adani
Ports and Logistics

AECTPL/KPL/HYC/ENV/2022/117 Date: 08.08.2022

To,
The General Manager (Marine Services)
Kamarajar Port Limited,
23, Rajaji Salai, Chennai - 600 001

Dear Sir,

Sub: Development of container terminal at Kamarajar Port Limited on DBFOT basis, KPL awarded to Adani Ennore Container Terminal Private Limited (AECTPL)- **Submission of Half yearly Compliance (January 2022 to June 2022) of Environmental Clearance issued to Kamarajar Port Limited in various stages of development with regards to Container Terminal** - Reg.

Ref: 1. Vide order no: 10-28/2005-IA-III dated 19th May, 2006
2. Vide order no: 10-28/2005-IA-III dated: 10/09/2007 and validity extension date: 31.03/2017
3. Vide order no: 10-28/2005-IA-III dated: 24/12/2014

With reference to the above captioned subject, **Adani Ennore Container Terminal Private Limited** is submitting the **Half yearly compliance report** (for the period **January 2022 to June 2022**) of applicable conditions to the Environmental & CRZ Clearance obtained by the M/s. Kamarajar Port Limited in various stages of development as referred above.

Further, as requested compliance status in .xls file format is also submitted for your kind perusal.

Kindly acknowledge us the receipt of the same.

For M/s. **Adani Ennore Container Terminal Private Limited,**

R. Sathish Kumar
Head - Environment

Encl.: As above.

Adani Ennore Container Terminal Pvt Ltd
Adani House
C/o. Kamarajar Port Limited
Ponneri Taluk, Tiruvallur District
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AECTPL/KPL/HYC/ENV/2022/117 Date: 08.08.2022

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adani

Ports and Logistics

ADANI ENNORE CONTAINER TERMINAL PRIVATE LIMITED (AECTPL)

C/o. KAMARAJAR PORT LIMITED, VALLUR POST,

PONNERI TALUK, ENNORE, TIRUVALLUR DISTRICT, CHENNAI- 600 120

TAMIL NADU

CRZ & Environmental Clearance

[File no: 10-28/2005- IA.III dated: 19/05/2006]

Compliance Report

for the Period

JANUARY 2022 TO JUNE 2022

adani Ports and Logistics	**Adani Ennore Container Terminal Pvt Ltd**	**From: January 2022** **To : June 2022**

Name of the Project: Ennore Port Expansion Proposals – Development of Terminals for Marine Liquids, Coal, Iron and Containers in Second Phase and associated capital dredging at Ennore Port Environment Clearance.

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CRZ & ENVIRONMENTAL CLEARANCE COMPLIANCE REPORT

adani Ports and Logistics	**Adani Ennore Container Terminal Pvt Ltd**	**From: January 2022 To : June 2022**

Name of the Project: Ennore Port Expansion Proposals – Development of Terminals for Marine Liquids, Coal, Iron and Containers in Second Phase and associated capital dredging at Ennore Port Environment Clearance.

Half yearly Compliance report on conditions stipulated in CRZ & Environmental Clearance [File no: 10-28/2005- IA.III dated: 19/05/2006]

S. No.	Conditions	Compliance Status
Specific Conditions		
I.	All the conditions stipulated in the NOC from TNPCB vide their letter No. T12/TNPCB/Misc./F.3322/TVLR/05, dated 07.12.2005 should be strictly implemented.	**Status by KPL.**
II.	Groins and other suitable structures should be constructed to prevent the closing of the month of Ennore Creek.	**Status by KPL.**
III.	The DPR and the technical details to be awarded to the BOT operator should provide to MoEF for post project monitoring within 6 months from the date of receipt of this letter.	**Complied.** Container Terminal DPR submitted vide letter number EPL/MS/49/2008 dt. 13/03/2008.
IV.	The marine terminal should be set up outside CRZ area.	**Status by KPL.**
V.	Recommendations of Risk Analysis report should be strictly implemented, and a comprehensive quantitative Risk Analysis should be carried out before operationalizing the project.	**Complied** Operational Risk Assessment carried out and the recommendations are being implemented. Operational Risk Assessment report submitted vide Letter No. AECTPL/KPL/EC-compliance/Env/02 dt. 13.07.2018.
VI.	Approval form Chief Controller of Chief Explosives should be obtained for hazardous chemicals storage, transfer and related activities.	**Not Applicable.** AECTPL is not storing any Hazardous chemicals. Hence not applicable.
VII.	The reclamation of the port area should be carried out with the dredged materials. Dredged material should not be dumped into the sea. No reclamation should be carried outside the port limits.	**Status by KPL.**

Half yearly Compliance report on conditions stipulated in CRZ & Environmental Clearance [File no: 10-28/2005- IA.III dated: 19/05/2006]

S. No.	Conditions	Compliance Status
VIII.	The coastal protection works should be carried out after detailed hydrodynamic modelling studies and it should be ensured that no erosion or accretion takes place in the shore protection works.	**Status by KPL.**
IX.	Reclamation of 500 acres should be carried out only for the port development. The height of the reclaimed area will be maintained above the maximum flood level.	**Status by KPL.**
X.	The wave tranquillity study and the ship manuring studies carried out should be taken into account while operating the port.	**Status by KPL.**
XI.	The project proponent should ensure that doing construction and operation of the port there will been impact on the livelihood of the fisherman. The fishermen should be provided free access to carry out the fishing activity.	**Status by KPL.**
XII.	All necessary precaution while undertaking construction and operation of the port should be taken keeping in view the bathymetric changes caused due to tsunami.	**Status by KPL.**
XIII.	All development in the port should be accordance with the Coastal Regulation Zone Notification, 1991 and approved Coastal Zone Management Plan of Tamil Nadu.	**Status by KPL.**

Half yearly Compliance report on conditions stipulated in CRZ & Environmental Clearance [File no: 10-28/2005- IA.III dated: 19/05/2006]

S. No.	Conditions	Compliance Status
XIV.	The project proponent should undertake a comprehensive hydrodynamic modelling study with regard to river diversion and submit the report to the Ministry within 6 months from the date of receipt of this letter. Further the unit should comply with all the findings/recommendations of the study.	**Status by KPL.**
XV.	Construction labour camps should be located outside of CRZ area and should be provided with adequate cooking and sanitation facilities.	**Complied.** Construction of container terminal is completed, and the terminal is under operation
XVI.	The project affected people, of any should be properly compensated and rehabilitated.	**Status by KPL.**

Half yearly Compliance report on conditions stipulated in CRZ & Environmental Clearance [File no: 10-28/2005- IA.III dated: 19/05/2006]

S. No.	Conditions	Compliance Status
GENERAL CONDITIONS:		
I.	Development of the proposed channel should be undertaken meticulously conforming to the existing Central/Local rules and regulations including CRZ Notification, 1991 and its amendments. All the construction designs/drawings relating to the proposed development activities must have approvals of the concerned State Govt. Depts./Agencies.	**Status by KPL.**
II.	A well-equipped laboratory with suitable instruments to monitor the quality of air and water shall be set up as to ensure that the quality of ambient air and water conforms to the prescribed standards. The laboratory will also equipped with qualified manpower including a marine biologist so that the marine water quality is regularly monitored in order to ensure that the marine life is not adversely affected as a result of implementation of the said project. The quality of ambient air and water shall be monitored periodically in all the seasons and the results should be properly maintained for inspection of concerned pollution control agencies. The periodic monitoring reports at least once in 6 months must be send to this Ministry (RO at Bangalore) and Pollution Control Committee.	**Complied.** AECTPL is engaging NABL accredited laboratory for regular monitoring of Ambient Air Quality, Ambient Noise Level, DG Stack Emission, Meteorological data, Soil Quality, Marine Surface & Bottom Water quality and Sea Sediment quality. The monitored results are submitted to KPL and Tamil Nadu Pollution Control Board on monthly basis and also as part of Six-monthly compliance report. Monitoring reports are properly maintained and made available for inspection to Pollution Control Agencies, as and when required. Environment Monitoring report for the period January 2022 – June 2022 is attached as **Annexure - I.**

Half yearly Compliance report on conditions stipulated in CRZ & Environmental Clearance [File no: 10-28/2005- IA.III dated: 19/05/2006]

S. No.	Conditions	Compliance Status
III.	Adequate provisions for infrastructure facilities such as water supply, fuel for cooking, sanitation etc. must be provided for the labourers during the construction period in order to avoid damage to the environment. Colonies for the labourers should not be located in CRZ area. It should also be ensured that the construction workers do not cut trees including mangroves for fuel wood purpose.	**Complied.** Construction of the terminal is completed and terminal is in operation.
IV.	To prevent discharge of sewage and other liquid wastes into the water bodies, adequate system for collection and treatment of the waste must be provided. No Sewage and other liquid wastes without treatment should be allowed to enter into the water bodies.	**Complied.** AECTPL is operating 25 KLD capacity Sewage Treatment Plant to treat the domestic effluent being generated from various sources such as washing water from canteen and toilet flushing water from office buildings. The entire treated sewage water is reused for green belt maintenance within the port premises after confirming permissible limit. Inlet & outlet characteristic of Sewage water is regularly monitored and analysed by NABL accredited laboratory. The monitoring results for the period January'22 to June'22 is enclosed as **Annexure - I**. Summary of STP treated water analysis results during compliance period as mentioned below.

Parameter	Unit	Min	Max	TNPCB Limit
pH	-	7.28	8.22	6.5 to 9
TSS	mg/l	14	24	30
BOD	mg/l	9.2	17	20
COD	mg/l	32	84	100
Faecal Coliform	MPN/100ml	160	280	<1000

Half yearly Compliance report on conditions stipulated in CRZ & Environmental Clearance [File no: 10-28/2005- IA.III dated: 19/05/2006]

S. No.	Conditions	Compliance Status
		All the parameters are well within the prescribed norms.
V.	Appropriate facility should be created for the collection of solid and liquid wastes generated by the barges/vessels and their safe treatment and disposal should be ensured to avoid possible contamination of the water bodies.	**Status by KPL.**
VI.	Necessary navigational aids such as channel markers should be provided to prevent accidents. Internationally recognized safety standards shall be applied in case of barge/vessel movements.	**Status by KPL.**
VII.	The project authorities should take appropriate community development and welfare measures for villagers in the vicinity of the project site, including drinking water facilities. A separate fund should be allocated for the purpose.	**Status by KPL.** However, AECTPL has implemented CSR activities like Evening Education center, Mobile Health Care Unit, Suposhan Program, distribution of Tractors(3 nos) to KottaiKuppam, Pazhaverkadhu and Thangalperumbulam panchayats for solid waste management, RO Plant at K.R. Palayam, distribution of 650 Grow bag kits and 900 Vegetable mini kits, Mobile pull carts, Adani Skill Development Centres, installation of 5 high mast lights at 5 panchayats, De-siltation of Kattupalli Pond, encouraging sports & events, etc., in the vicinity of the Port area. Expenses incurred for CSR during the compliance period is Rs.168.03 Lakhs and the breakup details are as follows;

Half yearly Compliance report on conditions stipulated in CRZ & Environmental Clearance [File no: 10-28/2005- IA.III dated: 19/05/2006]

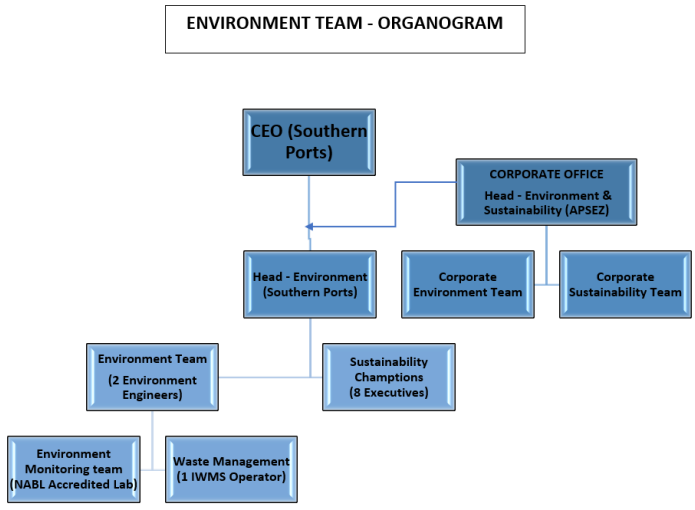
S. No.	Conditions	Compliance Status

S.No	Description	Amount (Rs in Lakhs)
1	Education	**34.80**
2	Health	**82.13**
3	Sustainable Livelihood Development	**15.28**
4	Community Infrastructure Development	**36.82**
	Total	**168.03**

Half yearly Compliance report on conditions stipulated in CRZ & Environmental Clearance [File no: 10-28/2005- IA.III dated: 19/05/2006]

S. No.	Conditions	Compliance Status
VIII.	The quarrying material required for the construction purpose should be obtained only from the approved quarries/borrow areas. Adequate safeguards measures shall be taken to ensure that the overburden and rocks at the quarry site do not find their way in water bodies.	**Complied** Construction of terminal is completed and terminal is in operation.
IX.	For employing unskilled, semi-skilled and skilled workers for the project, preference should be given to local people.	**Complied.** AECTPL has considered local people during construction phase & also during Operation Phase through Contracts.
X.	The recommendations made in the EMP and DMP, as contained in the EIA and RA reports of the projects shall be effectively implemented.	**Status by KPL.**

Half yearly Compliance report on conditions stipulated in CRZ & Environmental Clearance [File no: 10-28/2005- IA.III dated: 19/05/2006]

S. No.	Conditions	Compliance Status
XI.	A separate EMC with suitable qualified staff to carry out various environment should be set up under the charge of a Senior Executive who will report directly to Chief Executive of the Company.	**Complied.** A separate EMC with suitable qualified staff has been put in place by AECTPL for taking care of various day-to-day Environmental monitoring compliance and allied activities. Environment Department is headed by Deputy General Manager – Environment, who is reporting directly to Chief Executive Officer of the company. He is well supported by Environment Management Team at H.O. 

Half yearly Compliance report on conditions stipulated in CRZ & Environmental Clearance [File no: 10-28/2005- IA.III dated: 19/05/2006]

<table>
<tr><th>S. No.</th><th>Conditions</th><th>Compliance Status</th></tr>
<tr><td>XII.</td><td>The funds earmarked for environment protection measures should be maintained in a separate account and there should be no diversion of these funds for any other purpose. A year-wise expenditure on environmental safeguards should be reported to this Ministry.</td><td>Complied

Separate budget for the Environment Protection is earmarked every year. All the expenses are recorded in advanced accounting system of the organization. Expenditure for Environment Management measures during January 2022 to June 2022 is Rs. 36.68 Lakhs. The breakup details are as follows;

<table>
<tr><th>S.No</th><th>Description</th><th>Amount (Rs in Lakhs)</th></tr>
<tr><td>1</td><td>Environmental Monitoring</td><td>12.61</td></tr>
<tr><td>2</td><td>Greenbelt</td><td>2.05</td></tr>
<tr><td>3</td><td>STP – O&M</td><td>2.31</td></tr>
<tr><td>4</td><td>Housekeeping</td><td>18.33</td></tr>
<tr><td>5</td><td>Integrated Waste Management System</td><td>1.38</td></tr>
<tr><td colspan="2">Total</td><td>36.68</td></tr>
</table>
</td></tr>
<tr><td>XIII.</td><td>Full support should be extended to the officers of the Ministry's Regional office at Bangalore and the officer of the Central and SPCB by the project proponent during this inspection for monitoring purposes, by furnishing full details and action plans including the action plans including the action taken reports in respect if mitigative measures and other environmental protection activities.</td><td>Noted for compliance.

Full support is being extended to the officers of IRO, MoEF & CC, Chennai, CPCB & TNPCB during their inspection and site visit. During the compliance period monthly visits were made by TNPCB Officials, and all the necessary supports were extended and the same shall be continued in future also.</td></tr>
</table>

Half yearly Compliance report on conditions stipulated in CRZ & Environmental Clearance [File no: 10-28/2005- IA.III dated: 19/05/2006]

S. No.	Conditions	Compliance Status
XIV.	In case there is an intension of deviation or alternation in the project including the implementing agency, a fresh reference should be made to this Ministry for modification in the clearance conditions or imposition of new ones for ensuring environmental protection. The project proponents should be responsible for implementing the suggested safeguard measures.	**Noted for compliance**
XV.	The Ministry reserves right to revoke this clearance, if any of the conditions stipulated are not compiled with to the satisfaction of this Ministry.	**Noted.**
XVI.	This Ministry or any other competent authority may stipulate additional conditions subsequently, if deemed necessary for environmental protection, which shall be complied with.	**Noted for Compliance**

Half yearly Compliance report on conditions stipulated in CRZ & Environmental Clearance [File no: 10-28/2005- IA.III dated: 19/05/2006]

S. No.	Conditions	Compliance Status
XVII.	The project proponent should advertise at least in two local newspapers widely circulated in the region around the project, one of which shall be in the vernacular language of the locality concerned available with the SPCB and may also be seen at Website of the Ministry of Environment & Forests at http:www.envforenic.in. The advertisement should be made within 7 days from the date of issue of the clearance letter and a copy of the same should be forwarded to the Regional Office of the Ministry at Bangalore.	**Status by KPL.**
XVIII.	The project proponents should inform the RO 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.	**Status by KPL.**

adani Ports and Logistics	**Adani Ennore Container Terminal Pvt Ltd**	**From: January 2022 To : June 2022**

Name of the Project: Ennore Port Expansion Proposals – Development of Terminals for Marine Liquids, Coal, Iron and Containers in Second Phase and associated capital dredging at Ennore Port Environment Clearance.

Half yearly Compliance report on conditions stipulated in CRZ & Environmental Clearance

[Vide order no: 10-28/2005-IA-III dated: 10/09/2007]

A. SPECIFIC CONDITIONS:

S.No	Environmental Clearance conditions	Compliance Status
i	It should be ensured that no mangroves are destroyed during reclamation.	**Status by KPL.**
ii	The proposed extension to the project should not cause any shoreline change abutting Ennore Port.	**Status by KPL.**
iii	Adequate provision for beach nourishment and sand bypass should be provided.	**Status by KPL.**
iv	The dredged material obtained should be utilized for filling up of back up area.	**Status by KPL.**
v	All conditions stipulated in the environmental clearance letter of even number dated 19.05.2006 should be strictly complied with.	**Complied** All stipulated conditions applicable to AECTPL in the environmental clearance letter of even number dated 19.05.2006 are being complied and compliance reports are regularly submitted to KPL. Last compliance report for the period July 2021 to December 2021 was submitted to KPL vide letter No. AECTPL / KPL / HYC / ENV / 2021 / 94 dated 31.01.2022.
vi	The additional dredged material of 4 million cu. Mts. obtained from the project should not be disposed of into the sea.	**Status by KPL.**
vii	The reclaimed area should be used as containers stack yard only.	**Status by KPL.**

S.No	Environmental Clearance conditions	Compliance Status
viii	Adequate drainage facilities should be provided in the reclaimed are along with collection and treatment system for treating the run off from the container stack yards.	**Status by KPL.**
ix	Necessary approvals/clearances should be obtained from the Tamil Nadu Coastal Zone Management Authority and Tamil Nadu Pollution Control Board before implementing the project.	**Complied** TNCZMA recommendation was obtained by KPL. Tamil Nadu Pollution Control Board accorded Renewal of Consent to Operate orders vide their order nos: 2108136876855 & 2108236876855 under Water and Air Acts dated: 24.08.2021 valid till 31.03.2026

B. GENRAL CONDITIONS:

S.No	Environmental Clearance conditions	Compliance Status
i	Construction of the proposed structures should be undertaken meticulously confirming to the existing Central/ local rules and regulations including Coastal Regulation Zone Notification 1991 & its amendments. All the construction design drawings relating to the proposed construction activities must have approvals of the concerned State Government Departments / Agencies.	**Status by KPL.**
ii	Adequate provisions for infrastructure facilities such as water supply, fuel, sanitation etc. should be ensured for construction workers during the construction phase of the project so as to avoid felling of trees/ Mangroves and pollution of water and the surroundings.	**Complied.** Construction of container terminal was completed and project is in operation phase.

