.85	232	77.31	0.00	998.1	32.5	243.2
24-07-2021	8.39	233	82.15	0.00	999.7	32.8	289.8
25-07-2021	10.40	235	77.99	22.50	1000.6	33.6	364.0
26-07-2021	7.67	235	85.47	1.50	1001.1	33.3	340.0
27-07-2021	7.39	240	85.33	0.00	1001.1	32.5	270.7
28-07-2021	6.91	241	79.86	0.00	1001.5	32.9	265.2
29-07-2021	6.96	234	78.09	0.00	1002.0	32.8	215.7
30-07-2021	5.83	232	78.54	0.00	1002.9	32.9	222.9
31-07-2021	6.41	232	76.33	4.50	1003.5	33.0	236.8

Aug - 2021

Marine Infrastructure Developer Private Ltd							
Report Type: Average Report							
From: 01-08-2021 00:00:00 To: 31-08-2021 23:59:59							
Created By: ADANI Created At: 2021-09-02 16:06:20							
Date	AQMS-Wind_Speed (km/h)	AQMS-Wind_Direction (Degree)	AQMS-RH (%)	AQMS Total Rain Fall (mm)	AQMS-Atm. Pressure (mBar)	AQMS-Atm. Temperature (Degree)	AQMS-Solar_Radiation (w/m2)
Avg	5.3	233	87.8	84.5	1002.2	32.0	222.94
Min	1.9	203	74.4	-	998.9	30.1	116.02
Max	7.8	253	95.5	-	1004.5	34.0	304.43
01-08-2021	6.5	240	82.8	0.0	1002.5	32.3	255.9
02-08-2021	6.5	234	76.9	0.0	1002.5	33.1	276.7
03-08-2021	5.5	220	84.8	0.0	1003.7	33.0	260.9
04-08-2021	7.8	237	74.4	0.0	1003.5	34.0	259.8
05-08-2021	7.7	243	77.1	0.0	1002.0	33.5	244.1
06-08-2021	7.0	223	85.4	0.0	1001.3	32.2	243.6
07-08-2021	5.1	228	89.9	0.0	1001.9	32.9	249.4
08-08-2021	5.1	233	88.3	0.0	1002.8	33.1	298.6
09-08-2021	4.0	223	90.4	0.0	1003.2	33.2	285.6
10-08-2021	4.3	233	89.7	0.5	1003.1	31.8	297.1
11-08-2021	5.1	242	82.3	0.0	1002.4	34.0	276.0
12-08-2021	6.0	250	83.6	0.0	1003.2	32.6	116.6
13-08-2021	3.8	231	84.5	0.0	1002.3	32.1	188.8
14-08-2021	5.2	253	80.6	0.0	1000.5	32.8	159.3
15-08-2021	6.0	252	80.0	0.0	1001.2	31.9	127.1
16-08-2021	1.9	242	89.5	3.5	1002.6	31.2	116.0
17-08-2021	4.9	236	92.5	28.5	1003.4	30.7	216.8
18-08-2021	6.2	237	91.6	0.0	1001.8	31.7	228.3
19-08-2021	4.7	229	91.8	0.0	1001.2	31.4	194.7
20-08-2021	4.9	213	93.3	5.0	1002.5	31.2	174.1
21-08-2021	4.9	222	94.4	0.0	1004.5	31.2	182.6
22-08-2021	3.5	224	91.1	0.0	1004.3	31.7	304.4
23-08-2021	4.7	239	92.9	0.0	1004.2	31.0	273.2
24-08-2021	4.8	235	90.7	0.0	1003.2	32.0	282.1
25-08-2021	6.4	219	91.6	0.0	1002.1	31.8	243.6
26-08-2021	5.6	203	91.7	0.0	1000.9	31.8	229.8
27-08-2021	5.8	231	95.5	26.5	1000.6	30.1	206.3
28-08-2021	5.8	247	91.4	15.0	999.4	30.5	188.8
29-08-2021	6.3	240	93.3	5.0	998.9	30.3	168.0
30-08-2021	5.3	229	89.4	0.5	999.9	31.3	154.3
31-08-2021	3.7	223	90.0	0.0	1001.6	31.6	208.7

Sep - 2021

Marine Infrastructure Developer Private Ltd							
Report Type: Average Report							
From: 01-09-2021 00:00:00 To: 30-09-2021 23:59:59							
Created By: ADANI Created At: 01.10.2021 15:30:12							
Date	AQMS-Wind_Speed (km/h)	AQMS-Wind_Direction (Degree)	AQMS-RH (%)	AQMS Total Rain Fall (mm)	AQMS-Atm. Pressure (mBar)	AQMS-Atm. Temperature (Degree)	AQMS-Solar_Radiation (w/m2)
Avg	5.5	227	91.7	93.4	1001.9	31.5	191.5
Min	2.1	162	80.8	-	998.2	30.1	112.7
Max	9.7	245	98.2	-	1004.8	33.2	261.6
01-09-2021	3.2	186	97.7	0.0	1003.2	31.0	147.5
02-09-2021	4.1	235	94.7	0.0	1002.8	30.4	117.5
03-09-2021	5.2	230	93.7	0.3	1001.5	30.8	136.9
04-09-2021	6.2	231	96.8	0.2	1001.7	30.1	112.7
05-09-2021	8.6	231	91.4	0.2	1001.0	30.4	184.5
06-09-2021	6.6	240	92.1	0.2	1000.7	30.3	120.6
07-09-2021	7.7	233	86.4	0.0	1001.0	31.9	252.5
08-09-2021	6.2	234	89.7	0.0	1002.8	32.1	226.1
09-09-2021	6.0	219	86.9	0.0	1003.3	32.4	226.4
10-09-2021	5.2	231	85.9	0.0	1002.4	33.0	208.3
11-09-2021	8.5	231	90.0	0.0	1002.3	32.2	256.1
12-09-2021	7.5	236	85.7	0.1	999.8	33.1	218.9
13-09-2021	9.7	233	80.8	0.0	999.4	33.0	201.0
14-09-2021	8.0	232	85.2	0.0	1000.6	33.2	238.3
15-09-2021	4.5	234	91.1	0.0	1001.9	33.0	242.7
16-09-2021	3.5	225	95.4	0.4	1002.1	31.5	182.8
17-09-2021	4.0	231	94.5	4.0	1001.9	32.0	204.8
18-09-2021	4.7	237	93.7	0.0	1003.5	31.2	202.6
19-09-2021	4.5	237	90.8	0.0	1004.8	32.1	233.9
20-09-2021	5.3	233	89.9	1.2	1003.8	31.7	261.6
21-09-2021	5.7	205	92.6	2.8	1002.5	30.8	223.5
22-09-2021	5.2	245	94.8	23.7	1001.5	30.3	145.1
23-09-2021	3.6	238	96.9	0.3	1001.9	31.1	114.7
24-09-2021	2.9	199	94.2	2.0	1002.7	31.4	223.7
25-09-2021	3.1	236	96.1	15.6	1002.0	31.2	171.0
26-09-2021	5.1	244	95.0	29.2	999.9	30.5	143.9
27-09-2021	7.3	237	89.8	1.1	998.2	31.9	182.6
28-09-2021	6.6	230	86.4	0.0	1000.9	31.8	244.2
29-09-2021	2.1	216	94.1	0.3	1003.4	30.7	141.2
30-09-2021	3.6	162	98.2	11.8	1004.3	30.9	179.5

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. 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.

Monitoring Locations

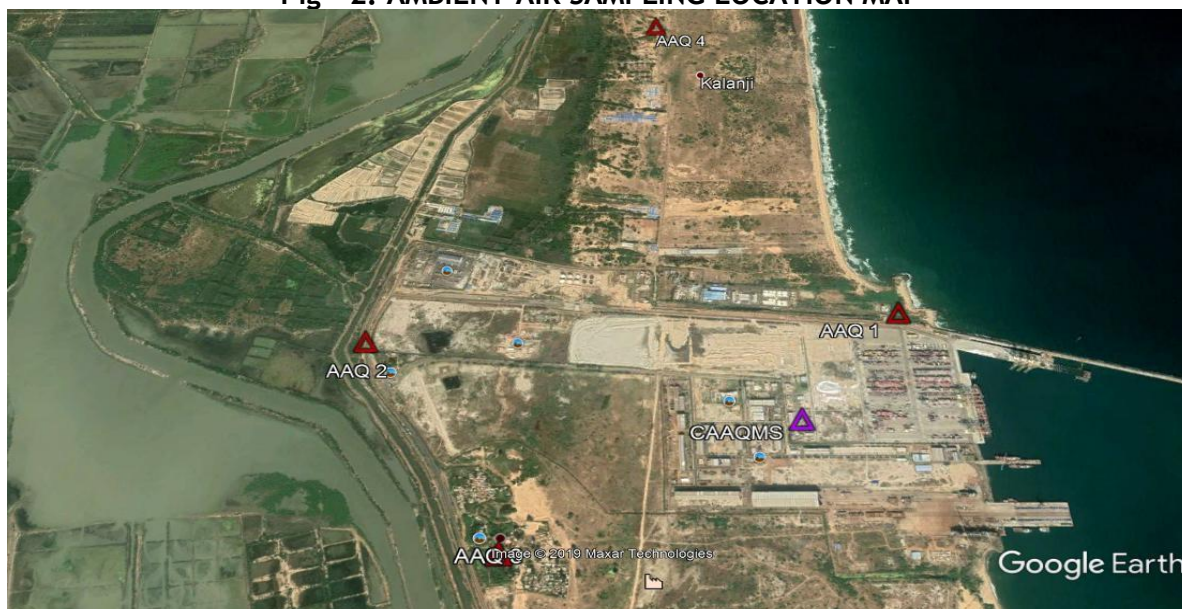
Ambient Air Quality monitoring has been carried out in the following locations.

DETAILS OF AMBIENT AIR QUALITY MONITORING LOCATIONS

Station code	Location	Geographical location	Environmental setting
AAQ1	Near Marine Control Tower	13° 18' 55" N 80° 20' 45" E	Industrial
AAQ2	Near Port Main Gate	13° 18' 51" N 80° 19' 28" E	Industrial
AAQ3	Kattupalli village	13° 18' 18" N 80° 19' 48" E	Village

AAQ4	Kalanji village	13° 20' 8" N 80° 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 LOCATION MAP



TECHNIQUES USED FOR AMBIENT AIR QUALITY MONITORING

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

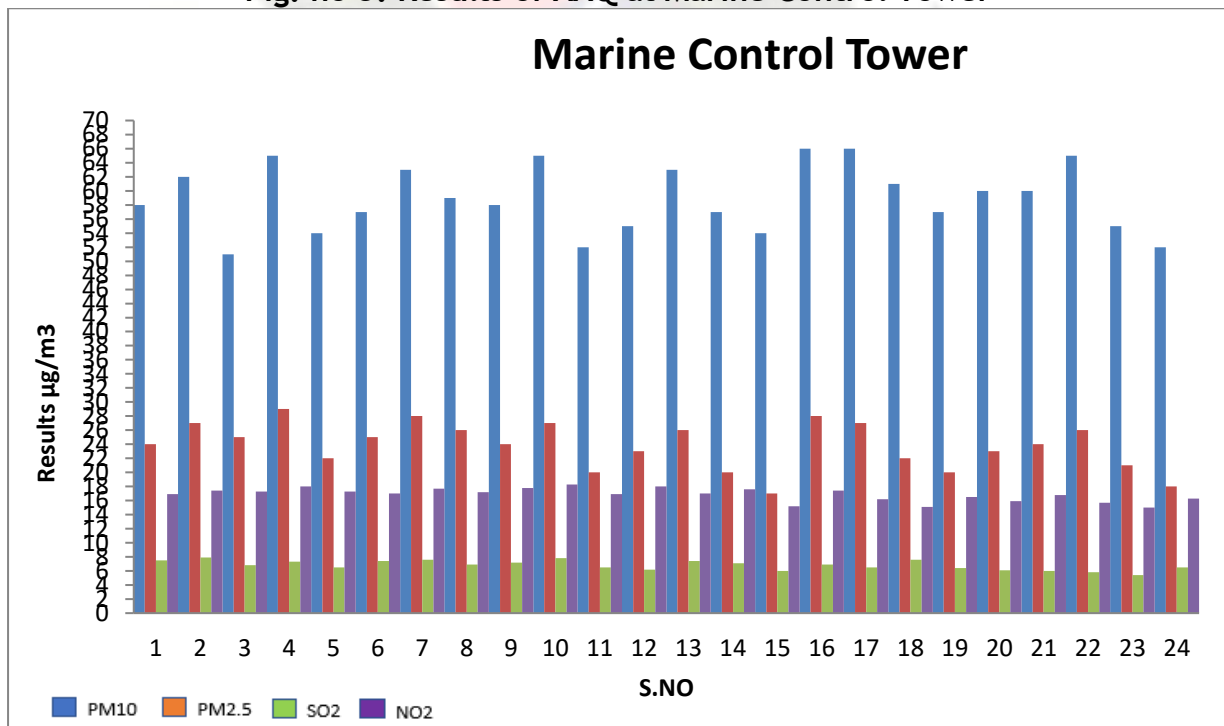
Results and Discussion

The results of the ambient air quality for the study period are submitted. The minimum, maximum 98th 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 AMBIENT AIR QUALITY MONITORING DATA

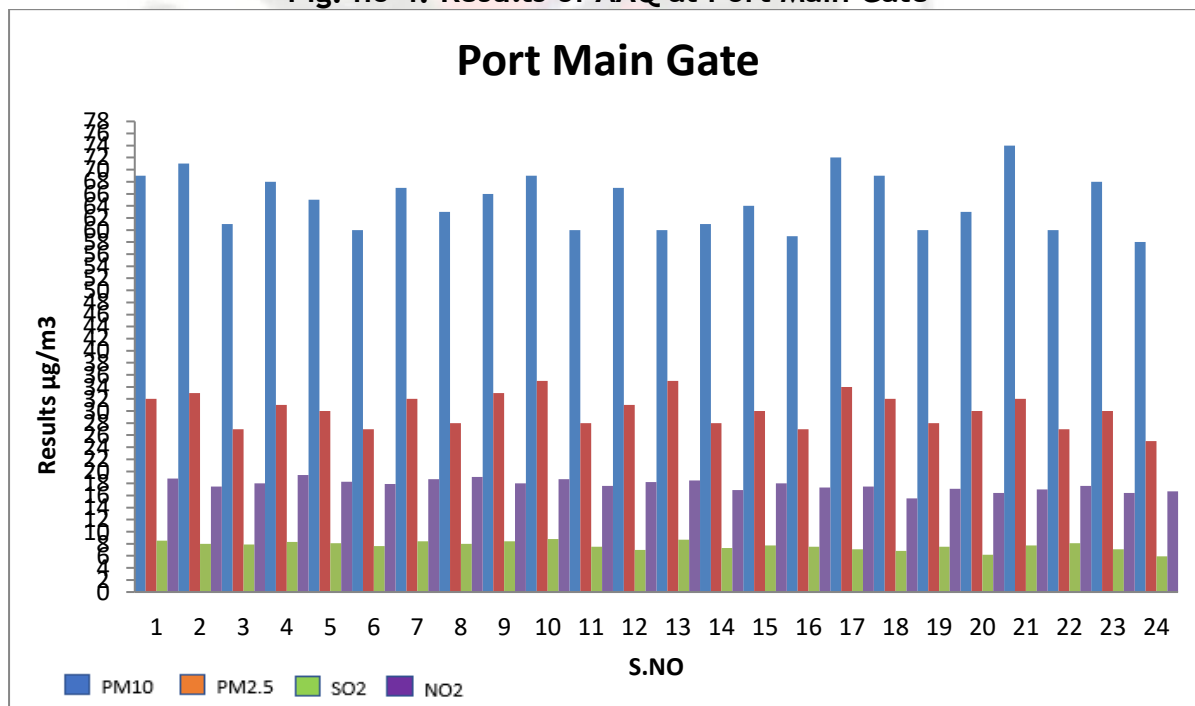
MARINE CONTROL TOWER (AAQ1)														
Parameters			Particular matter PM10	Particular matter PM2.5	Sulphur dioxide as SO2	Nitrogen dioxide as NO2	Lead as Pb	Carbon monoxide as CO	Ozone as O3	Ammonia as NH3	Arsenic as As	Nickel as Ni	Benzene as C6H6	Benzo (a) pyrene as BaP
Unit			µg/m3	µg/m3	µg/m3	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	Report Number												
1	07.04.2021	GCS/LAB/S/3376/21-22	58	24	7.5	16.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
2	09.04.2021	GCS/LAB/S/3376/21-22	62	27	7.9	17.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
3	19.04.2021	GCS/LAB/S/3376/21-22	51	25	6.8	17.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
4	23.04.2021	GCS/LAB/S/3376/21-22	65	29	7.3	18.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
5	12.05.2021	GCS/LAB/S/3422/21-22	54	22	6.5	17.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
6	14.05.2021	GCS/LAB/S/3422/21-22	57	25	7.4	17.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
7	25.05.2021	GCS/LAB/S/3422/21-22	63	28	7.6	17.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
8	27.05.2021	GCS/LAB/S/3422/21-22	59	26	6.9	17.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
9	07.06.2021	GCS/LAB/S/3502/21-22	58	24	7.2	17.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
10	11.06.2021	GCS/LAB/S/3502/21-22	65	27	7.8	18.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
11	21.06.2021	GCS/LAB/S/3502/21-22	52	20	6.5	16.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
12	25.06.2021	GCS/LAB/S/3502/21-22	55	23	6.2	18.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
13	05.07.2021	GCS/LAB/S/3576/21-22	63	26	7.4	17.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
14	09.07.2021	GCS/LAB/S/3576/21-22	57	20	7.1	17.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
15	19.07.2021	GCS/LAB/S/3576/21-22	54	17	6.0	15.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
16	23.07.2021	GCS/LAB/S/3576/21-22	66	28	6.9	17.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
17	02.08.2021	GCS/LAB/S/3692/21-22	66	27	6.5	16.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
18	06.08.2021	GCS/LAB/S/3692/21-22	61	22	7.6	15.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
19	16.08.2021	GCS/LAB/S/3692/21-22	57	20	6.4	16.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
20	20.08.2021	GCS/LAB/S/3692/21-22	60	23	6.1	15.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
21	06.09.2021	GCS/LAB/S/2780/21-22	60	24	6.0	16.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
22	20.09.2021	GCS/LAB/S/2780/21-22	65	26	5.8	15.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
23	24.09.2021	GCS/LAB/S/2780/21-22	55	21	5.4	15.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
24	27.09.2021	GCS/LAB/S/2780/21-22	52	18	6.5	16.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1

Fig. no 3: Results of AAQ at Marine Control Tower



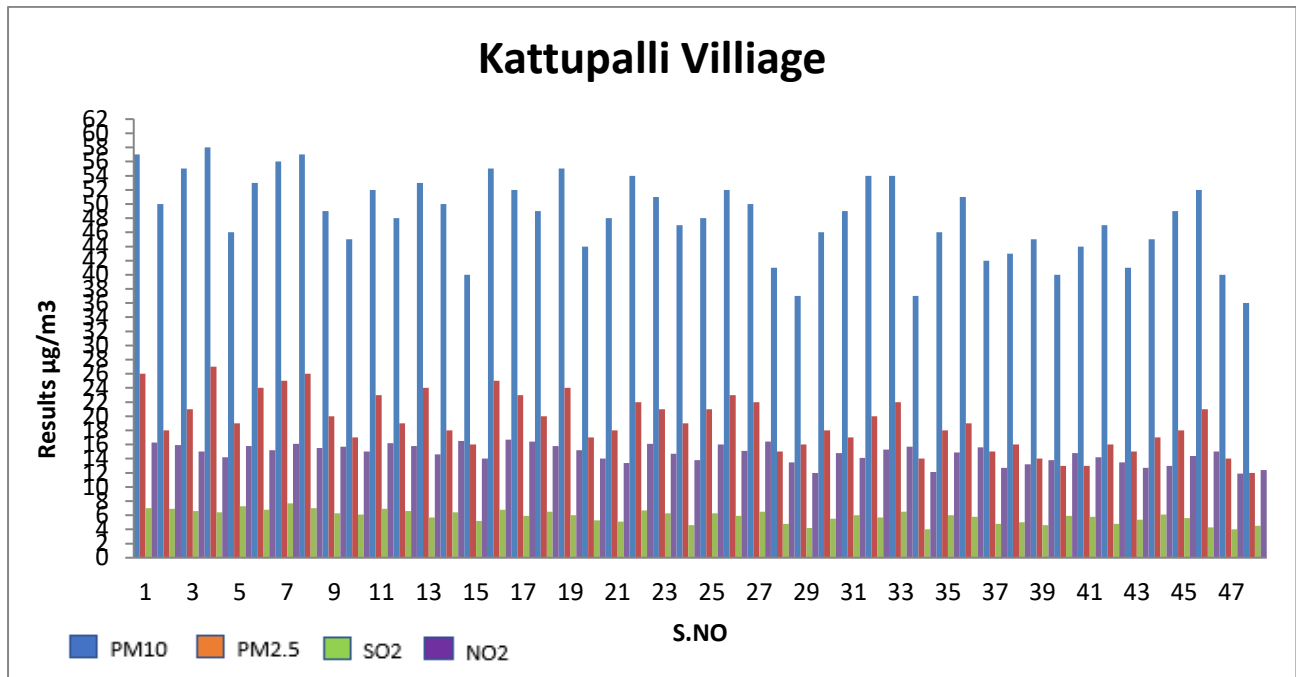
PORT MAIN GATE (AAQ2)														
Parameters			Particular matter PM10	Particular matter PM2.5	Sulphur dioxide as SO2	Nitrogen dioxide as NO2	Lead as Pb	Carbon monoxide as CO	Ozone as O3	Ammonia as NH3	Arsenic as As	Nickel as Ni	Benzene as C6H6	Benzo (a) pyrene as BaP
Unit			µg/m3	µg/m3	µg/m3	µg/m3	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	02.04.2021	GCS/LAB/S/3376/21-22	69	32	8.5	18.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
2	12.04.2021	GCS/LAB/S/3376/21-22	71	33	8.0	17.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
3	16.04.2021	GCS/LAB/S/3376/21-22	61	27	7.9	18.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
4	26.04.2021	GCS/LAB/S/3376/21-22	68	31	8.3	19.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
5	03.05.2021	GCS/LAB/S/3422/21-22	65	30	8.1	18.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
6	07.05.2021	GCS/LAB/S/3422/21-22	60	27	7.6	17.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
7	17.05.2021	GCS/LAB/S/3422/21-22	67	32	8.4	18.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
8	21.05.2021	GCS/LAB/S/3422/21-22	63	28	8.0	19.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
9	01.06.2021	GCS/LAB/S/3502/21-22	66	33	8.4	18.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
10	04.06.2021	GCS/LAB/S/3502/21-22	69	35	8.8	18.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
11	14.06.2021	GCS/LAB/S/3502/21-22	60	28	7.5	17.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
12	18.06.2021	GCS/LAB/S/3502/21-22	67	31	7.0	18.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
13	02.07.2021	GCS/LAB/S/3576/21-22	60	35	8.7	18.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
14	12.07.2021	GCS/LAB/S/3576/21-22	61	28	7.3	16.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
15	26.07.2021	GCS/LAB/S/3576/21-22	64	30	7.7	18.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
16	28.07.2021	GCS/LAB/S/3576/21-22	59	27	7.5	17.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
17	09.08.2021	GCS/LAB/S/3692/21-22	72	34	7.1	17.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
18	13.08.2021	GCS/LAB/S/3692/21-22	69	32	6.8	15.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
19	23.08.2021	GCS/LAB/S/3692/21-22	60	28	7.5	17.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
20	27.08.2021	GCS/LAB/S/3692/21-22	63	30	6.2	16.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
21	01.09.2021	GCS/LAB/S/2780/21-22	74	32	7.7	17.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
22	03.09.2021	GCS/LAB/S/2780/21-22	60	27	8.1	17.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
23	13.09.2021	GCS/LAB/S/2780/21-22	68	30	7.1	16.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
24	17.09.2021	GCS/LAB/S/2780/21-22	58	25	5.9	16.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1

