காமராஜர் துறைமுக நிறுவனம்
कामराजर पोर्ट लिमिटेड
Kamarajar Port Limited
(A company of Chennai Port Trust)
(Ministry of Ports, Shipping and Waterways - Government of India)

KPL/MS/Env/MoEF&CC/2021 Date: 25.08.2021

To

Dr. M.R.G. REDDY, IFS,
Addl. Principal Chief Conservator of Forests (C)
Ministry of Env., Forest and Climate Change
Regional Office (SEZ), Ist and IInd Floor,
Handloom Export Promotion Council,
34, Cathedral Garden Road,
Nungambakkam, Chennai- 34.

Sir,

Subject: Submission of Half–yearly compliance report on the conditions stipulated vide Environmental Clearance letters issued to various projects of Kamarajar Port – January to June 2021 - reg.

Please find enclosed herewith the compliance reports for the period of January to June 2021, on the conditions put forth by Ministry of Environment & Forests and Climate change, in the environmental clearances issued for the following projects.

1. Construction of new Satellite Port at Ennore, near Madras. Ministry's letter Ref: J-16011/9/87-IA, III dated 28.9.1992.

2. Development of Terminals for marine liquids, coal, iron and containers in second phase and associated capital dredging at Ennore port. Ministry's letter F. No. 10-28/2005-1A-III dated 19th May, 2006.

3. Development of Terminals for marine liquids, coal, iron and containers in second phase and associated capital dredging at Ennore port. Ministry's letter F. No. 10-28/2005-1A-III dated 10th September, 2007.

4. CRZ and Environmental clearance for the construction of General Cargo Berth at Ennore port cargo terminal project. MoEF Letter F.No.11-21/2009-IA-III dated 23.7.2009.

25/08/2021

Corporate cum Registered Office :
2nd Floor (North Wing) & 3rd Floor,
Jawahar Building, No.17,
Rajaji Salai, Chennai - 600 001.
Phone : 044 - 2525 1666 - 70
Fax : 044 - 2525 1665
CIN : U45203TN1999GO1043322

निगम सह पंचीकृत कार्यालय :
दूसरी मंजिल (उत्तर विंग) & तीसरी मंजिल
जवाहर बिल्डिंग, न.17,
राजाजी सालै, चेन्नै - 600 001.
फोन : 044 25251666 - 70 फेक्स : 044 - 2525 1665

Port Office : Vallur Post, Chennai - 600 120.
Phone : 044 - 27950030 - 40 Fax : 044 - 27950002

पोर्ट कार्यालय : वल्लूर पोस्ट, चेन्नै - 600 120
फोन : 044 - 27950030 - 40 फैक्स : 044 - 27950002
टोल फ्री संख्या / TOLL FREE NUMBER : 1800 - 425 - 1203

website : www.kamarajarport.in e-mail : info@kplmail.in

5. Expansion and modernization of existing multicargo container terminal at Kamarajar Port by M/s. Kamarajar Port Limited - Environmental and CRZ clearance (Development of Multicargo berth (230m) and container terminal (730m)). MoEF's letter F.No. 10-28/2005–IA-III dated 24.12.2014.

6. Development of additional coal berths (CB3 and CB4) at Kamarajar Port, Tamil Nadu by M/s. KPL Environmental and CRZ clearance –MoEF's Letter F.No. 11-51/2012–IA-III dated 12.03.2015.

7. Development of facilities envisaged in the Port Master Plan (Phase-III) by M/s Kamarajar Port Limited – MoEF's letter F. No. 11-51/2012-IA-III dated 30.10.2018.

The modification of iron ore terminal to handle coal by M/s SICAL Iron Ore Terminal Ltd (SIOTL), was in progress after grant of Environmental Clearance from Ministry. The Lender to the project M/s YES Bank Ltd, has given notice for 'Event of financial default' to KPL on 07.11.2020. Accordingly, in line with the License agreement, KPL has served *"Notice of Intent to Terminate"* to M/s SI

CAL Iron Ore Terminal Ltd on 20.12.2020. The License Agreement No. 20 of 2016 dated 11.7.2016 executed between KPL and M/s SIOTL stands terminated with effect from 19.6.2021 subsequent to issuance of Termination Notice dated 22.3.2021 by KPL.

Consequent to that, the project *'Modification of Iron Ore Terminal to handle Coal'* is presently in a stalled condition due to the above said reasons; hence the half-yearly compliance report for the said project is not included in the above list.

This is for kind information and records please.

Yours faithfully,

25/08/2021

Chief Manager(HSE)

Enclosure: Soft Copies of the report.

KAMARAJAR PORT LIMITED

Compliance Report

On

Ministry's guidelines for

"CONSTRUCTION OF NEW SATELLITE PORT AT ENNORE"

CONDITIONS COMPLIED AS PER THE GUIDELINES OF THE MINISTRY OF ENVIRONMENT AND FOREST ISSUED VIDE LETTER DATED 28/9/1992

Ref: J-16011/9/87-IA, III dated 28.9.1992

Ennore Port has been planned and developed for receiving coal exclusively for Thermal Power stations of Tamil Nadu Electricity Board (TANGEDCO). Ennore Port was declared as major port on March 23, 1999. Ennore Port is the first Major Port incorporated as a company under the Companies Act, 1956 on October 11, 1999.

The commercial operation of Port was started on June 22, 2001.

S.No	MoEF Guidelines	Compliance report
(i)	The total land area of the Project should be limited to 400 Ha as proposed	As per Environment clearance letter issued by Ministry of Environment & Forests for the "Construction of new satellite port at Ennore near Madras in Tamilnadu" vide letter dated 28.9.1992, the total land area accorded was 400 ha. Subsequently port has developed new projects under Phase-II and port has developed various new projects phase wise. Port has acquired 950 Acres of land from TIDCO during the year 2002 and was shown for obtaing Environment & CRZ clearance for the development of second phase project at KPL. The stock yard for the coal, iron ore, tank farm for Marine Liquid Terminal were developed in these lands. Ministry of Environment & Forests had accorded Environment and CRZ clearances vide No. 10-28/2005–IA-III dated 19th May 2006. For subsequent developments, Port has acquired 679 Acres of land from Salt Department during the year 2010 & 2014. The lands were meant for the development of stackyard for additional Coal berths (CB3&4). Ministry of Environment & Forests had accorded Environment and CRZ clearances vide letter No. F.No.11-51/2012-IA.III dated 12th March 2015. The total land area of port is 2787.29 Acres. The remaing portion of the land is shown in the Development of facilities envisaged in the Port

		master plan project, for which Environment & CRZ clearance is sought. At present, the total Port area is 1128.45 Ha. The details of land procured by KPL is tabulated enclosed as **Annexure-I.**
(ii)	Hill features of Karikkal and Bodiparai hills should not be destroyed for the construction of breakwater since this will drastically change the landscape.	No quarrying operation was carried out in Bodaparai hill. After completion of construction of the breakwaters, the quarry was handed over to District Collector, Vellore Dist by the Chennai Port vide its letter No.11/6828/96/E dated 7.1.2002, along with abandonment Certificate for closure of Karikkal quarry issued by Directorate of Mines, Safety Oorgaum.
(iii)	Quarrying operations must be carried out with utmost care giving consideration to the topography, vegetation and drainage system in consultation with expert institutions like Centre for Mining Environment, Indian School of Mines, Dhanbad. Quarrying site must be rehabilitated properly keeping in view such measures as proper terracing, additional top soil and reforestration. Major blasting in the port area should not be undertaken;	**Complied with.** The Chennai Port trust authorities have informed that rehabilitation of the quarry site was taken up and restored. Director of Mines safety, Oorgaum has issued Abandonment Certificate for closure of Karikkal quarry.
(iv)	A detailed Environment Management Plan should be prepared for each of the quarry site proposed and proper landscaping should form part of these operations. This should be included as a condition in the contracts. Its full implementation is the responsibility of the project authorities;	Noted and complied with.

(v)	Alternate sources of water supply other than tapping of ground water through bore wells must be explored to avoid intrusion of salt water since fresh water is scare in the island. A specific study should be undertaken on the ground water potential, recharge capacity, present drawl and future plans in an integrated manner. State/central ground Water Board should be fully involved in this study. The report should be submitted within one year.	Complied with. The water for construction, drinking, etc., is brought in the trucks and no deep bore wells are constructed in the project area.
(vi)	Dredging operations must be undertaken in stages in consultation with some expert institution like CWPRS, in such a way as to ensure that these operations do not deteriorate the surface water quality which must be maintained within the prescribed standards. Water parameters should be measured on regular intervals to monitor water quality. Dredging material should not be used for filling up any water body;	Complied with.
(vii)	Large scale dumping of waste shall not be undertaken by the Project Authorities without clearance from the environment angle. This is to ensure that marine ecology of the area is not affected by dumping in the marshy lagoon/low level areas;	Complied with.
(viii)	A green belt of appropriate width (say 200 meters) must be provided along the periphery of the port excluding the water area. Adequate provision for the initial cost for greening and maintenance has to be made in the project cost and subsequent annual budget for the port;	Complied In 1992 the port was conceived as a satellite port to handle coal through two coal berths. Environment clearance was issued to develop green belt in an area of 15 Hectares. However, the port diversified into a multi-cargo port and subsequently a land use plan was developed which includes a green belt of 414 Acres i.e. 167.25 Hectares. Port is continuously developing green belt area.

		2015-16 = Rs.2850917 2016-17= Rs.6463687 2017-18= Rs. 843365 2018-19= Rs.261535 2019-20= Rs. 83,32,257 2020-21= Rs. 53,23,979 2021-22= Till 31.07.2021 Rs. 8,80,472 At present port is having a green belt which includes a green belt (planted) 210.74 acres, green cover natural (349.26) and mangroves in an area of 76.14 acres. However, KPL is proposing to utilize the existing operational area in the custom bound area for future development projects/infrastructure activities. KPL has appointed a consultant for "Preparation of Bio-Diversity Management Plan" for the port and the report along with the green belt development plan was submitted to Tamil Nadu State Bio-diversity Board vide KPL letter No. KPL/MS/HSE/BD/2019 dated 17.01.209 for validation and approval. As per the plan, port has planned for the development of green belt of 68.66Acres inside the custom bound area and 621.91 Acres outside the custom bound area. The total green belt area of the port will be 690.77Acres.
(ix)	Green belt development of 50 ha of land instead of 25 ha proposed inside the port should be developed. This may spread in different pockets in vacant areas and need not be concentrated on one area. Apart from this green belt area of about 5.00 million sq m available in the island should be sustained by providing proper maintenance. Appropriate fund allocation towards initial cost for greening and	Port has acquired additional land from various Government authorities only like TIDCO, TNEB, salt Department, except 31.97 Acres of land which was transferred from private party (patta land). At present total Port area is 1128.45 Ha. At present port is having a green belt which includes a green belt (planted) 210.74 acres, green cover natural (349.26) and mangroves in a area of 76.14 acres.

	maintenance of 50 ha of land and 5.00 million sq m available in the island has to be provided in the project cost and in the subsequent annual budget of the port;	However, KPL is proposing to utilize the existing operational area in the custom bound area for future development projects/infrastructure activities. KPL has appointed a consultant for "Preparation of Bio-Diversity Management Plan" for the port and the report along with the green belt development plan was submitted to Tamil Nadu State Bio-diversity Board vide KPL letter No. KPL/MS/HSE/BD/2019 dated 17.01.209 for validation and approval. As per the plan, port has planned for the development of green belt of 68.66Acres inside the custom bound area and 621.91 Acres outside the custom bound area. The total green belt area of the port will be 690.77Acres.
(x)	Suitable low lying areas should be identified for mangrove plantation and provision of the required amount must be made for this purpose in the project cost by the project authorities;	Complied with. Port in association with Tamilnadu Forest Department had identified and planted mangroves along the coast line between Ennore and Pulicat. Tamilnadu Forest Department vide letter no. D2/6240/99 dated 05.09.2003 has informaed about to dig channels and plantoing of mangrove species at Thangal Perungalam(7.75ha) and at Kalanchi(7.5ha)respectively. The same are complied with.
(xi)	The project authorities must ensure that no cutting of trees take up place in the project area.	No cutting of trees was done.
(xii)	With the operation of Ennore Port as a measure of decongestion of Madras port the traffic in Madras port must be gradually reduced. Ministry of Surface Transport, Madras Port Trust and Ennore Port Trust must ensure that adequate measures in this regard are taken.	Complied with. Handling of Thermal coal for TNEB is completely shifted from Chennai port to Kamarajar Port (Ennore port).

(xiii)	To control dust pollution from coal, following measures must be adopted. (a) Totally enclosed continuous loaders / un-loaders and conveyor system should be adopted (b) Dust extraction system should be provided at all transfer points to minimize dust generation during stacking, loading, transferring operations as well as to minimize wind blown dust from the stack yard, proper water spraying should be done.	Complied with. The following measures are taken to control the dust. Dust pollution preventive measures have been taken up by TNEB, the operators of the Berths. Coal from the ship is unloaded through shore based gantry cranes with grab un-loaders and fed to the conveyor system to the thermal power plant. No coal is stored inside the port. In addition to the covered conveyor system, water sprinklers have been provided in the hoppers for suppression of coal dust emanating while discharging coal from the vessels. Cleaning up of the operational area/jetty after every unloading operation to prevent pilling up of material is being done. The coal is stored inside North Chennai Thermal Power Station.
(xiv)	Air pollution monitoring stations at strategic locations must be set up in the port area and in the neighborhood for monitoring dust/particulate matter at regular intervals. Adequate funds must be allocated towards this in the project cost.	Complied with. Kamarajar Port is continuously monitoring the environmental air pollution. KPL has engaged M/s. Hubert Enviro care Systems Pvt. Ltd. Chennai (MoEF & CC and NABL accredited laboratory) to carry out the periodical monitoring, testing and analysis of Ambient air quality, Marine water quality, creek water quality, Noise levels in the port area. Adequate funds are allocated in this project.
(xv)	To contain noise levels within the prescribed standards roofed conveyor belts should be deployed. Noise pollution in the port area should be reduced by putting up sound barriers at suitable locations. To protect the workers from high noise levels ear muffs/plugs should be provided.	Complied with. The coal is unloaded from the ships and transferred to the thermal power station through elevated closed conveyor system. There is no generation of noise pollution during the operations. Noise levels at the work zones were monitored regularly. However workers working

		in the berth area are also provided PPE like hard hat, ear muffs/plugs etc.
(xvi)	Water pollution monitoring stations at strategic points must be set up in the project area to monitor water quality and marine pollution at regular intervals.	Complied with. Kamarajar Port is continuously monitoring the environment. KPL has engaged M/s. Hubert Enviro Care Systems Pvt. Ltd. Chennai (MoEF & CC/ NABL certified) to carry out the periodical monitoring, testing and analysis of Marine water quality, creek surface water quality in the port area.
(xvii)	To contain accidental spillage of oil, the project authorities should deploy oil booms, multipurpose anti pollution craft, oil recovery cum reception craft, chemical dispersant and other equipment such as shovels, swabs, waste collection bags, etc.	Complied with. KPL falls under category B. Port is having oil spill contingency plan prepared in line with NOS-DCP. Necessary chemicals, booms, dispersants, etc. are readily available for containment of any accidental spill of Tier-I category.
(xviii	An environment division must be set up in Ennore port headed by Environment Manager with appropriate strength of Environment Engineers, Forest officers, forest guards and other laboratory staff. An environmental laboratory for Air Water and solid waste monitoring must be set up with adequate equipment and qualified staff. Adequate fund for establishment of laboratory must be provided in the project cost. The annual recurring cost for the laboratory and Environmental Division must be provided for in the annual budget of the port.	Complied with. At present, KPL is having an Environmental Division with the following officers. (i) Chief Manager(HSE), (ii) Sr.Manager(HSE) and (iii) Executive (HSE) to take care of the environmental requirements of the port. Port has engaged M/s. Hubert Enviro Care Systems Pvt. Ltd. Chennai (MoEF & CC/ NABL certified) to carry out the regular sampling and testing of various environmental parameters. Tamilnadu Pollution Control Board also monitors the Ambient Air Quality and Noise levels inside the port. The air quality level are found well within the limits. A copy of the report is enclosed herewith.

(xix)	The Ennore Port Trust authorities must draw up a Disaster Management Plan and get it approved by the nodal department of the state Government and forwards it to the Ministry for approval.	Complied with. Port is having a Crisis Management Plan and Disaster management Plan. However, with the subsequent development of various new projects phase wise, Port has updated the Disaster Management Plan in line with National Disaster Management Authority Guidelines 2019 and forwarded it to Indian Register of Shipping for vetting.
(xx)	Adequate measure must be taken to protect the Pulicat Lake, a bird sanctuary for several species of resident and migratory water birds and having potential for fishing as an important economic activity of the area.	Complied with. The Pulicat lake is situated about 20KM away from the location of the Kamarajar port.
(xxi)	A Monitoring Committee will be set up by the project authorities to review the implementation of the above conditions with representatives from MoEF, State forest Department, Sate pollution Control Board and representative of Port Authority.	Complied with. A monitoring committee with representatives from MoEF, State Forest department, State Pollution Control Board, Tamilnadu Electricity Board and Port officials was constituted then. They conducted ten Environmental Monitoring committee meetings and reviewed the implementation of MoEF conditions.
(xxii)	The quality of treated effluents, solid wastes, emissions and noise levels, etc., must confirm to the standards laid down by the competent authorities including Central/State Pollution Control Board and under the Environment (Protection) Act 1986 whichever area more stringent.	Complied with. KPL has engaged M/s. Hubert Enviro care Systems Pvt. Ltd. Chennai (MoEF & CC/ NABL certified) to carry out the periodical monitoring, testing and analysis of Marine water quality, creek water quality in the port area. The environmental parameters are found to be well within the standards prescribed by Central / State Pollution Control Boards. Tamilnadu Pollution Control Board is also monitoring the Ambient Air Quality and Noise levels inside the port. All the parameters are found to be well within the limits. A copy of the report is enclosed herewith.

(xxiii)	The project authorities must ensure that project out sees if any must be adequately compensated and rehabilitated.	Complied with. The Project outsees were properly compensated and rehabilitated at the time of land acquisition by the TNEB, Govt of Tamilnadu.
3.	Adequate financial provision must be made in the Project estimates and the annual budget to meet the financial requirement for the implementation of aforesaid safeguards. The funds so provided item wise should not be diverted for any other purpose.	Complied with. The details of expenditure incurred towards Environmental management for the period of January 2021 to June 2021 by KPL is furnished herewith as below: 1. Environmental Monitoring = Rs. 8,57,920/- (excluding GST). 2. Solid Waste Management = Rs. 5,16,365/- (excluding GST) 3. Consent fees to TNPCB = Rs. 26,91,754/-.
4.	In case of any deviations/alterations in the project proposal from those submitted to this Ministry for clearance and on the basis of EIA findings these stipulations may be modified and/or new ones imposed for ensuring environmental protection.	The deviations / alterations in the approved Project proposal have been ratified by the MoEF. A report was sent to MoEF on 17.02.2001.The deviation was ratified by MoEF & CC vide letter no. J-16001/9/87-IA-III, dated 03.01.2001.

Annexure-I

KAMARAJAR PORT LIMITED
(A Mini Ratna Company- Government of India Undertaken)

Details of Land Owned by Kamarajar Port Limited

S.No	Descriptions	Extent	Handed over on
1.	Land transferred from Tamil Nadu Electricity Board	995.05 Acres	28.10.1994
2.	Poramboke land (Govt. of Tamilnadu) TNEB	97.15 Acres	28.10.1994
3.	Poramboke land (Govt. of Tamilnadu) TIDCO	2.36 Acres	29.05.2002
4.	Land transferred from TIDCO	947.65 Acres	29.05.2002
5.	Land transferred from Private Party (Patta land) Vallur village	31.97 Acres	08.03.2005
6(1).	Land transferred from Salt Department	29.76 Acres	07.09.1996
6(2).	Land transferred from Salt Department	35.00 Acres	31.05.2010
6(3).	Land transferred from Salt Department	647.66 Acres	28.02.2014
7.	Land transferred railway siding (Athipattu Village)	0.69 Acres	21.10.2014
	Total	**2787.29 Acres (1128.45 Ha)**	

TAMIL NADU POLLUTION CONTROL BOARD

District Environmental Laboratory

AMBIENT AIR QUALITY SURVEY – Report of Analysis

Report No. 11 /AAQS/2019-2020 Date: 08.09.2020

1. Name of the Industry : **M/s. Kamarajar Port Ltd., (Coal Berth)**
2. Address of the Industry : Vallur Post, Chennai – 120.
3. Date of Survey : 28.08.2020
4. Duration of Survey : **8 Hours** / 24 hours
5. Category : **Red** / Orange / Green – **Large** / Medium / Small
6. Land use classification : **Industrial** / Commercial / Residential / Sensitive

Meteorological Conditions

Ambient Temperature (^{0}C)	Min	Max	Relative Humidity (%)	Min	Max
	26	35		49	84
Weather Condition	Partially Cloudy		Rain Fall (mm)	Nil	
Predominant Wind Direction	SE - NW		Mean Wind Speed (km/hr)	13	

Ambient Air Quality Survey Results

Sl. No.	Location	Direction *	Distance (m) *	Height Form GL (m)	Pollutants Concentration (microgram / m^3)			
					PM 2.5	PM 10	SO_2	NO_2
1	On top of Platform near Chettinad SS.	NE	50	3	--	75	8	19
2	On top of Platform near Dock.	ESE	100	3	--	63	9	17
3	On top of Platform near Control Tower.	SE	100	3	12	55	7	19
4	On building top of Main Gate	NW	350	4	19	80	10	22
5	On top of Platform near Admin	NNW	200	3	--	84	12	26

Note: * With respect to major emission sources. The analytical results are restricted to the sampling period of **8 hrs**/24hrs

8/9/2020
DCSO

Chief Scientific Officer,
District Environmental Laboratory
Tamil Nadu Pollution Control Board
Manali

Test Performed	Test Method
PM10	IS 5182 : (Part 23) – 2006
SO2	Modified West – Gaeke / IS 5182 : (Part 2) – 2001 RA: 2012
NO2	Jacobs – Hochheiser / IS 5182 : (Part 6) – 2006 RA:2012

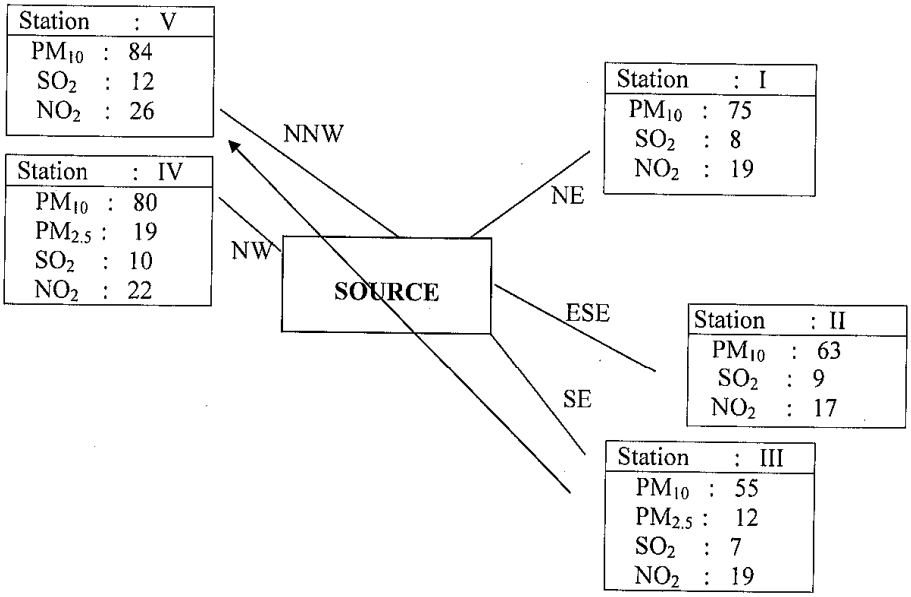
TAMILNADU POLLUTION CONTROL BOARD
District Environmental Laboratory

AMBIENT AIR QUALITY SURVEY
Schematic Diagram Showing Location of Sampling

Report No. 11 /AAQ/SM/2019 -2020

Name and Address of the Industry : **M/s. Kamarajar Port Ltd., (Coal Berth)**
Vallur Post, Chennai – 120.

Date of Survey : 28.08.2020



Note: All the values are expressed in $\mu g/m^3$ and restricted to sampling period of **8 hrs**/24hrs

Meteorological Conditions:	
Predominant Wind Direction	SE – NW
Wind Speed (Km/hr)	13
Weather Condition	Partially Cloudy
Rainfall	Nil

8/9/2020
DCSO

8/9/2020
Chief Scientific Officer,
District Environmental Laboratory
Tamil Nadu Pollution Control Board
Manali

TAMIL NADU POLLUTION CONTROL BOARD
District Environmental Laboratory

AMBIENT/SOURCE NOISE LEVEL SURVEY - Report of Analysis

Report No. 11/ NLS/2019-2020 Date: 08.09.2020

1.	Name of the Industry	**M/s. Kamarajar Port Ltd., (Coal Berth)**
2.	Address of the Industry	Vallur Post, Chennai – 120.
3.	Date of Survey	28.08.2020

Category	**RL**	**Land use Classification**	Industrial
Type of Survey	**Ambient**/Source	**Time of Survey**	Day
Meteorological conditions		**Calm/Windy/Rainy**	Windy

Logging Parameters

Instrument Used	CESVA Model SC310		Serial No		T243103
Logging Interval	10 Minutes each point		**Measuring Range**		50-110 dB(A)
Weighting	**" A"**	**Peak Weighting**	**"C"**	**Time Weighting**	FAST
Sound Incidence	RANDOM			**Time in hrs**	14.00 – 15.00

Report of Noise Level Monitoring

Sl. No	Location	Duration (min)	Distance (m)	Direction	Sound Level –dB(A)		
					L_{eq}	Min	Max
1	Near Chettinad SS	10	50	NE	56.1	52.7	73.3
2	Near Jetty	10	100	ESE	61.5	56.5	63.5
3	Near Control Tower	10	100	S	61.6	56.2	68.4
4	Near Main Gate (CISF)	10	350	NW	62.1	58.5	76.6
5	Near Admin	10	200	NNW	61.4	49.6	67.3

Note: Leq value is the average energy for the measured period.

8/9/2020
DCSO

8/9/2020
Chief Scientific Officer,
District Environmental Laboratory
Tamil Nadu Pollution Control Board
Manali

TAMIL NADU POLLUTION CONTROL BOARD
District Environmental Laboratory

INFERENCE REPORT ON A.A.Q.S./ S.M.

1. Name of Industry : **M/s. Kamarajar Port Ltd., (Coal Berth)**
   Vallur Post, Chennai – 120.
2. Pollution Category : Red Large
3. Date of A.A.Q. Survey : 28.08.2020
4. Predominant Wind Direction : SE - NW
5. Weather condition : Partially Cloudy

STATUS OF POLLUTANTS LEVEL

I. AMBIENT AIR QUALITY :-

1. Total No. of A.A.Q. stations monitored : 5
2. No. of A.A.Q. stations in which Pollutants Level exceeded the Boards standards : Nil

Maximum and Minimum values of Pollutants Level observed:

Sl. No.	POLLUTANT	Values in microgram/m^3		BOARD's STANDARD (As per consent order)
		Maximum	Minimum	
1.	PM_{10}	84	55	100
	PM.2.5	19	12	60
2.	GASEOUS POLLUTANTS:-			
	(i) SO2	12	7	80
	(ii) NO2	26	17	80

II. STACK MONITORING:-

1. Total No. of Stacks Monitored : --
2. No. of Stacks in which Pollutants level Exceeded the Boards standards : Nil

8/9/2020
DCSO

8/9/2020
Chief Scientific Officer,
District Environmental Laboratory
Tamil Nadu Pollution Control Boar
Manali

Compliance Report

On

Ministry's guidelines for

"EXPANSION PROPOSALS - DEVELOPMENT OF TERMINALS FOR MARINE LIQUIDS, COAL, IRON AND CONTAINERS IN SECOND PHASE AND ASSOCIATED DREDGING AT ENNORE PORT"

Point wise compliance report on Ministry's guidelines for the Ennore Port Expansion Proposals-Development of Terminals for marine liquids, coal, iron and containers in Second phase and associated dredging at Ennore Port Environmental clearance.

Ref: MoEF's Notification No. 10-28/2005–IA-III dated 19th May 2006

Ministry of Environment & Forests had accorded Environmental clearance for the development of satellite port at Ennore near Madras vide letter No. J16011/9/87-IA.III dated 28.9.1992. After commissioning of the satellite port in June 2001, Kamarajar Port Limited, KPL (erstwhile Ennore Port Limited) had proposed for expansion for development of the following projects. Subsequently MoEF & CC had accorded clearance vide letter No. 10-28/2005–IA-III dated 19th May 2006 for the following projects.

i. Marine Liquid Terminal to handle 3 MTPA.

ii. Coal Terminal other than TNEB Users to handle 8 MTPA.

iii. Iron Ore Terminal to handle 12 MTPA.

iv. Container Terminal for a quay length of 730m to handle 12 MTPA.

v. Associated Capital Dredging of 15.50 Million cubic metres.

Status of various projects accorded clearance by MoEF

Marine liquid terminal:

The project was developed on BOT basis to handle Marine liquids and chemicals to a capacity of 3 MTPA. The license Agreement was signed during November 2004 with Ennore Tank Terminals Private Limited. The project was commissioned on 18.1.2009.

Coal Terminal

The project was developed on BOT basis with M/s. Ennore Coal Terminal Pvt Ltd., to handle 8MTPA of coal for non TNEB users with an approved project cost of Rs.400 crores. Constructions were completed and commercial operations from March 2011.

Iron Ore Terminal

The project was developed on BOT basis and the agreement was signed with M/s. SICAL Iron Ore Terminals Limited at an approved project cost of Rs.480 crores with a capacity of 12 MTPA. Constructions were completed. However, due to the ban on the Iron ore mining from Bellary-Hospet region, the Licensee could not perform the trail run and the terminal was lying idle without any operation since then. It was decided to convert the terminal to handle coal.

KPL submitted application to MoEF&CC for "Modification of existing iron ore terminal to handle coal". Ministry of Environment & Forests (MoEF) has accorded the Terms of Reference (ToR) vide letter No.10-28/2005I-IA.III dated 28.01.2016 for the preparation of EIA-EMP report for the above said conversion proposal. MoEF&CC had accorded clearance vide letter No. 10-28/2005–IA-III dated 9th May 2018 and the work is in progress.

Container Terminal

KPL has subsequently modified this environment clearance for the development of container terminal. MoEF & CC has accorded Environment Clearance vide Letter No. 10-28/2005-IA-III dated 10th September 2007.

Further Environment Clearance was modified to handle container (16.8 MTPA) in quay length of 730m and Multi Cargo berth (2.0 MTPA) in a quay length of 270 m. MoEF&CC has accorded Environment Clearance vide Letter No. 10-28/2005–IA-III dated 24.12.2014.

Capital Dredging:

The total quantity of dredging for which environmental clearance was obtained are as follows:

(i) 15.5 million m^3 (dredging associated with second phase expansion proposals, viz. iron ore, coal, MLT and container terminal of 700m quay length with a depth of (-) 15.0 m) MoEF communication No. 10-28/2005–IA-III dated 19th May 2006.

Dredging Phase I

The project involves dredging of 4 million cum to provide -15 meters depth at the Marine Liquid, Coal and Iron Ore berths and approaches and to raise the land for coal and iron ore stackyards by using the dredge material. The work commenced on October, 2007 and completed by January, 2009.

Dredging Phase –II

The project work involves dredging of 10.0 million cu.m to provide a depth of -18.5m at basin and -20.0 m at channel. The work was awarded to Dredging Corporation of India (A Govt. of India Undertaking) and the work commenced on 22.2.2011 and completed on 20.4.2014.

Deeping of ECTPL alongside berth to (-)18m and (-)16.0m at CB1 & CB2 and (-)18.50m depth at the approaches were carried out by Dredging Corporation of India. The work was awarded on 18.10.2014 and was completed on 30.10.2015.

Compliance Report

S.No	MoEF Guidelines	Compliance Status
1	All the conditions stipulated in the No Objection Certificate from "Tamil Nadu State Pollution Control Board vide their letter No.T12/TNPCB/Misc/F.3322/TVLR/05 dt. 7/12/06 should be strictly implemented.	Complied with all conditions stipulated in the No Objection Certificate obtained from "Tamil Nadu State Pollution Control Board.
2	Groins and other suitable structures should be constructed to prevent the closing of the mouth of Ennore creek.	Kamarajar Port had requested State Public Works Dept. vide letter dated 09.05.2017 to carry out the groynes construction works on deposit basis. In response, the state Public works Department, Araniyar Basin Division vide letter No. F6/AEE/ASE/2017 dated 09.11.2017 communicated their willingness for carrying out the works on deposit basis. Subsequently, the State PWD requested NIOT, Chennai to conduct the study and submit the estimate for the work. Kamarajar Port had entrusted the work to State Public works Department, Araniyar Basin Division Chennai for Groynes construction works to prevent closure of the mouth of Ennore creek on deposit basis on 28.11.2017. Subsequently, the State PWD appointed NIOT, Chennai to conduct the study and submit the report which includes the cost estimate for the groin constructions at the mouth of the. KPL deposited Rs 112 lakhs for conducting the study in March 2018. NIOT conducted the study and submitted their Scientific Study Report to PWD during April 2019 along with design of Training wall, Bathymetry study drawing, contour wise section of training walls etc. Based on the NIOT report, state PWD has submitted their estimate for an amount of Rs.141.05 Crores. KPL had scrutinized the estimate and sanctioned an amount of Rs.115.04 crores and the same will be executed through state PWD on deposit basis.

3	The DPR and the technical details to be awarded to the BOT operators should be provided to MoEF for post project monitoring within 6 months from the date of receipt of this letter.	Complied with. DPR for Marine Liquid terminal was submitted to Regional Office, MoEF, Bangalore vide letter dated EPL/MS/49/2007 dated 3/7/2007. The DPR for Iron ore and Coal terminals were submitted to Regional Office, MoEF Bangalore vide Ltr .No EPL/MS/49/2008 dt. 13/3/2008. The DPR for the Adani Container Terminal had submitted vide letter no. EPL/MS/49/2008
4	The marine terminal should be set up outside CRZ area	Complied with. The terminal areas are developed outside CRZ area as stipulated.
5	Recommendations of Risk analysis report should be strictly implemented and a comprehensive quantitative Risk Analysis should be carried out before operationalizing the project.	Complied with. M/s. Ennore Tank Terminals Pvt. Ltd, one of the BOT operator operating petroleum products and chemicals had carried out Risk Analysis through M/s. Central Leather Research Institute during 2007. The firm has also carried out third party Safety Audit during 2019. Recommendations of Risk analysis were implemented by M/s. ETTPL. M/s. Ennore Coal Terminal Pvt. Ltd has also carried out risk analysis. With regard to M/s AECTPL, Operational Risk assessment was carried out and recommendations are being implemented. Operation al Risk Assessment report submitted vide letter No. AECTPL/KPL/EC-compliance/Env/02 dated 13.07.2018
6	Approval from Chief Controller of Explosives should be obtained for hazardous chemicals storage, transfer and related activities.	Complied with. For the Marine Liquid Terminal, license was obtained for the Storage Terminal from the Chief Controller of Explosives vide Licence No. P/HQ/TN/15/4648(P191324) dated 18/10/08 and the same was renewed during 2013, vide letter dated 17.4.2013. The validity of the above said licence is till 31.12.2022. With regard to M/s AECTPL, the terminal is not storing any hazardous chemicals; hence it is not applicable to this terminal.
7	The reclamation of the port area should be carried out with the dredged materials. Dredged material should not	Complied with. The dredged material was used for beach

	be dumped into the sea. No reclamation should be carried out outside the port limits	nourishment and filling up of low lying area within the port limits. However, MoEF & CC vide letter dated 6th September, 2006 has directed subsequently that dredged material not suitable for reclamation and beach nourishment should be disposed off in the sea. No reclamation is carried outside the port limits.
8	The coastal protection works should be carried out after detailed hydrodynamic modeling studies and it should be ensured that no erosion or accretion takes place in other areas due to the shore protection works.	KPL has carried out the study through Central Water and Power Research Station, Pune. The study reports were submitted to MoEF vide our letter No. EPL/49/MS/2007 dated 8.12.2009. As per the report, construction of sand trap, beach nourishment etc., was carried out.
9	Reclamation of 500 acres should be carried out only for port development. The height of the reclaimed area will be maintained above the maximum flood level.	Complied with. Reclamation carried out for the creation of stock yards for coal and iron ore are upto 4.5 m height, which is about 2 m above the flood level.
10	The wave tranquility study and the ship maneouvering studies carried out should be taken into account while operating the port.	Complied with. Wave tranquillity study and ship manoeuvring studies were carried out and the port is in operational.
11	The project proponent should ensure that during construction and operation of the port, there will be no impact on the livelihood of the fishermen. The fishermen should be provided free access to carry out the fishing activity.	Complied with. Due to port operations, there is no adverse impact on fishing activities.
12	All necessary precaution while undertaking construction and operation of the port should be taken up keeping in view, the bathymetric changes caused due to tsunami.	There was no bathymetry change due to Tsunami. After Tsunami bathymetry survey was carried out and confirmed.
13	All development in the port should be carried out in accordance with the Coastal Regulation Zone Notification, 1991 and approved Coastal Zone Management Plan of Tamil Nadu.	Complied with. All development activities are carried out in accordance with the CRZ Notification.
14	The project proponent should undertake a comprehensive hydrodynamic modeling study with regard to river	Complied with. Hydrodynamic study was carried out by NIOT, Chennai and submitted to MoEF vide our letter

	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.	No. EPL/49/MS/2007 dated 5/8/2008. Further study was made based on the present site conditions. The works of formation of protection bunds along the sides of the river are completed.
15	Construction of labour camps should be located outside Coastal Regulation Zone areas and should be provided with adequate cooking and sanitation facilities.	Complied with. Construction of the terminals is completed and the terminals are in operation.
16	The project-affected people, of any should be properly compensated and rehabilitated.	Complied with. The land has been transferred from TNEB, TIDCO and Salt Department, Government of India. Hence no direct project affected people by Kamarajar Port Limited.
B	**General conditions**	**Compliance Status**
1	Development of the proposed channel should be undertaken meticulously conforming to the applicable Central/ local rules and regulations including Coastal Regulation Zone Notification, 1991 and its amendments. All the construction designs/drawings relating to the proposed development activities must have approvals of the concerned State Government Department/Agencies.	Complied with. All constructions and plans are approved by port itself as Port itself being a regulatory authority by itself.

2	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 be 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 the concerned pollution control agencies. The periodic monitoring reports at least once in 6 months must be send to this Ministry (Regional Office at Bangalore) and Pollution Control Committee.	Complied with. Kamarajar Port is monitoring the environment. Port has engaged M/s. Hubert Enviro Care Systems (P) Ltd, an MoEF and NABL accredited laboratory for sampling and testing of various environmental parameters inside the port. M/s. ETTPL, the BOT operator handling POL projects is monitoring the environment by engaging a laboratory M/s. Green Chem Solution (P) Ltd. once in month and ensuring that it meets as per TNPCB norms. Further, TNPCB also visits the terminal for monitoring of air once in a year. The analysis reports are enclosed herewith. The operator of the coal terminal M/s. Ennore Coal Terminal Pvt Ltd is monitoring the environment by engaging laboratories for sampling and testing of parameters. The reports are submitted to TNPCB regularly. M/s AECTPL has awarded Environmental Monitoring services to NABL accredited laboratory. Ambient Air Quality, Noise Level, DG Stack emission, Marine & Surface water, sea sediment analysis are carried out on regular basis. The reports are being submitted to TNPCB also as part of the six monthly compliance reports. Monitoring reports are properly maintained and made available for inspection to Pollution Control Agencies, as and when required. Environmental Monitoring report for the compliance period is enclosed herewith.
3	Adequate provisions for infrastructure facilities such as water supply, fuel for cooking, sanitation etc. Must be provided for the laborers during the construction period in order to avoid damage to the environment. Colonies for the laborers should not be located in Coastal Regulation Zone area. It should also be ensured that the construction workers do not cut trees including mangroves for fuel wood purpose.	Complied with. Construction of the terminal is completed and the terminals are in operation.

4	To prevent discharge of sewage and other liquid wastes into the water bodies, adequate system for collection and treatment of the wastes must be provided. No sewage and other liquid wastes without treatment should be allowed to enter into the water bodies.	Complied with. Port handles coal, POL products and exports of automobiles. No effluent or liquid wastes are generated due to the above said operations. Solid waste generated from the ships are collected, segregated and sent to various recyclers for further beneficial use. No wastes are dumped into the water bodies. The operator M/s. ECTPL has installed a Sewage Treatment Plant at the stack-yard. M/s. ETTPL had taken adequate precautions to ensure that no sewage and other liquid waste are entering into the water bodies. With regard to M/s AECTPL, the terminal operators had installed and operating 25KLD capacity sewage treatment plant and the entire treated water is being used for development of horticulture purpose.
5	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.	Complied with. Kamarajar port is having Port "Waste Oil, Sewage and Other Waste Disposal Policy-2019" for the disposal of waste oil through empanelled list of CPCB approved waste oil recyclers. Port has engaged a contractor for the collection, segregation and disposal of solid wastes generated inside the port and from ships. The collected wastes like plastics, metals, wood, paper, cans, etc are segregated and sent to approved re-cyclers /industries for further beneficial use or for re-cycling. Hazardous wastes are sent to TSDF at Gummidipoondi.
6	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.	Complied with. Navigational aids are available. The channel length has been increased and additional navigational aids were provided.
7	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 this purpose.	Complied with. As part of community development and welfare measures, Port has constructed new school building at a neighboring Kattupalli village. Ennore port has also provided access road and street light facility to the nearby Kattupalli village. A school building for Attipattu village was

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<td>constructed during the year 2010-11 under CSR scheme and provided furniture, toilet facility for the school during the year 2011-12 under CSR scheme. Road improvement work at Attipattu Pudu Nagar village was carried out during 2011-12.

KPL has engaged 19 members of women Self Help Group belonging to Attipattu village during September 2011.

Port has engaged about 79 members of women Self Help Group belonging to the nearby Kattupalli for taking up of plantation and maintenance of green belt.

The amount spent on CSR activities during last four years is as below.

2017-18 is Rs.2.20 crores.
2018-19 is Rs. 4.69 crores
2019-20 is Rs. 8.11 crores
2020-21 is Rs. 18.56 crores (till March'2021)

With regard to M/s AECTPL, the terminal has implemented CSR activities like General Health Camp, Eye Camp, encouraging sports and events, etc., in the vicinity of the port area. Expenses incurred for CSR during the compliance period is 147.38 Lakhs. The breakup of 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>Education</td><td>31.20</td></tr>
<tr><td>2</td><td>Health</td><td>27.70</td></tr>
<tr><td>3</td><td>Sustainable Livelihood Development</td><td>32.18</td></tr>
<tr><td>4</td><td>Community Infrastructure Development</td><td>56.30</td></tr>
<tr><td colspan="2">Total</td><td>147.38</td></tr>
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<td>8</td>
<td>The quarrying material required for the construction purpose shall be obtained only from the approved quarries/borrow areas. Adequate safeguard measures shall be taken up to ensure that the overburden and rocks at the quarry side do not find their way into water bodies.</td>
<td>Construction of the terminals is completed and the terminals are in operation</td>
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9	For employing unskilled, semi-skilled and skilled workers for the project, preference shall be given to local people.	M/s AECTPL has engaged the local people also during construction phase & also during the operation phase through contracts. M/s ETTPL has given preference to the local people in employment. M/s ECTPL has engaged local people also during construction phase & also during the operation phase.
10	The recommendations made in the Environmental Management Plan and Disaster Management Plan, as contained in the Environmental Impact Assessment and Risk analysis Reports of the project shall be effectively implemented.	Port is having a Crisis Management Plan and Disaster management Plan. However, with the subsequent development of various new projects phase wise, Port has updated the Disaster Management Plan in line with National Disaster Management Authority Guidelines 2019 and forwarded it to Indian Register of Shipping for vetting.
11	A separate Environmental Management Cell with suitable qualified staff to carry out various environments should be set up under the charge of a senior Executive who will report directly to the Chief Executive of the Company.	The BOT operators are monitoring the quality of environmental parameters at their respective terminals. At present KPL is having an Environmental Division with the following officers. (i) Chief Manager(HSE), (ii) Sr. Manager(HSE) and (iii) Executive(HSE) to take care of the environmental requirements of the port. With regard to M/s AECTPL, 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. Environmental Department headed by Senior Manager-Environment, who is well supported by Environment Management Team at H.O. M/s ETTPL has appointed the safety officer by taking care of safety and environment. ETTPL has engaged a NABL accredited laboratory M/s. Green Chem Solution (P) Ltd. laboratory for sampling and testing for various Environmental parameters inside the terminal premises.

12	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.	The expenditure by M/s. ETTPL for the Marine Liquid Terminal during the year for the year 2019-20 is Rs. 21.92Lakhs and for the year 2020-21 is Rs. 25.08 Lakhs. The expenditure incurred by M/s. ECTPL for Environment Management is Rs.52.96 Lakhs & 49.31Lakhs for the years 2019-20 and 2020-21 respectively.
13	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 proponent during this inspection for monitoring purposes, by furnishing full details and action plans including the action taken reports in respect if mitigate measures and other environmental protection activities.	Complied with. All necessary support is being extended during the visit of officials of TNPCB & MoEF. With regard to M/s AECTPL, TNPCB officials are visiting the terminal on monthly basis. There was no visit from RO-MoEF & CC during the compliance period. All the necessary support is being provided during the site visit. With regard to M/s ETTPL & M/s ECTPL, necessary support is being extended by the terminal operators during the visit of officials.
14	In case there is an intention 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. The project proponent should be responsible for implementing the suggested safeguard measures.	Noted for compliance.
15	This Ministry reserves the right to revoke this clearance, if any of the conditions stipulated are not complied with to the satisfaction of this Ministry.	Noted please.
16	This Ministry or any other competent authority may stipulate any additional conditions subsequently, if deemed necessary for environmental protection, which shall be complied with.	Noted for compliance.
17	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 the copies of clearance	Complied with. It was advertised in the vernacular Tamil and English newspapers on 02/06/2006. This was communicated to regional office of MOEF & CC vide EPL letter No. EPL/74/2005 dated 29/5/2006.

	letters are available with the state pollution Control Board and may also be seen at web site of the Ministry of Environment & Forests at http://www.envfor.nic.in. The advertisement should be forwarded to the Regional office of this Ministry at Bangalore.	
18	The project proponents should inform the Regional Office as well as Ministry the date of financial closure and final approval of the project by the concerned authorities and the date of start of development work.	Noted. The details are as given below.

The details of financial closure of the projects are as follows:

Project	**Date of approval by Competent Authority**	**Date of Financial Closure**	**Date of start of development work**
Marine Liquid Terminal	16-02-2004	September 2006	Work commenced on 09-06-2006 and the terminal commissioned on 18.1.2009
Coal Terminal	04-07-2006.	27 September 2007	06.02.2007
Iron ore Terminal	20-06-2006.	27 September 2007 (in-principal approval accorded)	06.02.2007
Container Terminal	14.2.2014	15.3.2014	20.10.2014
Capital Dredging (Phase – I)	16-04-2007	---	Dredging ommenced on 16/2/2008 and completed on 31.1.09
Capital Dredging (Phase – IIA)	5-12-2009	---	Dredging commenced on 22.02.2011 and completed on 20.04.2014.
Deepening of ECTPL, CB1 & CB2 and its approaches	18.10.2014	---	Work completed.

Annexure- I

S. No	Guidelines issued by Tamil Nadu State Pollution Control Board vide their letter No.T12/TNPCB/Misc/F.3322/TVLR/05 dated 7/12/2006.	Compliance status
1	The unit shall provide adequate sewage Treatment Plant to treat the sewage generated.	The sewage generated is of sanitary waste in nature and the buildings in the port are provided with soak pits and septic tanks. With regard to M/s. ETTPL, the sewage generated is of sanitary waste in nature and is cleaned at once in 6 months. Effluent treatment plant of capacity 20KLD is installed. M/s. ECTPL has installed a Sewage treatment Plant and it is in operation. The outlet water is reused for garden purpose. Samples are being drawn by TNPCB every month and the results of the same are enclosed.
2	Adequate dust control measures shall be provided for controlling the dust emanating from large stock piles of bulk cargoes such as coal, iron ore and other dusty cargoes.	Complied with. Adequate dust control measures are provided for controlling the dust emanating from large stock piles of bulk cargoes such as coal. The bulk cargos are transported through elevated closed conveyor system installed with required dust extraction system at all transfer points, junction towers, etc. Water sprinkler systems are in place for minimizing dust at the stack yards. The details of dust control measures provided at the coal handling terminal (M/s. ECTPL) are as below. *a) Water sprinklers, are installed around the stock yard to suppress the dust emission.* *b) Wind shield has been installed in the predominant wind direction of North and South side at 12Mts height to mitigate the dust emission.* *c) Varieties of trees are planted around the stock yard to suppress the dust.* *d) At all the coal transfer towers, an in build high efficient water sprinkler*

		system are installed to mitigate the dust emission. *e) The conveyor is totally covered with bare galvalume sheet to protect the emission of coal during coal conveying process.* *f) In the Stacker / Re-claimer water spraying nozzles are installed to reduce the dust emission with exclusive water tanks and pumps. This is in-build dust suppression system incorporated in the basic design itself.* *g) A compound wall of sufficient height is constructed as all sides of the coal stock yard to protect the dust emission* *h) Bulldozer grader / pay-loader are being used for coal compression to avoid dust at elevated levels.* *i) Coal is dampened by using water to reduce the dust dispersion.*
3	The unit shall provide the following measures to control dust pollution from coal / iron ore handling activity, a) Totally enclosed continuous loaders / unloaders and conveyor system should be adopted. b) Dust extraction system should be provided at all transfer points. c) To minimize dust from the stack yard, proper water spraying should be done d) Compound wall of adequate height shall be made around the stack yard area. e)	The coals from berths (CB1 & CB2) are directly transported to North Chennai Thermal Power Station (NCTPS). Coal is not stored inside the port. The details of dust control measures provided at the M/s. ECTPL coal handling terminal are as below. a) The conveyor is totally covered with bare galvalume sheet to protect the emission of coal during coal conveying process. b) At all the coal transfer towers an in build high efficient water sprinkler system is installed to mitigate the dust emission. c) Water sprinklers, are installed all around the stock yard to suppress the dust emission. d) A compound wall of sufficient height is constructed on all sides of the coal stock yard to protect the dust emission.

4	Continuous Ambient Air Quality Monitoring Stations with computer printing arrangements shall be installed at strategic locations inside Port and neighbour hood for monitoring dust and shall be displayed online at the Main gate.	M/s. ECTPL has installed Continuous Ambient Air Quality Monitoring stations installed and it is connected to CARE air center – TNPCB. With regard to M/s. ETTPL, the operator has engaged M/s Green Chem Solution Pvt. Ltd. The air and water quality monitoring is being carried out by M/s Green Chem Solution Pvt. Ltd once in a month and ensured that it meets as per TNPCB norms. Apart from that Tamilnadu Pollution Control Board also visits the terminal for monitoring the air quality once in a year. Online VOC monitoring system has been installed at critical locations for continuous monitoring of VOC levels.
5	To contain noise levels within the prescribed standards roofed conveyor belts should be deployed. Noise pollution in the port area should be reduced by putting up sound barriers at suitable locations. To protect the workers from high noise levels ear muffs / plugs should be provided.	Complied with. M/s. ETTPL has provided ear muffs / plugs to Workers. Moreover DG power backup are with acoustic arrangements and other DGA set have silencer to reduce noise level. With regard to M/s ECTPL, the conveyor is totally covered to protect the emission of coal and noise.
6	The unit has to furnish the ROA of the split coal collected from seabed during annual maintenance / periodic maintenance dredging analyzed for heavy metals and other toxic metals.	Being complied. Kamarajar Port is carryout the analysis of seabed for heavy and toxic metals during the periodic maintenance dredging. Heavy metals are also monitored in the seawater and also in the sediments during dredging activities.

7	Water quality monitoring stations at strategic points must be set up in the project area to monitor water quality and marine pollution at regular intervals.	Complied with. Port has engaged M/s. Hubert Enviro Care Systems Pvt. Ltd. Chennai (MoEF & CC/ NABL certified) to carry out regular sampling and testing of various environmental parameters which includes marine water quality and ground water. M/s. ECTPL has installed 20 Nos. of piezometric well installed around the stack yard at ECTPL to monitor the ground water quality. ROA is submitted to TNPCB on monthly basis. With regard to M/s. ETTPL, there is no discharge from the unit.
8	The quality of treated effluents solid wastes, emissions and noise level etc must confirm to the standards laid down by the competent authorities including Central / State pollution Control Board and under the Environmental (Protection Act) 1986 whichever are more stringent.	Port is regularly monitoring the emission and noise levels inside the port premises and it is found to be within the standards prescribed by Tamil Nadu Pollution Control Board. With regard to M/s. ETTPL, there is no generation of effluent by terminal. Noise level inside the terminal premises are monitored regularly and found to be within the standards prescribed by Pollution Control Board. DG power backup which is with an acoustic arrangement and other DGA sets have silencer to reduce noise level. M/s. ECTPL effluents, emission level and noise are within the limit. The results are enclosed.
9	Dredging operations must be undertaken in stages in consultation with some expert institution like CWPRS, in such a way as to ensure that these operations do not deteriorate the surface water quality which must be maintained within the prescribed standards. Water parameters should be measured on regular intervals to monitor water quality. Dredging material should not be used for filling up any water body.	Port is monitoring the water quality during the dredging operations.
10	The port shall ensure that no spillage of POL/Chemicals handled is occurred in sea while unloading them either from ship or barge vessels to pipeline/road vessels.	Port ensures that no spillage of POL/Chemicals in sea during the operations. The terminal where the POL/Chemicals, are being transferred from the ships to the terminal tank yard through unloading arms/hoses having leak proof systems. Any

		eventual spill will be tackled with required booms and skimmers. The POL/Chemicals are transferred to the tank farms through dedicated pipelines. To prevent spillage from loading arm connection, collection trays are provided. Dock line integrity is maintained by hydraulics test once in year and pneumatic tests are conducted before each discharge operation from ocean tanker and thickness tests are also carried out for the pipeline regularly. With regard to M/s ECTPL, the terminal is not handling POL/Chemicals.
11	The port shall have adequate contamination boom facility with skimmer to contain and recover the spillage of POL in the sea if any.	Complied with. KPL falls under category B. Port is having oil spill contingency plan prepared in line with NOS-DCP. Necessary chemicals, booms, dispersants, etc. are readily available for containment of any accidental spill of Tier-I category. BOT operator M/s. Ennore Tank Terminals Pvt. Ltd has provided facilities like booms, skimmers etc., to contain any eventual oil spill. Port is equipped with facility to contain Tier – I oil spills. With regard to M/s ECTPL, the terminal is maintaining OIL SPILL CONTROL KIT.
12	A proper safety audit should be carried out by specialized agency and their recommendations should be implemented.	Complied with. M/s. Ennore Tank terminals Pvt. Ltd., one of the BOT operator operating petroleum products and chemicals has carried out the safety audit through M/s. I FLUIDS ENGINEERING for the year of 2019. Safety audit recommendations are implemented. KPL had carried out safety audit of the terminals through National Safety Council during the year 2020, and requested the terminal operators to comply with the shortcomings; the terminal operators are in the process of compliance to the shortcomings.
13	An environment division must be set up in Ennore port headed by Environment Manager with appropriate strength of Environment Engineers, Forest officers, forest guards and	At present KPL is having an Environmental Division with the following officers. (i) Chief Manager(HSE),

	other laboratory staff. An environmental laboratory for Air Water and solid waste monitoring must be set up with adequate equipment and qualified staff.	(ii) Sr.Manager(HSE) and (iii) Executive (HSE) to take care of the environmental requirements of the port. Port has engaged M/s. Hubert Enviro care Systems Pvt. Ltd. Chennai (MoEF & CC/ NABL certified) to carry out the regular environmental monitoring. TNPCB is also monitoring the Ambient Air Quality and Noise Levels at various locations inside the port. With regard to M/s ETTPL, the terminal operator has appointed the safety officer to take care of safety and environment. ETTPL has engaged M/s Green Chem Solutions Pvt Ltd, a laboratory for monitoring various environmental parameters inside the terminal premises.
14	The unit must ensure that all activities carried out in the area falling under coastal Regulation Zone are regulated as per the provision contained in the CRZ Notification 1991 as amended.	KPL is following all the provisions contained in the Coastal Regulation Zone Notification.
15	The unit has to implement Environmental Management Plan as envisaged under Environmental Impact assessment study as Per EIA Notification, 1994 as amended by the Ministry of Environment and Forest, Government of India.	Noted and being complied with.
16	The port shall maintain the marine eco system.	Port is maintaining the marine eco system by way of regular monitoring.
17	The project authorities must ensure that no cutting of trees takes place in the project area and shall develop green belt.	Will be complied as much as possible. In case cutting becomes essential, equivalent plantation will be made.
18	No reclamation of water bodies should be undertaken in CRZ using dredged materials.	Noted. No reclamation of water bodies is undertaken in the CRZ areas using dredged material.
19	The nature of drainage of the terrain should not be affected by filling of low lying areas with dredged material.	Noted and complied with.
20	The possibilities of dumping the dredged spoil north of northern breakwaters in areas prone to sea erosion by creating sand dunes and/or	Complied with. About 4.0 million m3 of dredged material

	for beach nourishment may also be explored.	are dumped in the north of north break water as beach nourishment.
21	Wherever mangroves are present within the project area, it should not be disturbed.	Noted and complied with. Mangroves present in the project area are not disturbed.
	The Ennore Port Limited shall develop additional green belt in an area of 150 hectares and install additional air quality monitoring stations with continuous display as assured vide letter dated 7.11.2005.	Green belt being developed inside the port in a phased manner. Port has engaged M/s L&T Infrastructure Engineering Ltd., for the preparation of Bio-Diversity Management Plan. Based on the green belt map submitted by the firm, port has planned for the development of green belt of 68.66Acres inside the custom bound area and 621.91 Acres outside the custom bound area.
23	The port shall adopt the additional dust suppression measures in iron ore and coal handling areas as assured vide letter dated 7.11.2005.	The details of dust suppression system adopted are mentioned at S.No 2 and 3 of this report.

Point wise compliance report on the conditions issued by Tamil Nadu State Coastal Zone Management vide Letter No. 30060/EC.3/2005-1 dated 06.12.2005

1	No reclamation of water bodies should be undertaken.	KPL has not reclaimed any water bodies for the development.
2	To ensure that the natural drainage of the terrain is not affected by filling of low lying areas with dredge spoils thus leading to inundation or water logging.	The dredge spoil was used for the reclamation of 500 acres of land owned by port for the development of coal and iron ore stackyards. It is informed that, in the application (Form-A) submitted to MoEF, for obtaining Environmental Clearance for Ennore Port Expansion proposals, Port has mentioned in the application that it would make use of the available materials to raise about 500 acres of low lying lands to (+) 2.50 M level for developing it as stack yards for coal and iron ore. Accordingly, the stock yard for the coal, iron ore, were developed in these lands.
3	To explore the possibilities of dumping the dredged spoil north of northern breakwaters in areas prone to sea erosion by creating sand dunes and / or for beach nourishment.	Complied with. About 4.0 million m3 of dredged material was dumped in the north of northern breakwater for beach nourishment.

4	The mangroves present near the project area should not be disturbed and action plan to conserve them may be indicated	While executing the project it was ensured that no mangroves were disturbed due to the construction of conveyor belt. KPL has conducted a study "Action plan and Ecological studies for Kamarajar Port" through National Centre for Sustainable Coastal Management, a unit of MoEF&CC, during May 2017. The report has identified the mangroves and also suggested various mitigation measures. The same will be implemented while exercising the Master plan projects. Further, KPL has engaged M/s L & T Infrastructure Engineering Limited, Hyderabad for the work of "Preparation of Bio-Diversity Management Plan for Kamarajar Port Limited", *vide* work order No: KPL/MS/HSE/BD/2018, Dated: 27.03.2019. The draft report was submitted to Tamil Nadu State Bio-diversity Board vide KPL letter No. KPL/MS/HSE/BD/2019 dated 17.01.2020 for validation and approval. In response, the Board has made some comments/suggestions on the report. The suggestions/comments of the Board has forwarded to the consultant M/s L & T Infrastructure Engineering Limited. The consultant is working on the comments/suggestions.

MARINE LIQUID TERMINAL

Operated by M/s.ENNORE TANK TERMINALS PVT LTD.,

ENVIRONMENTAL STATEMENT REPORT

FORM-V

See Rule-14

Environmental Statement Report for the financial year ending the March 31, 2020

PART- A

i	Name and address of the owner /Occupier of Industry operation or process	Mr. A.M.RAO Managing Director 'Neeladri', 3rd Floor No.9, Cenotaph Road Alwarpet, Chennai 600 018
I a	Authorized person for the occupier	Mr.C.P.VISWAMOHAN, Sr. General manager Ennore Tank Terminals Pvt Ltd Inside Kamarajar Port Vallur Post, Chennai 600120.
ii.	Industry Category Primary (STC CODE) Secondary (STC CODE)	Red industry
iii.	Production Capacity (Units)	3 MMTPA of Bulk Liquid Products
iv.	Year of establishment	2007
v.	Date of last environmental statement submitted	

PART- B

Water and Raw material consumption

A. Water

(i) Water consumption m^3/day

Process m^3/day : Not applicable

Domestic m^3/day : 27.0

(ii) Consumption per unit of production

Name of product	Process water consumption per unit of product-output (KL/MT)	
	During the previous financial Year (2020-2021)	During the current financial year (2021-2022)(till June-2021
	Not applicable.	

B. Raw material Consumption:

Name of the raw material	Name of product	Consumption of raw material per unit product output (MT of Cement)	
		During the previous financial year	During the current financial year

	No raw materials are to be procured and here only handling of storage of Bulk Liquid Products.

PART –C

Pollutant discharge to environment/unit of output

(Parameter as specified in the consent issued)

S. No	Pollutants	Quantity of pollutants discharged (Mass/day)	Concentrations of pollutants in discharged (mass/volume) ($kg/m^{3)}$	Percentage of variation from prescribed standard with reason
a	Water	Here no waste water is generated. Water is used for cooling tower and it is recycled and also which is evaporated in summer days.		
b	Air	Air and stack monitoring is being carried out by M/s Green Chem Solution Pvt Ltd once in a month and every month we are submitting the Environment report to Kamarajar Port Ltd. and also to TNPCB. Tamil Nadu Pollution Control Board visiting ETTPL site once in a year and doing the air quality and stack monitoring indifferent places for DG sets and the results meet PCB norms.		

PART-D

HAZARDOUS WASTES

(As specified under Hazardous wastes/management& handling rule, 1989 and as amended in 2016)

Hazardous waste	Total Quantity (Kg)	
	During the previous financial year (2019-2020)	During the current financial year (2020-2021)
(a) From process	Nil	Nil.
(b) From pollution control facility	Not applicable.	

PART-E

SOLID WASTE

S.No	Solid waste	Total Quantity (Kg.)	
		During the previous financial year (2019-2020)	During the financial year(2020-2021)
a	From Process	Nil	ADDITIVE EMPTY BARRELS-1.377 T(82 Nos)
b	From Pollution control facility	Not applicable	
c	Quantity recycled or reused		

	i. Sold	Not applicable	Send to authorized recycler (RAJA RAJESWARI TRADERS).
	ii. disposed	Not applicable	Not applicable

PART –F

Please specify the characterizations (in terms of composition quantity and Quantum) of hazardous as well as solid waste and indicates disposal practice adopted for both these categories of wastes.

As Per Authorization No.19HFC17900791, Proceeding No. T2/TNPCB/F.0320GMP/HWA/RL/GMP/2019, DT. 05.11.19				
Type of hazardous waste (with category No.)	Sources of generation	Authorized	Generated	Waste Disposed
3.1 - oil containing cargo residue, waste water and sludge	Tank cleaning	0.4 T/Y	NIL	Incineration TSDF, Gummidipoondi.
33.2 –Contaminated cotton rags or other cleaning materials	From pipe cleaning	24 T/Annum	NIL	Incineration TSDF, Gummidipoondi.
5.1 Used or spend oil	From process	0.3 KL/Y	NIL	Recovery and Reuse- Authorized recyclers.
33.1 –Empty barrels/ Containers/liners contaminated with hazardous chemicals/ wastes	From process/Empty additive barrels and used foam pig	21.6 T/Annum	1.377 T /Annum	Recovery and Reuse- Authorized recyclers.

PART – H

Additional Measures /investments proposed for environmental protection including abatement of pollution, prevention of pollution.

Air and water expenditure for environmental protection is: Rs.25, 08,000.00

PART –I

Any other particulars for improving the quality of environment

- Here only PUC certified vehicles are allowed.
- Training on EMS to all employees and contract worker to create awareness.
- Environmental day were celebrated every year on June 05th

ENNORE TANK TERMINALS PRIVATE LIMITED
3rd Floor, P.T. Lee Chengalvaraya Naicker Maaligai, No.23, Rajaji Salai, Chennai - 600001.
Tel. : 044 - 4348 8686, Fax : 044 - 2521 9696, URL : www.ettpl.net.in

Ref. No.:ETTPL/TNPCB/001/21
Date : February 01, 2021

The District Environmental Engineer
Tamil Nadu Pollution Control Board
Anthoni Pillai Nagar, Gummudipoondi,
Tamilnadu – 601201

Dear Sir,

Ref : a) Consent Order No. 17087 dated 17/07/2014 – Under Sec. 21 of the Air (Prevention & Control of Pollution) Act, 1981.

b) Consent Order No.21050 dated 17/07/2014 – Under Sec. 254 of the Water (Prevention and Control of Pollution) Act, 1974

We are enclosing herewith copies of the following reports for the tests done in the month of January 2021 for your perusal and records.

1. Air
2. Stack

Thanking you,

Yours faithfully,
For Ennore Tank Terminals Pvt Ltd.