S.No	Environmental Clearance conditions	Compliance Status
iii	The project authorities mush 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 are more stringent.	**Complied** AECTPL has installed and operating 25 KLD sewage treatment plant to collect and treat the sewage generated from the terminal. The entire treated sewage water is reused for green belt maintenance within the port premises after confirming permissible limit. Inlet & outlet characteristic of Sewage water is regularly monitored and analysed by NABL accredited laboratory.  AECTPL has implemented Integrated Waste Management System (IWMS) - Waste Segregation Yard. All the Solid waste generated is being handled in line to Solid Waste Management Rules, 2016 as amended. AECTPL vision is based on adoption of 5R principle of waste management i.e Reduce, Reuse, Reprocess, Recycle & Recover. All waste is being handled inline to 5R principle.

S.No	Environmental Clearance conditions	Compliance Status
iv	The proponent shall obtain the requisite consents for discharge of effluents and emission under the Water (Prevention and Control of Pollution) Act, 1974 and the Air (Prevention and Control of Pollution) Act, 1981 from the Tamil Nadu Pollution control Board before commissioning of the project and a copy of each of these shall be sent to this Ministry.	**Complied** Tamil Nadu Pollution Control Board accorded Renewal of Consent to Operate orders vide their order nos: 2108136876855 & 2108236876855 under Water and Air Acts dated: 24.08.2021 valid till 31.03.2026
v	The proponent shall provide for a regular monitoring mechanism so as to ensure that the treated effluents conform to the prescribed standards. The records of analysis reports must be properly maintained and made available for inspection to the concerned State/Central officials during their visits.	**Complied** AECTPL has awarded Environmental Monitoring services to NABL accredited laboratory. Monitoring of Ambient Air Quality, Noise, Stack, STP, Drinking Water, Marine Surface Water, Sea Sediment is carried out on regular basis. The reports are being submitted to KPL and Tamil Nadu Pollution Control Board on monthly basis and also as part of Six monthly compliance report. Environment Monitoring report for the period July 2021 – December 2021 is attached as **Annexure - I**. Reports are made available for inspection to the concerned State/Central officials during their visits.
vi	In order to carry out the environmental monitoring during the operational phase of the project, the project authorities should provide an environmental laboratory well equipped with standard equipment and facilities and qualified manpower to carry out the testing of various environmental parameters.	**Complied** Environmental Monitoring is being carried out through NABL accredited laboratory. Monitoring of Ambient Air Quality, Noise, Stack, STP, Drinking Water, Marine Surface Water, Sea Sediment is carried out on regular basis. The reports are being submitted to KPL and Tamil Nadu Pollution Control Board on monthly basis and also as part of Six monthly compliance reports. Environment Monitoring report for the period July 2021 – December 2021 is attached as **Annexure - I**.

S.No	Environmental Clearance conditions	Compliance Status
vii	The sand dunes and mangroves, if any, on the site should not be disturbed in any way.	**Status by KPL.**
viii	A copy of the clearance letter will be marked to the concerned Panchayat/Local NGO, if any from whom any suggestion/representation has been received while processing the proposal.	**Status by KPL.**
ix	The Tamil Nadu Pollution Control Board should display a copy of the clearance letter at the Regional Office, District Industries Centre and Collector's Office/Tehsildar's Office for 30 days.	**Status by KPL.**
x	The funds earmarked for environment protection measures should be maintained in a separate account and there should be no diversion of these funds for any other purpose. A year wise expenditure on environmental safeguards should be reported to this Ministry's Regional Office at Bangalore and the State Pollution Control Board.	**Complied** Separate budget for the Environment Protection is earmarked every year. All the expenses are recorded in advanced accounting system of the organization. Expenditure for Environment Management measures during January 2022 to June 2022 is Rs. 36.68 Lakhs. The breakup details are as follows;

S.No	Description	Amount (Rs in Lakhs)
1	Environmental Monitoring	**12.61**
2	Greenbelt	**2.05**
3	STP – O&M	**2.31**
4	Housekeeping	**18.33**
5	Integrated Waste Management System	**1.38**
	Total	**36.68**

S.No	Environmental Clearance conditions	Compliance Status
xi	Full support should be extended to the officers of this Ministry's Regional office at Bangalore and the officers of the Central and State Pollution Control Boards by the project proponents during their inspection for monitoring purposes, by furnishing full details and action plans including the action taken reports in respect of mitigative measures and other environmental protection activities.	**Noted for compliance.** Full support is being extended to the officers of IRO, MoEF & CC, Chennai, CPCB & TNPCB during their inspection and site visit. During the compliance period monthly visits were made by TNPCB Officials, and all the necessary supports were extended and the same shall be continued in future also.
xii	In case of deviation or alteration in the project including the implementing agency, a fresh reference should be made to this Ministry for modification in the clearance conditions or imposition of new ones for ensuring environmental protection.	**Noted.**
xiii	This Ministry reserve the right to revoke this clearance, if any of the conditions stipulated are not complied with to the satisfaction of this Ministry.	**Noted.**
xiv	This Ministry or any other component authority may stipulate any other additional conditions subsequently, if deemed necessary, for environmental protection, which shall be complied with.	**Noted.**

S.No	Environmental Clearance conditions	Compliance Status
xv	The project proponent should advertise at least in two local newspapers widely circulated in the region around the project, one of which shall be in the vernacular language of the locality concerned informing that the project has been accorded environmental clearance and copies of clearance letters are available with the State Pollution Control Board and may also be seen at Website of the Ministry of Environment & Forests at http://www.envfornic.in. The advertisement should be made within 7 days from the date of issue of the clearance letter and a copy of the same should be forwarded to the regional Office of this Ministry at Bangalore.	**Status by KPL.**
xvi	The Project proponents should inform the Regional Office at Bangalore 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.	**Status by KPL.**

Half yearly Compliance report on conditions stipulated in CRZ & Environmental Clearance
[Vide order no: 10-28/2005-IA-III dated: 24/12/2014]

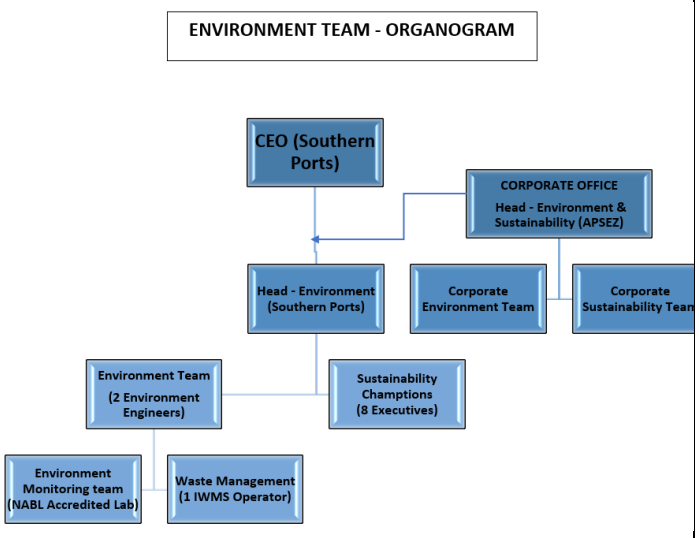
A. SPECIFIC CONDITIONS:

S.No	Environmental Clearance conditions	Compliance Status
i	"Consent to Establish" for the present project, shall be obtained from State Pollution Control Board under Air (Prevention and Control of Pollution) Act, 1981 and Water (Prevention and Control of Pollution) Act 1974.	**Complied.** Tamil Nadu Pollution Control Board accorded Renewal of Consent to Operate orders vide their order nos: 2108136876855 & 2108236876855 under Water and Air Acts dated: 24.08.2021 valid till 31.03.2026.
ii	Quality of Cargo should be handled in accordance with the details provided in the Form-I.	**Complied.** AECTPL is handling only containerized cargo, as approved.
iii	All the recommendations and conditions stipulated by Tamil Nadu Coastal Zone Management Authority (TNCZMA) No. 30060/EC.3/2005-1 dated 06.12.2005 shall be complied with.	**Status by KPL.**
iv	All the conditions as prescribed in the earlier Clearance letter no. 10-28/2005-IA-III dated 19.05.2006 and 10.09.2007 shall be complied with.	**Status by KPL.**
v	All the recommendation of the EIA/EMP & Risk Assessment and Disaster Management Report shall be complied with letter and spirit. All the mitigation measures submitted in the EIA report shall be prepared in the matrix format and the compliance for each mitigation plan shall be submitted to MoEF & CC along with half yearly compliance report to MoEF&CC- RO.	**Status by KPL.**

vi	The commitment made by the proponent to the issue raised during Public Hearing shall be implemented by the Proponent.	**Status by KPL.**
vii	Corporate Environmental Responsibility: a. The Company shall have a well laid down Environmental Policy approved by the Board of Directors. b. The Environment Policy shall prescribe for standard operating process/procedures to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions. c. The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions shall be furnished. d. To have proper checks and balances, the company shall have a well laid down system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the company and / or shareholders or stakeholders at large.	a. AECTPL having approved QHSE policy. b. AECTPL having approved SOPs. **c. Status by KPL.** d. Standard procedures are made available to address corrective & preventive deviation and violations.

B. GENERAL CONDITIONS:

S.No	Environmental Clearance conditions	Compliance Status
i	Appropriate measures must be taken while undertaking digging activities to avoid any likely degradation of water quality.	**Complied** Construction of the terminal is completed, and project is under operation.
ii	Full support shall be extended to the officers of the Ministry/Regional Office at Chennai by the project proponent during inspection of the project for monitoring purposes by furnishing full details and action plan including action taken reports in respect of mitigation measures and other environmental protection activities.	**Noted for compliance.** Full support is being extended to the officers of IRO, MoEF & CC, Chennai, CPCB & TNPCB during their inspection and site visit. During the compliance period monthly visits were made by TNPCB Officials, and all the necessary supports were extended and the same shall be continued in future also.
iii	A six-Monthly monitoring report shall be need to be submitted by the project proponents to the Regional Office of this Ministry at Chennai regarding the implementation of the stipulated conditions.	**Status by KPL.**
iv	Ministry of Environment, Forests & Climate Change or any other competent authority may stipulate any additional conditions or modify the existing ones, if necessary in the in the interest of environment and the same shall be complied with.	**Noted for compliance.**
v	The Ministry reserves the rights to revoke this clearance if any of the conditions stipulated are not complied with satisfaction of the Ministry.	**Noted.**
vi	In the event of a change in project profile or change in the implementation agency, a fresh reference shall be made to the Ministry of Environment, Forests & Climate Change.	**Noted.**

vii	The project proponents shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of start of land development work.	**Noted.**
viii	A copy of the clearance letter shall be marked to concerned Panchayat/ Local NGO, if any, from whom any suggestion/ representation has been made received while processing the proposal.	**Status by KPL.**
ix	The project proponent shall set up separate environmental management cell for effective implementation of the stipulated environmental safeguards under the supervision of a Senior Executive.	**Complied.** A separate EMC with suitable qualified staff has been put in place by AECTPL for taking care of various day-to-day Environmental monitoring compliance and allied activities. Environment Department is headed by Deputy General Manager – Environment, who is reporting directly to Chief Executive Officer of the company. He is well supported by Environment Management Team at H.O. 

<table>
<tr><td>x</td><td>The funds earmarked for environment management plan shall be included in the budget and this shall not be diverted for any other purposes.</td><td>Complied

Separate budget for the Environment Protection is earmarked every year. All the expenses are recorded in advanced accounting system of the organization. Expenditure for Environment Management measures during January 2022 to June 2022 is Rs. 36.68 Lakhs. The breakup details are as follows;

<table>
<tr><th>S.No</th><th>Description</th><th>Amount (Rs in Lakhs)</th></tr>
<tr><td>1</td><td>Environmental Monitoring</td><td>12.6</td></tr>
<tr><td>2</td><td>Greenbelt</td><td>2.0</td></tr>
<tr><td>3</td><td>STP – O&M</td><td>2.3</td></tr>
<tr><td>4</td><td>Housekeeping</td><td>18.3</td></tr>
<tr><td>5</td><td>Integrated Waste Management System</td><td>1.3</td></tr>
<tr><td colspan="2">Total</td><td>36.6</td></tr>
</table>
</td></tr>
<tr><td>5.</td><td>These stipulations would be enforced among others under the provisions of Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public Liability (Insurance) Act, 1991 and EIA Notification 1994, including the amendments and rules made thereafter.</td><td>Noted.</td></tr>
<tr><td>6.</td><td>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.</td><td>Noted.</td></tr>
</table>

7.	The project proponent shall advertise at least in two local newspapers widely circulated in the region around the project, one of which shall be in the vernacular language of the locality concerned informing that the project has been accorded Environmental and CRZ clearance and copies of clearance letters are available with the Tamil Nadu State Pollution Control Board and may also be seen at Website of the Ministry of Environment, Forests and Climate Change at http://www.envfornic.in. The advertisement should be made within Seven days from the date of issue of the clearance letter and a copy of the same should be forwarded to the regional Office of this Ministry at Chennai.	**Status by KPL.**
8.	The clearance is subject to final order of the Hon'ble Supreme Court of India in the matter of Goa Foundation Vs. Union of India in Writ Petition (Civil) No. 460 of 20014 as may be applicable this project.	**Noted.**
9.	Any appeal against this clearance shall lie with the National Green Tribunal, if preferred, with a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act 2010.	**Noted.**
10.	Status of compliance to the various stipulated environment conditions and environmental safeguards will be uploaded by the project proponent in its website.	**Complied.** The compliance to the various conditions stipulated for environmental safeguards are uploaded in our Company website and KPL website. https://www.adaniports.com/Downloads and https://ennoreport.gov.in/content/innerpage/environment.php

11.	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zilla Parisad /Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the company by the proponent.	**Status by KPL.**
12.	The proponent shall upload the status of compliance of the stipulated Clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Reginal Office of MoEF, the respective Zonal Office of CPCB and the SPCB.	**Status by KPL.** The compliance to the various conditions stipulated for environmental safeguards are uploaded in our Company website and KPL website.
13.	The project proportion shall also submit six monthly reports on the status of compliance of the stipulated Clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MoEF, the respective Zonal Office of CPCB and the SPCB.	**Status by KPL.**
14.	The Environmental Statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of Clearance conditions and shall also be sent to the respective Reginal Office of MoEF & CC by email.	**Complied.** Environment Statement (Form V) submitted FY 2020-21 vide our Letter No. AECTPL/TNPCB/2021-22/79 dated 23.09.2021 is enclosed as **Annexure – II.**

Enclosures:

Annexure Number	Details of Annexure
Annexure I:	Environmental Monitoring reports for the period January 2022 to June 2022
Annexure II:	Environmental Statement – Form V for the FY 2020-21

ANNEXURE – 1

(Environment Monitoring Report Jan'22- Jun'22)

REPORT ON

COMPREHENSIVE ENVIRONMENTAL MONITORING FOR

ADANI ENNORE CONTAINER TERMINAL PRIVATE LIMITED (AECTPL) (WITHIN KAMARAJAR PORTLIMITED) VALLUR POST, PONNERI TALUK, CHENNAI -600120

JANUARY 2022 - JUNE 2022

PREPARED BY:

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

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I. INTRODUCTION

M/s. Adani Ennore Container Terminal Pvt Ltd (AECTPL) located inside Kamarajar Port, Ennore is operating container berth and handling containerized Import/Export cargoes.

AECTPL have engaged M/s. Green Chem Solutions (P) Ltd, an Accredited Consultant by NABL to carry out the Comprehensive Environmental monitoring studies in the Adani Ennore Port continuously as per the statutory requirement. This report covers the monitored environmental data for the month of Jan 2022 to June 22.