Fig. no 4: Results of AAQ at Port Main Gate



KATTUPALLI VILLAGE (AAQ3)														
Parameters			Particular matter PM10	Particular matter PM2.5	Sulphur dioxide as SO2	Nitrogen dioxide as NO2	Lead as Pb	Carbon monoxide as CO	Ozone as O3	Ammonia as NH3	Arsenic as As	Nickel as Ni	Benzene as C6H6	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	02.04.2021	GCS/LAB/S/3376/21-22	57	26	7.0	16.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
2	07.04.2021	GCS/LAB/S/3376/21-22	50	18	6.9	15.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
3	09.04.2021	GCS/LAB/S/3376/21-22	55	21	6.6	15.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
4	12.04.2021	GCS/LAB/S/3376/21-22	58	27	6.4	14.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
5	16.04.2021	GCS/LAB/S/3376/21-22	46	19	7.3	15.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
6	19.04.2021	GCS/LAB/S/3376/21-22	53	24	6.8	15.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
7	23.04.2021	GCS/LAB/S/3376/21-22	56	25	7.7	16.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
8	26.04.2021	GCS/LAB/S/3376/21-22	57	26	7.0	15.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
9	03.05.2021	GCS/LAB/S/3422/21-22	49	20	6.3	15.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
10	07.05.2021	GCS/LAB/S/3422/21-22	45	17	6.1	15.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
11	12.05.2021	GCS/LAB/S/3422/21-22	52	23	6.9	16.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
12	14.05.2021	GCS/LAB/S/3422/21-22	48	19	6.6	15.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
13	17.05.2021	GCS/LAB/S/3422/21-22	53	24	5.7	14.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
14	21.05.2021	GCS/LAB/S/3422/21-22	50	18	6.4	16.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
15	25.05.2021	GCS/LAB/S/3422/21-22	40	16	5.2	14.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
16	27.05.2021	GCS/LAB/S/3422/21-22	55	25	6.8	16.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
17	01.06.2021	GCS/LAB/S/3502/21-22	52	23	5.9	16.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
18	04.06.2021	GCS/LAB/S/3502/21-22	49	20	6.5	15.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
19	07.06.2021	GCS/LAB/S/3502/21-22	55	24	6.0	15.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
20	11.06.2021	GCS/LAB/S/3502/21-22	44	17	5.3	14.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
21	14.06.2021	GCS/LAB/S/3502/21-22	48	18	5.1	13.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
22	18.06.2021	GCS/LAB/S/3502/21-22	54	22	6.7	16.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
23	21.06.2021	GCS/LAB/S/3502/21-22	51	21	6.3	14.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
24	25.06.2021	GCS/LAB/S/3502/21-22	47	19	4.6	13.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
25	02.07.2021	GCS/LAB/S/3576/21-22	48	21	6.3	16.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
26	05.07.2021	GCS/LAB/S/3576/21-22	52	23	5.9	15.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
27	09.07.2021	GCS/LAB/S/3576/21-22	50	22	6.5	16.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
28	12.07.2021	GCS/LAB/S/3576/21-22	41	15	4.8	13.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
29	19.07.2021	GCS/LAB/S/3576/21-22	37	16	4.2	12.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
30	23.07.2021	GCS/LAB/S/3576/21-22	46	18	5.5	14.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
31	26.07.2021	GCS/LAB/S/3576/21-22	49	17	6.0	14.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
32	28.07.2021	GCS/LAB/S/3576/21-22	54	20	5.7	15.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
33	02.08.2021	GCS/LAB/S/3692/21-22	54	22	6.5	15.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
34	06.08.2021	GCS/LAB/S/3692/21-22	37	14	4.0	12.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
35	09.08.2021	GCS/LAB/S/3692/21-22	46	18	6.0	14.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
36	13.08.2021	GCS/LAB/S/3692/21-22	51	19	5.8	15.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
37	16.08.2021	GCS/LAB/S/3692/21-22	42	15	4.8	12.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
38	20.08.2021	GCS/LAB/S/3692/21-22	43	16	5.0	13.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
39	23.08.2021	GCS/LAB/S/3692/21-22	45	14	4.6	13.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
40	27.08.2021	GCS/LAB/S/3692/21-22	40	13	5.9	14.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
41	01.09.2021	GCS/LAB/S/2780/21-22	44	13	5.8	14.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
42	03.09.2021	GCS/LAB/S/2780/21-22	47	16	4.8	13.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
43	06.09.2021	GCS/LAB/S/2780/21-22	41	15	5.4	12.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
44	13.09.2021	GCS/LAB/S/2780/21-22	45	17	6.1	13.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
45	17.09.2021	GCS/LAB/S/2780/21-22	49	18	5.6	14.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
46	20.09.2021	GCS/LAB/S/2780/21-22	52	21	4.3	15.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
47	24.09.2021	GCS/LAB/S/2780/21-22	40	14	4.0	11.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
48	27.09.2021	GCS/LAB/S/2780/21-22	36	12	4.5	12.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1

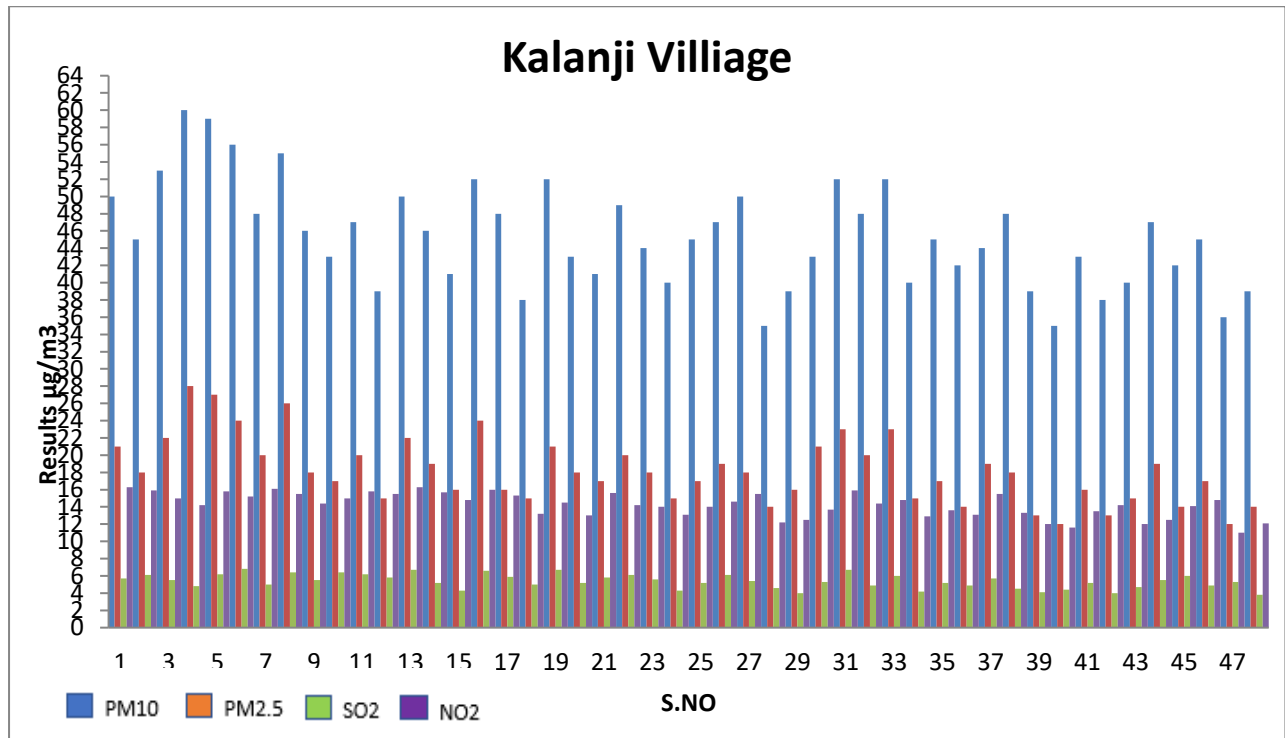
Fig. no 5: Results of AAQ at Kattupalli Village



KALANJI VILLAGE (AAQ4)														
Parameters			Particular matter PM10	Particular matter PM2.5	Sulphur dioxide as SO2	Nitrogen dioxide as NO2	Lead as Pb	Carbon monoxide as CO	Ozone as O3	Ammonia as NH3	Arsenic as As	Nickel as Ni	Benzene as C6H6	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	Report Number												
1	02.04.2021	GCS/LAB/S/3376/21-22	50	21	5.7	16.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
2	07.04.2021	GCS/LAB/S/3376/21-22	45	18	6.1	15.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
3	09.04.2021	GCS/LAB/S/3376/21-22	53	22	5.5	15.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
4	12.04.2021	GCS/LAB/S/3376/21-22	60	28	4.8	14.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
5	16.04.2021	GCS/LAB/S/3376/21-22	59	27	6.2	15.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
6	19.04.2021	GCS/LAB/S/3376/21-22	56	24	6.8	15.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
7	23.04.2021	GCS/LAB/S/3376/21-22	48	20	5.0	16.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
8	26.04.2021	GCS/LAB/S/3376/21-22	55	26	6.4	15.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
9	03.05.2021	GCS/LAB/S/3422/21-22	46	18	5.5	14.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
10	07.05.2021	GCS/LAB/S/3422/21-22	43	17	6.4	15.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
11	12.05.2021	GCS/LAB/S/3422/21-22	47	20	6.2	15.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
12	14.05.2021	GCS/LAB/S/3422/21-22	39	15	5.8	15.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
13	17.05.2021	GCS/LAB/S/3422/21-22	50	22	6.7	16.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
14	21.05.2021	GCS/LAB/S/3422/21-22	46	19	5.2	15.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
15	25.05.2021	GCS/LAB/S/3422/21-22	41	16	4.3	14.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
16	27.05.2021	GCS/LAB/S/3422/21-22	52	24	6.6	16.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
17	01.06.2021	GCS/LAB/S/3502/21-22	48	16	5.9	15.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
18	04.06.2021	GCS/LAB/S/3502/21-22	38	15	5.0	13.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
19	07.06.2021	GCS/LAB/S/3502/21-22	52	21	6.7	14.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
20	11.06.2021	GCS/LAB/S/3502/21-22	43	18	5.2	13.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
21	14.06.2021	GCS/LAB/S/3502/21-22	41	17	5.8	15.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
22	18.06.2021	GCS/LAB/S/3502/21-22	49	20	6.1	14.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
23	21.06.2021	GCS/LAB/S/3502/21-22	44	18	5.6	14.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
24	25.06.2021	GCS/LAB/S/3502/21-22	40	15	4.3	13.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
25	02.07.2021	GCS/LAB/S/3576/21-22	45	17	5.2	14.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
26	05.07.2021	GCS/LAB/S/3576/21-22	47	19	6.1	14.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
27	09.07.2021	GCS/LAB/S/3576/21-22	50	18	5.4	15.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
28	12.07.2021	GCS/LAB/S/3576/21-22	35	14	4.6	12.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
29	19.07.2021	GCS/LAB/S/3576/21-22	39	16	4.0	12.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
30	23.07.2021	GCS/LAB/S/3576/21-22	43	21	5.3	13.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
31	26.07.2021	GCS/LAB/S/3576/21-22	52	23	6.7	15.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
32	28.07.2021	GCS/LAB/S/3576/21-22	48	20	4.9	14.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
33	02.08.2021	GCS/LAB/S/3692/21-22	52	23	6.0	14.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
34	06.08.2021	GCS/LAB/S/3692/21-22	40	15	4.2	12.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
35	09.08.2021	GCS/LAB/S/3692/21-22	45	17	5.2	13.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
36	13.08.2021	GCS/LAB/S/3692/21-22	42	14	4.9	13.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
37	16.08.2021	GCS/LAB/S/3692/21-22	44	19	5.7	15.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
38	20.08.2021	GCS/LAB/S/3692/21-22	48	18	4.5	13.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
39	23.08.2021	GCS/LAB/S/3692/21-22	39	13	4.1	12.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
40	27.08.2021	GCS/LAB/S/3692/21-22	35	12	4.4	11.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1

41	01.09.2021	GCS/LAB/S/2780/21-22	43	16	5.2	13.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
42	03.09.2021	GCS/LAB/S/2780/21-22	38	13	4.0	14.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
43	06.09.2021	GCS/LAB/S/2780/21-22	40	15	4.7	12.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
44	13.09.2021	GCS/LAB/S/2780/21-22	47	19	5.5	12.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
45	17.09.2021	GCS/LAB/S/2780/21-22	42	14	6.0	14.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
46	20.09.2021	GCS/LAB/S/2780/21-22	45	17	4.9	14.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
47	24.09.2021	GCS/LAB/S/2780/21-22	36	12	5.3	11.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
48	27.09.2021	GCS/LAB/S/2780/21-22	39	14	3.8	12.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1

Fig. no 6: Results of AAQ at Kalanji Village



NATIONAL AMBIENT AIR QUALITY STANDARDS CENTRAL POLLUTION CONTROL BOARD

NOTIFICATION

New Delhi, the 18th November, 2009

No B-29016/20/90/PC-I-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, 1992, 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/m ³	Annual*	50	20	<ul style="list-style-type: none"> Improved West and Gaeke Ultraviolet fluorescence
		24 hours**	80	80	
2	Nitrogen Dioxide (NO ₂), µg/m ³	Annual*	40	30	<ul style="list-style-type: none"> Modified Jacob & Hochheiser (Na-Arsenite) Chemiluminescence
		24 hours**	80	80	
3	Particulate Matter (size less than 10 µm) or PM ₁₀ (µg/m ³)	Annual*	60	60	<ul style="list-style-type: none"> Gravimetric TOEM Beta attenuation
		24 hours**	100	100	
4	Particulate Matter (size less than 2.5 microns) or PM _{2.5} (µg/m ³)	Annual*	40	40	<ul style="list-style-type: none"> Gravimetric TOEM Beta attenuation
		24 hours**	60	60	
5	Ozone (O ₃), µg/m ³	8 hours**	100	100	<ul style="list-style-type: none"> UV photometric Chemiluminescence Chemical method
		1 hour**	180	180	
6	Lead (Pb) µg/m ³	Annual*	0.5	0.5	<ul style="list-style-type: none"> AAS / 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/m ³	8 hours**	2	2	Non Dispersive Infra RED Spectroscopy (NDIR)
		1 hour**	4	4	
8	Ammonia (NH ₃) µg/m ³	Annual*	100	100	<ul style="list-style-type: none"> Chemiluminescence Indophenol blue method
		24 hours**	400	400	
9	Benzene (C ₆ H ₆) µg/m ³	Annual*	5	5	<ul style="list-style-type: none"> Gas chromatography based continuous analyser Adsorption and desorption followed by GC analysis
10	Benzo (a) Pyrene (BaP) - particulate phase only ng/m ³	Annual*	1	1	Solvent extraction followed by HPLC / GC analysis
11	Arsenic (As) ng/m ³	Annual*	6	6	AAS / ICP method after sampling on EPM 2000 or equivalent filter paper
12	Nickel (Ni) ng/m ³	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.

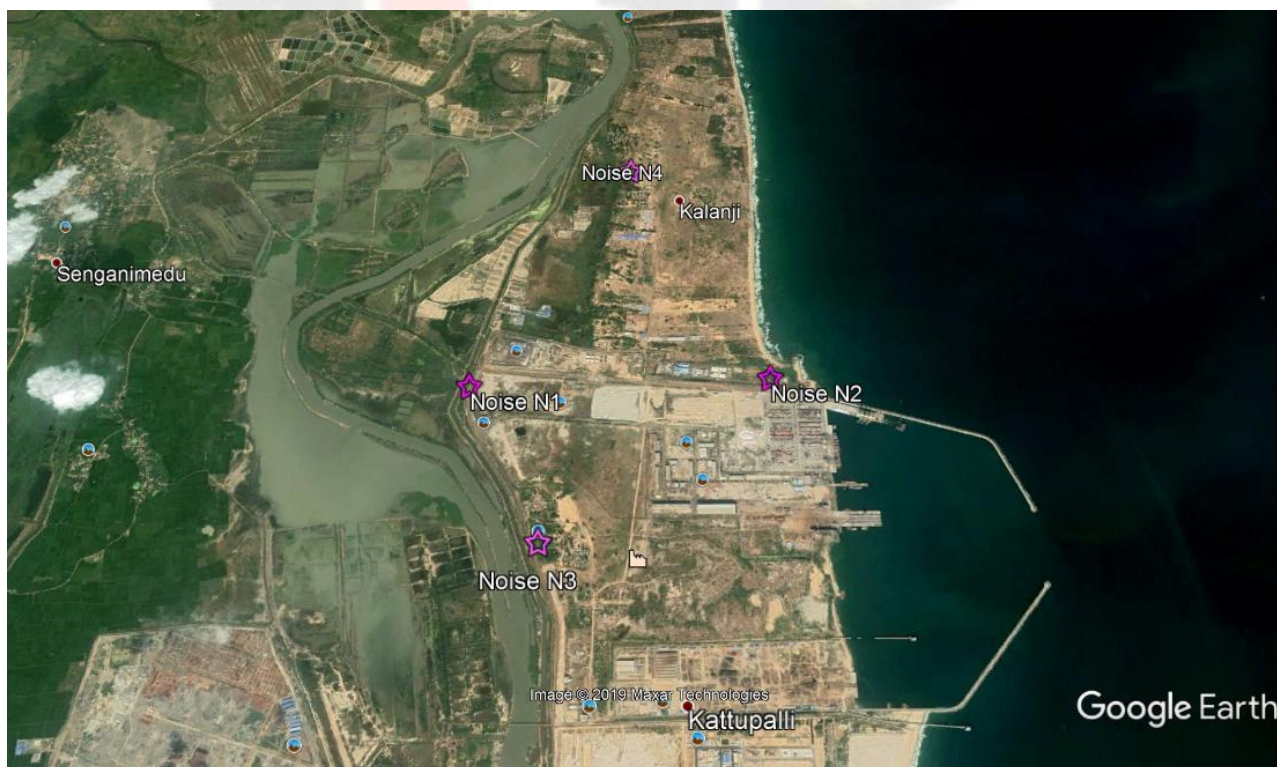
iii. AMBIENT NOISE LEVEL INTENSITY

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

DETAILS OF NOISE MONITORING LOCATIONS

STATION CODE	LOCATIONS	Geographical Location	Environmental setting
N1	Port main gate	N 13° 18.856' E 080° 19.478'	Industrial
N2	Marine control tower	N 13° 18.909' E 080° 20.756'	Industrial
N3	Kattupalli village	N 13° 18.342' E 080° 19.806'	Village
N4	Kalanji village	N 13° 20.156' E 080° 20.023'	Village

Fig - 7. 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

Location		PORT MAIN GATE						MARINE CONTROL TOWER					
Month & Year		Apr - 21	May - 21	Jun - 21	July - 21	Aug - 21	Sep - 21	Apr - 21	May - 21	Jun - 21	July - 21	Aug - 21	Sep - 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)	64.8	60.6	63.4	62.4	65.4	64.7	63.5	57.6	60.6	63.6	63.9	60.4
2	07.00 – 08.00	67.5	60.9	64	68.2	65.6	64.3	61.7	56.3	59.1	66.1	63.4	61.2
3	08.00 – 09.00	66.2	59.1	64.9	69.1	64.3	63.2	65.9	55	60.4	63.1	64.1	62.8
4	09.00 – 10.00	65.9	62.4	62.1	68.6	63.8	62.1	64.8	62.6	59.6	63	62.6	60.7
5	10.00 – 11.00	66.4	64.3	60.7	65.2	64.7	63.8	62.4	61.4	58.2	65.6	61.3	57.3
6	11.00 – 12.00	65	62	64.3	67.9	63.1	66.7	63.2	64.6	58.9	61.2	61.8	58.4
7	12.00 – 13.00	67.1	63.1	62.6	60.3	62.9	68.1	65	60.3	61.4	67.8	60.5	60.2
8	13.00 – 14.00	66.3	62.8	61.8	68.9	63.4	64.3	64.7	59.8	60.3	61.9	63.5	57.5
9	14.00 – 15.00	67.5	56.8	64.3	59.5	62.6	67.6	67.5	61.2	58.9	65	62.8	58.7
10	15.00 – 16.00	65.6	58.1	60.9	60	64.8	68.1	64	58.4	59.7	64.9	63.2	60.3
11	16.00 – 17.00	62.2	59.7	63.5	56.3	65.2	65.2	60.9	61	58.3	59.3	64.7	62.9
12	17.00 – 18.00	58.7	58.4	64.7	63	64.5	61.7	58.6	54.7	56.9	59.7	58.5	64.4
13	18.00 – 19.00	57.6	56.3	58.5	58.9	64	63.2	60.3	57.5	55.4	60.3	57.2	66.1
14	19.00 – 20.00	61.4	55	57.2	58.4	59.3	65.4	57.4	53.9	54.2	60.1	57.4	63.2
15	20.00 – 21.00	63.3	53.8	61	59.5	61.9	67.3	58.8	52.7	54.8	62	59.3	60.8
16	21.00 – 22.00	60.9	53.1	62.8	59.4	58.7	62	57	51.5	53	57	59	61.7
17	22.00 – 23.00 (Night)	57.6	52.1	55.8	60.3	57.6	59.5	54.9	48.6	51.2	54.3	56.3	58.8
18	23.00 – 00.00	59.4	50.6	54.5	58.6	59.1	60.3	56.6	49.1	48.5	55.6	59.7	60.3
19	00.00 – 01.00	58.5	54.8	56.7	62.1	60.8	62.8	55	45.7	49.8	54	55	57.5
20	01.00 – 02.00	56.8	53.1	53.4	58.7	62.7	63.1	53.1	47.5	52.4	51.9	53.2	55.9
21	02.00 – 03.00	57.3	50.4	52.8	60.5	63.4	60.9	54.7	46.3	53.1	52.4	52.4	54.2
22	03.00 – 04.00	56	48.6	52.3	61.3	64	63.5	55.4	45.9	51.9	53.6	53.5	58.1
23	04.00 – 05.00	58.1	50.1	56.4	63.7	62.6	64.9	55.8	46.3	54.6	54.8	53.8	56
24	05.00 – 06.00	61.7	54.9	58.1	57.9	63.3	66.2	58.3	51.6	53.3	55	58.1	56.7