1/2/21
C.P. Viswa Mohan
Senior General Manager

Encl : a/a

GREEN CHEM SOLUTIONS PVT LTD

(ISO 14001:2015 Certified)

Laboratory Division

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

Email: info@greenchemsolutions.in
greenchemsolutions@gmail.com
lab@greenchemsolutions.in

Tel : +91-44-42612103

Website: www.greenchemsolutions.in

Test Report

Report No.	GCS/S/AAQ/ 3151 A /2020-2021	Report Date	23.01.2021
Customer Name & Address	**M/s.ENNORE TANK TERMINALS PRIVATE LIMITED** **Inside Ennore Port, Vallur Post,** **Thiruvallur District,** **Chennai – 600 120.**		
Customer Reference	IMC/TER/GCSPL/WO/002/12-13 /2012		
Survey Description	Ambient Air Quality Monitoring	Sample Received on	19.01.2021
Survey Conducted by	GCSPL	Test Commenced on	19.01.2021
Survey Conducted on	18.01.2021	Test Completed on	20.01.2021

S. No.	Locations	Pollutants						
		PM_{10}	$PM_{2.5}$	SO_2	NO_x	Pb	CO	O_2
1	Near Main Gate	63	24	7.3	17.6	BDL(D.L: 0.5)	BDL(D.L: 1.0)	21.1
2	Weigh Bridge	65	26	7.9	17.0	BDL(D.L: 0.5)	BDL(D.L: 1.0)	21.1
3	Near Power House	48	18	6.0	15.4	BDL(D.L: 0.5)	BDL(D.L: 1.0)	21.1
4	Near Fire Engine Plant	53	20	6.5	13.8	BDL(D.L: 0.5)	BDL(D.L: 1.0)	21.1
Unit		$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	mg/m^3	%
NAAQ Standards (Industrial, Residential & Rural Area)		100	60	80	80	1.0	4	-
Reference Method - IS : 5182		Part 23	GCS/Lab/ SOP/087	Part 2	Part 6	Part 22	Part 10	IS 13270

PM_{10}	Particulate Matter (Size less than 10µm)	NO_x	Oxides of Nitrogen
$PM_{2.5}$	Particulate Matter (Size less than 2.5µm)	CO	Carbon Monoxide
SO_2	Sulphur Di-Oxide	Pb	Lead
O_2	Oxygen	BDL: Below Detection Limit D.L: Detection Limit	

For Green Chem Solutions Pvt Ltd
(Laboratory Division)

Authorized Signatory

*** *End of Report***

Note : The results relate only to the samples tested. This test report shall not be reproduced without approval of the laboratory.
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Test Report

Report No.	GCS/S/AAQ/ 3151 B /2020-2021	Report Date	23.01.2021
Customer Name & Address	**M/s.ENNORE TANK TERMINALS PRIVATE LIMITED, Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.**		
Customer Reference	IMC/TER/GCSPL/WO/002/12-13 /2012		
Survey Description	AAQ Monitoring – TLF I	Sample Received on	19.01.2021
Survey Conducted by	GCSPL	Test Commenced on	19.01.2021
Survey Conducted on	18.01.2021	Test Completed on	20.01.2021

S.No	PARAMETER	UNITS	RESULTS	REFERENCE METHOD	NAAQ Standards (Industrial, Residential & Rural Area)
1	PM_{10}	$\mu g/m^3$	54	IS 5182 – Part 23	100
2	$PM_{2.5}$	$\mu g/m^3$	20	GCS/Lab/SOP/087	60
3	Oxides of Sulphur as SO_2	$\mu g/m^3$	7.8	IS 5182 – Part 2	80
4	Oxides of Nitrogen as NO_2	$\mu g/m^3$	17.6	IS 5182 – Part 6	80
5	Lead as Pb	$\mu g/m^3$	BDL (DL:0.5)	IS 5182 – Part 22	1
6	Carbon monoxide as CO	mg/m^3	BDL (DL:1.0)	IS 5182 – Part 10	4
7	Ozone as O_3	$\mu g/m^3$	BDL (DL: 2.0)	IS 5182 – Part 9	180
8	Ammonia as NH_3	$\mu g/m^3$	BDL (DL: 2.0)	GCS/Lab/SOP/086	400
9	Benzene as C_6H_6	$\mu g/m^3$	BDL (DL: 1.0)	IS 5182 : Part 11 - 2006	5
10	Benzene (α) pyrene	ng/m^3	BDL (DL: 0.1)	IS 5182 : Part 12 - 2004	1
11	Arsenic as As	ng/m^3	BDL (DL: 1.0)	GCS/Lab/SOP/089	6
12	Nickel as Ni	ng/m^3	BDL (DL: 5.0)	GCS/Lab/SOP/090	20

For Green Chem Solutions Pvt. Ltd.
(Laboratory Division)

Authorized Signatory

*** *End of Report* ***

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greenchemsolutions@gmail.com

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Test Report

Report No.	GCS/S/NLM/ 3152 /2020-2021		Report Date		23.01.2021	
Customer Name & Address	M/s.ENNORE TANK TERMINALS PRIVATE LIMITED Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.					
Customer Reference	IMC/TER/GCSPL/WO/002/12-13 / 2012					
Description	Noise Level Monitoring		Monitoring Date		18.01.2021	
Monitored by	GCSPL		Data Received On		19.01.2021	
S.No.	Locations		Day Time		Night Time	
			Maximum	Minimum	Maximum	Minimum
1	Near Security Gate		66.1	61.9	57.5	53.7
2	Weigh Bridge		70.5	64.3	62.8	58.1
3	TLF IV		64.7	60.1	56.0	51.9
4	TLF I		65.4	61.6	57.3	52.5
5	Pump House – II		67.2	62.8	58.6	53.3
6	Near DG set		72.0	67.4	66.2	62.8
Unit			dB(A)		dB (A)	
TNPCB Standards (Industrial Area)			75.0		70.0	
Reference Method			Instruments Manual			

For Green Chem Solutions Pvt Ltd
(Laboratory Division)

Authorized Signatory

*** *End of Report***

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Test Report

Report No.	GCS/S/SM/ 3153 A /2020-2021	Report Date	23.01.2021
Customer Name & Address	M/s.ENNORE TANK TERMINALS PRIVATE LIMITED, Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.		
Customer Reference	IMC/TER/GCSPL/WO/002/12-13 /2012		
Survey Description	Stack Monitoring	Sample Received on	19.01.2021
Survey Conducted by	GCSPL	Test Commenced on	19.01.2021
Survey Conducted on	18.01.2021	Test Completed on	20.01.2021

S.No.	Descriptions	Unit	DG 250 KVA	DG 500 KVA	Reference Method
1	APC Measures Attached	-	Silencer	Silencer	.....
2	Total Stack Height Form 'G'Level	m	7.0	10.0	.....
3	Stack Diameter	m	0.10	0.20	.....
4	Ambient Temperature	°C	29	29	.....
5	Stack Temperature	°C	183	240	.....
6	Flue gas velocity	m/sec	14.96	23.84	IS:11255 - P3
7	Gaseous Emission	Nm^3/hr	274	1556	IS:11255 - P3
8	Particulate Matter (PM)	mg/ Nm^3	16.8	28.2	IS:11255 - P1
9	Sulphur Di-Oxide (SO_2)	mg/ Nm^3	7.9	10.5	IS:11255 - P2
10	Oxides of Nitrogen (NO_x)	mg/ Nm^3	81	144	IS:11255 - P7
11	Carbon monoxide(CO)	%	< 0.2	< 0.2	IS:13270
12	Chlorine as Cl_2	mg/Nm^3	< 1	< 1	Iodometric Method
TNPCB Standards – PM		mg/ Nm^3	150.0		

For Green Chem Solutions Pvt. Ltd.
(Laboratory Division)

Authorized Signatory

*** *End of Report***

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Test Report

Report No.	GCS/S/SM/ 3153 B /2020-2021	Report Date	23.01.2021
Customer Name & Address	**M/s.ENNORE TANK TERMINALS PRIVATE LIMITED, Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.**		
Customer Reference	IMC/TER/GCSPL/WO/002/12-13 /2012		
Survey Description	Stack Monitoring	Sample Received on	19.01.2021
Survey Conducted by	GCSPL	Test Commenced on	19.01.2021
Survey Conducted on	18.01.2021	Test Completed on	20.01.2021

S.No.	Descriptions	Unit	DG 180 KVA	DG 500 KVA	Reference Method
1	APC Measures Attached	-	Silencer	Silencer	.....
2	Total Stack Height Form 'G'Level	m	7.0	10.0	.....
3	Stack Diameter	m	0.10	0.20	.....
4	Ambient Temperature	^{o}C	29	29	.....
5	Stack Temperature	^{o}C	139	227	.....
6	Flue gas velocity	m/sec	12.41	22.02	IS:11255 - P3
7	Gaseous Emission	Nm^3/hr	254	1473	IS:11255 - P3
8	Particulate Matter (PM)	mg/ Nm^3	15.3	27.1	IS:11255 - P1
9	Sulphur Di-Oxide (SO_2)	mg/ Nm^3	7.8	9.5	IS:11255 - P2
10	Oxides of Nitrogen (NO_x)	mg/ Nm^3	67	136	IS:11255 - P7
11	Carbon monoxide(CO)	%	< 0.2	< 0.2	IS:13270
12	Chlorine as Cl_2	mg/Nm^3	< 1	< 1	Iodometric Method
TNPCB Standards – PM		mg/ Nm^3	150.0		

For Green Chem Solutions Pvt. Ltd.
(Laboratory Division)

Authorized Signatory

**** End of Report****

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Test Report

GREEN CHEM SOLUTIONS PVT LTD

Report of Analysis

MICROMETEOROLOGY SURVEY

Report No: GCS/S/MM/ 3154 /2020-2021 Date : 23.01.2021

Name and Address of the industry	:	M/s.ENNORE TANK TERMINALS PVT LTD , Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.	
Date of Survey	:	18.01.2021	
Duration of Survey	:	24 hours	
Pollution Category	:	Red	
Industry Classification	:	Large	
Weather Condition	:	Clear Sky	
Ambient Temperature	:	Max: 31 °C	Min : 25°C
Relative Humidity	:	Max : 81 %	Min : 50 %
Predominant Wind Direction	:	North	
Wind Speed (km/hr)	:	15.5	
Rainfall (mm)	:	Nil	

*** *End of Report* ***

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Tel : +91-44-42612103

Website: www.greenchemsolutions.in

Test Report

Report No	GCS/W/ 2493 /2020-2021	Report Date	23.01.2021
Customer Name & Address	**M/s.ENNORE TANK TERMINALS PRIVATE LIMITED** **Inside Ennore Port, Vallur Post,** **Thiruvallur District,** **Chennai – 600 120.**		
Survey Description	ETP Outlet	Sample Received On	18.01.2021
Sample Drawn By	GCSPL	Test Commenced On	18.01.2021
Sample Collected Date	18.01.2021	Test Completed On	23.01.2021

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	TNPCB Norms for Treated Effluent
1.	pH @ 25^{0}C	--	7.89	IS:3025/P11/1983 Reaff 2017	5.5 – 9.0
2.	Total Dissolved Solids	mg/l	385	IS:3025/P16/1984Reaff 2017	2100
3.	Total Suspended Solids	mg/l	13	IS:3025/P17/1984 Reaff 2017	100
4.	Chemical Oxygen Demand	mg/l	76	IS:3025/P58/2006Reaff 2017	250
5.	BOD (for 3 days at 27°C)	mg/l	14	IS:3025/P44/1993Reaff 2019	30
6.	Oil & Grease	mg/l	BDL(D.L:1.0)	IS:3025/P39/1991Reaff 2019	10

BDL: Below Detection Limit D.L: Detection Limit

For GREEN CHEM SOLUTIONS PVT LTD
(Laboratory Division)

Authorized Signatory

** End of Report ***

ENNORE TANK TERMINALS PRIVATE LIMITED
3rd Floor, P.T. Lee Chengalvaraya Naicker Maaligai, No.23, Rajaji Salai, Chennai - 600001.
Tel. : 044 - 4348 8686, Fax : 044 - 2521 9696, URL : www.ettpl.net.in

Ref. No.:ETTPL/TNPCB/002/21
Date : February 25, 2021

The District Environmental Engineer
Tamil Nadu Pollution Control Board
Anthoni Pillai Nagar, Gummudipoondi,
Tamilnadu – 601201

Dear Sir,

Ref : a) Consent Order No. 17087 dated 17/07/2014 – Under Sec. 21 of the Air (Prevention & Control of Pollution) Act, 1981.

b) Consent Order No.21050 dated 17/07/2014 – Under Sec. 254 of the Water (Prevention and Control of Pollution) Act, 1974

We are enclosing herewith copies of the following reports for the tests done in the month of February 2021 for your perusal and records.

1. Air
2. Stack

Thanking you,

Yours faithfully,
For Ennore Tank Terminals Pvt Ltd.

25/2/21
C.P. Viswa Mohan
Senior General Manager

Encl : a/a

GREEN CHEM SOLUTIONS PVT LTD

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Tel : +91-44-42612103

Website: www.greenchemsolutions.in

Test Report

Report No.	GCS/S/AAQ/ 3196 A /2020-2021	Report Date	15.02.2021
Customer Name & Address	**M/s.ENNORE TANK TERMINALS PRIVATE LIMITED Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.**		
Customer Reference	IMC/TER/GCSPL/WO/002/12-13 /2012		
Survey Description	Ambient Air Quality Monitoring	Sample Received on	11.02.2021
Survey Conducted by	GCSPL	Test Commenced on	11.02.2021
Survey Conducted on	10.02.2021	Test Completed on	12.02.2021

S. No.	Locations	Pollutants						
		PM_{10}	$PM_{2.5}$	SO_2	NO_x	Pb	CO	O_2
1	Near Main Gate	66	27	7.8	17.0	BDL(D.L: 0.5)	BDL(D.L: 1.0)	21.0
2	Weigh Bridge	69	28	7.3	17.9	BDL(D.L: 0.5)	BDL(D.L: 1.0)	21.0
3	Near Power House	55	22	6.9	16.4	BDL(D.L: 0.5)	BDL(D.L: 1.0)	21.0
4	Near Fire Engine Plant	57	23	6.0	16.8	BDL(D.L: 0.5)	BDL(D.L: 1.0)	21.0
Unit		$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	mg/m^3	%
NAAQ Standards (Industrial, Residential & Rural Area)		100	60	80	80	1.0	4	-
Reference Method - IS : 5182		Part 23	GCS/Lab/ SOP/087	Part 2	Part 6	Part 22	Part 10	IS 13270

PM_{10}	Particulate Matter (Size less than 10µm)	NO_x	Oxides of Nitrogen
$PM_{2.5}$	Particulate Matter (Size less than 2.5µm)	CO	Carbon Monoxide
SO_2	Sulphur Di-Oxide	Pb	Lead
O_2	Oxygen	BDL: Below Detection Limit D.L: Detection Limit	

For Green Chem Solutions Pvt Ltd
(Laboratory Division)

Authorized Signatory

*** *End of Report***

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GREEN CHEM SOLUTIONS PVT LTD

(ISO 14001:2015 Certified)

Laboratory Division

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

Email: info@greenchemsolutions.in
greenchemsolutions@gmail.com
lab@greenchemsolutions.in

Tel : +91-44-42612103

Website: www.greenchemsolutions.in

Test Report

Report No.	GCS/S/AAQ/ 3196 B /2020-2021	Report Date	15.02.2021
Customer Name & Address	**M/s.ENNORE TANK TERMINALS PRIVATE LIMITED, Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.**		
Customer Reference	IMC/TER/GCSPL/WO/002/12-13 /2012		
Survey Description	AAQ Monitoring – TLF I	Sample Received on	11.02.2021
Survey Conducted by	GCSPL	Test Commenced on	11.02.2021
Survey Conducted on	10.02.2021	Test Completed on	12.02.2021

S.No	PARAMETER	UNITS	RESULTS	REFERENCE METHOD	NAAQ Standards (Industrial, Residential & Rural Area)
1	PM_{10}	$\mu g/m^3$	51	IS 5182 – Part 23	100
2	$PM_{2.5}$	$\mu g/m^3$	19	GCS/Lab/SOP/087	60
3	Oxides of Sulphur as SO_2	$\mu g/m^3$	7.2	IS 5182 – Part 2	80
4	Oxides of Nitrogen as NO_2	$\mu g/m^3$	16.7	IS 5182 – Part 6	80
5	Lead as Pb	$\mu g/m^3$	BDL (DL:0.5)	IS 5182 – Part 22	1
6	Carbon monoxide as CO	mg/m^3	BDL (DL:1.0)	IS 5182 – Part 10	4
7	Ozone as O_3	$\mu g/m^3$	BDL (DL: 2.0)	IS 5182 – Part 9	180
8	Ammonia as NH_3	$\mu g/m^3$	BDL (DL: 2.0)	GCS/Lab/SOP/086	400
9	Benzene as C_6H_6	$\mu g/m^3$	BDL (DL: 1.0)	IS 5182 : Part 11 - 2006	5
10	Benzene (α) pyrene	ng/m^3	BDL (DL: 0.1)	IS 5182 : Part 12 - 2004	1
11	Arsenic as As	ng/m^3	BDL (DL: 1.0)	GCS/Lab/SOP/089	6
12	Nickel as Ni	ng/m^3	BDL (DL: 5.0)	GCS/Lab/SOP/090	20

For Green Chem Solutions Pvt. Ltd.
(Laboratory Division)

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*** *End of Report*** ***

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Test Report

Report No.	GCS/S/NLM/ 3197 /2020-2021	Report Date	15.02.2021
Customer Name & Address	M/s.ENNORE TANK TERMINALS PRIVATE LIMITED Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.		
Customer Reference	IMC/TER/GCSPL/WO/002/12-13 / 2012		
Description	Noise Level Monitoring	Monitoring Date	10.02.2021
Monitored by	GCSPL	Data Received On	11.02.2021

S.No.	Locations	Day Time		Night Time	
		Maximum	Minimum	Maximum	Minimum
1	Near Security Gate	67.9	63.0	58.4	51.8
2	Weigh Bridge	71.2	65.8	64.3	59.6
3	TLF IV	63.7	58.4	54.9	50.3
4	TLF I	64.0	60.2	56.5	51.7
5	Pump House – II	68.4	64.7	60.2	55.9
6	Near DG set	72.6	68.1	67.6	63.5
Unit		dB(A)		dB (A)	
TNPCB Standards (Industrial Area)		75.0		70.0	
Reference Method		Instruments Manual			

For Green Chem Solutions Pvt Ltd
(Laboratory Division)

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**** End of Report****

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Test Report

Report No.	GCS/S/SM/ 3198 A /2020-2021	Report Date	15.02.2021
Customer Name & Address	**M/s.ENNORE TANK TERMINALS PRIVATE LIMITED, Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.**		
Customer Reference	IMC/TER/GCSPL/WO/002/12-13 /2012		
Survey Description	Stack Monitoring	Sample Received on	11.02.2021
Survey Conducted by	GCSPL	Test Commenced on	11.02.2021
Survey Conducted on	10.02.2021	Test Completed on	12.02.2021

S.No.	Descriptions	Unit	DG 250 KVA	DG 500 KVA	Reference Method
1	APC Measures Attached	-	Silencer	Silencer	.....
2	Total Stack Height Form 'G'Level	m	7.0	10.0	.....
3	Stack Diameter	m	0.10	0.20	.....
4	Ambient Temperature	^{o}C	30	30	.....
5	Stack Temperature	^{o}C	170	231	.....
6	Flue gas velocity	m/sec	14.03	22.67	IS:11255 - P3
7	Gaseous Emission	Nm^3/hr	264	1505	IS:11255 - P3
8	Particulate Matter (PM)	mg/ Nm^3	15.1	24.6	IS:11255 - P1
9	Sulphur Di-Oxide (SO_2)	mg/ Nm^3	7.2	9.0	IS:11255 - P2
10	Oxides of Nitrogen (NO_X)	mg/ Nm^3	76	134	IS:11255 - P7
11	Carbon monoxide(CO)	%	< 0.2	< 0.2	IS:13270
12	Chlorine as Cl_2	mg/Nm^3	< 1	< 1	Iodometric Method
TNPCB Standards – PM		mg/ Nm^3	150.0		

For Green Chem Solutions Pvt. Ltd.
(Laboratory Division)

Authorized Signatory

**** End of Report****

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Test Report

Report No.	GCS/S/SM/ 3198 B /2020-2021	Report Date	15.02.2021
Customer Name & Address	M/s.ENNORE TANK TERMINALS PRIVATE LIMITED, Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.		
Customer Reference	IMC/TER/GCSPL/WO/002/12-13 /2012		
Survey Description	Stack Monitoring	Sample Received on	11.02.2021
Survey Conducted by	GCSPL	Test Commenced on	11.02.2021
Survey Conducted on	10.02.2021	Test Completed on	12.02.2021

S.No.	Descriptions	Unit	DG 180 KVA	DG 500 KVA	Reference Method
1	APC Measures Attached	-	Silencer	Silencer	.....
2	Total Stack Height Form 'G'Level	m	7.0	10.0	.....
3	Stack Diameter	m	0.10	0.20	.....
4	Ambient Temperature	^{o}C	30	30	.....
5	Stack Temperature	^{o}C	128	221	.....
6	Flue gas velocity	m/sec	11.95	23.56	IS:11255 - P3
7	Gaseous Emission	Nm^3/hr	249	1598	IS:11255 - P3
8	Particulate Matter (PM)	mg/ Nm^3	13.1	22.9	IS:11255 - P1
9	Sulphur Di-Oxide (SO_2)	mg/ Nm^3	6.5	8.7	IS:11255 - P2
10	Oxides of Nitrogen (NO_x)	mg/ Nm^3	60	128	IS:11255 - P7
11	Carbon monoxide(CO)	%	< 0.2	< 0.2	IS:13270
12	Chlorine as Cl_2	mg/Nm^3	< 1	< 1	Iodometric Method
TNPCB Standards – PM		mg/ Nm^3	150.0		

For Green Chem Solutions Pvt. Ltd.
(Laboratory Division)

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*** *End of Report* ***

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Test Report

GREEN CHEM SOLUTIONS PVT LTD

Report of Analysis

MICROMETEOROLOGY SURVEY

Report No: GCS/S/MM/ 3199 /2020-2021 Date : 15.02.2021

Name and Address of the industry : **M/s.ENNORE TANK TERMINALS PVT LTD ,**
Inside Ennore Port, Vallur Post,
Thiruvallur District,
Chennai – 600 120.

Date of Survey	:	10.02.2021	
Duration of Survey	:	24 hours	
Pollution Category	:	Red	
Industry Classification	:	Large	
Weather Condition	:	Clear Sky	
Ambient Temperature	:	Max: 30 ^{o}C	Min : 26^{o}C
Relative Humidity	:	Max : 70 %	Min : 54 %
Predominant Wind Direction	:	East	
Wind Speed (km/hr)	:	13.2	
Rainfall (mm)	:	Nil	

*** *End of Report****

GREEN CHEM SOLUTIONS PVT LTD

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lab@greenchemsolutions.in

Tel : +91-44-42612103

Website: www.greenchemsolutions.in

Test Report

Report No	GCS/W/ 2589 /2020-2021	Report Date	15.02.2021
Customer Name & Address	M/s.ENNORE TANK TERMINALS PRIVATE LIMITED Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.		
Survey Description	ETP Outlet	Sample Received On	10.02.2021
Sample Drawn By	GCSPL	Test Commenced On	10.02.2021
Sample Collected Date	10.02.2021	Test Completed On	15.02.2021

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	TNPCB Norms for Treated Effluent
1.	pH @ 25°C	--	8.12	IS:3025/P11/1983 Reaff 2017	5.5 – 9.0
2.	Total Dissolved Solids	mg/l	324	IS:3025/P16/1984Reaff 2017	2100
3.	Total Suspended Solids	mg/l	17	IS:3025/P17/1984 Reaff 2017	100
4.	Chemical Oxygen Demand	mg/l	91	IS:3025/P58/2006Reaff 2017	250
5.	BOD (for 3 days at 27°C)	mg/l	10	IS:3025/P44/1993Reaff 2019	30
6.	Oil & Grease	mg/l	BDL(D.L:1.0)	IS:3025/P39/1991Reaff 2019	10

BDL: Below Detection Limit D.L: Detection Limit

For GREEN CHEM SOLUTIONS PVT LTD
(Laboratory Division)

Authorized Signatory

** End of Report ***

ENNORE TANK TERMINALS PRIVATE LIMITED
3rd Floor, P.T. Lee Chengalvaraya Naicker Maaligai, No.23, Rajaji Salai, Chennai - 600001.
Tel. : 044 - 4348 8686, Fax : 044 - 2521 9696, URL : www.ettpl.net.in

Ref. No.:ETTPL/TNPCB/003/21
Date : April 10, 2021

The District Environmental Engineer
Tamil Nadu Pollution Control Board
Anthoni Pillai Nagar, Gummudipoondi,
Tamilnadu – 601201

Dear Sir,

Ref : a) Consent Order No. 17087 dated 17/07/2014 – Under Sec. 21 of the Air (Prevention & Control of Pollution) Act, 1981.

b) Consent Order No.21050 dated 17/07/2014 – Under Sec. 254 of the Water (Prevention and Control of Pollution) Act, 1974

We are enclosing herewith copies of the following reports for the tests done in the month of March 2021 for your perusal and records.

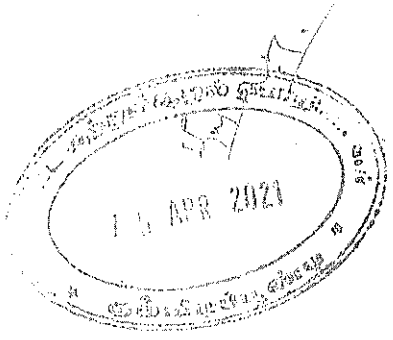
1. Air
2. Stack

Thanking you,

Yours faithfully,
For Ennore Tank Terminals Pvt Ltd.

10/4/21
C.P. Viswa Mohan
Senior General Manager

Encl : a/a



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greenchemsolutions@gmail.com
lab@greenchemsolutions.in

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Website: www.greenchemsolutions.in

Test Report

Report No.	GCS/S/AAQ/ 3325 /2020-2021	Report Date	31.03.2021
Customer Name & Address	**M/s.ENNORE TANK TERMINALS PRIVATE LIMITED** **Inside Ennore Port, Vallur Post,** **Thiruvallur District,** **Chennai – 600 120.**		
Customer Reference	IMC/TER/GCSPL/WO/002/12-13 /2012		
Survey Description	Ambient Air Quality Monitoring	Sample Received on	28.03.2021
Survey Conducted by	GCSPL	Test Commenced on	29.03.2021
Survey Conducted on	27.03.2021	Test Completed on	30.03.2021

S. No.	Locations	Pollutants						
		PM_{10}	$PM_{2.5}$	SO_2	NO_x	Pb	CO	O_2
1	Near Main Gate	61	25	7.1	16.4	BDL(D.L: 0.5)	BDL(D.L: 1.0)	21.7
2	Weigh Bridge	65	27	7.8	17.0	BDL(D.L: 0.5)	BDL(D.L: 1.0)	21.7
3	Near Power House	50	21	6.5	15.8	BDL(D.L: 0.5)	BDL(D.L: 1.0)	21.7
4	Near Fire Engine Plant	53	22	5.6	16.1	BDL(D.L: 0.5)	BDL(D.L: 1.0)	21.7
Unit		$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	mg/m^3	%
NAAQ Standards (Industrial, Residential & Rural Area)		100	60	80	80	1.0	4	-
Reference Method - IS : 5182		Part 23	GCS/Lab/ SOP/087	Part 2	Part 6	Part 22	Part 10	IS 13270

PM_{10}	Particulate Matter (Size less than 10µm)	NO_x	Oxides of Nitrogen
$PM_{2.5}$	Particulate Matter (Size less than 2.5µm)	CO	Carbon Monoxide
SO_2	Sulphur Di-Oxide	Pb	Lead
O_2	Oxygen	BDL: Below Detection Limit D.L: Detection Limit	

For Green Chem Solutions Pvt Ltd
(Laboratory Division)

Authorized Signatory

*** *End of Report*** ***

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Test Report

Report No.	GCS/S/AAQ/ 3325 B /2020-2021	Report Date	31.03.2021
Customer Name & Address	M/s.ENNORE TANK TERMINALS PRIVATE LIMITED, Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.		
Customer Reference	IMC/TER/GCSPL/WO/002/12-13 /2012		
Survey Description	AAQ Monitoring – TLF I	Sample Received on	28.03.2021
Survey Conducted by	GCSPL	Test Commenced on	29.03.2021
Survey Conducted on	27.03.2021	Test Completed on	30.03.2021

S.No	PARAMETER	UNITS	RESULTS	REFERENCE METHOD	NAAQ Standards (Industrial, Residential & Rural Area)
1	PM_{10}	$\mu g/m^3$	57	IS 5182 – Part 23	100
2	$PM_{2.5}$	$\mu g/m^3$	22	GCS/Lab/SOP/087	60
3	Oxides of Sulphur as SO_2	$\mu g/m^3$	7.9	IS 5182 – Part 2	80
4	Oxides of Nitrogen as NO_2	$\mu g/m^3$	17.4	IS 5182 – Part 6	80
5	Lead as Pb	$\mu g/m^3$	BDL (DL:0.5)	IS 5182 – Part 22	1
6	Carbon monoxide as CO	mg/m^3	BDL (DL:1.0)	IS 5182 – Part 10	4
7	Ozone as O_3	$\mu g/m^3$	BDL (DL: 2.0)	IS 5182 – Part 9	180
8	Ammonia as NH_3	$\mu g/m^3$	BDL (DL: 2.0)	GCS/Lab/SOP/086	400
9	Benzene as C_6H_6	$\mu g/m^3$	BDL (DL: 1.0)	IS 5182 : Part 11 - 2006	5
10	Benzene (α) pyrene	ng/m^3	BDL (DL: 0.1)	IS 5182 : Part 12 - 2004	1
11	Arsenic as As	ng/m^3	BDL (DL: 1.0)	GCS/Lab/SOP/089	6
12	Nickel as Ni	ng/m^3	BDL (DL: 5.0)	GCS/Lab/SOP/090	20

For Green Chem Solutions Pvt. Ltd.
(Laboratory Division)

Authorized Signatory

*** *End of Report* ***

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greenchemsolutions@gmail.com

lab@greenchemsolutions.in

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Website: www.greenchemsolutions.in

Test Report

Report No.	GCS/S/NLM/ 3326 /2020-2021		Report Date		31.03.2021	
Customer Name & Address	M/s.ENNORE TANK TERMINALS PRIVATE LIMITED Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.					
Customer Reference	IMC/TER/GCSPL/WO/002/12-13 / 2012					
Description	Noise Level Monitoring		Monitoring Date		27.03.2021	
Monitored by	GCSPL		Data Received On		28.03.2021	
S.No.	Locations		Day Time		Night Time	
			Maximum	Minimum	Maximum	Minimum
1	Near Security Gate		68.2	64.9	57.0	52.5
2	Weigh Bridge		72.5	64.3	63.7	59.0
3	TLF IV		65.8	59.6	55.4	51.7
4	TLF I		66.1	62.8	57.5	53.2
5	Pump House – II		69.6	65.2	61.8	57.9
6	Near DG set		72.9	67.5	66.2	62.1
Unit			dB(A)		dB (A)	
TNPCB Standards (Industrial Area)			75.0		70.0	
Reference Method			Instruments Manual			

For Green Chem Solutions Pvt Ltd
(Laboratory Division)

Authorized Signatory

*** *End of Report* ***

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greenchemsolutions@gmail.com
lab@greenchemsolutions.in

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Website: www.greenchemsolutions.in

Test Report

Report No.	GCS/S/SM/ 3327 A /2020-2021	Report Date	31.03.2021
Customer Name & Address	**M/s.ENNORE TANK TERMINALS PRIVATE LIMITED, Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.**		
Customer Reference	IMC/TER/GCSPL/WO/002/12-13 /2012		
Survey Description	Stack Monitoring	Sample Received on	28.03.2021
Survey Conducted by	GCSPL	Test Commenced on	29.03.2021
Survey Conducted on	27.03.2021	Test Completed on	30.03.2021

S.No.	Descriptions	Unit	DG 250 KVA	DG 500 KVA	Reference Method
1	APC Measures Attached	-	Silencer	Silencer	.....
2	Total Stack Height Form 'G'Level	m	7.0	10.0	.....
3	Stack Diameter	m	0.10	0.20	.....
4	Ambient Temperature	°C	30	30	.....
5	Stack Temperature	°C	179	218	.....
6	Flue gas velocity	m/sec	13.26	20.93	IS:11255 - P3
7	Gaseous Emission	Nm^3/hr	246	1434	IS:11255 - P3
8	Particulate Matter (PM)	mg/ Nm^3	13.2	22.7	IS:11255 - P1
9	Sulphur Di-Oxide (SO_2)	mg/ Nm^3	6.5	8.3	IS:11255 - P2
10	Oxides of Nitrogen (NO_x)	mg/ Nm^3	70	127	IS:11255 - P7
11	Carbon monoxide(CO)	%	< 0.2	< 0.2	IS:13270
12	Chlorine as Cl_2	mg/Nm^3	< 1	< 1	Iodometric Method
TNPCB Standards – PM		mg/ Nm^3	150.0		

For Green Chem Solutions Pvt. Ltd.
(Laboratory Division)

Authorized Signatory

**** End of Report****

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Test Report

Report No.	GCS/S/SM/ 3327 B /2020-2021	Report Date	31.03.2021
Customer Name & Address	**M/s.ENNORE TANK TERMINALS PRIVATE LIMITED, Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.**		
Customer Reference	IMC/TER/GCSPL/WO/002/12-13 /2012		
Survey Description	Stack Monitoring	Sample Received on	28.03.2021
Survey Conducted by	GCSPL	Test Commenced on	29.03.2021
Survey Conducted on	27.03.2021	Test Completed on	30.03.2021

S.No.	Descriptions	Unit	DG 180 KVA	DG 500 KVA	Reference Method
1	APC Measures Attached	-	Silencer	Silencer	.....
2	Total Stack Height Form 'G'Level	m	7.0	10.0	.....
3	Stack Diameter	m	0.10	0.20	.....
4	Ambient Temperature	^0C	30	30	.....
5	Stack Temperature	^0C	120	204	.....
6	Flue gas velocity	m/sec	11.02	21.68	IS:11255 - P3
7	Gaseous Emission	Nm^3/hr	235	1529	IS:11255 - P3
8	Particulate Matter (PM)	mg/ Nm^3	11.9	24.2	IS:11255 - P1
9	Sulphur Di-Oxide (SO_2)	mg/ Nm^3	6.0	8.4	IS:11255 - P2
10	Oxides of Nitrogen (NO_X)	mg/ Nm^3	53	121	IS:11255 - P7
11	Carbon monoxide(CO)	%	< 0.2	< 0.2	IS:13270
12	Chlorine as Cl_2	mg/Nm^3	< 1	< 1	Iodometric Method
TNPCB Standards – PM		mg/ Nm^3	150.0		

For Green Chem Solutions Pvt. Ltd.
(Laboratory Division)

Authorized Signatory

**** End of Report****

GREEN CHEM SOLUTIONS PVT LTD

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Test Report

GREEN CHEM SOLUTIONS PVT LTD

Report of Analysis

MICROMETEOROLOGY SURVEY

Report No: GCS/S/MM/ 3328 /2020-2021 Date : 31.03.2021

Name and Address of the industry	:	M/s.ENNORE TANK TERMINALS PVT LTD , Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.	
Date of Survey	:	27.03.2021	
Duration of Survey	:	24 hours	
Pollution Category	:	Red	
Industry Classification	:	Large	
Weather Condition	:	Clear Sky	
Ambient Temperature	:	Max: 30 °C	Min : 28°C
Relative Humidity	:	Max : 75 %	Min : 50 %
Predominant Wind Direction	:	NE	
Wind Speed (km/hr)	:	11.8	
Rainfall (mm)	:	Nil	

*** *End of Report* ***

GREEN CHEM SOLUTIONS PVT LTD

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greenchemsolutions@gmail.com
lab@greenchemsolutions.in

Test Report

Report No	GCS/W/ 2721 /2020-2021	Report Date	31.03.2021
Customer Name & Address	**M/s.ENNORE TANK TERMINALS PRIVATE LIMITED Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.**		
Survey Description	ETP Outlet	Sample Received On	27.03.2021
Sample Drawn By	GCSPL	Test Commenced On	27.03.2021
Sample Collected Date	27.03.2021	Test Completed On	31.03.2021

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	TNPCB Norms for Treated Effluent
1.	pH @ 25°C	--	7.43	IS:3025/P11/1983 Reaff 2017	5.5 – 9.0
2.	Total Dissolved Solids	mg/l	384	IS:3025/P16/1984Reaff 2017	2100
3.	Total Suspended Solids	mg/l	12	IS:3025/P17/1984 Reaff 2017	100
4.	Chemical Oxygen Demand	mg/l	68	IS:3025/P58/2006Reaff 2017	250
5.	BOD (for 3 days at 27°C)	mg/l	8.5	IS:3025/P44/1993Reaff 2019	30
6.	Oil & Grease	mg/l	BDL(D.L:1.0)	IS:3025/P39/1991Reaff 2019	10

BDL: Below Detection Limit D.L: Detection Limit

For GREEN CHEM SOLUTIONS PVT LTD
(Laboratory Division)

Authorized Signatory

** End of Report ***

ENNORE TANK TERMINALS PRIVATE LIMITED
3rd Floor, P.T. Lee Chengalvaraya Naicker Maaligai, No.23, Rajaji Salai, Chennai - 600001.
Tel. : 044 - 4348 8686, Fax : 044 - 2521 9696, URL : www.ettpl.net.in

Ref. No.:ETTPL/TNPCB/004/21
Date : April 19, 2021

The District Environmental Engineer
Tamil Nadu Pollution Control Board
Anthoni Pillai Nagar, Gummudipoondi,
Tamilnadu – 601201

Dear Sir,

Ref : a) Consent Order No. 17087 dated 17/07/2014 – Under Sec. 21 of the Air (Prevention & Control of Pollution) Act, 1981.

b) Consent Order No.21050 dated 17/07/2014 – Under Sec. 254 of the Water (Prevention and Control of Pollution) Act, 1974

We are enclosing herewith copies of the following reports for the tests done in the month of April 2021 for your perusal and records.

1. Air
2. Stack

Thanking you,

Yours faithfully,
For Ennore Tank Terminals Pvt Ltd.

19/7/21
C.P. Viswa Mohan
Senior General Manager

Encl : a/a

20 APR 2021

GREEN CHEM SOLUTIONS PVT LTD

(ISO 14001:2015 Certified)

Laboratory Division

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

Email: info@greenchemsolutions.in
greenchemsolutions@gmail.com
lab@greenchemsolutions.in

Tel : +91-44-42612103

Website: www.greenchemsolutions.in

Test Report

Report No.	GCS/S/AAQ/ 3354 A /2021-2022	Report Date	15.04.2021
Customer Name & Address	**M/s.ENNORE TANK TERMINALS PRIVATE LIMITED** **Inside Ennore Port, Vallur Post,** **Thiruvallur District,** **Chennai – 600 120.**		
Customer Reference	IMC/TER/GCSPL/WO/002/12-13 /2012		
Survey Description	Ambient Air Quality Monitoring	Sample Received on	11.04.2021
Survey Conducted by	GCSPL	Test Commenced on	12.04.2021
Survey Conducted on	10.04.2021	Test Completed on	13.04.2021

S. No.	Locations	Pollutants						
		PM_{10}	$PM_{2.5}$	SO_2	NO_x	Pb	CO	O_2
1	Near Main Gate	64	26	7.9	17.1	BDL(D.L: 0.5)	BDL(D.L: 1.0)	21.0
2	Weigh Bridge	60	24	8.2	18.5	BDL(D.L: 0.5)	BDL(D.L: 1.0)	21.0
3	Near Power House	54	22	7.3	16.9	BDL(D.L: 0.5)	BDL(D.L: 1.0)	21.0
4	Near Fire Engine Plant	58	25	6.9	17.0	BDL(D.L: 0.5)	BDL(D.L: 1.0)	21.0
Unit		$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	mg/m^3	%
NAAQ Standards (Industrial, Residential & Rural Area)		100	60	80	80	1.0	4	-
Reference Method - IS : 5182		Part 23	GCS/Lab/ SOP/087	Part 2	Part 6	Part 22	Part 10	IS 13270

PM_{10}	Particulate Matter (Size less than 10µm)	NO_x	Oxides of Nitrogen
$PM_{2.5}$	Particulate Matter (Size less than 2.5µm)	CO	Carbon Monoxide
SO_2	Sulphur Di-Oxide	Pb	Lead
O_2	Oxygen	BDL: Below Detection Limit D.L: Detection Limit	

For Green Chem Solutions Pvt Ltd
(Laboratory Division)

Authorized Signatory

**** End of Report****

GREEN CHEM SOLUTIONS PVT LTD

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Test Report

Report No.	GCS/S/AAQ/ 3354 B /2021-2022	Report Date	15.04.2021
Customer Name & Address	**M/s.ENNORE TANK TERMINALS PRIVATE LIMITED, Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.**		
Customer Reference	IMC/TER/GCSPL/WO/002/12-13 /2012		
Survey Description	AAQ Monitoring – TLF I	Sample Received on	11.04.2021
Survey Conducted by	GCSPL	Test Commenced on	12.04.2021
Survey Conducted on	10.04.2021	Test Completed on	13.04.2021

S.No	PARAMETER	UNITS	RESULTS	REFERENCE METHOD	NAAQ Standards (Industrial, Residential & Rural Area)
1	PM_{10}	$\mu g/m^3$	59	IS 5182 – Part 23	100
2	$PM_{2.5}$	$\mu g/m^3$	25	GCS/Lab/SOP/087	60
3	Oxides of Sulphur as SO_2	$\mu g/m^3$	8.4	IS 5182 – Part 2	80
4	Oxides of Nitrogen as NO_2	$\mu g/m^3$	18.0	IS 5182 – Part 6	80
5	Lead as Pb	$\mu g/m^3$	BDL (DL:0.5)	IS 5182 – Part 22	1
6	Carbon monoxide as CO	mg/m^3	BDL (DL:1.0)	IS 5182 – Part 10	4
7	Ozone as O_3	$\mu g/m^3$	BDL (DL: 2.0)	IS 5182 – Part 9	180
8	Ammonia as NH_3	$\mu g/m^3$	BDL (DL: 2.0)	GCS/Lab/SOP/086	400
9	Benzene as C_6H_6	$\mu g/m^3$	BDL (DL: 1.0)	IS 5182 : Part 11 - 2006	5
10	Benzene (α) pyrene	ng/m^3	BDL (DL: 0.1)	IS 5182 : Part 12 - 2004	1
11	Arsenic as As	ng/m^3	BDL (DL: 1.0)	GCS/Lab/SOP/089	6
12	Nickel as Ni	ng/m^3	BDL (DL: 5.0)	GCS/Lab/SOP/090	20

For Green Chem Solutions Pvt. Ltd.
(Laboratory Division)

Authorized Signatory

**** End of Report****

GREEN CHEM SOLUTIONS PVT LTD

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Website: www.greenchemsolutions.in

Test Report

Report No.	GCS/S/SM/ 3355 A /2021-2022	Report Date	15.04.2021
Customer Name & Address	M/s.ENNORE TANK TERMINALS PRIVATE LIMITED, Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.		
Customer Reference	IMC/TER/GCSPL/WO/002/12-13 /2012		
Survey Description	Stack Monitoring	Sample Received on	11.04.2021
Survey Conducted by	GCSPL	Test Commenced on	12.04.2021
Survey Conducted on	10.04.2021	Test Completed on	13.04.2021

S.No.	Descriptions	Unit	DG 250 KVA	DG 500 KVA	Reference Method
1	APC Measures Attached	-	Silencer	Silencer	.....
2	Total Stack Height Form 'G'Level	m	7.0	10.0	.....
3	Stack Diameter	m	0.10	0.20	.....
4	Ambient Temperature	^{o}C	31	31	.....
5	Stack Temperature	^{o}C	185	234	.....
6	Flue gas velocity	m/sec	14.40	22.05	IS:11255 - P3
7	Gaseous Emission	Nm^3/hr	264	1462	IS:11255 - P3
8	Particulate Matter (PM)	mg/ Nm^3	15.0	25.7	IS:11255 - P1
9	Sulphur Di-Oxide (SO_2)	mg/ Nm^3	6.9	9.1	IS:11255 - P2
10	Oxides of Nitrogen (NO_X)	mg/ Nm^3	74	139	IS:11255 - P7
11	Carbon monoxide(CO)	%	< 0.2	< 0.2	IS:13270
12	Chlorine as Cl_2	mg/Nm^3	< 1	< 1	Iodometric Method
TNPCB Standards – PM		mg/ Nm^3	150.0		

For Green Chem Solutions Pvt. Ltd.
(Laboratory Division)

Authorized Signatory

*** *End of Report* ***

GREEN CHEM SOLUTIONS PVT LTD

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Test Report

Report No.	GCS/S/SM/ 3355 B /2021-2022	Report Date	15.04.2021
Customer Name & Address	M/s.ENNORE TANK TERMINALS PRIVATE LIMITED, Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.		
Customer Reference	IMC/TER/GCSPL/WO/002/12-13 /2012		
Survey Description	Stack Monitoring	Sample Received on	11.04.2021
Survey Conducted by	GCSPL	Test Commenced on	12.04.2021
Survey Conducted on	10.04.2021	Test Completed on	13.04.2021

S.No.	Descriptions	Unit	DG 180 KVA	DG 500 KVA	Reference Method
1	APC Measures Attached	-	Silencer	Silencer	.....
2	Total Stack Height Form 'G' Level	m	7.0	10.0	.....
3	Stack Diameter	m	0.10	0.20	.....
4	Ambient Temperature	^{o}C	31	31	.....
5	Stack Temperature	^{o}C	126	214	.....
6	Flue gas velocity	m/sec	11.96	22.29	IS:11255 - P3
7	Gaseous Emission	Nm^3/hr	252	1541	IS:11255 - P3
8	Particulate Matter (PM)	mg/ Nm^3	13.1	21.6	IS:11255 - P1
9	Sulphur Di-Oxide (SO_2)	mg/ Nm^3	6.5	8.9	IS:11255 - P2
10	Oxides of Nitrogen (NO_X)	mg/ Nm^3	57	128	IS:11255 - P7
11	Carbon monoxide(CO)	%	< 0.2	< 0.2	IS:13270
12	Chlorine as Cl_2	mg/Nm^3	< 1	< 1	Iodometric Method
TNPCB Standards – PM		mg/ Nm^3	150.0		

For Green Chem Solutions Pvt. Ltd.
(Laboratory Division)

Authorized Signatory

*** *End of Report***

GREEN CHEM SOLUTIONS PVT LTD

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greenchemsolutions@gmail.com

lab@greenchemsolutions.in

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Website: www.greenchemsolutions.in

Test Report

Report No.	GCS/S/NLM/ 3356 /2021-2022	Report Date	15.04.2021
Customer Name & Address	M/s.ENNORE TANK TERMINALS PRIVATE LIMITED Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.		
Customer Reference	IMC/TER/GCSPL/WO/002/12-13 / 2012		
Description	Noise Level Monitoring	Monitoring Date	10.04.2021
Monitored by	GCSPL	Data Received On	11.04.2021

S.No.	Locations	Day Time		Night Time	
		Maximum	Minimum	Maximum	Minimum
1	Near Security Gate	69.4	66.1	59.6	54.8
2	Weigh Bridge	73.2	65.9	64.8	61.5
3	TLF IV	67.0	62.4	58.2	53.6
4	TLF I	64.9	60.7	55.0	50.4
5	Pump House – II	68.3	63.0	60.7	56.1
6	Near DG set	73.7	68.3	67.5	63.9
Unit		dB(A)		dB (A)	
TNPCB Standards (Industrial Area)		75.0		70.0	
Reference Method		Instruments Manual			

For Green Chem Solutions Pvt Ltd
(Laboratory Division)

Authorized Signatory

**** End of Report****

GREEN CHEM SOLUTIONS PVT LTD

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greenchemsolutions@gmail.com
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Test Report

GREEN CHEM SOLUTIONS PVT LTD

Report of Analysis

MICROMETEOROLOGY SURVEY

Report No: GCS/S/MM/ 3357 /2021-2022 Date : 15.04.2021

Name and Address of the industry	:	**M/s.ENNORE TANK TERMINALS PVT LTD ,** Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.	
Date of Survey	:	10.04.2021	
Duration of Survey	:	24 hours	
Pollution Category	:	Red	
Industry Classification	:	Large	
Weather Condition	:	Clear Sky	
Ambient Temperature	:	Max: 32 °C	Min : 29°C
Relative Humidity	:	Max : 63 %	Min : 41 %
Predominant Wind Direction	:	North	
Wind Speed (km/hr)	:	13.5	
Rainfall (mm)	:	Nil	

**** End of Report****

GREEN CHEM SOLUTIONS PVT LTD

(ISO 14001:2015 Certified)

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greenchemsolutions@gmail.com
lab@greenchemsolutions.in

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Website: www.greenchemsolutions.in

Test Report

Report No	GCS/W/ 2770 /2021-2022	Report Date	15.04.2021
Customer Name & Address	M/s.ENNORE TANK TERMINALS PRIVATE LIMITED Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.		
Survey Description	ETP Outlet	Sample Received On	10.04.2021
Sample Drawn By	GCSPL	Test Commenced On	10.04.2021
Sample Collected Date	10.04.2021	Test Completed On	15.04.2021

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	TNPCB Norms for Treated Effluent
1.	pH @ 25°C	--	7.10	IS:3025/P11/1983 Reaff 2017	5.5 – 9.0
2.	Total Dissolved Solids	mg/l	478	IS:3025/P16/1984Reaff 2017	2100
3.	Total Suspended Solids	mg/l	16	IS:3025/P17/1984 Reaff 2017	100
4.	Chemical Oxygen Demand	mg/l	91	IS:3025/P58/2006Reaff 2017	250
5.	BOD (for 3 days at 27°C)	mg/l	13	IS:3025/P44/1993Reaff 2019	30
6.	Oil & Grease	mg/l	BDL(D.L:1.0)	IS:3025/P39/1991Reaff 2019	10

BDL: Below Detection Limit D.L: Detection Limit

For GREEN CHEM SOLUTIONS PVT LTD
(Laboratory Division)

Authorized Signatory

** End of Report ***

ENNORE TANK TERMINALS PRIVATE LIMITED
3rd Floor, P.T. Lee Chengalvaraya Naicker Maaligai, No.23, Rajaji Salai, Chennai - 600001.
Tel. : 044 - 4348 8686, Fax : 044 - 2521 9696, URL : www.ettpl.net.in

Ref. No.:ETTPL/TNPCB/005/21
Date : 04th June 2021

The District Environmental Engineer
Tamil Nadu Pollution Control Board
Anthoni Pillai Nagar, Gummudipoondi,
Tamilnadu – 601201

Dear Sir,

Ref : a) Consent Order No. 17087 dated 17/07/2014 – Under Sec. 21 of the Air (Prevention & Control of Pollution) Act, 1981.

b) Consent Order No.21050 dated 17/07/2014 – Under Sec. 254 of the Water (Prevention and Control of Pollution) Act, 1974

We are enclosing herewith copies of the following reports for the tests done in the month of May 2021 for your perusal and records.

3. Air
4. Stack

Thanking you,

Yours faithfully,
For Ennore Tank Terminals Pvt Ltd.

C.P. Viswa Mohan
Senior General Manager

Encl : a/a

07 JUN 2021

GREEN CHEM SOLUTIONS PVT LTD

(ISO 14001:2015 Certified)

Laboratory Division

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Email: info@greenchemsolutions.in
greenchemsolutions@gmail.com
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Tel : +91-44-42612103

Website: www.greenchemsolutions.in

Test Report

Report No.	GCS/S/SM/ 3419 B /2021-2022	Report Date	24.05.2021
Customer Name & Address	**M/s.ENNORE TANK TERMINALS PRIVATE LIMITED, Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.**		
Customer Reference	IMC/TER/GCSPL/WO/002/12-13 /2012		
Survey Description	Stack Monitoring	Sample Received on	20.05.2021
Survey Conducted by	GCSPL	Test Commenced on	20.05.2021
Survey Conducted on	19.05.2021	Test Completed on	21.05.2021

S.No.	Descriptions	Unit	DG 180 KVA	DG 500 KVA	Reference Method
1	APC Measures Attached	-	Silencer	Silencer	.....
2	Total Stack Height Form 'G'Level	m	7.0	10.0	.....
3	Stack Diameter	m	0.10	0.20	.....
4	Ambient Temperature	°C	32	32	.....
5	Stack Temperature	°C	129	226	.....
6	Flue gas velocity	m/sec	11.07	21.44	IS:11255 - P3
7	Gaseous Emission	Nm^3/hr	231	1445	IS:11255 - P3
8	Particulate Matter (PM)	mg/ Nm^3	14.5	23.5	IS:11255 - P1
9	Sulphur Di-Oxide (SO_2)	mg/ Nm^3	6.0	8.1	IS:11255 - P2
10	Oxides of Nitrogen (NO_x)	mg/ Nm^3	61	139	IS:11255 - P7
11	Carbon monoxide(CO)	%	< 0.2	< 0.2	IS:13270
12	Chlorine as Cl_2	mg/Nm^3	< 1	< 1	Iodometric Method
TNPCB Standards – PM		mg/ Nm^3	150.0		

For Green Chem Solutions Pvt. Ltd.
(Laboratory Division)

Authorized Signatory

*** *End of Report***

GREEN CHEM SOLUTIONS PVT LTD

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greenchemsolutions@gmail.com
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Test Report

Report No.	GCS/S/AAQ/ 3418 A /2021-2022	Report Date	24.05.2021
Customer Name & Address	M/s.ENNORE TANK TERMINALS PRIVATE LIMITED Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.		
Customer Reference	IMC/TER/GCSPL/WO/002/12-13 /2012		
Survey Description	Ambient Air Quality Monitoring	Sample Received on	20.05.2021
Survey Conducted by	GCSPL	Test Commenced on	20.05.2021
Survey Conducted on	19.05.2021	Test Completed on	21.05.2021

S. No.	Locations	Pollutants						
		PM_{10}	$PM_{2.5}$	SO_2	NO_x	Pb	CO	O_2
1	Near Main Gate	67	28	8.6	17.9	BDL(D.L: 0.5)	BDL(D.L: 1.0)	21.7
2	Weigh Bridge	64	26	8.4	18.8	BDL(D.L: 0.5)	BDL(D.L: 1.0)	21.7
3	Near Power House	57	23	7.9	17.5	BDL(D.L: 0.5)	BDL(D.L: 1.0)	21.7
4	Near Fire Engine Plant	53	21	7.3	17.7	BDL(D.L: 0.5)	BDL(D.L: 1.0)	21.7
Unit		$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	mg/m^3	%
NAAQ Standards (Industrial, Residential & Rural Area)		100	60	80	80	1.0	4	-
Reference Method - IS : 5182		Part 23	GCS/Lab/ SOP/087	Part 2	Part 6	Part 22	Part 10	IS 13270

PM_{10}	Particulate Matter (Size less than 10µm)	NO_x	Oxides of Nitrogen
$PM_{2.5}$	Particulate Matter (Size less than 2.5µm)	CO	Carbon Monoxide
SO_2	Sulphur Di-Oxide	Pb	Lead
O_2	Oxygen	BDL: Below Detection Limit D.L: Detection Limit	

For Green Chem Solutions Pvt Ltd
(Laboratory Division)

Authorized Signatory

*** *End of Report* ***

Note : The results relate only to the samples tested. This test report shall not be reproduced without approval of the laboratory.
The samples will not be retained for more than one Month from the date of issue of test report.

GREEN CHEM SOLUTIONS PVT LTD

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Test Report

Report No.	GCS/S/AAQ/ 3418 B /2021-2022	Report Date	24.05.2021
Customer Name & Address	**M/s.ENNORE TANK TERMINALS PRIVATE LIMITED, Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.**		
Customer Reference	IMC/TER/GCSPL/WO/002/12-13 /2012		
Survey Description	AAQ Monitoring – TLF I	Sample Received on	20.05.2021
Survey Conducted by	GCSPL	Test Commenced on	20.05.2021
Survey Conducted on	19.05.2021	Test Completed on	21.05.2021

S.No	PARAMETER	UNITS	RESULTS	REFERENCE METHOD	NAAQ Standards (Industrial, Residential & Rural Area)
1	PM_{10}	$\mu g/m^3$	62	IS 5182 – Part 23	100
2	$PM_{2.5}$	$\mu g/m^3$	27	GCS/Lab/SOP/087	60
3	Oxides of Sulphur as SO_2	$\mu g/m^3$	8.8	IS 5182 – Part 2	80
4	Oxides of Nitrogen as NO_2	$\mu g/m^3$	18.4	IS 5182 – Part 6	80
5	Lead as Pb	$\mu g/m^3$	BDL (DL:0.5)	IS 5182 – Part 22	1
6	Carbon monoxide as CO	mg/m^3	BDL (DL:1.0)	IS 5182 – Part 10	4
7	Ozone as O_3	$\mu g/m^3$	BDL (DL: 2.0)	IS 5182 – Part 9	180
8	Ammonia as NH_3	$\mu g/m^3$	BDL (DL: 2.0)	GCS/Lab/SOP/086	400
9	Benzene as C_6H_6	$\mu g/m^3$	BDL (DL: 1.0)	IS 5182 : Part 11 - 2006	5
10	Benzene (α) pyrene	ng/m^3	BDL (DL: 0.1)	IS 5182 : Part 12 - 2004	1
11	Arsenic as As	ng/m^3	BDL (DL: 1.0)	GCS/Lab/SOP/089	6
12	Nickel as Ni	ng/m^3	BDL (DL: 5.0)	GCS/Lab/SOP/090	20

For Green Chem Solutions Pvt. Ltd.
(Laboratory Division)

Authorized Signatory

*** *End of Report*** ***

GREEN CHEM SOLUTIONS PVT LTD

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

Tel : +91-44-42612103

Website: www.greenchemsolutions.in

Email: info@greenchemsolutions.in
greenchemsolutions@gmail.com
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Test Report

Report No.	GCS/S/SM/ 3419 A /2021-2022	Report Date	24.05.2021
Customer Name & Address	M/s.ENNORE TANK TERMINALS PRIVATE LIMITED, Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.		
Customer Reference	IMC/TER/GCSPL/WO/002/12-13 /2012		
Survey Description	Stack Monitoring	Sample Received on	20.05.2021
Survey Conducted by	GCSPL	Test Commenced on	20.05.2021
Survey Conducted on	19.05.2021	Test Completed on	21.05.2021

S.No.	Descriptions	Unit	DG 250 KVA	DG 500 KVA	Reference Method
1	APC Measures Attached	-	Silencer	Silencer	.....
2	Total Stack Height Form 'G'Level	m	7.0	10.0	.....
3	Stack Diameter	m	0.10	0.20	.....
4	Ambient Temperature	^{o}C	32	32	.....
5	Stack Temperature	^{o}C	179	230	.....
6	Flue gas velocity	m/sec	13.75	23.28	IS:11255 - P3
7	Gaseous Emission	Nm^3/hr	256	1557	IS:11255 - P3
8	Particulate Matter (PM)	mg/ Nm^3	16.4	24.3	IS:11255 - P1
9	Sulphur Di-Oxide (SO_2)	mg/ Nm^3	6.7	8.6	IS:11255 - P2
10	Oxides of Nitrogen (NO_X)	mg/ Nm^3	78	135	IS:11255 - P7
11	Carbon monoxide(CO)	%	< 0.2	< 0.2	IS:13270
12	Chlorine as Cl_2	mg/Nm^3	< 1	< 1	Iodometric Method
TNPCB Standards – PM		mg/ Nm^3	150.0		

For Green Chem Solutions Pvt. Ltd.
(Laboratory Division)

Authorized Signatory

*** *End of Report* ***

GREEN CHEM SOLUTIONS PVT LTD

(ISO 14001:2015 Certified)

Laboratory Division

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

Tel : +91-44-42612103

Website: www.greenchemsolutions.in

Email: info@greenchemsolutions.in
greenchemsolutions@gmail.com
lab@greenchemsolutions.in

Test Report

Report No.	GCS/S/NLM/ 3420 /2021-2022	Report Date	24.05.2021
Customer Name & Address	M/s.ENNORE TANK TERMINALS PRIVATE LIMITED Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.		
Customer Reference	IMC/TER/GCSPL/WO/002/12-13 / 2012		
Description	Noise Level Monitoring	Monitoring Date	19.05.2021
Monitored by	GCSPL	Data Received On	20.05.2021

S.No.	Locations	Day Time		Night Time	
		Maximum	Minimum	Maximum	Minimum
1	Near Security Gate	68.7	64.9	61.5	57.1
2	Weigh Bridge	72.5	67.0	65.3	61.9
3	TLF IV	65.8	60.5	57.1	53.0
4	TLF I	66.3	62.7	56.9	51.6
5	Pump House – II	68.0	62.2	61.7	57.4
6	Near DG set	73.2	69.4	67.0	62.3
Unit		dB(A)		dB (A)	
TNPCB Standards (Industrial Area)		75.0		70.0	
Reference Method		Instruments Manual			

For Green Chem Solutions Pvt Ltd
(Laboratory Division)

Authorized Signatory

*** *End of Report* ***

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greenchemsolutions@gmail.com
lab@greenchemsolutions.in

Tel : +91-44-42612103

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Test Report

GREEN CHEM SOLUTIONS PVT LTD

Report of Analysis

MICROMETEOROLOGY SURVEY

Report No: GCS/S/MM/ 3421 /2021-2022 Date : 24.05.2021

Name and Address of the industry	:	M/s.ENNORE TANK TERMINALS PVT LTD , Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.
Date of Survey	:	19.05.2021
Duration of Survey	:	24 hours
Pollution Category	:	Red
Industry Classification	:	Large
Weather Condition	:	Clear Sky
Ambient Temperature	:	Max: 32 °C Min : 28°C
Relative Humidity	:	Max : 71 % Min : 44 %
Predominant Wind Direction	:	SE
Wind Speed (km/hr)	:	14.8
Rainfall (mm)	:	Nil

*** *End of Report****

GREEN CHEM SOLUTIONS PVT LTD

(ISO 14001:2015 Certified)

Laboratory Division

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

Email: info@greenchemsolutions.in
greenchemsolutions@gmail.com
lab@greenchemsolutions.in

Tel : +91-44-42612103

Website: www.greenchemsolutions.in

Test Report

Report No	GCS/W/ 2852 /2021-2022	Report Date	24.05.2021
Customer Name & Address	M/s.ENNORE TANK TERMINALS PRIVATE LIMITED Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.		
Survey Description	ETP Outlet	Sample Received On	19.05.2021
Sample Drawn By	GCSPL	Test Commenced On	19.05.2021
Sample Collected Date	19.05.2021	Test Completed On	24.05.2021

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	TNPCB Norms for Treated Effluent
1.	pH @ 25°C	--	7.65	IS:3025/P11/1983 Reaff 2017	5.5 – 9.0
2.	Total Dissolved Solids	mg/l	426	IS:3025/P16/1984Reaff 2017	2100
3.	Total Suspended Solids	mg/l	12	IS:3025/P17/1984 Reaff 2017	100
4.	Chemical Oxygen Demand	mg/l	54	IS:3025/P58/2006Reaff 2017	250
5.	BOD (for 3 days at 27°C)	mg/l	10	IS:3025/P44/1993Reaff 2019	30
6.	Oil & Grease	mg/l	BDL(D.L:1.0)	IS:3025/P39/1991Reaff 2019	10

BDL: Below Detection Limit D.L: Detection Limit

For GREEN CHEM SOLUTIONS PVT LTD
(Laboratory Division)

Authorized Signatory

** End of Report ***

ENNORE TANK TERMINALS PRIVATE LIMITED
3rd Floor, P.T. Lee Chengalvaraya Naicker Maaligai, No.23, Rajaji Salai, Chennai - 600001.
Tel. : 044 - 4348 8686, Fax : 044 - 2521 9696, URL : www.ettpl.net.in

Ref. No.:ETTPL/TNPCB/006/21
Date : 14th June 2021

The District Environmental Engineer
Tamil Nadu Pollution Control Board
Anthoni Pillai Nagar, Gummudipoondi,
Tamilnadu – 601201

Dear Sir,

Ref : a) Consent Order No. 17087 dated 17/07/2014 – Under Sec. 21 of the Air (Prevention & Control of Pollution) Act, 1981.

b) Consent Order No.21050 dated 17/07/2014 – Under Sec. 254 of the Water (Prevention and Control of Pollution) Act, 1974

We are enclosing herewith copies of the following reports for the tests done in the month of June 2021 for your perusal and records.

1. Air
2. Stack

Thanking you,

Yours faithfully,
For Ennore Tank Terminals Pvt Ltd.