II. LOCATION OF THE PROJECT

The Project site is located at Port area, Ennore 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 Water
6. Potable water
7. DG Set emission

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

SCOPE OF WORK

S.No	Attribute	Scope	Frequency
1.	Meteorological Data	Collection of micrometeorological data on hourly basis by installing an auto weather monitoring station at plant site covering the following parameters : • Wind speed • Wind direction • Rainfall • Relative Humidity • Temperature • Barometric pressure • Solar Radiation	Daily
2.	Ambient Air Quality	Sampling of ambient air at 03 stations for analyzing the following parameters: • PM10 • PM2.5 • SO_2 • NO_2 • CO • Lead • Ozone • Ammonia • Benzene • Benzo Pyrene • Arsenic • Nickel	Weekly Twice
3.	Ambient Noise	Collection of Noise levels on hourly basis at 3 locations • L_{eq} – Day (Max and Min) • L_{eq} – Night (Max and Min)	Monthly Once
4.	Marine Sampling		

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

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

		• Total Chromium • Petroleum Hydrocarbon • Aluminium • Total Nitrogen • Organic Nitrogen • Phosphorus • Texture	
4c.	Phytoplankton Monitoring	• Total Count • No. of species • Chlorophyll-a • Major Species	Monthly Once
4d.	Zooplankton Monitoring	• Total Count • No. of species • Major	Monthly Once
4e.	Microbiological Monitoring	• Total Bacteria count • Total Coliform • Faecal Coliform • E.Coli • Enterococcus • Salmonella • Sheigella • Vibrio	Monthly Once
4f.	Primary Productivity Monitoring	• Gross primary productivity • Net Primary productivity	Monthly Once
4g.	Phytobenthos Monitoring data	• Fungus • Total Count • No. of species • Diversity Index • Major species	Monthly Once
4h.	Total Fauna Monitoring	• Name of phylum • Class • Number of Individuals encountered • Total no. of species encountered • Total fauna	Monthly Once
5.	STP Treated Water	Collection of STP Treated water analyzed for – 1 locations • pH • TSS • BOD • Faecal Coliforms	Monthly Once
6.	Potable Water analysis	Collection of Drinking water analyzed for – 1 locations - As per IS 10500 2012 – 36 Parameters	Monthly Once
7	DG Set Emissions	Sampling of Emission at 03 stations for analyzing the following parameters: • PM • Carbon Monoxide • NO_x – NO_2 • SO_2	Monthly Once

IV. METHODOLOGY

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

1	**Meteorological parameters**	
	Auto weather station	
2	**Ambient Air Quality**	
	Parameters	**Method**
	Respirable Suspended Particulate Matter (PM10)	IS 5182 Part 23 : 2006
	Particulate Matter PM2.5	GCS/Lab/SOP/087, CPCB Guidelines
	Sulphur dioxide as SO_2	IS 5182 Part 2 : 2001 (Reaff. 2006)
	Oxides of Nitrogen as NO_2	IS 5182 Part 6 : 2006
	Lead as Pb	IS 5182 Part 22 : 2004 (Reaff.2009)
	Arsenic as As	GCS/Lab/SOP/089, CPCB Guidelines
	Nickel as Ni	GCS/Lab/SOP/090, CPCB Guidelines
	Carbon monoxide as CO	IS 5182 Part 10: 1999 (Reaff. 2009]
	Ozone as O_3	IS 5182 Part 9 : 1974 [Reaff.2009]
	Ammonia as NH_3	GCS/Lab/SOP/086, CPCB Guidelines
	Benzene (α) pyrene	IS 5182 – Part 12
	Benzene as C_6H_6	IS 5182 Part 11 : 2006
3	**Ambient Noise Monitoring**	
	L_{eq} Day & Night	Instrument Manual, GCS/LAB/SOP/Noise/001
4	**Marine Sampling**	
	Surface and Bottom Water	APHA Methods 23rd Edition, 2017 Standard Methods for examination of Water and Waste water and IS 3025 & USEPA Test Methods
	Sea Sediment	
	Phytoplankton Monitoring	
	Zooplankton Monitoring	
	Microbiological Monitoring	
	Primary Productivity Monitoring	
	Phytobenthos Monitoring data	
	Total Fauna Monitoring	
5	**STP Water Analysis**	
	pH , TSS, BOD , Faecal Coliforms	APHA Methods 23rd Edition, 2017 Standard Methods for examination of Water and Waste water and IS 3025
6	**Drinking Water Analysis**	
	As per IS 10500 : 2012 – 36 Parameters	APHA Methods 23rd Edition, 2017 Standard Methods for examination of Water and Waste water and IS 3025
7	**Emission Monitoring**	
	PM, Carbon Monoxide, NO_x – NO_2, SO_2	IS 11255 Methods of measurement of emissions from Stationary source

V. ENVIRONMENTAL STUDIES – JAN 2022 TO JUNE 22

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 3 locations.
3.	STP water	Collection of STP Inlet & outlet water at one location
4.	Ambient Noise	Collection of Ambient noise levels for day and night at 3 locations
5.	Potable Water	Collection of Potable water at Canteen Building
6.	Marine Water and Marine Sediments	Collection of Marine water and Marine Sediments at One locations
7	DG Set Emissions	Collection of DG Set Emission at 4 locations.

i. METEOROLOGICAL DATA

Meteorological data was collected on hourly basis by installing an auto weather monitoring station at Plant site. The report depicted here under represents the data for Jan 2022 to June 2022. The Detailed report has been is enclosed as Annexure - 1

The following parameters were recorded

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

Annexure – 1

Jan - 2022

Date	Ambient Temperature (°C)			Atmospheric Pressure (mbar)			Predominant wind Direction (Blowing From)	Wind Speed (m/s)			Relative Humidity (%)			Rainfall mm
	Min	Max	Avg	Min	Max	Avg		Min	Max	Avg	Min	Max	Avg	
01.01.22	25.6	27.9	26.9	1013	1016.8	1014.9	NNE	2.7	4	3.1	82	89	85.2	0.4
02.01.22	25.9	28.8	26.9	1012.1	1016.3	1014.0	NNE	1.8	4	2.8	77	85	81.1	0.0
03.01.22	25.8	27.9	26.6	1012	1015.3	1013.4	NNE	1.3	3.6	2.4	73	82	77.6	0.0
04.01.22	24.9	27.6	26.1	1011.9	1016.2	1013.7	NNE	1.8	3.1	2.6	68	79	74.4	0.0
05.01.22	21.5	27.3	25.1	1011.8	1015.4	1013.5	NNE	0.9	4	2.5	74	91	81.2	0.0
06.01.22	22.1	27.9	25.7	1010.3	1015.3	1012.6	NNE	0.9	4	1.9	76	93	83.3	0.0
07.01.22	22.4	29.1	26.5	1010.9	1015.2	1012.8	NE	0.4	2.7	1.5	74	93	81.3	0.0
08.01.22	26.1	28.8	27.1	1011.4	1015.7	1013.2	NE	1.3	2.7	1.9	74	83	79.5	0.0
09.01.22	23.6	28.6	26.5	1009.5	1013.8	1011.6	NE	0.4	2.2	1.4	75	90	80.7	0.0
10.01.22	22.6	28.1	26.5	1010	1013.9	1011.7	E	0.9	3.6	2.0	79	92	83.1	0.0
11.01.22	25.9	29.2	27.3	1009.2	1013.4	1011.2	NNE	1.3	2.7	1.8	77	86	82.5	0.0
12.01.22	26.3	28.3	27.2	1008.9	1012.8	1010.8	E	1.3	5.8	3.3	77	86	82.3	0.0
13.01.22	26.5	27.9	27.2	1007.8	1012.3	1010.1	ESE	4	6.3	5.1	81	87	84.7	0.0
14.01.22	25.3	28.2	27.1	1007.9	1012.4	1009.9	ESE	0.9	5.4	3.2	82	92	85.8	1.4
15.01.22	24.5	29.3	27.3	1009	1013	1011.0	NE	0.4	2.7	1.7	80	93	85.5	1.8
16.01.22	26.2	28.8	27.4	1010.6	1014.9	1012.6	NNE	1.3	3.1	2.2	78	86	81.9	0.0
17.01.22	21.8	27.8	25.1	1012.1	1016.2	1013.6	WNW	1.3	4	2.3	83	94	84.0	26.8
18.01.22	22.4	27.8	25.1	1011.1	1016.2	1013.6	NNE	0.4	4	2.3	74	94	84.0	0.0
19.01.22	21.9	28.6	25.3	1009.4	1014.5	1011.9	NNE	0.4	2.2	1.5	63	93	80.0	0.0
20.01.22	21	27.2	25.3	1007.8	1013	1010.2	ESE	0.9	3.6	2.3	72	91	78.0	0.0
21.01.22	21.8	27.1	25.2	1007.3	1012.5	1009.7	SSE	0.9	6.3	3.7	73	93	83.0	0.0
22.01.22	23.6	27.1	25.7	1005.6	1010.5	1008.0	SE	2.2	5.4	4.2	85	93	88.0	0.0
23.01.22	24.3	28.7	26.6	1005.7	1010.2	1008.0	SE	2.2	6.3	4.3	76	93	86.8	0.0
24.01.22	24.5	27.3	26.2	1006.2	1010.1	1007.9	SE	0.4	4.5	2.5	79	89	83.8	0.0

25.01.22	23.6	27.6	25.9	1006.2	1010.7	1008.5	SE	0.4	4.9	2.9	79	93	85.3	0.0
26.01.22	25.4	27.5	26.6	1007.4	1011.2	1009.3	SE	2.2	4.5	3.8	77	85	80.1	0.0
27.01.22	26	28.8	27.1	1008.3	1011.9	1010.0	NNE	0.9	3.6	2.3	72	82	78.1	0.0
28.01.22	26.1	28.8	27.0	1009.4	1014	1011.5	NNE	2.2	3.6	2.8	74	83	78.8	0.0
29.01.22	25.8	27.3	26.5	1010.7	1014.8	1012.4	NNE	1.3	4.5	2.8	75	83	78.9	0.0
30.01.22	24	28.2	26.6	1009.1	1014.2	1011.5	NNE	0.9	3.1	1.9	74	90	79.4	0.0
31.01.22	22.5	28.2	26.0	1008.7	1013	1010.6	ENE	0.4	3.1	1.7	74	93	81.6	0.0

Feb - 2022

Date	Ambient Temperature (°C)			Atmospheric Pressure (mbar)			Predominant wind Direction (Blowing From)	Wind Speed (m/s)			Relative Humidity (%)			Rainfall mm
	Min	Max	Avg	Min	Max	Avg		Min	Max	Avg	Min	Max	Avg	
01.02.22	22.3	27.8	25.6	1008.1	1012.6	1010.1	ESE	0.9	3.1	1.9	73	92	79.9	0.0
02.02.22	21.8	26.8	24.9	1009.2	1013.2	1010.9	ESE	0.4	4	2.6	71	92	79.1	0.0
03.02.22	21.2	26.9	25.3	1007.9	1013	1010.3	SE	0.4	4.9	3.3	72	91	77.7	0.0
04.02.22	22.4	27.3	25.9	1005.9	1011	1008.5	SE	0.9	4.5	3.4	77	91	81.8	0.0
05.02.22	23.7	28.5	26.5	1007.7	1011.9	1009.5	E	0.9	4.5	2.7	79	92	84.0	0.0
06.02.22	26.4	28.5	27.3	1010.2	1014.5	1012.2	E	1.3	3.6	2.6	75	83	78.4	0.0
07.02.22	22.5	29.2	26.9	1010.7	1015	1012.7	NNE	0.4	2.2	1.2	68	90	75.9	0.0
08.02.22	22.5	29.1	26.8	1009.2	1014.2	1011.6	NE	0.4	2.7	1.7	65	88	74.3	0.0
09.02.22	25.9	28.7	27.1	1009.9	1014.4	1011.8	NE	1.3	2.7	1.9	69	77	72.3	0.0
10.02.22	21.8	28.4	26.4	1008.8	1013.1	1011.0	NNE	0.9	4	2.3	68	90	75.8	0.0
11.02.22	22.8	28.9	26.5	1009.3	1013.1	1010.9	NNE	1.3	3.6	2.5	72	91	78.0	0.0
12.02.22	26.1	28.8	27.3	1008.6	1013.2	1010.5	NNE	1.3	3.1	2.2	72	79	76.4	0.0
13.02.22	23.2	29.4	27.0	1007.8	1012.3	1009.8	NNE	0.9	2.7	1.5	69	90	76.5	0.0
14.02.22	25.7	28.6	27.0	1007.7	1012.2	1009.7	NE	0.4	3.1	2.0	72	84	76.8	0.0
15.02.22	25.6	28.7	26.8	1007.9	1012.9	1009.9	NE	0.9	2.2	1.6	66	75	71.9	0.0
16.02.22	23.3	28.4	26.4	1005.1	1010.4	1008.0	NNE	0.4	2.2	1.3	69	85	74.0	0.0
17.02.22	21.9	29	27.3	1004.9	1011.4	1008.8	NNE	0.4	3.1	2.2	67	80	75.7	0.0
18.02.22	26.1	29	27.3	1006.4	1011.4	1008.8	NE	1.8	3.1	2.2	71	80	75.7	0.0
19.02.22	25.3	28.9	27.2	1008.8	1013.4	1010.8	NE	0.9	2.7	1.5	74	85	78.0	0.0
20.02.22	22.2	27.9	26.0	1007.4	1012.1	1009.5	ESE	0.4	4.9	2.7	76	93	82.8	0.0
21.02.22	22.8	27.8	26.1	1005.9	1010.4	1007.9	SE	0.9	6.3	4.1	81	94	87.2	0.0
22.02.22	23.8	28.6	26.8	1007.6	1012.7	1010.3	ESE	0.4	4	2.6	80	95	85.7	0.0
23.02.22	26.4	29.3	27.5	1011.2	1015.3	1013.2	E	2.2	4	2.9	74	83	78.4	0.0
24.02.22	26.3	29.4	27.5	1012.1	1016.7	1014.1	NE	0.9	2.2	1.5	71	80	75.7	0.0
25.02.22	22.8	29.2	26.8	1011.1	1015.5	1013.2	NE	0.9	2.7	1.7	68	87	74.2	0.0
26.02.22	25.8	29.2	27.4	1011.6	1015.7	1013.4	NE	1.3	2.7	2.0	74	80	76.6	0.0
27.02.22	26.2	28.9	27.4	1011	1015.6	1013.2	NNE	1.3	3.1	2.1	72	80	76.6	0.0
28.02.22	22.6	29.3	26.7	1010.1	1015	1012.5	NNE	0.4	3.1	1.7	72	91	80.4	0.0

Mar - 2022

Date	Ambient Temperature (°C)			Atmospheric Pressure (mbar)			Predominant wind Direction (Blowing From)	Wind Speed (m/s)			Relative Humidity (%)			Rainfall mm
	Min	Max	Avg	Min	Max	Avg		Min	Max	Avg	Min	Max	Avg	
01.03.22	22.8	29.6	26.7	1010.8	1014.4	1012.4	NNE	0.4	3.1	1.8	58	93	79.4	0.0
02.03.22	21.8	29.3	26.1	1009.7	1014.4	1011.7	NNE	0.9	3.1	2.1	74	92	83.3	0.0
03.03.22	23.2	29.2	27.1	1009.1	1013.7	1011.2	NNE	0.9	3.1	2.5	76	93	82.6	0.0
04.03.22	24.5	29.7	27.6	1009	1012.8	1010.7	NNE	2.2	3.6	2.9	69	89	76.4	3.0
05.03.22	24.3	29.7	27.7	1008.4	1011.9	1010.1	NNE	1.8	4.9	3.2	69	91	76.7	0.0
06.03.22	26.4	29.1	27.7	1008.4	1012.2	1010.2	NNE	2.2	5.4	3.2	56	80	71.3	0.0
07.03.22	27.1	29.7	28.2	1008.6	1012.1	1010.4	NNE	0.9	3.6	2.4	69	83	77.9	0.0
08.03.22	23.5	29.6	27.4	1008	1012.5	1010.3	NNE	0	2.7	1.3	75	93	81.8	0.0
09.03.22	23.4	30.1	27.2	1007.4	1011.8	1009.7	NNE	0.4	2.7	1.4	70	95	81.3	0.0
10.03.22	22.9	29.7	26.8	1007.7	1011.3	1009.4	NNE	0.4	2.7	1.3	73	92	82.7	0.0
11.03.22	23.6	29.1	27.0	1007	1011.2	1009.1	NNE	0.4	2.2	1.3	76	92	82.3	0.0
12.03.22	22.9	30.3	26.8	1006.4	1010.8	1008.6	NNE	0.4	2.2	1.4	66	94	82.5	0.0
13.03.22	23.5	30.8	27.4	1007.3	1010.8	1009.0	NNE	0.4	2.2	1.2	68	91	79.9	0.0
14.03.22	23.8	30.7	27.5	1006.8	1011.6	1009.0	NE	0.4	2.2	1.4	69	89	80.2	0.0
15.03.22	23.8	30.3	27.5	1005.3	1009.6	1007.6	E	0	4	2.1	63	94	80.2	0.0
16.03.22	23.7	30	27.3	1003.7	1008.4	1006.1	SE	0.9	5.8	3.1	62	90	79.2	0.0
17.03.22	24.4	28.9	27.3	1003	1008.3	1005.5	SE	0.9	7.2	4.7	65	93	85.9	0.0
18.03.22	23.4	28.9	27.3	1002.3	1008.3	1005.5	SE	1.8	7.2	4.7	78	93	85.9	0.0
19.03.22	26.8	29.4	28.0	1002.8	1008.3	1005.3	SE	2.2	5.8	4.5	79	91	87.0	0.0
20.03.22	27.2	29.7	28.4	1002.5	1007.1	1004.9	SE	1.3	6.3	3.9	85	95	89.5	0.0
21.03.22	27.3	30.4	28.9	1002.3	1006.7	1004.8	SE	0.4	4.5	3.5	82	95	89.8	0.0
22.03.22	27.9	34	29.9	1003	1007.5	1005.3	SE	1.3	4	2.9	62	95	82.7	0.0
23.03.22	28.2	29.8	29.0	1003.6	1008.2	1005.7	SE	2.2	5.4	4.0	86	92	89.3	0.0
24.03.22	27.2	30.1	28.8	1004.3	1009.2	1006.4	SE	0.4	5.8	4.1	82	91	87.7	0.0
25.03.22	27.7	29.8	28.8	1005.4	1009.6	1007.6	SE	2.7	5.8	4.6	82	89	86.5	0.0
26.03.22	27.3	29.9	28.8	1007.3	1012	1009.2	SE	1.8	7.2	4.8	82	90	86.3	0.0
27.03.22	27.4	29.9	28.7	1007	1011.9	1009.4	SE	0.9	7.6	4.9	83	90	87.2	0.0
28.03.22	27.6	29.7	28.7	1006.5	1011.3	1008.6	SSE	3.6	7.2	5.4	82	91	87.8	0.0
29.03.22	27.7	30.1	28.8	1005.2	1009.4	1007.2	SSE	3.1	8.9	5.8	81	92	87.5	0.0
30.03.22	28	31.2	29.0	1004.3	1009.1	1006.6	SSE	4	8.5	6.0	77	94	88.2	0.0