Fig No. 8 Results of Ambient Noise Level Monitoring Data at Port Main Gate

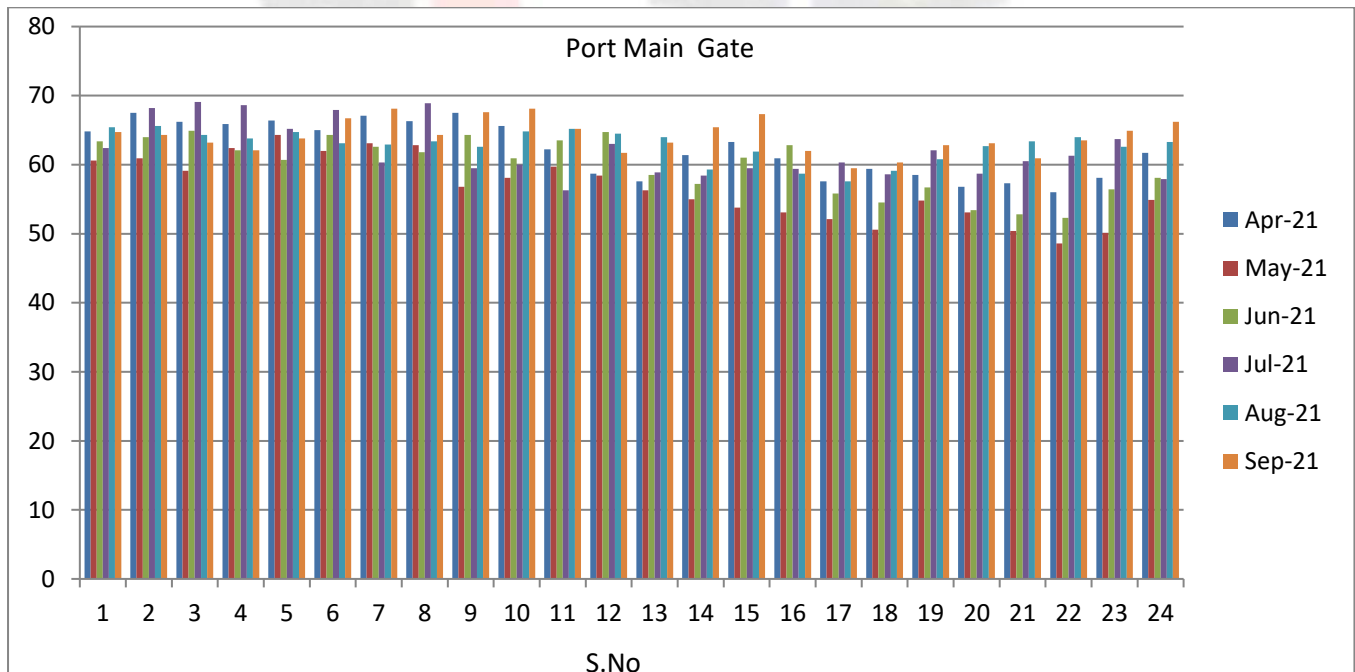
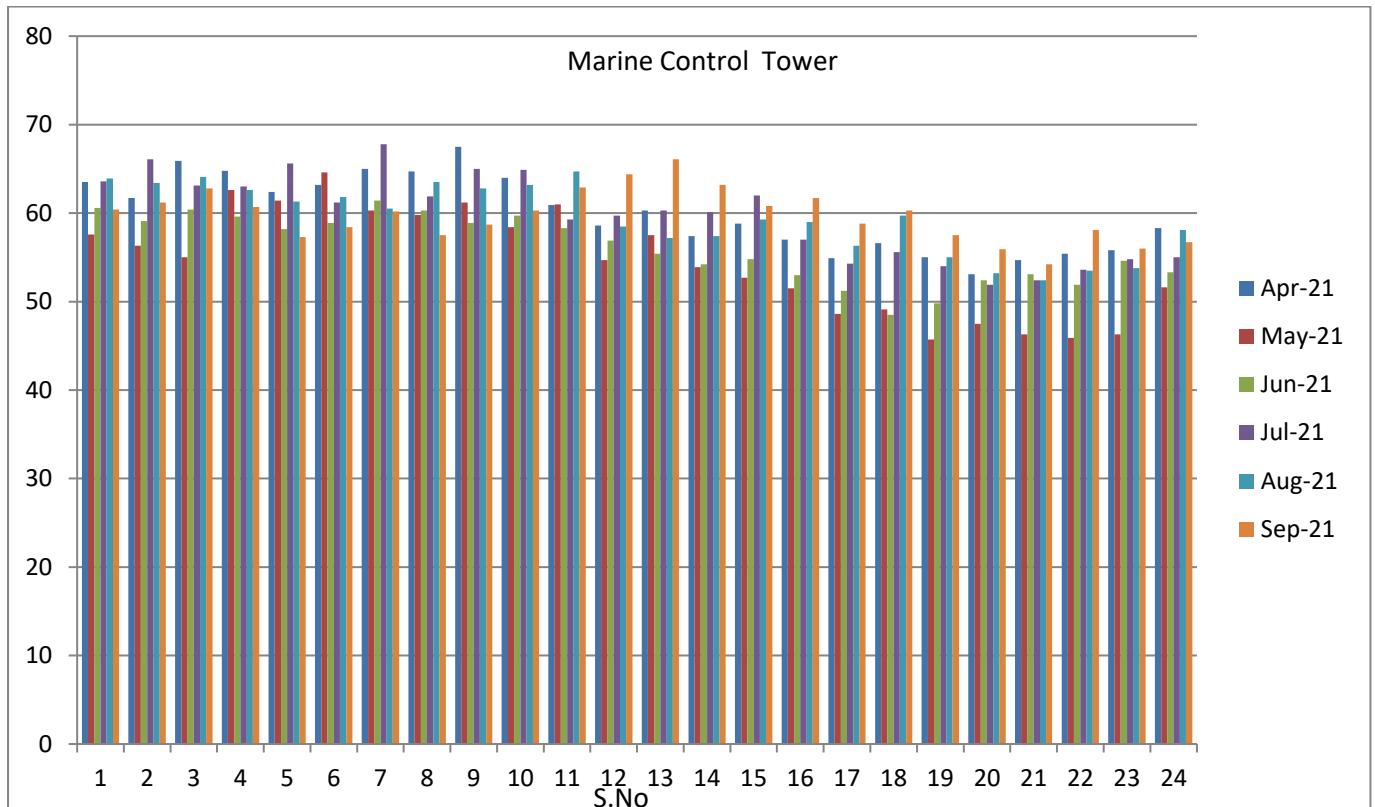
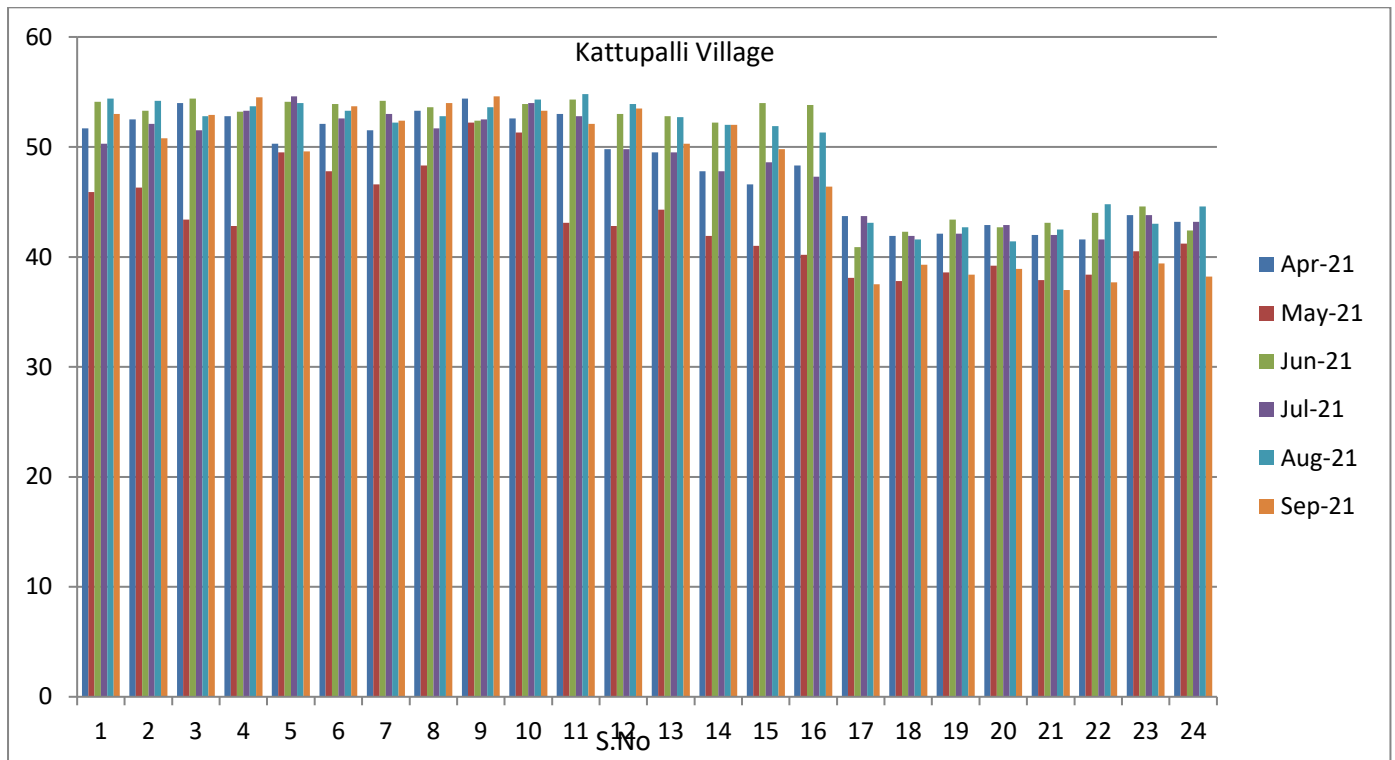
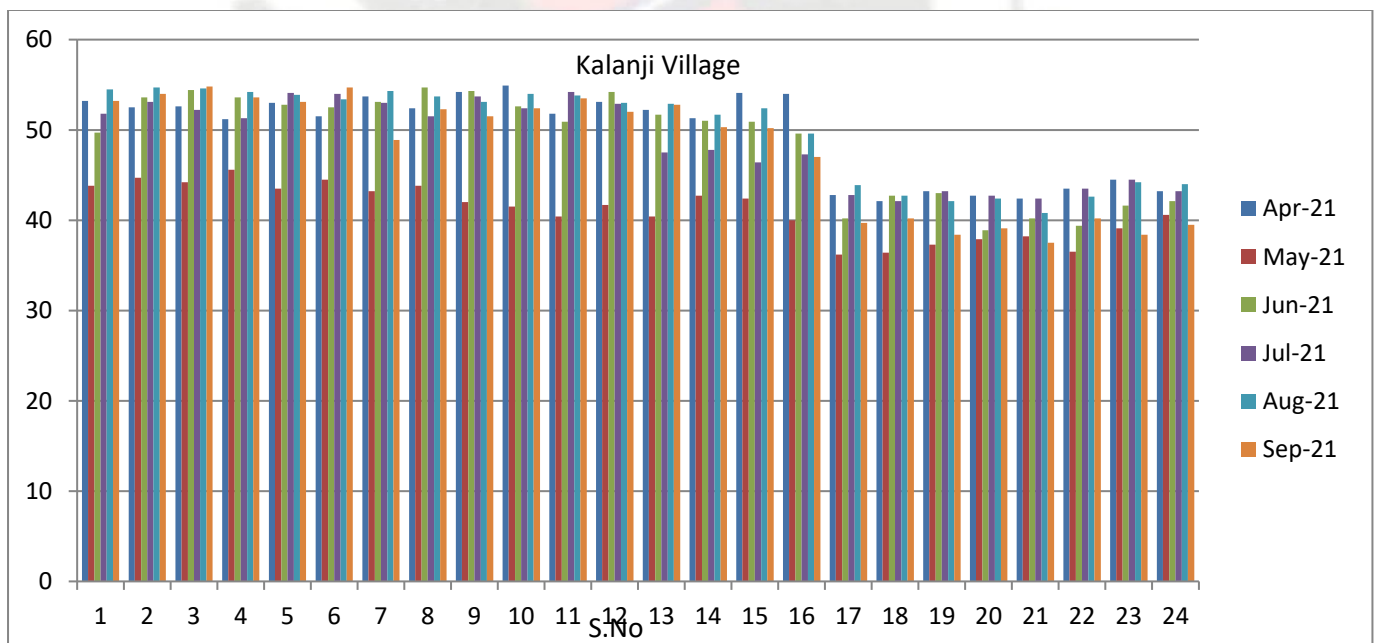


Fig No. 9 Results of Ambient Noise Level Monitoring Data at Marine Control Tower



Location		KATTUPALLI VILLAGE						KALANJI VILLAGE					
Month & Year		Apr - 21	May - 21	Jun - 21	July - 21	Aug - 21	Sep - 21	Apr - 21	May - 21	Jun - 21	July - 21	Aug - 21	Sep - 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)	51.7	45.9	54.1	50.3	54.4	53	53.2	43.8	49.7	51.8	54.5	53.2
2	07.00 – 08.00	52.5	46.3	53.3	52.1	54.2	50.8	52.5	44.7	53.6	53.1	54.7	54
3	08.00 – 09.00	54	43.4	54.4	51.5	52.8	52.9	52.6	44.2	54.4	52.2	54.6	54.8
4	09.00 – 10.00	52.8	42.8	53.2	53.3	53.7	54.5	51.2	45.6	53.6	51.3	54.2	53.6
5	10.00 – 11.00	50.3	49.5	54.1	54.6	54	49.6	53	43.5	52.8	54.1	53.9	53.1
6	11.00 – 12.00	52.1	47.8	53.9	52.6	53.3	53.7	51.5	44.5	52.5	54	53.4	54.7
7	12.00 – 13.00	51.5	46.6	54.2	53	52.2	52.4	53.7	43.2	53.1	53	54.3	48.9
8	13.00 – 14.00	53.3	48.3	53.6	51.7	52.8	54	52.4	43.8	54.7	51.5	53.7	52.3
9	14.00 – 15.00	54.4	52.2	52.4	52.5	53.6	54.6	54.2	42	54.3	53.7	53.1	51.5
10	15.00 – 16.00	52.6	51.3	53.9	54	54.3	53.3	54.9	41.5	52.6	52.4	54	52.4
11	16.00 – 17.00	53	43.1	54.3	52.8	54.8	52.1	51.8	40.4	50.9	54.2	53.8	53.5
12	17.00 – 18.00	49.8	42.8	53	49.8	53.9	53.5	53.1	41.7	54.2	52.9	53	52
13	18.00 – 19.00	49.5	44.3	52.8	49.5	52.7	50.3	52.2	40.4	51.7	47.5	52.9	52.8
14	19.00 – 20.00	47.8	41.9	52.2	47.8	52	52	51.3	42.7	51	47.8	51.7	50.3
15	20.00 – 21.00	46.6	41	54	48.6	51.9	49.8	54.1	42.4	50.9	46.4	52.4	50.2
16	21.00 – 22.00	48.3	40.2	53.8	47.3	51.3	46.4	54	40	49.6	47.3	49.6	47
17	22.00 – 23.00 (Night)	43.7	38.1	40.9	43.7	43.1	37.5	42.8	36.2	40.2	42.8	43.9	39.7
18	23.00 – 00.00	41.9	37.8	42.3	41.9	41.6	39.3	42.1	36.4	42.7	42.1	42.7	40.2
19	00.00 – 01.00	42.1	38.6	43.4	42.1	42.7	38.4	43.2	37.3	43	43.2	42.1	38.4
20	01.00 – 02.00	42.9	39.2	42.7	42.9	41.4	38.9	42.7	37.9	38.9	42.7	42.4	39.1
21	02.00 – 03.00	42	37.9	43.1	42	42.5	37	42.4	38.2	40.2	42.4	40.8	37.5
22	03.00 – 04.00	41.6	38.4	44	41.6	44.8	37.7	43.5	36.5	39.4	43.5	42.6	40.2
23	04.00 – 05.00	43.8	40.5	44.6	43.8	43	39.4	44.5	39.1	41.6	44.5	44.2	38.4
24	05.00 – 06.00	43.2	41.2	42.4	43.2	44.6	38.2	43.2	40.6	42.1	43.2	44	39.5

Fig No. 10 Results of Ambient Noise Level Monitoring Data at Kattupalli Port**Fig No. 11 Results of Ambient Noise Level Monitoring Data at Kattupalli Port**

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 DG - 1 2000 KVA, DG - 2 2000 KVA, DG-125 KVA and Liquid Terminal Hot Oil Generator Stack samplings are carried out, 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

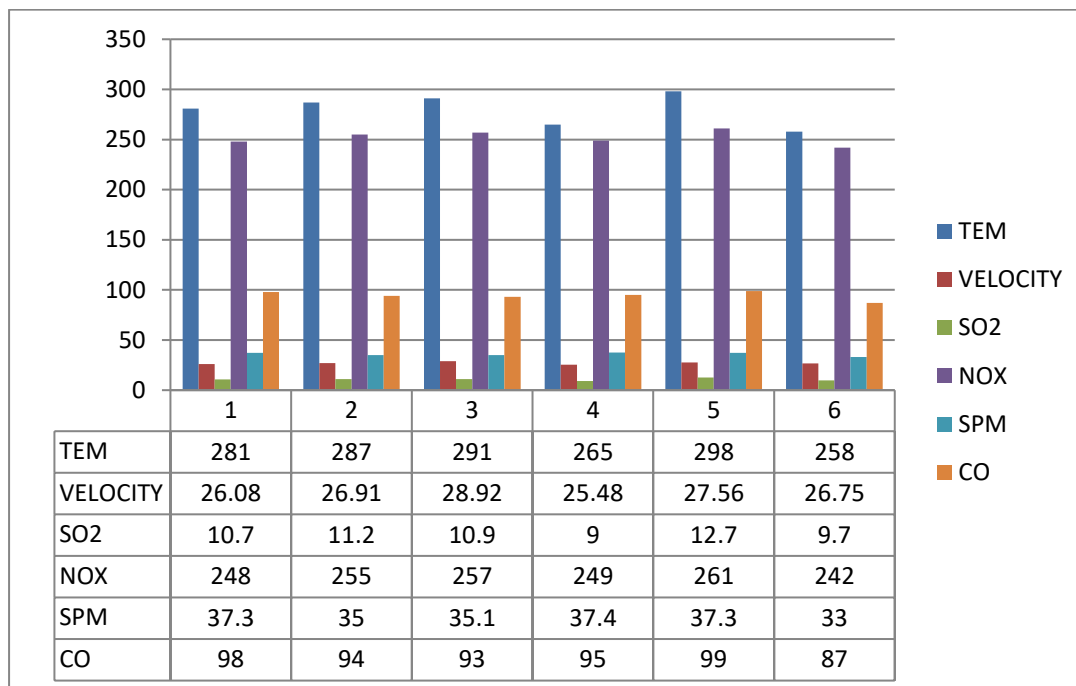
STATION CODE	LOCATIONS	Geographical Location
SM - 1	DG - 1 2000 KVA	13 ⁰ 19'6" N 80 ⁰ 19' 34" E
SM - 2	DG - 2 2000 KVA	
SM - 3	DG 125 KVA	13 ⁰ 18'36" N 80 ⁰ 20' 25" E
SM - 3	Liquid Terminal Hot Oil Generator Stack	13 ⁰ 19'2.38" N 80 ⁰ 20' 6.81" E

ANNEXURE - 4 RESULTS OF SOURCE EMISSION MONITORING DATA

STACK MONITORING							
Location		DG 2000KVA - 1				DG 2000KVA - 2	
Month & Year		Apr-21	May-21	Jul-21	Sep-21	Jun-21	Aug-21
S. No.	Parameters						
1	Stack Temperature, °C	281	287	291	265	298	258
2	Flue Gas Velocity, m/s	26.08	26.91	28.92	25.48	27.56	26.75
3	Sulphur Dioxide, mg/Nm3	10.7	11.2	10.9	9	12.7	9.7

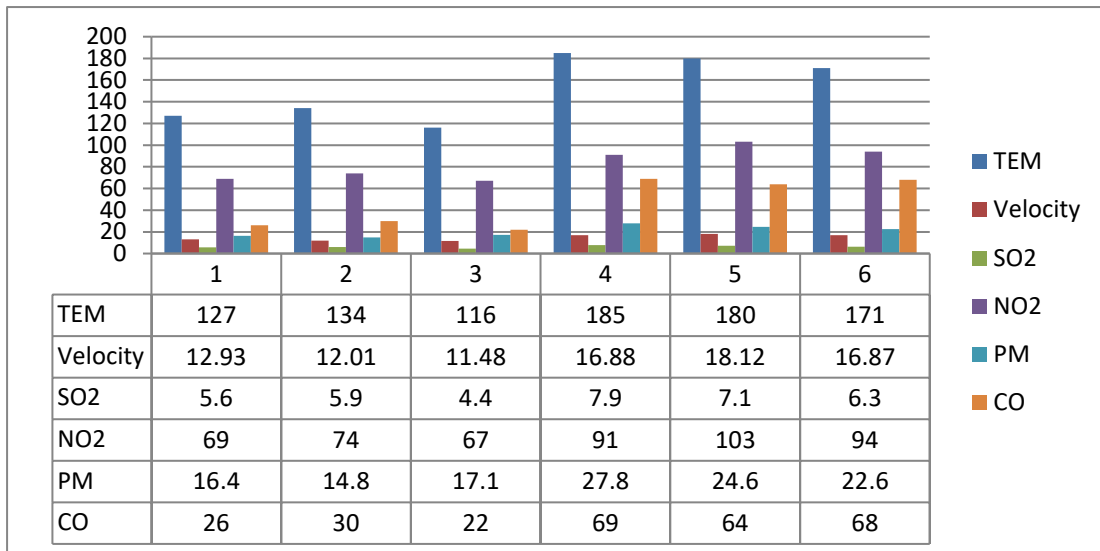
4	NOX (as NO ₂) in ppmv	248	255	257	249	261	242
5	Particular matter, mg/Nm ³	37.3	35	35.1	37.4	37.3	33
6	Carbon Monoxide, mg/Nm ³	98	94	93	95	99	87
7	Gas Discharge, Nm ³ /hr	6334	6465	6899	6372	6494	6778

Fig No.12 Results Of Source Emission Monitoring Data at DG - 1 2000 KVA, DG - 2 2000 KVA



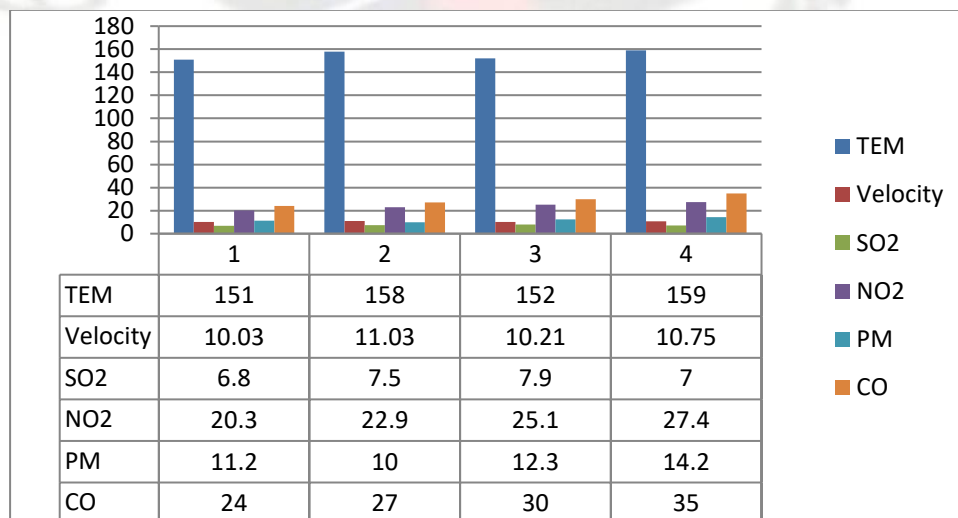
STACK MONITORING							
Location		DG 125 KVA			DG 500 KVA		
Month & Year		Apr-21	Jun-21	Jul-21	May-21	Jul-21	Sep-21
S.No.	Parameters						
1	Stack Temperature, °C	127	134	116	185	180	171
2	Flue Gas Velocity, m/s	12.93	12.01	11.48	16.88	18.12	16.87
3	Sulphur Dioxide, mg/Nm ³	5.6	5.9	4.4	7.9	7.1	6.3
4	NOX (as NO ₂) in ppmv	69	74	67	91	103	94
5	Particular matter, mg/Nm ³	16.4	14.8	17.1	27.8	24.6	22.6
6	Carbon Monoxide, mg/Nm ³	26	30	22	69	64	68
7	Gas Discharge, Nm ³ /hr	611	558	559	1639	1780	1690

Fig No.13 Results Of Source Emission Monitoring Data at DG-125 KVA and DG- 500 KVA



STACK MONITORING					
Location		Liquid Terminal- Hot Oil Generator Stack			
Month & Year		Apr-21	Jun-21	Jul-21	Sep-21
S.No.	Parameters				
1	Stack Temperature, °C	151	158	152	159
2	Flue Gas Velocity, m/s	10.03	11.03	10.21	10.75
3	Sulphur Dioxide, mg/Nm3	6.8	7.5	7.9	7.0
4	NOX (as NO2) in ppmv	20.3	22.9	25.1	27.4
5	Particular matter, mg/Nm3	11.2	10	12.3	14.2
6	Carbon Monoxide, mg/Nm3	24	27	30	35
7	Gas Discharge, Nm3/hr	36254	39221	36818	38137

Fig No.14 Results Of Source Emission Monitoring Data at Liquid Terminal- Hot Oil Generator Stack



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- Inlet and Treated Water Outlet
- 5 KLD- Inlet and Treated Water Outlet
- 10 KLD- Inlet and Treated Water Outlet