C.P. Viswa Mohan
Senior General Manager

Encl : a/a

15 JUN 2021

GREEN CHEM SOLUTIONS PVT LTD

(ISO 14001:2015 Certified)

Laboratory Division

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

Tel : +91-44-42612103

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Email: info@greenchemsolutions.in
greenchemsolutions@gmail.com
lab@greenchemsolutions.in

Test Report

Report No.	GCS/S/AAQ/ 3445 A /2021-2022	Report Date	11.06.2021
Customer Name & Address	**M/s.ENNORE TANK TERMINALS PRIVATE LIMITED** **Inside Ennore Port, Vallur Post,** **Thiruvallur District,** **Chennai – 600 120.**		
Customer Reference	IMC/TER/GCSPL/WO/002/12-13 /2012		
Survey Description	Ambient Air Quality Monitoring	Sample Received on	08.06.2021
Survey Conducted by	GCSPL	Test Commenced on	08.06.2021
Survey Conducted on	07.06.2021	Test Completed on	09.06.2021

S. No.	Locations	Pollutants						
		PM_{10}	$PM_{2.5}$	SO_2	NO_x	Pb	CO	O_2
1	Near Main Gate	63	26	8.0	17.4	BDL(D.L: 0.5)	BDL(D.L: 1.0)	22.0
2	Weigh Bridge	68	29	7.8	18.3	BDL(D.L: 0.5)	BDL(D.L: 1.0)	22.0
3	Near Power House	55	22	7.2	17.0	BDL(D.L: 0.5)	BDL(D.L: 1.0)	22.0
4	Near Fire Engine Plant	50	19	7.4	17.2	BDL(D.L: 0.5)	BDL(D.L: 1.0)	22.0
Unit		$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	$\mu g/m^3$	mg/m^3	%
NAAQ Standards (Industrial, Residential & Rural Area)		100	60	80	80	1.0	4	-
Reference Method - IS : 5182		Part 23	GCS/Lab/ SOP/087	Part 2	Part 6	Part 22	Part 10	IS 13270

PM_{10}	Particulate Matter (Size less than 10µm)	NO_x	Oxides of Nitrogen
$PM_{2.5}$	Particulate Matter (Size less than 2.5µm)	CO	Carbon Monoxide
SO_2	Sulphur Di-Oxide	Pb	Lead
O_2	Oxygen	BDL: Below Detection Limit D.L: Detection Limit	

For Green Chem Solutions Pvt Ltd
(Laboratory Division)

Authorized Signatory

*** *End of Report* ***

GREEN CHEM SOLUTIONS PVT LTD

(ISO 14001:2015 Certified)

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Tel : +91-44-42612103

Website: www.greenchemsolutions.in

Email: info@greenchemsolutions.in
greenchemsolutions@gmail.com
lab@greenchemsolutions.in

Test Report

Report No.	GCS/S/AAQ/ 3445 B /2021-2022	Report Date	11.06.2021
Customer Name & Address	M/s.ENNORE TANK TERMINALS PRIVATE LIMITED, Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.		
Customer Reference	IMC/TER/GCSPL/WO/002/12-13 /2012		
Survey Description	AAQ Monitoring – TLF I	Sample Received on	08.06.2021
Survey Conducted by	GCSPL	Test Commenced on	08.06.2021
Survey Conducted on	07.06.2021	Test Completed on	09.06.2021

S.No	PARAMETER	UNITS	RESULTS	REFERENCE METHOD	NAAQ Standards (Industrial, Residential & Rural Area)
1	PM_{10}	$\mu g/m^3$	57	IS 5182 – Part 23	100
2	$PM_{2.5}$	$\mu g/m^3$	25	GCS/Lab/SOP/087	60
3	Oxides of Sulphur as SO_2	$\mu g/m^3$	8.0	IS 5182 – Part 2	80
4	Oxides of Nitrogen as NO_2	$\mu g/m^3$	17.4	IS 5182 – Part 6	80
5	Lead as Pb	$\mu g/m^3$	BDL (DL:0.5)	IS 5182 – Part 22	1
6	Carbon monoxide as CO	mg/m^3	BDL (DL:1.0)	IS 5182 – Part 10	4
7	Ozone as O_3	$\mu g/m^3$	BDL (DL: 2.0)	IS 5182 – Part 9	180
8	Ammonia as NH_3	$\mu g/m^3$	BDL (DL: 2.0)	GCS/Lab/SOP/086	400
9	Benzene as C_6H_6	$\mu g/m^3$	BDL (DL: 1.0)	IS 5182 : Part 11 - 2006	5
10	Benzene (α) pyrene	ng/m^3	BDL (DL: 0.1)	IS 5182 : Part 12 - 2004	1
11	Arsenic as As	ng/m^3	BDL (DL: 1.0)	GCS/Lab/SOP/089	6
12	Nickel as Ni	ng/m^3	BDL (DL: 5.0)	GCS/Lab/SOP/090	20

For Green Chem Solutions Pvt. Ltd.
(Laboratory Division)

Authorized Signatory

*** *End of Report* ***

GREEN CHEM SOLUTIONS PVT LTD

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Email: info@greenchemsolutions.in
greenchemsolutions@gmail.com
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Test Report

Report No.	GCS/S/SM/ 3446 A /2021-2022	Report Date	11.06.2021
Customer Name & Address	**M/s.ENNORE TANK TERMINALS PRIVATE LIMITED, Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.**		
Customer Reference	IMC/TER/GCSPL/WQ/002/12-13 /2012		
Survey Description	Stack Monitoring	Sample Received on	08.06.2021
Survey Conducted by	GCSPL	Test Commenced on	08.06.2021
Survey Conducted on	07.06.2021	Test Completed on	09.06.2021

S.No.	Descriptions	Unit	DG 250 KVA	DG 500 KVA	Reference Method
1	APC Measures Attached	-	Silencer	Silencer	.....
2	Total Stack Height Form 'G'Level	m	7.0	10.0	.....
3	Stack Diameter	m	0.10	0.20	.....
4	Ambient Temperature	^{o}C	31	31	.....
5	Stack Temperature	^{o}C	171	224	.....
6	Flue gas velocity	m/sec	12.93	22.47	IS:11255 - P3
7	Gaseous Emission	Nm^3/hr	244	1520	IS:11255 - P3
8	Particulate Matter (PM)	mg/ Nm^3	15.1	22.9	IS:11255 - P1
9	Sulphur Di-Oxide (SO_2)	mg/ Nm^3	6.4	8.0	IS:11255 - P2
10	Oxides of Nitrogen (NO_X)	mg/ Nm^3	72	131	IS:11255 - P7
11	Carbon monoxide(CO)	%	< 0.2	< 0.2	IS:13270
12	Chlorine as Cl_2	mg/Nm^3	< 1	< 1	Iodometric Method
TNPCB Standards – PM		mg/ Nm^3	150.0		

For Green Chem Solutions Pvt. Ltd.
(Laboratory Division)

Authorized Signatory

**** End of Report ****

GREEN CHEM SOLUTIONS PVT LTD

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

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greenchemsolutions@gmail.com
lab@greenchemsolutions.in

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Website: www.greenchemsolutions.in

Test Report

Report No.	GCS/S/SM/ 3446 B /2021-2022	Report Date	11.06.2021
Customer Name & Address	M/s.ENNORE TANK TERMINALS PRIVATE LIMITED, Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.		
Customer Reference	IMC/TER/GCSPL/WO/002/12-13 /2012		
Survey Description	Stack Monitoring	Sample Received on	08.06.2021
Survey Conducted by	GCSPL	Test Commenced on	08.06.2021
Survey Conducted on	07.06.2021	Test Completed on	09.06.2021

S.No.	Descriptions	Unit	DG 180 KVA	DG 500 KVA	Reference Method
1	APC Measures Attached	-	Silencer	Silencer	.....
2	Total Stack Height Form 'G'Level	m	7.0	10.0	.....
3	Stack Diameter	m	0.10	0.20	.....
4	Ambient Temperature	^{o}C	31	31	.....
5	Stack Temperature	^{o}C	124	220	.....
6	Flue gas velocity	m/sec	11.86	20.42	IS:11255 - P3
7	Gaseous Emission	Nm^3/hr	251	1393	IS:11255 - P3
8	Particulate Matter (PM)	mg/ Nm^3	13.0	21.8	IS:11255 - P1
9	Sulphur Di-Oxide (SO_2)	mg/ Nm^3	5.5	7.4	IS:11255 - P2
10	Oxides of Nitrogen (NO_X)	mg/Nm^3	57	132	IS:11255 - P7
11	Carbon monoxide(CO)	%	< 0.2	< 0.2	IS:13270
12	Chlorine as Cl_2	mg/Nm^3	< 1	< 1	Iodometric Method
TNPCB Standards – PM		mg/ Nm^3	150.0		

For Green Chem Solutions Pvt. Ltd.
(Laboratory Division)

Authorized Signatory

*** *End of Report* ***

GREEN CHEM SOLUTIONS PVT LTD

(ISO 14001:2015 Certified)

Laboratory Division

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Email: info@greenchemsolutions.in
greenchemsolutions@gmail.com
lab@greenchemsolutions.in

Tel : +91-44-42612103

Website: www.greenchemsolutions.in

Test Report

Report No.	GCS/S/NLM/ 3447 /2021-2022		Report Date		11.06.2021	
Customer Name & Address	M/s.ENNORE TANK TERMINALS PRIVATE LIMITED Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.					
Customer Reference	IMC/TER/GCSPL/WO/002/12-13 / 2012					
Description	Noise Level Monitoring		Monitoring Date		07.06.2021	
Monitored by	GCSPL		Data Received On		08.06.2021	
S.No.	Locations		Day Time		Night Time	
			Maximum	Minimum	Maximum	Minimum
1	Near Security Gate		67.6	64.0	62.4	58.2
2	Weigh Bridge		73.8	68.5	63.1	59.7
3	TLF IV		64.0	56.9	55.7	51.4
4	TLF I		65.2	60.7	56.0	52.6
5	Pump House – II		66.9	60.4	59.6	55.3
6	Near DG set		72.8	68.3	66.5	61.2
Unit			dB(A)		dB (A)	
TNPCB Standards (Industrial Area)			75.0		70.0	
Reference Method			Instruments Manual			

For Green Chem Solutions Pvt Ltd
(Laboratory Division)

Authorized Signatory

*** *End of Report* ***

GREEN CHEM SOLUTIONS PVT LTD

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greenchemsolutions@gmail.com
lab@greenchemsolutions.in

Tel : +91-44-42612103

Website: www.greenchemsolutions.in

Test Report

GREEN CHEM SOLUTIONS PVT LTD

Report of Analysis

MICROMETEOROLOGY SURVEY

Report No: GCS/S/MM/ 3448 /2021-2022 Date : 11.06.2021

Name and Address of the industry	:	M/s.ENNORE TANK TERMINALS PVT LTD , Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.
Date of Survey	:	07.06.2021
Duration of Survey	:	24 hours
Pollution Category	:	Red
Industry Classification	:	Large
Weather Condition	:	Clear Sky
Ambient Temperature	:	Max: 31 °C Min : 28°C
Relative Humidity	:	Max : 83 % Min : 51 %
Predominant Wind Direction	:	North
Wind Speed (km/hr)	:	15.1
Rainfall (mm)	:	Nil

**** End of Report****

GREEN CHEM SOLUTIONS PVT LTD

(ISO 14001:2015 Certified)

Laboratory Division

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

Email: info@greenchemsolutions.in
greenchemsolutions@gmail.com
lab@greenchemsolutions.in

Tel : +91-44-42612103

Website: www.greenchemsolutions.in

Test Report

Report No	GCS/W/ 2878 /2021-2022	Report Date	11.06.2021
Customer Name & Address	**M/s.ENNORE TANK TERMINALS PRIVATE LIMITED Inside Ennore Port, Vallur Post, Thiruvallur District, Chennai – 600 120.**		
Survey Description	ETP Outlet	Sample Received On	07.06.2021
Sample Drawn By	GCSPL	Test Commenced On	07.06.2021
Sample Collected Date	07.06.2021	Test Completed On	11.06.2021

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	TNPCB Norms for Treated Effluent
1.	pH @ 25°C	--	7.84	IS:3025/P11/1983 Reaff 2017	5.5 – 9.0
2.	Total Dissolved Solids	mg/l	392	IS:3025/P16/1984Reaff 2017	2100
3.	Total Suspended Solids	mg/l	8.6	IS:3025/P17/1984 Reaff 2017	100
4.	Chemical Oxygen Demand	mg/l	40	IS:3025/P58/2006Reaff 2017	250
5.	BOD (for 3 days at 27°C)	mg/l	7.0	IS:3025/P44/1993Reaff 2019	30
6.	Oil & Grease	mg/l	BDL(D.L:1.0)	IS:3025/P39/1991Reaff 2019	10

BDL: Below Detection Limit D.L: Detection Limit

For GREEN CHEM SOLUTIONS PVT LTD
(Laboratory Division)

Authorized Signatory

** End of Report ***

Enviro Care®
INDIA PRIVATE LIMITED
ISO 9001 : 2008 Certified Company
ISO 14001 : 2004 Certified Company
OHSAS : 18001 : 2007 Certified Company

TEST REPORT

AMBIENT AIR QUALITY SURVEY

Report No	ECI-AAQ-2021/01/104	Report Date	27.01.2021
Customer Name & Address	**M/s. Chettinad International Coal Terminal Pvt.Ltd** Puzhuthivakkam Village Vallur-Post, PonneriTaluk Thiruvallur District-600 120		
Customer Reference	CICTPL/JO/47/20-21 Dt:18/06/2020	Sample Reference No	ECI-AAQ-2021/01/104
Sample Drawn By	ECI	Sample Received On	21.01.2021
Sample Collected Date	19.01.2021	Test Commenced On	21.01.2021
Qty of Sample Received	Filter Paper & 25ml Solution	Test Completed On	27.01.2021
Sample Description	Ambient Air	Sampling Method	IS 5182:P14
Sample Mark	Near Sub Station - I		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Permissible limits of NAAQs (Industrial, Residential)
1.	Ammonia (as NH_3)	µg/m³	< 1.0	IS 11255:Part 06	400
2.	Arsenic (as As)	ng/m³	< 0.1	IS 5182:Part 22	6.0
3.	Benzene (C_6H_6)	µg/m³	< 1.0	IS 5182:Part 11	5.0
4.	Benzo-a-Pyrine (BaP)	ng/m³	< 1.0	IS 5182:Part 12	1.0
5.	Carbon Monoxide (as CO)	mg/m³	< 1.2	ECI-SOP-SAM-08	2.0
6.	Lead (as Pb)	µg/m³	< 0.1	IS 5182:Part 22	1.0
7.	Nickel (as Ni)	ng/m³	< 0.1	IS 5182:Part 22	20
8.	Nitrogen dioxide (as NO_2)	µg/m³	19.3	IS 5182:Part 06	80
9.	Ozone (as O_3)	µg/m³	< 9.8	IS 5182:Part 09	180
10.	Particulate Matter ($PM_{2.5}$)	µg/m³	34.2	EPA 40 CFR Part 50 Appendix L	60
11.	Respirable Particulate Matter (PM_{10})	µg/m³	70.1	IS 5182:Part 23	100
12.	Sulphur Dioxide (as SO_2)	µg/m³	9.1	IS 5182:Part 02	80

<--- End of Report --->

Verified By :

Remarks : --

For ENVIRO CARE INDIA PRIVATE LIMITED
(Laboratory Division)

Authorized Signatory

ENVIRO CARE INDIA PRIVATE LIMITED MADURAI-16.

CHENNAI Tel : +91 (44) ...7084
Mobile : 99...3863...
e-mail : ecichennai@envirocareindia.com

MADURAI Tel : +91 (452) 4355103
Mobile : 8220015870
e-mail : lab@envirocareindia.com

COIMBATORE Tel : +91 (422) 4206686
Mobile : 8056766966
e-mail : ecicbe@envirocareindia.com

Enviro Care®
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ISO 14001 : 2004 Certified Company
OHSAS : 18001 : 2007 Certified Company

TEST REPORT

AMBIENT AIR QUALITY SURVEY

Report No :	ECI-AAQ-2021/01/105	Report Date :	27.01.2021
Customer Name & Address	**M/s. Chettinad International Coal Terminal Pvt.Ltd** Puzhuthivakkam Village Vallur-Post, PonneriTaluk Thiruvallur District-600 120		
Customer Reference :	CICTPL/JO/47/20-21 Dt:18/06/2020	Sample Reference No :	ECI-AAQ-2021/01/105
Sample Drawn By :	ECI	Sample Received On :	21.01.2021
Sample Collected Date :	19.01.2021	Test Commenced On :	21.01.2021
Qty of Sample Received :	Filter Paper & 25ml Solution	Test Completed On :	27.01.2021
Sample Description :	Ambient Air	Sampling Method :	IS 5182:P14
Sample Mark :	Near Main Gate		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Permissible limits of NAAQs (Industrial Residential)
1.	Ammonia (as NH_3)	$\mu g/m^3$	< 1.0	IS 11255:Part 06	400
2.	Arsenic (as As)	ng/m^3	< 0.1	IS 5182:Part 22	6.0
3.	Benzene (C_6H_6)	$\mu g/m^3$	< 1.0	IS 5182:Part 11	5.0
4.	Benzo-a-Pyrine (BaP)	ng/m^3	< 1.0	IS 5182:Part 12	1.0
5.	Carbon Monoxide (as CO)	mg/m^3	< 1.2	ECI-SOP-SAM-08	2.0
6.	Lead (as Pb)	$\mu g/m^3$	< 0.1	IS 5182:Part 22	1.0
7.	Nickel (as Ni)	ng/m^3	< 0.1	IS 5182:Part 22	20
8.	Nitrogen dioxide (as NO_2)	$\mu g/m^3$	24.6	IS 5182:Part 06	80
9.	Ozone (as O_3)	$\mu g/m^3$	< 9.8	IS 5182:Part 09	180
10.	Particulate Matter ($PM_{2.5}$)	$\mu g/m^3$	40.5	EPA 40 CFR Part 50 Appendix L	60
11.	Respirable Particulate Matter (PM_{10})	$\mu g/m^3$	87.3	IS 5182:Part 23	100
12.	Sulphur Dioxide (as SO_2)	$\mu g/m^3$	12.1	IS 5182:Part 02	80

<--- End of Report --->

Verified By :

Remarks : --

For ENVIRO CARE INDIA PRIVATE LIMITED
(Laboratory Division)

Authorized Signatory

ENVIRO CARE INDIA PRIVATE LIMITED MADURAI -16.

CHENNAI Tel : +91 (44) 42867084
Mobile : 9944938637
e-mail : ecichennai@envirocareindia.com

MADURAI Tel : +91 (452) 4355103
Mobile : 8220015870
e-mail : lab@envirocareindia.com

COIMBATORE Tel : +91 (422) 4206686
Mobile : 8056766966
e-mail : ecicbe@envirocareindia.com

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INDIA PRIVATE LIMITED
ISO 9001 : 2008 Certified Company
ISO 14001 : 2004 Certified Company
OHSAS : 18001 : 2007 Certified Company

TEST REPORT

AMBIENT AIR QUALITY SURVEY

Report No.	ECI-AAQ-2021/01/106	Report Date :	27.01.2021
Customer Name & Address	**M/s. Chettinad International Coal Terminal Pvt.Ltd** Puzhuthivakkam Village Vallur-Post, PonneriTaluk Thiruvallur District-600 120		
Customer Reference :	CICTPL/JO/47/20-21 Dt:18/06/2020	Sample Reference No :	ECI-AAQ-2021/01/106
Sample Drawn By :	ECI	Sample Received On :	21.01.2021
Sample Collected Date :	19.01.2021	Test Commenced On :	21.01.2021
Qty of Sample Received :	Filter Paper & 25ml Solution	Test Completed On :	27.01.2021
Sample Description :	Ambient Air	Sampling Method :	IS 5182:P14
Sample Mark :	Near Weigh Bridge (BTLS)		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Permissible limits of NAAQs (Industrial, Residential)
1.	Ammonia (as NH_3)	$\mu g/m^3$	< 1.0	IS 11255:Part 06	400
2.	Arsenic (as As)	ng/m^3	< 0.1	IS 5182:Part 22	6.0
3.	Benzene (C_6H_6)	$\mu g/m^3$	< 1.0	IS 5182:Part 11	5.0
4.	Benzo-a-Pyrine (BaP)	ng/m^3	< 1.0	IS 5182:Part 12	1.0
5.	Carbon Monoxide (as CO)	mg/m^3	< 1.2	ECI-SOP-SAM-08	2.0
6.	Lead (as Pb)	$\mu g/m^3$	< 0.1	IS 5182:Part 22	1.0
7.	Nickel (as Ni)	ng/m^3	< 0.1	IS 5182:Part 22	20
8.	Nitrogen dioxide (as NO_2)	$\mu g/m^3$	15.9	IS 5182:Part 06	80
9.	Ozone (as O_3)	$\mu g/m^3$	< 9.8	IS 5182:Part 09	180
10.	Particulate Matter ($PM_{2.5}$)	$\mu g/m^3$	31.1	EPA 40 CFR Part 50 Appendix L	60
11.	Respirable Particulate Matter (PM_{10})	$\mu g/m^3$	61.7	IS 5182:Part 23	100
12.	Sulphur Dioxide (as SO_2)	$\mu g/m^3$	7.5	IS 5182:Part 02	80

<--- End of Report --->

Verified By :

Remarks : --

For ENVIRO CARE INDIA PRIVATE LIMITED
(Laboratory Division)

Authorized Signatory

ENVIRO CARE INDIA PRIVATE LIMITED ★ MADURAI ★ -16.

CHENNAI Tel : +91 (44) 42867084
Mobile : 9944938637
e-mail : ecichennai@envirocareindia.com

MADURAI Tel : +91 (452) 4355103
Mobile : 8220015870
e-mail : lab@envirocareindia.com

COIMBATORE Tel : +91 (422) 4206686
Mobile : 8056766966
e-mail : ecicbe@envirocareindia.com

TEST REPORT

AMBIENT AIR QUALITY SURVEY

Report No	ECI-AAQ-2021/01/107	Report Date	27.01.2021
Customer Name & Address	**M/s. Chettinad International Coal Terminal Pvt.Ltd** Puzhuthivakkam Village Vallur-Post, PonneriTaluk Thiruvallur District-600 120		
Customer Reference	CICTPL/JO/47/20-21 Dt:18/06/2020	Sample Reference No	ECI-AAQ-2021/01/107
Sample Drawn By	ECI	Sample Received On	21.01.2021
Sample Collected Date	19.01.2021	Test Commenced On	21.01.2021
Qty of Sample Received	Filter Paper & 25ml Solution	Test Completed On	27.01.2021
Sample Description	Ambient Air	Sampling Method	IS 5182:P14
Sample Mark	Near Stores		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Permissible limits of NAAQs (Industrial, Residential)
1.	Ammonia (as NH_3)	$\mu g/m^3$	< 1.0	IS 11255:Part 06	400
2.	Arsenic (as As)	ng/m^3	< 0.1	IS 5182:Part 22	6.0
3.	Benzene (C_6H_6)	$\mu g/m^3$	< 1.0	IS 5182:Part 11	5.0
4.	Benzo-a-Pyrine (BaP)	ng/m^3	< 1.0	IS 5182:Part 12	1.0
5.	Carbon Monoxide (as CO)	mg/m^3	< 1.2	ECI-SOP-SAM-08	2.0
6.	Lead (as Pb)	$\mu g/m^3$	< 0.1	IS 5182:Part 22	1.0
7.	Nickel (as Ni)	ng/m^3	< 0.1	IS 5182:Part 22	20
8.	Nitrogen dioxide (as NO_2)	$\mu g/m^3$	17.3	IS 5182:Part 06	80
9.	Ozone (as O_3)	$\mu g/m^3$	< 9.8	IS 5182:Part 09	180
10.	Particulate Matter ($PM_{2.5}$)	$\mu g/m^3$	29.4	EPA 40 CFR Part 50 Appendix L	60
11.	Respirable Particulate Matter (PM_{10})	$\mu g/m^3$	60.5	IS 5182:Part 23	100
12.	Sulphur Dioxide (as SO_2)	$\mu g/m^3$	8.2	IS 5182:Part 02	80

<--- End of Report --->

Verified By :

Remarks : --

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e-mail : lab@envirocareindia.com

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TEST REPORT

AMBIENT AIR QUALITY SURVEY

Report No :	ECI-AAQ-2021/02/202	Report Date	01.03.2021
Customer Name & Address	**M/s. Chettinad International Coal Terminal Pvt.Ltd** Puzhuthivakkam Village Vallur-Post, PonneriTaluk Thiruvallur District-600 120		
Customer Reference :	CICTPL/JO/47/20-21 Dt:18/06/2020	Sample Reference No :	ECI-AAQ-2021/02/202
Sample Drawn By :	ECI	Sample Received On :	24.02.2021
Sample Collected Date :	23.02.2021	Test Commenced On :	24.02.2021
Qty of Sample Received :	Filter Paper & 25ml Solution	Test Completed On :	01.03.2021
Sample Description :	Ambient Air	Sampling Method :	IS 5182:P14
Sample Mark:	Near Sub Station - I		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Permissible limits of NAAQs (Industrial, Residential)
1.	Ammonia (as NH_3)	µg/m³	< 1.0	IS 11255:Part 06	400
2.	Arsenic (as As)	ng/m³	< 0.1	IS 5182:Part 22	6.0
3.	Benzene (C_6H_6)	µg/m³	< 1.0	IS 5182:Part 11	5.0
4.	Benzo-a-Pyrine (BaP)	ng/m³	< 1.0	IS 5182:Part 12	1.0
5.	Carbon Monoxide (as CO)	mg/m³	< 1.2	ECI-SOP-SAM-08	2.0
6.	Lead (as Pb)	µg/m³	< 0.1	IS 5182:Part 22	1.0
7.	Nickel (as Ni)	ng/m³	< 0.1	IS 5182:Part 22	20
8.	Nitrogen dioxide (as NO_2)	µg/m³	20.5	IS 5182:Part 06	80
9.	Ozone (as O_3)	µg/m³	< 9.8	IS 5182:Part 09	180
10.	Particulate Matter ($PM_{2.5}$)	µg/m³	35.1	EPA 40 CFR Part 50 Appendix L	60
11.	Respirable Particulate Matter (PM_{10})	µg/m³	72.2	IS 5182:Part 23	100
12.	Sulphur Dioxide (as SO_2)	µg/m³	9.3	IS 5182:Part 02	80

<--- End of Report --->

Verified By :

Remarks : --

For ENVIRO CARE INDIA PRIVATE LIMITED
(Laboratory Division)

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CHENNAI Tel : +91 (44) 42867084 Mobile : 9944778869 e-mail : ecichennai@envirocareindia.com
MADURAI Tel : +91 (452) 4355103 Mobile : 8220068535 e-mail : lab@envirocareindia.com
COIMBATORE Tel : +91 (422) 4206686 Mobile : 8056766966 e-mail : ecicbe@envirocareindia.com

TEST REPORT

AMBIENT AIR QUALITY SURVEY

Report No :	ECI-AAQ-2021/02/203	Report Date :	01.03.2021
Customer Name & Address	M/s. Chettinad International Coal Terminal Pvt.Ltd Puzhuthivakkam Village Vallur-Post, PonneriTaluk Thiruvallur District-600 120		
Customer Reference :	CICTPL/JO/47/20-21 Dt:18/06/2020	Sample Reference No :	ECI-AAQ-2021/02/203
Sample Drawn By :	ECI	Sample Received On :	24.02.2021
Sample Collected Date :	23.02.2021	Test Commenced On :	24.02.2021
Qty of Sample Received :	Filter Paper & 25ml Solution	Test Completed On :	01.03.2021
Sample Description :	Ambient Air	Sampling Method :	IS 5182:P14
Sample Mark :	Near Main Gate		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Permissible limits of NAAQs for Industrial, Residential
1.	Ammonia (as NH_3)	$\mu g/m^3$	< 1.0	IS 11255:Part 06	400
2.	Arsenic (as As)	ng/m^3	< 0.1	IS 5182:Part 22	6.0
3.	Benzene (C_6H_6)	$\mu g/m^3$	< 1.0	IS 5182:Part 11	5.0
4.	Benzo-a-Pyrine (BaP)	ng/m^3	< 1.0	IS 5182:Part 12	1.0
5.	Carbon Monoxide (as CO)	mg/m^3	< 1.2	ECI-SOP-SAM-08	2.0
6.	Lead (as Pb)	$\mu g/m^3$	< 0.1	IS 5182:Part 22	1.0
7.	Nickel (as Ni)	ng/m^3	< 0.1	IS 5182:Part 22	20
8.	Nitrogen dioxide (as NO_2)	$\mu g/m^3$	26.3	IS 5182:Part 06	80
9.	Ozone (as O_3)	$\mu g/m^3$	< 9.8	IS 5182:Part 09	180
10.	Particulate Matter ($PM_{2.5}$)	$\mu g/m^3$	41.4	EPA 40 CFR Part 50 Appendix L	60
11.	Respirable Particulate Matter (PM_{10})	$\mu g/m^3$	88.5	IS 5182:Part 23	100
12.	Sulphur Dioxide (as SO_2)	$\mu g/m^3$	12.8	IS 5182:Part 02	80

<--- End of Report --->

Verified By :

Remarks : --

For ENVIRO CARE INDIA PRIVATE LIMITED
(Laboratory Division)

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AMBIENT AIR QUALITY SURVEY

Report No :	ECI-AAQ-2021/02/204	**Report Date :**	01.03.2021
Customer Name & Address	**M/s. Chettinad International Coal Terminal Pvt.Ltd** Puzhuthivakkam Village Vallur-Post, PonneriTaluk Thiruvallur District-600 120		
Customer Reference :	CICTPL/JO/47/20-21 Dt:18/06/2020	**Sample Reference No :**	ECI-AAQ-2021/02/204
Sample Drawn By :	ECI	**Sample Received On :**	24.02.2021
Sample Collected Date :	23.02.2021	**Test Commenced On :**	24.02.2021
Qty of Sample Received :	Filter Paper & 25ml Solution	**Test Completed On :**	01.03.2021
Sample Description :	Ambient Air	**Sampling Method :**	IS 5182:P14
Sample Mark:	Near Weigh Bridge (BTLS)		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Permissible limits of NAAQs (Industrial, Residential)
1.	Ammonia (as NH_3)	$\mu g/m^3$	< 1.0	IS 11255:Part 06	400
2.	Arsenic (as As)	ng/m^3	< 0.1	IS 5182:Part 22	6.0
3.	Benzene (C_6H_6)	$\mu g/m^3$	< 1.0	IS 5182:Part 11	5.0
4.	Benzo-a-Pyrine (BaP)	ng/m^3	< 1.0	IS 5182:Part 12	1.0
5.	Carbon Monoxide (as CO)	mg/m^3	< 1.2	ECI-SOP-SAM-08	2.0
6.	Lead (as Pb)	$\mu g/m^3$	< 0.1	IS 5182:Part 22	1.0
7.	Nickel (as Ni)	ng/m^3	< 0.1	IS 5182:Part 22	20
8.	Nitrogen dioxide (as NO_2)	$\mu g/m^3$	16.3	IS 5182:Part 06	80
9.	Ozone (as O_3)	$\mu g/m^3$	< 9.8	IS 5182:Part 09	180
10.	Particulate Matter ($PM_{2.5}$)	$\mu g/m^3$	32.2	EPA 40 CFR Part 50 Appendix L	60
11.	Respirable Particulate Matter (PM_{10})	$\mu g/m^3$	63.8	IS 5182:Part 23	100
12.	Sulphur Dioxide (as SO_2)	$\mu g/m^3$	7.2	IS 5182:Part 02	80

<--- End of Report --->

Verified By :

Remarks : --

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(Laboratory Division)

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TEST REPORT

AMBIENT AIR QUALITY SURVEY

Report No :	ECI-AAQ-2021/02/205	Report Date :	01.03.2021
Customer Name & Address	**M/s. Chettinad International Coal Terminal Pvt.Ltd** Puzhuthivakkam Village Vallur-Post, PonneriTaluk Thiruvallur District-600 120		
Customer Reference :	CICTPL/JO/47/20-21 Dt:18/06/2020	Sample Reference No :	ECI-AAQ-2021/02/205
Sample Drawn By :	ECI	Sample Received On :	24.02.2021
Sample Collected Date :	23.02.2021	Test Commenced On :	24.02.2021
Qty of Sample Received :	Filter Paper & 25ml Solution	Test Completed On :	01.03.2021
Sample Description :	Ambient Air	Sampling Method :	IS 5182:P14
Sample Mark:	Near Stores		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Permissible limits of NAAQs (Industrial, Residential)
1.	Ammonia (as NH_3)	µg/m³	< 1.0	IS 11255:Part 06	400
2.	Arsenic (as As)	ng/m³	< 0.1	IS 5182:Part 22	6.0
3.	Benzene (C_6H_6)	µg/m³	< 1.0	IS 5182:Part 11	5.0
4.	Benzo-a-Pyrine (BaP)	ng/m³	< 1.0	IS 5182:Part 12	1.0
5.	Carbon Monoxide (as CO)	mg/m³	< 1.2	ECI-SOP-SAM-08	2.0
6.	Lead (as Pb)	µg/m³	< 0.1	IS 5182:Part 22	1.0
7.	Nickel (as Ni)	ng/m³	< 0.1	IS 5182:Part 22	20
8.	Nitrogen dioxide (as NO_2)	µg/m³	18.4	IS 5182:Part 06	80
9.	Ozone (as O_3)	µg/m³	< 9.8	IS 5182:Part 09	180
10.	Particulate Matter ($PM_{2.5}$)	µg/m³	30.6	EPA 40 CFR Part 50 Appendix L	60
11.	Respirable Particulate Matter (PM_{10})	µg/m³	62.2	IS 5182:Part 23	100
12.	Sulphur Dioxide (as SO_2)	µg/m³	8.0	IS 5182:Part 02	80

<--- End of Report --->

Verified By :

Remarks : --

For ENVIRO CARE INDIA PRIVATE LIMITED
(Laboratory Division)

Authorized Signatory

CHENNAI Tel : +91 (44) 4286709 Mobile : 9944998857 e-mail : ecichennai@envirocareindia.com
MADURAI Tel : +91 (452) 4355103 Mobile : 8220068555 e-mail : lab@envirocareindia.com
COIMBATORE Tel : +91 (422) 4206686 Mobile : 8056766966 e-mail : ecicbe@envirocareindia.com

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TEST REPORT

Accredited by NABL (Chemical & Biological)
Recognized by BIS as per IS : 14543 : 2016

AMBIENT AIR QUALITY SURVEY

Report No :	ECI-AAQ-2021/03/150	Report Date :	22.03.2021
Customer Name & Address	**M/s. Ennore Coal Terminal Pvt. Ltd** Puzhuthivakkam Village Vallur-Post, PonneriTaluk Thiruvallur District-600 120		
Customer Reference :	CICTPL/JO/47/20-21 Dt:18/06/2020	Sample Reference No :	ECI-AAQ-2021/03/150
Sample Drawn By :	ECI	Sample Received On :	16.03.2021
Sample Collected Date :	15.03.2021	Test Commenced On :	16.03.2021
Qty of Sample Received :	Filter Paper & 25ml Solution	Test Completed On :	22.03.2021
Sample Description :	Ambient Air	Sampling Method :	IS 5182:P14
Sample Mark :	Near Weigh Bridge (BTLS)		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Permissible limits of NAAQs (Industrial, Residential)
1.	Ammonia (as NH_3)	µg/m³	< 1.0	IS 11255:Part 06	400
2.	Arsenic (as As)	ng/m³	< 0.1	IS 5182:Part 22	6.0
3.	Benzene (C_6H_6)	µg/m³	< 1.0	IS 5182:Part 11	5.0
4.	Benzo-a-Pyrine (BaP)	ng/m³	< 1.0	IS 5182:Part 12	1.0
5.	Carbon Monoxide (as CO)	mg/m³	< 1.2	ECI-SOP-SAM-08	2.0
6.	Lead (as Pb)	µg/m³	< 0.1	IS 5182:Part 22	1.0
7.	Nickel (as Ni)	ng/m³	< 0.1	IS 5182:Part 22	20
8.	Nitrogen dioxide (as NO_2)	µg/m³	19.2	IS 5182:Part 06	80
9.	Ozone (as O_3)	µg/m³	< 9.8	IS 5182:Part 09	180
10.	Particulate Matter ($PM_{2.5}$)	µg/m³	33.3	EPA 40 CFR Part 50 Appendix L	60
11.	Respirable Particulate Matter (PM_{10})	µg/m³	68.6	IS 5182:Part 23	100
12.	Sulphur Dioxide (as SO_2)	µg/m³	8.2	IS 5182:Part 02	80

<--- End of Report --->

Verified By : [signature]

Remarks : In the above mentioned location meets the requirements of NAAQs standards with respect to the parameters tested.

For ENVIRO CARE INDIA PRIVATE LIMITED
(Laboratory Division)

[signature] [stamp: ENVIRO CARE INDIA PRIVATE LIMITED, MADURAI-16]

Authorized Signatory

CHENNAI Tel : +91 (44) 4285[illegible]
Mobile : 9944938637
e-mail : ecichennai@envirocareindia.com

MADURAI Tel : +91 (452) 4355103
Mobile : 8220068555
e-mail : lab@envirocareindia.com

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TEST REPORT

AMBIENT AIR QUALITY SURVEY

Report No:	ECI-AAQ-2021/03/151	Report Date :	22.03.2021
Customer Name & Address	**M/s. Ennore Coal Terminal Pvt. Ltd** Puzhuthivakkam Village Vallur-Post, PonneriTaluk Thiruvallur District-600 120		
Customer Reference :	CICTPL/JO/47/20-21 Dt:18/06/2020	Sample Reference No :	ECI-AAQ-2021/03/151
Sample Drawn By :	ECI	Sample Received On :	16.03.2021
Sample Collected Date :	15.03.2021	Test Commenced On :	16.03.2021
Qty of Sample Received :	Filter Paper & 25ml Solution	Test Completed On :	22.03.2021
Sample Description :	Ambient Air	Sampling Method :	IS 5182:P14
Sample Mark:	Near Stores		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Permissible limits of NAAQs (Industrial, Residential)
1.	Ammonia (as NH_3)	µg/m³	< 1.0	IS 11255:Part 06	400
2.	Arsenic (as As)	ng/m³	< 0.1	IS 5182:Part 22	6.0
3.	Benzene (C_6H_6)	µg/m³	< 1.0	IS 5182:Part 11	5.0
4.	Benzo-a-Pyrine (BaP)	ng/m³	< 1.0	IS 5182:Part 12	1.0
5.	Carbon Monoxide (as CO)	mg/m³	< 1.2	ECI-SOP-SAM-08	2.0
6.	Lead (as Pb)	µg/m³	< 0.1	IS 5182:Part 22	1.0
7.	Nickel (as Ni)	ng/m³	< 0.1	IS 5182:Part 22	20
8.	Nitrogen dioxide (as NO_2)	µg/m³	16.2	IS 5182:Part 06	80
9.	Ozone (as O_3)	µg/m³	< 9.8	IS 5182:Part 09	180
10.	Particulate Matter ($PM_{2.5}$)	µg/m³	31.4	EPA 40 CFR Part 50 Appendix L	60
11.	Respirable Particulate Matter (PM_{10})	µg/m³	64.8	IS 5182:Part 23	100
12.	Sulphur Dioxide (as SO_2)	µg/m³	7.5	IS 5182:Part 02	80

<--- End of Report --->

Verified By :

Remarks : In the above mentioned location meets the requirements of NAAQs standards with respect to the parameters tested.

For ENVIRO CARE INDIA PRIVATE LIMITED
(Laboratory Division)

Authorized Signatory

ENVIRO CARE INDIA PRIVATE LIMITED MADURAI-16.

CHENNAI Tel : +91 (44) 42862884 Mobile : 9944938637 e-mail : ecichennai@envirocareindia.com
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COIMBATORE Tel : +91 (422) 4206686 Mobile : 8056766966 e-mail : ecicbe@envirocareindia.com

STACK MONITORING

Report No:	ECI-SM-2021/03/136	Report Date :	22.03.2021
Customer Name & Address	M/s. Ennore Coal Terminal Pvt. Ltd Puzhuthivakkam Village Vallur-Post, PonneriTaluk Thiruvallur District-600 120		
Customer Reference :	CICTPL/JO/47/20-21 Dt:18/06/2020	Sample Reference No :	ECI-SM-2021/03/136
Sample Drawn By :	ECI	Sample Received On :	16.03.2021
Sample Collected Date :	15.03.2021	Test Commericed On :	16.03.2021
Qty of Sample Received :	Thimble & 50 ml Soln	Test Completed On :	22.03.2021
Sample Description :	Stack	Sampling Method :	IS :11255:P1
Sample Mark:	DG 200 KVA [Sub Station -2] -Silencer(Diesel)		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Max.Permissible TNPCB norms for General Emission Standards
1.	Ambient Temperature	°C	35	IS 11255:Part 03	NA
2.	Carbon dioxide (as CO_2)	% (v/v)	0.2	IS 13270	NA
3.	Carbon Monoxide (as CO)	% (v/v)	0.2	IS 13270	1.0
4.	Flow rate	Nm^3/hr	853	IS 11255:Part 03	NA
5.	Flue Gas velocity	m/sec	8.5	IS 11255:Part 03	NA
6.	Oxides of Nitrogen (as NO_x)	mg/Nm^3	23.5	IS 11255:Part 07 & IS 5182 :Part 06	NA
7.	Oxygen (as O_2)	% (v/v)	19.1	IS 13270	NA
8.	Particulate Matter (PM)	mg/Nm^3	60.2	IS 11255:Part 01	150
9.	Port hole Height from G Level	m	5.0	----	NA
10.	Stack Diameter at port hole	m	0.20	---	NA
11.	Stack Height from G Level	m	8.0	----	NA
12.	Stack Temperature	°C	62	IS 11255:Part 03	NA
13.	Sulphur Dioxide (as SO_2)	mg/Nm^3	10.3	IS 11255:Part 02	NA

<--- End of Report --->

Verified By :

Remarks: In the above mentioned stack meets the requirements of TNPCB standards with respect to the parameters tested
NA – Not Applicable

For ENVIRO CARE INDIA PRIVATE LIMITED
(Laboratory Division)

Authorized Signatory

ENVIRO CARE INDIA PRIVATE LIMITED MADURAI -16.

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OHSAS : 18001 : 2007 Certified Company

TEST REPORT

STACK MONITORING

Report No :	ECI-SM-2021/03/137	Report Date :	22.03.2021
Customer Name & Address	**M/s. Ennore Coal Terminal Pvt. Ltd** Puzhuthivakkam Village Vallur-Post, PonneriTaluk Thiruvallur District-600 120		
Customer Reference :	CICTPL/JO/47/20-21 Dt:18/06/2020	Sample Reference No :	ECI-SM-2021/03/137
Sample Drawn By :	ECI	Sample Received On :	16.03.2021
Sample Collected Date :	15.03.2021	Test Commenced On :	16.03.2021
Qty of Sample Received :	Thimble & 50 ml Soln	Test Completed On :	22.03.2021
Sample Description :	Stack	Sampling Method :	IS :11255:P1
Sample Mark:	DG 400 KVA [Electrical Room] -Silencer(Diesel)		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Max Permissible TNPCB norms for General Emission Standards
1.	Ambient Temperature	°C	35	IS 11255:Part 03	NA
2.	Carbon dioxide (as CO_2)	% (v/v)	0.4	IS 13270	NA
3.	Carbon Monoxide (as CO)	% (v/v)	0.4	IS 13270	1.0
4.	Flow rate	Nm^3/hr	469	IS 11255:Part 03	NA
5.	Flue Gas velocity	m/sec	9.9	IS 11255:Part 03	NA
6.	Oxides of Nitrogen (as NO_x)	mg/Nm^3	30.1	IS 11255:Part 07 & IS 5182 :Part 06	NA
7.	Oxygen (as O_2)	% (v/v)	17.2	IS 13270	NA
8.	Particulate Matter (PM)	mg/Nm^3	89.8	IS 11255:Part 01	150
9.	Port hole Height from G Level	m	5.0	---	NA
10.	Stack Diameter at port hole	m	0.15	---	NA
11.	Stack Height from G Level	m	7.0	---	NA
12.	Stack Temperature	°C	130	IS 11255:Part 03	NA
13.	Sulphur Dioxide (as SO_2)	mg/Nm^3	13.8	IS 11255:Part 02	NA

<--- End of Report --->

Verified By :

Remarks: In the above mentioned stack meets the requirements of TNPCB standards with respect to the parameters tested
NA – Not Applicable

For ENVIRO CARE INDIA PRIVATE LIMITED
(Laboratory Division)

Authorized Signatory

ENVIRO CARE INDIA PRIVATE LIMITED MADURAI

CHENNAI Tel : (44) 4986700 Mobile : 99449 e-mail : ecichennai@envirocareindia.com
MADURAI Tel : +91 (452) 4355103 Mobile : 8220068555 e-mail : lab@envirocareindia.com
COIMBATORE Tel : +91 (422) 4206686 Mobile : 8056766966 e-mail : ecicbe@envirocareindia.com

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TEST REPORT

Accredited by NABL [illegible]
Recognised by [illegible]

Report No.	ECI-AAQ-2021/04/138	Report Date	05.05.2021
Customer Name & Address	**M/s. Ennore Coal Terminal Pvt. Ltd** Puzhuthivakkam Village Vallur-Post, PonneriTaluk Thiruvallur District-600 120		
Customer Reference :	ECTPL/JO/24/21-22 Dt:23/04/2021	Sample Reference No. :	ECI-AAQ-2021/04/138
Sample Drawn By :	ECI	Sample Received On :	29.04.2021
Sample Collected Date :	28.04.2021	Test Commenced On :	29.04.2021
Qty of Sample Received :	Filter Paper & 25ml Solution	Test Completed On :	05.05.2021
Sample Description :	Ambient Air	Sampling Method :	IS 5182:P14
Sample Mark:	Near Sub Station - I		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Permissible limits of NAAQs (Industrial, Residential)
1.	Ammonia (as NH_3)	µg/m³	< 1.0	IS 11255:Part 06	400
2.	Arsenic (as As)	ng/m³	< 0.1	IS 5182:Part 22	6.0
3.	Benzene (C_6H_6)	µg/m³	< 1.0	IS 5182:Part 11	5.0
4.	Benzo-a-Pyrine (BaP)	ng/m³	< 1.0	IS 5182:Part 12	1.0
5.	Carbon Monoxide (as CO)	mg/m³	< 1.2	ECI-SOP-SAM-08	2.0
6.	Lead (as Pb)	µg/m³	< 0.1	IS 5182:Part 22	1.0
7.	Nickel (as Ni)	ng/m³	< 0.1	IS 5182:Part 22	20
8.	Nitrogen dioxide (as NO_2)	µg/m³	25.8	IS 5182:Part 06	80
9.	Ozone (as O_3)	µg/m³	< 9.8	IS 5182:Part 09	180
10.	Particulate Matter ($PM_{2.5}$)	µg/m³	40.6	EPA 40 CFR Part 50 Appendix L	60
11.	Respirable Particulate Matter (PM_{10})	µg/m³	76.2	IS 5182:Part 23	100
12.	Sulphur Dioxide (as SO_2)	µg/m³	13.2	IS 5182:Part 02	80

<--- End of Report --->

Verified By :

Remarks: In the above mentioned location meets the requirements of NAAQs standards with respect to the parameters tested.

For ENVIRO CARE INDIA PRIVATE LIMITED
(Laboratory Division)

Authorized Signatory

ENVIRO CARE INDIA PRIVATE LIMITED MADURAI -16.

CHENNAI Tel : +91 (44) 42867084 Mobile : 9944938637 e-mail : ecichennai@envirocareindia.com

MADURAI Tel : +91 (452) 4355103 Mobile : 8220068555 e-mail : lab@envirocareindia.com

COIMBATORE Tel : +91 (422) 4206686 Mobile : 8056766966 e-mail : ecicbe@envirocareindia.com

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OHSAS : 18001 : 2007 Certified Company

TEST REPORT

Report No :	ECI-AAQ-2021/04/139	Report Date :	05.05.2021
Customer Name & Address	M/s. Ennore Coal Terminal Pvt. Ltd Puzhuthivakkam Village Vallur-Post, PonneriTaluk Thiruvallur District-600 120		
Customer Reference :	ECTPL/JO/24/21-22 Dt:23/04/2021	Sample Reference No :	ECI-AAQ-2021/04/139
Sample Drawn By :	ECI	Sample Received On :	29.04.2021
Sample Collected Date :	28.04.2021	Test Commenced On :	29.04.2021
Qty of Sample Received :	Filter Paper & 25ml Solution	Test Completed On :	05.05.2021
Sample Description :	Ambient Air	Sampling Method :	IS 5182:P14
Sample Mark :	Near Main Gate		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Permissible limits of NAAQs (Industrial/ Residential)
1.	Ammonia (as NH_3)	$\mu g/m^3$	< 1.0	IS 11255:Part 06	400
2.	Arsenic (as As)	ng/m^3	< 0.1	IS 5182:Part 22	6.0
3.	Benzene (C_6H_6)	$\mu g/m^3$	< 1.0	IS 5182:Part 11	5.0
4.	Benzo-a-Pyrine (BaP)	ng/m^3	< 1.0	IS 5182:Part 12	1.0
5.	Carbon Monoxide (as CO)	mg/m^3	< 1.2	ECI-SOP-SAM-08	2.0
6.	Lead (as Pb)	$\mu g/m^3$	< 0.1	IS 5182:Part 22	1.0
7.	Nickel (as Ni)	ng/m^3	< 0.1	IS 5182:Part 22	20
8.	Nitrogen dioxide (as NO_2)	$\mu g/m^3$	30.8	IS 5182:Part 06	80
9.	Ozone (as O_3)	$\mu g/m^3$	< 9.8	IS 5182:Part 09	180
10.	Particulate Matter ($PM_{2.5}$)	$\mu g/m^3$	44.5	EPA 40 CFR Part 50 Appendix L	60
11.	Respirable Particulate Matter (PM_{10})	$\mu g/m^3$	82.3	IS 5182:Part 23	100
12.	Sulphur Dioxide (as SO_2)	$\mu g/m^3$	14.1	IS 5182:Part 02	80

<--- End of Report --->

Verified By :

Remarks: In the above mentioned location meets the requirements of NAAQs standards with respect to the parameters tested.

For ENVIRO CARE INDIA PRIVATE LIMITED
(Laboratory Division)

Authorized Signatory

ENVIRO CARE INDIA PRIVATE LIMITED MADURAI -15.

CHENNAI Tel : +91 [illegible]
Mobile : 9944938637
e-mail : ecichennai@envirocareindia.com

MADURAI Tel : +91 (452) 4355103
Mobile : 8220068555
e-mail : lab@envirocareindia.com

COIMBATORE Tel : +91 (422) 4206686
Mobile : 8056766966
e-mail : ecicbe@envirocareindia.com

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TEST REPORT

Report No :	ECI-AAQ-2021/04/140	Report Date :	05.05.2021
Customer Name & Address	M/s. Ennore Coal Terminal Pvt. Ltd Puzhuthivakkem Village Vallur-Post, PonneriTaluk Thiruvallur District-600 120		
Customer Reference :	ECTPL/JO/24/21-22 Dt:23/04/2021	Sample Reference No :	ECI-AAQ-2021/04/140
Sample Drawn By :	ECI	Sample Received On :	29.04.2021
Sample Collected Date :	28.04.2021	Test Commenced On :	29.04.2021
Qty of Sample Received :	Filter Paper & 25ml Solution	Test Completed On :	05.05.2021
Sample Description :	Ambient Air	Sampling Method :	IS 5182:P14
Sample Mark :	Near Weigh Bridge (BTLS)		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Permissible limits of NAAQs (Industrial, Residential)
1.	Ammonia (as NH_3)	$\mu g/m^3$	< 1.0	IS 11255:Part 06	400
2.	Arsenic (as As)	ng/m^3	< 0.1	IS 5182:Part 22	6.0
3.	Benzene (C_6H_6)	$\mu g/m^3$	< 1.0	IS 5182:Part 11	5.0
4.	Benzo-a-Pyrine (BaP)	ng/m^3	< 1.0	IS 5182:Part 12	1.0
5.	Carbon Monoxide (as CO)	mg/m^3	< 1.2	ECI-SOP-SAM-08	2.0
6.	Lead (as Pb)	$\mu g/m^3$	< 0.1	IS 5182:Part 22	1.0
7.	Nickel (as Ni)	ng/m^3	< 0.1	IS 5182:Part 22	20
8.	Nitrogen dioxide (as NO_2)	$\mu g/m^3$	18.5	IS 5182:Part 06	80
9.	Ozone (as O_3)	$\mu g/m^3$	< 9.8	IS 5182:Part 09	180
10.	Particulate Matter ($PM_{2.5}$)	$\mu g/m^3$	38.4	EPA 40 CFR Part 50 Appendix L	60
11.	Respirable Particulate Matter (PM_{10})	$\mu g/m^3$	73.9	IS 5182:Part 23	100
12.	Sulphur Dioxide (as SO_2)	$\mu g/m^3$	9.6	IS 5182:Part 02	80

<--- End of Report --->

Verified By :

Remarks: In the above mentioned location meets the requirements of NAAQs standards with respect to the parameters tested.

For ENVIRO CARE INDIA PRIVATE LIMITED
(Laboratory Division)

Authorized Signatory

ENVIRO CARE INDIA PRIVATE LIMITED ★ MADURAI ★ -16.

CHENNAI Tel : +91 (44) 42867084
Mobile : 9944938637
e-mail : ecichennai@envirocareindia.com

MADURAI Tel : +91 (452) 4355103
Mobile : 8220068555
e-mail : lab@envirocareindia.com

COIMBATORE Tel : +91 (422) 4206686
Mobile : 8056766966
e-mail : ecicbe@envirocareindia.com

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TEST REPORT

Report No :	ECI-AAQ-2021/04/141	Report Date :	05.05.2021
Customer Name & Address	M/s. Ennore Coal Terminal Pvt. Ltd Puzhuthivakkam Village Vallur-Post, PonneriTaluk Thiruvallur District-600 120		
Customer Reference :	ECTPL/JO/24/21-22 Dt:23/04/2021	Sample Reference No :	ECI-AAQ-2021/04/141
Sample Drawn By :	ECI	Sample Received On :	29.04.2021
Sample Collected Date :	28.04.2021	Test Commenced On :	29.04.2021
Qty of Sample Received :	Filter Paper & 25ml Solution	Test Completed On :	05.05.2021
Sample Description :	Ambient Air	Sampling Method :	IS 5182:P14
Sample Mark :	Near Stores		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Permissible limits of NAAQs (Industrial, Residential)
1.	Ammonia (as NH_3)	$\mu g/m^3$	< 1.0	IS 11255:Part 06	400
2.	Arsenic (as As)	ng/m^3	< 0.1	IS 5182:Part 22	6.0
3.	Benzene (C_6H_6)	$\mu g/m^3$	< 1.0	IS 5182:Part 11	5.0
4.	Benzo-a-Pyrine (BaP)	ng/m^3	< 1.0	IS 5182:Part 12	1.0
5.	Carbon Monoxide (as CO)	mg/m^3	< 1.2	ECI-SOP-SAM-08	2.0
6.	Lead (as Pb)	$\mu g/m^3$	< 0.1	IS 5182:Part 22	1.0
7.	Nickel (as Ni)	ng/m^3	< 0.1	IS 5182:Part 22	20
8.	Nitrogen dioxide (as NO_2)	$\mu g/m^3$	20.4	IS 5182:Part 06	80
9.	Ozone (as O_3)	$\mu g/m^3$	< 9.8	IS 5182:Part 09	180
10.	Particulate Matter ($PM_{2.5}$)	$\mu g/m^3$	38.2	EPA 40 CFR Part 50 Appendix L	60
11.	Respirable Particulate Matter (PM_{10})	$\mu g/m^3$	69.5	IS 5182:Part 23	100
12.	Sulphur Dioxide (as SO_2)	$\mu g/m^3$	9.7	IS 5182:Part 02	80

<--- End of Report --->

Verified By :

Remarks: In the above mentioned location meets the requirements of NAAQs standards with respect to the parameters tested.

For ENVIRO CARE INDIA PRIVATE LIMITED
(Laboratory Division)

ENVIRO CARE INDIA PRIVATE LIMITED ★ MADURAI -16.

Authorized Signatory

CHENNAI Tel : +91 (44) 42867084
Mobile : 9944938637
e-mail : ecichennai@envirocareindia.com

MADURAI Tel : +91 (452) 4355103
Mobile : 8220068555
e-mail : lab@envirocareindia.com

COIMBATORE Tel : +91 (422) 4206686
Mobile : 8056766966
e-mail : ecicbe@envirocareindia.com

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TEST REPORT

Report No :	ECI-AAQ-2021/05/112	Report Date :	29.05.2021
Customer Name & Address	**M/s. Ennore Coal Terminal Pvt. Ltd** Puzhuthivakkam Village Vallur-Post, PonneriTaluk Thiruvallur District-600 120		
Customer Reference :	ECTPL/JO/24/21-22 Dt:23/04/2021	Sample Reference No :	ECI-AAQ-2021/05/112
Sample Drawn By :	ECI	Sample Received On :	24.05.2021
Sample Collected Date :	21.05.2021	Test Commenced On :	24.05.2021
Qty of Sample Received :	Filter Paper & 25ml Solution	Test Completed On :	29.05.2021
Sample Description :	Ambient Air	Sampling Method :	IS 5182:P14
Sample Mark :	Near Sub Station - I		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Permissible limits of NAAQs (Industrial, Residential)
1.	Ammonia (as NH_3)	µg/m³	< 1.0	IS 11255:Part 06	400
2.	Arsenic (as As)	ng/m³	< 0.1	IS 5182:Part 22	6.0
3.	Benzene (C_6H_6)	µg/m³	< 1.0	IS 5182:Part 11	5.0
4.	Benzo-a-Pyrine (BaP)	ng/m³	< 1.0	IS 5182:Part 12	1.0
5.	Carbon Monoxide (as CO)	mg/m³	< 1.2	ECI-SOP-SAM-08	2.0
6.	Lead (as Pb)	µg/m³	< 0.1	IS 5182:Part 22	1.0
7.	Nickel (as Ni)	ng/m³	< 0.1	IS 5182:Part 22	20
8.	Nitrogen dioxide (as NO_2)	µg/m³	24.1	IS 5182:Part 06	80
9.	Ozone (as O_3)	µg/m³	< 9.8	IS 5182:Part 09	180
10.	Particulate Matter ($PM_{2.5}$)	µg/m³	42.9	EPA 40 CFR Part 50 Appendix L	60
11.	Respirable Particulate Matter (PM_{10})	µg/m³	72.6	IS 5182:Part 23	100
12.	Sulphur Dioxide (as SO_2)	µg/m³	11.7	IS 5182:Part 02	80

<--- End of Report --->

Verified By :

Remarks: In the above mentioned location meets the requirements of NAAQs standards with respect to the parameters tested.

For ENVIRO CARE INDIA PRIVATE LIMITED
(Laboratory Division)

Authorized Signatory

ENVIRO CARE INDIA PRIVATE LIMITED MADURAI-18.

CHENNAI Tel : +91 (44) 42867084
Mobile : 9944938637
e-mail : ecichennai@envirocareindia.com

MADURAI Tel : +91 (452) 4355103
Mobile : 8220068555
e-mail : lab@envirocareindia.com

COIMBATORE Tel : +91 (422) 4206686
Mobile : 8056766966
e-mail : ecicbe@envirocareindia.com

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TEST REPORT

Report No.:	ECI-AAQ-2021/05/113	Report Date :	29.05.2021
Customer Name & Address	**M/s. Ennore Coal Terminal Pvt. Ltd** Puzhuthivakkam Village Vallur-Post, PonneriTaluk Thiruvallur District-600 120		
Customer Reference :	ECTPL/JO/24/21-22 Dt:23/04/2021	Sample Reference No :	ECI-AAQ-2021/05/113
Sample Drawn By :	ECI	Sample Received On :	24.05.2021
Sample Collected Date :	21.05.2021	Test Commenced On :	24.05.2021
Qty of Sample Received :	Filter Paper & 25ml Solution	Test Completed On :	29.05.2021
Sample Description :	Ambient Air	Sampling Method :	IS 5182:P14
Sample Mark:	Near Main Gate		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Permissible limits of NAAQs (Industrial, Residential)
1.	Ammonia (as NH_3)	µg/m³	< 1.0	IS 11255:Part 06	400
2.	Arsenic (as As)	ng/m³	< 0.1	IS 5182:Part 22	6.0
3.	Benzene (C_6H_6)	µg/m³	< 1.0	IS 5182:Part 11	5.0
4.	Benzo-a-Pyrine (BaP)	ng/m³	< 1.0	IS 5182:Part 12	1.0
5.	Carbon Monoxide (as CO)	mg/m³	< 1.2	ECI-SOP-SAM-08	2.0
6.	Lead (as Pb)	µg/m³	< 0.1	IS 5182:Part 22	1.0
7.	Nickel (as Ni)	ng/m³	< 0.1	IS 5182:Part 22	20
8.	Nitrogen dioxide (as NO_2)	µg/m³	28.1	IS 5182:Part 06	80
9.	Ozone (as O_3)	µg/m³	< 9.8	IS 5182:Part 09	180
10.	Particulate Matter ($PM_{2.5}$)	µg/m³	43.6	EPA 40 CFR Part 50 Appendix L	60
11.	Respirable Particulate Matter (PM_{10})	µg/m³	78.4	IS 5182:Part 23	100
12.	Sulphur Dioxide (as SO_2)	µg/m³	13.5	IS 5182:Part 02	80

<--- End of Report --->

Verified By : [signature]

Remarks: In the above mentioned location meets the requirements of NAAQs standards with respect to the parameters tested.

For ENVIRO CARE INDIA PRIVATE LIMITED
(Laboratory Division)

[signature]

Authorized Signatory

ENVIRO CARE INDIA PRIVATE LIMITED MADURAI

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TEST REPORT

Report No :	ECI-AAQ-2021/05/114	Report Date :	29.05.2021
Customer Name & Address	**M/s. Ennore Coal Terminal Pvt. Ltd** Puzhuthivakkam Village Vallur-Post, PonneriTaluk Thiruvallur District-600 120		
Customer Reference :	ECTPL/JO/24/21-22 Dt:23/04/2021	Sample Reference No :	ECI-AAQ-2021/05/114
Sample Drawn By :	ECI	Sample Received On :	24.05.2021
Sample Collected Date :	21.05.2021	Test Commenced On :	24.05.2021
Qty of Sample Received :	Filter Paper & 25ml Solution	Test Completed On :	29.05.2021
Sample Description :	Ambient Air	Sampling Method :	IS 5182:P14
Sample Mark :	Near Weigh Bridge (BTLS)		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Permissible limits of NAAQs (Industrial, Residential)
1.	Ammonia (as NH_3)	$\mu g/m^3$	< 1.0	IS 11255:Part 06	400
2.	Arsenic (as As)	ng/m^3	< 0.1	IS 5182:Part 22	6.0
3.	Benzene (C_6H_6)	$\mu g/m^3$	< 1.0	IS 5182:Part 11	5.0
4.	Benzo-a-Pyrine (BaP)	ng/m^3	< 1.0	IS 5182:Part 12	1.0
5.	Carbon Monoxide (as CO)	mg/m^3	< 1.2	ECI-SOP-SAM-08	2.0
6.	Lead (as Pb)	$\mu g/m^3$	< 0.1	IS 5182:Part 22	1.0
7.	Nickel (as Ni)	ng/m^3	< 0.1	IS 5182:Part 22	20
8.	Nitrogen dioxide (as NO_2)	$\mu g/m^3$	20.6	IS 5182:Part 06	80
9.	Ozone (as O_3)	$\mu g/m^3$	< 9.8	IS 5182:Part 09	180
10.	Particulate Matter ($PM_{2.5}$)	$\mu g/m^3$	39.1	EPA 40 CFR Part 50 Appendix L	60
11.	Respirable Particulate Matter (PM_{10})	$\mu g/m^3$	77.8	IS 5182:Part 23	100
12.	Sulphur Dioxide (as SO_2)	$\mu g/m^3$	10.2	IS 5182:Part 02	80

<--- End of Report --->

Verified By :

Remarks: In the above mentioned location meets the requirements of NAAQs standards with respect to the parameters tested.

For ENVIRO CARE INDIA PRIVATE LIMITED
(Laboratory Division)

Authorized Signatory

ENVIRO CARE INDIA PRIVATE LIMITED MADURAI -16.

CHENNAI Tel : +91 (44) 42867084 Mobile : 9944938637 e-mail : ecichennai@envirocareindia.com

MADURAI Tel : +91 (452) 4355103 Mobile : 8220068555 e-mail : lab@envirocareindia.com

COIMBATORE Tel : +91 (422) 4206686 Mobile : 8056766966 e-mail : ecicbe@envirocareindia.com

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TEST REPORT

Accredited by NABL (Chemical & Biological)
Recognised by MoEF & CC vide GSR 683(E) dt 21.08.2009

Report No :	ECI-AAQ-2021/05/115	Report Date :	29.05.2021
Customer Name & Address	M/s. Ennore Coal Terminal Pvt. Ltd Puzhuthivakkam Village Vallur-Post, PonneriTaluk Thiruvallur District-600 120		
Customer Reference :	ECTPL/JO/24/21-22 Dt:23/04/2021	Sample Reference No :	ECI-AAQ-2021/05/115
Sample Drawn By :	ECI	Sample Received On :	24.05.2021
Sample Collected Date :	21.05.2021	Test Commenced On :	24.05.2021
Qty of Sample Received :	Filter Paper & 25ml Solution	Test Completed On :	29.05.2021
Sample Description :	Ambient Air	Sampling Method :	IS 5182:P14
Sample Mark :	Near Stores		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Permissible limits of NAAQs (Industrial, Residential)
1.	Ammonia (as NH_3)	$\mu g/m^3$	< 1.0	IS 11255:Part 06	400
2.	Arsenic (as As)	ng/m^3	< 0.1	IS 5182:Part 22	6.0
3.	Benzene (C_6H_6)	$\mu g/m^3$	< 1.0	IS 5182:Part 11	5.0
4.	Benzo-a-Pyrine (BaP)	ng/m^3	< 1.0	IS 5182:Part 12	1.0
5.	Carbon Monoxide (as CO)	mg/m^3	< 1.2	ECI-SOP-SAM-08	2.0
6.	Lead (as Pb)	$\mu g/m^3$	< 0.1	IS 5182:Part 22	1.0
7.	Nickel (as Ni)	ng/m^3	< 0.1	IS 5182:Part 22	20
8.	Nitrogen dioxide (as NO_2)	$\mu g/m^3$	18.3	IS 5182:Part 06	80
9.	Ozone (as O_3)	$\mu g/m^3$	< 9.8	IS 5182:Part 09	180
10.	Particulate Matter ($PM_{2.5}$)	$\mu g/m^3$	40.6	EPA 40 CFR Part 50 Appendix L	60
11.	Respirable Particulate Matter (PM_{10})	$\mu g/m^3$	72.6	IS 5182:Part 23	100
12.	Sulphur Dioxide (as SO_2)	$\mu g/m^3$	10.3	IS 5182:Part 02	80

<--- End of Report --->

Verified By :

Remarks: In the above mentioned location meets the requirements of NAAQs standards with respect to the parameters tested.

For ENVIRO CARE INDIA PRIVATE LIMITED
(Laboratory Division)

Authorized Signatory

ENVIRO CARE INDIA PRIVATE LIMITED MADURAI -15.

CHENNAI Tel : +91 (44) 42867084
Mobile : 9944938637
e-mail : ecichennai@envirocareindia.com

MADURAI Tel : +91 (452) 4355103
Mobile : 8220068555
e-mail : lab@envirocareindia.com

COIMBATORE Tel : +91 (422) 4206686
Mobile : 8056766966
e-mail : ecicbe@envirocareindia.com

Note : 1. The results relate only to the item tested.
2. Any corrections made to this report is subjected to Madurai jurisdiction only.

Enviro Care®
INDIA PRIVATE LIMITED
ISO 9001 : 2008 Certified Company
ISO 14001 : 2004 Certified Company
OHSAS : 18001 : 2007 Certified Company

TEST REPORT

Report No.	ECI-AAQ-2021/06/193	Report Date	01.07.2021
Customer Name & Address	M/s. Ennore Coal Terminal Pvt. Ltd Puzhuthivakkam Village Vallur-Post, PonneriTaluk Thiruvallur District-600 120		
Customer Reference	ECTPL/JO/24/21-22 Dt:23/04/2021	Sample Reference No	ECI-AAQ-2021/06/193
Sample Drawn By	ECI	Sample Received On	26.06.2021
Sample Collected Date	25.06.2021	Test Commenced On	26.06.2021
Qty of Sample Received	Filter Paper & 25ml Solution	Test Completed On	01.07.2021
Sample Description	Ambient Air	Sampling Method	IS 5182:P14
Sample Mark	Near Main Gate		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Permissible limits of NAAQs (Industrial, Residential)
1.	Ammonia (as NH_3)	$\mu g/m^3$	< 1.0	IS 11255:Part 06	400
2.	Arsenic (as As)	ng/m^3	< 0.1	IS 5182:Part 22	6.0
3.	Benzene (C_6H_6)	$\mu g/m^3$	< 1.0	IS 5182:Part 11	5.0
4.	Benzo-a-Pyrine (BaP)	ng/m^3	< 1.0	IS 5182:Part 12	1.0
5.	Carbon Monoxide (as CO)	mg/m^3	< 1.2	ECI-SOP-SAM-08	2.0
6.	Lead (as Pb)	$\mu g/m^3$	< 0.1	IS 5182:Part 22	1.0
7.	Nickel (as Ni)	ng/m^3	< 0.1	IS 5182:Part 22	20
8.	Nitrogen dioxide (as NO_2)	$\mu g/m^3$	27.9	IS 5182:Part 06	80
9.	Ozone (as O_3)	$\mu g/m^3$	< 9.8	IS 5182:Part 09	180
10.	Particulate Matter ($PM_{2.5}$)	$\mu g/m^3$	45.2	EPA 40 CFR Part 50 Appendix L	60
11.	Respirable Particulate Matter (PM_{10})	$\mu g/m^3$	86.3	IS 5182:Part 23	100
12.	Sulphur Dioxide (as SO_2)	$\mu g/m^3$	12.9	IS 5182:Part 02	80

<--- End of Report --->

Verified By :

Remarks: In the above mentioned location meets the requirements of NAAQs standards with respect to the parameters tested.