Apr - 2022

Date	Ambient Temperature (°C)			Atmospheric Pressure (mbar)			Predominant wind Direction (Blowing From)	Wind Speed (m/s)			Relative Humidity (%)			Rainfall mm
	Min	Max	Avg	Min	Max	Avg		Min	Max	Avg	Min	Max	Avg	
01.04.22	27.9	30.1	28.7	1005.4	1010.1	1007.5	NNE	3.6	8.9	6.0	82	93	88.0	0.0
02.04.22	27.8	29.7	28.7	1006.7	1011.6	1008.9	NNE	3.1	7.6	5.3	85	91	88.0	0.0
03.04.22	26.3	30	28.5	1005.7	1010.7	1008.4	NNE	0.4	6.3	4.3	83	92	87.6	0.0
04.04.22	27.8	29.6	28.7	1007.6	1011.8	1009.2	NNE	3.1	5.8	4.7	83	90	86.5	0.0
05.04.22	27.8	29.8	28.8	1008.6	1012.7	1010.8	NNE	2.7	6.7	5.0	82	87	84.5	0.0
06.04.22	25.7	29.5	28.4	1007.9	1013.1	1010.8	NNE	0.9	5.8	3.7	82	93	85.9	0.0
07.04.22	26.6	29.9	28.8	1007.2	1011.3	1009.6	NNE	0.9	5.8	3.6	82	91	85.6	0.0
08.04.22	26.9	30.6	29.3	1006.4	1011.2	1008.9	NNE	0.4	4.9	2.8	78	91	83.3	0.0
09.04.22	27.7	30.8	29.5	1005.6	1009.5	1007.8	NNE	0.9	4.5	2.8	81	89	84.2	0.0
10.04.22	28.9	31.6	30.1	1005.2	1008.9	1007.2	NNE	0.4	3.6	1.8	79	87	83.2	0.0
11.04.22	28.8	31	29.8	1004.1	1008.7	1006.5	NNE	0.4	3.6	2.2	81	86	83.3	0.0
12.04.22	27.7	31	29.7	1003.1	1008.1	1005.9	NNE	0.9	4.9	2.7	80	89	84.2	0.0
13.04.22	27.7	30.3	29.4	1003.3	1007.1	1005.4	NNE	0.4	4.9	3.2	83	93	86.6	1.2
14.04.22	27.3	30.8	29.6	1003.3	1008.3	1005.6	NE	0.4	7.2	4.2	81	92	85.5	0.0
15.04.22	28.7	30.7	29.7	1002.4	1007.1	1005.1	E	2.7	8	6.0	79	91	85.9	0.0
16.04.22	29.1	30.7	29.7	1001.4	1005.9	1003.9	SE	3.6	7.2	5.4	82	93	87.7	0.0
17.04.22	28.9	30.3	29.4	1003	1008.9	1006.7	SE	3.6	5.8	4.1	75	90	87.6	0.0
18.04.22	28.8	30.3	29.4	1004.4	1008.9	1006.7	SE	0.9	5.8	4.1	82	90	87.6	0.0
19.04.22	28.4	30.4	29.4	1005.6	1009.6	1007.9	SE	1.8	6.3	4.3	85	90	87.4	0.0
20.04.22	28.4	30.7	29.5	1004.1	1008.3	1006.5	SE	1.8	6.7	4.5	83	90	87.4	0.0
21.04.22	28.6	30.5	29.4	1004	1008.2	1006.2	SE	3.1	6.7	5.0	82	90	85.4	0.0
22.04.22	28.5	30.4	29.4	1005.9	1009.5	1007.6	SE	1.3	5.8	4.2	80	86	83.5	0.0
23.04.22	27.6	30.7	29.6	1005.5	1009.5	1007.8	SE	0.9	6.3	4.4	82	90	85.4	0.0
24.04.22	28.1	30.5	29.4	1004.2	1008.9	1006.6	SE	0.4	5.8	3.7	81	90	85.2	0.0
25.04.22	27.7	30.7	29.4	1003.2	1008	1005.7	SE	2.7	7.6	5.6	80	91	85.4	0.0
26.04.22	28.2	31.6	29.6	1004	1008.1	1006.1	SE	2.7	7.6	5.1	79	89	86.2	0.0
27.04.22	28.4	30.4	29.4	1003.3	1007.9	1005.8	SE	2.7	7.2	5.0	83	90	87.4	0.0
28.04.22	28.1	30.7	29.4	1004.3	1008.8	1006.5	SSE	2.2	7.2	5.0	81	90	87.1	0.0
29.04.22	28.7	30.7	29.6	1003.7	1007.9	1006.3	SSE	2.7	6.3	4.7	84	93	88.5	0.0
30.04.22	28.8	30.9	29.7	1001	1007.4	1004.3	SSE	4	7.2	5.4	86	94	90.0	0.0

May - 2022

Date	Ambient Temperature (°C)			Atmospheric Pressure (mbar)			Predominant wind Direction (Blowing From)	Wind Speed (m/s)			Relative Humidity (%)			Rainfall mm
	Min	Max	Avg	Min	Max	Avg		Min	Max	Avg	Min	Max	Avg	
01.05.22	28.8	30.7	29.8	999.7	1005.5	1003.0	SSE	3.1	7.6	5.5	84	94	90.9	0.0
02.05.22	27.2	33.9	29.9	1000.7	1005.3	1003.1	SE	1.3	5.4	3.4	66	95	84.0	0.0
03.05.22	28.7	30.9	29.8	1002.4	1006.1	1004.3	SE	2.7	6.3	4.5	87	95	91.0	0.0
04.05.22	28.8	30.8	29.8	1003.9	1007.8	1005.7	SSE	2.7	5.4	4.0	85	94	90.2	0.0
05.05.22	27.7	30.6	29.6	1002.6	1007	1005.2	ESE	0	5.8	3.0	81	91	85.8	0.0
06.05.22	29.1	31.3	30.1	1001.5	1006.1	1004.4	SE	1.3	5.8	4.2	83	92	88.8	0.0
07.05.22	27.2	32.6	30.0	1000.9	1005.6	1003.7	ESE	0.4	4.5	2.4	75	93	85.0	0.0
08.05.22	28.4	32.7	30.4	998.9	1003.7	1001.6	ENE	0.4	3.6	1.8	81	93	87.2	0.0
09.05.22	28.7	32.8	30.3	996.3	1001.6	999.1	NW	0.4	5.4	2.8	69	92	84.4	0.0
10.05.22	23.3	29.7	26.8	994.3	1002.7	998.1	SW	1.3	5.4	3.3	81	94	88.9	17.2
11.05.22	26.1	31.6	28.4	996.4	1001.9	999.2	WSW	1.8	5.8	3.5	74	90	79.1	0.0
12.05.22	25	29.6	27.4	1000.2	1003.1	1001.6	WSW	3.1	8	5.0	73	94	81.7	3.0
13.05.22	25.3	33.1	28.3	999.4	1003.7	1001.5	SSW	2.7	5.8	4.5	72	91	85.9	0.0
14.05.22	27.9	33.3	29.8	1000.3	1004.4	1002.0	SSE	1.8	5.4	3.9	73	90	84.7	0.0
15.05.22	26.9	30.5	29.2	1000.7	1005.3	1003.1	SE	2.2	5.8	4.4	80	90	87.1	0.0
16.05.22	25.9	31.7	28.5	1000.2	1004.6	1002.8	SE	2.2	4.9	3.6	78	93	87.9	0.0
17.05.22	27.1	30	29.2	999.4	1004.1	1002.6	SE	0	8.5	6.2	85	92	88.5	0.0
18.05.22	28.5	30	29.2	1000.6	1004.1	1002.6	SSE	3.6	8.5	6.2	85	92	88.5	0.0
19.05.22	28.4	30.2	29.3	1001.2	1005.2	1003.4	SSE	4.5	7.6	6.2	83	93	87.3	0.0
20.05.22	26.6	34	29.8	1002.3	1006.2	1004.3	WSW	1.3	5.8	3.8	64	91	76.3	0.0
21.05.22	27.7	34.9	31.2	1000.4	1005.3	1003.0	WSW	2.2	5.8	3.8	59	82	69.3	0.0
22.05.22	29.3	36.3	32.3	998.2	1003	1000.8	SW	1.3	4.9	3.9	58	75	68.0	0.0
23.05.22	28.5	34.3	30.7	998.7	1002.6	1000.7	SE	2.7	6.3	4.4	64	91	78.1	0.0
24.05.22	29.2	34.9	30.6	1000.4	1006.5	1003.1	SE	1.8	6.3	4.4	66	93	84.6	0.0
25.05.22	29	33.7	30.4	1003	1007.4	1005.1	SE	1.8	5.8	3.7	69	91	83.4	0.0
26.05.22	28.8	32.3	30.2	1002.3	1007	1005.1	SSW	2.2	6.7	4.7	69	87	80.1	0.0
27.05.22	28.1	34.1	30.4	1002.4	1006.6	1004.6	SW	2.2	5.4	4.0	66	92	79.6	0.0
28.05.22	28.2	35	30.1	1001.4	1005.1	1003.4	SW	2.7	6.3	4.3	60	92	82.0	0.0
29.05.22	28.8	35.2	30.4	1001.5	1005	1003.3	SSE	2.2	6.3	4.8	62	92	82.1	0.0
30.05.22	28.6	34.6	30.1	1000.5	1004.6	1002.7	SE	2.2	6.3	4.8	66	93	84.0	0.0
31.05.22	28.7	36.3	30.7	999.8	1003.4	1001.9	SSE	1.3	6.3	4.5	61	93	81.0	0.0

June - 2022

Date	Ambient Temperature (oC)			Atmospheric Pressure (mbar)			Predominant wind Direction (Blowing From)	Wind Speed (m/s)			Relative Humidity (%)			Rainfall mm
	Min	Max	Avg	Min	Max	Avg		Min	Max	Avg	Min	Max	Avg	
01.06.22	28.9	34.9	30.8	999.5	1003.3	1001.7	SE	1.3	6.3	4.4	63	91	80.6	0.0
02.06.22	29.3	35	31.0	999.9	1003.5	1001.7	SE	1.3	6.3	4.1	64	91	80.3	0.0
03.06.22	29.2	33.9	30.8	999.9	1003.1	1001.4	SSE	0.9	6.7	4.5	66	92	81.1	0.0
04.06.22	29.1	32.6	30.1	1000	1003.4	1001.6	SSE	1.3	6.3	4.4	66	93	84.5	0.0
05.06.22	29.1	32.9	30.1	999.7	1003.2	1001.6	ESE	3.6	8	6.0	74	93	86.6	0.0
06.06.22	25.2	32.1	29.3	1001.4	1004.7	1003.1	SW	1.8	8	4.5	71	91	82.1	0.0
07.06.22	27.1	35.4	30.7	1000.9	1004.5	1002.8	SW	2.2	6.7	4.4	63	90	76.5	0.0
08.06.22	29.4	37.3	31.2	999.8	1004	1001.9	SSE	2.7	7.2	5.5	61	92	78.7	0.0
09.06.22	29.1	34.1	30.7	1000.4	1003.8	1002.0	SSE	0.9	6.7	4.4	65	93	81.5	0.0
10.06.22	29.1	37.1	31.4	1000.4	1005.3	1002.8	SSE	3.6	7.2	5.1	53	93	78.0	0.0
11.06.22	28.9	35.4	30.7	1002	1006.1	1003.9	SSE	3.1	6.7	5.0	58	92	79.2	0.0
12.06.22	28.8	35.9	30.8	1002.2	1006.2	1004.1	ESE	1.8	6.3	4.4	59	93	81.0	0.0
13.06.22	26.6	33	29.9	1003.2	1007.4	1005.2	SE	1.3	4.9	3.0	65	90	80.5	0.8
14.06.22	28.9	34.6	30.9	1002	1006.1	1004.3	SSE	2.2	5.4	3.9	67	90	82.3	0.0
15.06.22	27.4	31.9	29.8	1002	1006.1	1004.1	ESE	1.8	7.6	4.5	72	85	80.5	0.0
16.06.22	26.5	33.1	29.8	1001.9	1005.9	1004.3	ESE	0.9	5.4	3.7	69	88	82.5	0.0
17.06.22	28.1	30.4	29.2	1002	1006.3	1004.7	SSE	0.9	6.3	4.8	73	91	85.2	0.0
18.06.22	27.3	30.4	29.2	1002.6	1006.3	1004.7	SSE	1.3	6.3	4.8	81	91	85.2	1.0
19.06.22	22.9	30.6	29.2	1002.1	1007.5	1004.7	SSE	2.2	7.6	5.0	83	95	87.5	8.6
20.06.22	23	32.3	27.6	1000.7	1005.4	1003.8	SSE	2.2	6.7	3.9	73	96	87.6	14.8
21.06.22	24.5	32.4	27.4	1000.1	1004.9	1002.6	SW	1.3	6.3	3.6	75	95	88.2	14.2
22.06.22	25.1	32.2	28.6	1001.8	1006	1003.8	SSE	0	5.8	3.3	71	94	87.6	6.2
23.06.22	28.1	29.3	28.9	1002.7	1006.2	1005.0	SSE	0.9	4.5	2.8	83	91	86.5	0.0
24.06.22	23.2	33.8	29.8	1000.2	1006.1	1003.6	SE	1.8	5.8	4.5	67	94	84.3	7.0
25.06.22	26.2	33.8	29.7	998.6	1003.7	1001.5	WSW	0.4	6.7	3.5	68	90	79.3	5.0
26.06.22	28	34.2	30.3	1000.1	1004.2	1002.1	SW	1.8	6.7	4.3	65	91	78.3	0.0
27.06.22	28.3	32.8	30.0	1002.4	1006.1	1003.9	WSW	0.9	4.9	2.8	68	88	78.4	0.0
28.06.22	27.2	32.1	29.6	1001.9	1005.7	1004.1	WSW	0	5.4	2.1	68	92	82.0	0.0
29.06.22	27.3	34	30.0	999.9	1003.9	1002.2	SSE	0.9	5.8	3.7	67	92	82.5	2.6
30.06.22	25.8	32.9	29.5	999.1	1003.8	1001.6	ESE	0.4	5.8	3.0	72	94	85.1	13.8

WIND PATTERN - Jan- 2022

Direction	0 <= ws< 1	1 <= ws< 2	2 <= ws< 3	3 <= ws< 4	4 <= ws< 5	ws>= 5	Avg. wind Speed (m/s)	Number of events	Events (%)
E	0	9	22	18	1	1	3.46	51	6.9
ENE	1	14	12	0	0	0	1.78	27	3.6
ESE	0	3	10	33	11	13	3.80	70	9.4
N	0	2	4	2	0	0	2.22	8	1.1
NE	14	50	24	0	0	0	1.55	88	11.8
NNE	9	83	116	60	0	0	2.22	268	36.1
NNW	0	0	0	1	0	0	3.60	1	0.1
NW	3	3	6	10	2	1	2.85	25	3.4
S	0	2	0	4	1	1	3.66	8	1.1
SE	0	0	5	29	32	11	4.25	77	10.4
SSE	0	1	3	8	2	2	4.02	16	2.2
SSW	0	0	0	4	2	0	4.02	6	0.8
SW	0	5	4	3	1	0	2.95	13	1.7
W	23	5	1	1	0	0	1.70	30	4.0
WNW	8	14	8	10	0	0	2.22	40	5.4
WSW	9	3	3	0	0	0	1.32	15	2.0
								743	
Number of events	67	194	218	183	52	29	743		
Events (%)	9.0	26.1	29.3	24.6	7.0	3.9			

WIND PATTERN - Feb- 2022

Direction	0 <= ws< 1	1 <= ws< 2	2 <= ws< 3	3 <= ws< 4	4 <= ws< 5	ws>= 5	Avg. wind Speed (m/s)	Number of events	Events (%)
E	1	5	26	18	0	0	2.23	50	7.5
ENE	0	15	33	4	0	0	2.22	52	7.7
ESE	1	3	17	37	5	0	2.68	63	9.4
N	0	2	0	1	0	0	2.20	3	0.4
NE	16	122	52	1	0	0	1.77	191	28.5
NNE	29	60	54	13	0	0	1.77	156	23.2
NNW	0	0	0	0	0	0	0.00	0	0.0
NW	6	0	0	5	0	0	2.40	11	1.6
S	0	0	1	1	0	0	3.15	2	0.3
SE	1	0	1	25	13	10	4.12	50	7.5
SSE	0	1	1	6	0	0	2.70	8	1.2
SSW	0	0	0	0	0	0	0.00	0	0.0
SW	1	0	5	2	0	0	2.50	8	1.2
W	19	8	0	0	0	0	1.10	27	4.0
WNW	14	14	3	3	0	0	1.77	34	5.1
WSW	10	5	1	0	0	0	1.42	16	2.4
								743	
Number of events	98	235	194	116	18	10	671		
Events (%)	14.6	35.0	28.9	17.3	2.7	1.5			

WIND PATTERN - Mar- 2022

Direction	0 <= ws< 1	1 <= ws< 2	2 <= ws< 3	3 <= ws< 4	4 <= ws< 5	ws>= 5	Avg. wind Speed (m/s)	Number of events	Events (%)
E	0	3	8	3	0	0	2.45	14	1.9
ENE	5	10	7	5	0	1	2.38	28	3.8
ESE	2	0	4	8	8	11	3.65	33	4.4
N	1	3	14	5	0	0	1.92	23	3.1
NE	8	14	9	4	1	0	2.51	36	4.9
NNE	27	41	52	36	0	0	2.22	156	21.0
NNW	1	0	0	1	0	0	2.20	2	0.3
NW	8	1	2	6	3	0	2.76	20	2.7
S	1	2	9	16	3	3	3.39	34	4.6
SE	0	1	7	37	35	85	5.34	165	22.2
SSE	0	3	14	38	19	42	4.92	116	15.6
SSW	0	2	2	1	0	2	3.95	7	0.9
SW	1	4	8	6	0	1	2.96	20	2.7
W	22	9	0	0	0	0	0.88	31	4.2
WNW	18	14	2	1	1	0	1.93	36	4.9
WSW	10	6	5	0	0	0	1.55	21	2.8
								742	

Number of events	104	113	143	167	70	145	742
Events (%)	14.0	15.2	19.3	22.5	9.4	19.5	

WIND PATTERN - Apr- 2022

Direction	0 <= ws< 1	1 <= ws< 2	2 <= ws< 3	3 <= ws< 4	4 <= ws< 5	ws>= 5	Avg. wind Speed (m/s)	Number of events	Events (%)
E	0	4	0	19	0	22	0	2	6.5
ENE	5	1	0	8	0	0	0	0	1.9
ESE	1	1	0	9	0	28	0	29	12.9
N	0	0	0	0	0	0	0	0	0.0
NE	8	7	0	0	0	0	0	0	2.1
NNE	4	0	0	0	0	0	0	0	0.6
NNW	0	0	0	0	0	0	0	0	0.0
NW	5	1	0	0	0	0	0	0	0.8
S	1	2	0	5	0	12	0	6	3.9
SE	4	2	0	9	0	29	0	86	43.8
SSE	0	6	0	14	0	68	0	42	21.3
SSW	0	1	0	1	0	3	0	3	1.4
SW	1	2	0	1	0	2	0	0	0.8
W	8	2	0	0	0	0	0	0	1.4
WNW	3	4	0	0	0	0	0	0	1.0
WSW	7	3	0	1	0	0	0	0	1.5
								719	

Number of events	47	36	67	164	168	237	719
Events (%)	6.5	5.0	9.3	22.8	23.4	33	

WIND PATTERN - May- 2022

Direction	0 <= ws< 1	1 <= ws< 2	2 <= ws< 3	3 <= ws< 4	4 <= ws< 5	ws>= 5	Avg. wind Speed (m/s)	Number of events	Events (%)
E	0	1	6	4	0	0	2.58	11	1.5
ENE	0	0	4	2	0	0	2.90	6	0.8
ESE	0	3	4	23	28	8	3.57	66	8.9
N	0	0	0	0	0	0	0.00	0	0.0
NE	0	5	3	0	0	0	1.77	8	1.1
NNE	1	4	1	0	0	0	1.68	6	0.8
NNW	0	0	0	0	0	0	0.00	0	0.0
NW	1	0	3	2	3	1	3.20	10	1.3
S	0	2	2	13	16	11	4.78	44	5.9
SE	1	2	5	28	47	64	4.44	147	19.8
SSE	0	2	9	47	38	61	5.14	157	21.1
SSW	0	1	3	11	15	10	4.06	40	5.4
SW	1	8	10	45	33	7	3.31	104	14.0
W	10	5	8	2	1	0	2.05	26	3.5
WNW	2	2	6	1	1	0	2.29	12	1.6
WSW	3	15	22	47	12	7	2.90	106	14.6
								743	
Number of events	19	50	86	225	194	169	743		
Events (%)	2.6	6.7	11.6	30.3	26.1	22.7			

