



COASTAL ENERGEN PVT. LTD

Melamarudur Village, Ottapidaram Taluk, Tuticorin - 628 105, Tamil Nadu.
Tel: 0461-2950628 www.coastalenergen.com

CEPL/Env/2021 -22/02

January 24, 2022

The Director
Ministry of Environment, Forest & Climate Change,
Paryavaran Bhavan,
CGO Complex, Lodhi Road,
New Delhi - 110 003.

Dear Sir,

Sub: Submission of Environmental Clearance and Coastal Regulation Zone Clearance Compliance Reports - Reg.

Ref: 1.Environment Clearance No.J-13011/41/2008-IA.II(T) dated 05.05.2009
2.Coastal Regulation Zone Clearance No. 11/32/2009-IA.III dated 10.08.2009
3.MoEF office memorandum No.F.No.J-13012 /8/2009-IA.II(T) dated 11.11.2020

This has reference to the captioned subject and cited references; we enclose the Environmental Clearance and Coastal Regulation Zone Clearance Compliance Report for the period July 2021 to December 2021. Also the compliance status for the reference cited Sl. No.03 is attached as Annexure-09.

This is for your kind information and records.

Thanking You

For COASTAL ENERGEN PRIVATE LIMITED



MK Parameswaran

Station Director



Copy to: 1. Director (S), MoEF &CC, Regional Office (South Eastern Zone), Chennai - 600 003.

2. Central Pollution Control Board, Bangaluru - 560 079.

3. District Environmental Engineer, TNPCCB, Tuticorin - 628 002.



SIX MONTHLY COMPLIANCE REPORT OF ENVIRONMENTAL & CRZ CLEARANCES

2X600 MW COAL BASED THERMAL POWER PLANT

at

**Melamarudur Village, Ottapidaram Taluk,
Tuticorin - 628 105
Tamil Nadu**

Submitted to:



Submitted By:



Coastal Energen Private Limited

PERIOD: JULY 2021 - DECEMBER 2021

**Ministry of
Environment Forest
& Climate Change
Clearance
Compliance**

**COMPLIANCE TO THE CONDITIONS LAID BY MoEF VIDE ENVIRONMENTAL
CLEARANCE No.J-13011/41/2008-IA.II(T) dated 10.12.2008**

Period: July 2021 to December 2021

Sl.No.	CONDITIONS STIPULATED BY MoEF	COMPLIANCE
1	Environment clearance is subject to obtaining clearance under the wildlife (protection) Act, 1972 from the competent authority.	As advised by MoEF, we have submitted our Proposal for obtaining the recommendation of the Standing Committee of National Board for Wildlife submitted to Wild Life Warden, Ramanathapuram vide our letter Ref. No. ENERGEN/PCCF&CWLW/2013-14/632dated 07.05.2014. As communicated by Principal Chief Conservator of Forest & Chief Wild Life Warden vide their Lr. No. Ref. No. WL5/7774/2013dated 16.04.2016, we have applied online in the MOEF & CC web portal. Copy of the same is enclosed as Annexure - 4.
2	Environment clearance is subject to final order of the hon'ble 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.
3	The total land acquired shall not be more than 875 acres for all the activities / facilities of the power project put together.	Complied. The total land acquired is 875 acre.
4	Prior CRZ clearance for the activities / facilities to be located in the CRZ area shall be obtained before start of the project.	Complied. CRZ clearance received from MoEF vide No.11-32/2009-IA-III dated 10.08.2009.
5	Ash and sulphur content in the imported coal to be used in the project shall not exceed 12% and 1.5 % respectively.	Complied.
6	A multi-flue stack of 275m height shall be provided with continuous online monitoring equipments for Sox, NOx and particulate (heavy metals like Hg, Cr, As, Pb periodically). Exit velocity of atleast 22 m/s shall be maintained.	Complied. Continuous online monitoring analyzers provided for measuring SO _x , NO _x and SPM.
7	High efficiency Electro static precipitators (ESPs) shall be installed to ensure that particulate emission does not exceed 50mg/Nm ³ .	Complied.
8	CFBC technology with lime injection having efficiency of SO ₂ removal atleast 90% shall be installed.	Not applicable MoEF clearance obtained for Sub Critical Pulverized fuel Boilers vide clearance No.J-13011/41/2008-IA.II(T) dated 05.05.2009
9	Space provision shall be made for flue gas desulphurisation (FGD) unit, if required at a later stage.	Complied. Necessary space provision made for FGD Unit.
10	Adequate dust extraction system such as cyclone /bag filters and water spray system in dusty area such as in coal handling and ash handling points, transfer areas and other vulnerable dusty areas shall be provided.	Complied. <ul style="list-style-type: none"> Automatic water sprinklers provided in the coal storage yard. Closed gallery conveyors provided for coal conveying Bag filters/ dust extraction system provided at all transfer points in the junction towers Ventilation system provided in all coal bunkers Bag filters provided in the ash silos Closed conveyors provided for bottom ash conveying