For ENVIRO CARE INDIA PRIVATE LIMITED
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Mobile : 9944938637
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OHSAS : 18001 : 2007 Certified Company

TEST REPORT

Report No :	ECI-AAQ-2021/06/192	Report Date :	01.07.2021
Customer Name & Address	M/s. Ennore Coal Terminal Pvt. Ltd Puzhuthivakkam Village Vallur-Post, PonneriTaluk Thiruvallur District-600 120		
Customer Reference :	ECTPL/JO/24/21-22 Dt:23/04/2021	Sample Reference No :	ECI-AAQ-2021/06/192
Sample Drawn By :	ECI	Sample Received On :	26.06.2021
Sample Collected Date :	25.06.2021	Test Commenced On :	26.06.2021
Qty of Sample Received :	Filter Paper & 25ml Solution	Test Completed On :	01.07.2021
Sample Description :	Ambient Air	Sampling Method :	IS 5182:P14
Sample Mark :	Near Weigh Bridge (BTLS)		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Permissible limits of NAAQs (Industrial, Residential)
1.	Ammonia (as NH_3)	$\mu g/m^3$	< 1.0	IS 11255:Part 06	400
2.	Arsenic (as As)	ng/m^3	< 0.1	IS 5182:Part 22	6.0
3.	Benzene (C_6H_6)	$\mu g/m^3$	< 1.0	IS 5182:Part 11	5.0
4.	Benzo-a-Pyrine (BaP)	ng/m^3	< 1.0	IS 5182:Part 12	1.0
5.	Carbon Monoxide (as CO)	mg/m^3	< 1.2	ECI-SOP-SAM-08	2.0
6.	Lead (as Pb)	$\mu g/m^3$	< 0.1	IS 5182:Part 22	1.0
7.	Nickel (as Ni)	ng/m^3	< 0.1	IS 5182:Part 22	20
8.	Nitrogen dioxide (as NO_2)	$\mu g/m^3$	21.1	IS 5182:Part 06	80
9.	Ozone (as O_3)	$\mu g/m^3$	< 9.8	IS 5182:Part 09	180
10.	Particulate Matter ($PM_{2.5}$)	$\mu g/m^3$	40.5	EPA 40 CFR Part 50 Appendix L	60
11.	Respirable Particulate Matter (PM_{10})	$\mu g/m^3$	49.6	IS 5182:Part 23	100
12.	Sulphur Dioxide (as SO_2)	$\mu g/m^3$	9.8	IS 5182:Part 02	80

<--- End of Report --->

Verified By :

Remarks: In the above mentioned location meets the requirements of NAAQs standards with respect to the parameters tested.

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(Laboratory Division)

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e-mail : ecicbe@envirocareindia.com

TEST REPORT

Report No:	ECI-AAQ-2021/06/191	Report Date:	01.07.2021
Customer Name & Address	M/s. Ennore Coal Terminal Pvt. Ltd Puzhuthivakkam Village Vallur-Post, PonneriTaluk Thiruvallur District-600 120		
Customer Reference:	ECTPL/JO/24/21-22 Dt:23/04/2021	Sample Reference No:	ECI-AAQ-2021/06/191
Sample Drawn By:	ECI	Sample Received On:	26.06.2021
Sample Collected Date:	25.06.2021	Test Commenced On:	26.06.2021
Qty of Sample Received:	Filter Paper & 25ml Solution	Test Completed On:	01.07.2021
Sample Description:	Ambient Air	Sampling Method:	IS 5182:P14
Sample Mark:	Near Stores		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Permissible limits of NAAQs (Industrial, Residential)
1.	Ammonia (as NH_3)	$\mu g/m^3$	<1.0	IS 11255:Part 06	400
2.	Arsenic (as As)	ng/m^3	< 0.1	IS 5182:Part 22	6.0
3.	Benzene (C_6H_6)	$\mu g/m^3$	< 1.0	IS 5182:Part 11	5.0
4.	Benzo-a-Pyrine (BaP)	ng/m^3	< 1.0	IS 5182:Part 12	1.0
5.	Carbon Monoxide (as CO)	mg/m^3	< 1.2	ECI-SOP-SAM-08	2.0
6.	Lead (as Pb)	$\mu g/m^3$	< 0.1	IS 5182:Part 22	1.0
7.	Nickel (as Ni)	ng/m^3	< 0.1	IS 5182:Part 22	20
8.	Nitrogen dioxide (as NO_2)	$\mu g/m^3$	19.8	IS 5182:Part 06	80
9.	Ozone (as O_3)	$\mu g/m^3$	< 9.8	IS 5182:Part 09	180
10.	Particulate Matter ($PM_{2.5}$)	$\mu g/m^3$	39.7	EPA 40 CFR Part 50 Appendix L	60
11.	Respirable Particulate Matter (PM_{10})	$\mu g/m^3$	80.6	IS 5182:Part 23	100
12.	Sulphur Dioxide (as SO_2)	$\mu g/m^3$	9.5	IS 5182:Part 02	80

<--- End of Report --->

Verified By :

Remarks: In the above mentioned location meets the requirements of NAAQs standards with respect to the parameters tested.

For ENVIRO CARE INDIA PRIVATE LIMITED
(Laboratory Division)

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ISO 14001 : 2004 Certified Company
OHSAS : 18001 : 2007 Certified Company

TEST REPORT

Report No :	ECI-AAQ-2021/06/194	Report Date :	01.07.2021
Customer Name & Address	M/s. Ennore Coal Terminal Pvt. Ltd Puzhuthiyakkam Village Vallur-Post, PonneriTaluk Thiruvallur District-600 120		
Customer Reference :	ECTPL/JO/24/21-22 Dt:23/04/2021	Sample Reference No :	ECI-AAQ-2021/06/194
Sample Drawn By :	ECI	Sample Received On :	26.06.2021
Sample Collected Date :	25.06.2021	Test Commenced On :	26.06.2021
Qty of Sample Received :	Filter Paper & 25ml Solution	Test Completed On :	01.07.2021
Sample Description :	Ambient Air	Sampling Method :	IS 5182:P14
Sample Mark :	Near Sub Station - I		

S.No	PARAMETERS	UNITS	RESULTS	TEST METHOD	Permissible limits of NAAQs (Industrial, Residential)
1.	Ammonia (as NH_3)	$\mu g/m^3$	< 1.0	IS 11255:Part 06	400
2.	Arsenic (as As)	ng/m^3	< 0.1	IS 5182:Part 22	6.0
3.	Benzene (C_6H_6)	$\mu g/m^3$	< 1.0	IS 5182:Part 11	5.0
4.	Benzo-a-Pyrine (BaP)	ng/m^3	< 1.0	IS 5182:Part 12	1.0
5.	Carbon Monoxide (as CO)	mg/m^3	< 1.2	ECI-SOP-SAM-08	2.0
6.	Lead (as Pb)	$\mu g/m^3$	< 0.1	IS 5182:Part 22	1.0
7.	Nickel (as Ni)	ng/m^3	< 0.1	IS 5182:Part 22	20
8.	Nitrogen dioxide (as NO_2)	$\mu g/m^3$	23.8	IS 5182:Part 06	80
9.	Ozone (as O_3)	$\mu g/m^3$	< 9.8	IS 5182:Part 09	180
10.	Particulate Matter ($PM_{2.5}$)	$\mu g/m^3$	43.2	EPA 40 CFR Part 50 Appendix L	60
11.	Respirable Particulate Matter (PM_{10})	$\mu g/m^3$	78.5	IS 5182:Part 23	100
12.	Sulphur Dioxide (as SO_2)	$\mu g/m^3$	11.0	IS 5182:Part 02	80

<--- End of Report --->

Verified By :

Remarks: In the above mentioned location meets the requirements of NAAQs standards with respect to the parameters tested.

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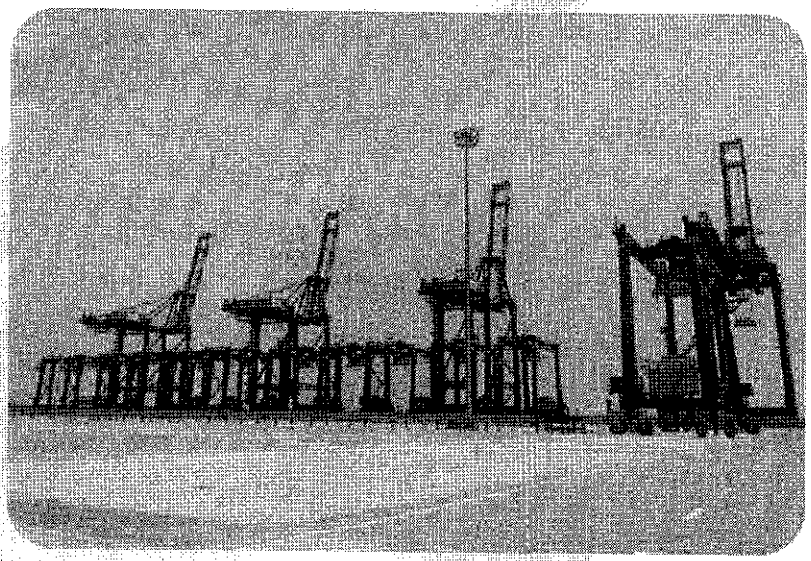
REPORT ON

COMPREHENSIVE ENVIRONMENTAL MONITORING FOR

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

JANUARY 2021 - JUNE 2021



PREPARED BY:

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

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List of Figures

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.

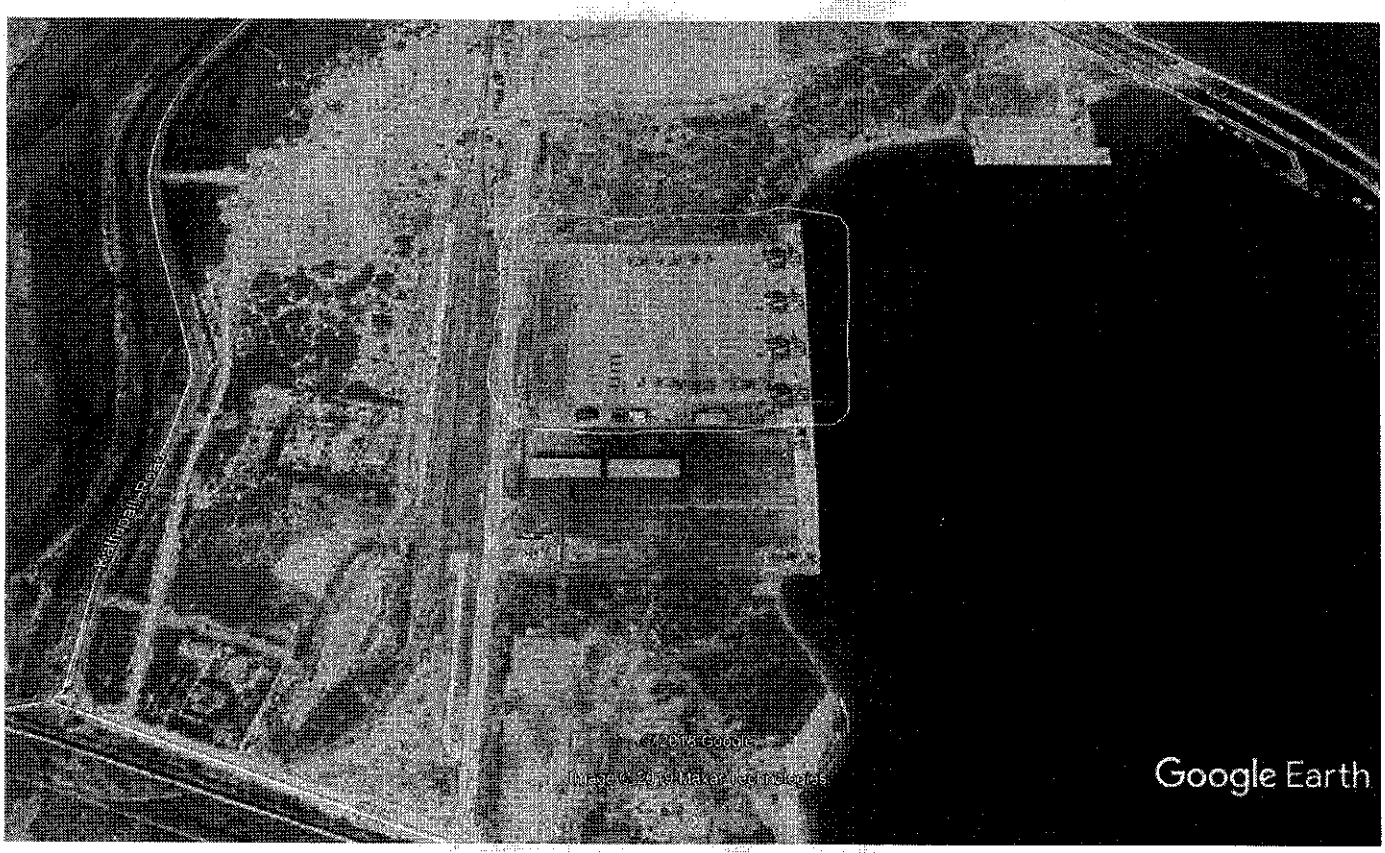
AECTPL have engaged M/s. Green Chem Solutions (P) Ltd, an Accredited Consultant by NABL to carry out the Comprehensive Environmental monitoring studies in the Adani Ennore Port continuously as per the statutory requirement. This report covers the monitored environmental data for the month of January 2021 to June 2021.

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

		• Delta HCH • Endosulfan (Alpha,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 - January 2021 to June 2021

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 January 2021 to June 2021. 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 - 2021

Marine Infrastructure Developer Pvt Ltd

Report Type:Average Report

From: 01-01-2021 00:00:00 To: 31-01-2021 23:59:59

Created By: glensAdmin Created At: 2021-02-05 11:27:48

Date (DD-MM-YYYY)	Wind Speed (km/h)	Wind Direction (Degree)	Atm Temperature (Degree C)	Relative Humidity (%)	Total Rainfall (mm)	Atm Pressure (mBar)	Solar Radiation (w/m2)
01-01-2021	7.74	69.12	29	82	0	1009.45	3.54
02-01-2021	8.33	67.91	28.35	95.38	0	1009.28	1.15
03-01-2021	7.82	75.53	28.76	96.81	0	1007.89	2.39
04-01-2021	8.41	63.93	28.88	94.95	0.09	1008.19	3.18
05-01-2021	5.28	101.12	27.51	99.9	31.94	1008.73	0.65
06-01-2021	3.1	94.08	28.54	99.83	5.48	1007.67	3.23
07-01-2021	3.99	143.29	27.88	99.84	35.33	1006.77	3.06
08-01-2021	2.94	169.89	27.57	99.81	1.06	1006.38	1.92
09-01-2021	4.81	77.39	28.88	98.81	0	1006.91	3.78
10-01-2021	8.01	57.8	28.96	99.74	0	1007.4	3.09
11-01-2021	9.85	67.26	29.12	99.13	0	1008.15	4.41
12-01-2021	11.45	59.99	28.92	98.53	0	1008.34	3.82
13-01-2021	7.85	54.08	29.24	94.63	0	1008.36	4.32
14-01-2021	7.37	64.47	29.24	96.12	0	1007.89	3.9
15-01-2021	5.24	71.08	29.34	84.46	0	1007.64	4.31
16-01-2021	4.49	70.72	28.99	82.39	0	1007.03	4.72
17-01-2021	4.4	118.67	28.47	78.16	0	1008.28	4.94
18-01-2021	5.35	75.31	29.32	75.27	0	1008.87	4.7
19-01-2021	7.68	68.05	29.01	82.43	0	1008.47	4.51
20-01-2021	5.88	106.66	28.48	94.73	0	1008.98	2.87
21-01-2021	3.76	115.84	29.08	98.79	0	1008.36	4.66
22-01-2021	3.29	157.08	29.18	94.77	0	1008.38	4.26
23-01-2021	3.84	87.1	29.41	86.27	0	1008.69	4.86
24-01-2021	4.28	147.86	28.32	89.9	0	1009.39	4.71
25-01-2021	3.98	117.11	28.81	84.94	0	1009.96	4.81
26-01-2021	4.01	137.29	28.76	80.08	0	1009.4	5.01
27-01-2021	3.39	134.19	28.28	84.54	0	1009.61	4.35
28-01-2021	6.12	83.9	29.7	82.43	0	1009.69	4
29-01-2021	6.44	85.47	29.89	81.38	0	1010.04	4.43
30-01-2021	5.25	80.61	29.62	85.61	0	1009.53	4.66
31-01-2021	5.5	78.85	29.48	83.93	0	1010.06	4.78

Feb - 2021

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	
01.02.21	25.9	28.6	27.2	1012.8	1017.2	1014.7	NNE	0	1.8	0.8	72	81	77.1	0.0
02.02.21	26.3	29.4	27.5	1012.9	1016.9	1014.8	N	0	2.2	0.6	73	82	78.1	0.6
03.02.21	25.9	28.2	26.9	1012.7	1016.7	1014.4	N	0	1.8	0.8	68	78	72.5	0.0
04.02.21	23.5	28.6	26.7	1012.5	1016.8	1014.3	NE	0	0.9	0.4	61	85	69.3	0.0
05.02.21	21.5	28.4	26.0	1011.2	1015.7	1013.4	N	0	2.7	0.6	62	87	70.1	0.0
06.02.21	21.2	28.3	25.9	1010.5	1014.2	1012.3	N	0	0.9	0.4	67	90	73.9	0.0
07.02.21	21	28.3	25.1	1011	1014.8	1012.7	N	0	2.2	0.6	72	92	80.5	0.0
08.02.21	24.8	28.6	26.7	1011.8	1015.6	1013.6	N	0	1.3	0.5	68	79	73.8	0.0
09.02.21	25.8	29.4	27.0	1011	1015.5	1012.9	N	0	0.9	0.4	59	84	68.5	0.0
10.02.21	24.7	28.3	26.4	1009.8	1014.4	1012.0	N	0	0.4	0.2	62	76	69.5	0.0
11.02.21	21.1	27.3	25.5	1009.5	1013.7	1011.6	E	0	0.9	0.2	64	89	71.1	0.0
12.02.21	21.4	28.7	25.9	1010.6	1014.1	1012.2	N	0	0.9	0.3	61	83	69.6	0.0
13.02.21	21.4	27.8	25.3	1011.8	1015	1013.2	N	0	1.3	0.4	71	86	77.7	0.0
14.02.21	21.1	28	25.6	1011.2	1014.9	1013.1	N	0	0.9	0.3	64	91	77.3	0.0
15.02.21	21.6	28.1	25.3	1009.5	1013.9	1012.0	N	0	0.9	0.3	71	91	79.8	0.0
16.02.21	20.8	27.6	25.5	1009.3	1013.7	1011.4	N	0	1.3	0.4	74	92	79.2	0.0
17.02.21	22.1	29	27.2	1009.1	1015	1012.4	E	0	1.8	1.0	69	80	73.1	0.0
18.02.21	26.1	29	27.2	1010.8	1015	1012.4	N	0.4	1.8	1.0	70	80	73.1	0.0
19.02.21	23.9	28.6	26.4	1010.6	1014.9	1012.6	N	0	2.7	1.0	79	90	83.8	0.4
20.02.21	22.9	27.8	25.5	1010.8	1014.6	1012.7	N	0	3.6	1.7	78	93	84.5	0.0
21.02.21	24.9	27.6	26.3	1011.3	1015.3	1013.2	N	0.4	2.2	1.3	78	88	83.6	0.0
22.02.21	24.4	28.7	27.1	1011.6	1015.6	1013.2	N	0	0.9	0.4	77	93	83.2	0.0
23.02.21	23	28.9	26.6	1009.6	1014.8	1011.9	N	0	0.9	0.3	76	94	83.3	0.0
24.02.21	22.6	28.7	26.2	1009.1	1013.1	1011.1	N	0	1.3	0.3	70	95	81.8	0.0
25.02.21	22	28.1	26.0	1008.7	1013.7	1010.8	N	0	2.7	0.7	75	93	81.9	0.0
26.02.21	22.4	27.8	25.8	1006.5	1012.1	1009.2	ESE	0	2.7	1.3	80	94	85.8	0.0
27.02.21	22.2	27.9	25.7	1006.1	1010.7	1008.3	SE	0	3.6	1.9	81	97	88.2	0.0
28.02.21	22.6	27.1	25.5	1007	1011.9	1009.3	N	0	3.1	1.5	83	97	89.1	0.0

Mar - 2021

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	
01.03.21	22	28.2	26.0	1009.8	1014.1	1012.0	N	0	3.6	2.1	81	97	87.2	0.0
02.03.21	23.2	28.2	26.2	1010.4	1014.5	1012.4	N	0.4	3.1	1.8	79	95	85.8	0.0
03.03.21	22.2	27.7	25.9	1009.9	1013.3	1011.5	ESE	0	2.7	1.0	73	93	83.5	0.0
04.03.21	22.3	28.1	26.0	1010.6	1013.8	1012.0	N	0	2.7	0.9	72	93	80.4	0.0
05.03.21	22.2	28.8	26.3	1010.7	1015	1012.7	N	0	2.7	0.8	74	92	81.5	0.0
06.03.21	23.2	28	26.2	1009.8	1014.8	1012.1	N	0	3.1	1.6	79	92	85.3	0.0
07.03.21	23.8	28.4	26.7	1008.8	1013.6	1011.3	N	0	3.6	1.9	79	94	86.6	0.0
08.03.21	24	29.2	27.3	1009.9	1014.5	1011.9	N	0	3.1	1.4	77	95	83.6	0.0
09.03.21	25.2	29.6	28.0	1010.7	1014.6	1012.5	E	0	2.7	0.9	78	92	82.9	0.0
10.03.21	27.1	29.9	28.2	1009.5	1014.6	1012.2	N	0.4	3.1	1.6	79	87	83.9	0.0
11.03.21	25.1	28.6	27.5	1009.2	1014.8	1012.1	N	0	3.6	2.4	79	91	82.6	0.0
12.03.21	23.4	28.8	26.8	1011.5	1016.1	1013.4	ESE	0	3.1	1.5	74	95	82.1	0.0
13.03.21	22.7	29.5	27.0	1010.9	1015.5	1012.8	ENE	0	1.3	0.7	75	93	81.4	0.0
14.03.21	23.4	29.4	27.2	1008.8	1013.4	1011.1	N	0	2.2	1.2	68	93	82.0	0.0
15.03.21	23.8	29.7	27.3	1008.3	1012.5	1010.2	N	0	1.8	0.5	76	94	84.9	0.0
16.03.21	24	29.1	27.1	1008.5	1012.3	1010.2	N	0	2.2	0.7	79	95	85.6	0.0
17.03.21	23.4	29.3	27.5	1007.7	1011.7	1009.7	ESE	0	1.3	0.3	79	93	80.4	0.0
18.03.21	24.3	29.3	27.5	1008	1011.7	1009.7	ESE	0	1.3	0.3	72	93	80.4	0.0
19.03.21	24.4	28.9	27.5	1007.3	1012	1009.4	N	0	3.1	0.9	74	87	79.3	0.0
20.03.21	23.4	28.9	26.7	1006.2	1010.4	1008.3	ESE	0	2.7	0.8	78	93	85.2	0.0
21.03.21	23.6	29.9	27.5	1006	1009.8	1007.8	ESE	0	0.9	0.3	75	95	84.0	0.0
22.03.21	25.2	29.6	27.9	1007.1	1011.9	1009.3	ESE	0	3.1	1.2	77	92	82.8	0.0
23.03.21	24.7	30.3	28.3	1008.4	1012.4	1010.3	ESE	0	1.8	0.4	75	92	81.2	0.0
24.03.21	24.4	30.5	28.1	1007.7	1012.9	1010.2	ENE	0	0.4	0.1	77	93	84.5	0.0
25.03.21	24.7	29.4	27.8	1007	1011.3	1009.1	ESE	0	1.8	0.4	80	95	87.3	0.0
26.03.21	25.1	29.8	28.1	1006.1	1011.1	1008.4	E	0	3.1	0.6	80	95	86.4	0.0
27.03.21	25.4	29.3	28.0	1005.9	1010.4	1008.0	ESE	0	3.1	1.1	79	94	86.2	0.0
28.03.21	25.3	29.9	28.1	1004.7	1009.5	1007.5	SE	0	3.6	1.9	82	93	87.0	0.0
29.03.21	27	29.9	28.7	1004.6	1009.3	1007.1	SSE	0.4	3.6	2.6	84	93	88.1	0.0
30.03.21	27.8	34.1	29.4	1001.7	1007.9	1005.2	SE	0.4	3.6	2.6	67	94	84.7	0.0
31.03.21	27.8	30.2	29.0	1000.3	1005.7	1003.2	SSE	0.9	4.5	3.1	81	94	88.6	0.0

Apr - 2021

Marine Infrastructure Developer Pvt Ltd							
Report Type:Average Report							
From: 01-04-2021 00:00:00 To: 30-04-2021 23:59:59							
Created By: glensAdmin Created At: 2021-05-04 10:05:05							
Date-(DD-MM-YYYY)	Wind Speed (km/h)	Wind Direction (Degree)	Atm Temperature (Degree C)	Relative Humidity (%)	Total Rainfall (mm)	Atm Pressure (mBar)	Solar Radiaton (w/m2)
Avg	3.98	212.85	32.35	91.71	0.22	1005.39	249.39
Min	2.98	159.54	30.11	84.77	0	1000.23	146.97
Max	5.9	244.05	33.59	96.49	6.62	1008.16	284.67
01-04-2021	5.1	228.11	32.79	92.35	0	1000.23	227.78
02-04-2021	5.77	215.08	33.59	86.09	0	1000.41	223.52
03-04-2021	5.9	224.42	32.64	91.62	0	1001.76	229.42
04-04-2021	3.92	202.17	32.39	96.49	0	1003.62	194.55
05-04-2021	4.69	164.52	32.16	95.03	0	1005.07	246.27
06-04-2021	3.29	187.64	31.8	89.88	0	1006.42	236.77
07-04-2021	3.47	240.33	31.71	89.21	0	1006.86	228.68
08-04-2021	4.61	239.21	31.21	89.3	0	1005.28	236.78
09-04-2021	4.12	228.94	31.38	84.77	0	1005.12	236.12
10-04-2021	4.06	198.76	31.56	88.27	0	1006.65	274.66
11-04-2021	4.39	159.54	31.72	91.83	0	1007.96	271.9
12-04-2021	3.66	193.23	32.61	88.01	0	1008.16	269.83
13-04-2021	3.7	201.6	32.36	89.92	0	1007.58	248.45
14-04-2021	3.05	212.55	31.65	93.31	0	1006.81	146.97
15-04-2021	4.07	176.32	30.11	91.52	6.62	1006.44	198.32
16-04-2021	4.1	220.39	31.25	93.13	0	1005.71	283.72
17-04-2021	4.25	211.81	32.36	92	0	1006.22	274.01
18-04-2021	3.94	237.91	32.61	93.13	0	1007.01	275.44
19-04-2021	3.76	234.45	32.96	93.96	0	1004.73	277.04
20-04-2021	4.04	233.37	32.98	92.68	0	1003.92	265.46
21-04-2021	3.81	238.4	32.88	93.33	0	1005.51	269.56
22-04-2021	4.21	235.02	32.78	93.05	0	1005.85	268.13
23-04-2021	3.26	217.8	32.75	93.24	0	1005.55	228.72
24-04-2021	2.98	212.94	32.61	95.51	0	1005.32	231.64
25-04-2021	3.23	233.12	32.81	93.08	0	1005.16	269.76
26-04-2021	3.53	244.05	32.77	89.37	0	1004.71	284.67
27-04-2021	3.22	219.08	32.85	92.39	0	1005.27	251.77
28-04-2021	3.51	218.4	32.88	94.39	0	1005.59	259.79
29-04-2021	3.82	190.46	33.01	92.47	0	1004.96	264.46
30-04-2021	3.94	165.76	33.18	91.94	0	1004.73	277.46

May - 2021

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	
01.05.21	28.1	32.2	30.2	1004.7	1009.9	1007.7	SE	0	5.4	3.6	71	91	85.0	0.0
02.05.21	28.8	31.4	30.2	1003.7	1009.4	1006.5	SE	0.4	4.9	3.4	82	90	85.7	0.0
03.05.21	28.2	31	30.1	1004.8	1008.4	1006.5	SE	0.4	7.2	4.2	83	90	85.7	0.0
04.05.21	27.8	31.2	29.9	1005.7	1009.9	1007.6	SE	0	8.5	4.8	79	91	84.0	0.0
05.05.21	29.4	30.9	30.1	1004.8	1010.4	1007.6	SE	0.4	3.6	2.3	81	86	83.0	0.0
06.05.21	29.4	31.2	30.3	1006.2	1011	1008.5	ESE	0.9	3.6	2.5	80	86	83.8	0.0
07.05.21	28.6	31	30.1	1007	1010.2	1008.7	ESE	0	4	2.2	81	88	83.8	0.0
08.05.21	28.2	31.6	30.1	1005.5	1008.8	1007.2	ESE	0	3.6	1.6	80	89	83.5	0.0
09.05.21	28.8	31.6	30.3	1004.4	1008.3	1006.4	N	0	3.6	2.0	78	88	83.5	0.0
10.05.21	28.3	31.6	30.2	1003.9	1007.9	1006.0	SE	0.4	3.6	2.6	79	90	84.5	0.0
11.05.21	25.7	31.7	30.1	1002.3	1007	1005.2	N	0.9	4	2.7	81	91	86.4	0.6
12.05.21	29.4	31.1	30.2	1001.3	1005.8	1003.8	SSE	1.8	4	3.0	85	92	88.2	0.0
13.05.21	29.3	31.1	30.2	1001.2	1005.6	1003.8	SE	0.9	4	2.7	85	92	88.7	0.0
14.05.21	29.4	30.7	30.1	1001.3	1004.4	1002.9	SE	2.7	4	3.5	77	91	85.9	0.0
15.05.21	29.3	30.8	29.9	1000.8	1005.5	1003.1	SE	2.2	4.5	3.5	78	92	84.9	0.0
16.05.21	28.9	30.8	29.5	1002.6	1007.5	1004.8	SSE	2.7	4.5	3.3	79	93	89.3	0.0
17.05.21	28.9	30.6	29.5	1003.4	1006.9	1005.3	N	1.8	4	3.2	81	94	91.0	0.0
18.05.21	28.6	30.6	29.5	1003.4	1006.9	1005.3	SSE	2.2	4	3.2	87	94	91.0	0.0
19.05.21	28.2	31.7	29.6	1002.3	1006.9	1004.7	N	0	4	2.2	74	94	87.2	0.0
20.05.21	26.9	32.9	28.6	1003	1007.2	1005.3	N	0	3.6	2.0	71	90	84.1	0.0
21.05.21	25.9	34.2	27.9	1003.2	1006.2	1005.0	N	0.4	3.6	2.2	65	91	85.4	0.4
22.05.21	28.3	31.9	29.7	1002.2	1006	1004.0	N	0.4	2.7	1.5	72	91	82.0	0.0
23.05.21	28.4	33.8	30.2	1002.3	1006.1	1003.9	N	0.4	3.1	2.0	67	92	84.0	0.0
24.05.21	29.3	34.1	31.6	1000	1004.4	1002.1	N	0	3.1	1.5	67	90	75.5	0.0
25.05.21	27.9	36.2	31.3	999.3	1003.1	1001.2	N	0.9	4.9	3.0	58	91	72.1	0.0
26.05.21	29.9	36.7	32.1	998	1003.1	1000.5	N	0.4	3.1	2.4	56	88	72.4	0.0
27.05.21	28.7	37.2	31.8	1000	1005.1	1002.6	N	0	3.6	1.3	53	93	74.0	0.0
28.05.21	29.1	34.2	30.8	1001.8	1006.1	1004.2	N	0	4	2.4	62	90	79.3	0.0
29.05.21	29.4	34.4	30.9	1002.6	1006.2	1004.5	N	0.4	3.6	1.8	64	91	80.9	0.0
30.05.21	27.9	34.9	31.0	1002.2	1005.3	1003.8	N	0.9	3.6	2.2	63	86	77.4	0.0
31.05.21	29.3	35.9	30.5	1000.7	1008.5	1004.1	N	0.9	8	4.8	62	92	86.4	0.0

Jun - 2021

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	
01.06.21	29.4	34.6	30.9	1001.6	1005.3	1003.6	N	0	3.1	1.8	66	90	81.9	0.0
02.06.21	29.4	31.1	30.3	1002.2	1006.1	1004.4	N	0.9	3.1	2.4	77	94	87.0	0.0
03.06.21	29.1	32.9	30.2	1004	1008	1005.8	N	2.2	3.6	2.9	69	94	87.1	0.0
04.05.21	28.2	31	29.7	1004.1	1009.1	1007.0	N	0	4	2.1	83	93	88.2	0.0
05.06.21	28.7	30.2	29.5	1003.9	1008.3	1006.5	N	0	4	2.5	82	90	86.8	0.0
06.06.21	26.8	31.3	29.2	1003.7	1008.4	1006.2	N	0	3.6	1.9	74	87	83.7	0.0
07.06.21	29.2	34.3	30.4	1003.1	1007.6	1005.7	N	0.9	3.6	2.4	69	89	83.2	0.2
08.06.21	26.7	33.3	29.5	1002.6	1007	1005.1	N	0.4	4	2.4	73	93	87.4	6.4
09.06.21	27.7	35.9	30.6	1001.4	1005.1	1003.6	N	0.4	3.6	2.4	59	92	79.0	1.0
10.06.21	29.1	34.9	30.7	1000.2	1004.2	1002.5	N	0.4	3.6	2.2	57	93	77.4	0.0
11.06.21	29.4	33.6	31.4	1001	1004.5	1002.6	N	0.9	3.1	2.4	61	87	69.6	0.0
12.06.21	27.1	35.7	30.7	1001	1004	1002.6	N	1.8	4	2.7	58	89	72.9	1.6
13.06.21	28.1	35.2	31.0	999.9	1004.2	1002.2	N	2.2	6.7	3.6	57	85	70.1	0.6
14.06.21	29.4	34.1	31.0	999.7	1004.1	1002.1	N	0.9	4.9	3.2	62	76	69.5	0.0
15.06.21	27.4	36.7	30.8	999.5	1003.5	1001.7	N	1.8	4.9	3.8	54	92	73.6	0.0
16.06.21	28.8	35.8	31.2	1000.2	1005.2	1003.0	N	0.4	4.5	2.7	56	92	71.9	0.0
17.06.21	28.8	34.3	30.4	1001.6	1007.5	1005.3	N	0.9	4	2.3	55	89	75.2	0.0
18.06.21	28.9	34.3	30.4	1003.5	1007.5	1005.3	N	0	4	2.3	60	89	75.2	0.0
19.06.21	28.6	35.1	30.3	1004.4	1009	1006.7	N	1.8	3.1	2.5	56	91	75.5	0.0
20.06.21	28.8	35.8	30.7	1004.5	1008.9	1006.8	N	0.4	3.1	2.0	56	89	75.2	0.0
21.06.21	28.8	34.3	30.5	1003.4	1007.6	1005.6	N	0.4	3.1	2.1	59	88	78.3	0.0
22.06.21	26.9	33	29.2	1002.6	1007.1	1005.1	N	0.9	3.6	2.5	65	90	82.8	0.0
23.06.21	28.8	32.8	29.6	1003.2	1006.8	1005.0	N	0.4	3.1	2.1	69	91	84.7	1.6
24.06.21	24	33.8	28.7	1003.4	1007.3	1005.6	N	0.9	3.1	2.0	65	94	84.0	5.0
25.06.21	27.5	33.4	29.9	1001.3	1006	1004.1	N	0	3.1	1.4	62	92	81.0	0.0
26.06.21	27.9	32.4	30.1	1002	1005.1	1003.6	N	0	3.1	1.6	66	91	78.0	0.0
27.06.21	27.3	31.8	29.0	1003.5	1006.9	1005.1	N	0.4	3.1	1.8	70	89	81.0	0.0
28.06.21	24.6	31.5	27.7	1004.1	1008	1005.8	N	0.4	3.6	2.1	74	95	88.3	4.2
29.06.21	26.9	30.3	29.0	1003.5	1006.9	1005.4	N	0.4	3.6	2.6	80	94	87.5	0.0
30.06.21	27.9	30.1	29.2	1002.2	1006.3	1004.5	N	2.2	3.6	2.9	82	94	88.8	0.0

WIND PATTERN - Jan- 2021

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 (%)
N	68	84	12	0	0	0		164	
NNE	200	129	27	0	0	0		356	
NE	89	26	4	0	0	0		119	
ENE	17	3	1	0	0	0		21	
E	11	4	2	0	0	0		17	
ESE	0	1	1	0	0	0		2	
SE	0	0	0	0	0	0		0	
SSE	1	0	0	0	0	0		1	
S	0	0	0	0	0	0		0	
SSW	0	0	0	0	0	0		0	
SW	0	0	0	0	0	0		0	
WSW	0	0	0	0	0	0		0	
W	7	0	0	0	0	0		7	
WNW	32	2	0	1	0	0		35	
NW	6	3	4	3	0	0		16	
NNW	2	3	0	0	0	0		5	
								743	

Number of events	433	255	51	4	0	0	743
Events (%)	58.3	34.3	6.9	0.5	0.0	0.0	

WIND PATTERN - Feb- 2021

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 (%)
N	233	63	14	7	0	0		317	
NNE	53	5	0	0	0	0		58	
NE	72	0	1	0	0	0		73	
ENE	40	3	0	0	0	0		43	
E	48	3	1	0	0	0		52	
ESE	8	7	7	0	0	0		22	
SE	5	5	8	8	0	0		26	
SSE	1	2	0	0	0	0		3	
S	1	0	0	0	0	0		1	
SSW	0	0	0	0	0	0		0	
SW	10	4	0	0	0	0		14	
WSW	5	0	0	0	0	0		5	
W	18	0	0	0	0	0		18	
WNW	30	1	0	0	0	0		31	
NW	5	1	1	0	0	0		7	
NNW	1	0	0	0	0	0		1	
								671	

Number of events	530	94	32	15	0	0	671
Events (%)	79	14	4.8	2.2	0.0	0.0	

WIND PATTERN - Mar- 2021

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 (%)
N	65	49	49	40	0	0	1.74	203	27.4
NNE	1	0	0	0	0	0	0.00	1	0.1
NE	4	0	0	0	0	0	0.20	4	0.5
ENE	29	2	0	0	0	0	0.93	31	4.2
E	72	15	0	0	0	0	0.88	87	11.7
ESE	62	28	41	10	0	0	1.78	141	19.0
SE	27	15	12	24	5	0	2.43	83	11.2
SSE	15	7	8	10	2	0	2.23	42	5.7
S	2	4	2	3	0	0	2.10	11	1.5
SSW	1	2	1	2	0	0	1.78	6	0.8
SW	18	7	2	2	0	0	1.46	29	3.9
WSW	20	0	0	0	0	0	0.20	20	2.7
W	31	1	0	0	0	0	0.65	32	4.3
WNW	44	0	0	0	0	0	0.00	44	5.9
NW	7	0	0	0	0	0	0.00	7	0.9
NNW	0	0	0	0	0	0	0.00	0	0.0
								741	

Number of events	398	130	115	91	7	0	741
Events (%)	53.7	17.5	15.5	12.3	0.8	0.0	

WIND PATTERN - Apr- 2021

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 (%)
N	65	49	49	40	0	0	1.74	203	27.4
NNE	1	0	0	0	0	0	0.00	1	0.1
NE	4	0	0	0	0	0	0.20	4	0.5
ENE	29	2	0	0	0	0	0.93	31	4.2
E	72	15	0	0	0	0	0.88	87	11.7
ESE	62	28	41	10	0	0	1.78	141	19.0
SE	27	15	12	24	5	0	2.43	83	11.2
SSE	15	7	8	10	2	0	2.23	42	5.7
S	2	4	2	3	0	0	2.10	11	1.5
SSW	1	2	1	2	0	0	1.78	6	0.8
SW	18	7	2	2	0	0	1.46	29	3.9
WSW	20	0	0	0	0	0	0.20	20	2.7
W	31	1	0	0	0	0	0.65	32	4.3
WNW	44	0	0	0	0	0	0.00	44	5.9
NW	7	0	0	0	0	0	0.00	7	0.9
NNW	0	0	0	0	0	0	0.00	0	0.0
								741	

Number of events	398	130	115	91	7	0	741
Events (%)	53.7	17.5	15.5	12.3	0.8	0.0	

WIND PATTERN - May- 2021

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 (%)
N	83	68	95	87	5	1	[illegible]	339	[illegible]
NNE	0	0	0	0	0	0	[illegible]	0	[illegible]
NE	0	0	0	0	0	0	[illegible]	0	[illegible]
ENE	0	0	0	0	0	0	[illegible]	0	[illegible]
E	0	0	0	0	0	0	[illegible]	0	[illegible]
ESE	3	3	10	32	0	0	[illegible]	48	[illegible]
SE	8	8	20	110	17	36	[illegible]	199	[illegible]
SSE	12	16	55	38	3	4	[illegible]	128	[illegible]
S	6	2	7	1	0	0	[illegible]	16	[illegible]
SSW	0	0	0	0	1	1	[illegible]	2	[illegible]
SW	4	0	0	0	1	0	[illegible]	5	[illegible]
WSW	0	0	0	0	0	0	[illegible]	0	[illegible]
W	2	0	0	0	0	0	[illegible]	2	[illegible]
WNW	4	0	0	0	0	0	[illegible]	4	[illegible]
NW	0	0	0	0	0	0	[illegible]	0	[illegible]
NNW	0	0	0	0	0	0	[illegible]	0	[illegible]
								743	

Number of events	122	97	187	268	27	42	743
Events (%)	16.4	13.1	25.2	36.1	3.6	5.7	

WIND PATTERN - Jun- 2021

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 (%)
N	104	119	228	213	35	2	[illegible]	701	[illegible]
NNE	0	0	0	0	0	0	[illegible]	0	[illegible]
NE	0	0	1	2	0	0	[illegible]	3	[illegible]
ENE	0	0	0	0	0	0	[illegible]	0	[illegible]
E	0	0	0	0	0	0	[illegible]	0	[illegible]
ESE	0	0	0	0	0	0	[illegible]	0	[illegible]
SE	0	0	1	3	0	0	[illegible]	4	[illegible]
SSE	0	0	4	1	1	0	[illegible]	6	[illegible]
S	0	1	2	1	0	0	[illegible]	4	[illegible]
SSW	0	0	0	0	0	0	[illegible]	0	[illegible]
SW	0	0	0	1	0	0	[illegible]	1	[illegible]
WSW	0	0	0	0	0	0	[illegible]	0	[illegible]
W	0	0	0	0	0	0	[illegible]	0	[illegible]
WNW	0	0	0	0	0	0	[illegible]	0	[illegible]
NW	0	0	0	0	0	0	[illegible]	0	[illegible]
NNW	0	0	0	0	0	0	[illegible]	0	[illegible]
								719	

Number of events	104	120	236	221	36	2	719
Events (%)	14.5	16.7	32.8	30.7	5.0	0.3	

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.

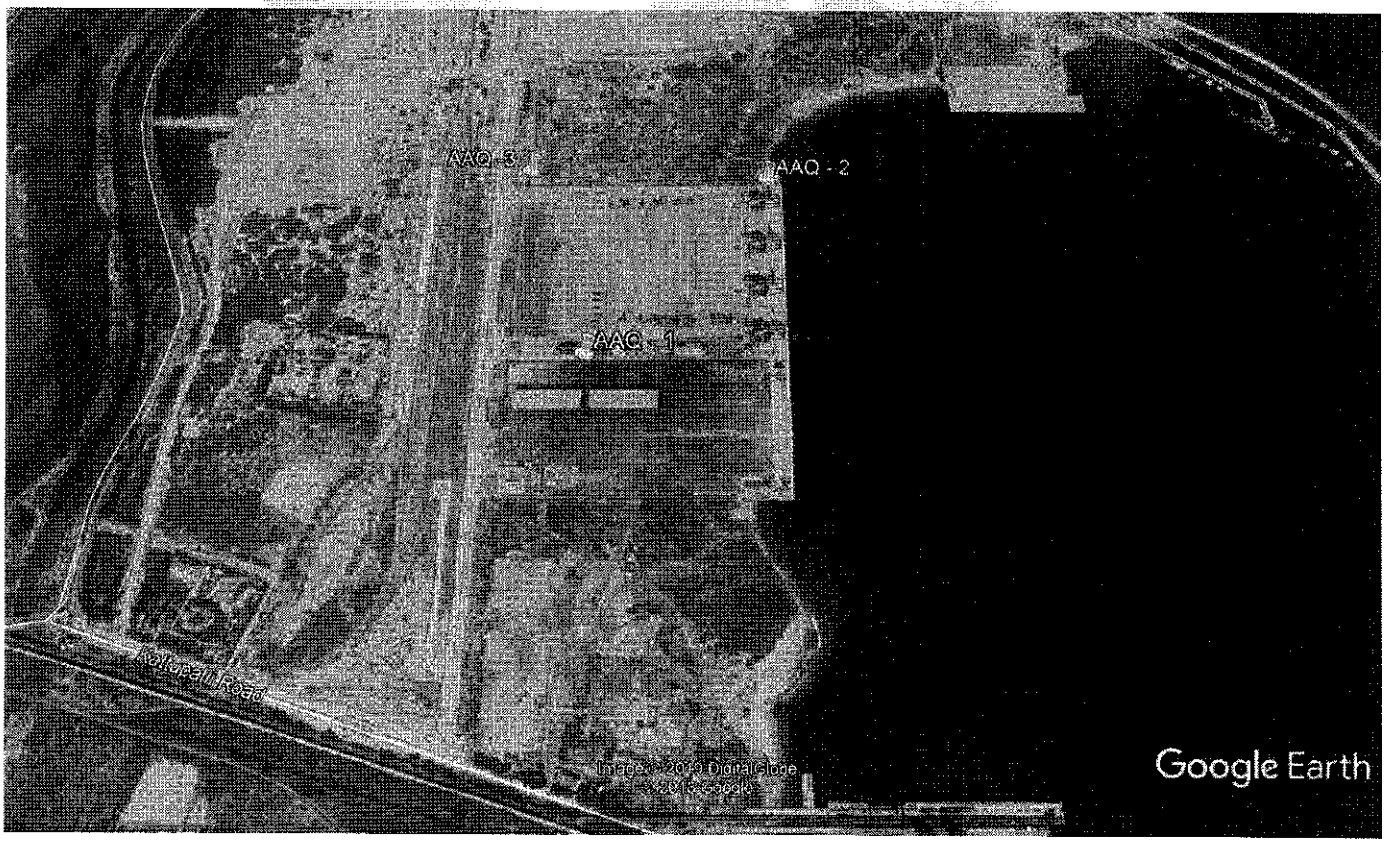
Frequency of Monitoring

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 LOCATION MAP



METHODOLOGY USED FOR AMBIENT AIR QUALITY MONITORING

S.No	Parameter	METHODOLOGY	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

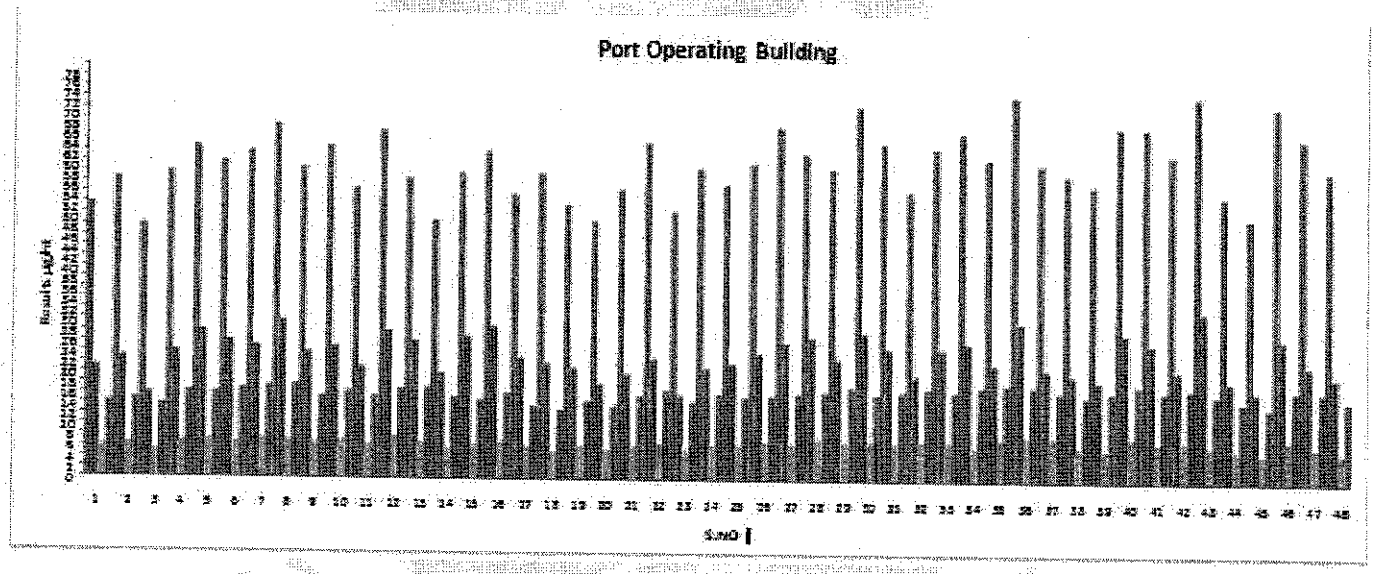
Results and Discussion

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

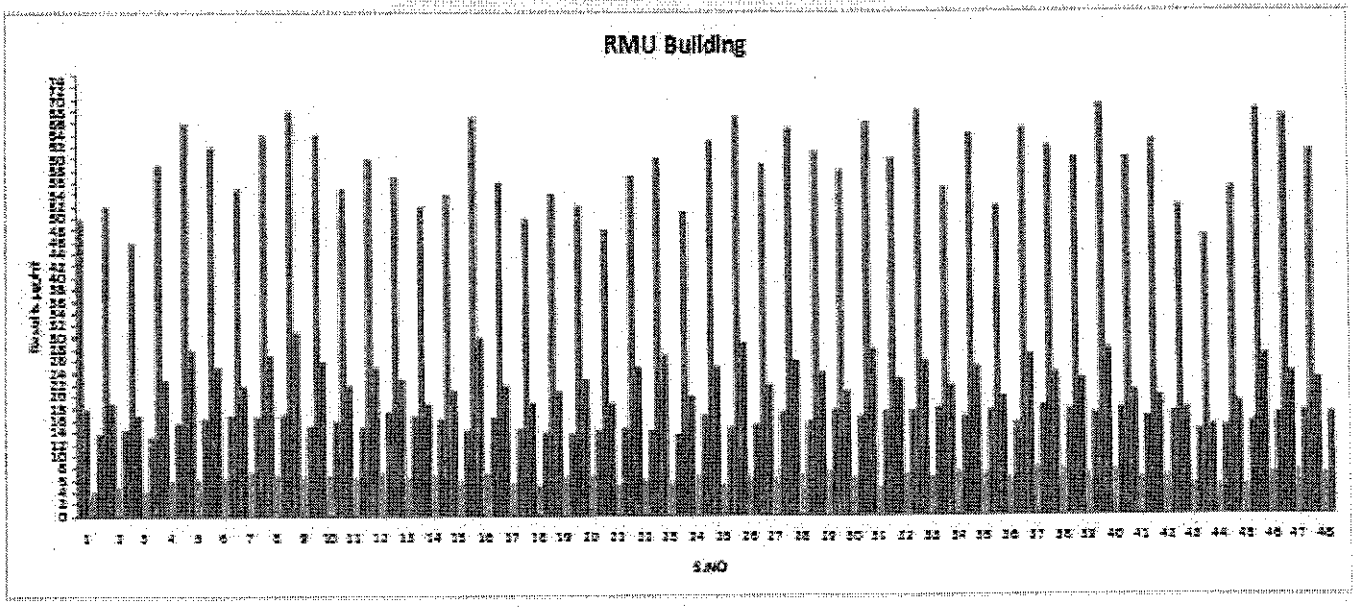
PORT OPERATING BUILDING (AAQ1)														
Parameters			Particular matter PM10	Particular matter PM2.5	Sulphur dioxide as SO2	Nitrogen dioxide as NO2	Lead as Pb	Carbon monoxide as CO	Ozone as O3	Ammonia as NH3	Arsenic as As	Nickel as Ni	Benzene as C6H6	Benzo (a) pyrene as BaP
Unit			µg/m3	µg/m3	µg/m3	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	04.01.2021	GCS/LAB/S/3176/20-21	52	21	5.8	14.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
2	06.01.2021	GCS/LAB/S/3176/20-21	57	23	6.4	15.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
3	08.01.2021	GCS/LAB/S/3176/20-21	48	16	5.1	14.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
4	11.01.2021	GCS/LAB/S/3176/20-21	58	24	7.0	16.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
5	18.01.2021	GCS/LAB/S/3176/20-21	63	28	7.4	16.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
6	22.01.2021	GCS/LAB/S/3176/20-21	60	26	6.8	17.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
7	27.01.2021	GCS/LAB/S/3176/20-21	62	25	7.5	17.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
8	29.01.2021	GCS/LAB/S/3176/20-21	67	30	7.3	17.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
9	01.02.2021	GCS/LAB/S/3219/20-21	59	24	6.7	15.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
10	05.02.2021	GCS/LAB/S/3219/20-21	63	25	7.0	16.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
11	08.02.2021	GCS/LAB/S/3219/20-21	55	21	6.3	15.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
12	12.02.2021	GCS/LAB/S/3219/20-21	66	28	7.9	17.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
13	15.02.2021	GCS/LAB/S/3219/20-21	57	26	6.9	17.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
14	19.02.2021	GCS/LAB/S/3219/20-21	49	20	5.7	15.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
15	22.02.2021	GCS/LAB/S/3219/20-21	58	27	6.3	15.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
16	26.02.2021	GCS/LAB/S/3219/20-21	62	29	6.8	16.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
17	01.03.2021	GCS/LAB/S/3313/20-21	54	23	6.0	13.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
18	05.03.2021	GCS/LAB/S/3313/20-21	58	22	5.0	13.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1

19	08.03.2021	GCS/LAB/S/3313/20-21	52	21	6.1	14.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
20	12.03.2021	GCS/LAB/S/3313/20-21	49	18	5.5	14.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
21	15.03.2021	GCS/LAB/S/3313/20-21	55	20	6.3	15.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
22	19.03.2021	GCS/LAB/S/3313/20-21	64	23	6.8	17.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
23	22.03.2021	GCS/LAB/S/3313/20-21	51	16	5.5	14.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
24	26.03.2021	GCS/LAB/S/3313/20-21	59	21	6.3	16.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
25	02.04.2021	GCS/LAB/S/3377/21-22	56	22	6.5	15.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
26	07.04.2021	GCS/LAB/S/3377/21-22	60	24	7.2	16.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
27	09.04.2021	GCS/LAB/S/3377/21-22	67	26	6.9	16.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
28	12.04.2021	GCS/LAB/S/3377/21-22	62	27	7.6	16.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
29	16.04.2021	GCS/LAB/S/3377/21-22	59	23	7.1	17.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
30	19.04.2021	GCS/LAB/S/3377/21-22	71	28	7.3	16.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
31	23.04.2021	GCS/LAB/S/3377/21-22	64	25	7.0	16.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
32	26.04.2021	GCS/LAB/S/3377/21-22	55	20	7.5	17.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
33	03.05.2021	GCS/LAB/S/3423/21-22	63	25	7.1	16.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
34	07.05.2021	GCS/LAB/S/3423/21-22	66	26	6.3	17.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
35	12.05.2021	GCS/LAB/S/3423/21-22	61	22	7.8	18.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
36	14.05.2021	GCS/LAB/S/3423/21-22	73	30	8.5	17.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
37	17.05.2021	GCS/LAB/S/3423/21-22	60	21	8.3	16.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
38	21.05.2021	GCS/LAB/S/3423/21-22	58	20	6.5	16.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
39	25.05.2021	GCS/LAB/S/3423/21-22	56	19	6.0	16.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
40	27.05.2021	GCS/LAB/S/3423/21-22	67	28	8.1	18.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
41	01.06.2021	GCS/LAB/S/3503/21-22	67	26	7.3	16.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
42	04.06.2021	GCS/LAB/S/3503/21-22	62	21	7.8	17.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
43	07.06.2021	GCS/LAB/S/3503/21-22	73	32	6.7	16.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
44	11.06.2021	GCS/LAB/S/3503/21-22	54	19	5.8	15.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
45	14.06.2021	GCS/LAB/S/3503/21-22	50	17	5.2	14.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
46	18.06.2021	GCS/LAB/S/3503/21-22	71	27	7.9	17.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
47	21.06.2021	GCS/LAB/S/3503/21-22	65	22	6.6	17.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
48	25.06.2021	GCS/LAB/S/3503/21-22	59	20	5.5	15.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1



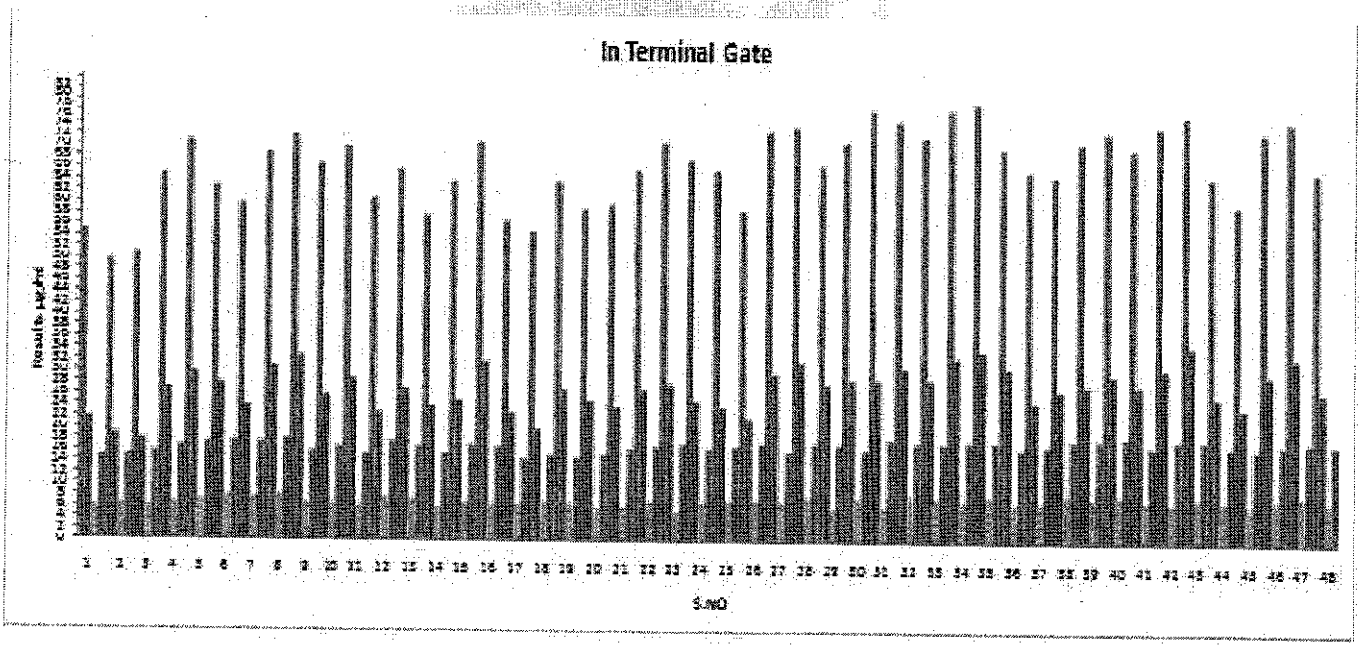
Parameters			Particular matter PM10	Particular matter PM2.5	Sulphur dioxide as SO2	Nitrogen dioxide as NO2	Lead as Pb	Carbon monoxide as CO	Ozone as O3	Ammonia as NH3	Arsenic as As	Nickel as Ni	Benzene as C6H6	Benzo (a) pyrene as BaP
Unit			µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	mg/m3	µg/m3	µg/m3	ng/m3	ng/m3	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	04.01.2021	GCS/LAB/S/3176/20-21	50	18	4.1	13.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
2	06.01.2021	GCS/LAB/S/3176/20-21	52	19	5.0	14.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
3	08.01.2021	GCS/LAB/S/3176/20-21	46	17	4.4	13.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
4	11.01.2021	GCS/LAB/S/3176/20-21	59	23	5.8	15.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
5	18.01.2021	GCS/LAB/S/3176/20-21	66	28	6.1	16.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
6	22.01.2021	GCS/LAB/S/3176/20-21	62	25	6.4	17.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
7	27.01.2021	GCS/LAB/S/3176/20-21	55	22	7.3	16.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
8	29.01.2021	GCS/LAB/S/3176/20-21	64	27	7.0	17.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
9	01.02.2021	GCS/LAB/S/3219/20-21	68	31	7.0	15.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
10	05.02.2021	GCS/LAB/S/3219/20-21	64	26	6.8	16.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
11	08.02.2021	GCS/LAB/S/3219/20-21	55	22	6.4	15.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
12	12.02.2021	GCS/LAB/S/3219/20-21	60	25	7.3	17.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
13	15.02.2021	GCS/LAB/S/3219/20-21	57	23	6.5	16.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
14	19.02.2021	GCS/LAB/S/3219/20-21	52	19	6.9	16.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
15	22.02.2021	GCS/LAB/S/3219/20-21	54	21	6.0	14.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
16	26.02.2021	GCS/LAB/S/3219/20-21	67	30	7.2	16.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
17	01.03.2021	GCS/LAB/S/3313/20-21	56	22	5.3	14.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
18	05.03.2021	GCS/LAB/S/3313/20-21	50	19	5.1	14.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
19	08.03.2021	GCS/LAB/S/3313/20-21	54	21	6.5	13.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
20	12.03.2021	GCS/LAB/S/3313/20-21	52	23	6.7	14.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1

21	15.03.2021	GCS/LAB/S/3313/20-21	48	19	5.2	14.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
22	19.03.2021	GCS/LAB/S/3313/20-21	57	25	6.0	14.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
23	22.03.2021	GCS/LAB/S/3313/20-21	60	27	5.5	13.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
24	26.03.2021	GCS/LAB/S/3313/20-21	51	20	6.6	16.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
25	02.04.2021	GCS/LAB/S/3377/21-22	63	25	5.0	14.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
26	07.04.2021	GCS/LAB/S/3377/21-22	67	29	6.6	15.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
27	09.04.2021	GCS/LAB/S/3377/21-22	59	22	6.1	17.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
28	12.04.2021	GCS/LAB/S/3377/21-22	65	26	6.9	15.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
29	16.04.2021	GCS/LAB/S/3377/21-22	61	24	7.4	17.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
30	19.04.2021	GCS/LAB/S/3377/21-22	58	21	6.5	16.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
31	23.04.2021	GCS/LAB/S/3377/21-22	66	28	4.8	17.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
32	26.04.2021	GCS/LAB/S/3377/21-22	60	23	6.9	17.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
33	03.05.2021	GCS/LAB/S/3423/21-22	68	26	6.5	18.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
34	07.05.2021	GCS/LAB/S/3423/21-22	55	22	7.4	16.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
35	12.05.2021	GCS/LAB/S/3423/21-22	64	25	7.0	17.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
36	14.05.2021	GCS/LAB/S/3423/21-22	52	20	6.4	15.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
37	17.05.2021	GCS/LAB/S/3423/21-22	65	27	8.1	18.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
38	21.05.2021	GCS/LAB/S/3423/21-22	62	24	7.8	17.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
39	25.05.2021	GCS/LAB/S/3423/21-22	60	23	6.7	17.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
40	27.05.2021	GCS/LAB/S/3423/21-22	69	28	7.7	18.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
41	01.06.2021	GCS/LAB/S/3503/21-22	60	21	6.4	16.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
42	04.06.2021	GCS/LAB/S/3503/21-22	63	20	6.6	17.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
43	07.06.2021	GCS/LAB/S/3503/21-22	52	18	5.3	14.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
44	11.06.2021	GCS/LAB/S/3503/21-22	47	15	5.0	14.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
45	14.06.2021	GCS/LAB/S/3503/21-22	55	19	5.2	15.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
46	18.06.2021	GCS/LAB/S/3503/21-22	68	27	7.1	17.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
47	21.06.2021	GCS/LAB/S/3503/21-22	67	24	7.4	17.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
48	25.06.2021	GCS/LAB/S/3503/21-22	61	23	7.0	17.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1



Parameters			IN TERMINAL GATE (AAQ3)											
			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	04.01.2021	GCS/LAB/S/3176/20-21	55	22	6.0	14.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
2	06.01.2021	GCS/LAB/S/3176/20-21	50	19	6.5	15.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
3	08.01.2021	GCS/LAB/S/3176/20-21	51	18	6.1	15.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
4	11.01.2021	GCS/LAB/S/3176/20-21	65	27	6.9	17.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
5	18.01.2021	GCS/LAB/S/3176/20-21	71	30	7.2	17.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
6	22.01.2021	GCS/LAB/S/3176/20-21	63	28	7.9	18.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
7	27.01.2021	GCS/LAB/S/3176/20-21	60	24	7.6	17.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
8	29.01.2021	GCS/LAB/S/3176/20-21	69	31	8.3	18.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
9	01.02.2021	GCS/LAB/S/3219/20-21	72	33	6.7	16.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
10	05.02.2021	GCS/LAB/S/3219/20-21	67	26	7.1	16.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
11	08.02.2021	GCS/LAB/S/3219/20-21	70	29	6.5	15.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
12	12.02.2021	GCS/LAB/S/3219/20-21	61	23	7.6	17.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
13	15.02.2021	GCS/LAB/S/3219/20-21	66	27	7.4	17.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
14	19.02.2021	GCS/LAB/S/3219/20-21	58	24	6.0	15.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
15	22.02.2021	GCS/LAB/S/3219/20-21	64	25	7.0	17.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
16	26.02.2021	GCS/LAB/S/3219/20-21	71	32	6.8	16.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
17	01.03.2021	GCS/LAB/S/3313/20-21	57	23	6.6	14.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
18	05.03.2021	GCS/LAB/S/3313/20-21	55	20	7.3	15.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
19	08.03.2021	GCS/LAB/S/3313/20-21	64	27	6.9	15.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
20	12.03.2021	GCS/LAB/S/3313/20-21	59	25	6.3	15.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
21	15.03.2021	GCS/LAB/S/3313/20-21	60	24	6.2	16.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
22	19.03.2021	GCS/LAB/S/3313/20-21	66	27	7.2	16.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1

23	22.03.2021	GCS/LAB/S/3313/20-21	71	28	5.5	17.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
24	26.03.2021	GCS/LAB/S/3313/20-21	68	25	7.0	16.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
25	02.04.2021	GCS/LAB/S/3377/21-22	66	24	7.2	17.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
26	07.04.2021	GCS/LAB/S/3377/21-22	59	22	7.5	17.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
27	09.04.2021	GCS/LAB/S/3377/21-22	73	30	7.1	16.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
28	12.04.2021	GCS/LAB/S/3377/21-22	74	32	7.9	17.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
29	16.04.2021	GCS/LAB/S/3377/21-22	67	28	6.0	17.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
30	19.04.2021	GCS/LAB/S/3377/21-22	71	29	7.8	16.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
31	23.04.2021	GCS/LAB/S/3377/21-22	77	29	6.5	18.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
32	26.04.2021	GCS/LAB/S/3377/21-22	75	31	8.4	17.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
33	03.05.2021	GCS/LAB/S/3423/21-22	72	29	7.9	17.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
34	07.05.2021	GCS/LAB/S/3423/21-22	77	33	7.4	18.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
35	12.05.2021	GCS/LAB/S/3423/21-22	78	34	8.3	17.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
36	14.05.2021	GCS/LAB/S/3423/21-22	70	31	6.8	16.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
37	17.05.2021	GCS/LAB/S/3423/21-22	66	25	7.2	17.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
38	21.05.2021	GCS/LAB/S/3423/21-22	65	27	8.5	18.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
39	25.05.2021	GCS/LAB/S/3423/21-22	71	28	7.9	18.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
40	27.05.2021	GCS/LAB/S/3423/21-22	73	30	8.6	18.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
41	01.06.2021	GCS/LAB/S/3503/21-22	70	28	7.5	17.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
42	04.06.2021	GCS/LAB/S/3503/21-22	74	31	7.0	18.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
43	07.06.2021	GCS/LAB/S/3503/21-22	76	35	8.1	18.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
44	11.06.2021	GCS/LAB/S/3503/21-22	65	26	7.4	17.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
45	14.06.2021	GCS/LAB/S/3503/21-22	60	24	6.8	16.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
46	18.06.2021	GCS/LAB/S/3503/21-22	73	30	7.7	17.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
47	21.06.2021	GCS/LAB/S/3503/21-22	75	33	8.5	18.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
48	25.06.2021	GCS/LAB/S/3503/21-22	66	27	7.5	17.8	<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	• AAS / ICP method after sampling on EPM 2000 or equivalent filter paper • ED – XRF using Teflon filter
		24 hours**	1.0	1.0	
7	Carbon Monoxide (CO) mg/m^3	8 hours**	2	2	Non Dispersive Infra RED (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.