WIND PATTERN - Jun- 2022

Direction	0 <= ws< 1	1 <= ws< 2	2 <= ws< 3	3 <= ws< 4	4 <= ws< 5	ws>= 5	Avg. wind Speed (m/s)	Number of events	Events (%)
E	2	7	5	4	0	0	2.23	18	2.5
ENE	2	1	3	1	0	0	1.88	7	1.0
ESE	0	2	4	14	24	12	3.80	56	7.8
N	0	0	0	0	0	0	0.00	0	0.0
NE	1	3	5	1	0	0	1.88	10	1.4
NNE	1	2	2	0	0	0	1.90	5	0.7
NNW	0	0	0	0	0	0	0.00	0	0.0
NW	1	0	0	4	0	1	3.92	6	0.8
S	1	1	4	11	18	14	4.16	49	6.8
SE	0	2	4	21	36	40	4.89	103	14.3
SSE	0	3	12	44	46	90	4.69	195	27.1
SSW	2	1	6	11	12	12	4.16	44	6.1
SW	0	6	6	39	20	23	4.02	94	13.1
W	6	15	2	1	0	0	1.66	24	3.3
WNW	1	3	4	0	0	0	1.78	8	1.1
WSW	4	8	33	46	8	1	2.90	100	13.9
								719	
Number of events	21	54	90	197	164	193	719		
Events (%)	2.9	7.5	12.5	27.4	22.8	26.8			

ii. AMBIENT AIR QUALITY

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

Frequency of Monitoring

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

DETAILS OF AMBIENT AIR QUALITY MONITORING LOCATIONS

Station code	Location	Geographical location	Environmental setting
AAQ1	Port operating building	13^0 16' 12" N 80^0 20' 5" E	Industrial
AAQ2	RMU Building	13^0 16' 25" N 80^0 20' 16" E	Industrial
AAQ3	In Terminal Gate	13^0 16' 25" N 80^0 20' 0" E	Industrial

Fig - 2. AMBIENT AIR SAMPLING STATIONS LOCATION MAP

Fig.3.AMBIENT AIR SAMPLINGS STATIONS WITH RESPECT TO WIND

TECHNIQUES USED FOR AMBIENT AIR QUALITY MONITORING

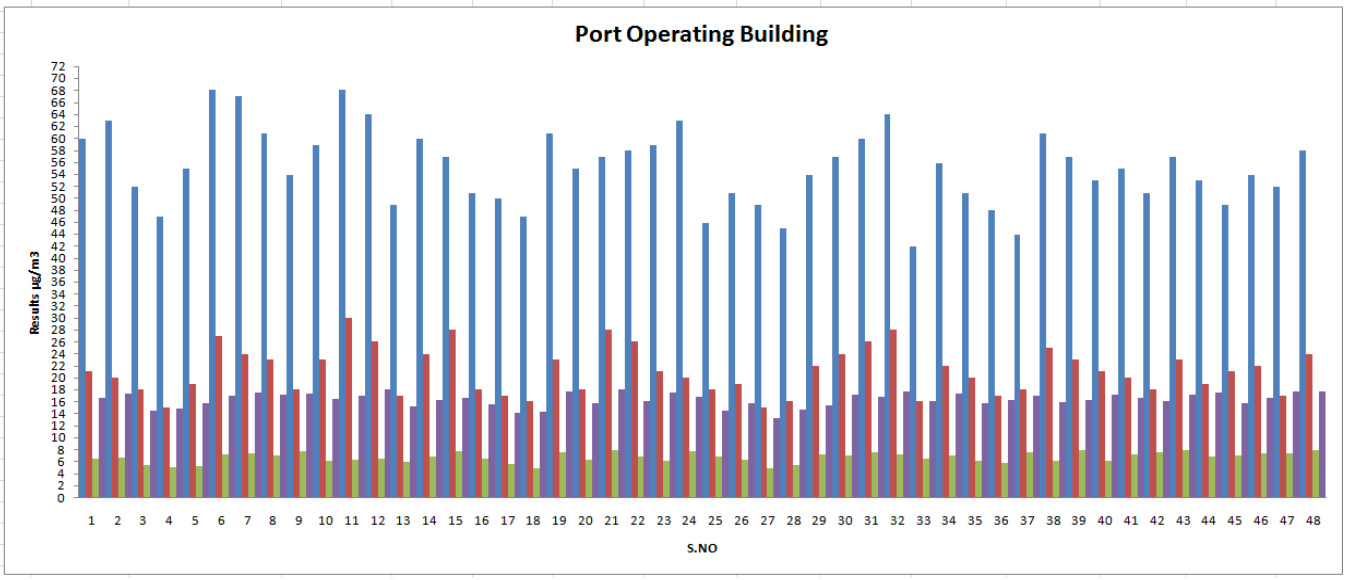
S.No	Parameter	Technique	Unit	Minimum Detectable Limit
1	PM_{10}	Respirable Dust Sampler (Gravimetric method)	$\mu g/m^3$	1.0
2	$PM_{2.5}$	Fine particle Sampler (Gravimetric method)	$\mu g/m^3$	5.0
3	Sulphur Dioxide	Modified West and Gaeke method	$\mu g/m^3$	4.0
4	Nitrogen Oxide	Jacob & Hochheiser method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

Results and Discussion

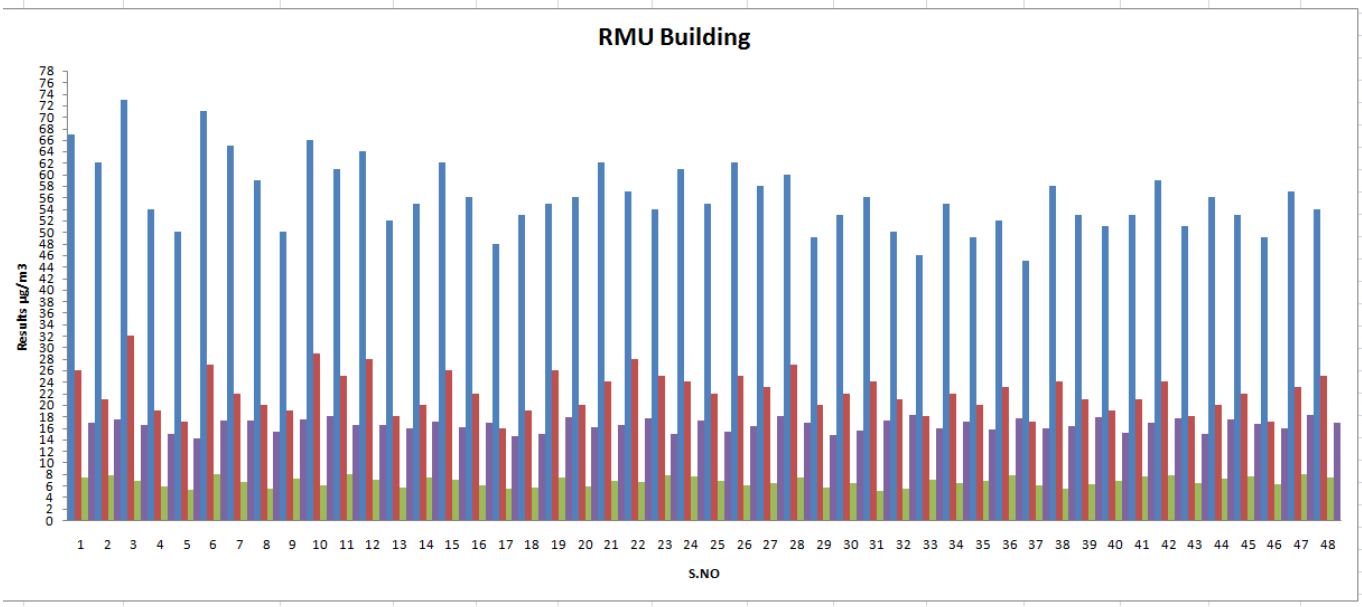
The results of the ambient air quality for the study period are presented and discussed. The minimum, maximum 98th percentile and average values have been computed from the observed raw data for all the AAQ monitoring stations. The summary of these results for all the locations is presented in the Table 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

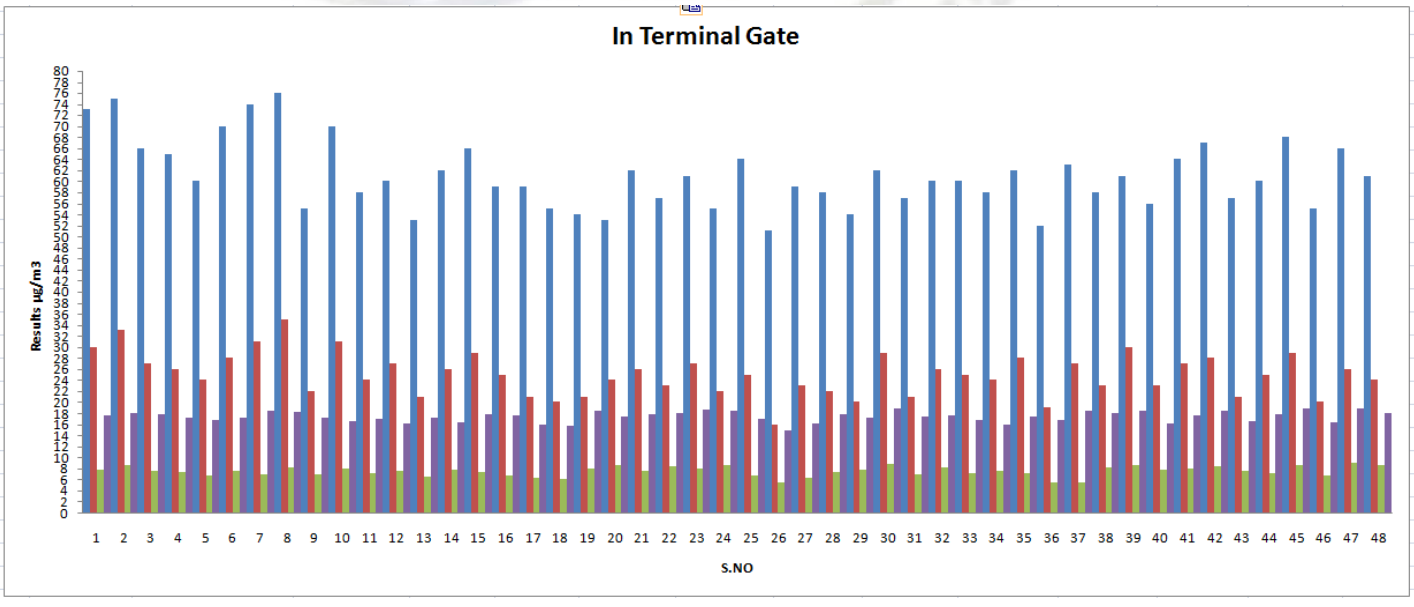
PORT OPERATING BUILDING (AAQ1)														
Parameters			Particular matter PM10	Particular matter PM2.5	Sulphur dioxide as SO2	Nitrogen dioxide as NO2	Lead as Pb	Carbon monoxide as CO	Ozone as O3	Ammonia as NH3	Arsenic as As	Nickel as Ni	Benzene as C6H6	Benzo (a) pyrene as BaP
Unit			µg/m3	µg/m3	µg/m3	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	03.01.2022	GCS/LAB/S/1111/21-22	60	21	6.4	16.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
2	07.01.2022	GCS/LAB/S/1111/21-22	63	20	6.6	17.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
3	10.01.2022	GCS/LAB/S/1111/21-22	52	18	5.3	14.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
4	12.01.2022	GCS/LAB/S/1111/21-22	47	15	5.0	14.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
5	17.01.2022	GCS/LAB/S/1111/21-22	55	19	5.2	15.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
6	21.01.2022	GCS/LAB/S/1111/21-22	68	27	7.1	17.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
7	24.01.2022	GCS/LAB/S/1111/21-22	67	24	7.4	17.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
8	27.01.2022	GCS/LAB/S/1111/21-22	61	23	7.0	17.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
9	01.02.2022	GCS/LAB/S/1164/21-22	54	18	7.7	17.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
10	04.02.2022	GCS/LAB/S/1164/21-22	59	23	6.0	16.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
11	07.02.2022	GCS/LAB/S/1164/21-22	68	30	6.2	16.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
12	11.02.2022	GCS/LAB/S/1164/21-22	64	26	6.5	18.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
13	14.02.2022	GCS/LAB/S/1164/21-22	49	17	5.9	15.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
14	18.02.2022	GCS/LAB/S/1164/21-22	60	24	6.8	16.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
15	21.02.2022	GCS/LAB/S/1164/21-22	57	28	7.6	16.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
16	23.02.2022	GCS/LAB/S/1164/21-22	51	18	6.4	15.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
17	01.03.2022	GCS/LAB/S/1231/21-22	50	17	5.5	14.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
18	04.03.2022	GCS/LAB/S/1231/21-22	47	16	4.9	14.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
19	07.03.2022	GCS/LAB/S/1231/21-22	61	23	7.5	17.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
20	11.03.2022	GCS/LAB/S/1231/21-22	55	18	6.3	15.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
21	14.03.2022	GCS/LAB/S/1231/21-22	57	28	7.9	18.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
22	18.03.2022	GCS/LAB/S/1231/21-22	58	26	6.7	16.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
23	21.03.2022	GCS/LAB/S/1231/21-22	59	21	6.0	17.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
24	25.03.2022	GCS/LAB/S/1231/21-22	63	20	7.6	16.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
25	01.04.2022	GCS/LAB/S/1293/22-23	46	18	6.7	14.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
26	04.04.2022	GCS/LAB/S/1293/22-23	51	19	6.2	15.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
27	08.04.2022	GCS/LAB/S/1293/22-23	49	15	4.9	13.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
28	11.04.2022	GCS/LAB/S/1293/22-23	45	16	5.3	14.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
29	15.04.2022	GCS/LAB/S/1293/22-23	54	22	7.1	15.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
30	18.04.2022	GCS/LAB/S/1293/22-23	57	24	6.9	17.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
31	22.04.2022	GCS/LAB/S/1293/22-23	60	26	7.5	16.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
32	25.04.2022	GCS/LAB/S/1293/22-23	64	28	7.2	17.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
33	02.05.2022	GCS/LAB/S/1350/22-23	42	16	6.5	16.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
34	06.05.2022	GCS/LAB/S/1350/22-23	56	22	6.9	17.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
35	09.05.2022	GCS/LAB/S/1350/22-23	51	20	6.1	15.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
36	13.05.2022	GCS/LAB/S/1350/22-23	48	17	5.8	16.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
37	16.05.2022	GCS/LAB/S/1350/22-23	44	18	7.5	17.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
38	20.05.2022	GCS/LAB/S/1350/22-23	61	25	6.0	15.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
39	23.05.2022	GCS/LAB/S/1350/22-23	57	23	7.8	16.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
40	25.05.2022	GCS/LAB/S/1350/22-23	53	21	6.1	17.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
41	03.06.2022	GCS/LAB/S/1421/22-23	55	20	7.2	16.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
42	06.06.2022	GCS/LAB/S/1421/22-23	51	18	7.5	16.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
43	10.06.2022	GCS/LAB/S/1421/22-23	57	23	7.9	17.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
44	13.06.2022	GCS/LAB/S/1421/22-23	53	19	6.7	17.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
45	17.06.2022	GCS/LAB/S/1421/22-23	49	21	7.0	15.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
46	20.06.2022	GCS/LAB/S/1421/22-23	54	22	7.4	16.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
47	24.06.2022	GCS/LAB/S/1421/22-23	52	17	7.3	17.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
48	27.06.2022	GCS/LAB/S/1421/22-23	58	24	7.8	17.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1



RMU BUILDING (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	Report Number												
1	03.01.2022	GCS/LAB/S/1111/21-22	67	26	7.3	16.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
2	07.01.2022	GCS/LAB/S/1111/21-22	62	21	7.8	17.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
3	10.01.2022	GCS/LAB/S/1111/21-22	73	32	6.7	16.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
4	12.01.2022	GCS/LAB/S/1111/21-22	54	19	5.8	15.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
5	17.01.2022	GCS/LAB/S/1111/21-22	50	17	5.2	14.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
6	21.01.2022	GCS/LAB/S/1111/21-22	71	27	7.9	17.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
7	24.01.2022	GCS/LAB/S/1111/21-22	65	22	6.6	17.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
8	27.01.2022	GCS/LAB/S/1111/21-22	59	20	5.5	15.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
9	01.02.2022	GCS/LAB/S/1164/21-22	50	19	7.2	17.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
10	04.02.2022	GCS/LAB/S/1164/21-22	66	29	6.0	18.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
11	07.02.2022	GCS/LAB/S/1164/21-22	61	25	7.9	16.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
12	11.02.2022	GCS/LAB/S/1164/21-22	64	28	6.9	16.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
13	14.02.2022	GCS/LAB/S/1164/21-22	52	18	5.7	15.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
14	18.02.2022	GCS/LAB/S/1164/21-22	55	20	7.4	17.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
15	21.02.2022	GCS/LAB/S/1164/21-22	62	26	7.0	16.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
16	23.02.2022	GCS/LAB/S/1164/21-22	56	22	6.1	16.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
17	01.03.2022	GCS/LAB/S/1231/21-22	48	16	5.4	14.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
18	04.03.2022	GCS/LAB/S/1231/21-22	53	19	5.7	15.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
19	07.03.2022	GCS/LAB/S/1231/21-22	55	26	7.3	17.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
20	11.03.2022	GCS/LAB/S/1231/21-22	56	20	5.8	16.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
21	14.03.2022	GCS/LAB/S/1231/21-22	62	24	6.7	16.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
22	18.03.2022	GCS/LAB/S/1231/21-22	57	28	6.5	17.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
23	21.03.2022	GCS/LAB/S/1231/21-22	54	25	7.7	14.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
24	25.03.2022	GCS/LAB/S/1231/21-22	61	24	7.5	17.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
25	01.04.2022	GCS/LAB/S/1293/22-23	55	22	6.7	15.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
26	04.04.2022	GCS/LAB/S/1293/22-23	62	25	6.0	16.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
27	08.04.2022	GCS/LAB/S/1293/22-23	58	23	6.4	18.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
28	11.04.2022	GCS/LAB/S/1293/22-23	60	27	7.4	16.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
29	15.04.2022	GCS/LAB/S/1293/22-23	49	20	5.6	14.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
30	18.04.2022	GCS/LAB/S/1293/22-23	53	22	6.4	15.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
31	22.04.2022	GCS/LAB/S/1293/22-23	56	24	5.0	17.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
32	25.04.2022	GCS/LAB/S/1293/22-23	50	21	5.5	18.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
33	02.05.2022	GCS/LAB/S/1350/22-23	46	18	6.9	16.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
34	06.05.2022	GCS/LAB/S/1350/22-23	55	22	6.4	17.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
35	09.05.2022	GCS/LAB/S/1350/22-23	49	20	6.8	15.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
36	13.05.2022	GCS/LAB/S/1350/22-23	52	23	7.7	17.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
37	16.05.2022	GCS/LAB/S/1350/22-23	45	17	6.0	15.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
38	20.05.2022	GCS/LAB/S/1350/22-23	58	24	5.5	16.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
39	23.05.2022	GCS/LAB/S/1350/22-23	53	21	6.2	17.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
40	25.05.2022	GCS/LAB/S/1350/22-23	51	19	6.7	15.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
41	03.06.2022	GCS/LAB/S/1421/22-23	53	21	7.5	16.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
42	06.06.2022	GCS/LAB/S/1421/22-23	59	24	7.8	17.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
43	10.06.2022	GCS/LAB/S/1421/22-23	51	18	6.4	15.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
44	13.06.2022	GCS/LAB/S/1421/22-23	56	20	7.1	17.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
45	17.06.2022	GCS/LAB/S/1421/22-23	53	22	7.6	16.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
46	20.06.2022	GCS/LAB/S/1421/22-23	49	17	6.2	16.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
47	24.06.2022	GCS/LAB/S/1421/22-23	57	23	7.9	18.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
48	27.06.2022	GCS/LAB/S/1421/22-23	54	25	7.3	16.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1