11	Fly ash shall be collected in dry form and storage facility (silos) shall be provided 100% utilization of fly ash shall be achieved from day one. Unutilized fly ash in emergency and bottom ash shall be disposed off in the ash pond. Supernatant effluent from ash pond and leachates collected will be monitored for heavy metals (Hg, Cr, As, Pb etc.).	Complied. Fly Ash is collected in dry form and 100% utilization is complied. Supernatant effluent from ash pond and leachates collected will be monitored for heavy metals. However, there is no supernatant effluent generated from the ash pond as of now due to 100% ash utilization.
12	Ash pond shall be lined with HDPE lining. Adequate safety measure shall also be implemented to protect the ash dyke from getting breached.	Complied.
13	Closed cycle cooling system with cooling towers as per the recommendations of chief wildlife warden shall be ensured.	Complied.
14	Continuous monitoring of coastal waters as per the recommendations of chief wildlife warden shall be ensured.	Complied.
15	Rain water harvesting shall be practiced. A detailed scheme for rain water harvesting to recharge the ground water aquifer shall be prepared in consultation with central ground water authority / state ground water and a copy of the same shall be submitted within three months to the ministry.	Storm water drains are already in place. Since, the existing ground water is more saline and not potable; recharging the storm water will not improve the existing ground water quality. Hence, the collected storm water is routed to nearby village pond for their domestic usage.
16	The treated effluents conforming to the prescribed standards only shall be discharged from cold water side in the sea. The temperature of the discharged effluents shall not exceed 5°C over and above the ambient water temperature of sea and it will be reduced to 0.5°C within 50m of the discharge point. The temperature of the discharge water shall be monitored continuously and records maintained.	<ul style="list-style-type: none"> ▪ Cooling water blow down discharged from the cold water side of the induced draft cooling system. ▪ Dilution of discharge, using fresh sea water to reduce the temperature to 0.5°C within 50 m of the discharge point is being carried out. ▪ Temperature of the discharge water is being monitored continuously.
17	A sewage treatment plant shall be provided and the treated sewage conforming to the standards prescribed by SPCB shall be used for raising green belt/ plantation.	Complied. STP's are functional at site premises. Treated water from STP is being used for gardening and Green belt development only.
18	Regular monitoring of ground water in and around the ash pond area shall be carried out, records maintained and 6 monthly reports shall be submitted to the regional office of this ministry.	Complied. Regular monitoring of ground water in and around the ash bund area is being carried out regularly. Copy of the report is enclosed as Annexure - 3.
19	Greenbelt of adequate width shall be developed all around the plant area, other utilities and ash pond covering 270 acres of area preferably with local species.	Complied. Greenbelt (Approximately 78,500 trees) of adequate width is developed all around the plant area, other utilities and ash bund covering 340 acres of land preferably with local species. Latest Photos of the developed greenbelt is enclosed as Annexure - 5.
20	First aid and sanitation arrangements shall be made for the drivers and other contract workers during construction phase.	Complied during construction phase.
21	Noise levels emanating from turbines, air compressors, steam leakage and other moving parts of the machine should be controlled in such a way that the ambient noise levels in the working environment do not exceed 75dBA. For people working in high noise area especially during maintenance phase or due to leakage of steam etc., if it is not possible to control noise by adopting engineering methods including acoustical treatment, noise barriers etc., requisite personal protective	Complied. <ul style="list-style-type: none"> • Turbine & air compressors are provided with acoustic enclosures. • Provided the silencer in safety valve • Provided earplugs and ear muffs to workers • Workers engaged in noisy areas is being periodically examined and their audiometric records is being maintained and also shifted in rotational basis.

	equipment like ear plugs/ ear muffs etc., shall be provided. Workers engaged in noisy areas such turbines, air compressors etc shall be periodically examined and their audiometric records maintained and should be treated for any hearing loss including shifting to non noisy/less noisy areas.	
22	Regular monitoring of ground level concentration of SO ₂ , NO _x , SPM, RSPM and mercury shall be carried out in the impact zone and records maintained. If at any stage these levels are found to exceed the prescribed limits, necessary control measures shall be provided immediately. The location of the monitoring stations and frequency of monitoring shall be decided in consultation with SPCB. 6 monthly reports shall be submitted to the regional office of this ministry at Bangalore.	Complied. The monitored data for the period of July 2021 to December 2021 is enclosed as Annexure - 1. The Six months report on Environment monitoring are being submitted to Regional office of MoEF& CC on regular basis.
23	Adequate funds shall be earmarked for the activities under CSR and details of these activities shall also be submitted to the regional office of the ministry, SPCB and the ministry.	Complied. Separate funds have been earmarked for implementation of CSR activities. Details of CSR activities carried out during July 2021 to December 2021 are enclosed as Annexure - 6.
24	Storage facilities for this liquid fuel such as LDO and HFO/LSHS shall be made in the plant area where risk is minimum to the storage facilities. Disaster management plan shall be prepared to meet any eventuality in case of an accident taking place. Mock drills shall be conducted regularly and based on the same, modification required, if any, shall be incorporated in the DMP.	Complied. HFO/LDO storage tanks are provided with dyke wall, automatic foam and water sprinkler system. Disaster Management plan is available and regular mock drills are being carried out.
25	Adequate safety measures shall be provided in the plant area to check/ minimize spontaneous fires in coal yard, especially during summer season. Copy of these measures with full details along with location plant layout shall be submitted to the ministry as well as to the regional office of the ministry at Bangalore.	Complied. Automatic water sprinkler system provided in the coal stock yard
26	The project proponent shall advertise in atleast two local news papers widely circulated in the region around the project, one of which shall be in the vernacular language of the locality/ municipal area /gram panchayat concerned and on the company's website within seven days from the date of this clearance letter, informing that the project has been accorded environmental clearance and copies of clearance letter are available with the state pollution control board / committee and may also be seen at website of the ministry of environment and forest at http://envfor.nic.in .	Complied.
27	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 during construction phase.
28	A separate environment monitoring cell with qualified staff shall be set up for implementation of the stipulated environmental safeguards.	Complied. Environment Cell with qualified staffs are in place for the Environmental monitoring, Marine monitoring, Green belt development activities,

		etc.
29	Half yearly report on the status of implementation of the stipulated conditions and environmental safeguards shall be submitted to this ministry, its regional office at Bangalore, CPCB and SPCB.	Complied.
30	Regional office of the ministry of environment & forests located at Bangalore will monitor the implementation of the stipulated conditions. A complete set of documents plan along with the additional information submitted from time to time shall be forwarded to the regional office for their use during monitoring.	Complied.
31	Adequate funds shall be allocated for implementation of environmental protection measures along with item-wise breakup. These cost shall be included as part of the project cost. The funds earmarked for the environment protection measures shall not be diverted for other purposes and year - wise expenditure should be reported to the ministry.	Complied.
32	Full cooperation shall be extended to the scientists/officer from the ministry / regional office of ministry at Bangalore/ the CPCB the SPCB who would be monitoring the compliance of environmental status.	Complied.
33	The project authorities shall inform the regional as well as the ministry regarding the date of financial closure and final approval of the project by the concerned authorities and the dates of start of land development work and commissioning of plant.	Complied.
34	Compliance status of the stipulated conditions shall be displayed in website of the industry/company.	The Compliance status of stipulated conditions is uploaded in the company website. Print Screen of company website is attached as Annexure - 2.