DETAILS OF STP WATER LOCATIONS

STATION CODE	LOCATIONS	Geographical Location
STP - 1	30 KLD	13° 18' 36" N 80° 20' 25" E
STP - 2	5 KLD	13° 19' 6" N 80° 19' 35" E
STP - 3	10 KLD	13° 19' 2.38" N 80° 20' 6.81" 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

STP WATER													
Location		STP 5KLD INLET						STP 5KLD OUTLET					
Month & Year		Apr - 21	May - 21	Jun - 21	July - 21	Aug - 21	Sep - 21	Apr - 21	May - 21	Jun - 21	July - 21	Aug - 21	Sep - 21
S.No	Parameters												
1	pH @ 25°C	6.96	6.69	7.02	7.02	6.19	6.85	7.73	7.22	7.49	7.49	6.94	7.24
2	Total Suspended	198	176	48	74	614	128	4.2	4	3	12	18	3.6
3	BOD at 27°C for 3	174	198	67	91	25	75	8.5	7	10.0	15.0	12	8
4	Fecal Coliform	450	670	480	710	620	620	91	110	136	194	280	280
5	COD	354	418	354	476	406	380	32	27	97	104	112	44
6	Oil & Grease	10	8.5	5.4	5	8.2	6	BDL	BDL	BDL	BDL	2.6	2
7	Total Dissolved Solids	1457	158	1428	1214	1088	1291	1175	1238	1284	1016	1140	9.75
8	Chlorides (as Cl)	496	524	526	440	429	458	471	490	514	429	453	402
9	Sulphates (as SO ₄)	18	15	21	16	45	20	52	39	16	18	47	28

STP WATER													
Location		STP 10KLD INLET						STP 10KLD OUTLET					
Month & Year		Apr - 21	May - 21	Jun - 21	July - 21	Aug - 21	Sep - 21	Apr - 21	May - 21	Jun - 21	July - 21	Aug - 21	Sep - 21
S.No	Parameters												
1	pH @ 25°C	6.51	6.57	6.72	7.45	7.31	7.28	7.31	7.23	7.83	7.71	7.88	7.92
2	Total Suspended	156	104	124	78	145	67	27	21	5.6	9	24	8.6
3	BOD at 27°C for 3	286	242	186	126	131	83	18	15	11	14	16	10
4	Fecal Coliform	850	810	740	650	810	520	354	280	218	182	290	94
5	COD	1120	986	618	484	428	341	232	82	69	92	88	52
6	Oil & Grease	16	12	10	7.5	8.4	5.2	4.6	3.8	BDL	BDL	BDL	BDL
7	Total Dissolved Solids	1564	1488	878	1350	1316	1242	1280	1124	950	614	1328	586
8	Chlorides (as Cl)	591	505	303	612	530	421	536	472	362	129	588	108
9	Sulphates (as SO4)	692	6.14	23	47	43	8.5	11	8.5	56	71	44	2.2

STP WATER													
Location		STP 30KLD INLET						STP 30KLD OUTLET					
Month & Year		Apr - 21	May - 21	Jun - 21	July - 21	Aug - 21	Sep - 21	Apr - 21	May - 21	Jun - 21	July - 21	Aug - 21	Sep - 21
S.No	Parameters												
1	pH @ 25°C	6.75	6.32	6.37	6.45	7.05	7.21	7.81	7.03	6.8	6.94	7.16	7.4
2	Total Suspended	244	164	178	156	286	92	29	13	12	7.8	22	26
3	BOD at 27°C for 3	248	205	296	248	320	378	16	12	14	18	16	14
4	Fecal Coliform	910	850	1280	1040	1340	1860	314	260	238	168	210	240
5	COD	856	798	1830	1124	1218	2414	202	68	81	114	119	192
6	Oil & Grease	14	10	14	11	13	18	5	2.4	3.1	2.5	2.5	3.1
7	Total Dissolved Solids	1522	1642	1286	1482	1474	1682	1218	1260	1120	1094	1016	1138
8	Chlorides (as Cl)	518	561	536	558	569	626	491	508	437	475	482	277
9	Sulphates (as SO4)	7.6	8	10	8.7	37	38	11	12	25	30	19	35

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	20

		Andaman and Nicobar Islands, Dadar and Nagar Haveli Daman and Diu and Lakshadweep	
		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.

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

DRINKING WATER									
Month & Year		Unit	Apr - 21	May - 21	Jun - 21	July - 21	Aug - 21	Sep - 21	IS: 10500-1991 R.2012 PERMISSIBLE LIMIT IN THE ABSENCE OF ALTERNATE SOURCE
S.No.	Parameters								
1	pH @ 25°C	-	7.18	7.96	8.36	7.74	8.23	8.05	6.5 – 8.5
2	Total Hardness as CaCo3	mg/L	4	10	10.0	4	4	BDL(DL:1.0)	600
3	Chloride as Cl	mg/L	8.93	13	13	14	16.3	23	1000
4	Total Dissolved Solids	mg/L	24	37	37	22	36	32	2000
5	Calcium as Ca	mg/L	0.8	0.8	1.6	0.8	0.8	BDL(DL:0.4)	200
6	Sulphate as SO4	mg/L	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)	400
7	Total Alkalinity as CaCo3	mg/L	10	12	10	5.2	5	10	600
8	Magnesium as Mg	mg/L	0.48	0.96	1.44	0.51	0.48	BDL(DL:0.24)	100
9	Color	Hazen	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	15
10	Odour	-	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable
11	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
12	Turbidity	NTU	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	5
13	Nitrate as No3	mg/L	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)	BDL(DL:1.0)	45
14	Iron as Fe	mg/L	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	0.3
15	Total Residual Chlorine	mg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	1
16	Copper as Cu	mg/L	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	1.5
17	Manganese as Mn	mg/L	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	0.3
18	Fluoride as F	mg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	1.5
19	Phenolic compounds as C6H5OH	mg/L	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	0.002
20	Mercury as Hg	mg/L	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	0.001
21	Cadmium as Cd	mg/L	BDL(DL 0.003)	BDL(DL 0.003)	BDL(DL 0.003)	BDL(DL 0.003)	BDL(DL 0.003)	BDL(DL 0.003)	0.003
22	Selenium as Se	mg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	0.01
23	Arsenic as As	mg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	0.05
24	Lead as Pb	mg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	0.01
25	Zinc as Zn	mg/L	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	15
26	Anionic Detergents as MBAS	mg/L	Nil	Nil	Nil	Nil	Nil	Nil	1.0

27	Total Chromium as Cr	mg/L	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	0.05
28	Phenolphthalein Alkalinity as CaCO ₃	mg/L	Nil	Nil	Nil	Nil	Nil	Nil	---
29	Aluminium as Al	mg/L	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	0.2
30	Boron as B	mg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	1.0
31	Mineral Oil	mg/L	Nil	Nil	Nil	Nil	Nil	Nil	0.5
32	Polynuclear Aromatic Hydrocarbons as	mg/L	Nil	Nil	Nil	Nil	Nil	Nil	0.0001
33	Pesticides	mg/L	Nil	Nil	Nil	Nil	Nil	Nil	-----
34	Cyanide as CN	mg/L	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	0.05
35	E. coli	MPN/100ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence
36	Total Coliform	MPN/100ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence

vii. RAIN WATER SAMPLE ANALYSIS

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

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

RAINWATER- HARVESTING POND WATER						
Month & Year		Unit	Apr - 21	May - 21	Jun - 21	July - 21
S.No.	Parameters					
1	pH @ 25°C	-	7.63	7.59	7.62	7.68
2	Total Hardness as CaCO ₃	mg/L	218	380	859	842
3	Chloride as Cl	mg/L	123	313	923	920
4	Total Dissolved Solids	mg/L	524	980	2284	2128
5	Calcium as Ca	mg/L	53	71	146	137
6	Sulphate as SO ₄	mg/L	27	38	372	390
7	Total Alkalinity as CaCO ₃	mg/L	197	273	343	303
8	Magnesium as Mg	mg/L	20	48	119	121
9	Color	Hazen	11	10	15	10
10	Odour	-	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable
11	Taste	-	Dis Agreeable	Dis Agreeable	Dis Agreeable	Dis Agreeable
12	Turbidity	NTU	4.6	4.8	8.5	12
13	Nitrate as NO ₃	mg/L	4.86	4.12	6.87	7.41
14	Iron as Fe	mg/L	0.27	0.25	0.44	0.39
15	Total Residual Chlorine	mg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
16	Copper as Cu	mg/L	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)
17	Manganese as Mn	mg/L	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)
18	Fluoride as F	mg/L	0.51	0.63	0.75	0.84
19	Phenolic compounds as C ₆ H ₅ OH	mg/L	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)
20	Mercury as Hg	mg/L	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)
21	Cadmium as Cd	mg/L	BDL(DL 0.003)	BDL(DL 0.003)	BDL(DL 0.003)	BDL(DL 0.003)
22	Selenium as Se	mg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
23	Arsenic as As	mg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
24	Lead as Pb	mg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
25	Zinc as Zn	mg/L	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)
26	Anionic Detergents as MBAS	mg/L	Nil	Nil	Nil	Nil
27	Total Chromium as Cr	mg/L	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)
28	Phenolphthalein Alkalinity as CaCO ₃	mg/L	Nil	Nil	Nil	Nil
29	Aluminium as Al	mg/L	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)
30	Boron as B	mg/L	0.52	0.56	0.91	0.89
31	Mineral Oil	mg/L	Nil	Nil	Nil	Nil
32	Polynuclear Aromatic Hydrocarbons as	mg/L	Nil	Nil	Nil	Nil
33	Pesticides	mg/L	Nil	Nil	Nil	Nil
34	Cyanide as CN	mg/L	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)
35	E. coli	MPN/100ml	Absence	Absence	Absence	Absence
36	Total Coliform	MPN/100ml	Absence	Absence	Absence	Absence

viii. RAW WATER SAMPLE ANALYSIS

Raw water samples were collected at raw water pumphouse. Analysis results of the water sample collected from the above location are enclosed as Annexure - 8.

ANNEXURE - 8 RESULTS OF RAW WATER SAMPLE QUALITY DATA

RAW WATER SAMPLE							
Month & Year		Unit	Apr - 21	May - 21	Jun - 21	July - 21	Aug - 21
S.No.	Parameters						
1	pH @ 25°C	-	7.12	7.9	7.9	7.75	7.47
2	Total Hardness as CaCO ₃	mg/L	77	81	93.0	79	56.5
3	Chloride as Cl	mg/L	409	427	476	455	424
4	Total Dissolved Solids	mg/L	768	820	918	840	788
5	Calcium as Ca	mg/L	8	9.6	9.6	11.6	8
6	Sulphate as SO ₄	mg/L	22	29	24	17	12
7	Total Alkalinity as CaCO ₃	mg/L	20	15	18	15	20
8	Magnesium as Mg	mg/L	13.9	13.7	16.6	12.1	8.8
9	Color	Hazen	10	5	10	5	5
10	Odour	-	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable
11	Taste	-	Dis Agreeable	Dis Agreeable	Dis Agreeable	Dis Agreeable	Dis Agreeable
12	Turbidity	NTU	1.9	BDL(DL 0.5)	BDL(DL 0.5)	1.0	0.5
13	Nitrate as NO ₃	mg/L	1.89	1.58	2.41	2.95	3.16
14	Iron as Fe	mg/L	0.13	0.08	0.06	0.08	0.02
15	Total Residual Chlorine	mg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
16	Copper as Cu	mg/L	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)
17	Manganese as Mn	mg/L	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)
18	Fluoride as F	mg/L	0.51	0.63	0.84	0.84	0.84
19	Phenolic compounds as C ₆ H ₅ OH	mg/L	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)
20	Mercury as Hg	mg/L	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)
21	Cadmium as Cd	mg/L	BDL(DL 0.003)	BDL(DL 0.003)	BDL(DL 0.003)	BDL(DL 0.003)	BDL(DL 0.003)
22	Selenium as Se	mg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
23	Arsenic as As	mg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
24	Lead as Pb	mg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
25	Zinc as Zn	mg/L	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)
26	Anionic Detergents as MBAS	mg/L	Nil	Nil	Nil	Nil	Nil
27	Total Chromium as Cr	mg/L	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)
28	Phenolphthalein Alkalinity as CaCO ₃	mg/L	Nil	Nil	Nil	Nil	Nil
29	Aluminium as Al	mg/L	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)
30	Boron as B	mg/L	0.28	0.31	0.34	0.5	0.77
31	Mineral Oil	mg/L	Nil	Nil	Nil	Nil	Nil
32	Polynuclear Aromatic Hydrocarbons as	mg/L	Nil	Nil	Nil	Nil	Nil
33	Pesticides	mg/L	Nil	Nil	Nil	Nil	Nil
34	Cyanide as CN	mg/L	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)
35	E. coli	MPN/100ml	Absence	Absence	Absence	Absence	Absence
36	Total Coliform	MPN/100ml	Absence	Absence	Absence	Absence	Absence

ix. Marine Sampling

Marine Water samples and sediment samples were collected at berths. Analysis data of Marine and sediments as represented in Annexure - 9 & 10.

DETAILS OF MARINE WATER AND SEDIMENT LOCATIONS

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

Fig - 15. Water and Marine Sampling Locations



ANNEXURE - 9 RESULTS OF MARINE WATER QUALITY DATA

MARINE WATER														
S.NO	PARAMETER	UNITS	CB - 1											
			Apr-21		May-21		Jun-21		Jul-21		Aug-21		Sep-21	
Physicochemical Parameters			Surface	Bottom	Surface	Bottom	Surface	Bottom	Surface	Bottom	Surface	Bottom	Surface	Bottom
1	Colour	Hazan	15	25	25	30	20	25	25	35	20	45	15	40
2	Odour	-	Unobjectionable											
3	pH @ 25°C	-	8.24	8.37	8.14	8.21	7.99	806	8.02	8.37	8.07	8.25	7.86	8.09
4	Temperature	°C	29	29	29	29	29	29	28	28	29	29	30	30
5	Turbidity	NTU	5.2	7.4	5.7	8.5	5.2	11	8.6	13.1	27	40	18	37
6	Total Suspended Solids	mg/L	8.6	10	8	13	8.4	16	10	19	24	31	20	28
7	BOD at 27 oC for 3 days	mg/L	4.2	4.4	4.6	4.1	4.8	4.5	4.5	4	4.2	4.9	4.3	4.6
8	COD	mg/L	106	132	114	138	124	144	108	132	116	150	128	141
9	Dissolved oxygen	mg/L	2.4	2.6	2.6	2.7	2.8	2.6	3.1	2.5	2.9	2.7	2.7	2.6
10	Salinity at 25 °C	ppt	30.5	32.6	31.3	32.1	30.8	31.9	31.6	32.3	38.5	41.2	39.2	40
11	Oil & Grease	mg/L	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)
Nutrient Parameters														
12	Nitrate as No3	mg/L	4.87	6.17	4.12	7.12	4.86	8.53	5.17	7.45	5.86	8.18	6.28	11
13	Nitrite as No2	mg/L	1.83	2.41	1.56	2.57	1.8	2.03	2.06	2.84	2.56	3.12	2.04	2.7
14	Ammonical Nitrogen	mg/L	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)
15	Total Nitrogen	mg/L	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)
16	Inorganic phosphates as PO4	mg/L	3.56	3.96	4.47	4.42	5.12	4.91	4.32	6.18	4.86	7.81	5.71	6.24
17	Silica as SiO2	mg/L	2.98	4.96	2.53	4.05	2.91	4.68	3.18	5.42	3.71	5.91	4.29	6.41
18	Particulate Organic Carbon	µgC/L	8	18	11	17	14	18	11	19	14	17	17	15
19	Pertoleum Hydrocarbons	µg/L	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)
Heavy Metals														
20	Cadmium as Cd	mg/L	BDL (DL : 0.003)	BDL (DL : 0.003)	BDL (DL : 0.003)	BDL (DL : 0.003)	BDL (DL : 0.003)	BDL (DL : 0.003)	BDL (DL : 0.003)	BDL (DL : 0.003)	BDL (DL : 0.003)	BDL (DL : 0.003)	BDL (DL : 0.003)	BDL (DL : 0.003)
21	Copper as Cu	mg/L	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)
22	Total Iron as Fe	mg/L	0.31	0.38	0.38	0.45	0.42	0.55	0.35	0.75	0.45	0.78	0.52	0.71
23	Zinc as Zn	mg/L	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)
24	Lead as Pb	mg/L	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)
25	Mercury as Hg	mg/L	BDL (DL : 0.001)	BDL (DL : 0.001)	BDL (DL : 0.001)	BDL (DL : 0.001)	BDL (DL : 0.001)	BDL (DL : 0.001)	BDL (DL : 0.001)	BDL (DL : 0.001)	BDL (DL : 0.001)	BDL (DL : 0.001)	BDL (DL : 0.001)	BDL (DL : 0.001)
26	Nickel as Ni	mg/L	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)
27	Total Chromium as Cr	mg/L	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)
Bacteriological Parameters														
28	Escherichia Coli (ECLO)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence
29	Faecal Coliform (FCLO)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence
30	Pseudomonas aeruginosa (PALO)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence
31	Streptococcus faecalis (SFLO)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence
32	Shigella (SHLO)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence
33	Salmonella (SLO)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence
34	Total Coliform (TC)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence
35	Total Viable Count (TVC)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence
36	Vibrio cholera (VC)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence
37	Vibrio	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence

CB - 1														
Month & Year			Apr-21		May-21		Jun-21		Jul-21		Aug-21		Sep-21	
S.N	Parameters	Unit	Surface	Bottom	Surface	Bottom	Surface	Bottom	Surface	Bottom	Surface	Bottom	Surface	Bottom
38	Primary Productivity	mg C/m ³ /hr	8.64	9.71	8.12	9.05	8.86	9.43	8.12	9.87	8.12	9.87	8.86	10.21
39	Chlorophyll a	mg /m ³	6.81	7.45	7.45	6.12	6.44	6.86	5.29	5.45	5.29	5.45	5.74	5.82
40	Phaeopigment	mg /m ³	3.12	3.77	3.54	3.96	3.26	3.5	2.84	3.79	2.84	3.79	2.86	3.91
41	Total Biomass	ml /100 m ³	1.75	2.44	1.58	2.12	1.81	1.75	1.48	1.32	1.48	1.32	1.69	1.45
PHYTOPLANKTON														
42	Bacteriastrium hyalinum	nos/ml	11	15	14	18	11	14	9	16	16	20	14	12
43	Bacteriastrium varians	nos/ml	8	12	9	11	13	10	15	13	18	17	12	13
44	Chaetoceros didymus	nos/ml	13	16	11	14	10	16	8	11	15	12	10	8
45	Chaetoceros decipiens	nos/ml	10	11	13	12	15	18	12	15	14	16	16	9
46	Biddulphia mobiliensis	nos/ml	14	17	12	15	8	11	16	14	17	19	21	17
47	Ditylum brightwellii	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
48	Gyrosigma sp	nos/ml	16	13	10	8	14	12	10	17	7	8	11	5
49	Cladophyxis sps	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
50	Coscinodiscus centralis	nos/ml	9	15	8	13	12	15	11	10	14	13	9	7
51	Coscinodiscus granii	nos/ml	21	23	17	20	16	18	19	22	12	10	17	14
52	Cylotella sps	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
53	Hemidiscus hardmanianus	nos/ml	7	10	14	9	9	7	14	16	18	15	20	11
54	Laudaria annulata	nos/ml	12	14	19	10	13	15	18	20	14	18	8	15
55	Pyropacus horologicum	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
56	Pleurosigma angulatum	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
57	Leptocylindrus danicus	nos/ml	19	22	21	13	22	19	20	22	22	21	19	23
58	Guinardia flaccida	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
59	Rhizosolenia alata	nos/ml	6	15	5	19	7	14	13	17	6	7	13	10
60	Rhizosolenia impricata	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
61	Rhizosolenia semispina	nos/ml	22	25	20	22	21	23	24	27	20	17	25	22
62	Thalassionema nitzschioides	nos/ml	16	13	18	15	17	19	21	25	8	13	14	10
63	Triceratium reticulatum	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
64	Ceratium trichoceros	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
65	Ceratium furca	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
66	Ceratium macroceros	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
67	Ceracium longipes	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
ZOOPLANKTONS														
68	Acrocalanus gracilis	nos/ml	17	13	13	16	10	14	13	17	12	10	16	13
69	Acrocalanus sp	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
70	Paracalanus parvus	nos/ml	7	11	16	14	12	10	8	13	11	15	14	17
71	Eutintinus sps	nos/ml	19	21	14	12	15	17	12	10	17	12	10	9
72	Centropages furcatus	nos/ml	14	16	10	16	8	11	10	15	13	16	8	10
73	Corycaeus dana	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
74	Oithona brevicornis	nos/ml	15	19	11	15	14	18	7	11	9	13	11	7
75	Euterpina acutifrons	nos/ml	18	23	9	13	11	15	15	19	18	11	21	18
76	Metacalanus aurivilli	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
77	Copepod nauplii	nos/ml	10	8	19	17	17	13	11	8	16	18	19	20
78	Cirripede nauplii	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
79	Bivalve veliger	nos/ml	18	20	12	15	13	16	18	20	14	19	17	14
80	Gastropod veliger	nos/ml	11	15	8	17	7	11	13	17	19	21	22	24

S.NO	PARAMETER	UNITS	CB - 2											
			Apr-21		May-21		Jun-21		Jul-21		Aug-21		Sep-21	
Physicochemical Parameters			Surface	Bottom	Surface	Bottom	Surface	Bottom	Surface	Bottom	Surface	Bottom	Surface	Bottom
1	Colour	Hazan	20	25	25	35	15	30	25	40	15	55	15	45
2	Odour	-	Unobjectionable											
3	pH @ 25°C	-	8.36	8.49	8.1	8.25	7.92	8.04	8.06	8.28	8.01	8.21	7.94	8.03
4	Temperature	°C	29	29	29	29	29	29	28	28	29	29	30	30
5	Turbidity	NTU	7.8	7.8	7.1	9.2	8.6	10.2	5.4	12.6	21	48	23	44
6	Total Suspended Solids	mg/L	15	17	12	18	14	14	9.2	17	15	36	21	32
7	BOD at 27 oC for 3 days	mg/L	4.3	4.8	4.5	4.6	4.1	4.8	4	4.7	4.9	4.2	4.6	4.5
8	COD	mg/L	121	135	110	127	118	140	102	120	120	140	132	148
9	Dissolved oxygen	mg/L	2.5	2.6	2.7	2.8	2.9	2.5	3	2.4	3.1	2.6	2.8	2.5
10	Salinity at 25 °C	ppt	29.4	33.4	30.6	32.7	30.5	31.4	32.1	32.6	40.3	42.4	39.6	41.2
11	Oil & Grease	mg/L	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)
Nutrient Parameters														
12	Nitrate as No3	mg/L	6.02	6.96	5.36	7.56	6.43	7.98	5.64	6.92	6.12	7.58	6.93	9.47
13	Nitrite as No2	mg/L	2.17	2.58	2.01	2.14	2.58	2.45	2.42	2.77	2.37	3.05	2.55	3.52
14	Ammonical Nitrogen	mg/L	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)
15	Total Nitrogen	mg/L	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)
16	Inorganic phosphates as PO4	mg/L	4.81	4.05	4.05	4.81	5.64	5.24	4.07	7.25	4.54	6.59	4.98	7.45
17	Silica as SiO2	mg/L	3.65	5.47	3.42	5.16	3.8	5	3.52	5.96	3.69	5.85	5.12	6.88
18	Particulate Organic Carbon	µgC/L	12	20	13	19	15	17	13	18	10	16	14	30
19	Pertoleum Hydrocarbons	µg/L	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)
Heavy Metals														
20	Cadmium as Cd	mg/L	BDL (DL : 0.003)	BDL (DL : 0.003)	BDL (DL : 0.003)	BDL (DL : 0.003)	BDL (DL : 0.003)	BDL (DL : 0.003)	BDL (DL : 0.003)	BDL (DL : 0.003)	BDL (DL : 0.003)	BDL (DL : 0.003)	BDL (DL : 0.003)	BDL (DL : 0.003)
21	Copper as Cu	mg/L	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)
22	Total Iron as Fe	mg/L	0.31	0.38	0.38	0.45	0.42	0.55	0.35	0.75	0.45	0.78	0.52	0.71
23	Zinc as Zn	mg/L	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)
24	Lead as Pb	mg/L	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)
25	Mercury as Hg	mg/L	BDL (DL : 0.001)	BDL (DL : 0.001)	BDL (DL : 0.001)	BDL (DL : 0.001)	BDL (DL : 0.001)	BDL (DL : 0.001)	BDL (DL : 0.001)	BDL (DL : 0.001)	BDL (DL : 0.001)	BDL (DL : 0.001)	BDL (DL : 0.001)	BDL (DL : 0.001)
26	Nickel as Ni	mg/L	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)
27	Total Chromium as Cr	mg/L	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)
Bacteriological Parameters														
28	Escherichia Coli (ECLO)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence
29	Faecal Coliform (FCLO)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence
30	Pseudomonas aeruginosa (PALO)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence
31	Streptococcus faecalis (SFLO)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence
32	Shigella (SHLO)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence
33	Salmonella (SLO)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence
34	Total Coliform (TC)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence
35	Total Viable Count (TVC)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence
36	Vibrio cholera (VC)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence
37	Vibrio	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence