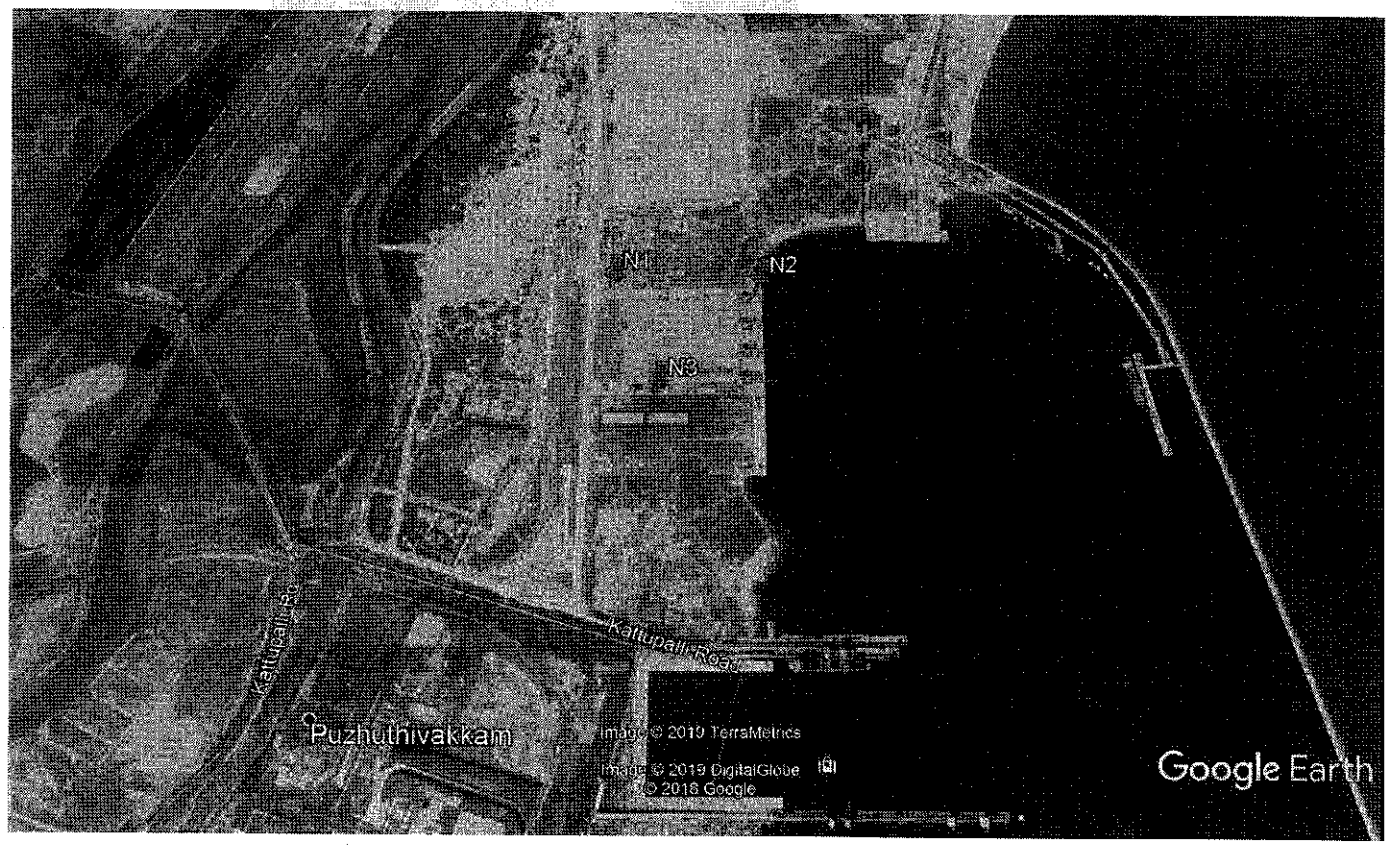
iii. AMBIENT NOISE LEVEL INTENSITY

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

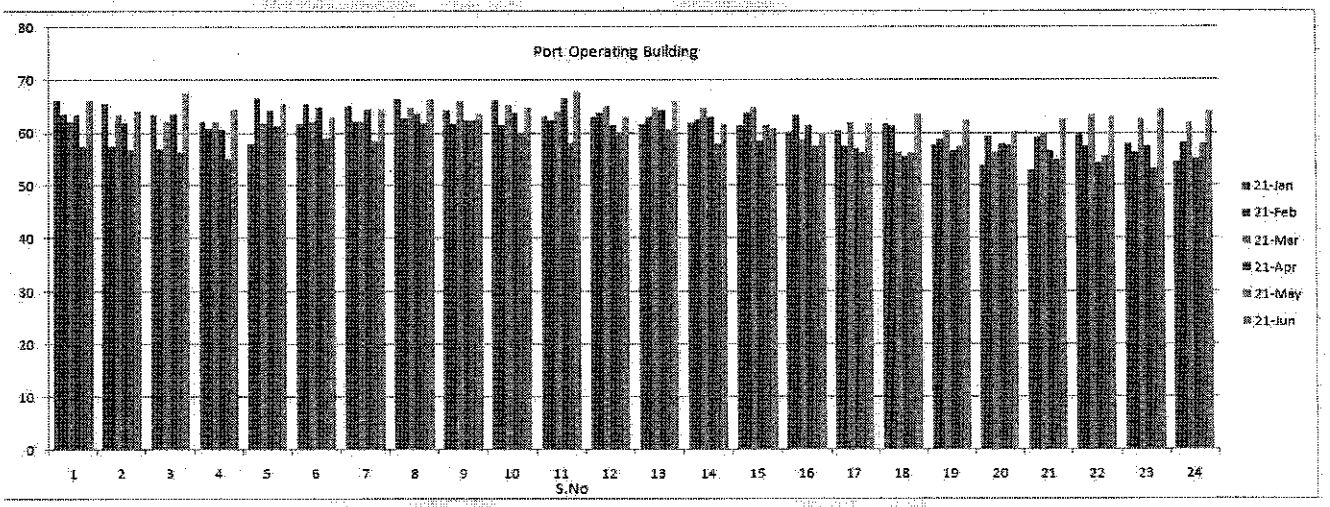
STATION CODE	LOCATIONS	Geographical Location
N1	In Terminal Gate	13^0 16' 25" N 80^0 20' 0" E
N2	RMU Building	13^0 16' 25" N 80^0 20' 16" E
N3	Port operating building	13^0 16' 12" N 80^0 20' 5" E

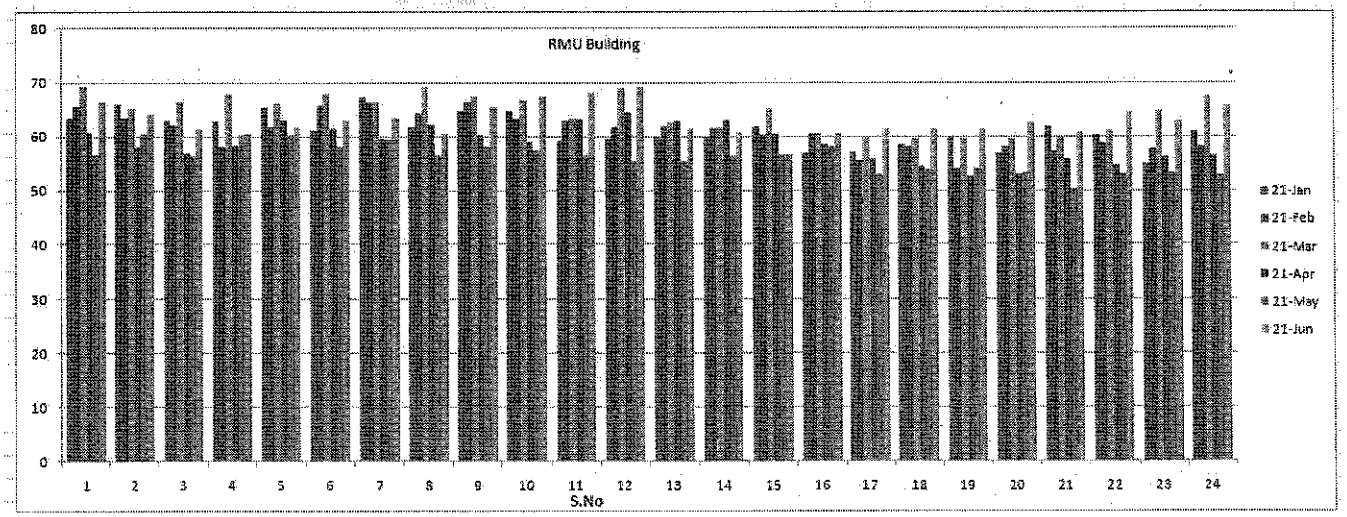
Fig - 3. Noise Level Sampling Locations



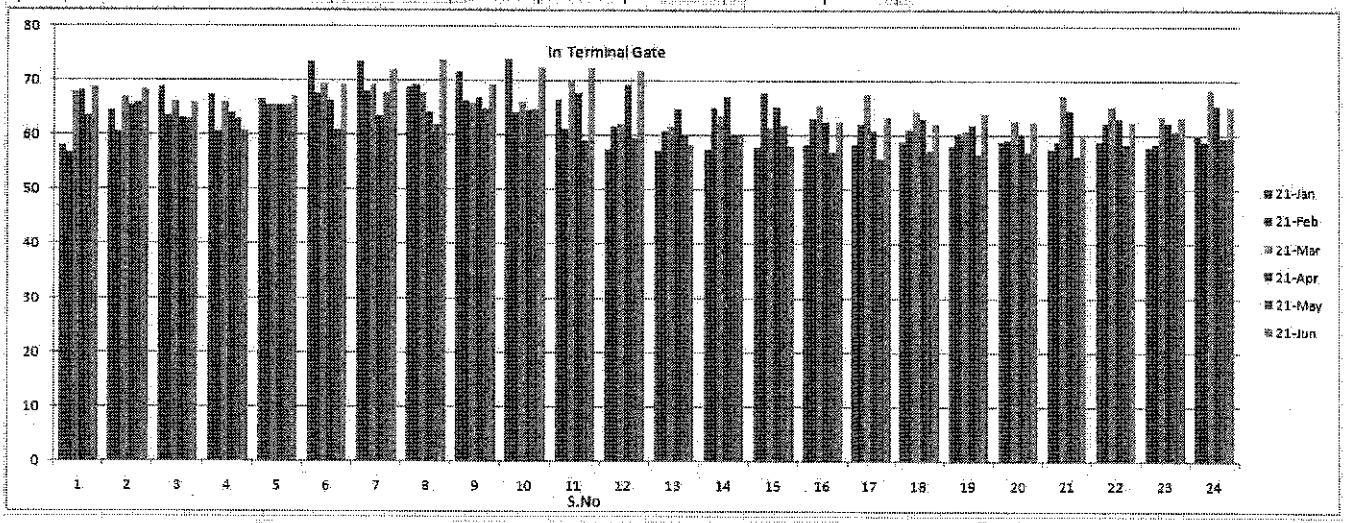
Annexure - 3

Location		PORT OPERATING BUILDING						RMU BUILDING					
Month & Year		Jan - 21	Feb - 21	Mar - 21	Apr - 21	May - 21	Jun - 21	Jan - 21	Feb - 21	Mar - 21	Apr - 21	May - 21	Jun - 21
Parameter & Unit		Leq	Leq dB(A)	Leq	Leq	Leq	Leq	Leq	Leq dB(A)	Leq	Leq	Leq	Leq
S.No	Time of Sampling												
1	06.00 – 07.00 (Day)	66.4	63.9	62.4	63.7	57.7	66.4	63.6	65.8	69.6	60.9	56.8	66.5
2	07.00 –08.00	65.8	57.7	63.6	62.1	57.1	64.3	66.1	63.7	65.3	58.4	60.7	64.3
3	08.00 – 09.00	63.7	57.3	62.3	63.8	56.7	67.4	63.1	62.4	66.7	57.1	56.7	61.4
4	09.00 – 10.00	62.4	61.1	62.3	60.9	55.4	64.6	63	58.2	68	58.6	60.4	60.6
5	10.00 – 11.00	58.1	66.9	62	64.4	61.5	65.8	65.6	62	66.4	63.2	60.4	61.9
6	11.00 – 12.00	62	65.7	62.3	65.2	59.2	63.1	61.2	65.9	68	61.7	58.3	63.2
7	12.00 – 13.00	65.4	62.4	62.4	64.7	58.8	64.7	67.4	66.5	66.5	59.8	59.5	63.7
8	13.00 – 14.00	66.5	63	65.2	63.9	62.1	66.6	61.9	64.5	69.4	62.3	56.6	60.6
9	14.00 – 15.00	64.5	62	66.1	62.6	62.5	63.9	65	66.5	67.7	60.5	58.2	65.5
10	15.00 – 16.00	66.3	61.8	65.5	64.1	60.3	65.1	64.9	63.4	66.8	59.2	57.7	67.6
11	16.00 – 17.00	63.3	62.5	64.3	66.8	58.4	67.9	59.3	63.1	63.7	63.4	56.6	68.2
12	17.00 – 18.00	63.1	64	65.3	61.7	59.8	63.2	59.7	61.9	69.1	64.7	55.8	69.3
13	18.00 – 19.00	61.9	63.1	65.2	64.5	60.8	66.1	60.3	62.2	62.8	62.9	55.5	61.8
14	19.00 –20.00	62.2	62.8	64.8	63.2	58.1	62	60.1	61.7	61.9	63.1	56.7	60.9
15	20.00 – 21.00	61.7	64	65.1	58.7	61.6	61.1	62	60.5	65.3	60.6	56.9	56.9
16	21.00 – 22.00	60.5	63.6	59	61.8	57.6	60.3	57	60.6	60.7	58.7	58.2	60.7
17	22.00 – 23.00 (Night)	60.6	57.7	62.2	57.2	56.7	62	57.3	55.7	59.9	55.9	53.1	61.4
18	23.00 – 00.00	62	61.5	56.5	55.7	56.3	63.8	58.7	58.2	59.8	54.6	54	61.5
19	00.00 – 01.00	57.9	59	60.6	56.8	57.6	62.6	60	54.3	59.3	52.8	54.2	61.4
20	01.00 – 02.00	53.9	59.5	56.7	58.1	57.8	60.4	57	58.4	59.8	53.1	53.3	62.7
21	02.00 – 03.00	53.1	59.4	60.2	56.9	55.2	62.7	62.1	57.4	60.1	56	50.4	60.8
22	03.00 – 04.00	60.1	57.6	63.6	54.3	55.7	63.1	60.5	58.9	61.2	54.8	53.2	64.6
23	04.00 – 05.00	58.1	56.4	62.8	57.6	53.3	64.7	55.1	57.8	65	56.3	53.5	63
24	05.00 – 06.00	54.7	58.2	62.2	55.3	58	64.2	61.1	58.3	67.6	56.5	53	65.9





Location		IN TERMINAL GATE					
Month & Year		PORT OPERATING BUILDING					
Parameter & Unit		Jan - 21	Feb - 21	Mar - 21	Apr - 21	May - 21	Jun - 21
S.No	Time of Sampling	Leq	Leq	Leq	Leq	Leq	Leq
1	06.00 – 07.00 (Day)	58.1	56.9	67.9	68.4	63.6	69
2	07.00 – 08.00	64.7	60.7	67	65.6	66.1	68.5
3	08.00 – 09.00	68.9	63.7	66.3	63.3	63.1	66.1
4	09.00 – 10.00	67.5	60.6	65.9	64.1	63	61
5	10.00 – 11.00	66.6	65.5	65.6	65.6	65.6	67.2
6	11.00 – 12.00	73.7	67.6	69.6	66.4	61.2	69.4
7	12.00 – 13.00	73.6	68.2	69.3	63.7	67.8	72.1
8	13.00 – 14.00	69	69.3	68	64.2	61.9	73.8
9	14.00 – 15.00	71.7	66.5	66	67	65	69.4
10	15.00 – 16.00	74	64.3	66.2	64.8	64.9	72.6
11	16.00 – 17.00	66.7	61.4	70.2	68	59.3	72.4
12	17.00 – 18.00	57.5	61.8	62.2	69.3	59.7	72
13	18.00 – 19.00	57.2	60.9	61.8	64.9	60.3	58.4
14	19.00 –20.00	57.5	65.1	63.6	67.2	60.1	60.2
15	20.00 – 21.00	58	67.9	61.5	65.3	62	58.1
16	21.00 – 22.00	58.4	63.2	65.6	62.5	57	62.6
17	22.00 – 23.00 (Night)	58.3	62.2	67.6	60.8	55.8	63.4
18	23.00 – 00.00	58.9	61.1	64.5	63.1	57.3	62.2
19	00.00 – 01.00	58.2	60.4	60.9	61.9	56.6	64
20	01.00 – 02.00	59	59.3	62.8	60.4	57	62.7
21	02.00 – 03.00	57.5	58.9	67.5	64.7	56.2	59.8
22	03.00 – 04.00	58.9	62.3	65.4	63.2	58.5	62.6
23	04.00 – 05.00	58	58.5	63.7	62.4	60.9	63.4
24	05.00 – 06.00	60	58.9	68.6	65.6	59.7	65.3



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

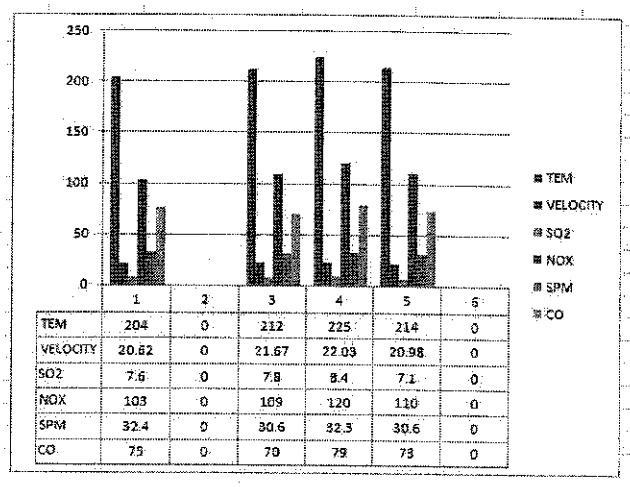
STATION CODE	LOCATIONS	Geographical Location
SM - 1	DG - 1 1500 KVA	13^0 16' 12" N 80^0 20' 5" E
SM - 2	DG - 2 1500 KVA	
SM - 3	DG 125 KVA	13°16'13.33" N 80°20'6.64" E

Annexure - 4

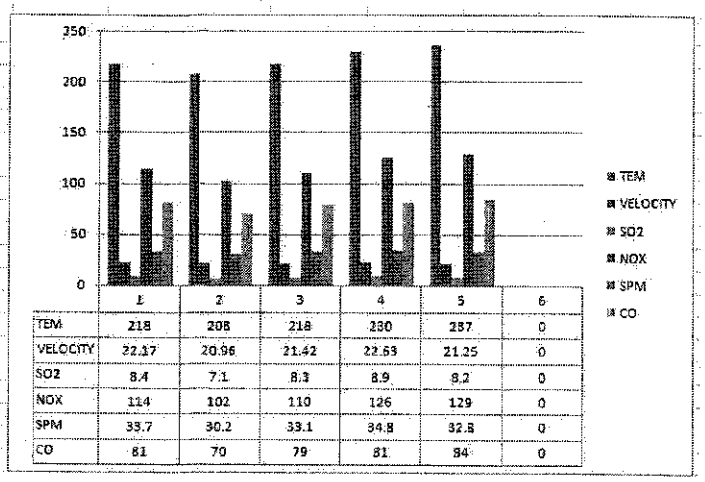
STACK MONITORING													
Location		DG 125KVA						DG 1500KVA -1					
Month & Year		Jan - 21	Feb - 21	Mar -	Apr - 21	May - 21	Jun - 21	Jan - 21	Feb - 21	Mar - 21	Apr - 21	May - 21	Jun - 21
S.N	Parameter												
1	Stack Temperature, °C	--	120	--	127	122	125	218	208	218	230	237	--
2	Flue Gas Velocity, m/s	--	13.98	--	12.02	11.43	12.19	22.17	20.96	21.42	22.63	21.25	--
3	Sulphur Dioxide, mg/Nm3	--	4	--	4.6	4.4	4.7	8.4	7.1	8.3	8.9	8.2	--
4	NOX (as NO2) in ppmv	--	83	--	87	80	86	114	102	110	126	129	--
5	Particular matter, mg/Nm3	--	12.6	--	13.9	14.5	13	33.7	30.2	33.1	34.8	32.8	--
6	Carbon Monoxide, mg/Nm3	--	25	--	30	33	36	81	70	79	81	84	--
7	Gas Discharge, Nm3/hr	--	671	--	568	547	580	6049	5837	5869	6053	5606	--

STACK MONITORING													
Location		DG 1500KVA - 2						DG 1500KVA - 3					
Month		Jan - 21	Feb -	Mar - 21	Apr - 21	May - 21	Jun - 21	Jan - 21	Feb - 21	Mar - 21	Apr - 21	May - 21	Jun - 21
S.N	Parameter												
1	Stack Temperature, °C	215	221	227	221	228	220	204	--	2	225	214	--
2	Flue Gas Velocity, m/s	22.58	21.74	22.19	20.98	21.43	19.52	20.62	--	21.67	22.03	20.98	--
3	Sulphur Dioxide, mg/Nm3	8.2	7.8	8.6	8	7.8	8.3	7.6	--	7.8	8.4	7.1	--
4	NOX (as NO2) in ppmv	110	116	121	115	122	118	103	--	109	120	110	--
5	Particular matter, mg/Nm3	31.9	30.4	35	33.1	35.4	32.1	32.4	--	30.6	32.3	30.6	--
6	Carbon Monoxide, mg/Nm3	78	73	77	75	80	74	75	--	70	79	73	--
7	Gas Discharge, Nm3/hr	6197	5895	5917	5714	5755	5327	579	--	6011	5951	5796	--

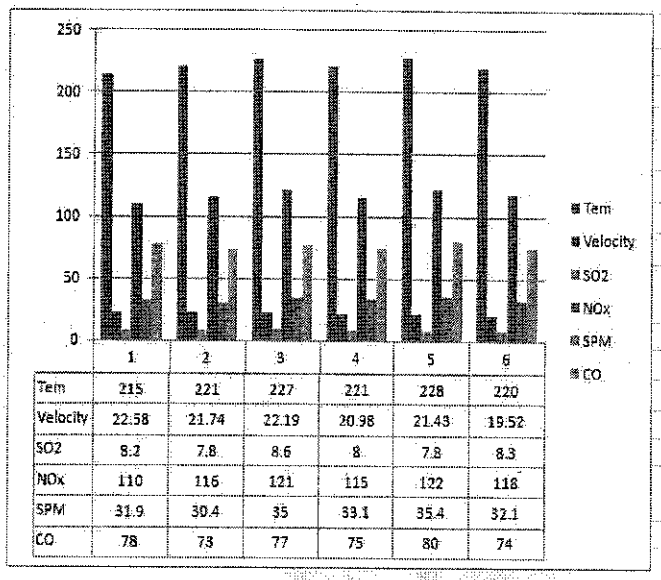
Note : --- DG not in operation.



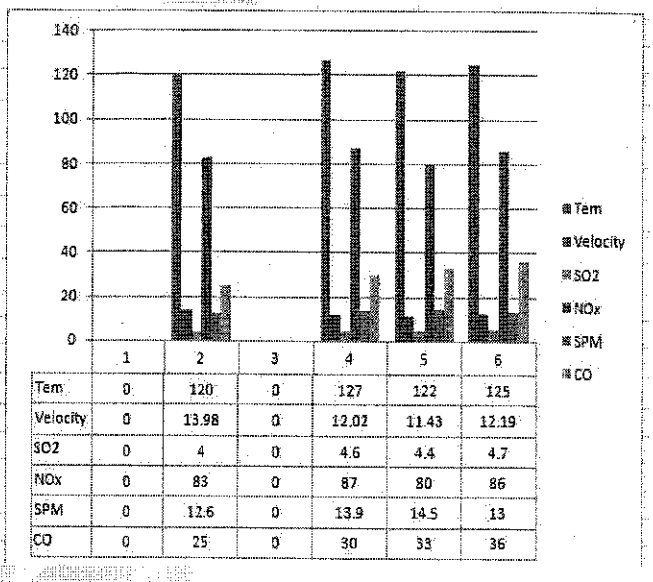
	1	2	3	4	5	6
TEM	204	0	212	225	214	0
VELOCITY	20.62	0	21.67	22.09	20.98	0
SO2	7.6	0	7.8	8.4	7.1	0
NOX	103	0	109	120	110	0
SPM	32.4	0	30.6	32.3	30.6	0
CO	75	0	70	79	73	0



	1	2	3	4	5	6
TEM	218	208	218	230	237	0
VELOCITY	22.17	20.96	21.42	22.63	21.25	0
SO2	8.4	7.1	8.3	8.9	8.2	0
NOX	114	102	110	126	129	0
SPM	33.7	30.2	33.1	34.8	32.8	0
CO	81	70	79	81	84	0



	1	2	3	4	5	6
Tem	215	221	227	221	228	220
Velocity	22.58	21.74	22.19	20.98	21.43	19.52
SO2	8.2	7.8	8.6	8	7.8	8.3
NOx	110	116	121	115	122	118
SPM	31.9	30.4	35	33.1	35.4	32.1
CO	78	73	77	75	80	74



	1	2	3	4	5	6
Tem	0	120	0	127	122	125
Velocity	0	13.98	0	12.02	11.43	12.19
SO2	0	4	0	4.6	4.4	4.7
NOx	0	83	0	87	80	86
SPM	0	12.6	0	13.9	14.5	13
CO	0	25	0	30	33	36

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 OUTLET WATER													
Location		STP OUTLET						STP INLET					
Month & Year		Jan - 21	Feb - 21	Mar - 21	Apr - 21	May - 21	Jun - 21	Jan - 21	Feb - 21	Mar - 21	Apr - 21	May - 21	Jun - 21
S.No	Parameters												
1	pH @ 25°C	7.63	7.35	7.42	7.36	7.43	7.55	6.89	6.79	7.21	6.97	7.18	7.28
2	Total Suspended	11	22	20	13	10	14	160	160	142	85	74	56
3	BOD at 27°C for 3	8.5	18.0	15.0	11.0	8.4	13.0	159	108	89	71	60	74
4	Fecal Coliform	120	146	123	108	108	142	724	564	510	482	416	510
5	COD	--	--	--	44	32	75	--	--	--	346	30	312
6	Oil & Grease	--	--	--	BDL	BDL	BDL	--	--	--	11	8.2	9.0
7	Total Dissolved Solids	--	--	--	1010	1154	1218	--	--	--	1184	1270	1380
8	Chlorides (as Cl)	--	--	--	248	260	357	--	--	--	286	302	372
9	Sulphates (as SO4)	--	--	--	14	17	25	--	--	--	10	11	100

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	IS: 10500-1991 R.2012 PERMISSIBLE	Jan - 21	Feb - 21	Mar - 21	Apr - 21	May - 21	Jun - 21
S.No.	Para								
1	pH @ 25°C	-	6.5 - 8.5	7.32	6.77	6.57	6.67	6.76	6.77
2	Total Hardness as CaCo3	mg/L	600	24	22	28	14.0	37	40
3	Chloride as Cl	mg/L	1000	23	25	23	21	76	28
4	Total Dissolved Solids	mg/L	2000	60	70	64	59	184	112
5	Calcium as Ca	mg/L	200	3.2	5.6	4.8	4.8	10	6.4
6	Sulphate as SO4	mg/L	400	4.73	2.33	2.69	2.42	11.0	3.2
7	Total Alkalinity as	mg/L	600	25	40	20	18	35	25
8	Magnesium as Mg	mg/L	1.0	3.84	1.92	3.84	1.92	2.88	5.76
9	Color	Hazen	15	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
10	Odour	-	Unobject	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionabl	Unobjectio
11	Taste	-	Agreeabl	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
12	Turbidity	NTU	5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
13	Nitrate as No3	mg/L	45	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	0.3	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL
15	Total Residual Chlorine	mg/L	1	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	1.5	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL
17	Manganese as Mn	mg/L	0.3	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL
18	Fluoride as F	mg/L	1.5	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	mg/L	0.002	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL
20	Mercury as Hg	mg/L	0.001	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL
21	Cadmium as Cd	mg/L	0.003	BDL(DL 0.003)	BDL(DL 0.003)	BDL(DL 0.003)	BDL(DL 0.003)	BDL(DL 0.003)	BDL(DL
22	Selenium as Se	mg/L	0.01	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL
23	Arsenic as As	mg/L	0.05	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL
24	Lead as Pb	mg/L	0.01	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL
25	Zinc as Zn	mg/L	15	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL
26	Anionic Detergents as	mg/L	1.0	Nil	Nil	Nil	Nil	Nil	Nil
27	Total Chromium as Cr	mg/L	0.05	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL
28	Phenolphthalein Alkalinity as $CaCO_3$	mg/L	---	Nil	Nil	Nil	Nil	Nil	Nil
29	Aluminium as Al	mg/L	0.2	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL
30	Boron as B	mg/L	1.0	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
31	Mineral Oil	mg/L	0.5	Nil	Nil	Nil	Nil	Nil	Nil
32	Polynuclear Aromatic Hydrocarbons as	mg/L	0.0001	Nil	Nil	Nil	Nil	Nil	Nil
33	Pesticides	mg/L	------	Nil	Nil	Nil	Nil	Nil	Nil
34	Cyanide as CN	mg/L	0.05	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL :
35	E. coli	MPN/100ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence
36	Total Coliform	MPN/100ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence

Remarks: The analysis report reveals that the water sample is meeting the criteria for Drinking water standard IS: 10500-1991 R.2012

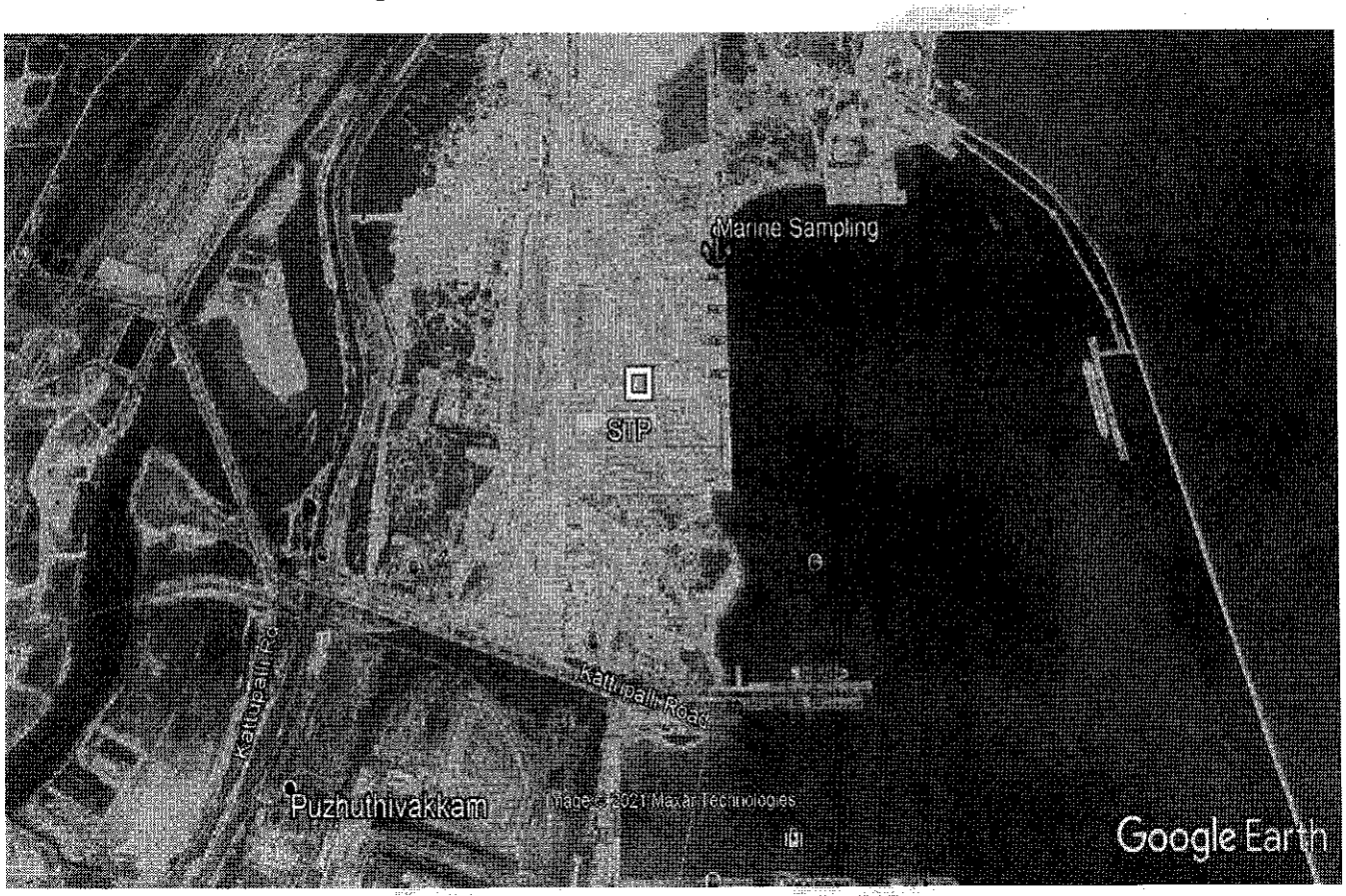
vii. Marine Sampling

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 - 4. Water and Marine Sampling Locations



Annexure - 7

MARINE WATER					
Location		Surface Water			
Month & Year		Unit	Jan - 21	Feb - 21	Mar - 21
S.No.	Parameters		Bollard 21	Bollard 02	Bollard 02
1	pH @ 25°C	-	8.16	8.24	8.36
2	Temperature	^{O}C	29	29	29
3	Total Suspended Solids	mg/L	14	10	14
4	BOD at 27 ^{O}C for 3 days	mg/L	9.2	4	4.2
5	Dissolved oxygen	mg/L	4.3	4.1	2.9
6	Salinity at 25 ^{O}C	ppt	32.8	30	31.8
7	Oil & Grease	mg/L	BDL(DL 1.0)	BDL(DL 1.0)	BDL(DL 1.0)
8	Nitrate as No_3	mg/L	4.21	4.86	4.12
9	Nitrite as No_2	mg/L	1.53	1.85	1.73
10	Ammonical Nitrogen as N	mg/L	BDL(DL 1.0)	BDL(DL 1.0)	BDL(DL 1.0)
11	Ammonia as NH3	mg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
12	Kjeldahl Nitrogen as N	mg/L	BDL(DL 1.0)	BDL(DL 1.0)	BDL(DL 1.0)
13	Total phosphates as PO4	mg/L	4.2	4.93	5.64
14	Total Nitrogen	mg/L	BDL(DL 1.0)		
15	Total Dissolved Solids	mg/L	34216	36290	37148
16	COD	mg/L	127	168	152
17	Total bacterial count	cfu/ml	101	143	120
18	Coliforms	Per 100 ml	Absence	Absence	Absence
19	Escherichia coli	Per 100 ml	Absence	Absence	Absence
20	Salmonella	Per 100 ml	Absence	Absence	Absence
21	Shigella	Per 100 ml	Absence	Absence	Absence
22	Vibrio cholerae	Per 100 ml	Absence	Absence	Absence
23	Vibrio parahaemolyticus	Per 100 ml	Absence	Absence	Absence
24	Enterococci	Per 100 ml	Absence	Absence	Absence
25	Octane	µg/L	144	169	175
26	Nonane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
27	Decane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
28	Undecane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
29	Tridecane	µg/L	8.9	8.3	7.7
30	Tetradecane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
31	Pentadecane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
32	Hexadecane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
33	Octadecane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
34	Nonadecane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
35	Elcosane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)

Surface Water								
Month & Year			Jan - 21	Feb - 21	Mar - 21	Apr-21	May-21	Jun-21
S.No.	Parameters	Unit	Bollard 21	Bollard 02	Bollard 02	Bollard 21	Bollard 01	Bollard 03
36	Primary Productivity	mg C/m^3 /hr	8.14	8.67	9.41	9.86	9.14	8.26
37	Chlorophylla	mg $/m^3$	6.26	6.02	7.05	7.69	6.37	6.14
38	Phaeophytin	mg $/m^3$	0.62	0.68	0.73	--	--	--
	Phaeopigment	mg $/m^3$	--	--	--	2.43	2.15	2.73
39	Oxidisable Paticular Organic	mg /L	4.78	5.86	5.02	--	--	--
	Total Biomass	ml /100 m3	--	--	--	1.21	1.14	1.48
PHYTOPLANKTON								
40	Bacteriastrum hyalinum	nos/ml	10	17	14	11	13	8
41	Bacteriastrum varians	nos/ml	13	8	10	14	11	15
42	Chaetoceros didymus	nos/ml	11	14	16	10	7	10
43	Chaetoceros decipiens	nos/ml	15	12	18	12	15	11
44	Biddulphia mobiliensis	nos/ml	9	11	15	9	12	14
45	Ditylum brightwellii	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
46	Gyrosigma sp	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
47	Cladophyxis sps	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
48	Coscinodiscus centralis	nos/ml	9	13	8	12	14	16
49	Coscinodiscus granii	nos/ml	20	15	7	8	10	13
50	Cylcotella sps	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
51	Hemidiscus hardmanianus	nos/ml	17	10	13	12	8	12
52	Laudaria annulata	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
53	Pyropacus horologicum	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
54	Pleurosigma angulatum	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
55	Leptocylindrus danicus	nos/ml	22	20	21	24	18	22

56	Guinardia flaccida	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
57	Rhizosolenia alata	nos/ml	24	22	17	13	16	13
58	Rhizosolena impricata	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
59	Rhizosolena semispina	nos/ml	7	9	12	16	18	20
60	Thalassionema nitzschioides	nos/ml	14	7	16	20	23	22
61	Triceratium reticulatum	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
62	Ceratium trichoceros	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
63	Ceratium furca	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
64	Ceratium macroceros	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
65	Ceracium longipes	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
			ZOOPLANKTONS					
66	Acrocalanus gracilis	nos/ml	13	15	10	12	14	12
67	Acrocalanus sp	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
68	Paracalanus parvus	nos/ml	16	18	13	8	11	8
69	Eutintinus sps	nos/ml	10	7	15	19	16	10
70	Centropages furcatus	nos/ml	15	17	6	11	8	11
71	Corycaeus dana	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
72	Oithona brevicornis	nos/ml	18	13	16	19	13	7
73	Euterpina acutifrons	nos/ml	12	18	9	13	10	14
74	Metacalanus aurivilli	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
75	Copipod nauplii	nos/ml	17	8	14	10	18	20
76	Cirripede nauplii	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
77	Bivalve veliger	nos/ml	9	6	17	14	17	19
78	Gastropod veliger	nos/ml	7	14	20	23	20	13

Location			Bottom Water		
Month & Year		Unit	Jan - 21	Feb - 21	Mar - 21
S.No.	Parameters		Bollard 21	Bollard 02	Bollard 02
1	pH @ 25°C	-	8.27	8.31	8.39
2	Temperature	°C	29	29	29
3	Total Suspended Solids	mg/L	18	13	17
4	BOD at 27 oC for 3 days	mg/L	11	11	4.2
5	Dissolved oxygen	mg/L	4.5	4	3
6	Salinity at 25 oC	-	32.2	29.6	30.8
7	Oil & Grease	mg/L	BDL(DL 1.0)	BDL(DL 1.0)	BDL(DL 1.0)
8	Nitrate as No3	mg/L	4.97	4.18	4.96
9	Nitrite as No2	mg/L	1.86	1.74	2.05
10	Ammonical Nitrogen as N	mg/L	BDL(DL 1.0)	BDL(DL 1.0)	BDL(DL 1.0)
11	Ammonia as NH3	mg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
12	Kjeldahl Nitrogen as N	mg/L	BDL(DL 1.0)	BDL(DL 1.0)	BDL(DL 1.0)
13	Total phosphates as PO4	mg/L	5.02	5.8	5.12
14	Total Nitrogen	mg/L	BDL(DL 1.0)	BDL(DL 1.0)	BDL(DL 1.0)
15	Total Dissolved Solids	mg/L	33896	35860	36864
16	COD	mg/L	132	144	156
17	Total bacterial count	cfu/ml	90	98	102
18	Coliforms	Per 100 ml	Absence	Absence	Absence
19	Escherichia coli	Per 100 ml	Absence	Absence	Absence
20	Salmonella	Per 100 ml	Absence	Absence	Absence
21	Shigella	Per 100 ml	Absence	Absence	Absence
22	Vibrio cholerae	Per 100 ml	Absence	Absence	Absence
23	Vibrio parahaemolyticus	Per 100 ml	Absence	Absence	Absence
24	Enterococci	Per 100 ml	Absence	Absence	Absence
25	Colour	Hazan	20	25	20
26	Odour	-	Unobjectionable	Unobjectionable	Unobjectionable
27	Taste	-	Disagreeable	Disagreeable	Disagreeable
28	Turbidity	NTU	8.4	6.9	7.4
29	Calcium as Ca	mg/L	486	600	642
30	Chloride as Cl	mg/L	17824	16389	17049
31	Cyanide as CN	mg/L	BDL(DL 0.01)		
32	Fluoride as F	mg/L	0.93	0.81	0.87
33	Magnesium as Mg	mg/L	1660	1320	1388
34	Total Iron as Fe	mg/L	1.85	1.53	1.24
35	Residual Free Chlorine	mg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
36	Phenolic Compounds as C6H5OH	mg/L	BDL(DL 1.0)	BDL(DL 1.0)	BDL(DL 1.0)
37	Total Hardness as CaCO3	mg/L	8132	7000	7388
38	Total Alkalinity as CaCO3	mg/L	103	115	104
39	Sulphide as H2S	mg/L	BDL(DL 0.5)	BDL(DL 0.5)	BDL(DL 0.5)
40	Sulphate as SO4	mg/L	1998	2423	2596
41	Anionic surfactants as MBAS	mg/L	BDL(DL 1.0)	BDL(DL 1.0)	BDL(DL 1.0)
42	Monocrotophos	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
43	Atrazine	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)

44	Ethion	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
45	Chiorpyrifos	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
46	Phorate	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
47	Mehyle parathion	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
48	Malathion	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
49	DDT (o,p and p,p-isomers of DDT,DDE	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
50	Gamma HCH (Lindane)	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
51	Alppha HCH	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
52	Beta HCH	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
53	Delta HCH	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
54	Endosulfan (Alpha,beta and sulphate)	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
55	Butachlor	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
56	Alachlor	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
57	Aldrin/Dieldrin	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
58	Isoproturon	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
59	2,4-D	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
60	Polychlorinated Biphenyls (PCB)	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
61	Polynuclear aromatic hydrocarbons	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
62	Arsenic as As	mg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
63	Mercury as Hg	mg/L	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)
64	Cadmium as Cd	mg/L	BDL(DL 0.003)	BDL(DL 0.003)	BDL(DL 0.003)
65	Total Chromium as Cr	mg/L	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)
66	Copper as Cu	mg/L	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)
67	Lead as Pb	mg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
68	Manganese as Mn	mg/L	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)
69	Nickel as Ni	mg/L	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)
70	Selenium as Se	mg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
71	Barium as Ba	mg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
72	Silver as Ag	mg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
73	Molybdenum as Mo	mg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
74	Octane	µg/L	159	167	175
75	Nonane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
76	Decane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
77	Undecane	µg/L	8.4	7.5	8
78	Tridecane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
79	Tetradecane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
80	Pentadecane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
81	Hexadecane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
82	Heptadecane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
83	Octadecane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
84	Nonadecane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
85	Elcosane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)

			Bottom Water					
	Month & Year		Jan - 21	Feb - 21	Mar - 21	Apr-21	May-21	Jun-21
S.No.	Parameters	Unit	Bollard 21	Bollard 02	Bollard 02	Bollard 21	Bollard 01	Bollard 03
86	Primary Productivity	mg C/m3 /hr	9.9	9.14	9.98	10.42	10.05	10.81
87	Chlorophyll a	mg /m3	7.84	7.38	8.46	8.1	6.89	6.03
88	Phaeophytin	mg /m3	0.76	0.71	0.79	--	--	--
	Phaeopigment	mg /m3	--	--	--	2.79	2.6	3.12
89	Oxidisable Paticular Organic	mg /L	6.01	6.95	6.33	--	--	--
	Total Biomass	ml /100 m3	--	--	--	1.87	1.57	1.75
			PHYTOPLANKTON					
90	Bacteriastrum hyalinum	nos/ml	14	20	17	15	16	11
91	Bacteriastrum varians	nos/ml	18	15	12	18	14	18
92	Chaetoceros didymus	nos/ml	13	16	19	13	10	13
93	Chaetoceros decipiens	nos/ml	17	19	22	17	19	15
94	Biddulphia mobiliensis	nos/ml	12	14	18	11	8	12
95	Ditylum brightwellii	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
96	Gyrosigma sp	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
97	Cladophyxis sps	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
98	Coscinodiscus centralis	nos/ml	12	18	11	14	17	19
99	Coscinodiscus granii	nos/ml	24	21	9	10	12	17
100	Cylcotella sps	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
101	Hemidiscus hardmanianus	nos/ml	15	8	15	15	11	14
102	Laudaria annulata	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
103	Pyropacus horologicum	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
104	Pleurosigma angulatum	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
105	Leptocylindrus danicus	nos/ml	26	24	23	25	22	24
106	Guinardia flaccida	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
107	Rhizosolenia alata	nos/ml	27	25	20	17	20	18

108	Rhizosolena impricata	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
109	Rhizosolena semispina	nos/ml	9	11	16	19	21	24
110	Thalassionema nitzschioides	nos/ml	16	9	18	22	25	26
111	Triceratium reticulatum	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
112	Ceratium trichoceros	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
113	Ceratium furca	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
114	Ceratium macroceros	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
115	Ceracium longipes	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
	ZOOPLANKTONS							
116	Acrocalanus gracilis	nos/ml	17	19	14	17	18	15
117	Acrocalanus sp	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
118	Paracalanus parvus	nos/ml	19	21	17	10	14	11
119	Eutintinus sps	nos/ml	13	10	11	14	13	17
120	Centropages furcatus	nos/ml	16	12	8	15	11	14
121	Corycaeus dana	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
122	Oithona brevicornis	nos/ml	20	16	20	22	17	12
123	Euterpina acutifrons	nos/ml	14	20	12	16	12	15
124	Metacalanus aurivilli	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
125	Copipod nauplii	nos/ml	21	11	16	12	16	23
126	Cirripede nauplii	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
127	Bivalve veliger	nos/ml	11	8	19	18	21	25
128	Gastropod veliger	nos/ml	9	17	22	25	26	20

Marine Water – Surface water and Bottom Water Test Results (Apr - 21 to Jun – 21)

S.NO	PARAMETER	UNITS	Bollard – 13		Bollard – 01		Bollard – 03	
			Apr-21		May-21		Jun – 21	
	Physicochemical Parameters		Surface water	Bottom water	Surface water	Bottom water	Surface water	Bottom water
1	Colour	Hazan	20	30	25	35	20	35
2	Odour	-	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable
3	pH @ 25°C	-	8.41	8.45	8.22	8.37	7.78	7.91
4	Temperature	°C	29	29	29	29	29	29
5	Turbidity	NTU	11.4	18.6	9.8	17.3	11	19
6	Total Suspended Solids	mg/L	25	27	18	24	15	26
7	BOD at 27 °C for 3 days	mg/L	7.1	5.6	4.6	4.4	4.1	4
8	COD	mg/L	160	168	134	152	126	142
9	Dissolved oxygen	mg/L	2.7	2.8	2.5	2.7	2.7	2.6
10	Salinity at 25 °C	ppt	30.3	27.1	31.4	30.1	32	31.2
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)
	Nutrient Parameters							
12	Nitrate as No_3	mg/L	3.08	4.15	3.47	4.91	3.93	5.17
13	Nitrite as No_2	mg/L	1.49	1.78	1.69	2.13	1.98	2.74
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)
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)
16	Inorganic phosphates as PO4	mg/L	5.01	4.07	4.23	5.67	5.07	6.21
17	Silica as SiO_2	mg/L	3.05	5.12	3.81	6.45	4.21	6.98
18	Particulate Organic Carbon	µgC/L	14	17	16	20	18	23
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)
	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)
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)
22	Total Iron as Fe	mg/L	0.53	0.82	0.53	0.82	0.57	0.7
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)
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	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)
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)
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)
	Bacteriological Parameters							
1	Escherichia Coli (ECLO)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence
2	Faecal Coliform (FCLO)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence
3	Pseudomonas aeruginosa (PALO)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence
4	Streptococcus faecalis (SFLO)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence
5	Shigella (SHLO)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence
6	Salmonella (SLO)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence
7	Total Coliform (TC)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence
8	Total Viable Count (TVC)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence
9	Vibrio cholera (VC)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence
10	Vibrio parahaemolyticus (VP)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence

Annexure - 8

SEA SEDIMENT								
Location			Sea Sediment					
Month & Year		Unit	Jan - 21	Feb - 21	Mar - 21	Apr - 21	May - 21	Jun - 21
S.No.	Parameters		Bollard 21	Bollard 02	Bollard 02	Bollard 13	Bollard 01	Bollard 03
1	Total organic matter	%	0.54	0.58	0.64	0.57	0.71	0.74
2	% Sand	%	23	25	22	21	24	25
3	%silt	%	31	28	30	33	31	28
4	%Clay	%	46	47	48	46	45	47
5	Iron (as Fe)	mg/kg	29.3	27.2	20.9	22.8	24.1	26.9
6	Aluminium (as Al)	mg/kg	9127	10004	10186	9864	9437	9811
7	Chromium (as cr)	mg/kg	52	41	27	21	24	20
8	Copper (as cu)	mg/kg	74	65	81	69	75	78
9	Manganese (as Mn)	mg/kg	91	78	65	52	44	51
10	Nickel (as Ni)	mg/kg	26.8	23.2	20.4	17.8	18.2	20.4
11	Lead (as Pb)	mg/kg	34.2	30.6	31.2	26.3	24.7	21.7
12	Zinc (as Zn)	mg/kg	220	203	186	175	186	175
13	Mercury(as Hg)	mg/kg	0.43	0.41	0.37	0.32	0.34	0.31
14	Total phosphorus as P	mg/kg	156	139	150	135	146	152
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	0.87	0.74	0.68	0.7	0.73	0.79
19	Dodecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
20	Tridecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
21	Tetradecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
22	Phntadecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
23	Hexadecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
24	Heptadecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
25	Octadecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
26	Nonadecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
27	Elcosane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
I. Nematoda								
28	Oncholaimussp	nos/m^2	15	12	15	18	13	15
29	Tricomasp	nos/m^2	13	8	12	9	11	8
I. Foraminifera								
30	Ammoniabeccarii	nos/m^2	10	16	10	16	19	12
31	Quinqulinasp	nos/m^2	21	18	14	11	15	17
32	Discorbinellasp.,	nos/m^2	24	15	17	20	23	20
33	Bolivinaspathulata	nos/m^2	22	20	13	17	10	16
34	Elphidiumsp	nos/m^2	18	14	19	13	18	22
35	Noniondepressula	nos/m^2	16	22	20	24	20	21
III. Molluscs-Bivalvia								
36	Meretrixveligers	nos/m^2	27	23	11	19	17	13
37	Anadoraveligers	nos/m^2	25	13	22	25	21	10
	Total No. of individuals	nos/m^2	187	161	153	172	167	154
	Shanon Weaver Diversity Index		2.27	2.26	2.27	2.26	2.27	2.26

Form-V

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

Environmental Statement for the financial year ending 31st March 2020

Part-A

i)	**Name and Address of the owner / occupier of the industry operation or process**	:	**Mr. Jai Khurana** **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/ENV2019-20/08 dated 20.09.2019

Part –B

WATER AND RAW MATERIAL CONSUMPTION

(i) Water Consumption

S.No	Water Consumption (m^3/Calendar Day)	2018-2019	2019-2020
1	Domestic	7.33	10.93

Adani Ennore Container Terminal Pvt. Ltd. Chennai

(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 (2018-19)	During the current financial year (2019-20)
1	Not Applicable	Not Applicable	NIL	NIL
The unit does not undergo any manufacturing process. The water consumed is mainly for firefighting, greenbelt development and maintenance, etc.,				

Part-C

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

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

Parameter	Consent Limit	Actual	% Variation with prescribed standard
pH	5.5-9	7.20	-Nil-
Total Suspended Solids (mg/l)	30	19.08	-Nil-
BOD (3 days at 27°C) (mg/l)	20	13.25	-Nil-

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

Part-D

HAZARDOUS WASTES

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

Hazardous Wastes	Total Quantity (Kg)	
	During the previous financial Year (2018-19)	During the current financial Year (2019-20)
(a) From Process	NIL	• Used Oil (5.1) - 10 Tons • Oil from Contaminated filter element (3.3) - 0.5 Tons • Empty Oil barrel (33.1) - 0.5 Tons
(b) From Pollution control facilities	NA	NA

Part-E

SOLID WASTES

Total Quantity Generated			
Solid Waste		During the previous financial Year (2018-19)	During the current financial Year (2019-20)
a)	From process	NIL	NIL
b)	From pollution control facilities- STP	20 kgs	57.28 kgs
c)	1. Quantity recycled or reutilized within the Unit	20 kgs	57.28 kgs
	2. Sold	NIL	NIL
	3. Disposed	NIL	NIL

Part-F

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

- 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 to Hazardous Waste Management Rules, 2016 (As amended).

Adani Ennore Container Terminal Pvt. Ltd. Chennai

- The used batteries and E –waste are also stored in Integrated Waste Management Shed and disposed off through approved vendor.
- 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.
- All the non-hazardous wastes like paper, wood, metal scraps generated from the terminal are also collected, stored in the Integrated Waste Management Shed and will be handled as per 5R principle.

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 waste water 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. STP treated water is used for Gardening purpose, thereby reducing freshwater consumption. The total cost spent on STP operation during the year 2019-20 is Rs. 3.60 Lakhs.
- Regular Environmental monitoring is carried out through NABL accredited laboratory. All the monitored environmental parameters are well within the specified limit & the details of monitored data is regularly submitted to TNPCB, CPCB, MoEF&CC and other concerned authorities.
- Unit is continuously developing and maintaining green belt within port premises.
- Implemented Integrated Waste Management System (IWMS) for managing all types of wastes in line with 5R principle.

Adani Ennore Container Terminal Pvt. Ltd. Chennai

Part-H

ADDITIONAL MEASURES/INVESTMENT PROPOSAL FOR ENVIRONMENTAL PROTECTION INCLUDING ABATEMENT OF POLLUTION, PREVENTION OF POLLUTION.

	Description	
	Regular Expenditure (cost in INR lakhs/year)	
1	Environmental monitoring of MOEF recognized third party	7.8
2	Green belt & Horticulture development	22.14
3	Annual maintenance contractor of STP operation	4.20
4	Operation & Maintenance of Integrated Waste Management System	2.40

Part-I

ANY OTHER PARTICULARS IN RESPECT TO ENVIRONMENT

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

Date:21.09.2020

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

21/9/2020

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.

Annexure - 1

AECTPL- STACK MONITORING (April'2019 to March'2020)													
Location		DG 1500KVA											
		I	II	I	I	I	I	I	I	I	III	III	III
Month & Year		Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20
S.No.	Parameters												
1	Stack Temperature, °C	222	210	217	226	215	232	243	246	240	229	235	239
2	Flue Gas Velocity, m/s	16.5	17.45	18.01	19.23	20.14	21.56	23	21.19	20.03	22.43	21.19	21.86
3	Sulphur Dioxide, mg/Nm3	7.5	7	7.9	8.3	7.7	7.2	8	6.8	7.6	7.1	7.8	8.3
4	NOX (as NO2) in ppmv	125	119	125	131	124	140	157	152	143	128	137	140
5	Particular matter, mg/Nm3	31.6	28.9	31.2	33.4	31.3	32.8	30	33.6	29.8	27.5	29.1	33.6
6	Carbon Monoxide, mg/Nm3	64	69	74	80	74	79	71	75	64	69	77	79
7	Gas Discharge, Nm3/hr	4476	4839	4923	5162	5528	5692	5846	5470	5230	5985	5587	5719

AECTPL- STACK MONITORING (April'2019 to March'2020)													
Location		DG 1500KVA											
		II	III	II	II	II	II	II	III	II	II	I	II
Month & Year		Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20
S.No.	Parameters												
1	Stack Temperature, °C	214	201	212	220	229	237	229	239	232	237	245	230
2	Flue Gas Velocity, m/s	17.21	15.98	17.42	18.67	19.58	20.41	22	22.74	21.75	20.56	21.81	20.54
3	Sulphur Dioxide, mg/Nm3	6.9	6.2	7.5	8	9.1	8	7	8.1	7.6	7.5	8.5	7.4
4	NOX (as NO2) in ppmv	120	107	119	128	136	144	150	141	143	139	142	133
5	Particular matter, mg/Nm3	34.2	30.5	29	31.9	30.5	33.1	31	32.4	29.8	29.7	31.4	32.8
6	Carbon Monoxide, mg/Nm3	55	63	71	78	72	82	65	68	64	74	70	74
7	Gas Discharge, Nm3/hr	4734	4516	4811	5073	5225	5361	5785	5949	5230	5400	5640	5470

Adani Container Terminal Pvt. Ltd. * Chennai

KAMARAJAR PORT LIMITED

Compliance Report

On

Ministry's guidelines for

"EXPANSION PROPOSALS - DEVELOPMENT OF TERMINALS FOR MARINE LIQUIDS, COAL, IRON AND CONTAINERS IN SECOND PHASE AND ASSOCIATED DREDGING AT ENNORE PORT"

Point wise compliance report on Ministry's guidelines for the Ennore Port Expansion Proposals-Development of Terminals for marine liquids, coal, iron and containers in Second phase and associated dredging at Ennore Port Environmental clearance

Ref: MoEF Letter No. 10-28/2005-IA-III dated 10th September 2007.

Back ground information

MoEF had accorded environmental clearance vide letter No. 10-28/2005–IA-III dated 19th May 2006 for the following projects:-

1. Marine Liquid Terminal to handle 3 MTPA.
2. Coal Terminal other than TNEB Users to handle 8 MTPA.
3. Iron Ore Terminal to handle 12 MTPA.
4. Container Terminal for a quay length of 700m to handle 12 MTPA.
5. Associated Capital Dredging of 15.50 million cubic meters.

Kamarajar Port Limited requested for modification of the above environmental clearance **with respect to the Container Terminal**, for the following reasons:

Reason for Modification of Environmental Clearance

i. The draft policy for maritime sector (Ports, merchant Shipping and IWT) suggested that Port Planning for the Development of Container Terminal should have a quay length of 1000m and capacity of 1.50 million TEUs.

ii. In accordance the NMDP prepared by Dept. of Shipping included the Development of Container Terminal at Ennore Port with 1000 meters.

iii. Department of Shipping has formulated an Action Plan for development of 18 Berths in various major Ports, which includes the Container Terminal of 1000 m quay length at Ennore Port during the financial year, 2007-08.

iv. Accordingly, it was proposed to reconfigure the container Terminal from 700 m to 1000m.

v. Reconfiguration of the quay length of the proposed container Terminal from 700 m to 1000 m would require an associated capital dredging of additional 4 million cu.m

vi. Reconfiguration would revise the capacity of the Container Terminal from 1.0 million TEUs to 1.50 million TEUs.

MoEF had accorded environmental clearance vide letter No. 10-28/2005-IA-III dated 10th September 2007

Status of the project:

Further KPL modified the above Environment Clearance for the development of Container Terminal and Multi Cargo Terminal.

Modified Environmental clearance from MoEF&CC

MoEF&CC has accorded environmental clearance for the development of container terminal in the 730m quay length and multi cargo berth in the 230m quay length vide its communication No. 10-28/2005-IA.III dated 24.12.2014.

Compliance report

S.No	**(A) Specific Conditions**	**Compliance Status**
(i)	It should be ensured that no mangroves are destroyed during reclamation.	Complied. No mangroves are present at container project site inside the port.
(ii)	The proposed extension to the project should not cause any shoreline change abutting Ennore Port.	The proposed extension of the project was addition of 300m to the quay length of 700m. (The container terminal will be developed to handle 11.68 MTPA in the 730m quay length and multi cargo berth of 2.0 MTPA in the 230m quay length). The alignment of the berth is in the N-S direction abutting the land side which is within the existing break-waters; hence, no shoreline changes are caused.
(iii)	Adequate provision for beach nourishment and sand by pass should be provided.	Complied. The dredge material was used as beach nourishment in the north of north break water and filling up of back up area.
(iv)	The dredged material obtained should be utilized for filling up of backup area.	Complied. About 2.0 million cubic meter of dredge material was used as filling up of back up area.
(v)	All conditions stipulated in the environmental clearance letter of	Complied.

	even number dated 19.5.2006 should be strictly complied with.	All stipulated conditions applicable in the environmental clearance letters are being complied with and the compliance reports are submitted to Regional Office of MoEF & CC, Chennai.
(vi)	The additional dredged material of 4 million cubic meters obtained from the project should not be disposed of into the sea.	Complied. The dredge material was used as beach nourishment and filling up of back up area.
(vii)	The reclaimed area should be used as container stackyards only.	Complied. Reclaimed area was used as container stack yard.
(viii)	Adequate drainage facilities should be provided in the reclaimed area along with collection and treatment system for treating the run off from the container stackyard.	Noted.
(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. All necessary approvals from TNPCB and SCZMA were obtained. TNPCB has accorded Consent to Operate to handle 11.68 MMTPA of containers vide order No. 1808111676581 & 1808211676581 under Air and Water Acts, dated 23.08.2018 and valid for 3years. TNPCB has extended the validity period of Consent To Operate (CTO) of the facility for a period upto 30.11.2021 vide their letter Order No. TNPCB/P&D/F.19205/2019 dated 13.05.2021.
B. General Conditions		**Compliance report**
(i)	Construction of the proposed structures should be undertaken	Noted.

	meticulously conforming to the existing Central/local rules and regulations including Coastal Regulation Zone Notification 1991 & its amendments. All the construction designs/drawings relating to the proposed construction activities must have approvals of the concerned State Government Departments/ Agencies.	
(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 the Terminals was completed and the projects are under operation.
(iii)	The project authorities must 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. M/s. AECTPL has installed and operating 25 KLD sewage treatment plant to collect and treat the sewage generated from the terminal. The entire treated water is being used for horticulture purpose. M/s AECTPL has implanted integrated waste management system-waste segregation yard. All the solid waste generated is being handled in line to Solid Waste Management Rules' 2016 as amended. M/s AECTPL vision is based on adoption of 5R principle of Solid Waste Management i.e reduce, Reuse, Reprocess, Recycle & recover. All waste is being handled inline to 5R principle.
(iv)	The proponent shall obtain the requisite consents for discharge of effluents and emissions under the Water (Prevention and Control of	Complied. The quay length 1000m was bifurcated into 730m quay length to handle

	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.	containers of 11.68 MTPA and in the remaining 270m to develop Multi Cargo terminal to handle 2.0 MTPA of cargo. Environmental clearance for the above was obtained from MoEF&CC vide letter dated 10-28/2005-IA.III dated 24.12.2014. TNPCB has accorded Consent to Operate to handle 11.68 MMTPA of containers vide order No. 1808111676581 & 1808211676581 under Air and Water Acts, dated 23.08.2018 and valid for 3years. TNPCB has extended the validity period of Consent To Operate (CTO) of the facility for a period upto 30.11.2021 vide their letter Order No. TNPCB/P&D/F.19205/2019 dated 13.05.2021.
(v)	The proponents shall provide for a regular monitoring mechanism so as to ensure that the treated effluents conform to the prescribed standards. The records of analysis reports must be properly maintained and made available for inspection to the concerned State/Central officials during their visits.	Complied. M/s AECTPL has awarded Environmental monitoring services to a 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 Tamilnadu Pollution Control Board on monthly basis and also as part of six monthly compliance report. Environment Monitoring report for the period January'2021 to June'2021 is enclosed herewith. Reports are made available for the inspection to the concerned State/central officials during their visits.
(vi)	In order to carry out the environmental monitoring during the	Complied.

	operational phase of the projects, 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.	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 Tamilnadu Pollution Control Board on monthly basis and also as part of six monthly compliance reports. Environment Monitoring report for the period July to December'2020 is enclosed herewith.
(vii)	The sand dunes and mangroves, if any, on the site should not be disturbed in any way.	No sand dunes or mangroves are present inside the port of this project site.
(viii)	A copy of the clearance letter will be marked to the concerned Panchayat/local NGO, if any, from whom any suggestion/representation has been received while processing the proposal.	No suggestion or representation was received from Panchayat/local NGO while processing the proposal.
(ix)	The Tamil Nadu Pollution Control Board should display a copy of the clearance letter at the Regional Office, District Industries centre and Collectors Office/Thasildhar office for 30 days.	No action needed as far as KPL is concerned.
(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.	The expenditure by M/s. AECTPL for Environment Management during the period from July to December 2020 is Rs.18.74 Lakhs. Breakup details are as follows: (i) EnvironmentalMonitoring-Rs.5.09 Lakhs (ii) Greenbelt Development-Rs.2.98 Lakhs (iii) Housekeeping-Rs.8.57 Lakhs (iv) O&M of STP-Rs.2.1 Lakhs

<table>
<tr><td></td><td></td><td>The environmental expenditure carried out by M/s AECTPL during the compliance period is Rs. 25.89 Lakhs. The breakup details are as follows.
<table><tr><td>S. No</td><td>Description</td><td>Amount (Rs. in Lakl</td></tr><tr><td>1</td><td>Environmental Monitoring</td><td>2.0</td></tr><tr><td>2</td><td>Greenbelt</td><td>2.22</td></tr><tr><td>3</td><td>STP-O&M</td><td>2.26</td></tr><tr><td>4</td><td>Housekeeping</td><td>19.41</td></tr><tr><td colspan="2">Total</td><td>25.89</td></tr></table></td></tr>
<tr><td>(xi)</td><td>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 proponent during their inspection for monitoring purposes, by furnishing full details and action plans including the action taken reports in respect if mitigative measures and other environmental protection activities.</td><td>Being complied with.