**COMPLIANCE TO THE CONDITIONS LAID BY MoEF VIDE ENVIRONMENTAL
CLEARANCE No.J-13011/41/2008-IA.II(T) dated 05.05.2009**

Period: July 2021 to December 2021

Sl.No.	CONDITIONS STIPULATED BY MoEF	COMPLIANCE
1	Regular monitoring of ground water in and around the ash pond area including heavy metals (Hg,Cr,As,Pb) shall be carried out, records maintained and six monthly reports shall be furnished to the Regional Office of this Ministry. The data so obtained should be compared with the baseline data so as to ensure that the ground water quality is not adversely affected due to the project.	Complied. Regular monitoring of ground water in and around the ash bund area is being carried out regularly. Analysis report for the period of July 2021 to December 2021 is attached as Annexure -3.
2	Regular monitoring of ground level concentration of SO ₂ , NO _x ,Hg,SPM and RSPM shall be carried out in the impact zone and records maintained. If at any stage these levels are found to exceed the prescribed limits, necessary control measures shall be provided immediately. The location of the monitoring stations and frequency of monitoring shall be decided in consultation with SPCB. Periodic reports shall be submitted to the Regional Office of this Ministry. The data so monitored shall also be put on the website of the company.	Complied. The monitored data for the period July 2021 to December 2021 is enclosed as Annexure - 1 and the same is uploaded in the company website. Print Screen of company website is attached as Annexure - 2.
3	Space for FGD shall be provided at planning stage for the units.	Complied. Necessary space provision made for FGD Unit.
4	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, ZilaParisad/Municipal Corporation, Urban local Body and the Local NGO, is any from whom suggestions/representations, if any, received while processing the proposal. The clearance letter shall also be put on the website of the company by the proponent.	Complied.
5	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, SO ₂ , NO _x (ambient levels as well as stack emissions) or critical sectoral 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. The Six months report on Ambient Air Quality monitoring are being submitted to Regional office of MoEF / TNPCB on regular basis and the same is uploaded in the company website. Print Screen of company website is attached as Annexure - 2. Online scrolling Display System provided at the main gate of the company.
6	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 by e-mail) to the respective Regional Office of MoEF, the respective Zonal Office of CPCB and the SPCB.	Complied. The Six monthly Compliance report are being submitted to Regional office of MoEF& CC /CPCB/ TNPCB on regular basis.

**COMPLIANCE TO THE ADDITIONAL CONDITIONS LAID BY MoEF VIDE OFFICE
MEMORANDUM No.J-11013/41/2006-IA.II(I) dated 06.04.2011**

Period: July 2021 to December 2021

Sl.No.	CONDITIONS STIPULATED BY MoEF	COMPLIANCE
1	Continuous monitoring of stack emissions as well as ambient air quality (as per notified standards) shall be carried out and continuous records maintained. Based on the monitored data, necessary corrective measures as may be required from time to time shall be taken to ensure that the levels are within permissible limits. The results of monitoring shall also be submitted to the respective Regional Office of MoEF regularly. Besides, the results of monitoring will also be put on the website of the company in the public domain.	<p>Continuous Stack emission and ambient air quality monitoring are being carried out and records are being maintained.</p> <p>The monitored data for the period of July 2021 to December 2021 is enclosed as Annexure - 1. The results are well within the prescribed norms.</p> <p>The Six months report on Ambient Air Quality monitoring are being submitted to Regional office of MoEF& CC on regular basis and the same is uploaded in the company website. Print Screen of company website is attached as Annexure - 2.</p>
2	The six monthly monitoring report as well as the monitored data on various parameters as stipulated in the environment clearance conditions shall be put on the website of the company and also regularly updated. The monitored data shall also be submitted to respective State Pollution Control Board / UTPCCs and the Regional office of MoEF.	<p>The Six months report on Ambient Air Quality monitoring are being submitted to Regional office of MoEF& CC / TNPCB on regular basis and the same is uploaded in the company website.</p> <p>Print Screen of company website is attached as Annexure - 2.</p>
3	The ambient air quality data as well as the stack emission data will also be displayed in public domain at some prominent place near the main gate of the company and updated in real time.	<p>Complied.</p> <p>Online scrolling Display System provided at the main gate of the company.</p>

Coastal Regulation Zone Clearance Compliance

**COMPLIANCE TO THE CONDITIONS LAID BY MoEF VIDE CRZ
CLEARANCE No.11/32/2009-IA.III dated 10.08.2009**

Period : July 2021 to December 2021

Sl.No.	CONDITIONS STIPULATED BY MoEF	COMPLIENCE
Specific Conditions :		
1.	All the Conditions stipulated by Tamilnadu Coastal Zone Management Authority vide letter dated 03.04.2009 shall be strictly complied with.	Complied. Compliance Status enclosed as Annexure - 7
2.	Sufficient dilution shall be carried out to meet the ambient parameters within 50m distance.	Complied.
3.	Independent monitoring shall be undertaken through a authorized agency.	Complied. Comprehensive Marine Environmental Monitoring is being carried out through M/s.Suganthi Devadasan Marine Research Institute, Thoothukudi, one of the identified institutions for coastal baseline studies and monitoring by the Tamil Nadu State Coastal Zone Management Authority.
4.	Filters in the way of extruders shall be provided at the intake point to prevent fishes entering in to the system. Fish culture shall be developed at the outfall point.	Complied. Fish Cage culture installed and monitoring is in progress. Report on Fish Cage culture monitoring is covered in Annexure -8.
5.	Regular monitoring especially for temperature and salinity shall be carried out at disposal site and six monthly reports shall be submitted to the ministry.	Complied. Monitoring data for the period July 2021 to December 2021 is enclosed as Annexure - 8.
6.	All the recommendations of EIA and DMP shall be strictly complied with	Complied.
7.	There shall be no reclamation in Coastal Regulation Zone area.	Complied.
8.	The pipeline shall be buried at least 2m depth in the onshore area and 4 mts in the offshore area. Necessary permission with regard to the pipeline burial and laying shall be obtained from concerned authorities to ensure that the pipeline route does not fall in the navigation channel.	Complied.
9.	The Project shall be implemented in such a manner that there is no damage whatsoever to the mangroves/other sensitive coastal ecosystems. If any damage to mangroves is anticipated / envisaged as a result of project activities then the clearance shall stand cancelled and the proponents shall seek fresh approval from the Ministry.	Not applicable. No mangroves are found in the project site.
10.	Consent shall be obtained from the Tamilnadu Pollution Control Board for the disposal of effluent into sea. The effluent shall meet the standards prescribed by Tamil Nadu Pollution Control Board before disposal.	Complied.
11.	A continuous and comprehensive post - project marine quality monitoring programme shall be taken up. This shall include monitoring of water quality, sediment quality and biological characteristics and report submitted every 6 months to Ministry's Regional Office at Bangalore.	Complied. Monitoring data for the period July 2021 to December 2021 is enclosed as Annexure - 8.