CB - 2														
Month & Year			Apr-21		May-21		Jun-21		Jul-21		Aug-21		Sep-21	
S.N	Parameters	Unit	Surface	Bottom	Surface	Bottom	Surface	Bottom	Surface	Bottom	Surface	Bottom	Surface	Bottom
38	Primary Productivity	mg C/m ³ /hr	9.04	9.96	9.86	10.42	9.12	10.05	9.47	10.58	9.47	10.58	9.05	10.12
39	Chlorophyll a	mg /m ³	6.59	7.83	7.21	7.96	7.9	7.17	7.03	6.45	7.03	6.45	6.58	7.21
40	Phaeopigment	mg /m ³	2.45	3.2	2.87	3.59	3.05	3.14	3.56	3.92	3.56	3.92	3.13	3.75
41	Total Biomass	ml /100 m ³	1.53	2.28	1.65	2.03	1.93	1.86	2.05	1.97	2.05	1.97	2.37	2.06
PHYTOPLANKTON														
42	Bacteriastrium hyalinum	nos/ml	14	17	12	15	8	11	10	15	15	17	13	12
43	Bacteriastrium varians	nos/ml	10	15	7	12	11	14	12	17	16	14	8	6
44	Chaetoceros didymus	nos/ml	15	18	10	13	12	17	14	10	13	15	19	21
45	Chaetoceros decipiens	nos/ml	19	20	8	17	10	13	16	18	7	9	12	14
46	Biddulphia mobiliensis	nos/ml	11	13	6	10	9	12	11	14	14	15	18	10
47	Ditylum brightwellii	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
48	Gyrosigma sp	nos/ml	18	22	13	16	16	18	8	13	6	5	9	11
49	Cladophyxys sps	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
50	Coscinodiscus centralis	nos/ml	12	14	6	9	13	16	7	10	12	16	16	19
51	Coscinodiscus granii	nos/ml	17	21	9	14	11	15	15	19	8	9	18	22
52	Cylcotella sps	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
53	Hemidiscus hardmanianus	nos/ml	9	12	5	7	6	9	13	17	19	22	17	20
54	Laudaria annulata	nos/ml	13	16	11	15	14	19	16	22	8	12	11	7
55	Pyropacus horologicum	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
56	Pleurosigma angulatum	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
57	Leptocylindrus danicus	nos/ml	17	23	19	24	21	25	15	19	17	18	13	12
58	Guinardia flaccida	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
59	Rhizosolenia alata	nos/ml	8	11	12	18	10	14	8	12	9	11	14	16
60	Rhizosolenia impricata	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
61	Rhizosolenia semispina	nos/ml	24	28	19	25	23	26	19	22	18	16	21	23
62	Thalassionema nitzschioides	nos/ml	19	23	21	26	18	20	24	28	11	13	15	17
63	Triceratium reticulatum	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
64	Ceratium trichoceros	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
65	Ceratium furca	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
66	Ceratium macroceros	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
67	Ceracium longipes	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
ZOOPLANKTONS														
68	Acrocalanus gracilis	nos/ml	15	10	11	15	12	17	10	15	14	18	19	23
69	Acrocalanus sp	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
70	Paracalanus parvus	nos/ml	10	14	9	18	11	14	7	10	9	12	16	17
71	Eutintinus sps	nos/ml	17	20	13	17	10	12	16	14	10	8	13	14
72	Centropages furcatus	nos/ml	18	12	14	10	13	15	5	9	8	12	11	13
73	Corycaeus dana	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
74	Oithona brevicornis	nos/ml	22	24	18	20	15	19	10	13	11	16	14	11
75	Euterpina acutifrons	nos/ml	20	22	11	14	13	18	17	21	13	14	10	8
76	Metacalanus aurivilli	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
77	Copepod nauplii	nos/ml	11	13	15	19	9	11	6	5	11	9	15	12
78	Cirripede nauplii	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
79	Bivalve veliger	nos/ml	14	17	10	13	12	16	15	18	17	13	11	10
80	Gastropod veliger	nos/ml	16	19	14	17	9	8	11	14	18	22	20	25

S.NO	PARAMETER	UNITS	BERTH - 3											
			Apr-21		May-21		Jun-21		Jul-21		Aug-21		Sep-21	
Physicochemical Parameters			Surface	Bottom	Surface	Bottom	Surface	Bottom	Surface	Bottom	Surface	Bottom	Surface	Bottom
1	Colour	Hazan	20	20	15	30	20	35	25	40	20	45	25	40
2	Odour	-	Unobjectionable											
3	pH @ 25°C	-	8.35	8.48	8.19	8.26	8.00	7.97	8.12	8.25	8.18	8.33	8.24	8.37
4	Temperature	°C	29	29	29	29	29	29	28	28	29	29	29	29
5	Turbidity	NTU	8.8	9.1	7	11	6.3	10	5.2	14	12	27	14	31
6	Total Suspended Solids	mg/L	11	14	9.4	16	8.5	14	7	19	9.6	22	11	28
7	BOD at 27 oC for 3 days	mg/L	4.9	4.9	4.1	4.8	4	4.6	4.8	4.3	4.7	4.1	4.5	4.3
8	COD	mg/L	118	132	107	125	116	132	104	120	114	137	106	130
9	Dissolved oxygen	mg/L	2.7	2.8	2.5	2.6	2.7	2.4	2.9	2.5	2.8	2.3	2.6	2.4
10	Salinity at 25 °C	ppt	30.8	32.3	30.2	31.7	30	31	31.4	31.7	38.3	40.9	39.8	40.5
11	Oil & Grease	mg/L	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)
Nutrient Parameters														
12	Nitrate as No3	mg/L	4.17	4.86	3.18	5.47	3.86	6.02	4.21	6.96	5.03	7.25	6.18	7.83
13	Nitrite as No2	mg/L	1.75	2.14	1.56	2.94	1.91	3.47	1.75	3.04	1.96	3.52	2.06	3.15
14	Ammonical Nitrogen as N	mg/L	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)
15	Total Nitrogen	mg/L	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)	BDL (DL : 1.0)
16	Inorganic phosphates as PO4	mg/L	3.26	4.27	3.07	4.75	3.54	4.18	4.28	5.63	4.91	6.37	3.86	5.12
17	Silica as SiO2	mg/L	3.45	4.98	3.12	5.48	2.98	5.74	3.12	4.98	3.84	5.23	4.52	6
18	Particulate Organic Carbon	µgC/L	13	16	10	17	13	19	15	17	18	19	15	17
19	Pertoleum Hydrocarbons	µg/L	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)
Heavy Metals														
20	Cadmium as Cd	mg/L	BDL (DL : 0.003)	BDL (DL : 0.003)	BDL (DL : 0.003)	BDL (DL : 0.003)	BDL (DL : 0.003)	BDL (DL : 0.003)	BDL (DL : 0.003)	BDL (DL : 0.003)	BDL (DL : 0.003)	BDL (DL : 0.003)	BDL (DL : 0.003)	BDL (DL : 0.003)
21	Copper as Cu	mg/L	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)
22	Total Iron as Fe	mg/L	0.31	0.38	0.38	0.45	0.42	0.55	0.35	0.75	0.45	0.78	0.52	0.71
23	Zinc as Zn	mg/L	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)
24	Lead as Pb	mg/L	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)
25	Mercury as Hg	mg/L	BDL (DL : 0.001)	BDL (DL : 0.001)	BDL (DL : 0.001)	BDL (DL : 0.001)	BDL (DL : 0.001)	BDL (DL : 0.001)	BDL (DL : 0.001)	BDL (DL : 0.001)	BDL (DL : 0.001)	BDL (DL : 0.001)	BDL (DL : 0.001)	BDL (DL : 0.001)
26	Nickel as Ni	mg/L	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)
27	Total Chromium as Cr	mg/L	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)	BDL (DL : 0.05)
Bacteriological Parameters														
28	Escherichia Coli (ECLO)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence
29	Faecal Coliform (FCLO)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence
30	Pseudomonas aeruginosa (PALO)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence
31	Streptococcus faecalis (SFLO)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence
32	Shigella (SHLO)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence
33	Salmonella (SLO)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence
34	Total Coliform (TC)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence
35	Total Viable Count (TVC)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence
36	Vibrio cholera (VC)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence
37	Vibrio	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence	Absence

BERTH - 3														
Month & Year			Apr-21		May-21		Jun-21		Jul-21		Aug-21		Sep-21	
S.N	Parameters	Unit	Surface	Bottom	Surface	Bottom	Surface	Bottom	Surface	Bottom	Surface	Bottom	Surface	Bottom
38	Primary Productivity	mg C/m ³ /hr	8.14	9.46	9.05	10.26	8.42	9.77	9.07	10.86	7.94	10.14	9.75	9.63
39	Chlorophyll a	mg /m ³	5.98	6.52	6.41	7.28	5.98	7.01	6.42	8.28	6.78	8.93	6.01	7.49
40	Phaeopigment	mg /m ³	2.63	3.39	2.12	2.9	2.73	3.15	2.94	3.5	3.13	4.08	3.93	4.56
41	Total Biomass	ml /100 m ³	1.02	1.45	1.43	1.65	1.62	1.84	1.75	2.02	1.96	2.57	1.68	2.14
PHYTOPLANKTON														
42	Bacteriastrium hyalinum	nos/ml	18	20	16	19	8	11	14	16	11	14	8	6
43	Bacteriastrium varians	nos/ml	11	14	12	16	10	13	13	18	7	10	11	8
44	Chaetoceros didymus	nos/ml	8	11	11	13	15	17	8	12	5	8	13	16
45	Chaetoceros decipiens	nos/ml	10	15	7	10	11	14	6	10	14	17	16	11
46	Biddulphia mobiliensis	nos/ml	14	17	10	14	12	16	17	19	20	15	12	18
47	Ditylum brightwellii	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
48	Gyrosigma sp	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	6	8	9	6	17	15
49	Cladophyxis sps	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
50	Coscinodiscus centralis	nos/ml	7	10	8	11	5	7	10	15	13	19	9	13
51	Coscinodiscus granii	nos/ml	12	16	15	17	17	12	9	6	11	13	7	9
52	Cylcotella sps	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
53	Hemidiscus hardmanianus	nos/ml	15	19	18	14	14	10	17	15	15	18	18	14
54	Laudaria annulata	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
55	Pyropacus horologicum	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
56	Pleurosigma angulatum	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
57	Leptocylindrus danicus	nos/ml	23	26	20	27	22	25	13	11	18	15	14	12
58	Guinardia flaccida	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
59	Rhizosolenia alata	nos/ml	19	21	16	23	19	21	18	20	12	23	7	10
60	Rhizosolenia impricata	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
61	Rhizosolenia semispina	nos/ml	13	9	15	11	18	20	15	8	17	12	19	16
62	Thalassionema nitzschioides	nos/ml	16	18	12	15	9	10	11	14	14	19	20	24
63	Triceratium reticulatum	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
64	Ceratium trichoceros	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
65	Ceratium furca	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
66	Ceratium macroceros	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
67	Ceracium longipes	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
ZOOPLANKTONS														
68	Acrocalanus gracilis	nos/ml	8	12	13	15	10	13	7	10	14	15	14	18
69	Acrocalanus sp	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
70	Paracalanus parvus	nos/ml	10	13	15	17	12	18	14	20	10	17	13	15
71	Eutintinus sps	nos/ml	17	15	19	14	15	17	9	12	13	19	17	12
72	Centropages furcatus	nos/ml	11	17	10	13	13	16	6	9	9	12	15	19
73	Corycaeus dana	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
74	Oithona brevicornis	nos/ml	14	19	11	16	8	12	13	17	14	10	8	13
75	Euterpina acutifrons	nos/ml	12	20	16	22	11	15	15	21	17	18	10	7
76	Metacalanus aurivilli	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
77	Copepod nauplii	nos/ml	16	21	20	24	18	21	12	14	8	11	11	14
78	Cirripede nauplii	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
79	Bivalve veliger	nos/ml	19	25	22	20	17	15	10	7	15	13	18	21
80	Gastropod veliger	nos/ml	13	16	9	18	11	14	21	19	18	14	12	17

ANNEXURE - 10 RESULTS OF MARINE SEDIMENT QUALITY DATA

SEA SEDIMENT								
Location		CB – 1						
Month & Year		Unit	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21
S.No.	Parameters							
1	Total organic matter	%	0.61	0.58	0.62	0.67	0.64	0.71
2	% Sand	%	27	25	27	23	21	18
3	%silt	%	28	29	26	28	27	31
4	%Clay	%	45	46	47	49	52	51
5	Iron (as Fe)	mg/kg	15.4	17.1	16.4	18.9	16.3	18.6
6	Aluminium (as Al)	mg/kg	8567	9005	9914	9045	9864	10123
7	Chromium (as cr)	mg/kg	34	31	34	41	44	35
8	Copper (as cu)	mg/kg	86	93	102	115	103	78
9	Manganese (as Mn)	mg/kg	173	164	148	140	168	141
10	Nickel (as Ni)	mg/kg	12.4	14	12.5	17	21	17
11	Lead (as Pb)	mg/kg	27	25	21	24	27	32
12	Zinc (as Zn)	mg/kg	386	372	388	343	316	286
13	Mercury(as Hg)	mg/kg	0.33	0.3	0.31	0.34	0.33	0.38
14	Total phosphorus as P	mg/kg	126	133	142	156	161	175
15	Octane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
16	Nonane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
17	Decane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
18	Undecane	mg/kg	0.65	0.71	0.65	0.68	0.73	0.79
19	Dodecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
20	Tridecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
21	Tetradecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
22	Phntadecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
23	Hexadecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
24	Heptadecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
25	Octadecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
26	Nonadecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
27	Elcosane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
I. Nematoda								
28	Oncholaimussp	nos/m ²	12	14	18	10	9	14
29	Tricomasp	nos/m ²	17	8	9	8	11	8
II. Foraminifera								
30	Ammoniaebecarii	nos/m ²	13	17	13	15	10	15
31	Quinulinasp	nos/m ²	18	15	20	17	19	21
32	Discorbinellasp.,	nos/m ²	20	22	17	13	8	16
33	Bolivinaspathulata	nos/m ²	15	18	14	11	14	10
34	Elphidiumsp	nos/m ²	19	12	16	19	17	19
35	Noniondepressula	nos/m ²	22	20	23	25	21	17
III. Molluscs-Bivalvia								
36	Meretrixveligers	nos/m ²	14	19	18	22	24	21
37	Anadoraveligers	nos/m ²	16	23	25	21	16	23
	Total No. of individuals	nos/m ²	166	171	173	161	149	164
	Shanon Weaver Diversity Index		2.29	2.28	2.27	2.25	2.24	2.26

Location		CB – 2						
Month & Year		Unit	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21
S.No.	Parameters							
1	Total organic matter	%	0.65	0.66	0.6	0.65	0.68	0.73
2	% Sand	%	24	26	24	21	20	16
3	%silt	%	30	28	25	32	30	35
4	%Clay	%	46	46	51	47	50	49
5	Iron (as Fe)	mg/kg	16.8	17.3	17.9	18.6	17.1	19.4
6	Aluminium (as Al)	mg/kg	956	9324	9785	9321	9608	9948
7	Chromium (as cr)	mg/kg	37	35	37	43	47	41
8	Copper (as cu)	mg/kg	79	86	94	120	112	86
9	Manganese (as Mn)	mg/kg	204	183	172	155	164	128
10	Nickel (as Ni)	mg/kg	11.5	12.9	13.6	14	18	20
11	Lead (as Pb)	mg/kg	31	27	28	22	21	28
12	Zinc (as Zn)	mg/kg	317	356	374	320	344	324
13	Mercury(as Hg)	mg/kg	0.35	0.32	0.33	0.37	0.35	0.31
14	Total phosphorus as P	mg/kg	129	135	139	149	158	150
15	Octane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
16	Nonane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
17	Decane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
18	Undecane	mg/kg	0.62	0.68	0.63	0.71	0.69	0.72
19	Dodecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
20	Tridecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
21	Tetradecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
22	Phntadecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
23	Hexadecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
24	Heptadecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
25	Octadecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
26	Nonadecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
27	Elcosane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
I. Nematoda								
28	Oncholaimussp	nos/m ²	14	16	14	16	13	15
29	Tricomasp	nos/m ²	10	13	10	12	15	10
II. Foraminifera								
30	Ammoniaebecarii	nos/m ²	17	15	17	10	9	11
31	Quinquinasp	nos/m ²	13	11	16	19	14	18
32	Discorbinellasp.,	nos/m ²	18	10	14	9	11	9
33	Bolivinaspathulata	nos/m ²	16	21	12	15	12	17
34	Elphidiumsp	nos/m ²	22	14	18	20	24	13
35	Noniondepressula	nos/m ²	20	23	20	23	18	22
III. Molluscs-Bivalvia								
36	Meretrixveligers	nos/m ²	12	17	19	21	22	24
37	Anadoraveligers	nos/m ²	18	21	22	18	10	16
	Total No. of individuals	nos/m ²	160	161	162	163	148	155
	Shanon Weaver Diversity Index		2.28	2.27	2.28	2.26	2.25	2.26

Location		BERTH – 3						
Month & Year		Unit	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21
S.No.	Parameters							
1	Total organic matter	%	0.68	0.62	0.64	0.61	0.67	0.64
2	% Sand	%	25	27	28	25	23	17
3	%silt	%	28	24	26	30	29	32
4	%Clay	%	47	49	46	45	48	51
5	Iron (as Fe)	mg/kg	17	18.3	18.5	18	16.8	17.5
6	Aluminium (as Al)	mg/kg	8029	8964	8681	8504	8981	9428
7	Chromium (as cr)	mg/kg	31	33	30	36	39	43
8	Copper (as cu)	mg/kg	74	79	87	96	106	94
9	Manganese (as Mn)	mg/kg	246	221	203	182	175	160
10	Nickel (as Ni)	mg/kg	10.4	11.6	12.1	15	17	19
11	Lead (as Pb)	mg/kg	45	41	35	30	24	21
12	Zinc (as Zn)	mg/kg	310	328	340	367	351	337
13	Mercury(as Hg)	mg/kg	0.41	0.42	0.36	0.3	0.32	0.36
14	Total phosphorus as P	mg/kg	133	130	134	143	155	162
15	Octane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
16	Nonane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
17	Decane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
18	Undecane	mg/kg	0.64	0.67	0.7	0.62	0.65	0.61
19	Dodecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
20	Tridecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
21	Tetradecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
22	Phntadecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
23	Hexadecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
24	Heptadecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
25	Octadecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
26	Nonadecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
27	Elcosane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
I. Nematoda								
28	Oncholaimussp	nos/m ²	16	18	13	15	11	13
29	Tricomasp	nos/m ²	19	15	17	18	14	11
II. Foraminifera								
30	Ammoniaebecarii	nos/m ²	15	13	10	13	16	19
31	Quinquilinasp	nos/m ²	11	14	8	11	7	15
32	Discorbinellasp.,	nos/m ²	17	19	11	14	10	18
33	Bolivinaspathulata	nos/m ²	9	15	18	20	18	22
34	Elphidiumsp	nos/m ²	24	10	14	17	21	16
35	Noniondepressula	nos/m ²	21	24	21	10	18	12
III. Molluscs-Bivalvia								
36	Meretrixveligers	nos/m ²	10	18	23	19	23	20
37	Anadoraveligers	nos/m ²	23	24	26	23	15	19
	Total No. of individuals	nos/m ²	165	170	161	160	153	165
	Shanon Weaver Diversity Index		2.25	2.27	2.21	2.27	2.25	2.28



Tech

TAMILNADU POLLUTION CONTROL BOARD

From

Dr. S. Selvan, M.E, M.B.A, Ph.D,
Member Secretary (i/c),
Tamil Nadu Pollution Control Board,
76, Mount Salai,
Guindy, Chennai – 600 032

To

The Director,
M/s. Marine Infrastructure Developer Private Limited,
S.F.No. 14-18B, Kattupalli Village,
Ponneri Taluk,
Tiruvallur District – 600 120

Lr. No: T1/TNPCB/ F.022882/RL/GMP/NIPL/2021 Dated:12.01.2021

Sir,

Sub: TNPC Board – Industries – M/s. Marine Infrastructure Developer Private Limited, SF.No.14-18B,15, etc., Kattupalli Village, Ponneri Taluk, Tiruvallur District – Pollution Load Assessment Committee (PLAC) Decision – Intimation –Reg.

Ref: 1. Your application submitted for requesting “No Increase in Pollution Load Certificate” dated 16.11.2020.
2. Pollution Load Assessment committee meeting held on 29.12.2020

In connection with your application dated.16.11.2020 and technical presentation made before the Pollution Load Assessment Committee meeting held on 29.12.2020, it is hereby informed that the Pollution Load Assessment Committee decided to certify that there is no increase in pollution load due to the proposed change in “Cargo Mix” by the unit. Hence the request of the unit to issue “ No increase in Pollution Load Certificate” shall be considered by TNPCB subject to the following conditions,

1. The unit shall comply with all the conditions imposed in the CRZ & Environment Clearance issued by MoEF vide letter Dated: 09.02.2018 and consent order conditions.
2. The unit shall follow and implement the recommendations of the Centre for Environmental Studies, Anna University, Chennai to attain no increase in Pollution Load due to the additional handling of Rock Phosphate, Dolomite, Bauxite Cargos and increase the Non-Hazardous Liquid Cargo capacity from 0.57 MMTPA to 0.72 MMTPA by optimally deploying the port infrastructure being developed without change in the overall handling capacity approved in the EC & CRZ by MoEF & CC.
3. The unit shall provide modified Effluent Treatment Plant for 150 KLD as per consented quantity considering the revised characteristics of trade effluent due to change in cargo mix.

POLLUTION PREVENTION PAYS



TAMILNADU POLLUTION CONTROL BOARD

4. The unit shall operate the existing Effluent Treatment Plant (50 KLD) without keeping idle by using rain/storm water to safeguard the components of Effluent Treatment Plant and to maintain the same in operational condition.
5. The unit shall comply with all existing norms of emission as well as changes if any made by authorities like MoEF &CC, CPCB and TNPCB from time to time.
6. The unit shall comply with all the conditions imposed by the TNPCB in the consent order when granted.
7. The unit shall not go for any expansion or installation of new machineries without prior consent of TNPCB.
8. The unit shall furnish undertaking not to carry out any additional construction/infrastructure development activities for handling of the proposed Change in cargo Mix.
9. There shall be no reclamation/dredging of areas as per CRZ & Environment Clearance issued by MoEF vide letter Dated: 09.02.2018.
10. The unit shall ensure that there shall be no additional construction and man power by virtue of the proposed change in cargo mix.
11. The unit to ensure that there shall not be any increase in pollution load due to this cargo mix during its operation.

Based on the above decision, the unit shall apply for consent through OCMMS for its proposed product mix by the unit.


For Member Secretary

Copy to:

1. Joint Chief Environmental Engineer (Monitoring),
Tamil Nadu Pollution Control Board,
Chennai – **Requested to periodically monitor the operation of the unit to ensure real time pollution load.**
2. The District Environmental Engineer,
Tamil Nadu Pollution Control Board,
Gummidipoondi.