With regard to M/s AECTPL, TNPCB officials are visiting the terminal on monthly basis. There was no visit from RO-MoEF & CC during the compliance period. All the necessary support is being provided during the site visit.</td></tr>
<tr><td>(xii)</td><td>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.</td><td>The quay length of the container terminal of 1000m length was bifurcated into 730m quay length to handle containers of 11.68 MTPA and in the remaining 230m to develop Multi Cargo terminal to handle 2.0 MTPA of cargo. Environmental clearance for the above was obtained from MoEF&CC vide letter dated 10-28/2005-IA.III dated 24.12.2014.</td></tr>
<tr><td>(xiii)</td><td>This Ministry reserves the right to revoke this clearance, if any of the conditions stipulated are not complied with to the satisfaction of this Ministry.</td><td>Noted.</td></tr>
<tr><td>(xiv)</td><td>This Ministry or any other competent authority may stipulate any other additional conditions subsequently, if deemed necessary for environmental</td><td>Noted.</td></tr>
</table>

	protection, which shall be complied with.	
(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 the copies of clearance letters are available with the state pollution Control Board and may also be seen at web site of the Ministry of Environment & Forests at http://www.envfor.nic.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.	Complied. It was advertised in the vernacular Tamil and English newspapers on 17/9/2008.
(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.	Complied.

Point wise compliance report on the conditions issued by Tamil Nadu State Coastal Zone Management vide Letter No. 17250/EC-3/2009-1 dated 26.10.2009

1.	The composition of the dredged materials should be duly analyzed and examined to find out the availability of any toxic contents.	• Port has carried out a study through Institute of Ocean Management, Anna University, Chennai entitled "Assessment of Water, Sediment & Biota in Ennore Port" during January 2009. • The study revealed that the toxic heavy metals are found to be well within the safety limits and as such do not pose

		any problem to the marine environment. • Sediment quality is also monitored during dredging operations. • Port is also monitoring monthly marine water quality for various physio-chemical parameters including heavy metals.
2.	Based on the analysis, a suitable methodology for the disposal of dredging material has to be evolved out.	National Institute of Ocean Technology (NIOT), Chennai has carried out EIA and Risk assessment for the second phase expansion proposals, which is inclusive of Modeling studies has identified a marine disposal area (5 km x 5 km area) for disposal of dredged material. The study has identified a location for the safe disposal of dredged material with a holding capacity of 18.0 million cubic meters.
3.	A permanent air quality monitoring station should be established to check and maintain the air quality within the permissible level.	Port has engaged M/s. Hubert Enviro Care Systems (P) Ltd, a MoEF an NABL accredited laboratory, for sampling and testing of various environmental parameters inside the port premises. Port is monitoring ambient air quality (PM10 & PM2.5). All the monitored parameters are well within the standard limits. The analysis reports are regularly submitted to TNPCB & Regional Office of MoEF&CC. District Environmental Laboratory, Tamil Pollution Control Board also monitors annually, the air quality at different locations inside the port. The results of analysis reveal that ambient air quality and noise levels inside the port are well within standards during the survey carried out.

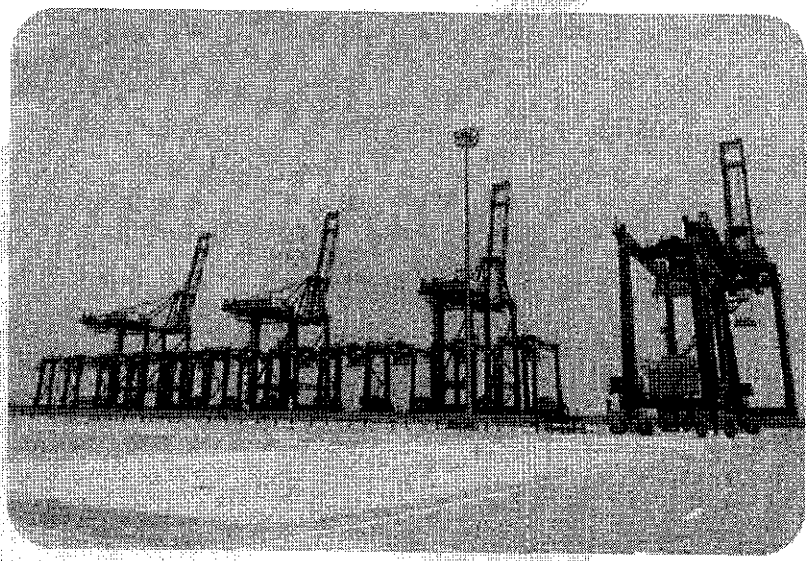
4.	A study should be carried out to ascertain the occurrence of coastal erosion / coastal accretion due to the dredging / dumping of dredged materials in the low lying coastal areas and if so, its extent of implication and the steps required to prevent erosion, mitigate the adverse impacts, etc.	• Desk studies for shoreline management for the proposed phase –II development at Ennore Port" CWPRS, (September 2009; Technical Report- 4658) • The study recommended creation of sand trap at the entrance • Regular dredging of the sand trap and dredging the sand accumulated at the mouth of the Ennore creek would be required to keep the inlet open. • This would enable minimizing further accretion / stabilization of land already formed on the south of the south breakwater. Regular dredging of sand accumulated at the creek mouth is being carried out by TNEB.

REPORT ON

COMPREHENSIVE ENVIRONMENTAL MONITORING FOR

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

JANUARY 2021 - JUNE 2021



PREPARED BY:

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

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List of Figures

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.

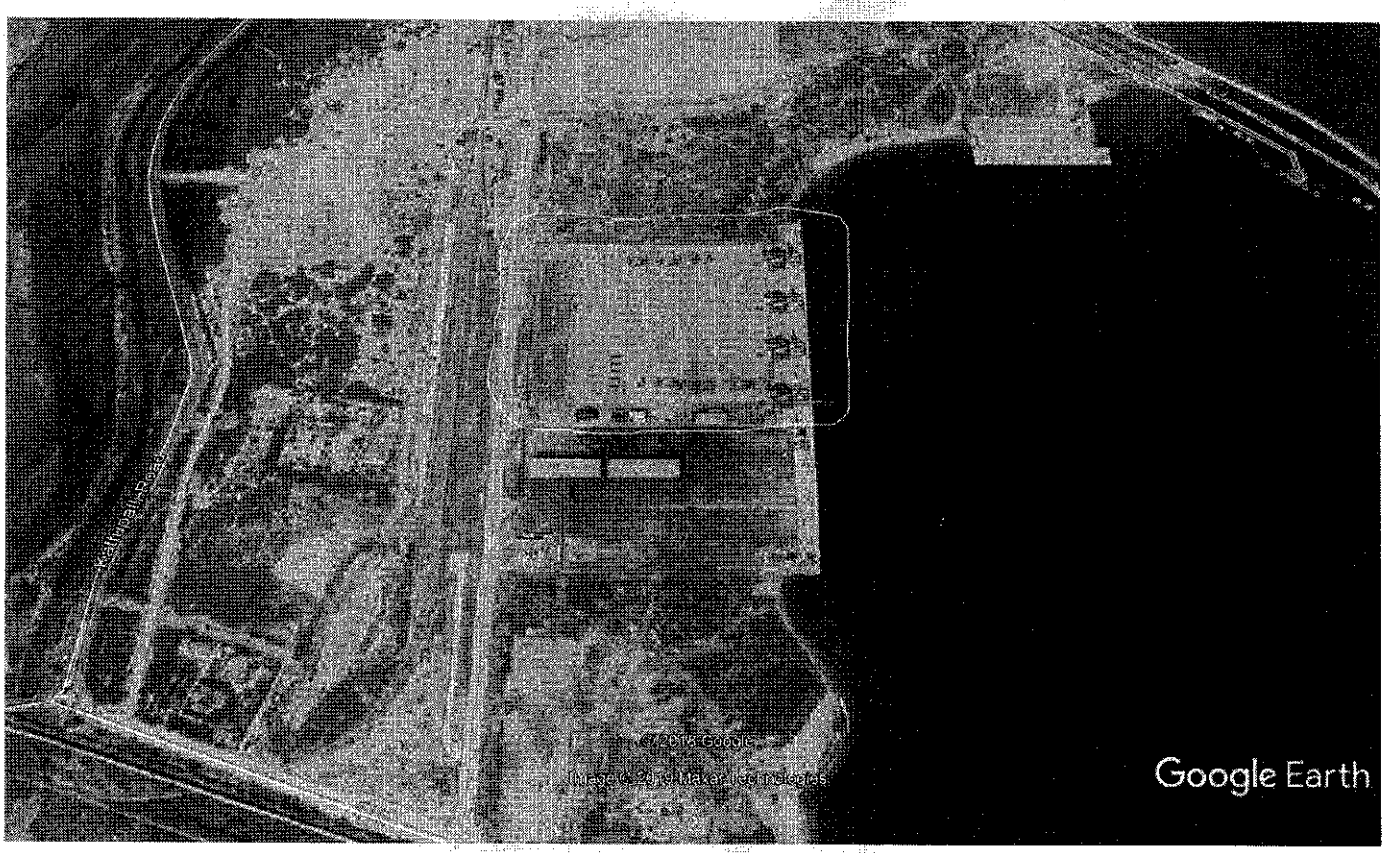
AECTPL have engaged M/s. Green Chem Solutions (P) Ltd, an Accredited Consultant by NABL to carry out the Comprehensive Environmental monitoring studies in the Adani Ennore Port continuously as per the statutory requirement. This report covers the monitored environmental data for the month of January 2021 to June 2021.

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

		• Delta HCH • Endosulfan (Alpha,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 - January 2021 to June 2021

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 January 2021 to June 2021. 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 - 2021

Marine Infrastructure Developer Pvt Ltd

Report Type:Average Report

From: 01-01-2021 00:00:00 To: 31-01-2021 23:59:59

Created By: glensAdmin Created At: 2021-02-05 11:27:48

Date (DD-MM-YYYY)	Wind Speed (km/h)	Wind Direction (Degree)	Atm Temperature (Degree C)	Relative Humidity (%)	Total Rainfall (mm)	Atm Pressure (mBar)	Solar Radiation (w/m2)
01-01-2021	7.74	69.12	29	82	0	1009.45	3.54
02-01-2021	8.33	67.91	28.35	95.38	0	1009.28	1.15
03-01-2021	7.82	75.53	28.76	96.81	0	1007.89	2.39
04-01-2021	8.41	63.93	28.88	94.95	0.09	1008.19	3.18
05-01-2021	5.28	101.12	27.51	99.9	31.94	1008.73	0.65
06-01-2021	3.1	94.08	28.54	99.83	5.48	1007.67	3.23
07-01-2021	3.99	143.29	27.88	99.84	35.33	1006.77	3.06
08-01-2021	2.94	169.89	27.57	99.81	1.06	1006.38	1.92
09-01-2021	4.81	77.39	28.88	98.81	0	1006.91	3.78
10-01-2021	8.01	57.8	28.96	99.74	0	1007.4	3.09
11-01-2021	9.85	67.26	29.12	99.13	0	1008.15	4.41
12-01-2021	11.45	59.99	28.92	98.53	0	1008.34	3.82
13-01-2021	7.85	54.08	29.24	94.63	0	1008.36	4.32
14-01-2021	7.37	64.47	29.24	96.12	0	1007.89	3.9
15-01-2021	5.24	71.08	29.34	84.46	0	1007.64	4.31
16-01-2021	4.49	70.72	28.99	82.39	0	1007.03	4.72
17-01-2021	4.4	118.67	28.47	78.16	0	1008.28	4.94
18-01-2021	5.35	75.31	29.32	75.27	0	1008.87	4.7
19-01-2021	7.68	68.05	29.01	82.43	0	1008.47	4.51
20-01-2021	5.88	106.66	28.48	94.73	0	1008.98	2.87
21-01-2021	3.76	115.84	29.08	98.79	0	1008.36	4.66
22-01-2021	3.29	157.08	29.18	94.77	0	1008.38	4.26
23-01-2021	3.84	87.1	29.41	86.27	0	1008.69	4.86
24-01-2021	4.28	147.86	28.32	89.9	0	1009.39	4.71
25-01-2021	3.98	117.11	28.81	84.94	0	1009.96	4.81
26-01-2021	4.01	137.29	28.76	80.08	0	1009.4	5.01
27-01-2021	3.39	134.19	28.28	84.54	0	1009.61	4.35
28-01-2021	6.12	83.9	29.7	82.43	0	1009.69	4
29-01-2021	6.44	85.47	29.89	81.38	0	1010.04	4.43
30-01-2021	5.25	80.61	29.62	85.61	0	1009.53	4.66
31-01-2021	5.5	78.85	29.48	83.93	0	1010.06	4.78

Feb - 2021

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	
01.02.21	25.9	28.6	27.2	1012.8	1017.2	1014.7	NNE	0	1.8	0.8	72	81	77.1	0.0
02.02.21	26.3	29.4	27.5	1012.9	1016.9	1014.8	N	0	2.2	0.6	73	82	78.1	0.6
03.02.21	25.9	28.2	26.9	1012.7	1016.7	1014.4	N	0	1.8	0.8	68	78	72.5	0.0
04.02.21	23.5	28.6	26.7	1012.5	1016.8	1014.3	NE	0	0.9	0.4	61	85	69.3	0.0
05.02.21	21.5	28.4	26.0	1011.2	1015.7	1013.4	N	0	2.7	0.6	62	87	70.1	0.0
06.02.21	21.2	28.3	25.9	1010.5	1014.2	1012.3	N	0	0.9	0.4	67	90	73.9	0.0
07.02.21	21	28.3	25.1	1011	1014.8	1012.7	N	0	2.2	0.6	72	92	80.5	0.0
08.02.21	24.8	28.6	26.7	1011.8	1015.6	1013.6	N	0	1.3	0.5	68	79	73.8	0.0
09.02.21	25.8	29.4	27.0	1011	1015.5	1012.9	N	0	0.9	0.4	59	84	68.5	0.0
10.02.21	24.7	28.3	26.4	1009.8	1014.4	1012.0	N	0	0.4	0.2	62	76	69.5	0.0
11.02.21	21.1	27.3	25.5	1009.5	1013.7	1011.6	E	0	0.9	0.2	64	89	71.1	0.0
12.02.21	21.4	28.7	25.9	1010.6	1014.1	1012.2	N	0	0.9	0.3	61	83	69.6	0.0
13.02.21	21.4	27.8	25.3	1011.8	1015	1013.2	N	0	1.3	0.4	71	86	77.7	0.0
14.02.21	21.1	28	25.6	1011.2	1014.9	1013.1	N	0	0.9	0.3	64	91	77.3	0.0
15.02.21	21.6	28.1	25.3	1009.5	1013.9	1012.0	N	0	0.9	0.3	71	91	79.8	0.0
16.02.21	20.8	27.6	25.5	1009.3	1013.7	1011.4	N	0	1.3	0.4	74	92	79.2	0.0
17.02.21	22.1	29	27.2	1009.1	1015	1012.4	E	0	1.8	1.0	69	80	73.1	0.0
18.02.21	26.1	29	27.2	1010.8	1015	1012.4	N	0.4	1.8	1.0	70	80	73.1	0.0
19.02.21	23.9	28.6	26.4	1010.6	1014.9	1012.6	N	0	2.7	1.0	79	90	83.8	0.4
20.02.21	22.9	27.8	25.5	1010.8	1014.6	1012.7	N	0	3.6	1.7	78	93	84.5	0.0
21.02.21	24.9	27.6	26.3	1011.3	1015.3	1013.2	N	0.4	2.2	1.3	78	88	83.6	0.0
22.02.21	24.4	28.7	27.1	1011.6	1015.6	1013.2	N	0	0.9	0.4	77	93	83.2	0.0
23.02.21	23	28.9	26.6	1009.6	1014.8	1011.9	N	0	0.9	0.3	76	94	83.3	0.0
24.02.21	22.6	28.7	26.2	1009.1	1013.1	1011.1	N	0	1.3	0.3	70	95	81.8	0.0
25.02.21	22	28.1	26.0	1008.7	1013.7	1010.8	N	0	2.7	0.7	75	93	81.9	0.0
26.02.21	22.4	27.8	25.8	1006.5	1012.1	1009.2	ESE	0	2.7	1.3	80	94	85.8	0.0
27.02.21	22.2	27.9	25.7	1006.1	1010.7	1008.3	SE	0	3.6	1.9	81	97	88.2	0.0
28.02.21	22.6	27.1	25.5	1007	1011.9	1009.3	N	0	3.1	1.5	83	97	89.1	0.0

Mar - 2021

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	
01.03.21	22	28.2	26.0	1009.8	1014.1	1012.0	N	0	3.6	2.1	81	97	87.2	0.0
02.03.21	23.2	28.2	26.2	1010.4	1014.5	1012.4	N	0.4	3.1	1.8	79	95	85.8	0.0
03.03.21	22.2	27.7	25.9	1009.9	1013.3	1011.5	ESE	0	2.7	1.0	73	93	83.5	0.0
04.03.21	22.3	28.1	26.0	1010.6	1013.8	1012.0	N	0	2.7	0.9	72	93	80.4	0.0
05.03.21	22.2	28.8	26.3	1010.7	1015	1012.7	N	0	2.7	0.8	74	92	81.5	0.0
06.03.21	23.2	28	26.2	1009.8	1014.8	1012.1	N	0	3.1	1.6	79	92	85.3	0.0
07.03.21	23.8	28.4	26.7	1008.8	1013.6	1011.3	N	0	3.6	1.9	79	94	86.6	0.0
08.03.21	24	29.2	27.3	1009.9	1014.5	1011.9	N	0	3.1	1.4	77	95	83.6	0.0
09.03.21	25.2	29.6	28.0	1010.7	1014.6	1012.5	E	0	2.7	0.9	78	92	82.9	0.0
10.03.21	27.1	29.9	28.2	1009.5	1014.6	1012.2	N	0.4	3.1	1.6	79	87	83.9	0.0
11.03.21	25.1	28.6	27.5	1009.2	1014.8	1012.1	N	0	3.6	2.4	79	91	82.6	0.0
12.03.21	23.4	28.8	26.8	1011.5	1016.1	1013.4	ESE	0	3.1	1.5	74	95	82.1	0.0
13.03.21	22.7	29.5	27.0	1010.9	1015.5	1012.8	ENE	0	1.3	0.7	75	93	81.4	0.0
14.03.21	23.4	29.4	27.2	1008.8	1013.4	1011.1	N	0	2.2	1.2	68	93	82.0	0.0
15.03.21	23.8	29.7	27.3	1008.3	1012.5	1010.2	N	0	1.8	0.5	76	94	84.9	0.0
16.03.21	24	29.1	27.1	1008.5	1012.3	1010.2	N	0	2.2	0.7	79	95	85.6	0.0
17.03.21	23.4	29.3	27.5	1007.7	1011.7	1009.7	ESE	0	1.3	0.3	79	93	80.4	0.0
18.03.21	24.3	29.3	27.5	1008	1011.7	1009.7	ESE	0	1.3	0.3	72	93	80.4	0.0
19.03.21	24.4	28.9	27.5	1007.3	1012	1009.4	N	0	3.1	0.9	74	87	79.3	0.0
20.03.21	23.4	28.9	26.7	1006.2	1010.4	1008.3	ESE	0	2.7	0.8	78	93	85.2	0.0
21.03.21	23.6	29.9	27.5	1006	1009.8	1007.8	ESE	0	0.9	0.3	75	95	84.0	0.0
22.03.21	25.2	29.6	27.9	1007.1	1011.9	1009.3	ESE	0	3.1	1.2	77	92	82.8	0.0
23.03.21	24.7	30.3	28.3	1008.4	1012.4	1010.3	ESE	0	1.8	0.4	75	92	81.2	0.0
24.03.21	24.4	30.5	28.1	1007.7	1012.9	1010.2	ENE	0	0.4	0.1	77	93	84.5	0.0
25.03.21	24.7	29.4	27.8	1007	1011.3	1009.1	ESE	0	1.8	0.4	80	95	87.3	0.0
26.03.21	25.1	29.8	28.1	1006.1	1011.1	1008.4	E	0	3.1	0.6	80	95	86.4	0.0
27.03.21	25.4	29.3	28.0	1005.9	1010.4	1008.0	ESE	0	3.1	1.1	79	94	86.2	0.0
28.03.21	25.3	29.9	28.1	1004.7	1009.5	1007.5	SE	0	3.6	1.9	82	93	87.0	0.0
29.03.21	27	29.9	28.7	1004.6	1009.3	1007.1	SSE	0.4	3.6	2.6	84	93	88.1	0.0
30.03.21	27.8	34.1	29.4	1001.7	1007.9	1005.2	SE	0.4	3.6	2.6	67	94	84.7	0.0
31.03.21	27.8	30.2	29.0	1000.3	1005.7	1003.2	SSE	0.9	4.5	3.1	81	94	88.6	0.0

Apr - 2021

Marine Infrastructure Developer Pvt Ltd							
Report Type:Average Report							
From: 01-04-2021 00:00:00 To: 30-04-2021 23:59:59							
Created By: glensAdmin Created At: 2021-05-04 10:05:05							
Date-(DD-MM-YYYY)	Wind Speed (km/h)	Wind Direction (Degree)	Atm Temperature (Degree C)	Relative Humidity (%)	Total Rainfall (mm)	Atm Pressure (mBar)	Solar Radiaton (w/m2)
Avg	3.98	212.85	32.35	91.71	0.22	1005.39	249.39
Min	2.98	159.54	30.11	84.77	0	1000.23	146.97
Max	5.9	244.05	33.59	96.49	6.62	1008.16	284.67
01-04-2021	5.1	228.11	32.79	92.35	0	1000.23	227.78
02-04-2021	5.77	215.08	33.59	86.09	0	1000.41	223.52
03-04-2021	5.9	224.42	32.64	91.62	0	1001.76	229.42
04-04-2021	3.92	202.17	32.39	96.49	0	1003.62	194.55
05-04-2021	4.69	164.52	32.16	95.03	0	1005.07	246.27
06-04-2021	3.29	187.64	31.8	89.88	0	1006.42	236.77
07-04-2021	3.47	240.33	31.71	89.21	0	1006.86	228.68
08-04-2021	4.61	239.21	31.21	89.3	0	1005.28	236.78
09-04-2021	4.12	228.94	31.38	84.77	0	1005.12	236.12
10-04-2021	4.06	198.76	31.56	88.27	0	1006.65	274.66
11-04-2021	4.39	159.54	31.72	91.83	0	1007.96	271.9
12-04-2021	3.66	193.23	32.61	88.01	0	1008.16	269.83
13-04-2021	3.7	201.6	32.36	89.92	0	1007.58	248.45
14-04-2021	3.05	212.55	31.65	93.31	0	1006.81	146.97
15-04-2021	4.07	176.32	30.11	91.52	6.62	1006.44	198.32
16-04-2021	4.1	220.39	31.25	93.13	0	1005.71	283.72
17-04-2021	4.25	211.81	32.36	92	0	1006.22	274.01
18-04-2021	3.94	237.91	32.61	93.13	0	1007.01	275.44
19-04-2021	3.76	234.45	32.96	93.96	0	1004.73	277.04
20-04-2021	4.04	233.37	32.98	92.68	0	1003.92	265.46
21-04-2021	3.81	238.4	32.88	93.33	0	1005.51	269.56
22-04-2021	4.21	235.02	32.78	93.05	0	1005.85	268.13
23-04-2021	3.26	217.8	32.75	93.24	0	1005.55	228.72
24-04-2021	2.98	212.94	32.61	95.51	0	1005.32	231.64
25-04-2021	3.23	233.12	32.81	93.08	0	1005.16	269.76
26-04-2021	3.53	244.05	32.77	89.37	0	1004.71	284.67
27-04-2021	3.22	219.08	32.85	92.39	0	1005.27	251.77
28-04-2021	3.51	218.4	32.88	94.39	0	1005.59	259.79
29-04-2021	3.82	190.46	33.01	92.47	0	1004.96	264.46
30-04-2021	3.94	165.76	33.18	91.94	0	1004.73	277.46

May - 2021

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	
01.05.21	28.1	32.2	30.2	1004.7	1009.9	1007.7	SE	0	5.4	3.6	71	91	85.0	0.0
02.05.21	28.8	31.4	30.2	1003.7	1009.4	1006.5	SE	0.4	4.9	3.4	82	90	85.7	0.0
03.05.21	28.2	31	30.1	1004.8	1008.4	1006.5	SE	0.4	7.2	4.2	83	90	85.7	0.0
04.05.21	27.8	31.2	29.9	1005.7	1009.9	1007.6	SE	0	8.5	4.8	79	91	84.0	0.0
05.05.21	29.4	30.9	30.1	1004.8	1010.4	1007.6	SE	0.4	3.6	2.3	81	86	83.0	0.0
06.05.21	29.4	31.2	30.3	1006.2	1011	1008.5	ESE	0.9	3.6	2.5	80	86	83.8	0.0
07.05.21	28.6	31	30.1	1007	1010.2	1008.7	ESE	0	4	2.2	81	88	83.8	0.0
08.05.21	28.2	31.6	30.1	1005.5	1008.8	1007.2	ESE	0	3.6	1.6	80	89	83.5	0.0
09.05.21	28.8	31.6	30.3	1004.4	1008.3	1006.4	N	0	3.6	2.0	78	88	83.5	0.0
10.05.21	28.3	31.6	30.2	1003.9	1007.9	1006.0	SE	0.4	3.6	2.6	79	90	84.5	0.0
11.05.21	25.7	31.7	30.1	1002.3	1007	1005.2	N	0.9	4	2.7	81	91	86.4	0.6
12.05.21	29.4	31.1	30.2	1001.3	1005.8	1003.8	SSE	1.8	4	3.0	85	92	88.2	0.0
13.05.21	29.3	31.1	30.2	1001.2	1005.6	1003.8	SE	0.9	4	2.7	85	92	88.7	0.0
14.05.21	29.4	30.7	30.1	1001.3	1004.4	1002.9	SE	2.7	4	3.5	77	91	85.9	0.0
15.05.21	29.3	30.8	29.9	1000.8	1005.5	1003.1	SE	2.2	4.5	3.5	78	92	84.9	0.0
16.05.21	28.9	30.8	29.5	1002.6	1007.5	1004.8	SSE	2.7	4.5	3.3	79	93	89.3	0.0
17.05.21	28.9	30.6	29.5	1003.4	1006.9	1005.3	N	1.8	4	3.2	81	94	91.0	0.0
18.05.21	28.6	30.6	29.5	1003.4	1006.9	1005.3	SSE	2.2	4	3.2	87	94	91.0	0.0
19.05.21	28.2	31.7	29.6	1002.3	1006.9	1004.7	N	0	4	2.2	74	94	87.2	0.0
20.05.21	26.9	32.9	28.6	1003	1007.2	1005.3	N	0	3.6	2.0	71	90	84.1	0.0
21.05.21	25.9	34.2	27.9	1003.2	1006.2	1005.0	N	0.4	3.6	2.2	65	91	85.4	0.4
22.05.21	28.3	31.9	29.7	1002.2	1006	1004.0	N	0.4	2.7	1.5	72	91	82.0	0.0
23.05.21	28.4	33.8	30.2	1002.3	1006.1	1003.9	N	0.4	3.1	2.0	67	92	84.0	0.0
24.05.21	29.3	34.1	31.6	1000	1004.4	1002.1	N	0	3.1	1.5	67	90	75.5	0.0
25.05.21	27.9	36.2	31.3	999.3	1003.1	1001.2	N	0.9	4.9	3.0	58	91	72.1	0.0
26.05.21	29.9	36.7	32.1	998	1003.1	1000.5	N	0.4	3.1	2.4	56	88	72.4	0.0
27.05.21	28.7	37.2	31.8	1000	1005.1	1002.6	N	0	3.6	1.3	53	93	74.0	0.0
28.05.21	29.1	34.2	30.8	1001.8	1006.1	1004.2	N	0	4	2.4	62	90	79.3	0.0
29.05.21	29.4	34.4	30.9	1002.6	1006.2	1004.5	N	0.4	3.6	1.8	64	91	80.9	0.0
30.05.21	27.9	34.9	31.0	1002.2	1005.3	1003.8	N	0.9	3.6	2.2	63	86	77.4	0.0
31.05.21	29.3	35.9	30.5	1000.7	1008.5	1004.1	N	0.9	8	4.8	62	92	86.4	0.0

Jun - 2021

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	
01.06.21	29.4	34.6	30.9	1001.6	1005.3	1003.6	N	0	3.1	1.8	66	90	81.9	0.0
02.06.21	29.4	31.1	30.3	1002.2	1006.1	1004.4	N	0.9	3.1	2.4	77	94	87.0	0.0
03.06.21	29.1	32.9	30.2	1004	1008	1005.8	N	2.2	3.6	2.9	69	94	87.1	0.0
04.05.21	28.2	31	29.7	1004.1	1009.1	1007.0	N	0	4	2.1	83	93	88.2	0.0
05.06.21	28.7	30.2	29.5	1003.9	1008.3	1006.5	N	0	4	2.5	82	90	86.8	0.0
06.06.21	26.8	31.3	29.2	1003.7	1008.4	1006.2	N	0	3.6	1.9	74	87	83.7	0.0
07.06.21	29.2	34.3	30.4	1003.1	1007.6	1005.7	N	0.9	3.6	2.4	69	89	83.2	0.2
08.06.21	26.7	33.3	29.5	1002.6	1007	1005.1	N	0.4	4	2.4	73	93	87.4	6.4
09.06.21	27.7	35.9	30.6	1001.4	1005.1	1003.6	N	0.4	3.6	2.4	59	92	79.0	1.0
10.06.21	29.1	34.9	30.7	1000.2	1004.2	1002.5	N	0.4	3.6	2.2	57	93	77.4	0.0
11.06.21	29.4	33.6	31.4	1001	1004.5	1002.6	N	0.9	3.1	2.4	61	87	69.6	0.0
12.06.21	27.1	35.7	30.7	1001	1004	1002.6	N	1.8	4	2.7	58	89	72.9	1.6
13.06.21	28.1	35.2	31.0	999.9	1004.2	1002.2	N	2.2	6.7	3.6	57	85	70.1	0.6
14.06.21	29.4	34.1	31.0	999.7	1004.1	1002.1	N	0.9	4.9	3.2	62	76	69.5	0.0
15.06.21	27.4	36.7	30.8	999.5	1003.5	1001.7	N	1.8	4.9	3.8	54	92	73.6	0.0
16.06.21	28.8	35.8	31.2	1000.2	1005.2	1003.0	N	0.4	4.5	2.7	56	92	71.9	0.0
17.06.21	28.8	34.3	30.4	1001.6	1007.5	1005.3	N	0.9	4	2.3	55	89	75.2	0.0
18.06.21	28.9	34.3	30.4	1003.5	1007.5	1005.3	N	0	4	2.3	60	89	75.2	0.0
19.06.21	28.6	35.1	30.3	1004.4	1009	1006.7	N	1.8	3.1	2.5	56	91	75.5	0.0
20.06.21	28.8	35.8	30.7	1004.5	1008.9	1006.8	N	0.4	3.1	2.0	56	89	75.2	0.0
21.06.21	28.8	34.3	30.5	1003.4	1007.6	1005.6	N	0.4	3.1	2.1	59	88	78.3	0.0
22.06.21	26.9	33	29.2	1002.6	1007.1	1005.1	N	0.9	3.6	2.5	65	90	82.8	0.0
23.06.21	28.8	32.8	29.6	1003.2	1006.8	1005.0	N	0.4	3.1	2.1	69	91	84.7	1.6
24.06.21	24	33.8	28.7	1003.4	1007.3	1005.6	N	0.9	3.1	2.0	65	94	84.0	5.0
25.06.21	27.5	33.4	29.9	1001.3	1006	1004.1	N	0	3.1	1.4	62	92	81.0	0.0
26.06.21	27.9	32.4	30.1	1002	1005.1	1003.6	N	0	3.1	1.6	66	91	78.0	0.0
27.06.21	27.3	31.8	29.0	1003.5	1006.9	1005.1	N	0.4	3.1	1.8	70	89	81.0	0.0
28.06.21	24.6	31.5	27.7	1004.1	1008	1005.8	N	0.4	3.6	2.1	74	95	88.3	4.2
29.06.21	26.9	30.3	29.0	1003.5	1006.9	1005.4	N	0.4	3.6	2.6	80	94	87.5	0.0
30.06.21	27.9	30.1	29.2	1002.2	1006.3	1004.5	N	2.2	3.6	2.9	82	94	88.8	0.0

WIND PATTERN - Jan- 2021

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 (%)
N	68	84	12	0	0	0		164	
NNE	200	129	27	0	0	0		356	
NE	89	26	4	0	0	0		119	
ENE	17	3	1	0	0	0		21	
E	11	4	2	0	0	0		17	
ESE	0	1	1	0	0	0		2	
SE	0	0	0	0	0	0		0	
SSE	1	0	0	0	0	0		1	
S	0	0	0	0	0	0		0	
SSW	0	0	0	0	0	0		0	
SW	0	0	0	0	0	0		0	
WSW	0	0	0	0	0	0		0	
W	7	0	0	0	0	0		7	
WNW	32	2	0	1	0	0		35	
NW	6	3	4	3	0	0		16	
NNW	2	3	0	0	0	0		5	
								743	

Number of events	433	255	51	4	0	0	743
Events (%)	58.3	34.3	6.9	0.5	0.0	0.0	

WIND PATTERN - Feb- 2021

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 (%)
N	233	63	14	7	0	0		317	
NNE	53	5	0	0	0	0		58	
NE	72	0	1	0	0	0		73	
ENE	40	3	0	0	0	0		43	
E	48	3	1	0	0	0		52	
ESE	8	7	7	0	0	0		22	
SE	5	5	8	8	0	0		26	
SSE	1	2	0	0	0	0		3	
S	1	0	0	0	0	0		1	
SSW	0	0	0	0	0	0		0	
SW	10	4	0	0	0	0		14	
WSW	5	0	0	0	0	0		5	
W	18	0	0	0	0	0		18	
WNW	30	1	0	0	0	0		31	
NW	5	1	1	0	0	0		7	
NNW	1	0	0	0	0	0		1	
								671	

Number of events	530	94	32	15	0	0	671
Events (%)	79	14	4.8	2.2	0.0	0.0	

WIND PATTERN - Mar- 2021

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 (%)
N	65	49	49	40	0	0	1.74	203	27.4
NNE	1	0	0	0	0	0	0.00	1	0.1
NE	4	0	0	0	0	0	0.20	4	0.5
ENE	29	2	0	0	0	0	0.93	31	4.2
E	72	15	0	0	0	0	0.88	87	11.7
ESE	62	28	41	10	0	0	1.78	141	19.0
SE	27	15	12	24	5	0	2.43	83	11.2
SSE	15	7	8	10	2	0	2.23	42	5.7
S	2	4	2	3	0	0	2.10	11	1.5
SSW	1	2	1	2	0	0	1.78	6	0.8
SW	18	7	2	2	0	0	1.46	29	3.9
WSW	20	0	0	0	0	0	0.20	20	2.7
W	31	1	0	0	0	0	0.65	32	4.3
WNW	44	0	0	0	0	0	0.00	44	5.9
NW	7	0	0	0	0	0	0.00	7	0.9
NNW	0	0	0	0	0	0	0.00	0	0.0
								741	

Number of events	398	130	115	91	7	0	741
Events (%)	53.7	17.5	15.5	12.3	0.8	0.0	

WIND PATTERN - Apr- 2021

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 (%)
N	65	49	49	40	0	0	1.74	203	27.4
NNE	1	0	0	0	0	0	0.00	1	0.1
NE	4	0	0	0	0	0	0.20	4	0.5
ENE	29	2	0	0	0	0	0.93	31	4.2
E	72	15	0	0	0	0	0.88	87	11.7
ESE	62	28	41	10	0	0	1.78	141	19.0
SE	27	15	12	24	5	0	2.43	83	11.2
SSE	15	7	8	10	2	0	2.23	42	5.7
S	2	4	2	3	0	0	2.10	11	1.5
SSW	1	2	1	2	0	0	1.78	6	0.8
SW	18	7	2	2	0	0	1.46	29	3.9
WSW	20	0	0	0	0	0	0.20	20	2.7
W	31	1	0	0	0	0	0.65	32	4.3
WNW	44	0	0	0	0	0	0.00	44	5.9
NW	7	0	0	0	0	0	0.00	7	0.9
NNW	0	0	0	0	0	0	0.00	0	0.0
								741	

Number of events	398	130	115	91	7	0	741
Events (%)	53.7	17.5	15.5	12.3	0.8	0.0	

WIND PATTERN - May- 2021

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 (%)
N	83	68	95	87	5	1	[illegible]	339	[illegible]
NNE	0	0	0	0	0	0	[illegible]	0	[illegible]
NE	0	0	0	0	0	0	[illegible]	0	[illegible]
ENE	0	0	0	0	0	0	[illegible]	0	[illegible]
E	0	0	0	0	0	0	[illegible]	0	[illegible]
ESE	3	3	10	32	0	0	[illegible]	48	[illegible]
SE	8	8	20	110	17	36	[illegible]	199	[illegible]
SSE	12	16	55	38	3	4	[illegible]	128	[illegible]
S	6	2	7	1	0	0	[illegible]	16	[illegible]
SSW	0	0	0	0	1	1	[illegible]	2	[illegible]
SW	4	0	0	0	1	0	[illegible]	5	[illegible]
WSW	0	0	0	0	0	0	[illegible]	0	[illegible]
W	2	0	0	0	0	0	[illegible]	2	[illegible]
WNW	4	0	0	0	0	0	[illegible]	4	[illegible]
NW	0	0	0	0	0	0	[illegible]	0	[illegible]
NNW	0	0	0	0	0	0	[illegible]	0	[illegible]
								743	

Number of events	122	97	187	268	27	42	743
Events (%)	16.4	13.1	25.2	36.1	3.6	5.7	

WIND PATTERN - Jun- 2021

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 (%)
N	104	119	228	213	35	2	[illegible]	701	[illegible]
NNE	0	0	0	0	0	0	[illegible]	0	[illegible]
NE	0	0	1	2	0	0	[illegible]	3	[illegible]
ENE	0	0	0	0	0	0	[illegible]	0	[illegible]
E	0	0	0	0	0	0	[illegible]	0	[illegible]
ESE	0	0	0	0	0	0	[illegible]	0	[illegible]
SE	0	0	1	3	0	0	[illegible]	4	[illegible]
SSE	0	0	4	1	1	0	[illegible]	6	[illegible]
S	0	1	2	1	0	0	[illegible]	4	[illegible]
SSW	0	0	0	0	0	0	[illegible]	0	[illegible]
SW	0	0	0	1	0	0	[illegible]	1	[illegible]
WSW	0	0	0	0	0	0	[illegible]	0	[illegible]
W	0	0	0	0	0	0	[illegible]	0	[illegible]
WNW	0	0	0	0	0	0	[illegible]	0	[illegible]
NW	0	0	0	0	0	0	[illegible]	0	[illegible]
NNW	0	0	0	0	0	0	[illegible]	0	[illegible]
								719	

Number of events	104	120	236	221	36	2	719
Events (%)	14.5	16.7	32.8	30.7	5.0	0.3	

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.

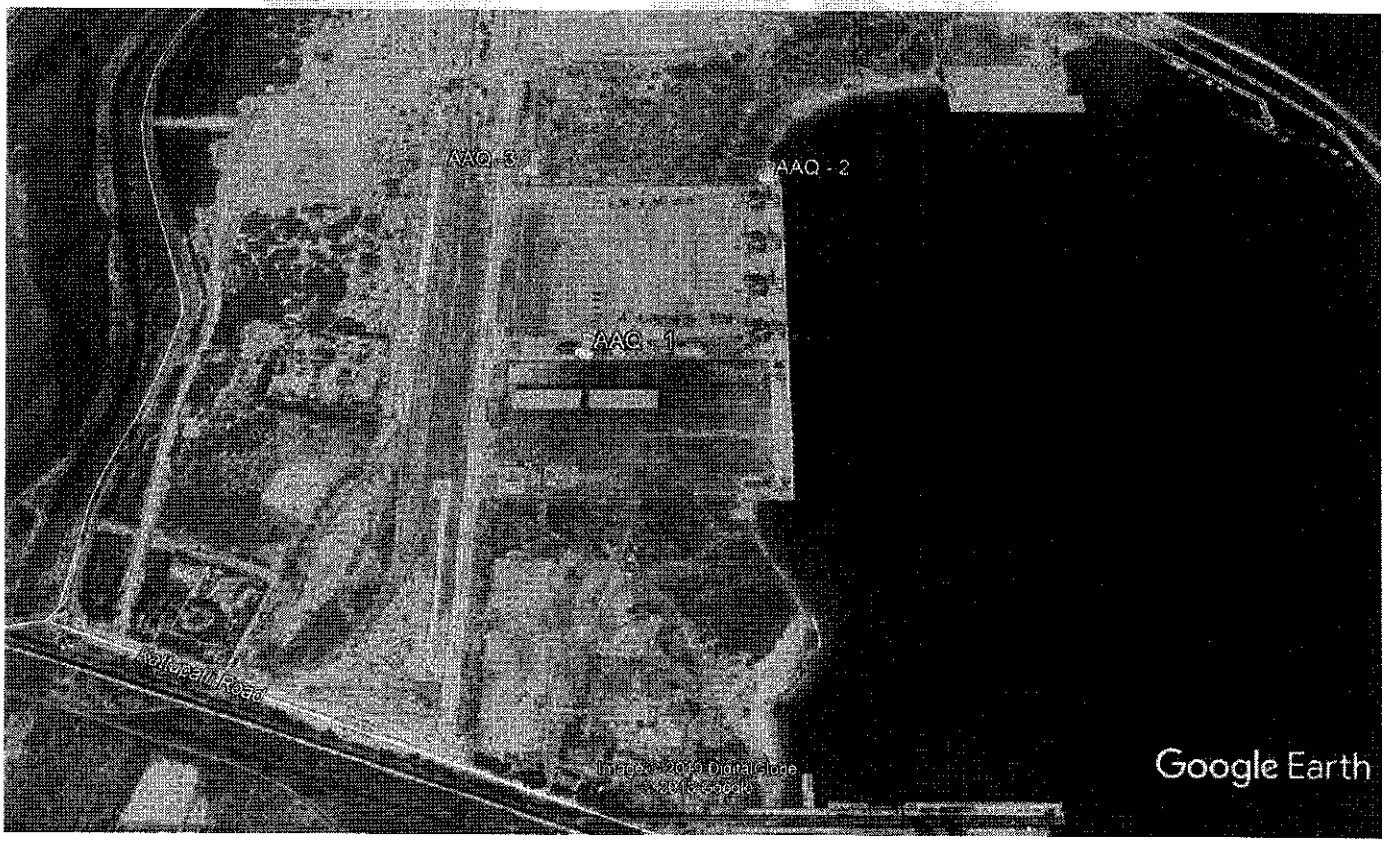
Frequency of Monitoring

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 LOCATION MAP



METHODOLOGY USED FOR AMBIENT AIR QUALITY MONITORING

S.No	Parameter	METHODOLOGY	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

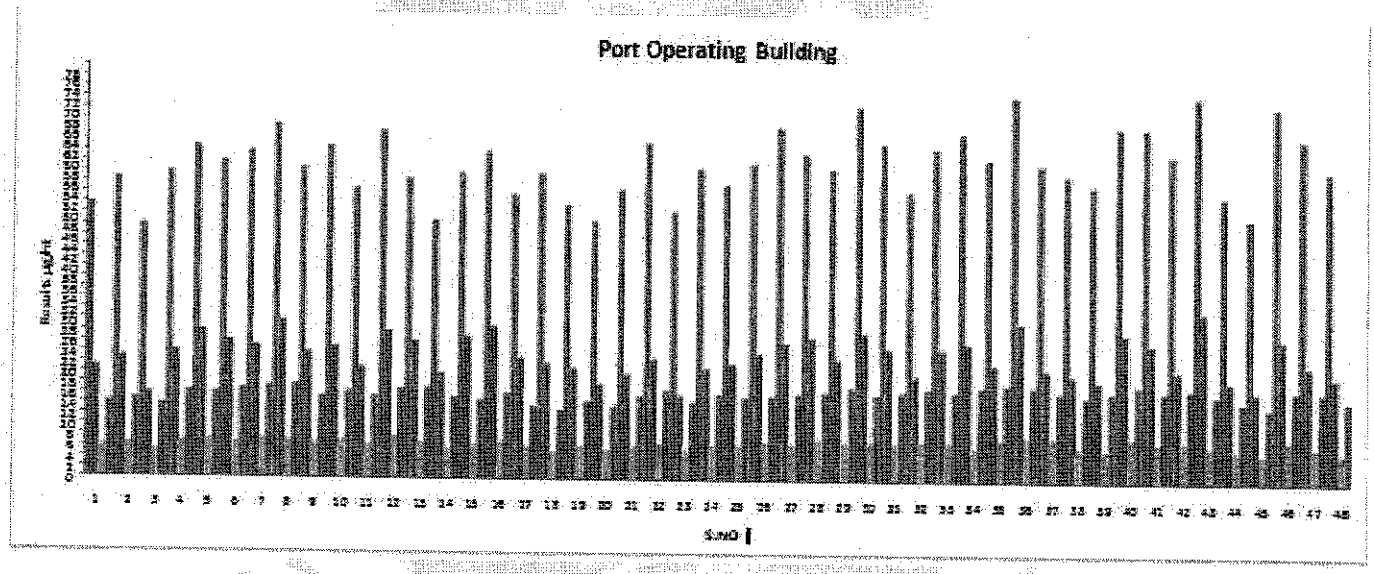
Results and Discussion

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

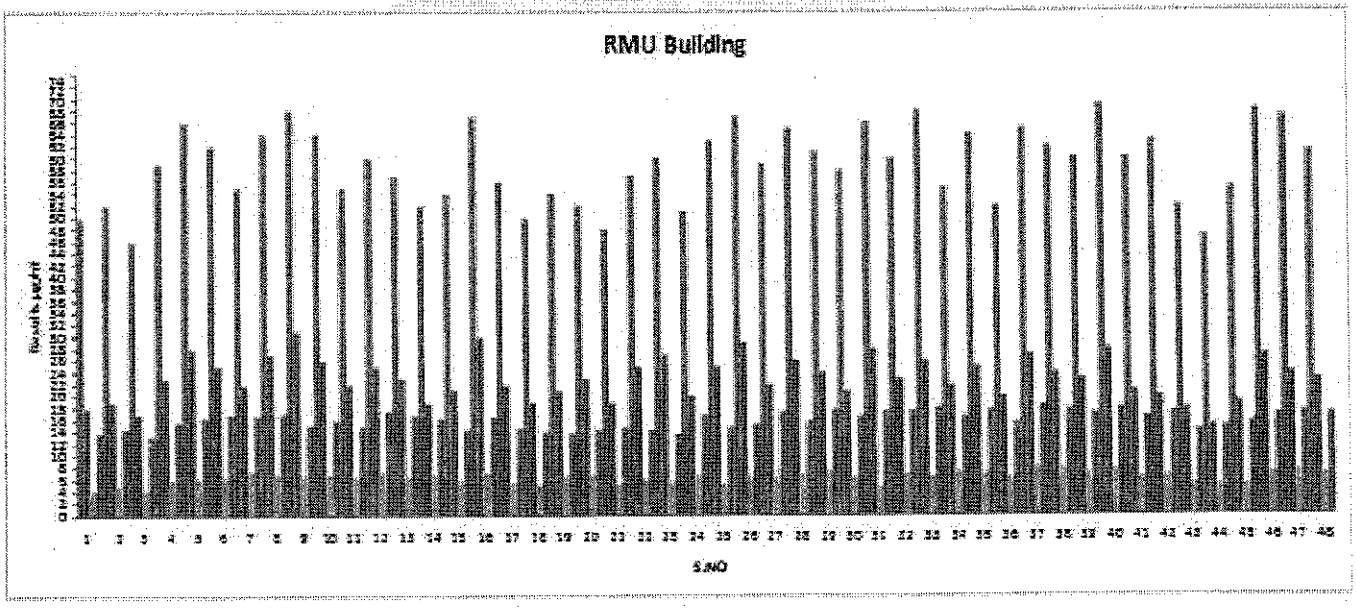
PORT OPERATING BUILDING (AAQ1)														
Parameters			Particular matter PM10	Particular matter PM2.5	Sulphur dioxide as SO2	Nitrogen dioxide as NO2	Lead as Pb	Carbon monoxide as CO	Ozone as O3	Ammonia as NH3	Arsenic as As	Nickel as Ni	Benzene as C6H6	Benzo (a) pyrene as BaP
Unit			µg/m3	µg/m3	µg/m3	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	04.01.2021	GCS/LAB/S/3176/20-21	52	21	5.8	14.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
2	06.01.2021	GCS/LAB/S/3176/20-21	57	23	6.4	15.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
3	08.01.2021	GCS/LAB/S/3176/20-21	48	16	5.1	14.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
4	11.01.2021	GCS/LAB/S/3176/20-21	58	24	7.0	16.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
5	18.01.2021	GCS/LAB/S/3176/20-21	63	28	7.4	16.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
6	22.01.2021	GCS/LAB/S/3176/20-21	60	26	6.8	17.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
7	27.01.2021	GCS/LAB/S/3176/20-21	62	25	7.5	17.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
8	29.01.2021	GCS/LAB/S/3176/20-21	67	30	7.3	17.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
9	01.02.2021	GCS/LAB/S/3219/20-21	59	24	6.7	15.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
10	05.02.2021	GCS/LAB/S/3219/20-21	63	25	7.0	16.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
11	08.02.2021	GCS/LAB/S/3219/20-21	55	21	6.3	15.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
12	12.02.2021	GCS/LAB/S/3219/20-21	66	28	7.9	17.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
13	15.02.2021	GCS/LAB/S/3219/20-21	57	26	6.9	17.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
14	19.02.2021	GCS/LAB/S/3219/20-21	49	20	5.7	15.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
15	22.02.2021	GCS/LAB/S/3219/20-21	58	27	6.3	15.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
16	26.02.2021	GCS/LAB/S/3219/20-21	62	29	6.8	16.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
17	01.03.2021	GCS/LAB/S/3313/20-21	54	23	6.0	13.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
18	05.03.2021	GCS/LAB/S/3313/20-21	58	22	5.0	13.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1

19	08.03.2021	GCS/LAB/S/3313/20-21	52	21	6.1	14.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
20	12.03.2021	GCS/LAB/S/3313/20-21	49	18	5.5	14.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
21	15.03.2021	GCS/LAB/S/3313/20-21	55	20	6.3	15.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
22	19.03.2021	GCS/LAB/S/3313/20-21	64	23	6.8	17.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
23	22.03.2021	GCS/LAB/S/3313/20-21	51	16	5.5	14.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
24	26.03.2021	GCS/LAB/S/3313/20-21	59	21	6.3	16.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
25	02.04.2021	GCS/LAB/S/3377/21-22	56	22	6.5	15.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
26	07.04.2021	GCS/LAB/S/3377/21-22	60	24	7.2	16.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
27	09.04.2021	GCS/LAB/S/3377/21-22	67	26	6.9	16.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
28	12.04.2021	GCS/LAB/S/3377/21-22	62	27	7.6	16.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
29	16.04.2021	GCS/LAB/S/3377/21-22	59	23	7.1	17.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
30	19.04.2021	GCS/LAB/S/3377/21-22	71	28	7.3	16.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
31	23.04.2021	GCS/LAB/S/3377/21-22	64	25	7.0	16.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
32	26.04.2021	GCS/LAB/S/3377/21-22	55	20	7.5	17.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
33	03.05.2021	GCS/LAB/S/3423/21-22	63	25	7.1	16.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
34	07.05.2021	GCS/LAB/S/3423/21-22	66	26	6.3	17.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
35	12.05.2021	GCS/LAB/S/3423/21-22	61	22	7.8	18.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
36	14.05.2021	GCS/LAB/S/3423/21-22	73	30	8.5	17.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
37	17.05.2021	GCS/LAB/S/3423/21-22	60	21	8.3	16.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
38	21.05.2021	GCS/LAB/S/3423/21-22	58	20	6.5	16.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
39	25.05.2021	GCS/LAB/S/3423/21-22	56	19	6.0	16.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
40	27.05.2021	GCS/LAB/S/3423/21-22	67	28	8.1	18.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
41	01.06.2021	GCS/LAB/S/3503/21-22	67	26	7.3	16.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
42	04.06.2021	GCS/LAB/S/3503/21-22	62	21	7.8	17.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
43	07.06.2021	GCS/LAB/S/3503/21-22	73	32	6.7	16.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
44	11.06.2021	GCS/LAB/S/3503/21-22	54	19	5.8	15.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
45	14.06.2021	GCS/LAB/S/3503/21-22	50	17	5.2	14.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
46	18.06.2021	GCS/LAB/S/3503/21-22	71	27	7.9	17.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
47	21.06.2021	GCS/LAB/S/3503/21-22	65	22	6.6	17.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
48	25.06.2021	GCS/LAB/S/3503/21-22	59	20	5.5	15.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1



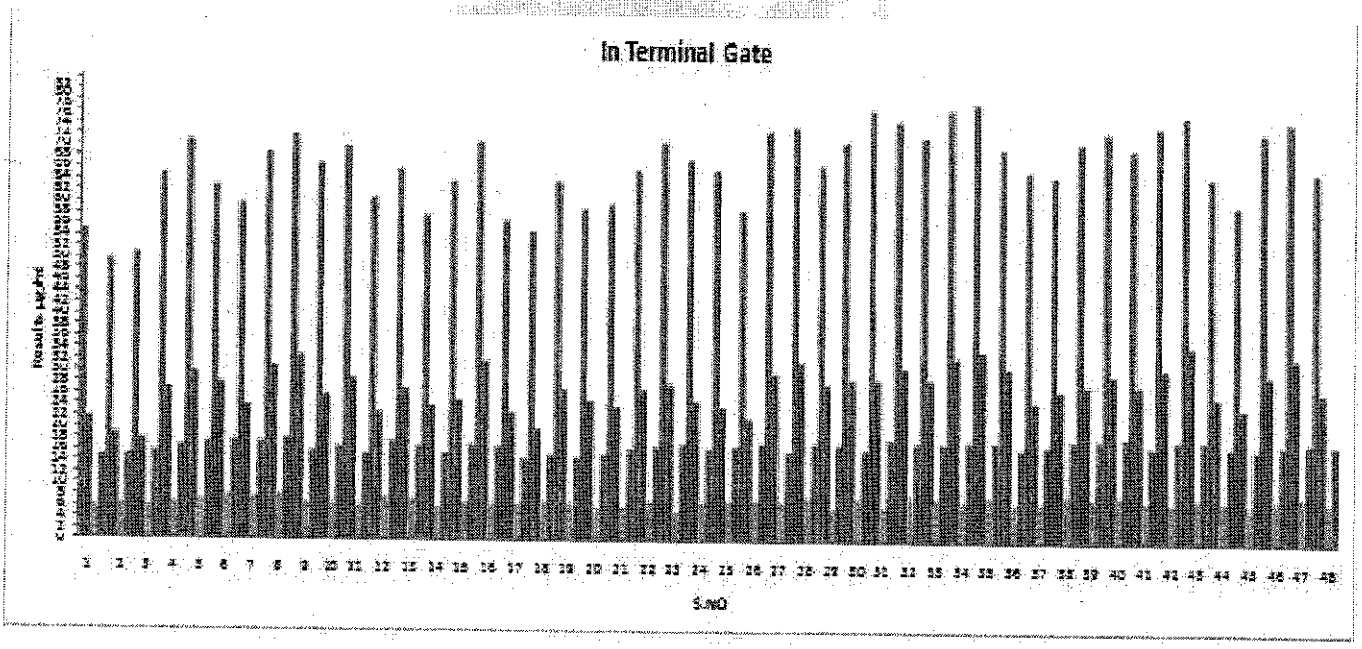
Parameters			Particular matter PM10	Particular matter PM2.5	Sulphur dioxide as SO2	Nitrogen dioxide as NO2	Lead as Pb	Carbon monoxide as CO	Ozone as O3	Ammonia as NH3	Arsenic as As	Nickel as Ni	Benzene as C6H6	Benzo (a) pyrene as BaP
Unit			µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	mg/m3	µg/m3	µg/m3	ng/m3	ng/m3	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	04.01.2021	GCS/LAB/S/3176/20-21	50	18	4.1	13.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
2	06.01.2021	GCS/LAB/S/3176/20-21	52	19	5.0	14.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
3	08.01.2021	GCS/LAB/S/3176/20-21	46	17	4.4	13.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
4	11.01.2021	GCS/LAB/S/3176/20-21	59	23	5.8	15.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
5	18.01.2021	GCS/LAB/S/3176/20-21	66	28	6.1	16.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
6	22.01.2021	GCS/LAB/S/3176/20-21	62	25	6.4	17.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
7	27.01.2021	GCS/LAB/S/3176/20-21	55	22	7.3	16.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
8	29.01.2021	GCS/LAB/S/3176/20-21	64	27	7.0	17.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
9	01.02.2021	GCS/LAB/S/3219/20-21	68	31	7.0	15.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
10	05.02.2021	GCS/LAB/S/3219/20-21	64	26	6.8	16.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
11	08.02.2021	GCS/LAB/S/3219/20-21	55	22	6.4	15.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
12	12.02.2021	GCS/LAB/S/3219/20-21	60	25	7.3	17.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
13	15.02.2021	GCS/LAB/S/3219/20-21	57	23	6.5	16.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
14	19.02.2021	GCS/LAB/S/3219/20-21	52	19	6.9	16.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
15	22.02.2021	GCS/LAB/S/3219/20-21	54	21	6.0	14.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
16	26.02.2021	GCS/LAB/S/3219/20-21	67	30	7.2	16.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
17	01.03.2021	GCS/LAB/S/3313/20-21	56	22	5.3	14.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
18	05.03.2021	GCS/LAB/S/3313/20-21	50	19	5.1	14.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
19	08.03.2021	GCS/LAB/S/3313/20-21	54	21	6.5	13.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
20	12.03.2021	GCS/LAB/S/3313/20-21	52	23	6.7	14.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1

21	15.03.2021	GCS/LAB/S/3313/20-21	48	19	5.2	14.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
22	19.03.2021	GCS/LAB/S/3313/20-21	57	25	6.0	14.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
23	22.03.2021	GCS/LAB/S/3313/20-21	60	27	5.5	13.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
24	26.03.2021	GCS/LAB/S/3313/20-21	51	20	6.6	16.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
25	02.04.2021	GCS/LAB/S/3377/21-22	63	25	5.0	14.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
26	07.04.2021	GCS/LAB/S/3377/21-22	67	29	6.6	15.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
27	09.04.2021	GCS/LAB/S/3377/21-22	59	22	6.1	17.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
28	12.04.2021	GCS/LAB/S/3377/21-22	65	26	6.9	15.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
29	16.04.2021	GCS/LAB/S/3377/21-22	61	24	7.4	17.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
30	19.04.2021	GCS/LAB/S/3377/21-22	58	21	6.5	16.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
31	23.04.2021	GCS/LAB/S/3377/21-22	66	28	4.8	17.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
32	26.04.2021	GCS/LAB/S/3377/21-22	60	23	6.9	17.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
33	03.05.2021	GCS/LAB/S/3423/21-22	68	26	6.5	18.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
34	07.05.2021	GCS/LAB/S/3423/21-22	55	22	7.4	16.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
35	12.05.2021	GCS/LAB/S/3423/21-22	64	25	7.0	17.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
36	14.05.2021	GCS/LAB/S/3423/21-22	52	20	6.4	15.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
37	17.05.2021	GCS/LAB/S/3423/21-22	65	27	8.1	18.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
38	21.05.2021	GCS/LAB/S/3423/21-22	62	24	7.8	17.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
39	25.05.2021	GCS/LAB/S/3423/21-22	60	23	6.7	17.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
40	27.05.2021	GCS/LAB/S/3423/21-22	69	28	7.7	18.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
41	01.06.2021	GCS/LAB/S/3503/21-22	60	21	6.4	16.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
42	04.06.2021	GCS/LAB/S/3503/21-22	63	20	6.6	17.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
43	07.06.2021	GCS/LAB/S/3503/21-22	52	18	5.3	14.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
44	11.06.2021	GCS/LAB/S/3503/21-22	47	15	5.0	14.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
45	14.06.2021	GCS/LAB/S/3503/21-22	55	19	5.2	15.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
46	18.06.2021	GCS/LAB/S/3503/21-22	68	27	7.1	17.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
47	21.06.2021	GCS/LAB/S/3503/21-22	67	24	7.4	17.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
48	25.06.2021	GCS/LAB/S/3503/21-22	61	23	7.0	17.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1



Parameters			IN TERMINAL GATE (AAQ3)											
			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	04.01.2021	GCS/LAB/S/3176/20-21	55	22	6.0	14.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
2	06.01.2021	GCS/LAB/S/3176/20-21	50	19	6.5	15.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
3	08.01.2021	GCS/LAB/S/3176/20-21	51	18	6.1	15.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
4	11.01.2021	GCS/LAB/S/3176/20-21	65	27	6.9	17.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
5	18.01.2021	GCS/LAB/S/3176/20-21	71	30	7.2	17.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
6	22.01.2021	GCS/LAB/S/3176/20-21	63	28	7.9	18.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
7	27.01.2021	GCS/LAB/S/3176/20-21	60	24	7.6	17.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
8	29.01.2021	GCS/LAB/S/3176/20-21	69	31	8.3	18.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
9	01.02.2021	GCS/LAB/S/3219/20-21	72	33	6.7	16.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
10	05.02.2021	GCS/LAB/S/3219/20-21	67	26	7.1	16.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
11	08.02.2021	GCS/LAB/S/3219/20-21	70	29	6.5	15.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
12	12.02.2021	GCS/LAB/S/3219/20-21	61	23	7.6	17.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
13	15.02.2021	GCS/LAB/S/3219/20-21	66	27	7.4	17.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
14	19.02.2021	GCS/LAB/S/3219/20-21	58	24	6.0	15.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
15	22.02.2021	GCS/LAB/S/3219/20-21	64	25	7.0	17.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
16	26.02.2021	GCS/LAB/S/3219/20-21	71	32	6.8	16.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
17	01.03.2021	GCS/LAB/S/3313/20-21	57	23	6.6	14.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
18	05.03.2021	GCS/LAB/S/3313/20-21	55	20	7.3	15.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
19	08.03.2021	GCS/LAB/S/3313/20-21	64	27	6.9	15.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
20	12.03.2021	GCS/LAB/S/3313/20-21	59	25	6.3	15.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
21	15.03.2021	GCS/LAB/S/3313/20-21	60	24	6.2	16.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
22	19.03.2021	GCS/LAB/S/3313/20-21	66	27	7.2	16.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1

23	22.03.2021	GCS/LAB/S/3313/20-21	71	28	5.5	17.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
24	26.03.2021	GCS/LAB/S/3313/20-21	68	25	7.0	16.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
25	02.04.2021	GCS/LAB/S/3377/21-22	66	24	7.2	17.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
26	07.04.2021	GCS/LAB/S/3377/21-22	59	22	7.5	17.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
27	09.04.2021	GCS/LAB/S/3377/21-22	73	30	7.1	16.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
28	12.04.2021	GCS/LAB/S/3377/21-22	74	32	7.9	17.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
29	16.04.2021	GCS/LAB/S/3377/21-22	67	28	6.0	17.3	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
30	19.04.2021	GCS/LAB/S/3377/21-22	71	29	7.8	16.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
31	23.04.2021	GCS/LAB/S/3377/21-22	77	29	6.5	18.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
32	26.04.2021	GCS/LAB/S/3377/21-22	75	31	8.4	17.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
33	03.05.2021	GCS/LAB/S/3423/21-22	72	29	7.9	17.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
34	07.05.2021	GCS/LAB/S/3423/21-22	77	33	7.4	18.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
35	12.05.2021	GCS/LAB/S/3423/21-22	78	34	8.3	17.9	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
36	14.05.2021	GCS/LAB/S/3423/21-22	70	31	6.8	16.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
37	17.05.2021	GCS/LAB/S/3423/21-22	66	25	7.2	17.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
38	21.05.2021	GCS/LAB/S/3423/21-22	65	27	8.5	18.4	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
39	25.05.2021	GCS/LAB/S/3423/21-22	71	28	7.9	18.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
40	27.05.2021	GCS/LAB/S/3423/21-22	73	30	8.6	18.8	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
41	01.06.2021	GCS/LAB/S/3503/21-22	70	28	7.5	17.1	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
42	04.06.2021	GCS/LAB/S/3503/21-22	74	31	7.0	18.5	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
43	07.06.2021	GCS/LAB/S/3503/21-22	76	35	8.1	18.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
44	11.06.2021	GCS/LAB/S/3503/21-22	65	26	7.4	17.2	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
45	14.06.2021	GCS/LAB/S/3503/21-22	60	24	6.8	16.7	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
46	18.06.2021	GCS/LAB/S/3503/21-22	73	30	7.7	17.6	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
47	21.06.2021	GCS/LAB/S/3503/21-22	75	33	8.5	18.0	<0.1	<1.0	<10	<2	<2	<2	<1	<0.1
48	25.06.2021	GCS/LAB/S/3503/21-22	66	27	7.5	17.8	<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	• AAS / ICP method after sampling on EPM 2000 or equivalent filter paper • ED – XRF using Teflon filter
		24 hours**	1.0	1.0	
7	Carbon Monoxide (CO) mg/m^3	8 hours**	2	2	Non Dispersive Infra RED (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.