12.	It shall be ensured that there is no displacement of people, houses or fishing activity as a result of the project.	Complied. No displacement of people, houses or fishing activity is involved.
13.	There shall be display boards at critical locations along the pipeline viz. road/rail/river crossings giving emergency instructions. This will ensure prompt information regarding location of accident during any emergency. Emergency information board shall contain emergency instructions in addition to contact details. Proper lighting shall be provided all along the road.	Complied.
14.	There shall be no withdrawal of ground water in CRZ, area, for this project.	Complied.
15.	Necessary provisions shall also be made to develop a nursery for mangroves and the area should be demarcated specifically for the development of mangroves within the complex.	<ul style="list-style-type: none"> • There are no mangroves in the project site. • The project site is not suitable for the development of mangroves as mangroves requires special environmental factors including fresh water sources along with marine (i.e) Estuarine conditions. • Hence, this condition is not applicable to us.
16.	Arrangement for treatment of liquid effluents shall be made so as to ensure that the untreated effluents are not allowed to be discharged into the sea/marine water.	Complied. Effluent Treatment Plant is provided in the Main plant and is in operation.
17.	Appropriate safety devices such as masks shall be provided for use by the workers at the site and their usage by them shall be ensured.	Complied and the same is being ensured continuously.
18.	Necessary provisions shall be made for emergency evacuation during natural and man-made disasters like floods, cyclone, tsunami and earthquake etc.	Not applicable. This project is only a sea water collection and discharge pipeline work. However, leakages in the pipeline are being taken care.
19.	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 case, crèche etc. The house may be in the form of temporary structures to be removed after the completion of the project.	Complied.
20.	A First Aid Room will be provided in the project both during construction and operation of the project.	Complied. First Aid Center with ambulance facilities available at site on 24 Hrs basis.
21.	All the topsoil excavated during construction activities should be stored for use in horticulture / landscape development within the project site.	Complied.
22.	Soil and ground water samples will be tested to ascertain that there is no threat to ground water quality by leaching of heavy metals and other toxic contaminants.	Complied.
23.	Any Hazardous Waste Generated During Construction Phase, Should Be Disposed Off As Per Applicable Rules And Norms With Necessary Approvals Of The Andhra Pradesh Pollution Control Board.	No Hazardous waste being generated.
24.	The diesel generator sets to be used during construction phase should be low sulphur diesel type and should conform to Environment (protection) Rules prescribed for air and noise emission standards.	Complied.

25.	The Diesel required for operating DG sets shall be stored in underground tanks and if required, clearance from Chief Controller of Explosives shall be taken.	No Bulk storage of diesel at site. Captive DG Sets are being used as a backup power and hence minimum quantity of diesel is being kept at site.
26.	Vehicles hired for bringing construction material to the site should be in good condition and should have a pollution check certificate and should conform to applicable air and noise emission standards and should be operated only during non-peak hours.	Complied.
27.	Ambient noise levels should conform to residential standards both during day and night. Incremental pollution loads on the ambient air construction phase. Adequate measures should be made to reduce ambient air and noise level during construction phase, so as to conform to the stipulated standards by CPCB/ TNPCCB.	Complied.
28.	Storm water control and its-re-use as per CGWB and BIS standards for various applications.	Not applicable. This project is only an underground pipeline work.
29.	Regular supervision of the above and other measures for monitoring should be in place all through the construction phase, so as to avoid disturbance to the surroundings.	Complied.
General Conditions:		
1.	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.	Complied.
2.	In the event of any change in the project profile a fresh reference shall be made to the Ministry of Environment and Forests.	Noted.
3.	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.
4.	This Ministry or any other competent authority may stipulate any additional conditions subsequently, if deemed necessary, for environmental protection, which shall be complied with.	Agreed.
5.	Noise should be controlled to ensure that it does not exceed the prescribed standards. During night time the noise levels measured at the boundary of the building shall be restricted to the permissible levels to comply with the prevalent regulations.	Complied.
6.	The green belt of the adequate width and density preferably with local species along the periphery of the plot shall be raised so as to provide protection against particulates and noise.	Not applicable.
7.	The ground water level and its quality should be monitored regularly in consultation with Central Ground Water Authority.	Not applicable.
8.	The sand dune, if any, on the site should not be disturbed in any way.	No sand dune exists.
9.	The mangroves, if any, on the site should not be disturbed in any way.	No mangroves exists.

10.	The environment safeguards contained in the EIA Report should be implemented in letter and spirit.	Complied.
11.	A separate Environment Management Cell with suitably qualified staff to carry out various environment related Executive who will report directly to the Chief Executive of the Company.	Complied. Environment Cell with qualified staffs are in place for the Environmental monitoring, Marine monitoring, Green belt development activities, etc.
12.	The funds earmarked for environment protection measures shall be maintained in a separate account and there shall be no diversion of these funds for any other purpose. A year-wise expenditure on environmental safeguards shall be reported to this Ministry's Regional Office to Bangalore.	Common funds for environmental protection measures is being allotted along with the main power plant
13.	In case of deviation or alteration in the project including the implementing agency, a fresh reference shall be made to this Ministry for modification in the clearance conditions or imposition of new one for ensuring environmental protection. The project proponents shall be responsible for implementing the suggested safeguard measures.	Noted
14.	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
15.	Full support should be extended to the officers of this Ministry's Regional Office at Bangalore and the offices of the Central and 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.	Noted
16.	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 Municipal Solid Wastes (Management and Handling) Rules, 2000 including the amendments and rules made thereafter.	Agreed.
17.	All other statutory clearances such as the approvals for storage of diesel from Chief Controller of Explosives, Fire Department, Civil Aviation Department, Forest Conservation Act, 1980 and Wildlife (Protection) act, 1972 etc, shall be obtained, as applicable by project proponents from the respective competent authorities.	Complied.
18.	The project proponent should advertise in at least two local Newspapers widely circulated in the regions, one of which shall be in the vernacular language informing that the project has been accorded Environmental Clearance and copies of clearance letter 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.
19.	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.	Noted