Copy



TAMILNADU POLLUTION CONTROL BOARD

Category of the Industry :

RED

CONSENT ORDER NO. 2105236876761

DATED: 13/09/2021.

PROCEEDINGS NO.T6/TNPCB/F.0491GMP/RL/GMP/A/2021 DATED: 13/09/2021



SUB: Tamil Nadu Pollution Control Board –CONSENT TO OPERATE –DIRECT –M/s. MARINE INFRASTRUCTURE DEVELOPER PRIVATE LIMITED , S.F.No. Survey Numbers : 14/18B, 15, 168/1, 168/2, 169, 170/1, 170/2, 171/1, 171/2, 172/1, 172/2, 173/1, 173/2, 174, 175, 176, 177, 178/1, 178/2, 178/3, 178/4, 179/1, 179/2, 179/3, 179/4, 180, 181, 182, 183, 184/1, 184/2, 184/3, 186, 187, 188/1, 188/2A, 188/2B, 188/2C, 189, 190, 191, 192/1, 192/2, 193/1, 193/2, 193/3, 193/4, 194, 195, 196, 197/1, 197/2, 197/3, 199, 200/1, 200/2, 202/1, 202/2, 203, 206/1, 206/2A, 206/2B, 206/3, 206/4A, 206/4B, 207/2B, 208/2, 209/1, 209/2, 209/3, 210/1, 210/2, 211/1, 211/2, 211/3, 211/4, 211/5, 211/6, 211/7, 212, 213, 214/1, 214/2, 214/3, 214/4, 215/1, 215/2, 216, 217, 218/1, 218/2, 218/3, 218/4, 218/5, 219/1, 219/2, 220, 223/1, 223/2, 224/1, 224/2, 224/3, 224/4, 224/5, 225, 226, 227, 228/1, 228/2, 228/3, 228/4, 228/5, 229, 230, 231/1, 231/2, 231/3, 231/4, 231/5, 232, 233/1, 233/2, 233/3, 233/4, 234/1, 234/2, 234/3, 234/4, 235/1B, 235/2, 235/3B, 236/3B, 236/4, 242/1, 242/2, 243/2B, 244/2, 247/1, 248/1, 248/2, 249/1A2, 249/2B, 198/1, 205/1A, 205/1B, 205/2, 205/5, 1/4A1, 1/4A2, 1/4B, 1/5, 16/1, 16/2, 17/1, 17/2, 17/3A, 17/3B, 143, 151/1, 151/2, 151/3, 151/4, 152, 153, 154/1, 154/2, 166, 167/1, 167/2, 204/1, 204/2, 204/3, 221, 221/1, 222/2, 330/1, 330/2, 330/3, 330/4, 12, 16/3, 198/2, 201, 205/3, 205/4., KATTUPALLI village Ponneri Taluk and Tiruvallur District - Consent for operation of the plant and discharge of emissions under Section 21 of the Air (Prevention and Control of Pollution) Act, 1981 as amended in 1987 (Central Act 14 of 1981) –Issued- Reg.

- Ref:** 1. Units application for CTO direct dt. 15.02.2021
 2. IR.No : F.0491GMP/RL/DEE/GMP/2021 dated 30/06/2021
 3. Board's (Consent Clearance Committee) Resolution No.281-12 dt: 13.08.2021

CONSENT TO OPERATE is hereby granted under Section 21 of the Air (Prevention and Control of Pollution) Act, 1981 as amended in 1987 (Central Act 14 of 1981) (hereinafter referred to as "The Act") and the rules and orders made there under to

The Chief Executive Officer,

M/s . MARINE INFRASTRUCTURE DEVELOPER PRIVATE LIMITED

S.F No.Survey Numbers : 14/18B, 15, 168/1, 168/2, 169, 170/1, 170/2, 171/1, 171/2, 172/1, 172/2, 173/1, 173/2, 174, 175, 176, 177, 178/1, 178/2, 178/3, 178/4, 179/1, 179/2, 179/3, 179/4, 180, 181, 182, 183, 184/1, 184/2, 184/3, 186, 187, 188/1, 188/2A, 188/2B, 188/2C, 189, 190, 191, 192/1, 192/2, 193/1, 193/2, 193/3, 193/4, 194, 195, 196, 197/1, 197/2, 197/3, 199, 200/1, 200/2, 202/1, 202/2, 203, 206/1, 206/2A, 206/2B, 206/3, 206/4A, 206/4B, 207/2B, 208/2, 209/1, 209/2, 209/3, 210/1, 210/2, 211/1, 211/2, 211/3, 211/4, 211/5, 211/6, 211/7, 212, 213, 214/1, 214/2, 214/3, 214/4, 215/1, 215/2, 216, 217, 218/1, 218/2, 218/3, 218/4, 218/5, 219/1, 219/2, 220, 223/1, 223/2, 224/1, 224/2, 224/3, 224/4, 224/5, 225, 226, 227, 228/1, 228/2, 228/3, 228/4, 228/5, 229, 230, 231/1, 231/2, 231/3, 231/4, 231/5, 232, 233/1, 233/2, 233/3, 233/4, 234/1, 234/2, 234/3, 234/4, 235/1B, 235/2, 235/3B, 236/3B, 236/4, 242/1, 242/2, 243/2B, 244/2, 247/1, 248/1, 248/2, 249/1A2, 249/2B, 198/1, 205/1A, 205/1B, 205/2, 205/5, 1/4A1, 1/4A2, 1/4B, 1/5, 16/1, 16/2, 17/1, 17/2, 17/3A, 17/3B, 143, 151/1, 151/2, 151/3, 151/4, 152, 153, 154/1, 154/2, 166, 167/1, 167/2, 204/1, 204/2, 204/3, 221, 221/1, 222/2, 330/1, 330/2, 330/3, 330/4, 12, 16/3, 198/2, 201, 205/3, 205/4.,

KATTUPALLI Village,

Ponneri Taluk,

Tiruvallur District.

Authorizing the occupier to operate the industrial plant in the Air Pollution Control Area as notified by the Government and to make discharge of emission from the stacks/chimneys.



TAMILNADU POLLUTION CONTROL BOARD

This is subject to the provisions of the Act, the rules and the orders made there under and the terms and conditions incorporated under the Special and General conditions stipulated in the Consent Order issued earlier and subject to the special conditions annexed.

This CONSENT is valid for the period ending March 31, 2026

JOSEPHINESAHAYARANI Digitally signed by JOSEPHINESAHAYARA
Date: 2021.09.14 07:44:46 +05'30'

**For Member Secretary,
Tamil Nadu Pollution Control Board,
Chennai**

To
The Chief Executive Officer,
M/s.MARINE INFRASTRUCTURE DEVELOPER PRIVATE LIMITED,
Ramcons Fortuna Towers, 4th Floor, No:1/2 Kodambakkam High Road, Nungambakam,
Chennai - 600034,
Pin: 600034

Copy to:

- 1.The Commissioner, MEENJUR-Panchayat Union, Ponneri Taluk, Tiruvallur District .
 2. The District Environmental Engineer, Tamil Nadu Pollution Control Board, GUMMIDIPOONDI.
 3. The JCEE-Monitoring, Tamil Nadu Pollution Control Board, Chennai.
 4. File
-



TAMILNADU POLLUTION CONTROL BOARD

SPECIAL CONDITIONS

- This consent to operate is valid for operating the facility for the manufacture of products (Col. 2) at the rate (Col. 3) mentioned below. Any change in the products and its quantity has to be brought to the notice of the Board and fresh consent has to be obtained.

Sl. No.	Description	Quantity	Unit
Product Details			
1.	Containers	21.60	MMTPA
2.	Ro-Ro – Automobiles	0.07	MMTPA
3.	Project Cargo	0.44	MMTPA
4.	Break Bulk/general cargo (Barytes / Gypsum / Limestone / Granite / Steel Cargo / Rock Phosphate / Bauxite / Dolomite cargoes)	1.82	MMTPA
5.	Edible oil, CBFS, Base Oil, Lube and Non-Hazardous Liquid Cargo	0.72	MMTPA

- This consent to operate is valid for operating the facility with the below mentioned emission/noise sources along with the control measures and/or stack. Any change in the emission source/control measures/change in stack height has to be brought to the notice of the Board and fresh consent/Amendment has to be obtained.

I	Point source emission with stack :			
Stack No.	Point Emission Source	Air pollution Control measures	Stack height from Ground Level in m	Gaseous Discharge in Nm ³ /hr
1	DG Set - 2000 KVA - I	Acoustic enclosures with stack	30	8000
2	DG Set - 2000 KVA - II	Acoustic enclosures with stack	30	8000
3	DG Set - 500 KVA - I	Acoustic enclosures with stack	20	5000
4	DG Set - 500 KVA - II	Acoustic enclosures with stack	20	5000
5	DG Set - 125 KVA	Acoustic enclosures with stack	4	1000
6	Hot Water System (CBFS / Veg Oil Facility)	Wet scrubber with stack	31	50000
7	Hot Oil Generator (Bitumen Facility)	Wet scrubber with stack	31	50000
8	Fire DG Pump Stack - 1	Stack	2.5	
9	Fire DG Pump Stack - 2	Stack	2.5	
10	ETP Boiler Stack	Stack	12	
II	Fugitive/Noise emission :			
Sl. No.	Fugitive or Noise Emission sources	Type of emission	Control measures	
1.	DG Set	Noise	Acoustic Enclosures	



TAMILNADU POLLUTION CONTROL BOARD

- 3(a). The emission shall not contain constituents in excess of the tolerance limits as laid down hereunder :
- | Sl. | Parameter | Unit | Tolerance limits | Stacks |
|-----|-----------|------|------------------|--------|
|-----|-----------|------|------------------|--------|

Annexure enclosed if applicable. :-

- 3.(b) The Ambient Air in the industrial plant area shall not contain constituents in excess of the tolerance limits prescribed below.
- | Sl. No. | Pollutant | Time Weighted Average | Unit | Tolerance Limits | |
|---------|---|-----------------------|------------------------------|---|---|
| | | | | Industrial, Residential, Rural and other area | Ecologically Sensitive Area (notified by Central Govt.) |
| 1. | Sulphur Dioxide (SO2) | Annual
24 hours | microgram/m3
microgram/m3 | 50
80 | 20
80 |
| 2. | Nitrogen Dioxide (NO2) | Annual
24 hours | microgram/m3
microgram/m3 | 40
80 | 30
80 |
| 3. | Particulate Matter (Size Less than 10 micro M) or PM10 | Annual
24 hours | microgram/m3
microgram/m3 | 60
100 | 60
100 |
| 4. | Particulate Matter (Size Less than 2.5 micro M) or PM2.5 | Annual
24 hours | microgram/m3
microgram/m3 | 40
60 | 40
60 |
| 5. | Ozone (O3) | Annual
24 hours | 8 Hours
1 Hour | 100
180 | 100
180 |
| Sl. No. | Pollutant | Time Weighted Average | Unit | Tolerance Limits | |
| | | | | Industrial, Residential, Rural and other area | Ecologically Sensitive Area (notified by Central Govt.) |
| 6. | Lead (Pb) | Annual
24 hours | microgram/m3
microgram/m3 | 0.5
1.0 | 0.5
1.0 |
| 7. | Carbon Monoxide (CO) | 8 Hours
1 Hour | miligram/m3
miligram/m3 | 02
04 | 02
04 |
| 8. | Ammonia (NH3) | Annual
24 hours | microgram/m3
microgram/m3 | 100
400 | 100
400 |
| 9. | Benzene (C6H6) | Annual | microgram/m3 | 5 | 5 |
| 10. | Benzo(O) Pyrene (BaP)
-particulate phase only | Annual | nanogram/m3 | 01 | 01 |
| 11. | Arsenic (As) | Annual | nanogram/m3 | 06 | 06 |
| 12. | Nickel (Ni) | Annual | nanogram/m3 | 20 | 20 |

- 3(c) The Ambient Noise Level in the industrial plant area shall not exceed the limits prescribed below:
- | Limits in L.eq.-dB(A) | Day Time | Night Time |
|-----------------------|----------|------------|
| IndustrialArea | 75 | 70 |

4. All units of the Air pollution control measures shall be operated efficiently and continuously so as to achieve the standards prescribed in Sl. No.3 above.



TAMILNADU POLLUTION CONTROL BOARD

5. The occupier shall not change or alter quality or quantity or the rate of emission or replace or alter the air pollution control equipment or change the raw material or manufacturing process resulting in change in quality and/or quantity of emissions without the previous written permission of the Board.
6. The occupier shall maintain log book regarding the stack monitoring system or operation of the plant or any other particulars for each of the unit operations of air pollution control systems to reflect the working condition which shall be furnished for verification of the Board officials during inspection.
7. The occupier shall at his own cost get the samples of emission/air/noise levels collected and analyzed by the TNPC Board Laboratory once in every 6 months/once in a year/periodically for the parameters as prescribed.
8. Any upset condition in any of the plants of the factory which is likely to result in increased emissions and result in violation of the standards mentioned in Sl.No.3 shall be reported to the Member Secretary / Joint Chief Environmental Engineer-Monitoring and the concerned District/Assistant Environmental Engineer of the Board by e-mail immediately and subsequently by Post with full details of such upset condition.
9. The occupier shall always comply and carryout the order/directions issued by the Board in this Consent Order and from time to time without any negligence. The occupier shall be liable for action as per provisions of the Act in case of non compliance of any order/directions issued.

Special Additional Conditions:

The unit shall install the approved retrofit emission control device/equipment with at least 70% Particulate matter reduction efficiency on all DG sets with capacity of 125 KVA and above or otherwise the unit shall be shift to gas based generators within the time frame prescribed in the notification No. TNPCB/Labs/DD(L)02151/2019 dated 10.06.2020 issued by TNPCB.

Additional Conditions:

1. The unit shall operate and maintain the APC measures efficiently and continuously so as to satisfy the Ambient Air Quality / emission standards prescribed by the Board.
2. The unit shall adhere to the Ambient Noise Level standards prescribed by the Board.
3. The unit shall conduct AAQ/ANL/SM emission survey periodically and furnish the ROA to the Board.
4. The unit shall maintain Continuous Ambient Air Quality Monitoring station provided for the parameters PM10, PM2.5 and VOC and shall transfer data to the care Air Centre, TNPCB, Guindy without any interruption.
5. The unit shall utilize the Power obtained from the DG Sets for captive use only and shall not supply Power to Grid.
6. The unit shall maintain adequate dust suppression system and take all measures to ensure that the cargo is handled by taking necessary precautions to avoid spread of fugitive dust while transporting cargo through lorries and containers.
7. The unit shall ensure that the vehicles shall not fit or use any multi toned horn giving a harsh, shrill, loud or alarming noise.
8. The unit shall provide water sprinklers to the internal roads so as to avoid dust emissions due to the vehicular movements inside the premises within a month as committed.
9. The unit shall comply with the conditions imposed in the environmental clearance accorded to the unit from the MoEF, GOI vide Lr.No. 10-130/2007-IAIII dated 09.02.2018.
10. In case of any deviation in the Gross Fixed Assets furnished in future, the unit shall remit the difference in amount to the Board without fail.
11. The unit shall continue to develop adequate green belt by planting tree saplings of native species in and around the unit premises so as to comply with the Board norms.
12. In case of revision of consent fee by the Government, the unit shall remit the difference in amount within one month from the date of notification. Failing to remit consent fee, this consent order will be withdrawn without any notice and further action will be initiated against the unit as per law.
13. The unit shall comply with the conditions imposed in the "No increase in Pollution Load" letter issued to the unit by the Board vide Lr. No: T1/TNPCB/ F.022882/RL/GMP/NIPL/2021 Dated:12.01.2021.

JOSEPHINESAHAYARANI

Digitally signed by
JOSEPHINESAHAYARANI
Date: 2021.09.14 07:45:41 +05'30'

For Member Secretary,
Tamil Nadu Pollution Control Board,
Chennai



TAMILNADU POLLUTION CONTROL BOARD

GENERAL CONDITIONS

1. The occupier shall make an application along with the prescribed consent fee for grant of renewal of consent at least 60 days before the date of expiry of this Consent Order along with all the required particulars ensuring that there is no change in production quantity and emission.
2. This Consent is given by the Board in consideration of the particulars given in the application. Any change or alteration or deviation made in actual practice from the particulars furnished, in the application will also be ground for review/variation/revocation of the Consent Order under Section 21 of the Act.
3. The conditions imposed shall continue in force until revoked under Section 21 of the Act.
4. After the issue of this order, all the 'Consent to Operate' orders issued previously under Air (Prevention and Control of Pollution) Act, 1981 as amended stands defunct.
5. The occupier shall maintain an Inspection Register in the factory so that the inspecting officer shall record the details of the observations and instructions issued to the unit at the time of inspection for adherence.
6. The occupier shall provide and maintain an alternate power supply along with separate energy meter for the Air Pollution Control measures sufficient to ensure continuous operation of all pollution control equipments to ensure compliance.
7. The occupier shall provide all facilities to the Board officials for collection of samples in and around the factory at any time.
8. The applicant shall display the flow diagram of the sources of emission and pollution control systems provided at the site.
9. The liquid effluent arising out of the operation of the air pollution control equipment shall also be treated in a manner and to the satisfaction of standards prescribed by the Board in accordance with the provisions of Water (Prevention and Control of Pollution) Act, 1974 as amended.
10. The air pollution control equipments, location of inspection chambers and sampling port holes shall be made easily accessible at all time.
11. In case of any episodal discharge of emission, the industry shall take immediate action to bring down the emission within the limits prescribed by the Board.
12. If applicable, the occupier has to comply with the provisions of Public Liability Insurance Act, 1991 to provide immediate relief in the event of any hazard to human beings, other living creatures/plants and properties while handling and storage of hazardous substances.
13. The issuance of this consent does not authorize or approve the construction of any physical structures or facilities or the undertaking of any work in any natural watercourse or in Government Poromboke lands.
14. The issuance of this Consent does not convey any property right in either real personal property or any exclusive privileges, nor does it authorize any injury to private property or Government property or any invasion of personal rights nor any infringement of Central, State laws or regulation.
15. The occupier shall forth with keep the Board informed of any accident of unforeseen act or event of any poisonous, noxious or polluting matter or emissions are being discharged into stream or well or air as a result of such discharge, water or air is being polluted.
16. If due to any technological improvements or otherwise the Board is of opinion that all or any of the conditions referred to above requires variation (including the change of any treatment system, either in whole or in part) the Board shall, after giving the applicant an opportunity of being heard, vary all or any of such conditions and thereupon the applicant shall be bound to comply with the conditions as so varied.
17. In case there is any change in the constitution of the management, the occupier of the new management shall file fresh application under Air (Prevention and Control of Pollution) Act, 1981, as amended in Form-I alongwith relevant documents of change of management immediately and get the necessary amendment with renewal of consent order.
18. In case there is any change in the name of the company alone, the occupier shall inform the same with relevant documents immediately and get the necessary amendments for the change of name from the Board.



TAMILNADU POLLUTION CONTROL BOARD

19. The occupier shall display this consent order granted to him in a prominent place for perusal of the inspecting Officers of this Board.

JOSEPHINESAHAYARANI Digitally signed by JOSEPHINESAHAYARANI
Date: 2021.09.14 07:46:18 +05'30'

For Member Secretary,
Tamil Nadu Pollution Control Board,
Chennai



TAMILNADU POLLUTION CONTROL BOARD

Category of the Industry :

RED

CONSENT ORDER NO. 2105136876761

DATED: 13/09/2021.

PROCEEDINGS NO.T6/TNPCB/F.0491GMP/RL/GMP/W/2021 DATED: 13/09/2021



SUB: Tamil Nadu Pollution Control Board –CONSENT TO OPERATE – DIRECT -M/s. MARINE INFRASTRUCTURE DEVELOPER PRIVATE LIMITED , S.F.No. Survey Numbers : 14/18B, 15, 168/1, 168/2, 169, 170/1, 170/2, 171/1, 171/2, 172/1, 172/2, 173/1, 173/2, 174, 175, 176, 177, 178/1, 178/2, 178/3, 178/4, 179/1, 179/2, 179/3, 179/4, 180, 181, 182, 183, 184/1, 184/2, 184/3, 186, 187, 188/1, 188/2A, 188/2B, 188/2C, 189, 190, 191, 192/1, 192/2, 193/1, 193/2, 193/3, 193/4, 194, 195, 196, 197/1, 197/2, 197/3, 199, 200/1, 200/2, 202/1, 202/2, 203, 206/1, 206/2A, 206/2B, 206/3, 206/4A, 206/4B, 207/2B, 208/2, 209/1, 209/2, 209/3, 210/1, 210/2, 211/1, 211/2, 211/3, 211/4, 211/5, 211/6, 211/7, 212, 213, 214/1, 214/2, 214/3, 214/4, 215/1, 215/2, 216, 217, 218/1, 218/2, 218/3, 218/4, 218/5, 219/1, 219/2, 220, 223/1, 223/2, 224/1, 224/2, 224/3, 224/4, 224/5, 225, 226, 227, 228/1, 228/2, 228/3, 228/4, 228/5, 229, 230, 231/1, 231/2, 231/3, 231/4, 231/5, 232, 233/1, 233/2, 233/3, 233/4, 234/1, 234/2, 234/3, 234/4, 235/1B, 235/2, 235/3B, 236/3B, 236/4, 242/1, 242/2, 243/2B, 244/2, 247/1, 248/1, 248/2, 249/1A2, 249/2B, 198/1, 205/1A, 205/1B, 205/2, 205/5, 1/4A1, 1/4A2, 1/4B, 1/5, 16/1, 16/2, 17/1, 17/2, 17/3A, 17/3B, 143, 151/1, 151/2, 151/3, 151/4, 152, 153, 154/1, 154/2, 166, 167/1, 167/2, 204/1, 204/2, 204/3, 221, 221/1, 222/2, 330/1, 330/2, 330/3, 330/4, 12, 16/3, 198/2, 201, 205/3, 205/4., KATTUPALLI village Ponneri Taluk and Tiruvallur District - Consent for the operation of the plant and discharge of sewage and/or trade effluent under Section 25 of the Water (Prevention and Control of Pollution) Act, 1974 as amended in 1988 (Central Act 6 of 1974) – Issued- Reg.

- Ref:** 1. Units application for CTO direct dt. 15.02.2021
 2. IR.No : F.0491GMP/RL/DEE/GMP/2021 dated 30/06/2021
 3. Board's (Consent Clearance Committee) Resolution No.281-12 dt: 13.08.2021

CONSENT TO OPERATE is hereby granted under Section 25 of the Water (Prevention and Control of Pollution) Act, 1974 as amended in 1988 (Central Act, 6 of 1974) (hereinafter referred to as "The Act") and the rules and orders made there under to

The Chief Executive Officer,

M/s . MARINE INFRASTRUCTURE DEVELOPER PRIVATE LIMITED

S.F No.Survey Numbers : 14/18B, 15, 168/1, 168/2, 169, 170/1, 170/2, 171/1, 171/2, 172/1, 172/2, 173/1, 173/2, 174, 175, 176, 177, 178/1, 178/2, 178/3, 178/4, 179/1, 179/2, 179/3, 179/4, 180, 181, 182, 183, 184/1, 184/2, 184/3, 186, 187, 188/1, 188/2A, 188/2B, 188/2C, 189, 190, 191, 192/1, 192/2, 193/1, 193/2, 193/3, 193/4, 194, 195, 196, 197/1, 197/2, 197/3, 199, 200/1, 200/2, 202/1, 202/2, 203, 206/1, 206/2A, 206/2B, 206/3, 206/4A, 206/4B, 207/2B, 208/2, 209/1, 209/2, 209/3, 210/1, 210/2, 211/1, 211/2, 211/3, 211/4, 211/5, 211/6, 211/7, 212, 213, 214/1, 214/2, 214/3, 214/4, 215/1, 215/2, 216, 217, 218/1, 218/2, 218/3, 218/4, 218/5, 219/1, 219/2, 220, 223/1, 223/2, 224/1, 224/2, 224/3, 224/4, 224/5, 225, 226, 227, 228/1, 228/2, 228/3, 228/4, 228/5, 229, 230, 231/1, 231/2, 231/3, 231/4, 231/5, 232, 233/1, 233/2, 233/3, 233/4, 234/1, 234/2, 234/3, 234/4, 235/1B, 235/2, 235/3B, 236/3B, 236/4, 242/1, 242/2, 243/2B, 244/2, 247/1, 248/1, 248/2, 249/1A2, 249/2B, 198/1, 205/1A, 205/1B, 205/2, 205/5, 1/4A1, 1/4A2, 1/4B, 1/5, 16/1, 16/2, 17/1, 17/2, 17/3A, 17/3B, 143, 151/1, 151/2, 151/3, 151/4, 152, 153, 154/1, 154/2, 166, 167/1, 167/2, 204/1, 204/2, 204/3, 221, 221/1, 222/2, 330/1, 330/2, 330/3, 330/4, 12, 16/3, 198/2, 201, 205/3, 205/4.,

KATTUPALLI Village,

Ponneri Taluk,

Tiruvallur District.