IN TERMINAL GATE (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	Report Number												
1	03.01.2022	GCS/LAB/S/1111/21-22	73	30	7.7	17.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
2	07.01.2022	GCS/LAB/S/1111/21-22	75	33	8.5	18.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
3	10.01.2022	GCS/LAB/S/1111/21-22	66	27	7.5	17.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
4	12.01.2022	GCS/LAB/S/1111/21-22	65	26	7.4	17.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
5	17.01.2022	GCS/LAB/S/1111/21-22	60	24	6.8	16.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
6	21.01.2022	GCS/LAB/S/1111/21-22	70	28	7.5	17.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
7	24.01.2022	GCS/LAB/S/1111/21-22	74	31	7.0	18.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
8	27.01.2022	GCS/LAB/S/1111/21-22	76	35	8.1	18.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
9	01.02.2022	GCS/LAB/S/1164/21-22	55	22	6.9	17.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
10	04.02.2022	GCS/LAB/S/1164/21-22	70	31	8.0	16.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
11	07.02.2022	GCS/LAB/S/1164/21-22	58	24	7.1	16.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
12	11.02.2022	GCS/LAB/S/1164/21-22	60	27	7.5	16.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
13	14.02.2022	GCS/LAB/S/1164/21-22	53	21	6.4	17.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
14	18.02.2022	GCS/LAB/S/1164/21-22	62	26	7.8	16.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
15	21.02.2022	GCS/LAB/S/1164/21-22	66	29	7.4	17.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
16	23.02.2022	GCS/LAB/S/1164/21-22	59	25	6.8	17.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
17	01.03.2022	GCS/LAB/S/1231/21-22	59	21	6.3	16.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
18	04.03.2022	GCS/LAB/S/1231/21-22	55	20	6.1	15.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
19	07.03.2022	GCS/LAB/S/1231/21-22	54	21	8.0	18.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
20	11.03.2022	GCS/LAB/S/1231/21-22	53	24	8.6	17.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
21	14.03.2022	GCS/LAB/S/1231/21-22	62	26	7.5	17.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
22	18.03.2022	GCS/LAB/S/1231/21-22	57	23	8.4	18.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
23	21.03.2022	GCS/LAB/S/1231/21-22	61	27	7.9	18.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
24	25.03.2022	GCS/LAB/S/1231/21-22	55	22	8.6	18.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
25	01.04.2022	GCS/LAB/S/1293/22-23	64	25	6.8	17.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
26	04.04.2022	GCS/LAB/S/1293/22-23	51	16	5.5	14.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
27	08.04.2022	GCS/LAB/S/1293/22-23	59	23	6.3	16.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
28	11.04.2022	GCS/LAB/S/1293/22-23	58	22	7.4	17.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
29	15.04.2022	GCS/LAB/S/1293/22-23	54	20	7.8	17.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
30	18.04.2022	GCS/LAB/S/1293/22-23	62	29	8.7	18.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
31	22.04.2022	GCS/LAB/S/1293/22-23	57	21	7.0	17.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
32	25.04.2022	GCS/LAB/S/1293/22-23	60	26	8.1	17.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
33	02.05.2022	GCS/LAB/S/1350/22-23	60	25	7.2	16.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
34	06.05.2022	GCS/LAB/S/1350/22-23	58	24	7.6	16.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
35	09.05.2022	GCS/LAB/S/1350/22-23	62	28	7.1	17.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
36	13.05.2022	GCS/LAB/S/1350/22-23	52	19	5.4	16.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
37	16.05.2022	GCS/LAB/S/1350/22-23	63	27	5.5	18.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
38	20.05.2022	GCS/LAB/S/1350/22-23	58	23	8.1	18.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
39	23.05.2022	GCS/LAB/S/1350/22-23	61	30	8.6	18.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
40	25.05.2022	GCS/LAB/S/1350/22-23	56	23	7.7	16.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
41	03.06.2022	GCS/LAB/S/1421/22-23	64	27	7.9	17.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
42	06.06.2022	GCS/LAB/S/1421/22-23	67	28	8.3	18.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
43	10.06.2022	GCS/LAB/S/1421/22-23	57	21	7.5	16.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
44	13.06.2022	GCS/LAB/S/1421/22-23	60	25	7.2	17.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
45	17.06.2022	GCS/LAB/S/1421/22-23	68	29	8.5	18.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
46	20.06.2022	GCS/LAB/S/1421/22-23	55	20	6.8	16.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
47	24.06.2022	GCS/LAB/S/1421/22-23	66	26	9.1	18.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
48	27.06.2022	GCS/LAB/S/1421/22-23	61	24	8.6	18.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1



NATIONAL AMBIENT AIR QUALITY STANDARDS
CENTRAL POLLUTION CONTROL BOARD
NOTIFICATION

New Delhi, the 18th November, 2009

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

NATIONAL AMBIENT AIR QUALITY STANDARDS

S. No.	Pollutant	Time Weighted average	Concentration in Ambient Air		Methods of Measurement
			Industrial, Residential, Rural and Other Area	Ecologically sensitive area (notified by Central Govt.)	
(1)	(2)	(3)	(4)	(5)	(6)
1	Sulphur Dioxide (SO_2), $\mu g/m^3$	Annual*	50	20	• Improved West and Gaeke • Ultraviolet fluorescence
		24 hours**	80	80	
2	Nitrogen Dioxide (NO_2), $\mu g/m^3$	Annual*	40	30	• Modified Jacob & Hochheiser (Na-Arsenite) • Chemiluminescence
		24 hours**	80	80	
3	Particulate Matter (size less than 10 µm) or PM_{10} $\mu g/m^3$	Annual*	60	60	• Gravimetric • TOEM • Beta attenuation
		24 hours**	100	100	
4	Particulate Matter (size less than 2.5 microns) or $PM_{2.5}$ $\mu g/m^3$	Annual*	40	40	• Gravimetric • TOEM • Beta attenuation
		24 hours**	60	60	
5	Ozone (O_3) $\mu g/m^3$	8 hours **	100	100	• UV photometric • Chemiluminescence • Chemical method
		1 hour **	180	180	
6	Lead (Pb) $\mu g/m^3$	Annual*	0.5	0.5	• ASS / ICP method after sampling on EPM 2000 or equivalent filter paper • ED – XRF using Teflon filter
		24 hours**	1.0	1.0	
7	Carbon Monoxide (CO) mg/m^3	8 hours**	2	2	Non Dispersive Infra RED (NDIR) Spectroscopy
		1 hour**	4	4	
8	Ammonia (NH_3) $\mu g/m^3$	Annual*	100	100	• Chemiluminescence • Indophenol blue method
		24 hours**	400	400	
9	Benzene (C_6H_6) $\mu g/m^3$	Annual*	5	5	• 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 where measured with a pre calibrated Noise Level Meter – SL- 4023 SD for day and night periods. The Detailed report has been is enclosed as Annexure - 3

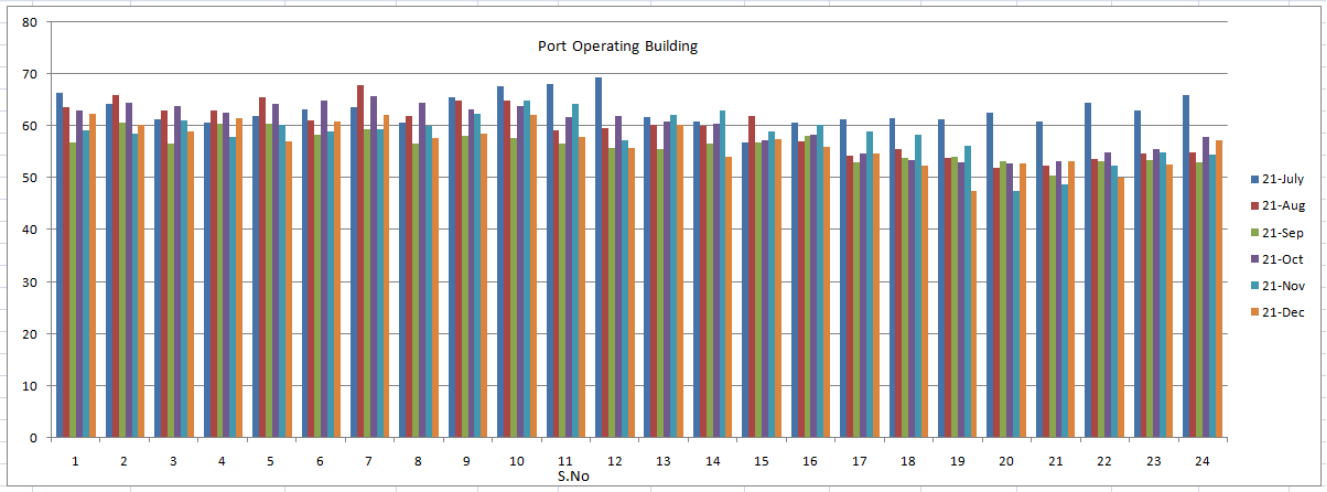
DETAILS OF NOISE MONITORING LOCATIONS

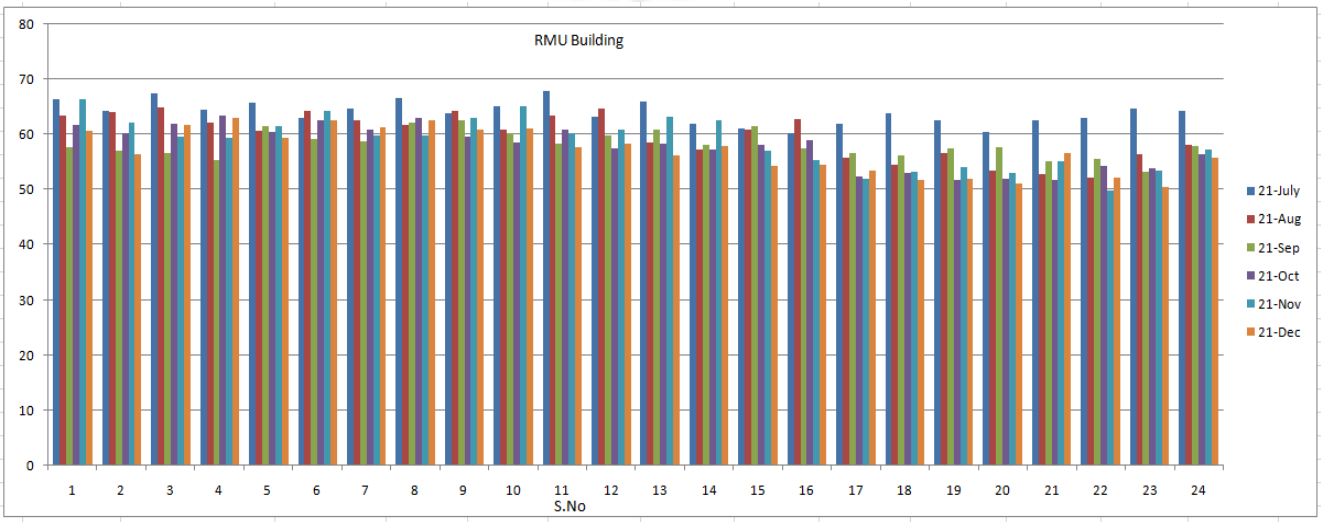
STATION CODE	LOCATIONS	Geographical Location
N1	In Terminal Gate	13^0 16' 25" N 80^0 20' 0" E
N2	RMU Building	13^0 16' 25" N 80^0 20' 16" E
N3	Port operating building	13^0 16' 12" N 80^0 20' 5" E

Fig – 4. Noise Level Sampling Locations

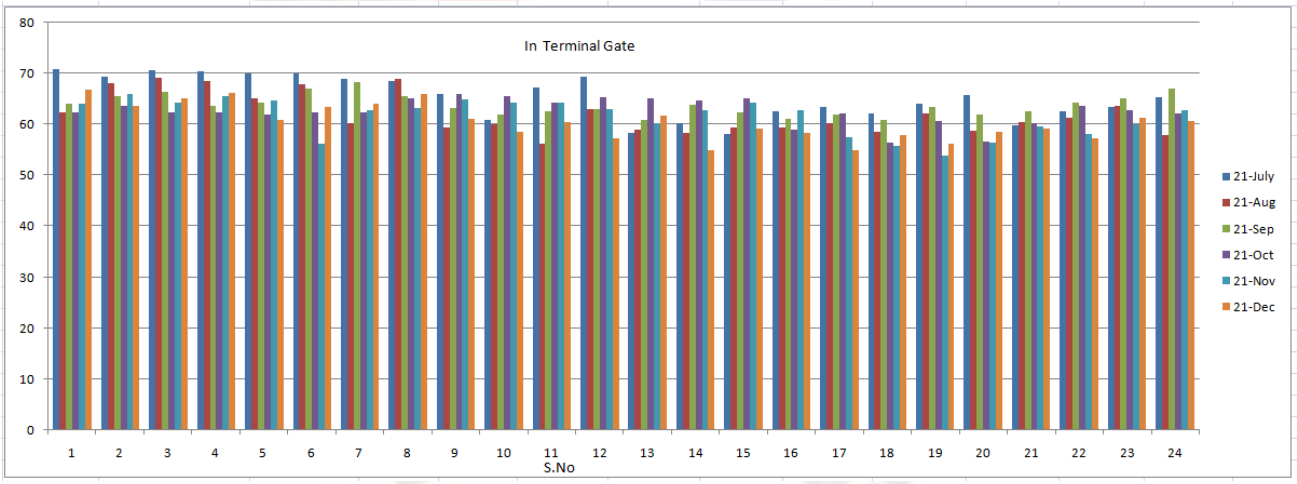
Annexure - 3

Location		PORT OPERATING BUILDING						RMU BUILDING					
Month & Year		Jan - 22	Feb - 22	Mar - 22	Apr - 22	May - 22	Jun - 22	Jan - 22	Feb - 22	Mar - 22	Apr - 22	May - 22	Jun - 22
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)	66.5	63.6	56.8	63.1	59.1	62.4	66.4	63.4	57.7	61.7	66.5	60.6
2	07.00 –08.00	64.3	66.1	60.7	64.5	58.6	60.3	64.3	64.0	57.1	60.3	62.1	56.4
3	08.00 – 09.00	61.4	63.1	56.7	63.9	61.2	58.9	67.4	64.9	56.7	61.9	59.7	61.7
4	09.00 – 10.00	60.6	63.0	60.4	62.7	57.9	61.5	64.6	62.1	55.4	63.4	59.5	63.0
5	10.00 – 11.00	61.9	65.6	60.4	64.2	60.3	57.0	65.8	60.7	61.5	60.5	61.6	59.4
6	11.00 – 12.00	63.2	61.2	58.3	64.9	58.9	60.8	63.1	64.3	59.2	62.5	64.3	62.6
7	12.00 – 13.00	63.7	67.8	59.5	65.7	59.5	62.2	64.7	62.6	58.8	60.8	59.8	61.3
8	13.00 – 14.00	60.6	61.9	56.6	64.5	60.0	57.7	66.6	61.8	62.1	63.1	59.9	62.5
9	14.00 – 15.00	65.5	65.0	58.2	63.2	62.4	58.5	63.9	64.3	62.5	59.7	63.0	60.9
10	15.00 – 16.00	67.6	64.9	57.7	63.8	65.0	62.2	65.1	60.9	60.3	58.6	65.1	61.1
11	16.00 – 17.00	68.2	59.3	56.6	61.7	64.2	58.0	67.9	63.5	58.4	61.0	60.2	57.7
12	17.00 – 18.00	69.3	59.7	55.8	62.0	57.4	55.9	63.2	64.7	59.8	57.5	60.8	58.4
13	18.00 – 19.00	61.8	60.3	55.5	60.8	62.2	60.3	66.1	58.5	60.8	58.3	63.3	56.2
14	19.00 –20.00	60.9	60.1	56.7	60.5	63.1	54.2	62.0	57.2	58.1	57.4	62.7	58.0
15	20.00 – 21.00	56.9	62.0	56.9	57.3	58.9	57.6	61.1	61.0	61.6	58.1	57.0	54.3
16	21.00 – 22.00	60.7	57.0	58.2	58.4	60.3	56.1	60.3	62.8	57.6	58.9	55.4	54.6
17	22.00 – 23.00 (Night)	61.4	54.3	53.1	54.7	58.9	54.7	62.0	55.8	56.7	52.5	52.0	53.4
18	23.00 – 00.00	61.5	55.6	54.0	53.4	58.4	52.5	63.8	54.5	56.3	53.1	53.2	51.8
19	00.00 – 01.00	61.4	54.0	54.2	53.0	56.3	47.6	62.6	56.7	57.6	51.8	54.2	52.0
20	01.00 – 02.00	62.7	51.9	53.3	52.8	47.5	52.8	60.4	53.4	57.8	52.0	53.0	51.2
21	02.00 – 03.00	60.8	52.4	50.4	53.2	48.9	53.2	62.7	52.8	55.2	51.7	55.2	56.7
22	03.00 – 04.00	64.6	53.6	53.2	54.9	52.4	50.0	63.1	52.3	55.7	54.3	49.8	52.3
23	04.00 – 05.00	63.0	54.8	53.5	55.7	54.9	52.6	64.7	56.4	53.3	53.9	53.5	50.5
24	05.00 – 06.00	65.9	55.0	53.0	58.0	54.5	57.4	64.2	58.1	58.0	56.4	57.2	55.9





Location		IN TERMINAL GATE					
Month & Year		PORT OPERATING BUILDING					
Parameter & Unit		Jan - 22	Feb - 22	Mar - 22	Apr - 22	May - 22	Jun - 22
S.No.	Time of Sampling	Leq dB(A)	Leq dB(A)	Leq dB(A)	Leq dB(A)	Leq dB(A)	Leq dB(A)
1	06.00 – 07.00 (Day)	70.8	62.4	64.1	62.4	64.0	66.8
2	07.00 – 08.00	69.4	68.2	65.6	63.6	65.9	63.7
3	08.00 – 09.00	70.6	69.1	66.4	62.3	64.2	65.1
4	09.00 – 10.00	70.4	68.6	63.7	62.3	65.6	66.3
5	10.00 – 11.00	70.0	65.2	64.2	62.0	64.7	60.8
6	11.00 – 12.00	70.1	67.9	67.0	62.3	56.3	63.4
7	12.00 – 13.00	69.0	60.3	68.4	62.4	62.8	64.0
8	13.00 – 14.00	68.5	68.9	65.6	65.2	63.2	65.9
9	14.00 – 15.00	66.1	59.5	63.3	66.1	65.0	61.2
10	15.00 – 16.00	61.0	60.0	61.9	65.5	64.3	58.6
11	16.00 – 17.00	67.2	56.3	62.5	64.3	64.4	60.5
12	17.00 – 18.00	69.4	63.0	63.0	65.3	63.1	57.3
13	18.00 – 19.00	58.4	58.9	60.9	65.2	60.3	61.8
14	19.00 –20.00	60.2	58.4	63.8	64.8	62.8	55.0
15	20.00 – 21.00	58.1	59.5	62.4	65.1	64.3	59.2
16	21.00 – 22.00	62.6	59.4	61.2	59.0	62.9	58.4
17	22.00 – 23.00 (Night)	63.4	60.3	62.0	62.2	57.5	55.0
18	23.00 – 00.00	62.2	58.6	60.8	56.5	55.8	57.9
19	00.00 – 01.00	64.0	62.1	63.5	60.6	54.0	56.2
20	01.00 – 02.00	65.7	58.7	61.9	56.7	56.4	58.5
21	02.00 – 03.00	59.8	60.5	62.7	60.2	59.6	59.1
22	03.00 – 04.00	62.6	61.3	64.3	63.6	58.2	57.4
23	04.00 – 05.00	63.4	63.7	65.1	62.8	60.1	61.3
24	05.00 – 06.00	65.3	57.9	67.0	62.2	62.8	60.7