20.	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.
21.	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, So ₂ , Nox (ambient levels as well as stack emissions) or critical sectoral 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.	The Compliance status of stipulated conditions is uploaded in the company website. Print Screen of company website is attached as Annexure - 2.
22.	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.	Complied
23.	The environmental statement for each financial year ending 31 st 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.	Agreed to comply

ANNEXURE - 1



Remarks:	* Internet Problem, # Analyser Problem
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Remarks: * Internet Problem, # Analyser Problem



Date	STATION-1 (Near Main Office)					STATION-2 (Near CHP)					STATION-3 (Near Ash Pond)					STATION-4 (Sea Water Pump House)				
	SO2	NOX	PM10	PM2.5	CO	SO2	NOX	PM10	PM2.5	CO	SO2	NOX	PM10	PM2.5	CO	SO2	NOX	PM10	PM2.5	CO
	µg/m³	µg/m³	µg/m³	µg/m³	mg/m³	µg/m³	µg/m³	µg/m³	µg/m³	mg/m³	µg/m³	µg/m³	µg/m³	µg/m³	mg/m³	µg/m³	µg/m³	µg/m³	µg/m³	mg/m³
1-Sep-21	8.0	12.8	26.9	12.1	0.6	8.8	4.3	16.8	12.4	0.7	6.8	3.0	56.4	10.2	0.5	2.8	5.5	31.5	22.5	#
2-Sep-21	8.1	13.4	24.1	11.6	0.6	8.9	4.3	32.5	13.0	0.7	6.7	3.2	66.4	10.4	0.6	2.4	5.3	27.4	23.7	#
3-Sep-21	8.2	12.5	23.7	9.9	0.6	8.7	4.3	26.6	10.8	0.7	6.9	3.3	39.8	9.7	0.5	2.7	4.8	19.7	19.5	#
4-Sep-21	8.2	10.9	21.5	6.8	0.6	8.6	4.3	13.1	7.3	0.7	6.6	3.5	41.3	10.1	0.5	4.5	5.8	21.3	26.1	#
5-Sep-21	8.1	11.6	20.1	7.7	0.6	8.7	4.3	15.9	9.4	0.7	6.4	3.1	37.6	9.8	0.5	4.5	5.4	26.2	22.5	#
6-Sep-21	8.0	10.7	13.4	6.5	0.6	8.7	4.3	10.7	8.2	0.7	6.2	2.6	23.9	8.3	0.4	4.7	4.7	17.7	20.7	#
7-Sep-21	8.1	10.7	19.3	7.0	0.6	8.7	4.2	11.9	8.8	0.7	6.3	2.5	30.5	8.9	0.4	4.8	4.8	21.0	21.0	#
8-Sep-21	8.2	11.3	34.1	11.6	0.6	8.9	4.3	25.3	10.8	0.7	6.4	3.0	51.5	10.7	0.5	5.0	5.6	48.4	30.9	#
9-Sep-21	8.2	9.5	28.2	11.0	0.6	8.8	4.3	20.4	12.2	0.7	6.2	2.7	40.5	10.6	0.4	4.4	4.8	33.2	25.6	#
10-Sep-21	8.4	11.4	25.6	10.7	0.6	8.9	4.3	19.2	9.7	0.7	6.3	3.0	31.3	9.6	0.4	5.0	5.2	33.8	21.7	#
11-Sep-21	8.2	11.0	25.2	9.1	0.6	8.9	4.3	18.1	8.7	0.7	6.1	2.7	28.0	9.7	0.4	5.4	5.5	29.2	21.5	#
12-Sep-21	8.3	11.3	28.9	9.0	0.6	8.9	4.3	19.6	9.4	0.7	6.0	2.5	34.0	9.2	0.4	3.1	5.0	27.8	20.0	#
13-Sep-21	8.2	10.2	21.6	6.5	0.6	8.9	4.3	13.4	7.2	0.7	6.2	2.1	22.8	7.1	0.3	2.0	5.1	23.2	24.5	#
14-Sep-21	8.3	10.7	26.6	10.2	0.6	8.9	4.3	17.8	7.7	0.7	6.4	1.9	43.0	10.5	0.4	2.2	5.5	27.6	23.7	#
15-Sep-21	8.6	10.2	44.6	17.2	0.7	9.2	4.3	30.6	13.3	0.8	6.4	2.4	43.7	12.3	0.4	2.4	5.6	45.2	36.6	#
16-Sep-21	8.3	10.2	24.0	9.1	0.7	8.9	4.3	16.9	10.7	0.8	6.3	2.6	55.4	9.6	0.4	3.8	5.5	24.3	16.7	#
17-Sep-21	8.2	12.0	32.1	13.8	0.7	8.9	#	30.0	14.7	0.8	6.2	2.6	62.3	11.5	0.4	4.2	5.8	36.2	29.8	#
18-Sep-21	8.2	19.4	26.6	16.0	0.7	7.8	#	19.4	18.9	0.8	6.1	2.6	85.3	11.0	0.4	3.1	5.5	27.8	27.2	#
19-Sep-21	8.2	18.3	42.5	20.0	0.7	8.9	#	44.9	23.2	0.8	6.1	2.7	68.4	15.0	0.4	3.1	4.6	41.0	36.4	#
20-Sep-21	8.3	17.5	44.0	26.2	0.7	8.9	4.3	56.4	20.4	0.8	6.1	2.7	86.3	16.4	0.4	3.2	4.6	47.8	34.3	#
21-Sep-21	8.1	17.2	35.8	22.7	0.7	8.8	4.3	56.9	3.5	0.8	6.2	2.5	68.4	21.5	0.4	5.3	4.9	40.9	34.4	#
22-Sep-21	9.6	13.0	41.3	17.0	0.7	9.5	4.3	60.2	10.5	0.8	6.4	2.5	67.0	21.5	0.3	10.5	4.8	36.0	20.8	#
23-Sep-21	8.3	11.3	29.2	16.8	0.8	9.0	4.3	46.5	7.6	0.8	6.4	2.8	55.9	21.5	0.3	9.8	4.9	35.8	21.1	#
24-Sep-21	8.3	18.3	31.0	15.3	0.7	8.9	4.3	46.4	7.8	0.8	6.3	2.6	51.0	21.5	0.3	10.1	4.2	38.3	28.4	#
25-Sep-21	8.0	14.0	21.1	12.7	0.7	8.9	4.3	31.6	6.6	0.8	6.6	2.8	33.0	21.5	0.3	10.7	4.6	27.2	24.6	#
26-Sep-21	8.2	13.1	16.6	8.9	0.7	8.9	4.3	29.0	5.4	0.8	6.7	2.4	32.1	#	0.2	10.3	4.6	26.6	19.7	#
27-Sep-21	8.1	11.3	17.1	5.1	0.7	8.8	4.3	30.3	3.7	0.8	6.5	2.0	47.5	#	0.2	12.5	4.5	26.6	25.4	#
28-Sep-21	8.2	9.4	18.2	8.3	0.7	8.8	4.3	30.9	3.5	0.8	6.3	1.6	24.6	#	0.2	11.9	4.4	22.7	16.0	#
29-Sep-21	8.2	10.2	25.9	9.6	0.7	8.9	4.3	36.1	4.3	0.8	6.6	1.9	37.1	#	0.3	10.2	4.5	29.0	25.8	#
30-Sep-21	9.1	12.2	31.9	14.5	0.8	9.7	4.3	50.1	9.5	0.8	7.9	2.6	47.6	#	0.3	10.4	4.6	31.5	16.1	#
Remarks:	# Analyser Problem																			