Authorising the occupier to make discharge of sewage and /or trade effluent.



TAMILNADU POLLUTION CONTROL BOARD

This is subject to the provisions of the Act, the rules and the orders made there under and the terms and conditions incorporated under the Special and General conditions stipulated in the Consent Order issued earlier and subject to the special conditions annexed.

This CONSENT is valid for the period ending March 31, 2026

JOSEPHINESAHAYARANI Digitally signed by JOSEPHINESAHAYARANI
Date: 2021.09.14 07:47:28 +05'30'

**For Member Secretary,
Tamil Nadu Pollution Control Board,
Chennai**

To
The Chief Executive Officer,
M/s.MARINE INFRASTRUCTURE DEVELOPER PRIVATE LIMITED,
Ramcons Fortuna Towers, 4th Floor, No:1/2 Kodambakkam High Road, Nungambakam,
Chennai - 600034,
Pin: 600034

Copy to:

- 1.The Commissioner, MEENJUR-Panchayat Union, Ponneri Taluk, Tiruvallur District .
2. The District Environmental Engineer, Tamil Nadu Pollution Control Board, GUMMIDIPOONDI.
3. The JCEE-Monitoring, Tamil Nadu Pollution Control Board, Chennai.
4. File



TAMILNADU POLLUTION CONTROL BOARD

SPECIAL CONDITIONS

1. This consent to operate is valid for operating the facility for the manufacture of products (Col. 2) at the rate (Col. 3) mentioned below. Any change in the products and its quantity has to be brought to the notice of the Board and fresh consent has to be obtained.

Sl. No.	Description	Quantity	Unit
Product Details			
1.	Containers	21.60	MMTPA
2.	Ro-Ro – Automobiles	0.07	MMTPA
3.	Project Cargo	0.44	MMTPA
4.	Break Bulk/general cargo (Barytes / Gypsum / Limestone / Granite / Steel Cargo / Rock Phosphate / Bauxite / Dolomite cargoes)	1.82	MMTPA
5.	Edible oil, CBFS, Base Oil, Lube and Non-Hazardous Liquid Cargo	0.72	MMTPA

2. This consent to operate is valid for operating the facility with the below mentioned permitted outlets for the discharge of sewage/trade effluent. Any change in the outlets and the quantity has to be brought to the notice of the Board and fresh consent has to be obtained.

Outlet No.	Description of Outlet	Maximum daily discharge in KLD	Point of disposal
Effluent Type : Sewage			
1.	Treated Sewage Effluent - 1 (30 KLD)	30.0	On land for gardening
2.	Treated Sewage Effluent - 2 (10 KLD)	10.0	On land for gardening
3.	Treated Sewage Effluent - 3 (5 KLD)	5.0	On land for gardening
Effluent Type : Trade Effluent			
1.	Trade Effluent - 1 (RO Permeate)	41.0	On land for gardening
2.	Trade Effluent - 2 (RO Reject)	9.0	Evaporated in ATFD System

3. The effluent discharge shall not contain constituents in excess of the tolerance Limits as laid down hereunder.



TAMILNADU POLLUTION CONTROL BOARD

Sl. No.	Parameters	Unit	TOLERANCE LIMITS - OUTLETS -Nos				
			Sewage		Trade Effluent		
			1	2,3	1	2	
1.	pH		5.5 to 9	5.5 to 9	5.5 to 9	5.5 to 9	
2.	Temperature	oC	-	-	-	shall not exceed 5°C above the receiving water temperature	
3.	Particle size of Suspended solids	-	-	-	-	shall pass 850 micron IS sieve	
4.	Total Suspended Solids	mg/l	30	30	200	100	
5.	Total Dissolved solids (inorganic)	mg/l	-	-	2100	2100	
6.	Oil & Grease	mg/l	-	-	10	10	
7.	Biochemical Oxygen Demand (3 days at 27oC)	mg/l	20	20	100	30	
8.	Chemical Oxygen Demand	mg/l	-	-	-	250	
9.	Chloride (as Cl)	mg/l	-	-	600	1000	
10.	Sulphates (as SO4)	mg/l	-	-	1000	1000	
11.	Total Residual Chlorine	mg/l	-	-	-	1	
12.	Ammonical Nitrogen (as N)	mg/l	-	-	50	50	
13.	Total Kjeldahl Nitrogen (as N)	mg/l	-	-	-	100	
14.	Free Ammonia (as NH3)	mg/l	-	-	-	5	
15.	Arsenic (as As)	mg/l	-	-	0.2	0.2	
16.	Mercury (as Hg)	mg/l	-	-	0.01	0.01	
17.	Lead (as Pb)	mg/l	-	-	1	0.1	
18.	Cadmium(as Cd)	mg/l	-	-	1	2	
19.	Hexavalent Chromium (as Cr+6)	mg/l	-	-	1	0.1	
20.	Total Chromium (as Cr)	mg/l	-	-	2	2	
21.	Copper (as Cu)	mg/l	-	-	3	3	
22.	Zinc (as Zn)	mg/l	-	-	1.5	1	
23.	Selenium (as Se)	mg/l	-	-	0.05	0.05	
24.	Nickel (as Ni)	mg/l	-	-	3	3	
25.	Boron (as B)	mg/l	-	-	2	2	
26.	Percent Sodium	%	-	-	60	-	
27.	Residual Sodium Carbonate	mg/l	-	-	5	-	
28.	Cyanide (as CN)	mg/l	-	-	0.2	0.2	
29.	Fluoride (as F)	mg/l	-	-	2	2	
30.	Dissolved Phosphates(as P)	mg/l	-	-	-	5	
31.	Sulphide (as S)	mg/l	-	-	2	2	
32.	Pesticides	mg/l	-	-			
33.	Phenolic Compounds (as C6H5OH)	mg/l	-	-	5	1	
34.	Radioactive materials a) Alpha emitters	micro curie/ml	-	-	10-8	10-7	



TAMILNADU POLLUTION CONTROL BOARD

35.	Radioactive materials b). Beta emitters	micro curie/ml	-	-	10-6	10-6	
36.	Fecal Coliform	MPN/100ml	-	-	-	-	

4. All units of the sewage and Trade effluent treatment plants shall be operated efficiently and continuously so as to achieve the standards prescribed in Sl No.3 above or to achieve the zero liquid discharge of effluent as applicable.
5. The occupier shall maintain the Electro Magnetic Flow Meters/water Meters installed at the inlet of the water supply connection for each of the purposes mentioned below for assessing the quantity of water used and ensuring that such meters are easily accessible for inspection and maintenance and for other purposes of the Act.
 - a. Industrial Cooling, Spraying in mine pits or boiler feed.
 - b. Domestic purpose.
 - c. Process.
6. The occupier shall maintain the Electro Magnetic Flow Meters with computer recording arrangement for measuring the quantity of effluent generated and treated for the monitoring purposes of the Act.
7. Log book for each of the unit operations of ETP have to be maintained to reflect the working condition of ETP along with the readings of the Electro Magnetic Flow Meters installed to assess effluent quantity and the same shall be furnished for verification of the Board officials during inspection.
8. The occupier shall at his own cost get the samples of effluent/surface water/ground water collected in and around the unit by Board officials and analyzed by the TNPC Board Laboratory periodically.
9. Any upset condition in any of the plants of the factory which is, likely to result in increased effluent discharge and result in violation of the standards mentioned in Sl. No.3 above shall be reported to the Member Secretary / Joint Chief Environmental Engineer-Monitoring and the concerned District/Assistant Environmental Engineer of the Board by e-mail immediately and subsequently by Post with full details of such upset condition.
10. The occupier shall always comply and carryout the order/directions issued by the Board in this Consent Order and from time to time without any negligence. The occupier shall be liable for action as per provisions of the Act in case of non compliance of any order/directions issued.
11. The occupier shall develop adequate width of green belt at the rate of 400 numbers of trees per Hectare.
12. The occupier shall provide and maintain rain water harvesting facilities.
13. The occupier shall ensure that there shall not be any discharge of effluent either treated or untreated into storm water drain at any point of time.
14. In the case of zero liquid discharge of effluent units, the occupier shall adhere the following conditions as laid under.
 - i). The occupier shall ensure zero liquid discharge of effluent, thereby no discharge of untreated / treated effluent on land or into any water bodies either inside or outside the premises at any point of time.
 - ii) The occupier shall operate and maintain the Zero liquid discharge treatment components comprising of Primary, Secondary and tertiary treatment systems at all times and ensure that the RO permeate/Evaporator condensate shall be recycled in the process and the final RO reject shall be disposed off with the reject management system ensuring zero liquid discharge of effluents in the premises.
 - iii) The occupier shall operate and maintain the reject management system effectively and recover the salt from the system which shall be reused in the process if reusable or shall be disposed off as ETP sludge.
 - iv) In case of failure to achieve zero discharge of effluents for any reason, the occupier shall stop its production and operations forthwith and shall be reported to the Member Secretary/Joint Chief Environmental Engineer-Monitoring and the concerned District/Assistant Environmental Engineer of the Board by e-mail immediately and subsequently by Post with full details of such upset condition.
 - v) The occupier shall restart the production only after ascertaining that the Zero discharge treatment system can perform effectively for achieving zero discharge of effluents.

Additional Conditions:



TAMILNADU POLLUTION CONTROL BOARD

1. The unit shall operate and maintain the existing STPs efficiently and continuously so as to satisfy the standards prescribed by the Board.
2. The unit shall utilize the treated sewage on its own land for gardening purposes.
3. The unit shall operate and maintain the existing ETP, RO systems, MEE and ATFD for the treatment of trade effluent generated from the unit and the RO permeate shall be utilized for gardening purpose after satisfying the standards prescribed by the Board.
4. The unit shall ensure that operation of the Port activity does not create any impact on the livelihood of the fishermen.
5. The unit shall ensure that the operation of port activity shall not create any adverse effect on the marine eco system or marine water quality of the sea water intake point of M/s. Chennai Water Desalination Plant.
6. The unit shall ensure that the operation activity of the unit shall not create any hindrances to the Kattupalli village under any circumstances.
7. The unit shall comply with the conditions imposed in the environmental clearance accorded to the unit from the MoEF, GOI vide Lr.No. 10-130/2007-IAIII dated 09.02.2018.
8. The unit shall ensure that no oil spill shall occur in the marine coastal areas due to the operation activities.
9. The Port shall ensure that the dredged material arising from dredging operations shall not be dumped in the areas attracting CRZ Notification and the material shall be used for further beneficial use.
10. The Port shall have containment Boom facility with skimmer to contain and recover the spillages of Liquid Cargo in to the sea if any.
11. The unit shall maintain the water quality of Marine Sea so as to meet the Marine Water quality prescribed for Harbour Sea Water and ensure that the marine water quality is monitored at regular intervals by engaging competent agencies.
12. The unit shall furnish carry out impact assessment study once in a year with respect to marine and land environment and the report shall be furnished to Board.
13. The Port shall ensure that adequate oil spill response equipment shall be made available as per the Appendix B of the Tamil Nadu State Oil Spill Disaster Contingency Plan, September 2016.
14. The Port shall ensure participation in the oil spill combating training along with the State Agencies such as Tamil Nadu Maritime Board organised by the Indian Coast Guard time to time.
15. The port shall ensure the formation and regular functioning of dedicated Environment Cell and Oil Spill Contingency Response Cell in order to have timely response to incidents of oil spill and any other contingency in the Port area.
16. In case of revision of consent fee by the Government, the unit shall remit the difference in amount within one month from the date of notification. Failing to remit consent fee, this consent order will be withdrawn without any notice and further action will be initiated against the unit as per law.
17. The unit shall not use 'use and throwaway plastics' such as plastic sheets used for food wrapping, spreading on dining table etc., plastic plates, plastic coated tea cups, plastic tumbler, water pouches and packets, plastic straw, plastic carry bag and plastic flags irrespective of thickness, within the industry premises. Instead unit shall encourage use of eco friendly alternative such as banana leaf, areca nut palm plate, stainless steel, glass, porcelain plates/cups, cloth bag, jute bag etc.
18. The unit shall not undertake any activity in its premises in violation of the CRZ Rules notified by the MoEF & CC, GoI.
19. The unit shall maintain the dedicated reception facilities provided for receiving hazardous waste as per the orders of the Hon'ble NGT (PB) in OA No.804/2017.
20. The unit shall adhere to the International Convention for the prevention of pollution from Ships (MARPOL guidelines) covering the following regulations,
 - (i) Regulations for the prevention of pollution by oil
 - (ii) Regulations for the control of pollution by Noxious liquid substances in bulk
 - (iii) Prevention of pollution by sewage from ships
 - (iv) Prevention of pollution by garbage from ships
 - (v) Prevention of Air pollution from ships
21. The unit shall comply with the conditions imposed in the "No increase in Pollution Load" letter issued to the unit by the Board vide Lr. No: T1/TNPCB/ F.022882/RL/GMP/NIPL/2021 Dated:12.01.2021.
22. In case of any deviation in the Gross Fixed Assets furnished in future, the unit shall remit the difference in amount to the Board without fail.
23. The unit shall not commence its expansion activity before obtaining CTE/CTO expansion from the Board.



JOSEPHINESAHAYARANI
TAMILNADU POLLUTION CONTROL BOARD

Digitally signed by JOSEPHINESAHAYARANI
Date: 2021.09.14 07:48:13 +05'30'

For Member Secretary,
Tamil Nadu Pollution Control Board,
Chennai





TAMILNADU POLLUTION CONTROL BOARD

GENERAL CONDITIONS

1. The occupier shall make an application along with the prescribed consent fee for grant of renewal of consent at least 60 days before the date of expiry of this Consent Order along with all the required particulars ensuring that there is no change in Production quantity and change in sewage/Trade effluent.
2. This Consent is issued by the Board in consideration of the particulars given in the application. Any change or alteration or deviation made in actual practice from the particulars furnished in the application will also be ground for review/variation/revocation of the Consent Order under Section 27 of the Act and to make such variation as deemed fit for the purpose of the Act.
3. The consent conditions imposed in this order shall continue in force until revoked under Section 27(2) of the Act.
4. After the issue of this order, all the 'Consent to Operate' orders issued previously under Water (Prevention and Control of Pollution) Act, 1974 as amended stands defunct.
5. The occupier shall maintain an Inspection Register in the factory so that the inspecting officer shall record the details of the observations and instructions issued to the unit at the time of inspection for adherence.
6. The occupier shall provide and maintain an alternate power supply along with separate energy meter for the Effluent Treatment Plant sufficient to ensure continuous operation of all pollution control equipments to maintain compliance.
7. The occupier shall provide all facilities to the Board officials for inspection and collection of samples in and around the factory at any time.
8. The occupier shall display the flow diagram of the sources of effluent generation and pollution control systems provided at the ETP site.
9. The solid waste such as sweepings, wastage, package, empty containers, residues, sludge including that from air pollution control equipments collected within the premises of the industrial plant shall be collected in an earmarked area and shall be disposed off properly.
10. The occupier shall collect, treat the solid wastes like food waste, green waste generated from the canteen and convert into organic compost.
11. The occupier shall segregate the Hazardous waste from other solid wastes and comply in accordance with Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008.
12. The occupier shall maintain good house-keeping within the factory premises.
13. All pipes, valves, sewers and drains shall be leak proof. Floor washings shall be admitted into the trade effluent collection system only and shall not be allowed to find their way in storm drains or open areas.
14. The occupier shall ensure that there shall not be any diversion or by-pass of trade effluent on land or into any water sources.
15. The occupier shall ensure that solar Evaporation pans shall be constructed in such a way that the bottom of the solar pan is at least 1 m above the Ground level (if applicable).
16. The occupier shall furnish the following returns in the prescribed formats to the concerned District office regularly.
 - a) Monthly water consumption returns of each of the purposes with water meter readings in Form-I on or before 5th of every month.
 - b) Yearly return on Hazardous wastes generated and accumulated for the period from 1st April to 31st March in Form-4 before the end of the subsequent 30th June of every year (if applicable).
 - c) Yearly Environmental Statement for the period from 1st April to 31st March in Form -V before the end of the subsequent 30th September of every year(if applicable).
17. If applicable, the occupier has to comply with the provisions of Public Liability Insurance Act, 1991 to provide immediate relief in the event of any hazard to human beings, other living creatures/plants and properties while handling and storage of hazardous substances.
18. The issuance of this consent does not authorize or approve the construction of any physical structures or facilities or the undertaking of any work in any natural watercourse or in Government Poromboke lands.
19. The issuance of this Consent does not convey any property right in either real personal property or any exclusive privileges, nor does it authorize any injury to private property or Government property or any invasion of personal rights nor any infringement of Central, State laws or regulation.




TAMILNADU POLLUTION CONTROL BOARD

20. The occupier shall forth with keep the Board informed of any accident of unforeseen act or event of any poisonous, noxious or polluting matter or emissions are being discharged into stream or well or air as a result of such discharge, water or air is being polluted.
21. If due to any technological improvements or otherwise the Board is of opinion that all or any of the conditions referred to above requires variation (including the change of any treatment system, either in whole or in part) the Board shall, after giving the applicant an opportunity of being heard, vary all or any of such conditions and thereupon the applicant shall be bound to comply with the conditions as so varied.
22. In case there is any change in the constitution of the management, the occupier of the new management shall file fresh application under Water (Prevention and Control of Pollution) Act, 1974, as amended in Form-II alongwith relevant documents of change of management immediately and get the necessary amendment with renewal of consent order.
23. In case there is any change in the name of the company alone, the occupier shall inform the same with relevant documents immediately and get the necessary amendments for the change of name from the Board.
24. The occupier shall display this consent order granted to him in a prominent place for perusal of the inspecting Officers of this Board.

JOSEPHINESAHAYARANI


Digitally signed by JOSEPHINESAHAYA
Date: 2021.09.14 07:48:57 +05'30'

**For Member Secretary,
Tamil Nadu Pollution Control Board,
Chennai**

	Marine Infrastructure Developer Pvt Ltd	From : April 2021 To : September 2021
<p align="center"><u>Compliance to Tamil Nadu Coastal Zone Management Authority (TNCZMA)</u> <u>Conditions vide letter no. 6064/EC.3/2014-1 dated 26.06.2014</u></p>		

Annexure – VI

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	<p>Being Complied.</p> <p>In past, LTSB has been continuously monitoring shoreline studies through Institute of Ocean Management, Anna University, Chennai.</p> <p>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.</p>
iii	Chemical waste generated and the sewage generated, if any should not be discharged into the sea and shall be properly handled	<p>Complied.</p> <p>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 April'21 to Sep'21 is enclosed as Annexure - III.</p>
iv	The wastewater generated shall be collected, treated and reused properly	<p>Complied.</p> <p>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 April'21 to Sep'21 is enclosed as Annexure - III.</p>

	Marine Infrastructure Developer Pvt Ltd	From : April 2021 To : September 2021
<u>Compliance to Tamil Nadu Coastal Zone Management Authority (TNCZMA)</u> <u>Conditions vide letter no. 6064/EC.3/2014-1 dated 26.06.2014</u>		

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 towards dock safety for the period April'21 to Sep'21 is enclosed as Annexure- VII.

Annexure – VII

Marine Infrastructure Developer Pvt. Ltd, Kattupalli Port. Mock Drills – April'21 to Sep'21				
S. No	Date	Time	Scenario	Participants
1	27.04.2021	16:30 Hrs	Patrol Party Not Reporting Back for Last 2 Hours.	14
2	15.05.2021	17:45 Hrs	An Empty Truck Made Forced Entry and Disappeared Inside the Port Premises	16
3	27.05.2021	18:10 Hrs	Unauthorized Taking In Prohibited Material Hidden In Vehicle	13
4	17.06.2021	11:00 Hrs	Suspected Item Found at Quay & Intruder Attempting to Penetrate the Outer Perimeter	20
5	19.07.2021	17:45 Hrs	Criminal Terrorist Attack and Hostage Situation	15
6	20.08.2021	21:30 Hrs	Enforced Entry of Vehicle Through Port In Gate	13
7	23.08.2021	09:40 Hrs	Bug and Hidden Camera Case	04
8	28.08.2021	15:00 Hrs	Attempt to Chemical Attack Inside Port Premises	17
9	13.09.2021	11:15 Hrs	Attempt to Temper Export Cargo Stored Inside the Container	17
10	17.09.2021	18:10 Hrs	Entry of Contraband (Liquor Drug) By Hiding Inside the Cargo Vehicle	12
11	19.09.2021	11:00 Hrs	Bomb Threat Received by Telephone Call	17
12	30.09.2021	12:08 Hrs	Bitumen Cargo Spill on The Cleaner Left Leg While Repositioning of Loading Arm at Encl-3 TLF Bay No:2.	43

Marine Infrastructure Developer Pvt. Ltd, Kattupalli Port.
Mock Drills – April'21 to Sep'21 (Photos)



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	<ul style="list-style-type: none"> • 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 	<p>Complied.</p> <p>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:</p> <ul style="list-style-type: none"> • 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. <p>Adequate Greenbelt has been developed & is being maintained in the port area. Till date, 37,118 Nos. of trees has been planted and around 11,744 Nos of trees planted during the compliance period.</p>

				<div data-bbox="1320 191 1911 631"><p>Shot on OnePlus By R Satish Kumar</p></div> <div data-bbox="1320 660 1917 1000"><p>REDMI NOTE 8 PRO AI QUAD CAMERA 2022/6/24 12:28</p></div> <div data-bbox="1388 1031 1877 1399"></div>
--	--	--	--	--


				<div data-bbox="1299 207 1619 779" data-label="Image"> </div> <div data-bbox="1644 207 1911 771" data-label="Image"> </div> <div data-bbox="1289 878 1470 1031" data-label="Image"> </div> <div data-bbox="1333 1066 1457 1088" data-label="Caption"> <p>Water sprinkling</p> </div> <div data-bbox="1528 854 1703 1079" data-label="Image"> </div> <div data-bbox="1560 1089 1671 1110" data-label="Caption"> <p>Mobile Hopper</p> </div> <div data-bbox="1759 878 1911 1047" data-label="Image"> </div> <div data-bbox="1782 1066 1890 1088" data-label="Caption"> <p>Road cleaning</p> </div> <div data-bbox="1285 1138 1484 1273" data-label="Image"> </div> <div data-bbox="1505 1130 1703 1252" data-label="Image"> </div> <div data-bbox="1537 1271 1671 1292" data-label="Caption"> <p>closed warehouse</p> </div> <div data-bbox="1717 1130 1932 1243" data-label="Image"> </div> <div data-bbox="1738 1271 1911 1292" data-label="Caption"> <p>Covered with Tarpaulin</p> </div>
--	--	--	--	--

		Noise	<ul style="list-style-type: none"> • Personal Protecting Equipment (PPE) • Greenbelt Development • Counselling and traffic regulation 	<p>Complied.</p> <p>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.</p> <ul style="list-style-type: none"> • 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 30 Km/ Hr. • Adopting latest technology operation to restrict the vehicular movements inside terminal <div data-bbox="1381 786 1812 1075" data-label="Image"> </div> <div data-bbox="1335 1078 1885 1382" data-label="Image"> </div>
--	--	-------	--	---

		Traffic Addition	<ul style="list-style-type: none"> 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. 	<p>Complied.</p> <p>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.</p> <p>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.</p> <p>Kattupalli Port is located Close proximity to majority of CFSs serving immediate hinterland and enabling faster evacuation of cargo.</p>
2	Aqueous discharges in harbour basin	Marine water quality and ecology	<ul style="list-style-type: none"> 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. 	<p>Complied.</p> <ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> • In case of any cargo spillage during transfer from/to ships, it will be attempted to recover the spills. • Oil spill control equipment such as booms / barriers will be provided for containment and skimmers will be provided for recovery. • Response time for shutting down the fuelling, containment and recovery will be quicker. 	<ul style="list-style-type: none"> • 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. <div data-bbox="1325 347 1635 651" data-label="Image"> </div> <div data-bbox="1661 347 1913 643" data-label="Image"> </div> <div data-bbox="1287 670 1959 1050" data-label="Image"> </div> <div data-bbox="1312 1050 1896 1378" data-label="Image"> </div>
---	----------------------	----------------------------------	--	--

4	Maintenance dredging	Maintenance dredging	<ul style="list-style-type: none"> 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. <ul style="list-style-type: none"> 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 report for the period Apr'21 to Sep'21 is attached as Annexure- III
		Marine Ecology		
5	Water Supply	Water resources	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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 April'21 to Sep'21 is enclosed as Annexure - III .
7	Solid Waste Management	Groundwater and Soil quality	<ul style="list-style-type: none"> Composted biodegradable waste will be used as manure in greenbelt. Other recyclable wastes will be sold. 	Complied. <ul style="list-style-type: none"> 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

				<p>is used in the nursery and for the gardening purposes.</p> <ul style="list-style-type: none"> Kitchen waste is being disposed to the biogas facility (6 m3/Day) available on site. Gas output will be 3 Kg/Day.
8	Handling of hazardous wastes	Fire accidents due to products handling	<ul style="list-style-type: none"> 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. Effective Disaster Management Plan (DMP) which covers onsite and offsite emergency plans. Recovery of spills to the extent possible. 	<p>Complied.</p> <ul style="list-style-type: none"> 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 2020-21 is attached as Annexure – II. 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. <div data-bbox="1260 1144 1848 1331">  </div>
9	Fishing activity	Fishermen livelihood	<ul style="list-style-type: none"> The cargo handling activities involved in operation phase are confined to the project area and 	<p>Complied.</p>

			<p>hence no hindrance to fishing is anticipated Continuing to Educate the fishermen about Port activities</p> <ul style="list-style-type: none"> • Regular Interactions will be carried out with the fishing community • Conflicts if any with fishing community will be amicably resolved in all cases 	<ul style="list-style-type: none"> • 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	<p>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 the area with better schooling, communication and transport facilities that will be developed/ triggered as a part of overall economic development of the region.</p>	<p>Being Complied. Major CSR activities carried out during the compliance period is as follows;</p> <p>1. Education:</p> <ul style="list-style-type: none"> • Joyful learning- Sankalp by IIT volunteers: Demonstrated simple science experiments from the materials available in day-to-day use Organised in Thiruvellavoyal for 42 school children benefited Volunteers from IIT Madras handled the session in interactive mode Local young girls volunteered to mobilize the students along with community animator. • Observed international Yoga day on the Theme of “Yoga for Wellness” in 7 villages covering 106 students learned importance of yoga in day-to-day life, physically and physiologically strong especially in the present challenging situation. • Created awareness among Animators and Volunteers on importance to save and protect environment participated by 20 members. <p>2. Community Health:</p> <ul style="list-style-type: none"> • Artificial Limp - Supported a girl child • Suposhan Tele Counselling conducted for 272 Community people wherein 176 of 0-5 years children, 80 Adolescent girls and 16 pregnant and lactating mothers.