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

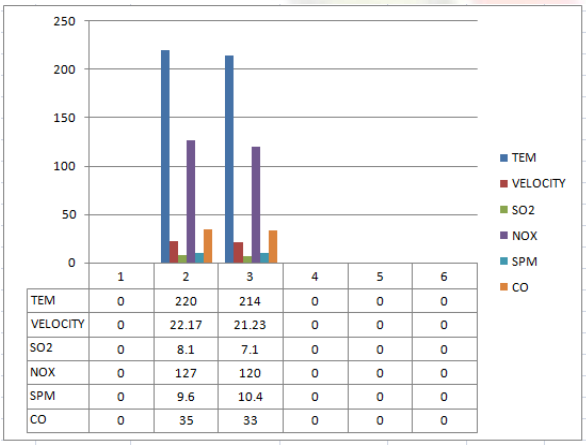
Sampling of Flue gas emission of 1500 KVA DG Set was done and its emissions were determined along with its noise intensity. The Detailed report has been is enclosed as Annexure - 4

DETAILS OF EMISSION MONITORING LOCATIONS

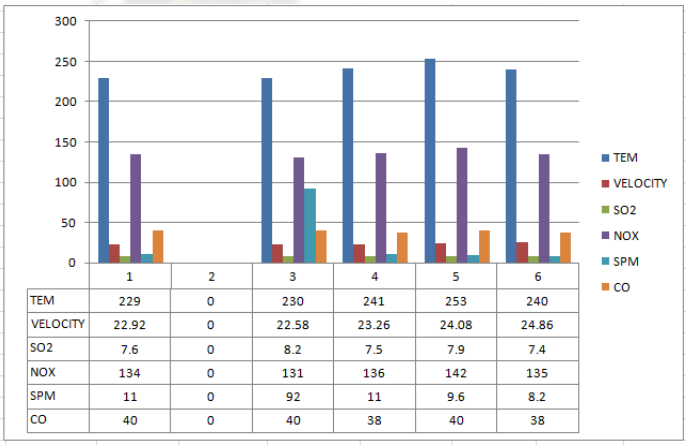
STATION CODE	LOCATIONS	Geographical Location
SM – 1	DG – 1 1500 KVA	13^0 16' 12" N 80^0 20' 5" E
SM – 2	DG – 2 1500 KVA	
SM – 3	DG 125 KVA	13°16'13.33" N 80°20'6.64" E

Annexure - 4

STACK MONITORING													
Location		DG 1500KVA – 3						DG 1500KVA -1					
Month & Year		Jan - 22	Feb - 22	Mar - 22	Apr - 22	May - 22	Jun - 22	Jan - 22	Feb - 22	Mar - 22	Apr - 22	May - 22	Jun - 22
S.N	Parameters												
1	Stack Temperature, °C	--	220	214	--	--	--	229	--	230	241	253	240
2	Flue Gas Velocity, m/s	--	22.17	21.23	--	--	--	22.92	--	22.58	23.26	24.08	24.86
3	Sulphur Dioxide, mg/Nm3	--	8.1	7.1	--	--	--	7.6	--	8.2	7.5	7.9	7.4
4	NOX (as NO2) in ppmv	--	127	120	--	--	--	134	--	131	136	142	135
5	Particular matter, mg/Nm3	--	9.6	10.4	--	--	--	11	--	92	11	9.6	8.2
6	Carbon Monoxide, mg/Nm3	--	35	33	--	--	--	40	--	40	38	40	38
7	Gas Discharge, Nm3/hr	--	6050	5796	--	--	--	6143	--	5606	6124	6159	6520

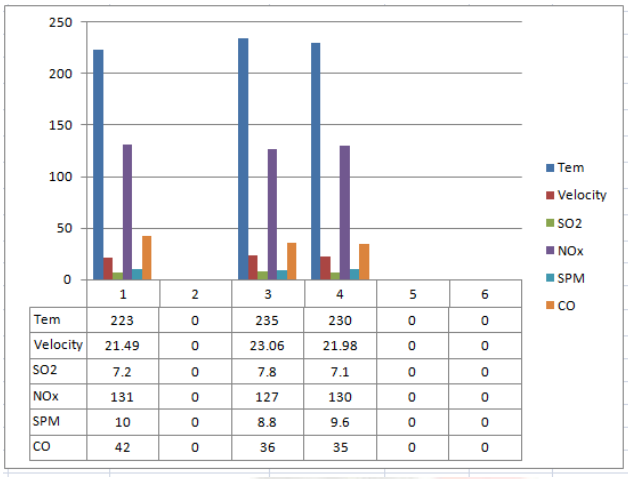


	1	2	3	4	5	6
TEM	0	220	214	0	0	0
VELOCITY	0	22.17	21.23	0	0	0
SO2	0	8.1	7.1	0	0	0
NOX	0	127	120	0	0	0
SPM	0	9.6	10.4	0	0	0
CO	0	35	33	0	0	0

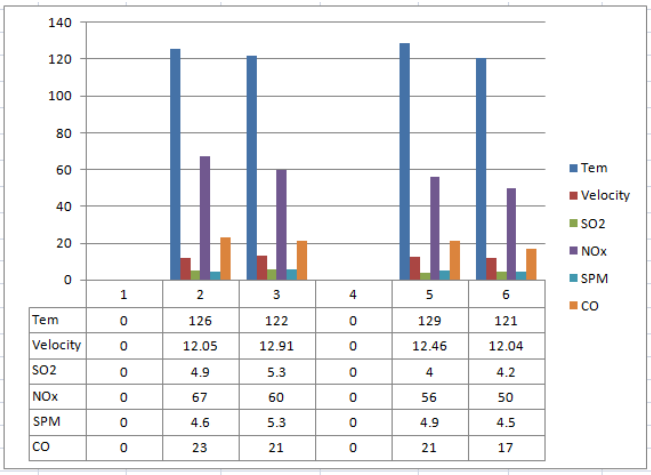


	1	2	3	4	5	6
TEM	229	0	230	241	253	240
VELOCITY	22.92	0	22.58	23.26	24.08	24.86
SO2	7.6	0	8.2	7.5	7.9	7.4
NOX	134	0	131	136	142	135
SPM	11	0	92	11	9.6	8.2
CO	40	0	40	38	40	38

STACK MONITORING													
Location		DG 1500KVA - 2						DG 125KVA					
Month		Jan - 22	Feb - 22	Mar - 22	Apr - 22	May - 22	Jun - 22	Jan - 22	Feb - 22	Mar - 22	Apr - 22	May - 22	Jun - 22
S.N	Paramet												
1	Stack Temperature, °C	223	--	235	230	--	--	-	126	122	--	129	121
2	Flue Gas Velocity, m/s	21.49	--	23.06	21.98	--	--	--	12.05	12.91	--	12.46	12.04
3	Sulphur Dioxide, mg/Nm3	7.2	--	7.8	7.1	--	--	-	4.9	5.3	--	4.0	4.2
4	NOX (as NO2) in ppmv	131	--	127	130	--	--	-	67	60	--	56	50
5	Particular matter, mg/Nm3	10	--	8.8	9.6	--	--	-	4.6	5.3	--	4.9	4.5
6	Carbon Monoxide, mg/Nm3	42	--	36	35	--	--	-	23	21	--	21	17
7	Gas Discharge, Nm3/hr	5830	--	5755	5879	--	--	-	571	571	--	586	578



	1	2	3	4	5	6
Tem	223	0	235	230	0	0
Velocity	21.49	0	23.06	21.98	0	0
SO2	7.2	0	7.8	7.1	0	0
NOx	131	0	127	130	0	0
SPM	10	0	8.8	9.6	0	0
CO	42	0	36	35	0	0



	1	2	3	4	5	6
Tem	0	126	122	0	129	121
Velocity	0	12.05	12.91	0	12.46	12.04
SO2	0	4.9	5.3	0	4	4.2
NOx	0	67	60	0	56	50
SPM	0	4.6	5.3	0	4.9	4.5
CO	0	23	21	0	21	17

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

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

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

v. STP WATER SAMPLE ANALYSIS

Water samples were collected at the following points.

- 25 KLD Treated Water Outlet

DETAILS OF STP WATER LOCATIONS

STATION CODE	LOCATIONS	Geographical Location
STP – 1	25 KLD	13^0 16' 12" N 80^0 20' 8" E

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

Annexure - 5

STP WATER													
Location		STP INLET						STP OUTLET (25 KLD)					
Month & Year		Jan - 22	Feb - 22	Mar - 22	Apr - 22	May - 22	Jun - 22	Jan - 22	Feb - 22	Mar - 22	Apr - 22	May - 22	Jun - 22
S.No	Parameters												
1	pH @ 25°C	6.85	6.56	7.17	7.72	7.08	6.98	7.53	7.28	7.40	8.22	7.61	7.32
2	Total Suspended	98	83	73	68	55	64	21	23	14	22	18	24
3	BOD at 27°C for 3	64	62	60	82	70	86	14	17	12	13	9.2	17
4	Fecal Coliform	670	610	510	610	690	810	280	250	160	240	180	280
5	COD	435	401	372	196	196	342	58	73	36	46	32	84
6	Oil & Grease	6.2	5.6	5.0	6.4	5.1	7.4	BDL	BDL	BDL	BDL	BDL	BDL
7	Total Dissolved Solids	1284	1184	1268	1352	1246	1318	1156	1042	1144	1274	1098	1012
8	Chlorides (as Cl)	430	408	310	350	304	352	398	375	248	232	196	318
9	Sulphates (as SO_4)	72	64	38	42	35	70	63	40	22	30	24	66

MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

NOTIFICATION

New Delhi, the 13th October, 2017

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

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

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

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

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

vi. DRINKING WATER SAMPLE ANALYSIS

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

Annexure - 6

DRINKING WATER								
Month & Year		Unit	Jan - 22	Feb - 22	Mar - 22	Apr - 22	May - 22	Jun - 22
S.No.	Parameters							
1	pH @ 25°C	-	6.76	7.23	7.07	8.20	6.97	6.86
2	Total Hardness as CaCo3	mg/L	4.0	8.0	14	12	16	10
3	Chloride as Cl	mg/L	14	17	21	14	20	14
4	Total Dissolved Solids	mg/L	32	44	72	44	68	48
5	Calcium as Ca	mg/L	0.8	1.2	2.5	4.8	5.2	1.6
6	Sulphate as SO4	mg/L	BDL	BDL	BDL	BDL	BDL	2.5
7	Total Alkalinity as CaCo3	mg/L	21	26	36	30	36	25
8	Magnesium as Mg	mg/L	0.48	1.2	1.88	BDL (0.24)	0.73	1.5
9	Color	Hazen	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
10	Odour	-	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable
11	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
12	Turbidity	NTU	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
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)
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)
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)
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)
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)
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)
19	Phenolic compounds as C_6H_5OH	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)
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)
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)
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)
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)
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)
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)
26	Anionic Detergents as MBAS	mg/L	Nil	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)	BDL(DL 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)
30	Boron as B	mg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	0.37	BDL(DL 0.1)
31	Mineral Oil	mg/L	Nil	Nil	Nil	Nil	Nil	Nil
32	Polynuclear Aromatic Hydrocarbons as	mg/L	Nil	Nil	Nil	Nil	Nil	Nil
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)
35	E. coli	MPN/100ml	Absence	Absence	Absence	Absence	Absence	Absence
36	Total Coliform	MPN/100ml	Absence	Absence	Absence	Absence	Absence	Absence

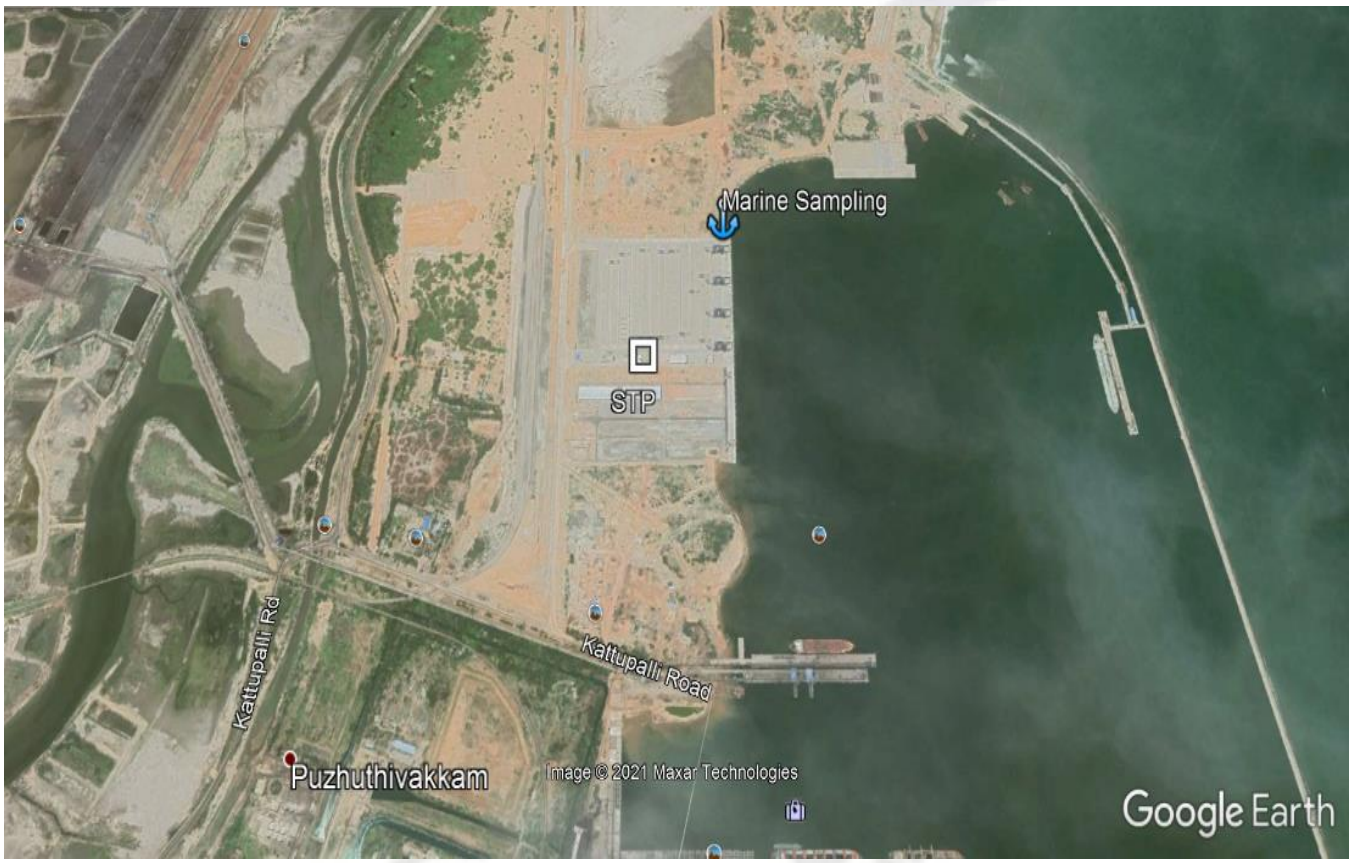
vii. Marine Sampling

Marine Water samples and sediment samples were collected at locations South side berth and North side berth. Analysis data of Marine and sediments as represented in Annexure – 7 & 8.