Date	STATION-1 (Near Main Office)					STATION-2 (Near CHP)					STATION-3 (Near Ash Pond)					STATION-4 (Sea Water Pump House)				
	SO2	NOX	PM10	PM2.5	CO	SO2	NOX	PM10	PM2.5	CO	SO2	NOX	PM10	PM2.5	CO	SO2	NOX	PM10	PM2.5	CO
	µg/m³	µg/m³	µg/m³	µg/m³	mg/m³	µg/m³	µg/m³	µg/m³	µg/m³	mg/m³	µg/m³	µg/m³	µg/m³	µg/m³	mg/m³	µg/m³	µg/m³	µg/m³	µg/m³	mg/m³
1-Oct-21	9.0	10.0	30.0	13.0	0.7	9.0	4.0	44.0	8.0	1.0	7.0	2.0	54.0	#	0.3	9.0	5.0	23.0	14.0	0.2
2-Oct-21	8.0	16.0	22.0	15.0	0.7	9.0	4.0	36.0	9.0	1.0	7.0	2.0	46.0	#	0.4	10.0	4.0	26.0	25.0	0.2
3-Oct-21	8.0	19.0	32.0	20.0	0.7	9.0	4.0	51.0	19.0	1.0	7.0	2.0	60.0	#	0.4	10.0	4.0	34.0	30.0	0.3
4-Oct-21	8.0	18.0	19.0	13.0	0.7	9.0	4.0	32.0	7.0	1.0	7.0	2.0	33.0	#	0.4	9.0	4.0	24.0	24.0	0.2
5-Oct-21	8.0	14.0	17.0	9.0	0.7	9.0	4.0	31.0	5.0	1.0	7.0	3.0	31.0	#	0.4	10.0	4.0	19.0	22.0	0.1
6-Oct-21	8.0	17.0	27.0	12.0	0.7	9.0	4.0	41.0	6.0	1.0	10.0	2.0	48.0	#	0.4	9.0	4.0	26.0	22.0	0.1
7-Oct-21	8.0	16.0	36.0	11.0	0.7	9.0	4.0	34.0	6.0	1.0	7.0	2.0	16.0	#	0.5	9.0	4.0	39.0	22.0	0.2
8-Oct-21	8.0	15.0	28.0	10.0	0.7	9.0	4.0	36.0	5.0	1.0	7.0	3.0	16.0	20.0	0.4	9.0	4.0	49.0	22.0	0.3
9-Oct-21	8.0	13.0	17.0	7.0	0.7	9.0	4.0	26.0	1.0	1.0	7.0	2.0	35.0	20.0	0.4	9.0	4.0	22.0	22.0	0.1
10-Oct-21	8.0	12.0	10.0	3.0	0.7	9.0	4.0	18.0	3.0	1.0	7.0	2.0	43.0	10.0	0.3	8.0	4.0	19.0	22.0	0.4
11-Oct-21	8.0	11.0	8.0	2.0	0.7	9.0	4.0	14.0	4.0	1.0	7.0	2.0	42.0	22.0	0.3	9.0	4.0	15.0	22.0	0.4
12-Oct-21	8.0	10.0	18.0	4.0	0.7	9.0	4.0	27.0	6.0	1.0	7.0	2.0	35.0	32.0	0.3	9.0	4.0	21.0	22.0	0.4
13-Oct-21	8.0	11.0	22.0	7.0	0.7	9.0	4.0	28.0	6.0	1.0	7.0	2.0	60.0	30.0	0.3	9.0	4.0	25.0	22.0	0.4
14-Oct-21	8.0	10.0	27.0	5.0	0.7	9.0	4.0	22.0	6.0	1.0	7.0	2.0	29.0	35.0	0.3	10.0	5.0	21.0	22.0	0.4
15-Oct-21	8.0	5.0	30.0	12.0	0.8	9.0	4.0	41.0	13.0	1.0	7.0	3.0	46.0	23.0	0.2	10.0	5.0	54.0	19.0	0.4
16-Oct-21	8.0	6.0	20.0	11.0	0.8	9.0	4.0	32.0	11.0	1.1	7.0	2.0	51.0	17.0	0.2	10.0	4.0	24.0	17.0	0.4
17-Oct-21	8.0	4.0	28.0	13.0	0.8	9.0	4.0	39.0	13.0	1.1	7.0	3.0	46.0	26.0	0.3	11.0	4.0	44.0	17.0	0.4
18-Oct-21	8.0	4.0	35.0	15.0	0.8	9.0	4.0	50.0	15.0	1.0	7.0	2.0	58.0	18.0	0.2	11.0	5.0	43.0	11.0	0.4
19-Oct-21	8.0	7.0	43.0	21.0	0.8	9.0	4.0	68.0	21.0	1.1	8.0	2.0	78.0	29.0	0.3	9.0	3.0	50.0	10.0	0.3
20-Oct-21	8.0	7.0	29.0	18.0	0.8	9.0	4.0	47.0	17.0	1.1	7.0	2.0	75.0	40.0	0.7	5.0	1.0	34.0	35.0	0.1
21-Oct-21	8.0	18.0	33.0	21.0	0.8	9.0	4.0	50.0	23.0	1.2	8.0	2.0	84.0	19.0	0.9	5.0	3.0	38.0	35.0	0.1
22-Oct-21	8.0	18.0	23.0	15.0	0.8	9.0	4.0	48.0	7.0	1.0	7.0	2.0	57.0	15.0	0.9	5.0	5.0	28.0	35.0	0.1
23-Oct-21	13.0	20.0	37.0	19.0	0.8	9.0	4.0	41.0	2.0	#	7.0	2.0	38.0	20.0	0.6	5.0	5.0	37.0	35.0	0.1
24-Oct-21	10.0	12.0	20.0	11.0	0.8	9.0	4.0	8.0	2.0	#	6.0	2.0	19.0	19.0	0.4	5.0	5.0	27.0	35.0	0.1
25-Oct-21	8.0	11.0	19.0	14.0	0.8	9.0	3.0	30.0	2.0	1.0	6.0	2.0	30.0	24.0	0.4	5.0	5.0	26.0	35.0	0.1
26-Oct-21	9.0	17.0	33.0	24.0	0.9	8.0	6.0	31.0	9.0	1.0	6.0	2.0	15.0	25.0	0.5	5.0	5.0	43.0	35.0	0.1
27-Oct-21	11.0	14.0	42.0	28.0	0.9	8.0	8.0	39.0	28.0	1.0	6.0	2.0	71.0	28.0	0.7	6.0	5.0	40.0	35.0	0.1
28-Oct-21	8.0	14.0	47.0	42.0	0.9	8.0	7.0	59.0	20.0	1.0	6.0	2.0	54.0	27.0	0.8	6.0	5.0	55.0	35.0	0.1
29-Oct-21	8.0	22.0	18.0	37.0	1.0	8.0	8.0	39.0	17.0	#	6.0	2.0	28.0	32.0	0.7	7.0	5.0	28.0	35.0	0.1
30-Oct-21	8.0	19.0	2.0	6.0	0.9	8.0	9.0	8.0	15.0	#	6.0	2.0	18.0	31.0	0.4	6.0	5.0	21.0	35.0	0.1
31-Oct-21	8.0	19.0	#	16.0	0.9	8.0	8.0	4.0	17.0	1.0	6.0	2.0	62.0	28.0	0.4	7.0	5.0	21.0	35.0	0.1
Remarks:	# Analyser Problem																			