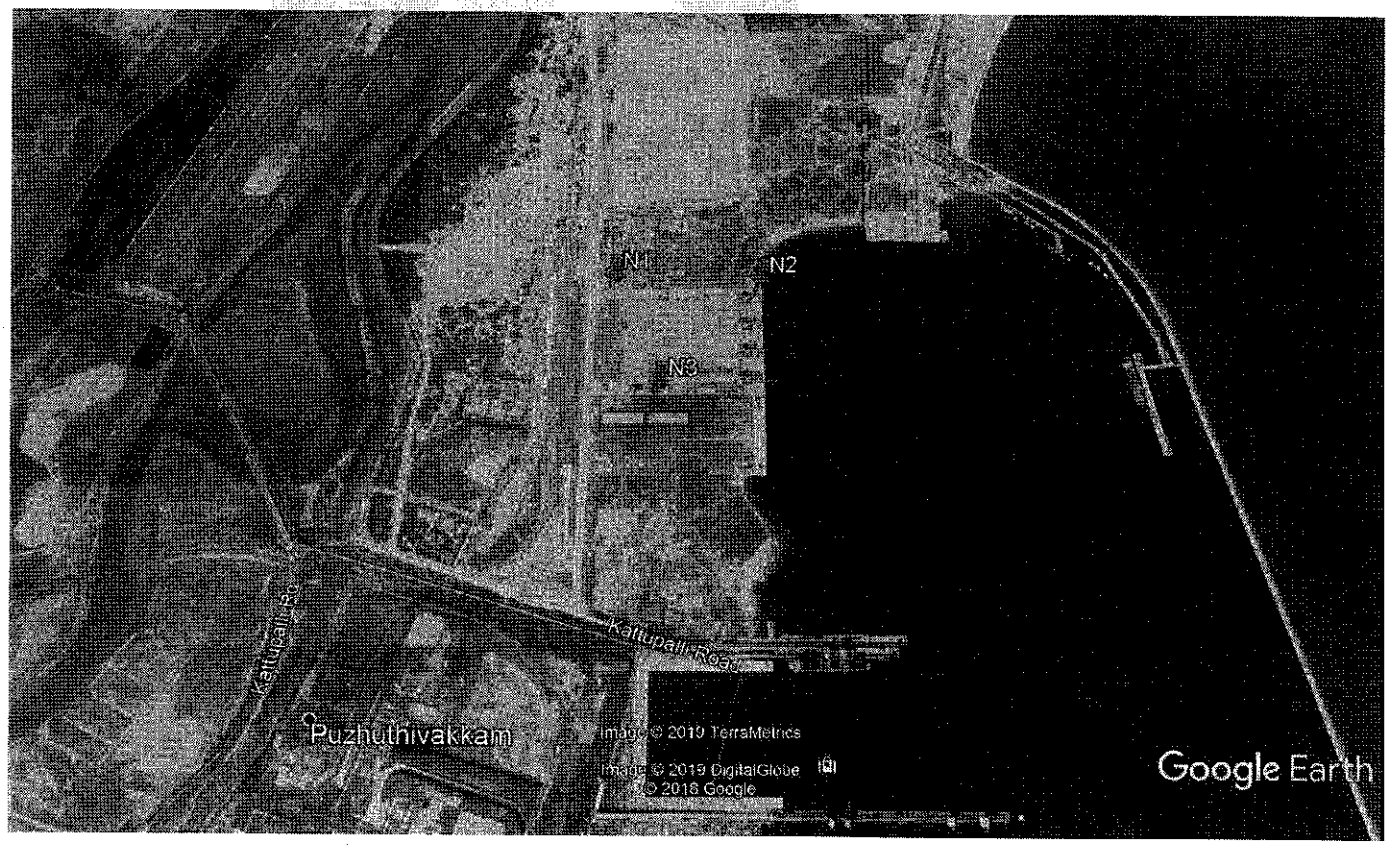
iii. AMBIENT NOISE LEVEL INTENSITY

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

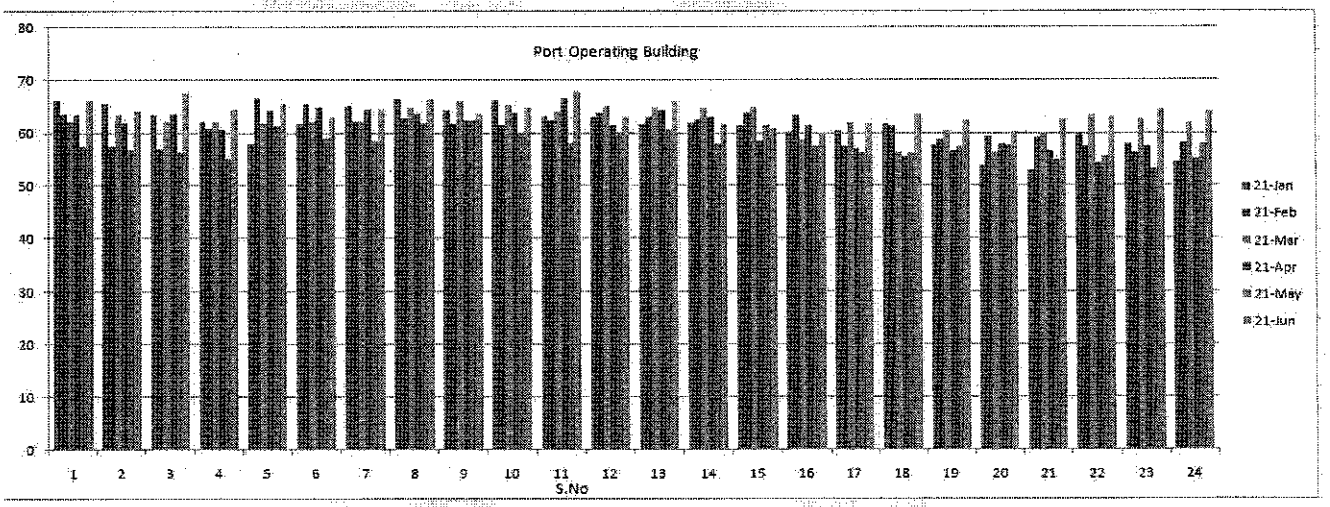
STATION CODE	LOCATIONS	Geographical Location
N1	In Terminal Gate	13^0 16' 25" N 80^0 20' 0" E
N2	RMU Building	13^0 16' 25" N 80^0 20' 16" E
N3	Port operating building	13^0 16' 12" N 80^0 20' 5" E

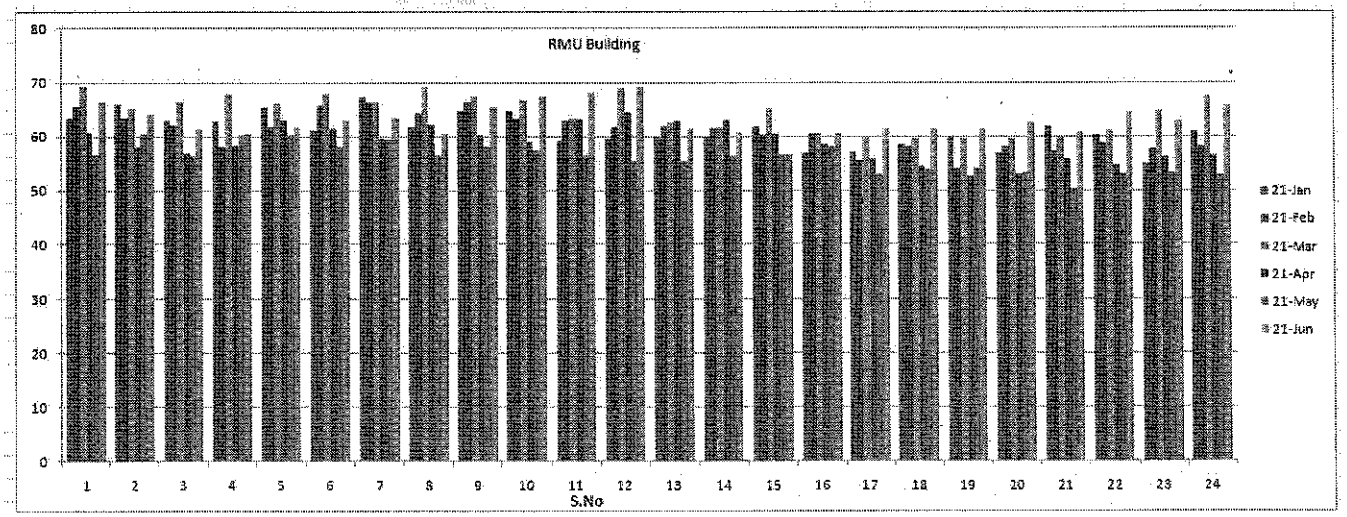
Fig - 3. Noise Level Sampling Locations



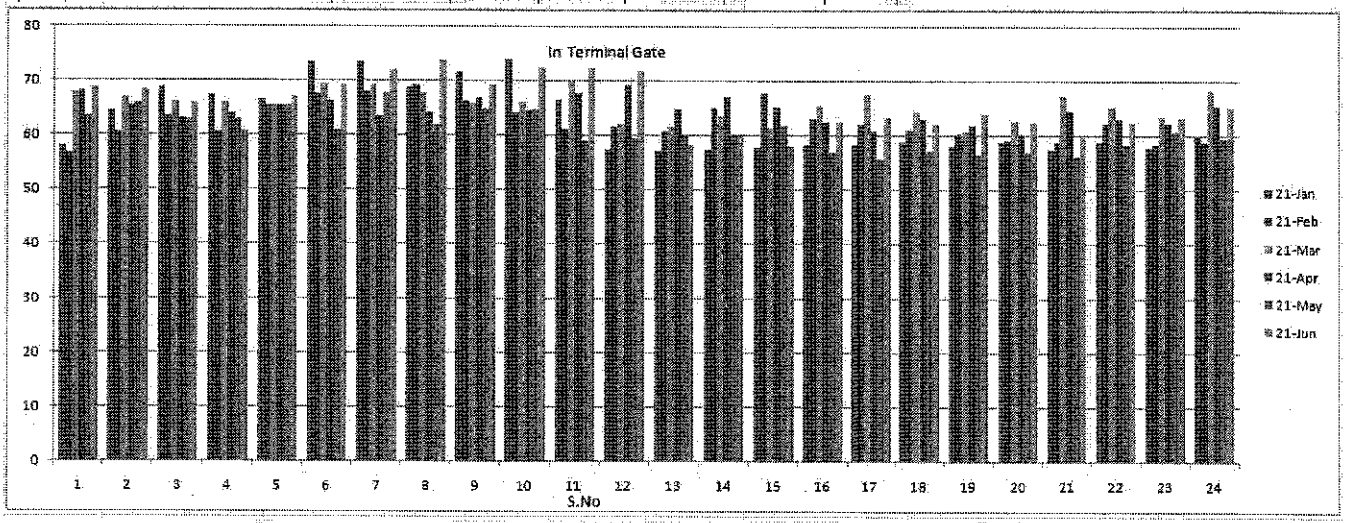
Annexure - 3

Location		PORT OPERATING BUILDING						RMU BUILDING					
Month & Year		Jan - 21	Feb - 21	Mar - 21	Apr - 21	May - 21	Jun - 21	Jan - 21	Feb - 21	Mar - 21	Apr - 21	May - 21	Jun - 21
Parameter & Unit		Leq	Leq dB(A)	Leq	Leq	Leq	Leq	Leq	Leq dB(A)	Leq	Leq	Leq	Leq
S.No	Time of Sampling												
1	06.00 – 07.00 (Day)	66.4	63.9	62.4	63.7	57.7	66.4	63.6	65.8	69.6	60.9	56.8	66.5
2	07.00 –08.00	65.8	57.7	63.6	62.1	57.1	64.3	66.1	63.7	65.3	58.4	60.7	64.3
3	08.00 – 09.00	63.7	57.3	62.3	63.8	56.7	67.4	63.1	62.4	66.7	57.1	56.7	61.4
4	09.00 – 10.00	62.4	61.1	62.3	60.9	55.4	64.6	63	58.2	68	58.6	60.4	60.6
5	10.00 – 11.00	58.1	66.9	62	64.4	61.5	65.8	65.6	62	66.4	63.2	60.4	61.9
6	11.00 – 12.00	62	65.7	62.3	65.2	59.2	63.1	61.2	65.9	68	61.7	58.3	63.2
7	12.00 – 13.00	65.4	62.4	62.4	64.7	58.8	64.7	67.4	66.5	66.5	59.8	59.5	63.7
8	13.00 – 14.00	66.5	63	65.2	63.9	62.1	66.6	61.9	64.5	69.4	62.3	56.6	60.6
9	14.00 – 15.00	64.5	62	66.1	62.6	62.5	63.9	65	66.5	67.7	60.5	58.2	65.5
10	15.00 – 16.00	66.3	61.8	65.5	64.1	60.3	65.1	64.9	63.4	66.8	59.2	57.7	67.6
11	16.00 – 17.00	63.3	62.5	64.3	66.8	58.4	67.9	59.3	63.1	63.7	63.4	56.6	68.2
12	17.00 – 18.00	63.1	64	65.3	61.7	59.8	63.2	59.7	61.9	69.1	64.7	55.8	69.3
13	18.00 – 19.00	61.9	63.1	65.2	64.5	60.8	66.1	60.3	62.2	62.8	62.9	55.5	61.8
14	19.00 –20.00	62.2	62.8	64.8	63.2	58.1	62	60.1	61.7	61.9	63.1	56.7	60.9
15	20.00 – 21.00	61.7	64	65.1	58.7	61.6	61.1	62	60.5	65.3	60.6	56.9	56.9
16	21.00 – 22.00	60.5	63.6	59	61.8	57.6	60.3	57	60.6	60.7	58.7	58.2	60.7
17	22.00 – 23.00 (Night)	60.6	57.7	62.2	57.2	56.7	62	57.3	55.7	59.9	55.9	53.1	61.4
18	23.00 – 00.00	62	61.5	56.5	55.7	56.3	63.8	58.7	58.2	59.8	54.6	54	61.5
19	00.00 – 01.00	57.9	59	60.6	56.8	57.6	62.6	60	54.3	59.3	52.8	54.2	61.4
20	01.00 – 02.00	53.9	59.5	56.7	58.1	57.8	60.4	57	58.4	59.8	53.1	53.3	62.7
21	02.00 – 03.00	53.1	59.4	60.2	56.9	55.2	62.7	62.1	57.4	60.1	56	50.4	60.8
22	03.00 – 04.00	60.1	57.6	63.6	54.3	55.7	63.1	60.5	58.9	61.2	54.8	53.2	64.6
23	04.00 – 05.00	58.1	56.4	62.8	57.6	53.3	64.7	55.1	57.8	65	56.3	53.5	63
24	05.00 – 06.00	54.7	58.2	62.2	55.3	58	64.2	61.1	58.3	67.6	56.5	53	65.9





Location		IN TERMINAL GATE					
Month & Year		PORT OPERATING BUILDING					
Parameter & Unit		Jan - 21	Feb - 21	Mar - 21	Apr - 21	May - 21	Jun - 21
S.No	Time of Sampling	Leq	Leq	Leq	Leq	Leq	Leq
1	06.00 – 07.00 (Day)	58.1	56.9	67.9	68.4	63.6	69
2	07.00 – 08.00	64.7	60.7	67	65.6	66.1	68.5
3	08.00 – 09.00	68.9	63.7	66.3	63.3	63.1	66.1
4	09.00 – 10.00	67.5	60.6	65.9	64.1	63	61
5	10.00 – 11.00	66.6	65.5	65.6	65.6	65.6	67.2
6	11.00 – 12.00	73.7	67.6	69.6	66.4	61.2	69.4
7	12.00 – 13.00	73.6	68.2	69.3	63.7	67.8	72.1
8	13.00 – 14.00	69	69.3	68	64.2	61.9	73.8
9	14.00 – 15.00	71.7	66.5	66	67	65	69.4
10	15.00 – 16.00	74	64.3	66.2	64.8	64.9	72.6
11	16.00 – 17.00	66.7	61.4	70.2	68	59.3	72.4
12	17.00 – 18.00	57.5	61.8	62.2	69.3	59.7	72
13	18.00 – 19.00	57.2	60.9	61.8	64.9	60.3	58.4
14	19.00 –20.00	57.5	65.1	63.6	67.2	60.1	60.2
15	20.00 – 21.00	58	67.9	61.5	65.3	62	58.1
16	21.00 – 22.00	58.4	63.2	65.6	62.5	57	62.6
17	22.00 – 23.00 (Night)	58.3	62.2	67.6	60.8	55.8	63.4
18	23.00 – 00.00	58.9	61.1	64.5	63.1	57.3	62.2
19	00.00 – 01.00	58.2	60.4	60.9	61.9	56.6	64
20	01.00 – 02.00	59	59.3	62.8	60.4	57	62.7
21	02.00 – 03.00	57.5	58.9	67.5	64.7	56.2	59.8
22	03.00 – 04.00	58.9	62.3	65.4	63.2	58.5	62.6
23	04.00 – 05.00	58	58.5	63.7	62.4	60.9	63.4
24	05.00 – 06.00	60	58.9	68.6	65.6	59.7	65.3



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

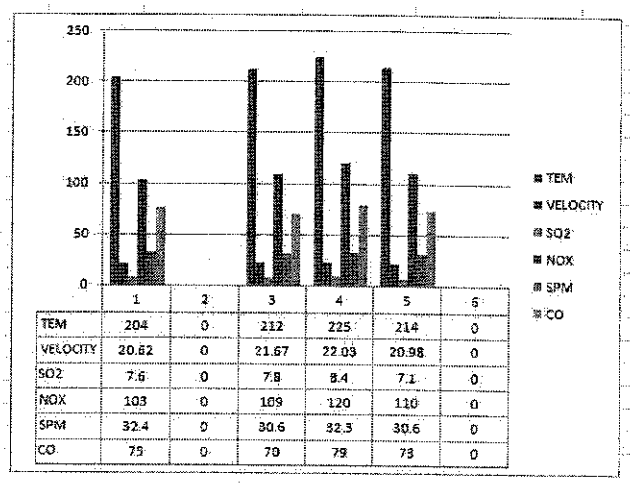
STATION CODE	LOCATIONS	Geographical Location
SM - 1	DG - 1 1500 KVA	13^0 16' 12" N 80^0 20' 5" E
SM - 2	DG - 2 1500 KVA	
SM - 3	DG 125 KVA	13°16'13.33" N 80°20'6.64" E

Annexure - 4

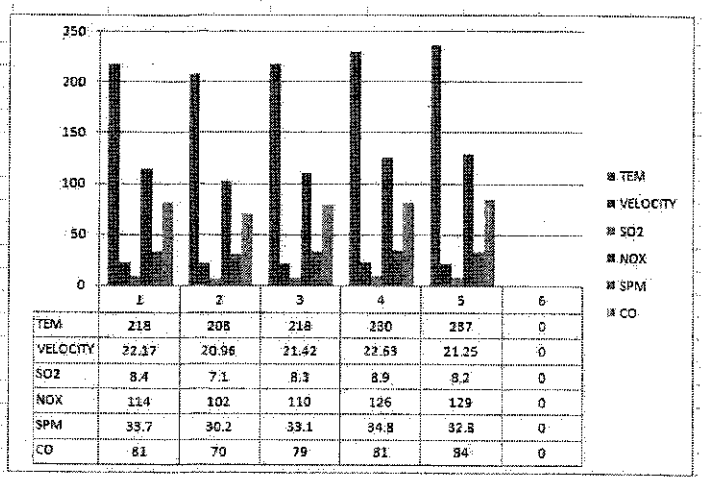
STACK MONITORING													
Location		DG 125KVA						DG 1500KVA -1					
Month & Year		Jan - 21	Feb - 21	Mar -	Apr - 21	May - 21	Jun - 21	Jan - 21	Feb - 21	Mar - 21	Apr - 21	May - 21	Jun - 21
S.N	Parameter												
1	Stack Temperature, °C	--	120	--	127	122	125	218	208	218	230	237	--
2	Flue Gas Velocity, m/s	--	13.98	--	12.02	11.43	12.19	22.17	20.96	21.42	22.63	21.25	--
3	Sulphur Dioxide, mg/Nm3	--	4	--	4.6	4.4	4.7	8.4	7.1	8.3	8.9	8.2	--
4	NOX (as NO2) in ppmv	--	83	--	87	80	86	114	102	110	126	129	--
5	Particular matter, mg/Nm3	--	12.6	--	13.9	14.5	13	33.7	30.2	33.1	34.8	32.8	--
6	Carbon Monoxide, mg/Nm3	--	25	--	30	33	36	81	70	79	81	84	--
7	Gas Discharge, Nm3/hr	--	671	--	568	547	580	6049	5837	5869	6053	5606	--

STACK MONITORING													
Location		DG 1500KVA - 2						DG 1500KVA - 3					
Month		Jan - 21	Feb -	Mar - 21	Apr - 21	May - 21	Jun - 21	Jan - 21	Feb - 21	Mar - 21	Apr - 21	May - 21	Jun - 21
S.N	Parameter												
1	Stack Temperature, °C	215	221	227	221	228	220	204	--	2	225	214	--
2	Flue Gas Velocity, m/s	22.58	21.74	22.19	20.98	21.43	19.52	20.62	--	21.67	22.03	20.98	--
3	Sulphur Dioxide, mg/Nm3	8.2	7.8	8.6	8	7.8	8.3	7.6	--	7.8	8.4	7.1	--
4	NOX (as NO2) in ppmv	110	116	121	115	122	118	103	--	109	120	110	--
5	Particular matter, mg/Nm3	31.9	30.4	35	33.1	35.4	32.1	32.4	--	30.6	32.3	30.6	--
6	Carbon Monoxide, mg/Nm3	78	73	77	75	80	74	75	--	70	79	73	--
7	Gas Discharge, Nm3/hr	6197	5895	5917	5714	5755	5327	579	--	6011	5951	5796	--

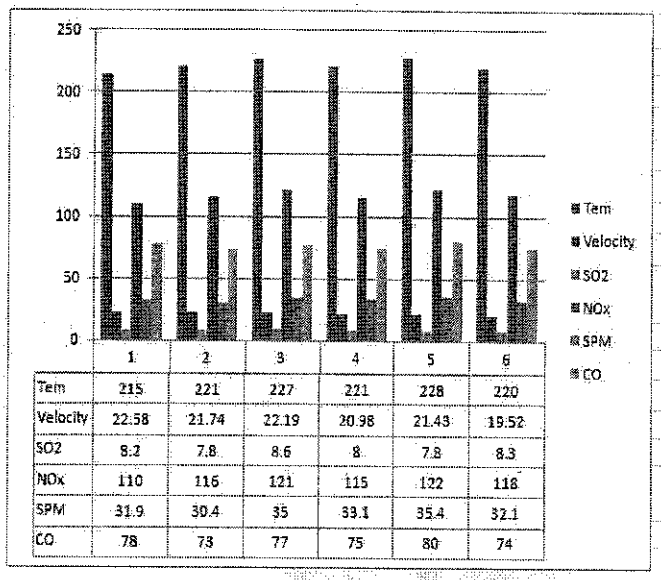
Note : --- DG not in operation.



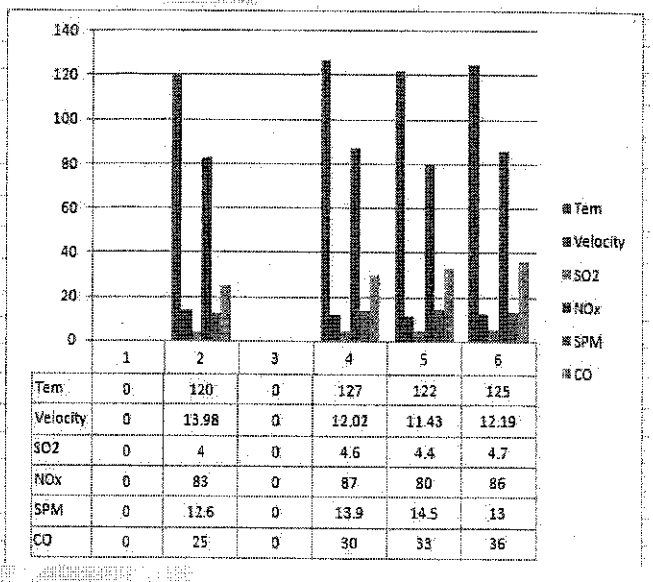
	1	2	3	4	5	6
TEM	204	0	212	225	214	0
VELOCITY	20.62	0	21.67	22.09	20.98	0
SO2	7.6	0	7.8	8.4	7.1	0
NOX	103	0	109	120	110	0
SPM	32.4	0	30.6	32.3	30.6	0
CO	75	0	70	79	73	0



	1	2	3	4	5	6
TEM	218	208	218	230	237	0
VELOCITY	22.17	20.96	21.42	22.63	21.25	0
SO2	8.4	7.1	8.3	8.9	8.2	0
NOX	114	102	110	126	129	0
SPM	33.7	30.2	33.1	34.8	32.8	0
CO	81	70	79	81	84	0



	1	2	3	4	5	6
Tem	215	221	227	221	228	220
Velocity	22.58	21.74	22.19	20.98	21.43	19.52
SO2	8.2	7.8	8.6	8	7.8	8.3
NOx	110	116	121	115	122	118
SPM	31.9	30.4	35	33.1	35.4	32.1
CO	78	73	77	75	80	74



	1	2	3	4	5	6
Tem	0	120	0	127	122	125
Velocity	0	13.98	0	12.02	11.43	12.19
SO2	0	4	0	4.6	4.4	4.7
NOx	0	83	0	87	80	86
SPM	0	12.6	0	13.9	14.5	13
CO	0	25	0	30	33	36

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 OUTLET WATER													
Location		STP OUTLET						STP INLET					
Month & Year		Jan - 21	Feb - 21	Mar - 21	Apr - 21	May - 21	Jun - 21	Jan - 21	Feb - 21	Mar - 21	Apr - 21	May - 21	Jun - 21
S.No	Parameters												
1	pH @ 25°C	7.63	7.35	7.42	7.36	7.43	7.55	6.89	6.79	7.21	6.97	7.18	7.28
2	Total Suspended	11	22	20	13	10	14	160	160	142	85	74	56
3	BOD at 27°C for 3	8.5	18.0	15.0	11.0	8.4	13.0	159	108	89	71	60	74
4	Fecal Coliform	120	146	123	108	108	142	724	564	510	482	416	510
5	COD	--	--	--	44	32	75	--	--	--	346	30	312
6	Oil & Grease	--	--	--	BDL	BDL	BDL	--	--	--	11	8.2	9.0
7	Total Dissolved Solids	--	--	--	1010	1154	1218	--	--	--	1184	1270	1380
8	Chlorides (as Cl)	--	--	--	248	260	357	--	--	--	286	302	372
9	Sulphates (as SO4)	--	--	--	14	17	25	--	--	--	10	11	100

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	IS: 10500-1991 R.2012 PERMISSIBLE	Jan - 21	Feb - 21	Mar - 21	Apr - 21	May - 21	Jun - 21
S.No.	Para								
1	pH @ 25°C	-	6.5 - 8.5	7.32	6.77	6.57	6.67	6.76	6.77
2	Total Hardness as CaCo3	mg/L	600	24	22	28	14.0	37	40
3	Chloride as Cl	mg/L	1000	23	25	23	21	76	28
4	Total Dissolved Solids	mg/L	2000	60	70	64	59	184	112
5	Calcium as Ca	mg/L	200	3.2	5.6	4.8	4.8	10	6.4
6	Sulphate as SO4	mg/L	400	4.73	2.33	2.69	2.42	11.0	3.2
7	Total Alkalinity as	mg/L	600	25	40	20	18	35	25
8	Magnesium as Mg	mg/L	1.0	3.84	1.92	3.84	1.92	2.88	5.76
9	Color	Hazen	15	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
10	Odour	-	Unobject	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionabl	Unobjectio
11	Taste	-	Agreeabl	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
12	Turbidity	NTU	5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
13	Nitrate as No3	mg/L	45	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	0.3	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL
15	Total Residual Chlorine	mg/L	1	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	1.5	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL
17	Manganese as Mn	mg/L	0.3	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL
18	Fluoride as F	mg/L	1.5	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	mg/L	0.002	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL
20	Mercury as Hg	mg/L	0.001	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL
21	Cadmium as Cd	mg/L	0.003	BDL(DL 0.003)	BDL(DL 0.003)	BDL(DL 0.003)	BDL(DL 0.003)	BDL(DL 0.003)	BDL(DL
22	Selenium as Se	mg/L	0.01	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL
23	Arsenic as As	mg/L	0.05	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL
24	Lead as Pb	mg/L	0.01	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL
25	Zinc as Zn	mg/L	15	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL
26	Anionic Detergents as	mg/L	1.0	Nil	Nil	Nil	Nil	Nil	Nil
27	Total Chromium as Cr	mg/L	0.05	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL
28	Phenolphthalein Alkalinity as $CaCO_3$	mg/L	---	Nil	Nil	Nil	Nil	Nil	Nil
29	Aluminium as Al	mg/L	0.2	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL
30	Boron as B	mg/L	1.0	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
31	Mineral Oil	mg/L	0.5	Nil	Nil	Nil	Nil	Nil	Nil
32	Polynuclear Aromatic Hydrocarbons as	mg/L	0.0001	Nil	Nil	Nil	Nil	Nil	Nil
33	Pesticides	mg/L	------	Nil	Nil	Nil	Nil	Nil	Nil
34	Cyanide as CN	mg/L	0.05	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL : 0.01)	BDL (DL :
35	E. coli	MPN/100ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence
36	Total Coliform	MPN/100ml	Absence	Absence	Absence	Absence	Absence	Absence	Absence

Remarks: The analysis report reveals that the water sample is meeting the criteria for Drinking water standard IS: 10500-1991 R.2012

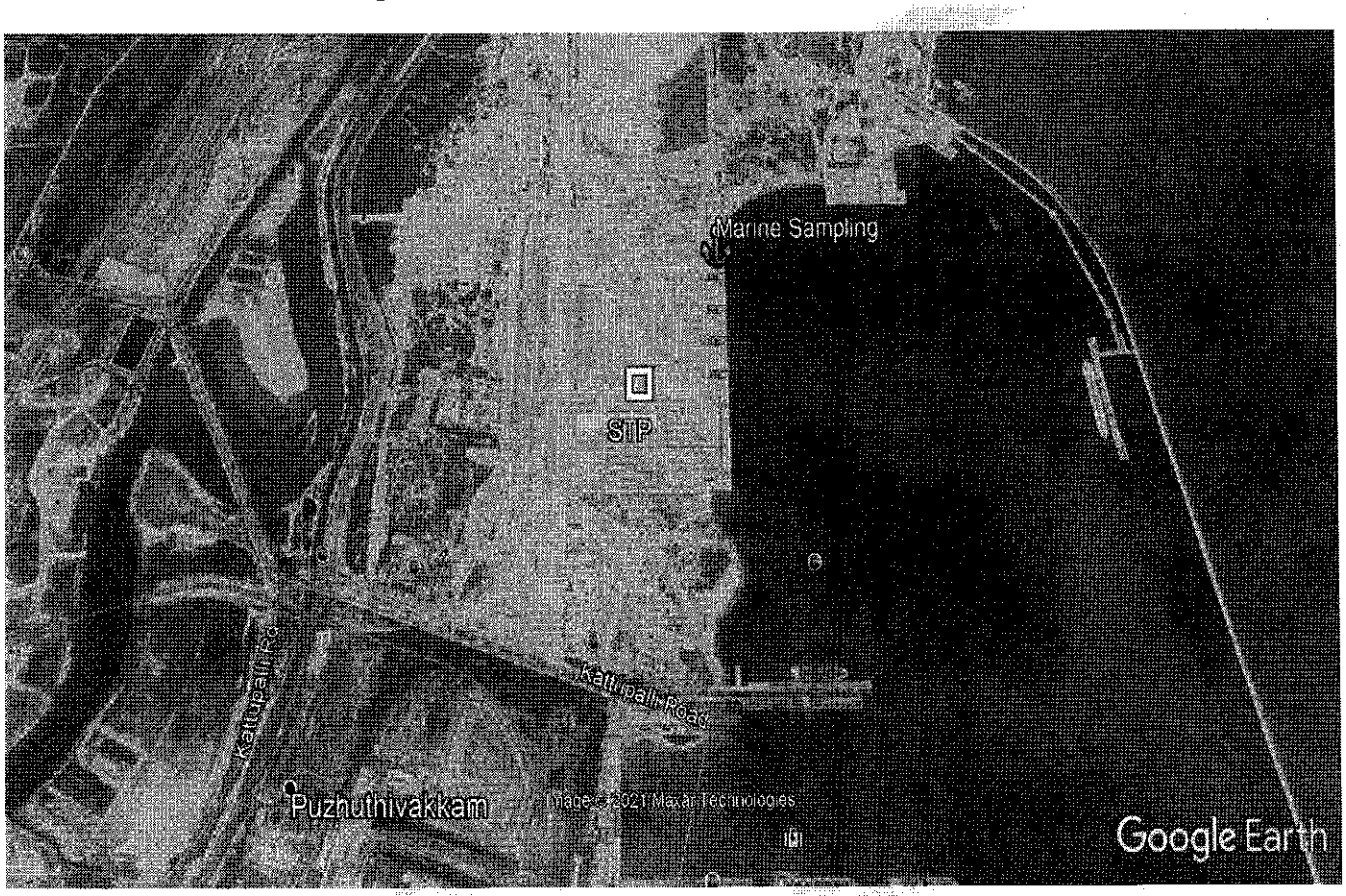
vii. Marine Sampling

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 - 4. Water and Marine Sampling Locations



Annexure - 7

MARINE WATER					
Location		Surface Water			
Month & Year		Unit	Jan - 21	Feb - 21	Mar - 21
S.No.	Parameters		Bollard 21	Bollard 02	Bollard 02
1	pH @ 25°C	-	8.16	8.24	8.36
2	Temperature	^{O}C	29	29	29
3	Total Suspended Solids	mg/L	14	10	14
4	BOD at 27 ^{O}C for 3 days	mg/L	9.2	4	4.2
5	Dissolved oxygen	mg/L	4.3	4.1	2.9
6	Salinity at 25 ^{O}C	ppt	32.8	30	31.8
7	Oil & Grease	mg/L	BDL(DL 1.0)	BDL(DL 1.0)	BDL(DL 1.0)
8	Nitrate as No_3	mg/L	4.21	4.86	4.12
9	Nitrite as No_2	mg/L	1.53	1.85	1.73
10	Ammonical Nitrogen as N	mg/L	BDL(DL 1.0)	BDL(DL 1.0)	BDL(DL 1.0)
11	Ammonia as NH3	mg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
12	Kjeldahl Nitrogen as N	mg/L	BDL(DL 1.0)	BDL(DL 1.0)	BDL(DL 1.0)
13	Total phosphates as PO4	mg/L	4.2	4.93	5.64
14	Total Nitrogen	mg/L	BDL(DL 1.0)		
15	Total Dissolved Solids	mg/L	34216	36290	37148
16	COD	mg/L	127	168	152
17	Total bacterial count	cfu/ml	101	143	120
18	Coliforms	Per 100 ml	Absence	Absence	Absence
19	Escherichia coli	Per 100 ml	Absence	Absence	Absence
20	Salmonella	Per 100 ml	Absence	Absence	Absence
21	Shigella	Per 100 ml	Absence	Absence	Absence
22	Vibrio cholerae	Per 100 ml	Absence	Absence	Absence
23	Vibrio parahaemolyticus	Per 100 ml	Absence	Absence	Absence
24	Enterococci	Per 100 ml	Absence	Absence	Absence
25	Octane	µg/L	144	169	175
26	Nonane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
27	Decane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
28	Undecane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
29	Tridecane	µg/L	8.9	8.3	7.7
30	Tetradecane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
31	Pentadecane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
32	Hexadecane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
33	Octadecane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
34	Nonadecane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
35	Elcosane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)

Surface Water								
Month & Year			Jan - 21	Feb - 21	Mar - 21	Apr-21	May-21	Jun-21
S.No.	Parameters	Unit	Bollard 21	Bollard 02	Bollard 02	Bollard 21	Bollard 01	Bollard 03
36	Primary Productivity	mg C/m^3 /hr	8.14	8.67	9.41	9.86	9.14	8.26
37	Chlorophylla	mg $/m^3$	6.26	6.02	7.05	7.69	6.37	6.14
38	Phaeophytin	mg $/m^3$	0.62	0.68	0.73	--	--	--
	Phaeopigment	mg $/m^3$	--	--	--	2.43	2.15	2.73
39	Oxidisable Paticular Organic	mg /L	4.78	5.86	5.02	--	--	--
	Total Biomass	ml /100 m3	--	--	--	1.21	1.14	1.48
PHYTOPLANKTON								
40	Bacteriastrum hyalinum	nos/ml	10	17	14	11	13	8
41	Bacteriastrum varians	nos/ml	13	8	10	14	11	15
42	Chaetoceros didymus	nos/ml	11	14	16	10	7	10
43	Chaetoceros decipiens	nos/ml	15	12	18	12	15	11
44	Biddulphia mobiliensis	nos/ml	9	11	15	9	12	14
45	Ditylum brightwellii	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
46	Gyrosigma sp	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
47	Cladophyxis sps	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
48	Coscinodiscus centralis	nos/ml	9	13	8	12	14	16
49	Coscinodiscus granii	nos/ml	20	15	7	8	10	13
50	Cylcotella sps	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
51	Hemidiscus hardmanianus	nos/ml	17	10	13	12	8	12
52	Laudaria annulata	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
53	Pyropacus horologicum	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
54	Pleurosigma angulatum	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
55	Leptocylindrus danicus	nos/ml	22	20	21	24	18	22

56	Guinardia flaccida	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
57	Rhizosolenia alata	nos/ml	24	22	17	13	16	13
58	Rhizosolena impricata	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
59	Rhizosolena semispina	nos/ml	7	9	12	16	18	20
60	Thalassionema nitzschioides	nos/ml	14	7	16	20	23	22
61	Triceratium reticulatum	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
62	Ceratium trichoceros	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
63	Ceratium furca	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
64	Ceratium macroceros	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
65	Ceracium longipes	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
			ZOOPLANKTONS					
66	Acrocalanus gracilis	nos/ml	13	15	10	12	14	12
67	Acrocalanus sp	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
68	Paracalanus parvus	nos/ml	16	18	13	8	11	8
69	Eutintinus sps	nos/ml	10	7	15	19	16	10
70	Centropages furcatus	nos/ml	15	17	6	11	8	11
71	Corycaeus dana	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
72	Oithona brevicornis	nos/ml	18	13	16	19	13	7
73	Euterpina acutifrons	nos/ml	12	18	9	13	10	14
74	Metacalanus aurivilli	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
75	Copipod nauplii	nos/ml	17	8	14	10	18	20
76	Cirripede nauplii	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
77	Bivalve veliger	nos/ml	9	6	17	14	17	19
78	Gastropod veliger	nos/ml	7	14	20	23	20	13

Location			Bottom Water		
Month & Year		Unit	Jan - 21	Feb - 21	Mar - 21
S.No.	Parameters		Bollard 21	Bollard 02	Bollard 02
1	pH @ 25°C	-	8.27	8.31	8.39
2	Temperature	°C	29	29	29
3	Total Suspended Solids	mg/L	18	13	17
4	BOD at 27 oC for 3 days	mg/L	11	11	4.2
5	Dissolved oxygen	mg/L	4.5	4	3
6	Salinity at 25 oC	-	32.2	29.6	30.8
7	Oil & Grease	mg/L	BDL(DL 1.0)	BDL(DL 1.0)	BDL(DL 1.0)
8	Nitrate as No3	mg/L	4.97	4.18	4.96
9	Nitrite as No2	mg/L	1.86	1.74	2.05
10	Ammonical Nitrogen as N	mg/L	BDL(DL 1.0)	BDL(DL 1.0)	BDL(DL 1.0)
11	Ammonia as NH3	mg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
12	Kjeldahl Nitrogen as N	mg/L	BDL(DL 1.0)	BDL(DL 1.0)	BDL(DL 1.0)
13	Total phosphates as PO4	mg/L	5.02	5.8	5.12
14	Total Nitrogen	mg/L	BDL(DL 1.0)	BDL(DL 1.0)	BDL(DL 1.0)
15	Total Dissolved Solids	mg/L	33896	35860	36864
16	COD	mg/L	132	144	156
17	Total bacterial count	cfu/ml	90	98	102
18	Coliforms	Per 100 ml	Absence	Absence	Absence
19	Escherichia coli	Per 100 ml	Absence	Absence	Absence
20	Salmonella	Per 100 ml	Absence	Absence	Absence
21	Shigella	Per 100 ml	Absence	Absence	Absence
22	Vibrio cholerae	Per 100 ml	Absence	Absence	Absence
23	Vibrio parahaemolyticus	Per 100 ml	Absence	Absence	Absence
24	Enterococci	Per 100 ml	Absence	Absence	Absence
25	Colour	Hazan	20	25	20
26	Odour	-	Unobjectionable	Unobjectionable	Unobjectionable
27	Taste	-	Disagreeable	Disagreeable	Disagreeable
28	Turbidity	NTU	8.4	6.9	7.4
29	Calcium as Ca	mg/L	486	600	642
30	Chloride as Cl	mg/L	17824	16389	17049
31	Cyanide as CN	mg/L	BDL(DL 0.01)		
32	Fluoride as F	mg/L	0.93	0.81	0.87
33	Magnesium as Mg	mg/L	1660	1320	1388
34	Total Iron as Fe	mg/L	1.85	1.53	1.24
35	Residual Free Chlorine	mg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
36	Phenolic Compounds as C6H5OH	mg/L	BDL(DL 1.0)	BDL(DL 1.0)	BDL(DL 1.0)
37	Total Hardness as CaCO3	mg/L	8132	7000	7388
38	Total Alkalinity as CaCO3	mg/L	103	115	104
39	Sulphide as H2S	mg/L	BDL(DL 0.5)	BDL(DL 0.5)	BDL(DL 0.5)
40	Sulphate as SO4	mg/L	1998	2423	2596
41	Anionic surfactants as MBAS	mg/L	BDL(DL 1.0)	BDL(DL 1.0)	BDL(DL 1.0)
42	Monocrotophos	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
43	Atrazine	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)

44	Ethion	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
45	Chiorpyrifos	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
46	Phorate	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
47	Mehyle parathion	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
48	Malathion	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
49	DDT (o,p and p,p-isomers of DDT,DDE	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
50	Gamma HCH (Lindane)	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
51	Alppha HCH	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
52	Beta HCH	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
53	Delta HCH	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
54	Endosulfan (Alpha,beta and sulphate)	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
55	Butachlor	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
56	Alachlor	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
57	Aldrin/Dieldrin	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
58	Isoproturon	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
59	2,4-D	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
60	Polychlorinated Biphenyls (PCB)	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
61	Polynuclear aromatic hydrocarbons	µg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
62	Arsenic as As	mg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
63	Mercury as Hg	mg/L	BDL(DL 0.001)	BDL(DL 0.001)	BDL(DL 0.001)
64	Cadmium as Cd	mg/L	BDL(DL 0.003)	BDL(DL 0.003)	BDL(DL 0.003)
65	Total Chromium as Cr	mg/L	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)
66	Copper as Cu	mg/L	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)
67	Lead as Pb	mg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
68	Manganese as Mn	mg/L	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)
69	Nickel as Ni	mg/L	BDL(DL 0.05)	BDL(DL 0.05)	BDL(DL 0.05)
70	Selenium as Se	mg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
71	Barium as Ba	mg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
72	Silver as Ag	mg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
73	Molybdenum as Mo	mg/L	BDL(DL 0.01)	BDL(DL 0.01)	BDL(DL 0.01)
74	Octane	µg/L	159	167	175
75	Nonane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
76	Decane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
77	Undecane	µg/L	8.4	7.5	8
78	Tridecane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
79	Tetradecane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
80	Pentadecane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
81	Hexadecane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
82	Heptadecane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
83	Octadecane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
84	Nonadecane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
85	Elcosane	µg/L	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)

			Bottom Water					
	Month & Year		Jan - 21	Feb - 21	Mar - 21	Apr-21	May-21	Jun-21
S.No.	Parameters	Unit	Bollard 21	Bollard 02	Bollard 02	Bollard 21	Bollard 01	Bollard 03
86	Primary Productivity	mg C/m3 /hr	9.9	9.14	9.98	10.42	10.05	10.81
87	Chlorophyll a	mg /m3	7.84	7.38	8.46	8.1	6.89	6.03
88	Phaeophytin	mg /m3	0.76	0.71	0.79	--	--	--
	Phaeopigment	mg /m3	--	--	--	2.79	2.6	3.12
89	Oxidisable Paticular Organic	mg /L	6.01	6.95	6.33	--	--	--
	Total Biomass	ml /100 m3	--	--	--	1.87	1.57	1.75
			PHYTOPLANKTON					
90	Bacteriastrum hyalinum	nos/ml	14	20	17	15	16	11
91	Bacteriastrum varians	nos/ml	18	15	12	18	14	18
92	Chaetoceros didymus	nos/ml	13	16	19	13	10	13
93	Chaetoceros decipiens	nos/ml	17	19	22	17	19	15
94	Biddulphia mobiliensis	nos/ml	12	14	18	11	8	12
95	Ditylum brightwellii	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
96	Gyrosigma sp	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
97	Cladophyxis sps	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
98	Coscinodiscus centralis	nos/ml	12	18	11	14	17	19
99	Coscinodiscus granii	nos/ml	24	21	9	10	12	17
100	Cylcotella sps	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
101	Hemidiscus hardmanianus	nos/ml	15	8	15	15	11	14
102	Laudaria annulata	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
103	Pyropacus horologicum	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
104	Pleurosigma angulatum	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
105	Leptocylindrus danicus	nos/ml	26	24	23	25	22	24
106	Guinardia flaccida	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
107	Rhizosolenia alata	nos/ml	27	25	20	17	20	18

108	Rhizosolena impricata	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
109	Rhizosolena semispina	nos/ml	9	11	16	19	21	24
110	Thalassionema nitzschioides	nos/ml	16	9	18	22	25	26
111	Triceratium reticulatum	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
112	Ceratium trichoceros	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
113	Ceratium furca	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
114	Ceratium macroceros	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
115	Ceracium longipes	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
	ZOOPLANKTONS							
116	Acrocalanus gracilis	nos/ml	17	19	14	17	18	15
117	Acrocalanus sp	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
118	Paracalanus parvus	nos/ml	19	21	17	10	14	11
119	Eutintinus sps	nos/ml	13	10	11	14	13	17
120	Centropages furcatus	nos/ml	16	12	8	15	11	14
121	Corycaeus dana	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
122	Oithona brevicornis	nos/ml	20	16	20	22	17	12
123	Euterpina acutifrons	nos/ml	14	20	12	16	12	15
124	Metacalanus aurivilli	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
125	Copipod nauplii	nos/ml	21	11	16	12	16	23
126	Cirripede nauplii	nos/ml	Nil	Nil	Nil	Nil	Nil	Nil
127	Bivalve veliger	nos/ml	11	8	19	18	21	25
128	Gastropod veliger	nos/ml	9	17	22	25	26	20

Marine Water – Surface water and Bottom Water Test Results (Apr - 21 to Jun – 21)

S.NO	PARAMETER	UNITS	Bollard – 13		Bollard – 01		Bollard – 03	
			Apr-21		May-21		Jun – 21	
	Physicochemical Parameters		Surface water	Bottom water	Surface water	Bottom water	Surface water	Bottom water
1	Colour	Hazan	20	30	25	35	20	35
2	Odour	-	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable
3	pH @ 25°C	-	8.41	8.45	8.22	8.37	7.78	7.91
4	Temperature	°C	29	29	29	29	29	29
5	Turbidity	NTU	11.4	18.6	9.8	17.3	11	19
6	Total Suspended Solids	mg/L	25	27	18	24	15	26
7	BOD at 27 °C for 3 days	mg/L	7.1	5.6	4.6	4.4	4.1	4
8	COD	mg/L	160	168	134	152	126	142
9	Dissolved oxygen	mg/L	2.7	2.8	2.5	2.7	2.7	2.6
10	Salinity at 25 °C	ppt	30.3	27.1	31.4	30.1	32	31.2
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)
	Nutrient Parameters							
12	Nitrate as No_3	mg/L	3.08	4.15	3.47	4.91	3.93	5.17
13	Nitrite as No_2	mg/L	1.49	1.78	1.69	2.13	1.98	2.74
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)
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)
16	Inorganic phosphates as PO4	mg/L	5.01	4.07	4.23	5.67	5.07	6.21
17	Silica as SiO_2	mg/L	3.05	5.12	3.81	6.45	4.21	6.98
18	Particulate Organic Carbon	µgC/L	14	17	16	20	18	23
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)
	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)
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)
22	Total Iron as Fe	mg/L	0.53	0.82	0.53	0.82	0.57	0.7
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)
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	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)
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)
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)
	Bacteriological Parameters							
1	Escherichia Coli (ECLO)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence
2	Faecal Coliform (FCLO)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence
3	Pseudomonas aeruginosa (PALO)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence
4	Streptococcus faecalis (SFLO)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence
5	Shigella (SHLO)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence
6	Salmonella (SLO)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence
7	Total Coliform (TC)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence
8	Total Viable Count (TVC)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence
9	Vibrio cholera (VC)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence
10	Vibrio parahaemolyticus (VP)	cfu/ml	Absence	Absence	Absence	Absence	Absence	Absence

Annexure - 8

SEA SEDIMENT								
Location			Sea Sediment					
Month & Year		Unit	Jan - 21	Feb - 21	Mar - 21	Apr - 21	May - 21	Jun - 21
S.No.	Parameters		Bollard 21	Bollard 02	Bollard 02	Bollard 13	Bollard 01	Bollard 03
1	Total organic matter	%	0.54	0.58	0.64	0.57	0.71	0.74
2	% Sand	%	23	25	22	21	24	25
3	%silt	%	31	28	30	33	31	28
4	%Clay	%	46	47	48	46	45	47
5	Iron (as Fe)	mg/kg	29.3	27.2	20.9	22.8	24.1	26.9
6	Aluminium (as Al)	mg/kg	9127	10004	10186	9864	9437	9811
7	Chromium (as cr)	mg/kg	52	41	27	21	24	20
8	Copper (as cu)	mg/kg	74	65	81	69	75	78
9	Manganese (as Mn)	mg/kg	91	78	65	52	44	51
10	Nickel (as Ni)	mg/kg	26.8	23.2	20.4	17.8	18.2	20.4
11	Lead (as Pb)	mg/kg	34.2	30.6	31.2	26.3	24.7	21.7
12	Zinc (as Zn)	mg/kg	220	203	186	175	186	175
13	Mercury(as Hg)	mg/kg	0.43	0.41	0.37	0.32	0.34	0.31
14	Total phosphorus as P	mg/kg	156	139	150	135	146	152
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	0.87	0.74	0.68	0.7	0.73	0.79
19	Dodecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
20	Tridecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
21	Tetradecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
22	Phntadecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
23	Hexadecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
24	Heptadecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
25	Octadecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
26	Nonadecane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
27	Elcosane	mg/kg	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)	BDL(DL 0.1)
I. Nematoda								
28	Oncholaimussp	nos/m^2	15	12	15	18	13	15
29	Tricomasp	nos/m^2	13	8	12	9	11	8
I. Foraminifera								
30	Ammoniabeccarii	nos/m^2	10	16	10	16	19	12
31	Quinqulinasp	nos/m^2	21	18	14	11	15	17
32	Discorbinellasp.,	nos/m^2	24	15	17	20	23	20
33	Bolivinaspathulata	nos/m^2	22	20	13	17	10	16
34	Elphidiumsp	nos/m^2	18	14	19	13	18	22
35	Noniondepressula	nos/m^2	16	22	20	24	20	21
III. Molluscs-Bivalvia								
36	Meretrixveligers	nos/m^2	27	23	11	19	17	13
37	Anadoraveligers	nos/m^2	25	13	22	25	21	10
	Total No. of individuals	nos/m^2	187	161	153	172	167	154
	Shanon Weaver Diversity Index		2.27	2.26	2.27	2.26	2.27	2.26

Form-V

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

Environmental Statement for the financial year ending 31st March 2020

Part-A

i)	**Name and Address of the owner / occupier of the industry operation or process**	:	**Mr. Jai Khurana** **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/ENV2019-20/08 dated 20.09.2019

Part –B

WATER AND RAW MATERIAL CONSUMPTION

(i) Water Consumption

S.No	Water Consumption (m^3/Calendar Day)	2018-2019	2019-2020
1	Domestic	7.33	10.93

Adani Ennore Container Terminal Pvt. Ltd. Chennai

(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 (2018-19)	During the current financial year (2019-20)
1	Not Applicable	Not Applicable	NIL	NIL
The unit does not undergo any manufacturing process. The water consumed is mainly for firefighting, greenbelt development and maintenance, etc.,				

Part-C

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

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

Parameter	Consent Limit	Actual	% Variation with prescribed standard
pH	5.5-9	7.20	-Nil-
Total Suspended Solids (mg/l)	30	19.08	-Nil-
BOD (3 days at 27°C) (mg/l)	20	13.25	-Nil-

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

Part-D

HAZARDOUS WASTES

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

Hazardous Wastes	Total Quantity (Kg)	
	During the previous financial Year (2018-19)	During the current financial Year (2019-20)
(a) From Process	NIL	• Used Oil (5.1) - 10 Tons • Oil from Contaminated filter element (3.3) - 0.5 Tons • Empty Oil barrel (33.1) - 0.5 Tons
(b) From Pollution control facilities	NA	NA

Part-E

SOLID WASTES

Total Quantity Generated			
Solid Waste		During the previous financial Year (2018-19)	During the current financial Year (2019-20)
a)	From process	NIL	NIL
b)	From pollution control facilities- STP	20 kgs	57.28 kgs
c)	1. Quantity recycled or reutilized within the Unit	20 kgs	57.28 kgs
	2. Sold	NIL	NIL
	3. Disposed	NIL	NIL

Part-F

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

- 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 to Hazardous Waste Management Rules, 2016 (As amended).

Adani Ennore Container Terminal Pvt. Ltd. Chennai

- The used batteries and E –waste are also stored in Integrated Waste Management Shed and disposed off through approved vendor.
- 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.
- All the non-hazardous wastes like paper, wood, metal scraps generated from the terminal are also collected, stored in the Integrated Waste Management Shed and will be handled as per 5R principle.

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 waste water 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. STP treated water is used for Gardening purpose, thereby reducing freshwater consumption. The total cost spent on STP operation during the year 2019-20 is Rs. 3.60 Lakhs.
- Regular Environmental monitoring is carried out through NABL accredited laboratory. All the monitored environmental parameters are well within the specified limit & the details of monitored data is regularly submitted to TNPCB, CPCB, MoEF&CC and other concerned authorities.
- Unit is continuously developing and maintaining green belt within port premises.
- Implemented Integrated Waste Management System (IWMS) for managing all types of wastes in line with 5R principle.

Adani Ennore Container Terminal Pvt. Ltd. Chennai

Part-H

ADDITIONAL MEASURES/INVESTMENT PROPOSAL FOR ENVIRONMENTAL PROTECTION INCLUDING ABATEMENT OF POLLUTION, PREVENTION OF POLLUTION.

	Description	
	Regular Expenditure (cost in INR lakhs/year)	
1	Environmental monitoring of MOEF recognized third party	7.8
2	Green belt & Horticulture development	22.14
3	Annual maintenance contractor of STP operation	4.20
4	Operation & Maintenance of Integrated Waste Management System	2.40

Part-I

ANY OTHER PARTICULARS IN RESPECT TO ENVIRONMENT

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

Date:21.09.2020

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

21/9/2020

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.

Annexure - 1

AECTPL- STACK MONITORING (April'2019 to March'2020)													
Location		DG 1500KVA											
		I	II	I	I	I	I	I	I	I	III	III	III
Month & Year		Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20
S.No.	Parameters												
1	Stack Temperature, °C	222	210	217	226	215	232	243	246	240	229	235	239
2	Flue Gas Velocity, m/s	16.5	17.45	18.01	19.23	20.14	21.56	23	21.19	20.03	22.43	21.19	21.86
3	Sulphur Dioxide, mg/Nm3	7.5	7	7.9	8.3	7.7	7.2	8	6.8	7.6	7.1	7.8	8.3
4	NOX (as NO2) in ppmv	125	119	125	131	124	140	157	152	143	128	137	140
5	Particular matter, mg/Nm3	31.6	28.9	31.2	33.4	31.3	32.8	30	33.6	29.8	27.5	29.1	33.6
6	Carbon Monoxide, mg/Nm3	64	69	74	80	74	79	71	75	64	69	77	79
7	Gas Discharge, Nm3/hr	4476	4839	4923	5162	5528	5692	5846	5470	5230	5985	5587	5719

AECTPL- STACK MONITORING (April'2019 to March'2020)													
Location		DG 1500KVA											
		II	III	II	II	II	II	II	III	II	II	I	II
Month & Year		Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20
S.No.	Parameters												
1	Stack Temperature, °C	214	201	212	220	229	237	229	239	232	237	245	230
2	Flue Gas Velocity, m/s	17.21	15.98	17.42	18.67	19.58	20.41	22	22.74	21.75	20.56	21.81	20.54
3	Sulphur Dioxide, mg/Nm3	6.9	6.2	7.5	8	9.1	8	7	8.1	7.6	7.5	8.5	7.4
4	NOX (as NO2) in ppmv	120	107	119	128	136	144	150	141	143	139	142	133
5	Particular matter, mg/Nm3	34.2	30.5	29	31.9	30.5	33.1	31	32.4	29.8	29.7	31.4	32.8
6	Carbon Monoxide, mg/Nm3	55	63	71	78	72	82	65	68	64	74	70	74
7	Gas Discharge, Nm3/hr	4734	4516	4811	5073	5225	5361	5785	5949	5230	5400	5640	5470

Adani Container Terminal Pvt. Ltd. * Chennai

KAMARAJAR PORT LIMITED

Compliance Report

On

Ministry's guidelines for

"CONSTRUCTION OF GENERAL CARGO BERTH AT ENNORE PORT CARGO TERMINAL PROJECT"

Point wise compliance report on Ministry's guidelines for the CRZ and Environmental clearance for the construction of General Cargo Berth at Ennore port cargo terminal project.

Ref: MoEF Letter No. 11-21/2009-IA-III dated 23.7.2009

Back ground information

MoEF had accorded environmental clearance vide letter No. 11-21/2009–IA-III dated 23rd July, 2009 for the development of a general cargo berth. The length of the berth is 250m length and 35m width to handle about 2 lakh cars per year and project cargoes & finished cargo of 0.5 million tons per year.

Status of the project:

A General Cargo Berth with Car parking area was developed for the export of automobiles and handling project cargo, etc. The terminal is under operational.

S.No.	Specific Conditions	Compliance Status
(i)	As the Ennore expressway is very busy. It is suggested to examine the details of traffic analysis and incorporate necessary improvement study the impact of additional traffic due to the proposed development	Complied with. The copy of report on traffic analysis carried out by M/s. Wilber Smith Association Pvt. Ltd., was sent to MoEF vide our letter dated 17.2.2010.
(ii)	No construction work other than those permitted in Coastal Regulation Zone Notification shall be carried out in Coastal Regulation Zone area.	Complied. No construction works other than those permitted in the Coastal Regulation Zone Notification are carried out in Coastal Regulation Zone area.
(iii)	Oil spills if any shall be properly collected and disposed as per the Rules.	Complied with.
(iv)	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. At present KPL is having an Environmental Division with the following officers. (i) Chief Manager(HSE), (ii) Sr.Manager(HSE) and (iii) Executive(HSE) to take care of the environmental requirements of the port. Port is monitoring the environment. Port has

		engaged M/s. Hubert Enviro Care Systems Pvt. Ltd. Chennai (MoEF & CC/ NABL certified) for sampling and testing of various environmental parameters.
(v)	The project proponent shall take up mangrove plantation/green belt in the project area, wherever possible. Adequate budget shall be provided in the Environment Management Plan for such mangrove development.	At present, port is having a green belt which includes a green belt (planted) of 210.74 acres, green cover natural 349.26 acres and mangroves in an area of 76.14 acres. However, KPL has proposed to utilize the existing operational area in the custom bound area for future development projects/infrastructure activities. KPL has appointed a consultant for "Preparation of Bio-Diversity Management Plan" for the port and the report along with the green belt development plan was submitted to Tamil Nadu State Bio-diversity Board vide KPL letter No. KPL/MS/HSE/BD/2019 dated 17.01.209 for validation and approval. As per the plan, port has planned for the development of green belt of 68.66Acres inside the custom bound area and 621.91 Acres outside the custom bound area. Upon implementation of the plan, the total green belt area of the port will be 690.77Acres.
(vi)	The funds earmarked for environment management plan shall be included in the budget and this shall not be diverted for any other purposes.	The expenditure incurred towards Environmental Management for the period January 2020 to June 2020 by KPL is as follows: 1. Environmental Monitoring = Rs. 8,57,920/- (excluding GST). 2. Solid Waste Management = Rs. 5,16,365/- (excluding GST) 3. Consent fees to TNPCB = Rs. 26,91,754/-.

S No.	General Conditions	Compliance Status
(i)	The construction of the structures should be undertaken as per the plans approved by the concerned local authorities/local administration, meticulously conforming to the existing local and Central rules and regulations including the provisions of Coastal Regulation Zone Notification dated 19.02.1991 and the approved Coastal Zone Management Plan of Tamil Nadu.	All constructions and plans are approved by port itself as port is a regulatory authority by itself.
(ii)	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	Complied with. Local labors were engaged during the construction and the labour camps were located outside the CRZ area.
(iii)	Appropriate measures must be taken while undertaking digging activities to avoid any likely degradation of water quality.	Digging activities were carried out during the construction of berth. Marine water quality was monitored to notice any degradation of water quality.
(iv)	*Borrow sites for each quarry sites for road construction material and dump sites must be identified keeping in view the following:*	
	a. No excavation or dumping on private property is carried out without written consent of the owner	Complied with. No excavation was carried out in the project area or any material dumped in any private property. Concrete structure on pile foundation was carried out.
	b. No excavation or dumping shall be allowed on wetlands, forest areas or other ecologically valuable or sensitive locations	No excavation or dumping was carried out on wetlands or any ecologically sensitive areas during the development of the project.

	c. Excavation work shall be done in close consultation with the Soil Conservation and Watershed Development Agencies working in the area, and	Complied with. No excavation work was carried in the project area.
	d. Construction spoils including bituminous material and other hazardous materials must not be allowed to contaminate water courses and the dump sites for such materials must be secured so that they shall not leach into the ground water.	Complied with. No construction spoils or any other hazardous materials such as bituminous were generated during the construction process.
(v)	The construction material shall be obtained only from approved quarries. In case new quarries are to be opened, specific approvals from the competent authority shall be obtained in this regard.	Complied with. Construction material does not involve any quarry materials other than blue granite. Only iron & metal steel are used for RCC. Blue granite metal was obtained from approved quarry.
(vi)	Adequate precautions shall be taken during transportation of the construction material so that it does not affect the environment adversely.	Adequate measures like covering the material etc. were undertaken during the transportation of construction material.
(vii)	Full support shall be extended to the officers of this Ministry/ Regional Office at Bangalore 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.	Being complied.
(viii)	Ministry of Environment & Forests or any other competent authority may stipulate any additional conditions or modify the existing ones, if necessary in the interest of environment and the same shall be complied with.	Noted.
(ix)	The Ministry reserves the right to revoke this clearance if any of the conditions stipulated are not complied with the satisfaction of the Ministry	Noted.

(x)	In the event of a change in project profile or change in the implementation agency, a fresh reference shall be made to the Ministry of Environment and Forests.	Noted. Kamarajar Port is a premier port of Government of India inter-alia in which import/export of automobiles and the same has been greatly acknowledged by the foreign automobile manufacturers using Chennai as an automobile hub. Each car weighs on an average of 1000 kg. The berth is to handle 0.75 MTPA (i.e., 2 lakh cars equivalent 0.2 MTPA and 0.5 MTPA project cargo). Port is handling the cargo well within the approved limit. All these cargo are green cargo.
(xi)	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.	Complied with. KPL has informed MoEF and RO of MoEF vide its letterNo. EPL/MS/Env/GCB/1/08 Dt. 7.12.2009.
(xii)	Tamil Nadu State Pollution Control Board shall display a copy of the clearance letter at the Regional Office, District Industries Center and Collector's Office/ Tehsildar's Office for 30 days.	Complied with.
7	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.	KPL is enforcing the provisions of Water (Prevention and Control of Pollution) Act 1974, the Air (Prevention and Control of Pollution) Act 1981 and the Environment (Protection) Act, 1986. With regard to the Public Liability Insurance, Port has obtained Public Liability Insurance through Oriental Insurance Company Ltd.' vide Policy No:411400/22/2021/1, valid till 05/11/2021.

8	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 Wild (Protection) Act, 1972 etc. shall be obtained, as applicable by project proponents from the respective competent authorities.	These clearances are not required. In case of requirement, the same will be taken as applicable.
9	The project proponent shall advertise in at least two local Newspapers widely circulated in the region, one of which shall be in the vernacular language informing that the project has been accorded Environmental Clearance and copies of clearance letters are available with the Tamil Nadu State Pollution Control Board and may also be seen on the website of the Ministry of Environment and Forests at http://www.envfor.nic.in. The advertisement should be made within 10 days from the date of receipt of the Clearance letter and a copy of the same should be forwarded to the Regional Office of this Ministry at Bangalore.	Complied with. The receipt of the environment and CRZ clearance was advertised in two local news papers on 6.8.2009. The copies of the advertisements were forwarded to MoEF, RO, Bangalore vide our letter No.EPL/MS/Env/GCB/01/2008 dated 25.8.2009. 1. 'The Dinamani dated: 06.08.2009 2. The New Indian Express' Dated: 06.08.2009.
10	Environmental Clearance is subject to final order of the Hon'ble Supreme Court of India in the matter of Goa Foundation Vs. Union of India in Writ Petition (Civil) No.460 of 2004 as may be applicable to this project.	Noted.
11	Any appeal against this Environmental Clearance shall lie with the National Environment Appellate Authority, if preferred, within a period of 30 days as prescribed under Section 11 of the National Environment Appellate Act, 1997.	There is no appeal against this EC was made with National Environment Appellate.
12	A copy of the Clearance letter shall be sent by the proponent to concerned Panchayat, ZillaParishad/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	No public hearing was conducted as the same was not recommended by MoEF & CC in the ToR. No suggestions / representations were received while processing the proposal. The clearance letter was put on the

	the proponent.	KPL website.
13	The proponent shall upload the status of compliance of the stipulated EC conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of MoEF, the respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely; SPM, RSPM, SO2, NOx (ambient levels as well as stack emissions) or critical sect oral parameters, indicated for the project shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.	Complied with. Only brand new cars (Green Cargo) are handled in this terminal. The status of compliance of the stipulated EC conditions and the results of the monitored data are being sent to Regional office of MoEF. The result of the monitoring data carried out by the Port is uploaded in the company's website.
14	The project proponent shall also submit six monthly reports on the status of compliance of the stipulated EC 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.	The reports are regularly submitted to Regional Office of MoEF & CC. The same is being uploaded in MoEF & CC and KPL websites also.
15	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 EC conditions and shall also be sent to the respective Regional Offices of MoEF by e-mail.	Complied with. The environmental statement (Form-V) is enclosed herewith as Annexure-I.

Point wise compliance report on the conditions issued by Tamil Nadu State Coastal Zone Management vide Letter No. 151/EC3/2009-1 dated 24.02.2009

1	There should not be any extraction of ground water in Coastal Regulation Zone	Complied with. No ground water is extracted in the CRZ area. Open dug wells are provided beyond the CRZ area in the port exclusively for watering of plants.
2	The project activity should not affect the coastal ecosystem including marine flora and fauna	Complied with. Only automobiles (green cargo) are handled in the project. No sewage or wastes are dumped in the port waters. KPL is monitoring marine water quality inside the port. Monitoring reports are regularly submitted to R.O of MoEF&CC. Port waters conform to SW Class IV standards.
3	The composition of the dredged materials should be duly analyzed and examined to find out the availability of any toxic contents.	• Port has carried out a study through Institute of Ocean Management, Anna University, Chennai entitled "Assessment of Water, Sediment & Biota in Ennore Port" during January 2009. • The study revealed that the toxic heavy metals are found to be well within the safety limits and as such do not pose any problem to the marine environment. • Sediment quality is also continuously monitored during dredging operations. • Port is also monitoring monthly marine water quality for various physio-chemical parameters including heavy metals.