				<ul style="list-style-type: none"> • Covid Awareness- Educated 9268 people on vaccination wherein 1345 people got vaccinated • Adani Foundation donated 20 lakhs worth of Digital X Ray machine to Government Hospital Ponneri. Technical advantages of this machine are it replaces conventional X Ray with immediate Digital analysis. Hence by this initiative and average 30K Rs contributed towards community Health covering 54 Panchyats. • Observed World breast feeding week in Pulicat Panchayat. Organised training on breast feeding awareness for Anganwadi workers. 50 Anganwadi staff were participated in this program • MHCU (Mobile Health Care Unit) inaugurated at 14 villages in three Panchayat (Kattupalli, Thangalperumbulam & Voyalur). So far, we have reached 800 persons and provided medical care support through our Mobile Health Care Unit. • <u>Suposhan</u> – Celebrated Poshanma program in our working intervention villages – Planted Drumstick trees in SAM/ MAM children houses. Conducted Rangoli competition and Nutrition awareness program for ANC & PNC mothers and personal hygiene awareness for adolescence girls. <p>3. Sustainable Livelihood Development:</p> <ul style="list-style-type: none"> • Palm Leaf Product- training on Palm leaf product at Jamilabath of Kottai kuppam panchayat in Pulicat zone. • AF, Kattupalli have extended financial support of Rs. 50K upon his request for resuming the petty shop – he would be earning Rs. 12K monthly from this shop
--	--	--	--	---

				<ul style="list-style-type: none"> • Adani Skill Development Centre at Kattur. • AF Organized 1000 Farmers and linked to TAFE free ploughing scheme to support the small and marginal farmers in Kattur, Thiruvellavoyal, Neithavoyal and Voyalur Villages. • Total 1500 acres of land will be ploughed through the Scheme. It was 100 acres covered. About Rs.15 lakhs will be provided from TAFE whereas AF Katturpalli CSR Team Organize the farmers. • Organized Farmers Awareness Meetings Thiruvellavoyal village and sensitized 20 farmers on the Adoption of Integrated Nutrient Management and Integrated Pest and Disease Management Technologies to mitigate these problems – Major agenda is to promote Organic Farming in the Village for sustainable production and restoration of Local Eco-system • Soli Sample collected from the Kattur villages to the analysis of a soil sample to determine nutrient content, composition, and other characteristics such as the acidity or pH level. • Motivated Farmer Producer Organization at Thiruvellavoyal to scale up their initiatives on integrated Farming and direct marketing. A project on the same under CSR is recommended to promote. • AF Organized free ploughing for 134 small and marginal Farmers out of 435. TAFE facilitated them to take up the cultivation during the ensuing season. Other Farmers could not take up the ploughing activity due to the continuous rainfall. <p>4. Community Infrastructure Development:</p>
--	--	--	--	---

- Provided streetlight and High mast for 4 Villages (Katur, Thiruvellavoyal, Neithavoyal, and Sathankuppam villages)



--	--	--





		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.	<p>Noted for Compliance.</p> <p>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 April'21 to Sep'21 is enclosed as Annexure-VII.</p>
		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.	<p>Being Complied.</p> <p>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.</p> <p>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.</p>

KATTUPALLI PORT
CHENNAI'S NEW GATEWAY

MIDPL/TNPCB/2021-22/119

Date: 23/09/2021

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

MS

ET082426163IN IVR:6984082426163
SP ANNA ROAD H.O <600002>
Counter No:18,23/09/2021,13:08
To:MEMBER SECRET, TN POLLUTION CONT
PIN:600032, Guindy Industrial Estate S.O
From:R SATHISHKU, SR MANAGER ENVIR
Wt:140gms
Amt:29.50(Cash)Tax:4.50
<Track on www.indiapost.gov.in>
<Dial 18002666868> <Wear Masks, Stay Safe>

Dear Sir,

Sub: Submission of Environmental Statement (Form V) for the financial year ending 31st March, 2021 of Marine Infrastructure Developer Private Limited, Kattupalli Port, Chennai

Ref: 1. Consent Order No. 2105136876761 under Water Act dated 13.09.2021
2. Consent Order No. 2105236876761 under Air Act dated 13.09.2021

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 2021.

Submitted for your kind information and records.

Thanking you,

JCEE

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

23/9/21
Jai Singh Khurana
Managing Director

R.S.

Encl: As above

ET082426150IN IVR:6984082426150
SP ANNA ROAD H.O <600002>
Counter No:18,23/09/2021,13:08
To:JOINT CHIEF E, TN POLLUTION CONT
PIN:600106, Arumbakkam S.O
From:R SATHISHKU, SR MANAGER ENVIR
Wt:140gms
Amt:29.50(Cash)Tax:4.50
<Track on www.indiapost.gov.in>

DEE

Copy To:

ET082426146IN IVR:6984082426146
SP ANNA ROAD H.O <600002>
Counter No:18,23/09/2021,13:08
To:DIS ENVIRONME, TN POLLUTION CONT
PIN:601201, Gummidipundi SO
From:R SATHISHKU, SR MANAGER ENVIR
Wt:140gms
Amt:41.30(Cash)Tax:6.30
<Track on www.indiapost.gov.in>
<Dial 18002666868> <Wear Masks, Stay Safe>

- 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,
Tiruvalluvar District 600 120,
Tamil Nadu, India

Tel +91 44 2824 3062

CIN: U74999TN2016PTC103769

Vijayasankar K

From: Sathish Kumar R
Sent: Thursday, September 23, 2021 1:02 PM
To: ecompliance-tn@gov.in
Cc: Jai Khurana; Milind Sangtiani; Vijayasankar K; Subramanian A
Subject: Submission of Environmental Statement (Form V) for the financial year ending 31st March, 2021 of Marine Infrastructure Developer Private Limited, Kattupalli Port, Chennai
Attachments: MIDPL Form V 2020-21 23.09.2021.pdf
Importance: High

Dear Sir / Madam,

With reference to the captioned subject, 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 2021.

Submitted for your kind information and records.

Thanks and Regards

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 |



Growth
with
Goodness

Our Values: Courage | Trust | Commitment



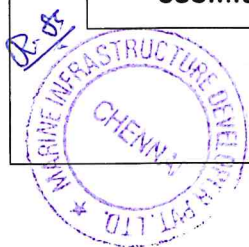
Form-V

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

Environmental Statement for the financial year ending 31st March 2021

PART - A

i) Name and Address of the owner/occupier of the industry operation or process	: Mr. Jai Singh Khurana Managing 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 <ul style="list-style-type: none">• 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 09 th February 2018.
v) Date of the last environmental statement submitted	: Vide our Letter No. MIDPL/TNPCB/2020-21/32 dated 21.09.2020.



PART – B

WATER AND RAW MATERIAL CONSUMPTION

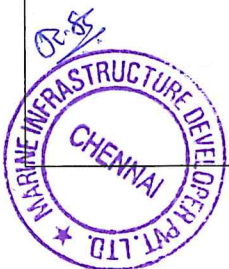
(i) Water Consumption

S. No	Water Consumption (m ³ / Day)	During the previous Financial year (2019-2020)	During the Current Financial year (2020-2021)
1.	Process	NIL	NIL
2.	Cooling	NIL	NIL
3.	Domestic	138.25	124.66

(ii) Raw Material Consumption

S. No	Name of the Raw Material	Name of the Product	Consumption during the financial year 2019-20.	Consumption during the financial year 2020-21.
1	Not Applicable	Not Applicable	NIL	NIL

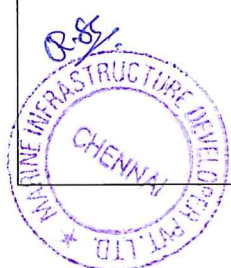
The unit does not undergo any manufacturing process. The water consumed is mainly for Firefighting, dust suppression on roads, Greenbelt development and maintenance, etc.



PART – C

POLLUTION DISCHARGE TO ENVIRONMENT/ 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	10 KLD	5 KLD	
	pH	5.5-9	7.32	7.21	7.57	-Nil-
	Total Suspended Solids (mg/l)	30	18.54	8.0	17.18	-Nil-
	BOD (3 days at 27°C) (mg/l)	20	15.27	3.0	13.68	-Nil-
b) Air	DG sets are provided as standby power source and are used during power failure only. The Height of DG stacks as per CPCB/TNPCB Standards. All the monitored parameters are well within the 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

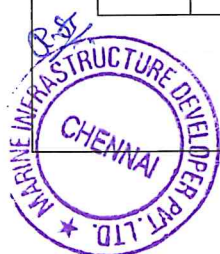
(As specified under Hazardous Waste Management and Handling Rules 1989)

Hazardous Wastes	Total Quantity (Kg)	
	During the previous financial Year (2019-20)	During the current financial Year (2020-21)
(a) From Process	<ul style="list-style-type: none">Cargo residue, washing water and sludge containing oil (3.1) - 50.310 T	<ul style="list-style-type: none">Cargo residue, washing water and sludge containing Oil (3.1)- 44.42 MTDiscarded Containers/ Barrels (33.1)- 3.57 MTUsed/Waste/ Spent Oil (5.1)- 5.4 MT
(b) From Pollution control facilities	NA	NA

PART-E

SOLID WASTES

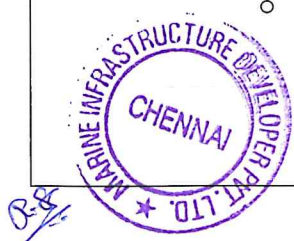
TOTAL QUANTITY GENERATED			
Solid Waste		During the previous Financial Year (2019-20)	During the current Financial Year (2020-21)
a)	From process	NIL	NIL
b)	From pollution control facilities- STP	192 kgs	168 kgs
c)	1. Quantity recycled or reutilized within the Unit	192 kgs	168 kgs
	2. Sold	NIL	NIL
	3. Disposed	NIL	NIL



PART-F

Please specify the characterization (in terms of composition and quantum) of hazardous as well as solid wastes and indicate disposal practice adopted for both these categories of wastes.

- **"Zero Waste to Landfill" Initiative** - No waste is being sent to landfill or incineration facility. MIDPL is having Integrated Waste Management System (IWMS) to proper segregate & recover the materials and are handled as per 5R (Reuse, Recycle, Recover and Reprocess) principle.
- MIDPL has awarded with Zero Waste to Landfill Management System (ZWTL MS 2020) from TÜV Rheinland India Pvt. Ltd (Annexure – 2).
- Hazardous waste includes Cargo residue, washing water and sludge containing oil, Discarded Containers/ Barrels and Used/Waste/ Spent 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 with the 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 vendors as per the E-waste Management Rules 2016 (as amended).
- Hazardous Waste Annual returns in Form 4 was submitted in line with the Hazardous and Other Wastes (Management & Transboundary Movement) Rules, 2016.
- 100% utilization of STP sludge for greenbelt maintenance as manure.
- MIDPL certified as "Single Use Plastic (SUP) Free" site from CII –ITC Centre of Excellence for Sustainable Development (Annexure – 3)
- **Plastic free Drive:**
 - MIDPL has displayed stickers at various places at the facility, spreading awareness as plastic are prohibited now.

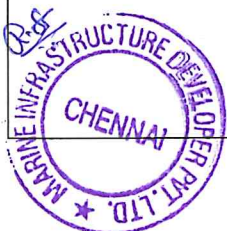


- Awareness sessions organized among department and contract workers. Made shop keepers and canteen owners to stop providing plastic carry bags to carry the material.
- Confirms to stop usage of plastic cups to serve tea and water pouches within the premises of MIDPL.
- Regular supervision by Team Members at Port Canteens for verification of prohibition of plastic.

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.
- 15 RTGs 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,10 KLD and 5 KLD STPs) are in continuous operation and the treated effluent water quality is meeting the TNPCB norms. STP treated water is used for Gardening purpose, thereby reducing freshwater consumption. The total cost spent on STP operation and maintenance during the year 2020-21 is Rs. 11.62 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, NO_x, 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



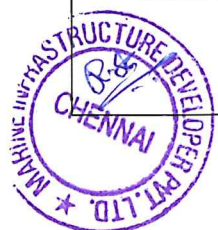
is regularly being submitting to TNPCB, CPCB, MoEF&CC and other concerned authorities.

- All the domestic effluent generated at port is treated at existing Sewage Treatment Plants (30 KLD, 10 KLD and 5 KLD) and the entire treated sewage water is being reused within port premises for gardening.
- Motion sensor and timers installed at buildings to reduce energy consumption.
- Installed and operating Vehicle Pollution Under Control (PUC) checking facility to control vehicular emission in port premises.
- RTG Container Stacking 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 "Eco Plug"
- Streetlight and High mast lighting controlled by light intensity sensor.
- 12,320 trees & 9,600 Shrubs planted as part of Greenbelt development program in the year 2020-21. Drip Line and Sprinkler Irrigation System is provided at MIDPL during the year 2020-21.

PART-H

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

<u>Regular Expenditure (cost in INR lakhs/year)</u>		
S. No	Description	Cost
1	Comprehensive Environmental Monitoring	4.93
2	AAQ/NL/SM Survey & STP Treated Water Quality Analysis	0.48
3	Environment Studies	52.86
4	Training & Awareness program	0.20
5	Integrated Waste Management & Pollution Under Check Facility	1.85
6	O&M of STP's	11.62
7	Housekeeping	77.8
8	Greenbelt Maintenance	79.47
Total		229.2



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.
- Paperless Operation is in place (Except for Statutory requirements) using application tools and Software – Terminal Info Gateway (TIG).
- Energy Conservation Committee to measure the amount of energy consumed and to actions to reduce the energy consumed through port operations.
- 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.
- Working towards Implementation and obtaining "5S" Certification at MIDPL
- Working towards Implementing Energy Management System ISO 50001:2018
- Environmental benchmarking has been performed for GHG Emission with global ports.

Date: 23.09.2021

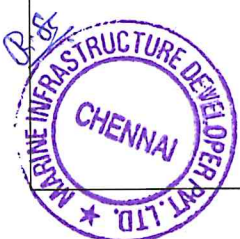
(Signature of a person carrying out an industry operation or process)

[Handwritten Signature]
23/9/21

Name : **Jai Singh Khurana**

Designation: **Managing Director**

Address : Marine Infrastructure Developer Pvt Ltd (MIDPL)
Kattupalli Village, Ponneri Taluk,
Thiruvallur District – 600 120
Tamil Nadu, India.



MIDPL- STACK MONITORING (MAY'2020 TO MARCH'2021)													
Location		DG 2000KVA - 1											Avg
Month & Year		April'2020	May'2020	June'2020	July'2020	Aug'2020	Sep'2020	Oct'2020	Nov'2020	Dec'2020	Jan'2021	Feb'2021	March'2021
S. No.	Parameters												
1	Stack Temperature, °C		255	267	260	274	262	268	261	249	256	242	269
2	Flue Gas Velocity, m/s		24.98	25.44	24.25	25.37	26.01	26.94	25.68	26.92	27.42	25.96	24.12
3	Sulphur Dioxide, mg/Nm ³	The sampling was not taken Due to Covid 19 lockdown	6.2	6.7	7.2	8.4	8.9	9.4	9	7.8	8.3	7.5	9.3
4	NOX (as NO2) in ppmv		201	219	227	236	228	235	227	217	234	221	236
5	Particulate Matter, mg/Nm ³		32.1	34.5	32.8	34.1	36.8	34.1	36.1	38.4	35.1	32.9	34.2
6	Carbon Monoxide, mg/Nm ³		75	86	90	95	87	92	94	87	89	80	91
7	Gas Discharge, Nm ³ /hr		6337	6311	6127	6213	6512	6670	6442	6908	6943	6753	5961
MIDPL- STACK MONITORING (May'2020 to March'2021)													
Location		DG 2000KVA - 2											Avg
Month & Year		April'2020	May'2020	June'2020	July'2020		Sep'2020	Oct'2020	Nov'2020	Dec'2020	Jan'2021	Feb'2021	March'2021
S. No.	Parameters												
1	Stack Temperature, °C		251	261	249		255	264	257	252	239	220	261
2	Flue Gas Velocity, m/s		25.12	23.98	24.98		25.53	26.27	26.09	26.92	27.51	24.43	23.75
3	Sulphur Dioxide, mg/Nm ³		6.5	5.9	6.8		7.7	8.6	8	8.5	8	7.1	8.8
4	NOX (as NO2) in ppmv		209	214	218	---	215	232	221	223	218	210	234
5	Particulate Matter, mg/Nm ³		30.9	33.1	31.7		33.4	35.9	33.2	36.2	32.4	31.9	32.9
6	Carbon Monoxide, mg/Nm ³		81	83	96		83	90	93	91	78	75	88
7	Gas Discharge, Nm ³ /hr		6420	6015	6445		6478	6553	6594	6925	7197	6638	5957
MIDPL- STACK MONITORING (Aug'20, Oct'20 to March'2021)													
Location		DG 125 KVA											Avg
Month & Year			Aug'2020		Oct'2020	Nov'2020	Dec'2020	Jan'2021	Feb'2021	March'2021			
S. No.	Parameters												
1	Stack Temperature, °C		420		146	140	130	124	117	124		117	124
2	Flue Gas Velocity, m/s		9.87		9.98	10.17	11.02	11.98	11.08	12.41		11.08	10.93
3	Sulphur Dioxide, mg/Nm ³		-		4.7	4.5	4.1	4.3	4	4.9		4	4.42
4	NOX (as NO2) in ppmv		-		85	78	70	66	54	62		54	69.17
5	Particulate Matter, mg/Nm ³		-		15.8	16.7	14.3	15.7	16.8	18.1		16.8	16.23
6	Carbon Monoxide, mg/Nm ³		<0.2		21	25	19	22	19	23		19	21.50
7	Gas Discharge, Nm ³ /hr		443		449	463	515	569	535	592		535	509.43



Certificate

Standard: **Zero Waste to Landfill Management System
(ZWTL MS 2020)**

Certificate Holder: **Marine Infrastructure Developer Private Limited**
Kattupalli Port, Tiruvallur - 600120
Tamil Nadu, India

Scope: **Providing Port Facilities for Handling and Storage
of Bulk Cargo, Containerized Cargo and Liquid
Terminal Operations**



Proof has been furnished by means of an audit that the
Requirements of ZWTL MS 2020 are met, with the
achievement of waste diversion rate of above 99%

Validity: This certificate is valid from 01-06-2021 until 31-05-2024
Subject to satisfactory annual surveillance audits.

Certificate No. TUV/ZWLMS/2021/Adani Ports/0502

New Delhi, 01-06-2021

TÜV Rheinland India Pvt. Ltd.
Office 610, 6th Floor, iThum
Tower, A-40, Sector-62,
Noida- 201301, India



CII-ITC Centre of Excellence
for Sustainable Development



Confederation of Indian Industry

Certificate

Single-use Plastic Free

Marine Infrastructure Developer Private Limited

Kattupalli Village, Ponneri Taluk, Tiruvallur District, Tamil Nadu 600 120. India.

This is to certify that Marine Infrastructure Developer Private Limited at the location mentioned above is Single-use Plastic Free as verified by the Confederation of Indian Industry for the period 01 April 2020 to 31 March 2021 under the provisions of the **Plastics-use Protocol: Verification and Certification (1.0)**.

PLASTICS-USE
PROTOCOL



Ms Seema Arora

Deputy Director General

Confederation of Indian Industry (CII)

Centre of Excellence for Sustainable Development (CESD)

Certificate Date: 6 May 2021

Certificate No: CII/PuP/2021/011

This certificate has been awarded after the company fulfilled the requirements for phasing-out single-use plastics and providing evidence for it. Responsibility for the data provided to CII rests solely with the company. The conditions of certification are detailed in the Annex.



CII-ITC Centre of Excellence
for Sustainable Development



Confederation of Indian Industry

Annex

The certification applies to the following single-use plastic items identified and phased out by Marine Infrastructure Developer Private Limited:

- Cutlery (knives, forks, spoons, chopsticks)
- Crockery (plates, glasses, cups) and plastic food containers
- Straws
- Stirrers
- Carry bags
- Items of decoration (polystyrene)
- Garbage bags
- Sheets for food wrapping and spreading on dining tables
- Plastic coated teacups and tumblers
- Water pouches
- Flags
- Gloves

This certification is based on the verification of data set for the period from 1 April 2020 to 31 March 2021.

Organizational Boundary: Marine Infrastructure Developer Private Limited

Operational Boundary: Administrative, canteen, kitchen and operational areas

Material Boundary: Single-use Plastics

Reference

Verification date: 8 April 2021

Verification Report No: PuP/Verification/2021/AdaniPort/003

Mode: On account of the COVID-19 pandemic, the verification process was virtual and followed provisions outlined in the Verification Procedure 1.0 of the Protocol