Date	STATION-1 (Near Main Office)					STATION-2 (Near CHP)					STATION-3 (Near Ash Pond)					STATION-4 (Sea Water Pump House)				
	SO2	NOX	PM10	PM2.5	CO	SO2	NOX	PM10	PM2.5	CO	SO2	NOX	PM10	PM2.5	CO	SO2	NOX	PM10	PM2.5	CO
	µg/m³	µg/m³	µg/m³	µg/m³	mg/m³	µg/m³	µg/m³	µg/m³	µg/m³	mg/m³	µg/m³	µg/m³	µg/m³	µg/m³	mg/m³	µg/m³	µg/m³	µg/m³	µg/m³	mg/m³
1-Nov-21	8.0	29.0	8.0	5.0	0.3	8.0	9.0	7.0	22.0	1.0	6.0	2.0	32.0	26.0	0.3	6.0	5.0	15.0	35.0	0.1
2-Nov-21	8.0	23.0	9.0	4.0	0.2	8.0	8.0	17.0	23.0	0.5	6.0	2.0	68.0	26.0	0.3	6.0	5.0	9.0	35.0	0.1
3-Nov-21	8.0	19.0	7.0	3.0	0.1	8.0	10.0	18.0	22.0	1.0	6.0	2.0	48.0	28.0	0.4	6.0	5.0	9.0	35.0	0.1
4-Nov-21	8.0	19.0	15.0	12.0	0.1	8.0	10.0	28.0	21.0	1.0	6.0	2.0	56.0	27.0	0.7	6.0	5.0	21.0	35.0	0.1
5-Nov-21	8.0	12.0	20.0	15.0	0.1	8.0	7.0	24.0	20.0	0.3	6.0	3.0	27.0	25.0	0.4	5.0	5.0	29.0	20.0	0.1
6-Nov-21	8.0	11.0	14.0	7.0	0.1	8.0	6.0	15.0	22.0	0.2	5.0	3.0	42.0	22.0	0.3	5.0	5.0	15.0	19.0	0.1
7-Nov-21	8.0	11.0	20.0	10.0	0.3	8.0	6.0	30.0	23.0	1.0	6.0	4.0	47.0	23.0	0.5	6.0	5.0	23.0	22.0	0.1
8-Nov-21	7.0	17.0	9.0	15.0	0.2	8.0	7.0	22.0	24.0	0.4	6.0	3.0	43.0	22.0	0.4	5.0	6.0	13.0	16.0	0.3
9-Nov-21	7.0	20.0	31.0	25.0	0.2	8.0	8.0	38.0	28.0	1.0	6.0	3.0	45.0	19.0	0.8	5.0	6.0	42.0	39.0	0.5
10-Nov-21	8.0	18.0	43.0	33.0	0.3	8.0	9.0	60.0	23.0	1.0	7.0	4.0	31.0	19.0	0.8	5.0	8.0	50.0	48.0	0.5
11-Nov-21	7.0	13.0	34.0	23.0	0.3	9.0	7.0	45.0	21.0	1.0	7.0	5.0	66.0	22.0	1.0	5.0	7.0	42.0	29.0	0.5
12-Nov-21	8.0	14.0	41.0	32.0	0.2	8.0	7.0	62.0	18.0	0.6	8.0	6.0	90.0	22.0	1.2	4.0	9.0	51.0	38.0	0.5
13-Nov-21	7.0	13.0	19.0	9.0	0.2	8.0	8.0	23.0	20.0	1.0	8.0	6.0	120.0	19.0	1.2	4.0	10.0	27.0	13.0	0.5
14-Nov-21	8.0	10.0	18.0	9.0	0.1	8.0	7.0	30.0	25.0	1.0	9.0	7.0	159.0	17.0	1.4	4.0	12.0	25.0	16.0	0.5
15-Nov-21	8.0	11.0	28.0	21.0	0.2	8.0	8.0	43.0	21.0	1.0	9.0	8.0	83.0	19.0	1.4	5.0	9.0	41.0	19.0	0.5
16-Nov-21	8.0	9.0	30.0	23.0	0.2	8.0	8.0	50.0	20.0	1.0	9.0	8.0	46.0	19.0	1.4	5.0	8.0	43.0	24.0	0.5
17-Nov-21	8.0	7.0	17.0	13.0	0.2	8.0	9.0	25.0	25.0	1.0	8.0	6.0	39.0	23.0	1.4	3.0	3.0	23.0	12.0	0.5
18-Nov-21	9.0	8.0	24.0	12.0	0.3	6.0	11.0	32.0	27.0	1.0	8.0	6.0	34.0	23.0	1.4	3.0	4.0	27.0	20.0	0.5
19-Nov-21	8.0	10.0	24.0	15.0	0.2	5.0	7.0	14.0	18.0	1.0	8.0	6.0	51.0	25.0	1.4	3.0	9.0	37.0	15.0	0.5
20-Nov-21	8.0	11.0	37.0	19.0	0.2	7.0	1.0	15.0	23.0	1.0	8.0	7.0	73.0	22.0	1.4	3.0	9.0	46.0	19.0	0.5
21-Nov-21	8.0	15.0	37.0	19.0	0.3	7.0	5.0	16.0	17.0	0.6	9.0	8.0	33.0	27.0	1.5	3.0	5.0	45.0	13.0	0.5
22-Nov-21	8.0	11.0	26.0	18.0	0.2	7.0	5.0	22.0	24.0	0.3	9.0	7.0	87.0	24.0	1.5	3.0	6.0	33.0	19.0	0.5
23-Nov-21	8.0	11.0	15.0	11.0	0.3	7.0	4.0	30.0	24.0	1.0	8.0	6.0	24.0	21.0	1.5	3.0	5.0	21.0	12.0	0.5
24-Nov-21	8.0	6.0	20.0	14.0	0.2	7.0	5.0	33.0	20.0	0.7	8.0	4.0	15.0	15.0	1.5	3.0	5.0	32.0	21.0	0.5
25-Nov-21	8.0	6.0	19.0	17.0	0.3	7.0	8.0	31.0	27.0	1.0	8.0	4.0	20.0	17.0	1.5	3.0	6.0	30.0	25.0	0.5
26-Nov-21	8.0	8.0	11.0	9.0	0.2	7.0	9.0	23.0	31.0	1.0	7.0	2.0	12.0	29.0	1.4	5.0	12.0	41.0	10.0	0.4
27-Nov-21	8.0	6.0	19.0	16.0	0.2	7.0	6.0	35.0	22.0	1.0	7.0	2.0	26.0	19.0	1.4	4.0	12.0	48.0	28.0	0.4
28-Nov-21	8.0	3.0	16.0	15.0	0.2	7.0	4.0	28.0	14.0	1.0	7.0	3.0	26.0	11.0	1.4	6.0	12.0	43.0	#	0.4
29-Nov-21	8.0	6.0	6.0	3.0	0.2	7.0	6.0	15.0	20.0	1.0	7.0	2.0	28.0	17.0	1.4	5.0	12.0	24.0	23.0	0.4
30-Nov-21	8.0	9.0	17.0	8.0	0.1	7.0	5.0	16.0	17.0	0.6	7.0	2.0	40.0	19.0	1.4	12.0	6.0	27.0	#	0.4
Remarks:	# Analyzer problem.																			