4	Based on the analysis, a suitable methodology for the disposal of dredging material has to be evolved out.	National Institute of Ocean Technology (NIOT), Chennai has carried out EIA and Risk assessment for the second phase expansion proposals, which is inclusive of Modelling studies and identified a marine disposal area (5 KM x 5 KM area) for disposal of dredged material. The study has identified a location for the safe disposal of dredged material with a holding capacity of 18.0 million cubic meters.
5	No blasting activities in Coastal Regulation Zone is permissible	Complied with. No blasting activity was carried out during the construction phase. Berth constructions are made up of RCC super structure on pile foundation.
6	The proponent shall not undertake any activity, which is violative of the provisions of Coastal Regulation Zone Notification 1991 and the subsequent amendments.	Noted. No activity in violation of the provisions of CRZ Notification will be carried out.
7	The coastal Regulation Zone clearance will be revoked if any of the condition stipulated is not complied with	Noted.

KAMARAJAR PORT LIMITED - GENERAL CARGO BERTH (GCB)

Environmental Statement for the financial year ending the 31st March-2021

[FORM – V]

PART – A

S.No	Description	Remarks
1.	Name and address	Kamarajar Port Limited, Vallur Post, Near NCTPS, Chennai-120.
2.	Type of Cargo handled	Auto mobiles (green cargo)
3.	Industry category Primary (STC Code) Secondary (SIC Code)	Major port under the administrative control of Ministry of shipping, GOI.
4.	Cargo handling capacity as per CTO	2Lakh cars/year and project /finished cargo of 0.5 MTPA. All these cargo are green cargo.
5.	Date of start of commercial operation	28.01.2011

PART – B

Water and Raw Material Consumption

(1) Water consumption m3/d: i) 9KL per Day for this terminal.

ii) Total water consumption of Port is 33015KL for the period from Jul'20 to Dec'20.

(2) Process/ sprinkling: Nil. Only brand new and assembled automobiles (green cargo) are handled (export/import) in this terminal.

(3) Cooling: Nil. There is no cooling process done in this terminal.
Domestic: Nil

Any other: Nil

Name of Cargo handled	Process water consumption per unit of product output.(per Annum)	
	During the previous financial year (2019-20)	During the Current financial year (2020-21)
Auto mobiles	Only brand new assembled automobiles (green cargo) are handled (export/import) in this terminal.	

(2) Raw Material Consumption (if applicable)

*Name of raw materials	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)
Not Applicable. Only brand new assembled automobiles (green cargo) are handled (export/impo in this terminal.			

*Industry may use codes if disclosing details of raw material would violate contractual obligations, otherwise all industries have to name the raw materials used.

PART - C

Pollution discharged to environment/unit of output
(Parameter as specified in the consent issued)

Pollutants	Quantity of pollutants discharged (mass/day)	Concentrations of pollutants in discharges (mass/volume)	Percentage of variation from prescribed standards with reasons
a) Water	Not Applicable. Only brand new assembled automobiles (green cargo) are handle (export/import) in this terminal.		
b) Air	Not Applicable. Only brand new assembled automobiles (green cargo) are handle (export/import) in this terminal.		

Only brand new assembled automobiles (Green Cargo) are handled (export/import) in this terminal. Therefore, there is no pollution generated from the operations in this terminal.

Tamil Nadu Pollution Control Board is monitoring the Ambient Air Quality and Noise Quality standards in the terminal annually. KPL is also monitoring the environment. Port has engaged M/s. Hubert Enviro Care Systems Pvt. Ltd. Chennai (MoEF & CC/ NABL certified) to carry out the periodical monitoring, testing and analysis of Marine water quality, creek water quality in the port area which includes General Cargo berth. The environmental parameters are found to be well within the standards prescribed by Central / State Pollution Control Boards.

PART – D
Hazardous Wastes

(As specified under Hazardous and other wastes Transboundary Rules, 2016)

Hazardous Wastes	Total Quantity (Kg.)	
	During the previous Financial Year (2019-20)	During the current Financial year (2020-21)
a) Source of Hazardous waste generation	Not Applicable.	
b) Disposal procedure	Not Applicable.	
c) Quantity disposed	Not Applicable.	
d) Any other details	Port has formulated 'Waste Oil, Sewage & Other Wastes Disposal Policy, 2019'. The Policy is uploaded in the KPL website for the easy access of the port users. The ship generated oily wastes are being disposed off through CPCB/SPCB approved recyclers. The list of empanelled recyclers is made available in KPL website under reception facilities.	

PART – E
Solid Wastes

Solid Wastes	Total Quantity (M^3)	
	During the Year period Jan-June'20	During the 2020 (Jul-Dec'20)
Quantity collection	The total collected quantity from port and ships is 1573 Cu.M (Jan'20 to June'2020).	The collected total quantity from port and ships is 2364.13 Cu.M (Jul'2020 to Dec'2020).
a) Source of solid waste generation	Solid waste generated in the port is of domestic wastes likes, paper, packing material, water bottles, etc. Ship generated wastes include paper, plastic cans, metal drums, e-wastes, food waste, ropes, wooden packing material, etc.	
b) Disposal procedure	As per MARPOL regulations, every port has to provide reception facility for the disposal of ship generated wastes. Accordingly port	

	has engaged a contractor for the collection of wastes from the ships. The collected wastes are segregated into different species and sent to various recyclers for further beneficial use.	
c) Quantity disposed	The disposed quantity from port and ships is 1573 Cu.M (Jan'20 to June'2020).	The disposed quantity from port and ships is 2364.13 Cu.M (Jul'2020 to Dec'2020).
d) Any other details	NIL	

PART – F

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

Port has Waste Oil, sewage & Other Wastes Reception Facilities Policy, 2019. The generated oily wastes from the ships are disposed off through CPCB/SPCB approved recyclers.

Solid waste generated in the port is of domestic wastes like paper, packing material, water bottles, etc. and ship generated wastes including paper, plastic cans, metal drums, e-wastes, food waste, ropes, wooden packing material, etc.

As per MARPOL regulations, every port has to provide reception facility for the disposal of ship generated wastes. Accordingly port has engaged a contractor for the collection of wastes from the ships. The collected waste are segregated in the yard into different categories and sent to various recyclers for further beneficial use.

PART – G

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

Only brand new assembled automobiles (Green Cargo) are handled (export/import) in this terminal. Therefore, there is no pollution generated from the operations in this terminal.

Tamilnadu Pollution Control Board is monitoring the Ambient Air Quality and Noise Quality standards in the terminal annually. KPL is also monitoring the environment. Port has engaged M/s. Hubert Enviro Care Systems Pvt. Ltd. Chennai (MoEF & CC/ NABL certified) to carry out the periodical monitoring, testing and analysis of Marine water quality, creek water quality in the port area which includes General Cargo berth. The environmental parameters are found to be well within the standards prescribed by Central / State Pollution Control Boards.

PART – H

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

Port's Environmental Management Plan (EMP) is aimed at mitigating the possible adverse impacts of projects and for ensuring to maintenance of the existing environmental quality.

- Port has facilitated the ships with reception facilities as per MARPOL regulations for ships for disposal of wastes under Annexure- I (oil) and Annexure- V (Garbage).
- Port generated domestic wastes are disposed off at approved dumping yards.
- Disposal of septic waste through tanks/soak pits.
- Workers are provided with ear protection devices, masks and helmets.
- Emergency / Crisis Response Plan that covers situations such as cyclones, marine accidents, bomb threats, fire, explosion and accidents is in place.
- Port is having oil spill contingency plan prepared in line with National Oil Spill Disaster Contingency plan (NOS-DCP).

PART – I

Any other particulars for improving the quality of the environment.

Nil.

TAMIL NADU POLLUTION CONTROL BOARD

District Environmental Laboratory

AMBIENT AIR QUALITY SURVEY – Report of Analysis

Report No. 12 /AAQS/2019-2020 Date: 08.09.2020

1. Name of the Industry : **M/s. Kamarajar Port Ltd., (Cargo)**
2. Address of the Industry : Vallur Post, Chennai – 120.
3. Date of Survey : 28.08.2020
4. Duration of Survey : **8 Hours** / 24 hours
5. Category : **Red** / Orange / Green – **Large** / Medium / Small
6. Land use classification : **Industrial** / Commercial / Residential / Sensitive

Meteorological Conditions

Ambient Temperature (^{0} C)	Min	Max	Relative Humidity (%)	Min	Max
	26	35		49	84
Weather Condition	Partially Cloudy		Rain Fall (mm)	Nil	
Predominant Wind Direction	SE - NW		Mean Wind Speed (km/hr)	13	

Ambient Air Quality Survey Results

Sl. No.	Location	Direction *	Distance (m) *	Height Form GL (m)	Pollutants Concentration (microgram / m^3)			
					PM 2.5	PM 10	SO_2	NO_2
1	On top of Platform near Car Parking	N	500	3	--	60	7	10
2	On top of Platform Car Berth Area	SE	900	3	13	51	8	12
3	On top of Platform near Chettinad SS.	S	900	3	--	75	10	15
4	On top of Platform near Main Gate (CISF)	SW	1000	4	--	80	11	17
5	On top of Platform near Fire Station	NW	500	3	28	89	13	19

Note: * With respect to major emission sources. The analytical results are restricted to the sampling period of **8 hrs**/24hrs

8/9/2020
DCSO

8/9/2020
Chief Scientific Officer,
District Environmental Laboratory
Tamil Nadu Pollution Control Board
Manali

Test Performed	Test Method
PM10	IS 5182 : (Part 23) – 2006
SO2	Modified West – Gaeke / IS 5182 : (Part 2) – 2001 RA: 2012
NO2	Jacobs – Hochheiser / IS 5182 : (Part 6) – 2006 RA:2012

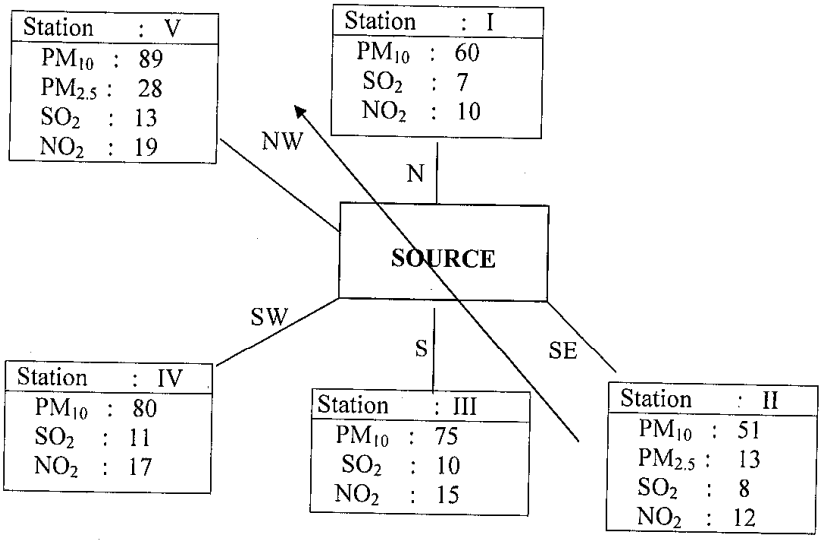
TAMILNADU POLLUTION CONTROL BOARD
District Environmental Laboratory

AMBIENT AIR QUALITY SURVEY
Schematic Diagram Showing Location of Sampling

Report No. 12 /AAQ/SM/2019 -2020

Name and Address of the Industry : **M/s. Kamarajar Port Ltd., (Cargo)**
Vallur Post, Chennai – 120.

Date of Survey : 28.08.2020



Note: All the values are expressed in $\mu g/m^3$ and restricted to sampling period of **8 hrs**/24hrs

Meteorological Conditions:	
Predominant Wind Direction	SE – NW
Wind Speed (Km/hr)	13
Weather Condition	Partially Cloudy
Rainfall	Nil

8/9/2020
DCSO

8/9/2020
Chief Scientific Officer,
District Environmental Laboratory
Tamil Nadu Pollution Control Board
Manali

TAMIL NADU POLLUTION CONTROL BOARD
District Environmental Laboratory

AMBIENT/SOURCE NOISE LEVEL SURVEY - Report of Analysis

Report No. 12/ NLS/2019-2020 Date: 08.09.2020

1.	Name of the Industry	**M/s. Kamarajar Port Ltd., (Cargo)**
2.	Address of the Industry	Vallur Post, Chennai – 120.
3.	Date of Survey	28.08.2020

Category	**RL**	**Land use Classification**	Industrial
Type of Survey	**Ambient**/Source	**Time of Survey**	Day
Meteorological conditions		**Calm/Windy/Rainy**	Windy

Logging Parameters

Instrument Used	CESVA Model SC310		Serial No		T243103
Logging Interval	10 Minutes each point		**Measuring Range**		50-110 dB(A)
Weighting	**" A"**	**Peak Weighting**	**"C"**	**Time Weighting**	FAST
Sound Incidence	RANDOM			**Time in hrs**	14.00 – 15.00

Report of Noise Level Monitoring

Sl. No	Location	Duration (min)	Distance (m)	Direction	Sound Level –dB(A)		
					L_{eq}	Min	Max
1	Near Car Parking	10	500	N	61.6	50.3	69.2
2	Near Car Berth Area	10	900	SE	57.6	55.2	70.5
3	Near Chettinad SS	10	900	S	56.3	52.2	75.1
4	Near Main Gate (CISF)	10	1000	SW	62.2	59.5	76.4
5	Near Fire Station	10	500	NW	64.3	54.9	75.6

Note: Leq value is the average energy for the measured period.

8/9/2020
DCSO

9/9/2020
Chief Scientific Officer,
District Environmental Laboratory
Tamil Nadu Pollution Control Board
Manali

TAMIL NADU POLLUTION CONTROL BOARD
District Environmental Laboratory

INFERENCE REPORT ON A.A.Q.S./ S.M.

1. Name of Industry : **M/s. Kamarajar Port Ltd., (Cargo)**
   Vallur Post, Chennai – 120.
2. Pollution Category : Red Large
3. Date of A.A.Q. Survey : 28.08.2020
4. Predominant Wind Direction : SE - NW
5. Weather condition : Partially Cloudy

STATUS OF POLLUTANTS LEVEL

I. AMBIENT AIR QUALITY :-

1. Total No. of A.A.Q. stations monitored : 5
2. No. of A.A.Q. stations in which Pollutants Level exceeded the Boards standards : Nil

Maximum and Minimum values of Pollutants Level observed:

Sl. No.	POLLUTANT	Values in microgram/m^3		BOARD's STANDARD (As per consent order)
		Maximum	Minimum	
1.	PM_{10}	89	51	100
	PM.2.5	28	13	60
2.	GASEOUS POLLUTANTS:-			
	(i) SO2	13	7	80
	(ii) NO2	19	10	80

II. STACK MONITORING:-

1. Total No. of Stacks Monitored : --
2. No. of Stacks in which Pollutants level Exceeded the Boards standards : Nil

8/9/2020
DCSO

8/9/2020
Chief Scientific Officer,
District Environmental Laboratory
Tamil Nadu Pollution Control Boar
Manali

KAMARAJAR PORT LIMITED

Compliance Report

On

Ministry's guidelines for

"EXPANSION AND MODERNIZATION OF EXISTING HANDLING OF MULTICARGO CONTAINER TERMINAL AT KAMARAJAR PORT, TAMIL NADU"

Expansion and modernization of existing handling of Multicargo container terminal at Kamarajar Port, Tamil Nadu by M/s. Kamarajar Port Limited- Environmental and CRZ Clearance.

Ref: MoEF's Notification No. 10-28/2005–IA-III dated 24.12.2014

KPL has awarded the development of Multi Cargo Terminal on DBFOT basis for a capacity of 2MTPA with an estimated cost of Rs.151 crores to M/s Chettinad International Bulk Terminal Pvt. Ltd. Concession agreement was signed on 28.03.2014. Award of Concession was granted to the Concessionaire from 27.02.2015. The Concessionaire has completed the berth construction, utility, back yard etc. and started operation.

Cargoes to be handled

Development of multi cargo container terminal is to handle Project clean cargoes like Granite, timber logs, Grains, bagged cargoes including sugar, cobble stone, steel cargoes, project cargo and small quantity of containers of about 2 Million tonnes per annum.

Development of Container Terminal at KPL on DBFOT basis was awarded to M/s. Adani Ennore Container Terminal Private Limited (AECTPL). The quantity handled will be 11.68 MTPA.

S.No	Specific Conditions	Compliance Status
1	"Consent for Establishment" 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.	Kamarajar Port has obtained "Consent to Establish" from Tamilnadu Pollution Control Board (TNPCB) for handling container cargo of 16.8 MMTPA vide consent order No. 170126235691 (Air Act) and 170116235691 (Water Act) dated 21.04.2017 valid till 31.03.2024. TNPCB has accorded Consent to Operate to handle 11.68 MMTPA of containers vide order No. 1808111676581 & 1808211676581 under Air and Water Acts, dated 23.08.2018 and valid for 3years. TNPCB has extended the validity period of Consent To Operate (CTO) of the facility for a period upto 30.11.2021 vide their letter Order No. TNPCB/P&D/F.19205/2019 dated 13.05.2021.

		With regard to M/s Chettinad International Bulk terminal Pvt Ltd (CIBTPL), TNPCB accorded Consent to operate vide Order No.1808212438509 (Air) dtd 20.09.2018 (Under section 21 of Water prevention and Control of Pollution Act, 1981 and Consent Order No. 1808112438509 (Water) dtd 20.09.2018 (Under section 25 of Water prevention and Control of Pollution Act, 1981.
2	Quantity of cargo should be handled in accordance with the details provided in the Form-1	Complied.
3	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.	Noted for compliance.
4	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.	Noted and being complied with.
5	All the recommendation of the EIA/EMP & Risk Assessment and Disaster Management Report shall be complied with letter and spirit. All the mitigation measures submitted in the EIA report shall be prepared in a matrix format and the compliance for each mitigation submitted in the EIA report shall be submitted to MoEF&CC along with half yearly compliance report to MoEF&CC-RO	EIA/EMP report in a matrix format is enclosed as Annexure -I.
6	The commitment made by the Proponent to the issue raised during Public Hearing shall be implemented by the Proponent.	No direction was given to conduct public hearing for the modification of the project.
7	**Corporate Environment Responsibility:** a) The Company shall have a well	

	laid down Environment Policy approved by the Board of Directors.	M/s. AECTPL is having approved QHSE policy.
	b) The Environment Policy shall prescribe for standard operating process/producers to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions.	M/s. AECTPL is having approved SOPs.
	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.	Noted.
	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	M/s. AECTPL is having Standard procedures to address corrective, preventive, deviations and violations.

General Conditions

S.No	Environmental Clearance Conditions	Compliance Status
(i)	Appropriate measures must be taken while understanding digging activities to avoid any likely degradation of water quality.	Complied with. Construction completed and the project is under operation.

(ii)	Full support shall be extended to the officers of this 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. TNPCB officials are visiting the terminal on monthly basis. There was no visit of RO-MoEF & CC and CPCB during the compliance period. All necessary support is being provided during the site visit.
(iii)	A six-monthly monitoring report shall need to be submitted by the project proponent to the Regional Office of this Ministry at Chennai regarding the implementation of the stipulated conditions.	Complied with. The six-monthly compliance status report on the conditions stipulated vide Environmental clearance letters is being sent to Regional Office of MoEF & CC, Chennai and Tamilnadu Pollution Control Board.
(iv)	Ministry of Environment, Forest & Climate Change or any other competent authority may stipulate any additional conditions or modify the existing ones, if necessary in the interest of environment and the same shall be complied with.	Noted.
(v)	The Ministry reserves the right to revoke this clearance if any of the condition stipulated are not complied with the 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, Forest & Climate Change.	Noted.
(vii)	The project proponent 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.

<table>
<tr><td>(viii)</td><td>A copy of the clearance letter shall be marked to concern Panchayat/local NGO, if any, from whom any suggestion/ representation has been made received while processing the proposal.</td><td>No suggestion / representation were received from the Panchayat/NGO while processing the proposal. However a copy of the clearance letter was forwarded to local Panchayat.</td></tr>
<tr><td>(ix)</td><td>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.</td><td>Complied with.

A separate EMC with suitable qualified staff has been put in place by M/s AECTPL for taking care of various day-to-day Environmental monitoring compliance and allied activities. Environment Department is headed by Senior Manager-Environment, who is well supported by qualified Environment Management Team at H.O</td></tr>
<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 purposes.</td><td>Complied.

The environmental expenditure carried out by M/s AECTPL during the compliance period is Rs. 25.89 Lakhs. The breakup details are as follows.

<table><tr><td>S.No</td><td>Description</td><td>Amount (Rs. in Lakhs)</td></tr><tr><td>1</td><td>Environmental Monitoring</td><td>2.0</td></tr><tr><td>2</td><td>Greenbelt</td><td>2.22</td></tr><tr><td>3</td><td>STP-O&M</td><td>2.26</td></tr><tr><td>4</td><td>Housekeeping</td><td>19.41</td></tr><tr><td colspan="2">Total</td><td>25.89</td></tr></table>
Environmental Expenditure carried out by M/s CIBTPL during 2019-20 is Rs.5,44,440/- and 2020-21 is Rs.5,10,086/-.</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,</td><td>Noted.</td></tr>
</table>

	1986, the Public Liability (Insurance) Act, 1991 and EIA Notification 1994, including the amendments and rules made thereafter.	
6	All other statutory clearances such as the approvals for storage of diesel from Chief Controller of Explosives, Fire Department, Civil Aviation Department, Forest Conservation Act, 1980 and Wildlife (Protection) Act, 1972 etc. shall be obtained, as applicable by project proponents from the respective competent authority.	Noted. Approvals shall be obtained as applicable. *M/s CIBTPL* has obtained Fire Service License from Tamil Nadu Fire & Rescue Service under Section 13 of the Tamil Nadu Fire Services Act 1985 and in accordance with Tamil Nadu Fire service Rules 1990 Appendix III) Lic.No.3589/2019 dt.30.10.2019.
7	The project proponent shall advertise in atleast two local Newspaper widely circulated in the region, one of which shall be in the vernacular language informing that the project has been accorded Environmental and CRZ clearance and copies of clearance letters are available with the Tamil Nadu State Pollution Control Board and may also be seen on the website of the Ministry of Environment, Forest & Climate Change at http://www.envfor.nic.in. The advertisement should be made within Seven days from the date of receipt of the Clearance letter and a copy of the same should be forwarded to the Regional office of this Ministry at Chennai.	The advertisement was given in the local Tamil newspaper Dinamani & New Indian Express paper on 04.02.2015 intimating the accordance of Environmental & CRZ clearance for the project. The copy of the same was forwarded to MoEF&CC.
8	This clearance is subject to final order of the Hon'ble Supreme court of India in the matter of Goa Foundation Vs. Union of India in Writ Petition (Civil) No.460 of 2004 as may be applicable to this project.	Noted.
9	Any appeal against this clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.	Noted.

10	Status of compliance to the various stipulated environmental conditions and environment safeguards will be uploaded by the project proponent in its website.	M/s AECTPL has uploaded the status of compliance in its website.
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.	Complied with. The copy of the clearance letter was forwarded to local Panchayat.
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 regional Office of MoEF, the respective Zonal Office of CPCB and the SPCB.	Complied with.
13	The project proponent shall also submit six monthly reports on the status of compliance of the stipulated Clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office of MoEF, the respect Zonal of CPCB and SPCB.	Port is submitting the bi-annual compliance report to Regional Office of MoEF & CC.
14	The environment 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 be sent to the respective Regional Office of MoEF&CC by e-mail.	Noted and will be complied with. The environmental statement (Form-V) is enclosed as **Annexure-III.**

Annexure -I

Environmental Mitigation Measures in Matrix format

S.No	Component	Impact	Mitigation Measures
Construction Phase			
1.	Land	• Change in topography of inner dock basin, which will be dredged and converted into marine berthing area. • Land pollution due to discharge of sewage and solid waste onto land.	• Use of removed soil (top soil only) for green belt development. • No change in land use land cover as the proposed project site is located within the existing break waters. • Disposal of solid waste through authorized recyclers/ contractors. • Local labours are engaged.
2.	Water	• Water pollution due to disposal of sewage and construction waste into water body.	• No construction waste is disposed off into the water body.
3.	Air	• Generation of PM2.5, PM10,CO, SO2, NO2	• Raw materials for construction will be brought inside the port in trucks with proper covers. • Regular servicing of vehicles and DG sets. • Compulsory wearing of Personal Protective Equipment (PPE) like dust mask etc by workers.
4.	Noise and Vibration	• Increase in the noise level due to movement of vehicles and construction activities. • Vibration due to movement of vehicles and construction activities.	• Regular servicing and maintenance of construction Machineries, equipments and vehicles is carried out to control noise. • Compulsory wearing of Personal Protective Equipment (PPE) like ear plugs or ear muff by workers. • The impact due to vibration from vehicular movement is insignificant.
5.	Marine Environment	• Increase in suspended solid concentration due to dredging in the marine water body. • Change in shoreline.	• Usage of silt curtains to contain spread of suspended sediment in marine water body. • Since, the construction of the

			berth is inside the breakwaters hence no changes in shoreline.
6.	Biological • Flora • Fauna	• Site clearance. • Disturbance due to increase in noise.	• The activities do not create any disturbance to flora and fauna. • No operations of heavy machinery.
7.	Socio-Economic	• Employment generation.	• Local people were engaged by the contractors during construction.
Operation Phase			
8.	Land	• Pollution due to discharge of sewage. • Generation of ship and port generated solid wastes	• Sanitation facilities were provided. • Sewage will be collected in septic tank, which will be emptied regularly by contractor. • Port has facilitated the ships with reception facilities for the disposal of solid wastes as required under MARPOL regulations.
9.	Water	• Consumption of water. • Contamination of water body by discharge of untreated sewage. • Contamination of water body due to discharge of contaminated storm water runoff.	• Water consumption is only for domestic purpose. No process or manufacturing is taking place. • Sewage will be collected in septic tank, which will be emptied regularly by contractor. • Storm water drainage system.
10.	Air	• Emission of air pollutantslike CO, SO2, NOx from vehicles, heavy machineries and DG sets.	• Cargo is handled in closed containers. In the Multi cargo berth only green cargo are handled. • Regular servicing and maintenance of DG set and vehicles are carried out. • Air quality is regularly monitored.
11.	Noise and Vibration	• Operation of heavy machineries will result in generation of noise and vibration.	• Ear muffs are provided for workers.

12.	Marine Environment	• Contamination of marine water and bottom sediment due to discharge/ disposal of untreated sewage/garbage from the ships/port area into the marine environment.	• No garbage is disposed off into the sea. The same is collected by the port and disposed off.
13.	Biological • Flora • Fauna	• Disturbance due to increase in noise.	• The activities do not create any disturbance to flora and fauna. • No operations of heavy machinery.
14.	Socio-Economic	• Employment opportunity.	• Generation of Employment opportunity.
15.	Occupational Health and Safety	• Storage of materials and handling.	• Materials are stored in either closed shed or in closed containers. • Usage of personal protective equipment like dust mask and safety goggle. • Safety training.

KAMARAJAR PORT LIMITED

Compliance Report

On

Ministry's guidelines for

Development of additional Coal Berths (CB3 and CB4) at Kamarajar Port, Tamil Nadu by M/s. Kamarajar Port Limited – Environmental and CRZ clearance

Point wise compliance report on Ministry's guidelines for the Kamarajar Ports project "Development of additional coal berths (CB3 and CB4) at Kamarajar Port, Tamil Nadu by M/s. Kamarajar Port Limited (Formerly known as Ennore Port Limited)- Environmental and CRZ clearance-reg.

Ref: MoEF's Notification F.No.11-51/2012-IA.III dated 12th March 2015

Construction of Coal Berth No. 3

Construction of Coal berth No 3 for TNEB was planned for a capacity of 9 MTPA at an estimated cost of 209.68 crores. The agreement was signed between M/s ITD Cementation India Ltd., on 20th January 2015, and the work was commenced on 02nd June 2015 and completed on 13.12.2017. Though the berth construction was completed on 13.12.2017, since the other berth infrastructure being constructed, the terminal is yet to commission.

Construction of Coal Berth No. 4

Construction of Coal berth No 4 for TNEB was planned for a capacity of 9 MTPA at an estimated cost of 255.79 crores. The agreement was signed between M/s Afcons Infrastructure Ltd., on 20th July 2015, and the work was commenced on 19th August 2015 and completed on 31.05.2018. Though the berth construction was completed on 31.05.2018, since the other berth infrastructure being constructed, the terminal is yet to commission.

S.No	**Specific Conditions**	**Compliance Status**
A (i)	"Consent for Establishment" 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.	Tamil Nadu Pollution Control Board has accorded consent to Establish for the project vide Consent Order No. 15061355540 dated 31.8.2015 and Proceedings No. T6/TNPCB/F.0044AMB/RL/AMB/W/2015 dated 31.8.2015 for Water and Proceedings No. T6/TNPCB/F.0044AMB/RL/AMB/A/2015 dated 31.8.2015 for Air.
(ii)	Dust screens shall be provided with a height of 2 meter above the maximum stack height. Water sprinkling shall be carried out for settling dust. Three layers of green belt of all growing trees shall be provided on all sides.	Will be complied. The condition will be implemented during the construction and operation stage.
(iii)	Water sprinkler should be provided in the area of coal loading and unloading, storage and vehicle path/roads.	Noted.
(iv)	Energy conservation measures shall be provided which may include use of solar panels, wind mill etc.	Complied with. At present, port has installed solar panels with a total capacity of 20 KV.
(v)	There shall be no washing of conveyor belt.	Noted for compliance.

(vi)	All the conditions stipulated by Tamil Nadu Coastal Zone Management Authority (TNCZMA) vide letter No. 23187/EC.3/2014-1 dated 16.12.2014, shall be complied with.	Noted for compliance.
(vii)	All the recommendation of the EIA/EMP, Disaster Management Plan shall be strictly complied within letter and spirit. All the mitigation measures submitted in the EIA report shall be prepared in a matrix format and the compliance for each mitigation plan shall be submitted to MoEF & CC along with half yearly compliance report to MoEF & CC - RO.	Noted for compliance.
(viii)	Cargo shall be unloaded directly into hopper from the ship and transportation of coal shall be through covered/closed trucks/ rail only. Closed conveyor belt shall be used for loading the product in the barges.	The project is yet to be commissioned. Cargo shall be unloaded directly into hopper from the ships and transported through elevated closed conveyor systems to the stack yard / thermal power plant.
(ix)	The dredge material shall be reused for low level rising wherever possible and excess shall be dumped into sea at the designated dumping areas identified based on mathematical model studies.	Noted. Portion of the dredged material was dumped in the sea.
(x)	To prevent discharge of sewage and other liquid waste including ballast into marine environment, adequate system for collection, treatment and disposal of liquid waste must be provided.	Noted.
(xi)	Necessary arrangements for the treatment of the effluents and solid waste must be made and it must be ensured that the untreated effluents and solid wastes are not discharged into the water or on the beach; and no effluent or solid waste shall be discharged on the beach.	**Noted.**
(xii)	The quality of treated effluents, solids wastes, emission and noise levels and the like, from the project area must conform to the standards laid down by the competent	Noted for compliance.

	authorities including the Central or State Pollution Control Board and under the Environment (Protection) Act, 1986.	
(xiii)	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.	At present, KPL is having an Environmental Division with the following officers. (i) Chief Manager(HSE), (ii) Sr.Manager(HSE) and (iii) Executive(HSE) to take care of the environmental requirements of the port. Port has engaged M/s. Hubert Enviro care Systems Pvt. Ltd. Chennai (MoEF & CC/ NABL certified) to carry out regular environmental monitoring.
(xiv)	The commitment made by the proponent to the issue raised during Public Hearing shall be implemented by the Proponent.	Noted.
(xv)	Corporate Environment Responsibility: a) The Company shall have a well laid down Environment Policy approved by the Board of Directors. b) The Environment Policy shall prescribe for standard operating process/producers 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. 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.	Kamarajar Port Limited is having an Environmental Management System Policy. Noted. Noted. Noted.

B. General conditions

S.No	General Conditions	Compliance Status
(i)	Appropriate measures must be taken while understanding digging activities to avoid any likely degradation of water quality.	Noted. Port is regularly monitoring the marine water quality during the construction activities.
(ii)	Full support shall be extended to the officers of this 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. Full support will be extended to the officers of the Ministry/Regional office at Chennai.
(iii)	A six-Monthly monitoring report shall need to be submitted by the project proponent to the Regional Office of this Ministry at Chennai regarding the implementation of the stipulated conditions.	Complied with.
(iv)	Ministry of Environment, Forest & Climate Change or any other component authority may stipulate any additional conditions or modify the existing ones, if necessary in the interest of environment and the same shall be complied with.	Noted.
(v)	The Ministry reserves the right to revoke this clearance if any of the condition stipulated are not complied with the 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, Forest & Climate Change.	There is no change.
(vii)	The project proponent 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.	**Construction of Coal Berth No. 3** Coal berth No 3 for TNEB was planned for a capacity of 9 MTPA at an estimated cost of 209.68 crores. The agreement was signed with M/s. ITD Cementation India Ltd. **Date of financial closure- internal resources:** Date of final approval of the project by

		concerned authorities- KPL Board approved it on 9.6.2015 Date of start of land development works- 2.6.2015. **Construction of Coal Berth No. 4** Construction of Coal berth No 4 for TNEB was planned for a capacity of 9 MTPA at an estimated cost of 255.79 crores. The agreement was signed between M/s Afcons Infrastructure Ltd., **Date of financial closure- internal resources:** Date of final approval of the project by concerned authorities- KPL Board approved it on 21.2.2015 Date of start of land development works- 19.8.2015.
(viii)	A copy of the clearance letter shall be marked to concern Panchayat/local NGO, if any, from whom any suggestion/ representation has been made received while processing the proposal.	Complied with. KPL has advertised in two local Newspapers informing that the project has been accorded with Environmental and CRZ clearance. The copy of the clearance letter was forwarded to the local Panchayat vide letter dated 26.3.2015.
(ix)	Full support should be extended to the officers of this Ministry's Regional Office at Chennai and the offices of the Central and Tamil Nadu State Pollution control Board 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.	Full support will be extended to the officers of Ministry of Environment & Forests.
(x)	The funds earmarked for environmental protection measures shall be kept in separate account and shall not be diverted for other purpose. Year-wise expenditure shall be reported to this Ministry and its concerned Regional Office.	Noted

5	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.	KPL is enforcing the provisions of Water (Prevention and Control of Pollution) Act 1974, the Air (Prevention and Control of Pollution) Act 1981 and the Environment (Protection) Act, 1986. With regard to Public Liability Insurance, Port has obtained Public Liability Insurance through 'The Oriental Insurance Company Ltd.' vide Policy No:411400/22/2021/1, valid till 05/11/2021.
6	All other statutory clearances such as the approvals for storage of diesel from Chief Controller of Explosives, Fire Department, Civil Aviation Department, Forest Conservation Act, 1980 and Wildlife (Protection) Act, 1972 etc. shall be obtained, as applicable by project proponents from the respective competent authority.	Presently, no diesel is stored inside the project area. Clearances from Fire Department, Chief Controller of explosives, Civil Aviation Department, Forest conservation Act are not applicable for the above project.
7	The project proponent shall advertise in atleast two local Newspaper widely circulated in the region, one of which shall be in the vernacular language informing that the project has been accorded Environmental and CRZ clearance and copies of clearance letters are available with the Tamil Nadu State Pollution Control Board and may also be seen on the website of the Ministry of Environment, Forest & Climate Change at http://www.envfor.nic.in. The advertisement should be made within Seven days from the date of receipt of the Clearance letter and a copy of the same should be forwarded to the Regional office of this Ministry at Chennai.	Complied with. It was advertised in the vernacular Tamil and English newspapers on 25.3.2015 in the New Indian Express and Tamil Paper Dinamani.
8	This clearance is subject to final order of the Hon'ble Supreme court of India in the matter of Goa Foundation Vs. Union of India in Writ Petition (Civil) No.460 of 2004 as may be applicable to this project.	Noted.

9	Status of compliance to the various stipulated environmental conditions and environment safeguards will be uploaded by the project proponent in its website.	Complied with.
10	Any appeal against this clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.	There is no appeal against this EC was made with National Green Tribunal.
11	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, ZillaParisad/Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the company by the proponent.	Complied with. The copy of the clearance letter was forwarded to local body. The copy of the clearance letter was also uploaded in KPL website.
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 regional Office of MoEF, the respective Zonal Office of CPCB and the SPCB.	The compliance reports are sent to Regional office of MoEF&CC, O/o of District Environment Engineer, TNPCB and Member Secretary, TNPCB.
13	The environment 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 be sent to the respective Regional Office of MoEF&CC by e-mail.	Noted.

Point wise compliance report to the conditions given in the Tamil Nadu Coastal Zone Management Authority letter No. 23187/EC.3/2014-1, dated 16.12.2014 for additional coal berths (CB3 & CB4), which are under construction.

1	There should not be any sea water intrusion or erosion on the adjacent coastal areas due to the proposed construction of two additional berths, dredging and also due to the dumping of dredged material.	There is no seawater intrusion. The berths are constructed inside the already existing two break waters.
2	Dredged material should be dumped on the landward side and should not be dumped into sea (CRZ IV)., intertidal area (CRZIB) of the Buckingham canal and also in the salt pan areas as the salt pan areas are declared as CRZ-IB (intertidal zone) as per approved coastal Zone management plan of Tamil Nadu.	KPL has dumped a quantity of 73000 cum of dredged materials at the south side of NCTPS road and at the west of Port Access Road. A case was filed before the Hon'ble National Green Tribunal [NGT] (SZ) vide application nos. 8/2016, 152/2016 & 198/2016 regarding dumping of dredged soil/ debris in the CRZ area. After hearing, Hon'ble NGT directed KPL to remove the dumped earth in the above said areas. KPL has removed the dumped material and informed the same to the Hon'ble NGT. However, the petitioner has raised objection before the Hon'ble NGT that KPL has not removed the materials fully. National Green Tribunal (NGT) vide order dated 20.05.2019 had constituted a committee to inspect and ascertain the present status of the unit (north Chennai Thermal Power station) in respect of fly ash disposal, the damage caused to the environment. The committee inspected the dredged material dumped area and submitted an assessment report to NGT on 17.01.2020. Based on assessment report of the committee, NGT vide orders dated 20.01.2020 had imposed the environmental compensation to KPL to the tune of Rs.8,34,60,000/- (Rupees Eight Crores Thirty Four Lakhs and Sixty Thousand only). KPL filed a petition for reviewing the above order dated 20.01.2020. Hon'ble NGT vide order dated 06.11.2020 reviewed and imposed an interim compensation of Rs.4,00,00,000/- (Rupees Four Crore only) instead of Rs.8,34,60,000/- and directed to deposit

		the amount within a period of 2 (Two) months with the Central Pollution Control Board (CPCB). KPL has filed a civil appeal before the Hon'ble Supreme Court of India. After subsequent hearings and progress, the Hon'ble NGT adjourned the case to 08.09.2021 for consideration of Committee's report.
3	There should not be any impact of dispersal of dredged material on the adjacent L&T shipyard area especially the navigational channels of that shipyard.	National Institute of Ocean Technology (NIOT) had conducted modelling study to identify the marine disposal area for Ennore Port in 2004. NIOT had re-validated the impact of dredged material for further development in 2010. Outcome of the 2010 Re-validation Study: The effect of dredge spoil is in line with earlier model with the plume moving in NNE-SSW direction and generally parallel to the coast line. The boundaries of L&T shipyard are sufficiently away from the path of modeled plume drift. The modeled sedimentation rate is 0.3m at dumping site and 0.1m after spreading at 11km away from dump site.
4	A continuous proper air quality monitoring station should be under taken around the project area to implement corrective, mitigate measures immediately on the noticing of any adverse impact.	Port has already installed two ambient air quality monitoring stations one of which is close to the present development site.
5	Necessary adequate preventive measures should be undertaken to maintain the air quality PM10 level at Ennore Port within the standards and it should not cross the prescribed limit and suitable plan on handling of coal in the project area shall be implemented.	Adequate pollution control measures will be implemented during the operational stage.

6	Necessary measures should be taken to control the noise level within the prescribed standard levels.	Adequate pollution control measures will be implemented during the operational stage.
7	Closed conveyor system with latest technology should be established for coal handling as indicated in the report.	Complied with.
8	Green belt development shall be implemented.	Noted.
9	There shall be no extraction of ground water	No ground water is extracted inside the port for construction or for operational purpose. Only open dug well are made for horticulture purpose.
10	As indicated in the revised report sufficient allocation of funds should be made to carryout outdoor Environment Social welfare activities.	Noted.

Annexure-I

Environmental Mitigation Measures in Matrix format

S.No	Component	Impact	Mitigation Measures
Construction Phase			
1.	Land	• Change in topography of inner dock basin, which will be dredged and converted into marine berthing area. • Land pollution due to discharge of sewage and solid waste onto land.	• Use of removed soil (top soil only) for green belt development. • No change in land use land cover is done as the proposed project site is located within port area, adjacent to the existing coal berths CB 1 and CB2. • Disposal of solid waste through authorized recyclers/ contractors. • Local labours are engaged.
2.	Water	• Water pollution due todisposal of sewage andconstruction waste into water body.	• No construction waste is disposed off into the water body.
3.	Air	• Generation of PM2.5, PM10, CO, SO2, NO2	• Use of water sprinklers. • Covering of construction and with sheets while transportation and storage. • Low sulphur content diesel for DG sets. • Regular servicing of vehicles and DG sets done. • Compulsory wearing of Personal Protective Equipment (PPE) like dust mask by workers ensured.
4.	Noise and Vibration	• Increase in the noise level due to movement of vehicles and construction activities.	• Regular servicing and maintenance of construction machineries, equipments and vehicles done to control noise. • Compulsory wearing of Personal Protective Equipment

		• Vibration due to movement of vehicles and construction activities.	ensured. PPE like ear plugs or ear muff by workers ensured. • The impact due to vibration from vehicular movement is insignificant. • Anti-vibration gloves made of visco-elastic material will be compulsorily worn by workers exposed to hand vibration due to continuous hammering etc.
5.	Marine Environment	• Increase in suspended solid concentration due to dredging in the marine water body. • Change in shoreline.	• Usage of silt curtains to contain spread of suspended sediment in marine water body. • Construction of coal berths are within the two breakwaters. Aspects relating to sediment cell and coastal erosion are not relevant. • No change in shoreline.
6.	Biological • Flora • Fauna	• Site clearance. • Disturbance due to increase in noise.	• Green belt development. • No operations of heavy machinery.
7.	Socio-Economic	• Employment generation.	• Local people were engaged by the contractors during construction.
Operation Phase:			
8.	Land	• Pollution due to discharge of sewage.	• Sanitation facilities were provided. • Sewage will be collected in septic tank, and • will be emptied regularly by contractor.
9.	Water	• Consumption of water. • Contamination of water body by discharge of untreated sewage. • Contamination of water body due to discharge of contaminated storm water runoff.	• Water consumption is only for domestic purpose. No process or manufacturing is taking place. • Sewage will be collected in septic tank, which will be emptied regularly by contractor. • Storm water drainage system.
10.	Air	• Coal dust generation.	• Installation of coal dust

		• Emission of air pollutantslike CO, SO2, NOx from vehicles, heavy machineries and DG sets.	suppression mechanism. • Transportation of coal in closed conveyor system. • Dust masks for workers. • Regular servicing and maintenance of DG set and vehicles. • Air quality will be monitored.
11.	Noise and Vibration	• Operation of heavy machineries will result in generation of noise and vibration.	• Ear muffs for workers working near noisy environment.
12.	Marine Environment	• Contamination of marine water and bottom sediment due to discharge/ disposal of untreated sewage/garbage from the ships/port area into the marine environment. • Any spillage/ runoff from the coal unloading/handling area, windblown dust might also contaminate the marine water quality and sediment quality.	• Coal will be transferred through elevated closed conveyer belt to the stack yard. • Water sprinkler will be installed at the unloading points. • No garbage will be disposed into the sea. The same will be collected by the port and disposed off.
13.	Biological • Flora • Fauna	• Dust emission due to storage and handling of coal.	• Coal dust suppression. • Green belt development.
14.	Socio-Economic	• Employment opportunity. • Increase in thermal power generation.	• Employment opportunity. • The coal is supplied to thermal power station for the generation of power.
15.	Occupational Health and Safety	• Generation of dust duringhandling and storage of coal leading to respiratory ailments. • Fire hazard due to coal handling and storage.	• Usage of personal protective equipment like dust mask and safety goggle. • Safety training. • Display of visible signages at places of fire hazard. • Cordoning of coal handling area, transportation area and storage area as No Smoking Zone.

KAMARAJAR PORT LIMITED

Compliance Report

On

Ministry's guidelines for

"DEVELOPMENT OF THE FACILITIES ENVISAGED IN THE PORT MASTER PLAN (PHASE III) BY M/S KAMARAJAR PORT LIMITED"

Point wise compliance report on Ministry's guidelines for Development of the facilities envisaged in the Port Master Plan(Phase Ill) by M/s Kamarajar Port Limited-Environmental clearance.

Ref: MoEF's Notification F.No.11-51/2012-1A-111, dated 30.10.2018

Present expansion proposals- Phase III

Due to cargo demand and to effectively use the facilities already created, port proposed to develop the following projects (as shown in Table below) as envisaged in the Kamarajar Port master plan. The projects will be developed in a phased manner in line with the market requirements, well within the existing break waters and in the lands owned by Kamarajar Port.

Phase III projects

S.No	Description	Qty	Capacity
1	Automobile export/import terminal-	2Nos.	6 MTPA
2	Container terminal-1000m quay length(3berths)	1Nos.	24 MTPA
3	Marine Liquid Terminal	1No.	5 MTPA
4	IOC captive jetty	1No.	5 MTPA
5	Bulk terminal (coal/ore/other type)	2Nos.	18 MTPA
6	Multi cargo berth	1No.	2 MTPA
7	Associated capital dredging for the above projects	33.0 Million M^3	
	Total No. of Projects	**8 Nos.**	**60 MTPA**

Compliance report

S.No	MoEF Guidelines	Compliance Status
A.	**Specific Conditions**	
(i)	The project is recommended for grant of Environmental and CRZ Clearance subject to final outcome of cases [Shri R. Ravimaran, Chennai (NGT Case No.8 of 2016) and Meena Thanthai K. R. Selvaraj Kumar, Chennai (NGT Case No.152 of 2016)] which are sub-judice in the Hon'ble National GreenTribunal (NGT) South Zone, Chennai, Tamil Nadu.	Noted. KPL has dumped a quantity of 73000 cum of dredged materials at the south side of NCTPS road and at the west of Port Access Road. A case was filed before the Hon'ble National Green Tribunal [NGT] (SZ) vide application nos. 8/2016, 152/2016 & 198/2016 regarding dumping of dredged soil/ debris in the CRZ area. After hearing, Hon'ble NGT directed KPL to remove the dumped earth in the above said areas. KPL has removed the dumped material and informed the same to the Hon'ble NGT. However, the petitioner has raised objection before the Hon'ble NGT that KPL has not removed the materials fully. National Green Tribunal (NGT) vide order dated 20.05.2019 had constituted a committee to inspect and ascertain the present status of the unit (north Chennai Thermal Power station) in respect of fly ash disposal, the damage caused to the environment. The committee inspected the dredged material dumped area and submitted an assessment report to NGT on 17.01.2020. Based on assessment report of the committee, NGT vide orders dated 20.01.2020 had imposed the environmental compensation to KPL to the tune of Rs.8,34,60,000/- (Rupees Eight Crores Thirty Four Lakhs and Sixty Thousand only). KPL filed a petition for reviewing the above order dated 20.01.2020. Hon'ble NGT vide order dated 06.11.2020 reviewed and imposed an interim compensation of Rs.4,00,00,000/- (Rupees Four Crore only) instead of Rs.8,34,60,000/- and directed to deposit the amount within a period of 2 (Two) months with the Central Pollution Control Board (CPCB).

		KPL has filed a civil appeal before the Hon'ble Supreme Court of India. After subsequent hearings, the Hon'ble NGT adjourned the case to 08.09.2021 for consideration of Committee's report.
(ii)	Construction activity shall be carried out strictly according to the provisions of the CRZ Notification, 2011. No construction work other than those permitted in Coastal Regulation Zone Notification shall be carried out in Coastal Regulation Zone area.	Noted.
(iii)	All the recommendations and conditions specified by the Tamil Nadu Coastal Zone Management Authority who has recommended the project vide letter No. 12311/EC.3/2017-1 dated 20.07.2017 shall be complied with.	Please find enclosed the compliance report as **Annexure-1**
(iv)	The project proponent shall ensure that the project is in consonance with the new CZMP prepared by the State Government under the provisions of CRZ Notification, 2011.	Noted
(v)	Consent to Establish/Operate for the project shall be obtained from the State Pollution Control Board as required under the Air (Prevention and Control of Pollution) Act, 1981 and the Water (Prevention and Control of Pollution) Act, 1974.	Noted. Application was already submitted to TamilNadu pollution Control Board for grant of Consent To Establish.
(vi)	As per the latest map no development zone shall be maintained 100m on either side of the Kosasthalaiyar river. Besides 50m buffer zone shall be maintained from the mangrove boundary as marked in the combined map indicating the actual field position taking into consideration both the maps i.e. CRZ Map of Anna University prepared for KPL in 2016 and draft CZMP of TNCZMA 2018.	Noted

(vii)	Though the area including the portion of Kosasthalaiyar river has been transferred to KPL, no activity shall be carried out in this zone by maintaining a buffer of 100m since water bodies and wet lands are more important than the development activity.	Noted and will be complied with.
(viii)	The area in the southern side meant for Commercial building, office and parking terminal shall be relocated to some other area on the northern side (within the existing port limit where sufficient land is available).	Noted.
(ix)	The referred Culverts i.e. C1 to C6 as marked in the combined map indicating the actual field position taking into consideration both the maps i.e. CRZ Map of Anna University prepared for KPL in 2016 and draft CZMP of TNCZMA2018 shall be widened to facilitate the free flow of water.	Noted.
(x)	The Project proponent shall ensure that no creeks or rivers are blocked due to any activities at the project site and free flow of water is maintained.	Noted.
(xi)	Dredging shall not be carried out during the fish breeding season.	Noted.
(xii)	Dredging, etc shall be carried out in the confined manner to reduce the impacts on marine environment including turbidity.	Noted.
(xiii)	Dredged material shall be disposed safely in the designated areas.	Noted. Port has identified an area of 6000m x 6000m in the open sea through mathematical modeling studies for the disposal of dredged material.

(xiv)	Shoreline should not be disturbed due to dumping. Periodical study on shoreline changes shall be conducted and mitigation carried out, if necessary. The details shall be submitted along with the six monthly monitoring report.	Noted.
(xv)	While carrying out dredging, an independent monitoring shall be carried out by Government Agency/Institute to check the impact and necessary measures shall be taken on priority basis if any adverse impact is observed.	Noted.
(xvi)	The fresh water requirement (1000 KLD) for the present project will be met from Chennai Metro water supply. However if additional quantity is required the same will be met through outsourced external agency. However Rain water harvesting shall be followed as per local byelaw and harvested water shall be stored, treated and reused to reduce the additional water requirement since Chennai is a water deficient area, besides use of water efficient appliances.	Noted.
(xvii)	The concerns expressed during the public hearing held by the Kamarajar Port Limited needs to be addressed during the project implementation. These would also cover socio-economic and ecological and environmental concerns, besides commitment by the management towards employment opportunities.	Noted
(xviii)	Marine ecological studies as carried out by the accredited consultant (Indomer Coastal Hydraulics Pvt Ltd), Chennai and its mitigation measures for protection of phytoplankton, zooplanktons, Macrobenthos etc as given in the EIA-EMP Report shall be complied with in letter and spirit.	Noted.

(xix)	A copy of the Marine and riparian biodiversity management plan duly validated by the State Biodiversity Board shall be submitted before commencement of implementation.	KPL has engaged M/s L & T Infrastructure Engineering Limited, Hyderabad for the work of "Preparation of Bio-Diversity Management Plan for Kamarajar Port Limited", *vide* work order No: KPL/MS/HSE/BD/2018, Dated: 27.03.2019. The draft report was submitted to Tamil Nadu State Bio-diversity Board vide KPL letter No. KPL/MS/HSE/BD/2019 dated 17.01.2020 for validation and approval. In response, the Board has made some comments/suggestions on the report. The suggestions/comments of the Board has forwarded to the consultant M/s L & T Infrastructure Engineering Limited. The consultant is working on the comments/suggestions.
(xx).	A continuous monitoring programme covering all the seasons on various aspects of the coastal environs need to be undertaken by a competent organization available in the State or by entrusting to the National Institutes/renowned Universities/accredited Consultant with rich experiences in marine science aspects. The monitoring should cover various physicochemical parameters coupled with biological indices such as microbes, plankton, benthos and fishes on a periodic basis during construction and operation phase of the project. Any deviations in the parameters shall be given adequate care with suitable measures to conserve the marine environment and its resources.	Being carried out. The same will be continued for the present project also during construction and operation.
(xxi)	Continuous online monitoring of for air and water covering the total area shall be carried out and the compliance report of the same shall be submitted along with the 6 monthly compliance report to the regional office of MOEF&CC.	Noted and will be complied with once the projects are implemented.
(xxii)	Effective and efficient pollution control measures like covered conveyors/ stacks	Noted and the same will be complied with.

	(coal, iron ore and other bulk cargo) with fogging/back filters and water sprinkling commencing from ship unloading to stacking to evacuation shall be undertaken. Coal and iron ore stack yards shall be bounded by thick two tier green belt with proper drains and wind barriers wherever necessary.	
(xxiii)	Marine ecology shall be monitored regularly also in terms of sea weeds, sea grasses, mudflats, sand dunes, fisheries, echinoderms, shrimps, turtles, corals, coastal vegetation, mangroves and other marine biodiversity components as part of the management plan. Marine ecology shall be monitored regularly also in terms of all micro, macro and mega floral and faunal components of marine biodiversity.	Noted and will be complied with. KPL has engaged M/s L & T Infrastructure Engineering Limited, Hyderabad for the work of "Preparation of Bio-Diversity Management Plan for Kamarajar Port Limited", *vide* work order No: KPL/MS/HSE/BD/2018, Dated: 27.03.2019. The draft report was submitted to Tamil Nadu State Bio-diversity Board vide KPL letter No. KPL/MS/HSE/BD/2019 dated 17.01.2020 for validation and approval. In response, the Board has made some comments/suggestions on the report. The suggestions/comments of the Board has forwarded to the consultant M/s L & T Infrastructure Engineering Limited. The consultant is working on the comments/suggestions.
(xxiv)	The project proponents would also draw up and implement a management plan for the prevention of fires due to handling of coal.	Will be complied with.
(xxv)	Spillage of fuel / engine oil and lubricants from the construction site are a source of organic pollution which impacts marine life, particularly benthos. This shall be prevented by suitable precautions and also by providing necessary mechanisms to trap the spillage.	Noted.
(xxvi)	Necessary arrangements for the treatment of the effluents and solid wastes/facilitation of reception facilities under MARPOL must be made and it must be ensured that they conform to the standards laid down by the	Being carried out and the same will be extended to the other projects also during construction and operation.

	competent authorities including the Central or State Pollution Control Board and under the Environment (Protection) Act, 1986. The provisions of Solid Waste Management Rules, 2016. E- Waste Management Rules, 2016, and Plastic Waste Management Rules, 2016 shall be followed.	
(xxvii)	Compliance to Energy Conservation Building (ECBC-2017) shall be ensured for all the building complexes. Solar/wind or other renewable energy shall be installed to meet energy demand of 1% equivalent.	Noted
(xxviii)	All the recommendations mentioned in the rapid risk assessment report, disaster management plan and safety guidelines shall be implemented.	Noted.
(xxix)	Measures should be taken to contain, control and recover the accidental spills of fuel and cargo handle.	Noted.
(xxx).	Necessary arrangement for general safety and occupational health of people should be done in letter and spirit.	Noted.
(xxxi)	All the mitigation measures submitted in the EIA report shall be prepared in a matrix format and the compliance for each mitigation plan shall be submitted to the RO, MoEF&CC along with half yearly compliance report.	Noted and will be complied with.
(xxxii)	KPL will strengthen their Environmental Management Cell.	At present, KPL is having an Environmental Division with the following officials. (i) Chief Manager (HSE), (ii) Sr.Manager(HSE) and (iii) Executive(HSE) to take care of the environmental requirements of the port.

(xxxiii)	KPL Shall consider more employment opportunities to the local people.	Noted.
(xxxiv)	As per the Ministry's Office Memorandum F.No. 22-65/2017-IA.III dated 1stMay 2018, and proposed by the project proponent, an amount of Rs. 15 Crore (@0.25% of project Cost) shall be earmarked under Corporate Environment Responsibility (CER) for the activities such as strengthening of environmental cell by new recruitments, development of green fields, environmental monitoring surveys, solid waste management, sanitation and sewage facilities, widening of culverts etc. The activities proposed under CER shall be restricted to the affected area around the project. The entire activities proposed under the CER shall be treated as project and shall be monitored. The monitoring report shall be submitted to the regional office as a part of half yearly compliance report, and to the District Collector. It should be posted on the website of the project proponent.	Noted and will be complied with.
(xxxv)	The project is recommended for grant of Environmental and CRZ Clearance subject to final outcome/legal opinion on the order dated 22nd November,2017 of Hon'ble NGT in the Original Application No. 424 of 2016 (Earlier O.A.No. 169 of 2015) and Original Application No. 11 of 2014 in the matter of M/s. Mehdad & Anr. Vs. Ministry of Environment, Forests & Climate Change & Ors. and Shamsunder Shridhar Dalvi & Ors. Vs. Govt. of India & Ors.	The said NGT case is not relevant to KPL.

B. General Conditions:

(i)	Appropriate measures must be taken while undertaking digging activities to avoid any likely degradation of water quality.	Noted.

(ii)	Full support shall be extended to the officers of this 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.	Will be complied with.
(iii)	A six-Monthly monitoring report shall need to be submitted by the project proponents to the Regional Office of this Ministry at Chennai regarding the implementation of the stipulated conditions.	Will be complied with.
(iv)	Ministry of Environment, Forest and Climate Change or any other competent authority may stipulate any additional conditions or modify the existing ones, if necessary in the interest of environment and the same shall be complied with.	Will be complied.
(v)	The Ministry reserves the right to revoke this clearance if any of the conditions stipulated are not complied with the satisfaction of the Ministry.	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, Forest and 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.	Complied with. It was Advertised in two local Newspapers informing that the project has been accorded Environmental and CRZ clearance. the

		Commissioner, Minjur panchayat unio, Ponneri taluk, vide KPL letter dated 22.11.2018.
(ix)	A copy of this clearance letter shall also be displayed on the website of the concerned State Pollution Control Board. The Clearance letter shall also be displayed at the Regional Office, District Industries centre and Collector's Office/ Tehsildar's office for 30 days.	Noted.
6	All other statutory clearances such as the approvals for storage of diesel from Chief Controller of Explosives, Fire Department, Civil Aviation Department, Forest Conservation Act, 1980 and Wildlife (Protection) Act, 1972 etc. shall be obtained, as applicable by project proponents from the respective competent authorities.	Presently, no diesel is stored inside the project area. Clearances from Fire Department, Chief Controller of explosives, Civil Aviation Department, Forest conservation Act are not applicable for the above project.
7	The project proponent shall advertise in at least two local Newspapers widely circulated in the region, one of which shall be in the vernacular language informing that the project has been accorded Environmental and CRZ Clearance and copies of clearance letters are available with the State Pollution Control Board and may also be seen on the website of the Ministry of Environment, Forest and Climate Change at http://www.envfor.nic.in. The advertisement should be made within Seven days from the date of receipt of the Clearance letter and a copy of the same should be forwarded to the Regional office of this Ministry at Chennai.	Complied with. It was advertised in the vernacular Tamil and English newspapers on 14.11.2018 in the Indian Express and Tamil paper Dinamani.
8	This clearance is subject to final order of the Hon'ble Supreme Court of India in the matter of Goa Foundation Vs. Union of India in Writ Petition (Civil) No.460 of 2004 as may be applicable to this project.	Noted.

9	Any appeal against this clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.	Noted.
10	Status of compliance to the various stipulated environmental conditions and environmental safeguards will be uploaded by the project proponent in its website.	Noted.
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.	Complied with. The copy of the clearance letter was forwarded to the Commissioner, Minjur panchayat union, Ponneri Taluk vide KPL letter dated 22.11.2018.
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 Regional Office of MoEF&CC, the respective Zonal Office of CPCB and the SPCB.	Noted. The compliance reports shall be sent to Regional office of MoEF & CC, O/o District Environment Engineer, TNPCB and Member Secretary, TNPCB.
13	The project proponent shall also submit six monthly reports on the status of compliance of the stipulated Clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the respective Regional Office ofMoEF&CC, the respective Zonal Office of CPCB and the SPCB.	Noted.
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	Noted.

	the website of the company along with the status of compliance of Clearance conditions and shall also be sent to the respective Regional Office of MoEF&CC by e-mail.	
15	The above 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.	Port has obtained Public Liability Insurance through 'The Oriental Insurance Company Ltd.', vide PolicyNo:411400/22/2019/1, valid till 05/05/2021.
16	These issues with the approval of the Competent Authority.	Noted.

	Annexure-I	Directions of TNSCZMA
1	The proposed activities involve capital dredging in port basin and Navigational channel resulting in a quality of 33 MCM of dredged material and the dredging is proposed to be carried out for a period of 5 years. A dredge disposal site at a depth of 25-50m depth has been identified for disposal of dredged material amounting to 30 MCM and the disposal will be made in a phased manner for a period of 5 years. The disposal site measures about 30 sq km and the dumbed dredged material is expected to rise the sea bed level from 0.5 to 1 m after completion of the dumping. The Authority felt that blanketing of 30 sq km seabed area with a cover of dredge soil upto 1m may affect drastically the benthic fauna of the area. Using the models, the dump area size should be designed in such a way that it extends from 20km or more from the 50m depth in the offshore area with a narrow band of dumping area say 100-200m width and low discharge rate, leading to marginal increase of sea bed level. Such an arrangement may minimize the damaging effect on fauna. Find scale bathymetry data should be collected before initiation of dumping in the proposed site and repeated annually till completion of the dumping. A report in this regard has to be submitted to the Authority as a part of Compliance report that will be submitted to the MoEF & CC, GoI after obtaining Environmental Clearance.	The area for offshore disposal was extended to 6000m x 6000m spread over the depth of 25 to 55m CD as per the revised study and recommendation of State Coastal Zone management Authority.
2	It should be ensured that the proposed construction of Truss does not affect free flow of water.	Noted and the same will be complied with.

3	No interference of any kind to be done in Mangroves and Salt marsh areas, including construction of coal conveyor belt.	Noted.
4	Area under wetlands as elaborated by the EIA report need to be considered and managed as wetlands, and not reclaimed or built up in future.	Noted.
5	In addition to the mangroves, the existing patch of sand dune/beach vegetation within the Kamarajar Port Limited (KPL) premises needs to be scientifically studied, covering aspects such as checklist of flora and fauna, diversity, representativeness, population trends, regeneration and recruitment trends, percentage coverage of invasive alien species and presence of breeding populations. The proposed afforestation / greenbelt programme needs to be based on the above assessment, with habitat specific greening plans being developed and implemented.	KPL has engaged M/s L & T Infrastructure Engineering Limited, Hyderabad for the work of "Preparation of Bio-Diversity Management Plan for Kamarajar Port Limited", *vide* work order No: KPL/MS/HSE/BD/2018, Dated: 27.03.2019. The draft report was submitted to Tamil Nadu State Bio-diversity Board vide KPL letter No. KPL/MS/HSE/BD/2019 dated 17.01.2020 for validation and approval. In response, the Board has made some comments/suggestions on the report. The suggestions/comments of the Board has forwarded to the consultant M/s L & T Infrastructure Engineering Limited. The consultant is working on the comments/suggestions.
6	The afforestation / green belt programme needs to be representative of the typical vegetation of the Ennore estuary, covering all the major habitat types including salt marshes. It is further recommended that a set of biological indicators be identified based on the scientific assessment and be used for monitoring the efficiency of the afforestation / greening programme.	KPL has engaged M/s L & T Infrastructure Engineering Limited, Hyderabad for the work of "Preparation of Bio-Diversity Management Plan for Kamarajar Port Limited", *vide* work order No: KPL/MS/HSE/BD/2018, Dated: 27.03.2019. The draft report was submitted to Tamil Nadu State Bio-diversity Board vide KPL letter No. KPL/MS/HSE/BD/2019 dated 17.01.2020 for validation and approval. Comments/Suggestions of Board on the draft report are being carried out.

7	It is also recommended that impact assessment studies be commissioned that cover a select number of species as also the different phases of project execution. The Kamarajar Port Limited shall develop and implement ecological restoration programme with the support of the Tamil Nadu Forest Department, especially addressing wetlands and wetland bio-diversity.	KPL has engaged M/s L & T Infrastructure Engineering Limited, Hyderabad for the work of "Preparation of Bio-Diversity Management Plan for Kamarajar Port Limited", *vide* work order No: KPL/MS/HSE/BD/2018, Dated: 27.03.2019. The draft report was submitted to Tamil Nadu State Bio-diversity Board vide KPL letter No. KPL/MS/HSE/BD/2019 dated 17.01.2020 for validation and approval. In response, the Board has made some comments/suggestions on the report. The suggestions/comments of the Board has forwarded to the consultant M/s L & T Infrastructure Engineering Limited. The consultant is working on the comments/suggestions.
8	In view of the location of the project within the landscape that encompasses a perennial river and its estuarine complex, it is recommended that a dedicated programme be developed and implemented on the hydrological services of the landscape, notably flood mitigation.	Noted.
9	The concerns expressed during the public hearing that was held by the kamarajar Port need to be addressed during the project implementation. These would cover socio-economic as also ecological and environmental concerns.	Noted.
10	Oil Spill Contingency Plan should be prepared and a team of trained men formed to be available 24 X 7 to tackle any disasters.	KPL has prepared an Oil Spil Contignecy plan in line with NOS-DCP. Port is also having a team of trained manpower available on 24 x 7 being to tackle any disasters.

11	A detailed plan for the source segregation and disposal of solid waste(Bio-degradable/non- degradable etc.,) generated shall be formulated. Further solid wastes such as plastics may be collected and disposed as per rules. ETP should be provided and treatment done meticulously.	Kamarajar Port has engaged a contractor for collection, segregation and disposal of solid wastes. Solid waste including plastic generated from the port and ships are being collected, segregated and sent to various approved recyclers for further beneficial use. ETP / STP shall be provided as per the requirements in accordance with TNPCB norms.