DETAILS OF MARINE WATER AND SEDIMENT LOCATIONS

STATION CODE	LOCATIONS	Geographical Location
MW – 1 / MS – 1	Bollard	13^0 16’ 25” N 80^0 20’ 16” E

Fig – 5. Water and Marine Sampling Locations



Annexure – 7

MARINE WATER														
S.NO	PARAMETER	UNITS	Jan - 22		Feb - 22		Mar - 22		Apr - 22		May - 22		Jun - 22	
			Bollard - 07		Bollard - 16		Bollard - 26		Bollard - 19		Bollard - 02		BERTH AREA	
Physicochemical Parameters			Surface	Bottom	Surface	Bottom	Surface	Bottom	Surface	Bottom	Surface	Bottom	Surface	Bottom
1	Colour	Hazan	20	45	25	40	25	35	20	30	15	35	15	35
2	Odour	-	Unobjectionable											
3	pH @ 25°C	-	8.14	8.47	8.13	8.36	8.22	8.37	8.09	8.41	7.86	8.24	8.08	8.21
4	Temperature	°C	29	29	28	28	29	29	30	30	31	31	30	30
5	Turbidity	NTU	7.5	18	8.3	16	9.8	17.3	8.1	15.4	9.5	17.8	7.8	21
6	Total Suspended Solids	mg/L	12	25	14	23	18	24	14	26	11	29	10	33
7	BOD at 27 oC for 3	mg/L	4.6	4.7	4.5	4.9	4.6	4.4	4.8	4.6	4.5	4.3	4.6	4.4
8	COD	mg/L	152	165	140	161	134	152	120	138	106	126	118	135
9	Dissolved oxygen	mg/L	2.6	2.4	2.7	2.5	2.5	2.7	2.6	2.8	2.7	2.6	2.9	3.0
10	Salinity at 25 °C	ppt	34.2	35.6	34.7	35.1	31.4	30.1	32.8	31.9	36.8	38.1	39.6	40.2
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	4.91	6.18	4.10	6.73	4.91	6.05	5.56	6.72	4.12	5.80	4.98	4.12
13	Nitrite as No2	mg/L	1.85	2.96	1.52	2.39	2.13	2.48	1.94	2.05	2.43	2.98	2.05	2.54
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	5.87	6.71	4.64	6.10	4.27	5.73	3.86	5.18	5.03	6.72	5.98	4.12
17	Silica as SiO2	mg/L	8.03	9.86	8.57	9.14	5.26	7.29	6.05	8.12	7.18	8.84	9.15	8.07
18	Particulate Organic Carbon	µgC/L	10	14	11	16	14	18	17	20	13	21	10	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	0.48	0.62	0.53	0.64	0.57	0.78	0.63	0.81	0.67	0.78	0.64	0.72
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

Month & Year			Jan - 22		Feb - 22		Mar - 22		Apr - 22		May - 22		Jun - 22	
			Bollard - 07		Bollard - 16		Bollard - 26		Bollard - 19		Bollard - 02		BERTH AREA	
S.N	Parameters	Unit	Surface	Bottom	Surface	Bottom	Surface	Bottom	Surface	Bottom	Surface	Bottom	Surface	Bottom
38	Primary Productivity	mg C/m3 /hr	10.71	11.63	10.85	11.93	9.14	10.21	8.67	10.84	9.41	10.23	8.21	10.78
39	Chlorophyll a	mg /m3	6.27	6.96	6.78	7.05	6.39	6.85	6.12	6.07	5.60	6.37	4.73	6.06
40	Phaeopigment	mg /m3	2.60	3.74	2.91	3.09	2.27	2.93	2.41	3.12	2.78	3.91	2.15	3.40
41	Total Biomass	ml /100 m3	2.14	2.81	2.77	3.02	1.65	2.07	1.96	2.68	1.73	2.19	1.96	2.73
	PHYTOPLANKTON													
42	Bacteriastrum hyalinum	nos/ml	12	15	10	8	14	17	18	21	15	19	10	16
43	Bacteriastrum varians	nos/ml	13	17	15	19	11	15	15	17	11	14	16	18
44	Chaetoceros didymus	nos/ml	8	11	12	14	8	11	10	13	16	11	8	5
45	Chaetoceros decipiens	nos/ml	14	19	16	11	15	18	12	16	7	13	9	11
46	Biddulphia mobiliensis	nos/ml	7	8	13	16	10	7	8	10	12	8	17	15
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	Nil	Nil	Nil	Nil	Nil	Nil
49	Cladophyxis sps	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
50	Coscinodiscus centralis	nos/ml	17	18	19	21	14	16	7	11	10	15	13	19
51	Coscinodiscus granii	nos/ml	15	25	18	20	9	13	13	18	17	20	21	24
52	Cylcotella sps	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
53	Hemidiscus hardmanianus	nos/ml	11	9	14	12	8	10	11	14	6	9	12	17
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	16	14	10	11	16	20	19	22	14	18	11	14
58	Guinardia flaccida	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
59	Rhizosolenia alata	nos/ml	10	17	13	19	17	21	21	23	20	25	18	20
60	Rhizosolena impricata	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
61	Rhizosolena semispina	nos/ml	21	26	17	23	20	24	14	18	12	16	17	21
62	Thalassionema nitzschioides	nos/ml	8	13	7	10	13	15	16	19	9	12	13	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	11	14	10	13	13	17	10	12	15	17	10	14
69	Acrocalanus sp	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
70	Paracalanus parvus	nos/ml	9	15	12	17	10	13	8	10	11	7	16	12
71	Eutintinus sps	nos/ml	13	16	14	0	17	15	19	11	12	15	18	21
72	Centropages furcatus	nos/ml	10	13	8	15	11	10	14	17	10	19	15	23
73	Corycaeus dana	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
74	Oithona brevicornis	nos/ml	14	17	16	19	12	17	8	13	14	16	8	10
75	Euterpina acutifrons	nos/ml	7	9	10	13	14	19	16	21	9	14	13	12
76	Metacalanus aurivilli	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
77	Copipod nauplii	nos/ml	15	20	14	18	19	21	14	18	7	10	11	15
78	Cirripede nauplii	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
79	Bivalve veliger	nos/ml	8	6	6	9	15	18	17	20	18	23	14	20
80	Gastropod veliger	nos/ml	17	21	11	23	22	25	15	22	11	17	18	22

Annexure - 8

SEA SEDIMENT								
Location			Sea Sediment					
Month & Year		Unit	Jan - 22	Feb - 22	Mar - 22	Apr - 22	May - 22	Jun - 22
S.No.	Parameters		Bollard - 07	Bollard - 16	Bollard - 26	Bollard - 19	Bollard - 02	BERTH AREA
1	Total organic matter	%	0.79	0.72	0.67	0.61	0.68	0.73
2	% Sand	%	10	11	12	14	15	17
3	%silt	%	31	33	30	33	31	28
4	%Clay	%	59	56	58	53	54	55
5	Iron (as Fe)	mg/kg	29.2	27.5	23.9	25.1	19.6	21.3
6	Aluminium (as Al)	mg/kg	8947	9012	9426	9784	9053	9579
7	Chromium (as cr)	mg/kg	31	34	30	37	32	27
8	Copper (as cu)	mg/kg	124	120	92	55	64	61
9	Manganese (as Mn)	mg/kg	47	49	45	41	37	30
10	Nickel (as Ni)	mg/kg	29	25	19.7	18.1	19	22
11	Lead (as Pb)	mg/kg	24	22	21.2	19.5	21	20
12	Zinc (as Zn)	mg/kg	198	190	184	178	185	156
13	Mercury(as Hg)	mg/kg	0.36	0.37	0.33	0.31	BDL(DL 0.1)	BDL(DL 0.1)
14	Total phosphorus as P	mg/kg	121	125	116	120	139	131
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	0.72	0.76	0.71	0.73	0.81	0.70
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	15	13	15	18	15	12
29	Tricomasp	nos/m^2	10	16	11	13	10	17
II. Foraminifera								
30	Ammoniabeccarii	nos/m^2	16	11	19	15	19	15
31	Quinqulinasp	nos/m^2	18	15	13	11	14	10
32	Discorbinellasp.,	nos/m^2	17	10	23	20	23	19
33	Bolivinaspathulata	nos/m^2	21	24	10	14	17	13
34	Elphidiumsp	nos/m^2	14	17	18	12	11	10
35	Noniondepressula	nos/m^2	11	8	14	16	18	23
III. Molluscs-Bivalvia								
36	Meretrixveligers	nos/m^2	24	20	16	19	22	25
37	Anadoraveligers	nos/m^2	26	19	21	24	20	22
	Total No. of individuals	nos/m^2	172	153	160	162	169	166
	Shanon Weaver Diversity Index		2.26	2.25	2.27	2.28	2.27	2.25

ANNEXURE – 2

(Annual Environment Statement In Form-V)

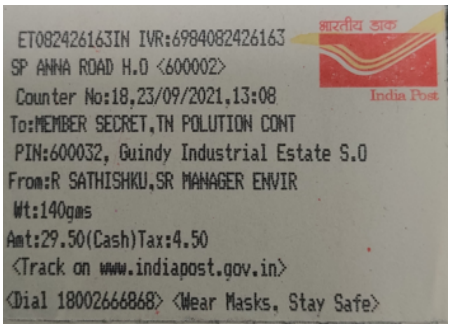
adani
Ports and Logistics

AECTPL/TNPCB/2021-22/79 Date: 23/09/2021

To,

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

MS



Dear Sir,

Sub: Submission of Environmental Statement (Form V) for the financial year ending 31st March, 2021 of Adani Ennore Container Terminal Private Limited, Chennai

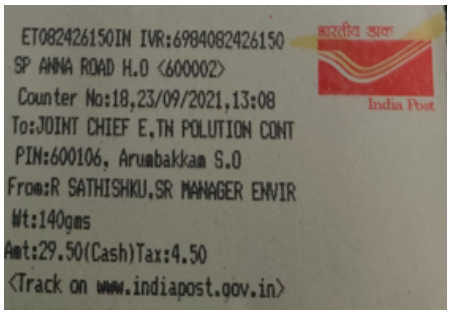
Ref: 1. Consent Order No. 2108136876855 under Water Act dated 24.08.2021
2. Consent Order No. 2108236876855 under Air Act dated 24.08.2021

With reference to the captioned subject and cited references above, we submit herewith the Environmental Statement of **M/s Adani Ennore Container Terminal 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

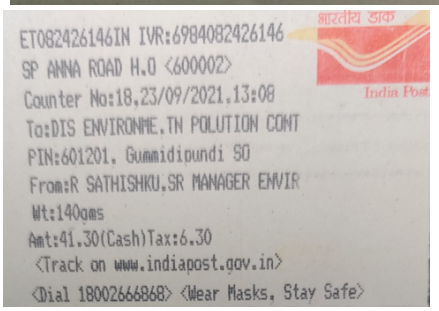


for **Adani Ennore Container Terminal Private Limited (AECTPL)**

23/9/21

Jai Khurana
Chief Executive Officer

DEE



Encl: As above

Copy To:

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

Adani Ennore Container Terminal Pvt Ltd
Chennai

Adani Ennore Container Terminal Pvt Ltd
Adani House
C/o. Kamarajar Port Limited,
Ponneri Taluk,
Tiruvallur District,
Tamil Nadu – 600 120.

Tel +91 44 2824 3062

info@adani.com
www.adani.com

CIN: U61200GJ2014PTC078795

Vijayasankar K

From: Sathish Kumar R
Sent: Thursday, September 23, 2021 1:03 PM
To: eccompliance-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 Adani Ennore Container Terminal Private Limited, Chennai
Attachments: AECTPL Form V 2020-21 23.09.2021.pdf

Importance: High

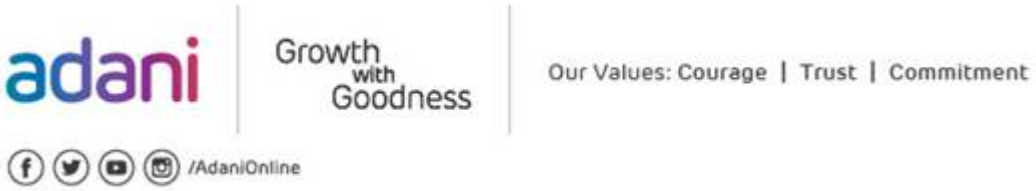
Dear Sir,

With reference to the captioned subject, we submit herewith the **Environmental Statement** of **M/s Adani Ennore Container Terminal 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 |



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** **Chief Executive Officer** **Adani Ennore Container Terminal Private Limited** **C/O Kamarajar Port Limited** **Vallur Post, Ennore** **Thiruvallur District– 600 120** **Tamil Nadu, India**
ii) Industry Category	:	**Primary** : Red **Secondary** : 1065 – Ports and Harbour, Jetties and Dredging Operations.
iii) Production Capacity	:	**Cargo Handling Capacity** : 11.68 MMTPA of Container cargo
iv) Year of establishment	:	2016
v) Date of the last environmental statement submitted	:	Vide our Letter No. AECTPL/TNPCB/2020-21/28 dated 21.09.2020

PART – B

WATER AND RAW MATERIAL CONSUMPTION

(i) Water Consumption

S. No	Water Consumption (m^3/Calendar Day)	2019-2020	2020-2021
1	Domestic	10.93	13.8

(ii) Raw Material Consumption

S. No.	Name of Raw Material	Name of Products	Consumption of Raw Material per Unit of output	
			During the previous financial year (2019-20)	During the current 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, Greenbelt development and maintenance, etc.,				

PART – C

POLLUTION DISCHARGE TO ENVIRONEMENT/ UNIT OF OUTPUT

(Parameters as specified in the consent issued)

<table>
<tr><th>Pollutants</th><th>Quality of Pollutants Discharged (Mass/day)</th><th>Concentration of Pollutants discharges (mass/volume)</th><th>Percentage of variation from prescribed standards with reason</th></tr>
<tr><td>a) Water</td><td colspan="3">STP Treated Water Characteristics: -
<table>
<tr><th>Parameter</th><th>Consent Limit</th><th>Actual</th><th>% Variation with prescribed standard</th></tr>
<tr><td>pH</td><td>5.5-9</td><td>7.48</td><td>-Nil-</td></tr>
<tr><td>Total Suspended Solids (mg/l)</td><td>30</td><td>20.45</td><td>-Nil-</td></tr>
<tr><td>BOD (3 days at 27°C) (mg/l)</td><td>20</td><td>13.86</td><td>-Nil-</td></tr>
</table></td></tr>
<tr><td>b) Air</td><td colspan="3">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 within standards.</td></tr>
<tr><td>Particulate Matter (mg/Nm3)</td><td colspan="3" rowspan="3">DG stack emission report is enclosed as Annexure 1</td></tr>
<tr><td>Sulphur Dioxide (mg/Nm3)</td></tr>
<tr><td>Nitrogen Oxide (ppm)</td></tr>
</table>

Adani Ennore Container Terminal Pvt. Ltd. Chennai

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	• Used Oil (5.1) - 10 Tons • Oil from Contaminated filter element (3.3) - 0.5 Tons • Empty Oil barrel (33.1) - 0.5 Tons	Nil
(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	57.28 kgs	63.42 kgs
c)	1. Quantity recycled or reutilized within the Unit 2. Sold 3. Disposed	57.28 kgs NIL NIL	63.42 kgs 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.

- AECTPL has awarded with Zero Waste to Landfill Management System (ZWTL MS 2020) from TÜV Rheinland India Pvt. Ltd (Annexure – 2).

- Hazardous wastes include Used oil, Filters contaminated with Oil and Empty barrels / containers contaminated with hazardous wastes. 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 Hazardous and other Wastes (Management and Transboundary Movement) Rules, 2016 (As amended).

- The used batteries and E –waste are also stored in Integrated Waste Management Shed and disposed off through approved vendor in line to 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 & Trans boundary Movement) Rules, 2016.

- E-waste returns in Form 3 was submitted in line with the E-waste Management Rules, 2016.

- 100% utilization of STP sludge for greenbelt maintenance as manure.

- AECTPL certified as "Single Use Plastic (SUP) Free" site from CII –ITC Centre of Excellence for Sustainable Development (Annexure – 3)

- **Plastic free Drive:**
  - AECTPL 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 AECTPL.
- Regular supervision by Team Members at Port Canteens for verification of prohibition of plastic.

PART-G

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

- Adani Ennore Container Terminal Private Limited is having electrified cranes only and hence the diesel consumption by the cranes is totally eliminated.
- All the domestic wastewater being generated at port is treated at existing sewage treatment plant and the treated water is being reused within port premises for gardening/horticulture purpose.
- Sewage Treatment Plant (STP) is in continuous operation and the treated effluent water quality is meeting the TNPCB norms. The total cost spent on STP operation during the year 2020-21 is Rs. 4.39 Lakhs.
- Regular Environmental monitoring is being carried out through NABL accredited laboratory. All the monitored environmental parameters are well within the prescribed norms & the details of monitored data is being submitted regularly to TNPCB, CPCB, MoEF&CC and other concerned authorities.
- Unit is continuously developing and maintaining Greenbelt within port premises.
- Implemented Integrated Waste Management System (IWMS) for managing all types of wastes in line with 5R principle.

PART-H

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

Regular Expenditure (Cost in INR lakhs/year)		
S. No.	**Description**	**Cost**
1	Environmental monitoring of MOEF recognized third party	7.22

Adani Ennore Container Terminal Pvt. Ltd. Chennai

2	Green belt & Horticulture development	4.87
3	Annual maintenance contractor of STP operation	4.39
4	Operation & Maintenance of Integrated Waste Management System	1.88

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 take 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)

23/9/21

Name : **Jai Khurana**
Designation: **Chief Executive Officer**

Address : Adani Ennore Container Terminal Pvt Ltd
C/O Kamarajar Port Limited
Vallur post, Ennore
Thiruvallur District– 600 120.

Adani Ennore Container Terminal Pvt. Ltd. Chennai

ANNEXURE - 1

AECTPL- STACK MONITORING (April'2020 to March'2021)														
Location		DG 1500KVA												
		I	III	III	III	III	III	III	II	I	I	I	I	III
Month & Year		May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20		Dec-20	Jan-21	Feb-21	Mar-21	
S.No.	Parameters													
1	Stack Temperature, °C	220.0	233.0	220.0	235.0	224.0	210.0	217.0	219.0	214.0	218.0	208.0	218.0	212.0
2	Flue Gas Velocity, m/s	20.1	21.4	22.9	23.7	25.0	24.2	23.1	22.8	23.0	22.2	21.0	21.4	21.7
3	Gas Discharge, Nm3/hr	5467.0	5670.0	6247.0	6260.0	6728.0	6703.0	6320.0	6194.0	6329.0	6049.0	5837.0	5869.0	6011.0
4	Sulphur Dioxide, mg/Nm3	7.0	7.6	7.9	8.3	7.7	6.2	8.8	8.5	7.9	8.4	7.1	8.3	7.8
5	NOX (as NO2) in ppmv	129.0	134.0	126.0	134.0	122.0	128.0	121.0	119.0	105.0	114.0	102.0	110.0	109.0
6	Particular matter, mg/Nm3	30.6	32.7	34.1	32.8	30.2	32.6	30.4	32.1	30.6	33.7	30.2	33.1	30.6
7	Carbon Monoxide, mg/Nm3	70.0	76.0	70.0	81.0	85.0	80.0	77.0	80.0	78.0	81.0	70.0	79.0	70.0

AECTPL- STACK MONITORING (April'2020 to March'2021)														
Location		DG 1500KVA												
		II	II	II	I	I	II	II	I	II	III	II	II	
Month & Year		May-20	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21		Feb-21	Mar-21	
S.No.	Parameters													
1	Stack Temperature, °C	226.0	218.0	229.0	220.0	217.0	212.0	205.0	210.0	215.0	204.0	221.0	227.0	
2	Flue Gas Velocity, m/s	21.0	22.2	23.1	22.0	23.0	23.9	21.7	21.9	22.6	20.6	21.7	22.2	
3	Gas Discharge, Nm3/hr	5629.0	6043.0	6208.0	5972.0	6291.0	6587.0	6075.0	6070.0	6197.0	5790.0	5895.0	5917.0	
4	Sulphur Dioxide, mg/Nm3	7.8	7.2	7.5	7.0	7.3	7.9	7.6	8.1	8.2	7.6	7.8	8.6	
5	NOX (as NO2) in ppmv	125.0	128.0	140.0	129.0	117.0	124.0	112.0	112.0	110.0	103.0	116.0	121.0	
6	Particular matter, mg/Nm3	31.3	30.5	33.7	35.2	31.9	33.8	28.4	34.2	31.9	32.4	30.4	35.0	
7	Carbon Monoxide, mg/Nm3	68.0	72.0	84.0	73.0	78.0	82.0	73.0	85.0	78.0	75.0	73.0	77.0	

ANNEXURE-2

TÜVRheinland®
Precisely Right.

Certificate

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

Certificate Holder: **Adani Ennore Container Terminal Private Limited**
Ennore Terminal, C/O Kamarajar Port Ltd,
Tiruvallur - 600120,Tamil Nadu,India

Scope: **Providing Port facilities for Handling and Storage of Containerized Cargo**

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/0503

New Delhi, 01-06-2021

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

ANNEXURE - 3

CII-ITC Centre of Excellence
for Sustainable Development

Confederation of Indian Industry

Certificate

Single-use Plastic Free

Adani Ennore Container Terminal Private Limited

Kamarajar Port Limited, Ponneri Taluk, Tiruvallur District, Tamil Nadu 600 120. India.

This is to certify that Adani Ennore Container Terminal 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

CONFEDERATION OF INDIAN INDUSTRY CII NEW DELHI

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/2021/010

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 Adani Ennore Container Terminal 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: Adani Ennore Container Terminal 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/002
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