Date	STATION-1 (Near Main Office)					STATION-2 (Near CHP)					STATION-3 (Near Ash Pond)					STATION-4 (Sea Water Pump House)				
	SO2	NOX	PM10	PM2.5	CO	SO2	NOX	PM10	PM2.5	CO	SO2	NOX	PM10	PM2.5	CO	SO2	NOX	PM10	PM2.5	CO
	µg/m³	µg/m³	µg/m³	µg/m³	mg/m³	µg/m³	µg/m³	µg/m³	µg/m³	mg/m³	µg/m³	µg/m³	µg/m³	µg/m³	mg/m³	µg/m³	µg/m³	µg/m³	µg/m³	mg/m³
1-Dec-21	8.0	8.0	27.0	16.0	0.2	7.0	4.0	23.0	14.0	0.2	7.0	3.0	55.0	16.0	1.4	16.0	4.0	12.0	16.0	0.5
2-Dec-21	8.0	7.0	32.0	33.0	0.3	8.0	4.0	32.0	38.0	0.3	8.0	4.0	47.0	31.0	1.4	15.0	5.0	39.0	20.0	0.6
3-Dec-21	8.0	8.0	37.0	32.0	0.3	8.0	10.0	26.0	42.0	0.4	8.0	4.0	52.0	29.0	1.5	16.0	5.0	47.0	11.0	0.6
4-Dec-21	8.0	6.0	37.0	29.0	0.3	8.0	14.0	44.0	19.0	0.2	7.0	4.0	66.0	28.0	1.5	12.0	5.0	48.0	22.0	0.7
5-Dec-21	8.0	5.0	45.0	23.0	0.3	8.0	11.0	53.0	19.0	0.1	7.0	3.0	22.0	35.0	1.6	9.0	4.0	64.0	35.0	0.7
6-Dec-21	8.0	9.0	29.0	19.0	0.3	8.0	11.0	44.0	23.0	0.2	7.0	3.0	39.0	115.0	1.1	6.0	5.0	34.0	35.0	0.7
7-Dec-21	8.0	9.0	36.0	26.0	0.3	8.0	8.0	55.0	25.0	0.4	7.0	3.0	48.0	98.0	0.2	6.0	9.0	47.0	35.0	0.7
8-Dec-21	8.0	8.0	37.0	31.0	0.3	8.0	6.0	49.0	20.0	0.3	7.0	3.0	51.0	30.0	0.1	6.0	11.0	47.0	35.0	0.7
9-Dec-21	8.0	6.0	19.0	13.0	0.3	8.0	6.0	31.0	14.0	0.2	7.0	2.0	34.0	13.0	0.1	6.0	10.0	25.0	35.0	0.7
10-Dec-21	8.0	9.0	19.0	10.0	0.3	8.0	5.0	34.0	15.0	0.1	7.0	2.0	32.0	17.0	0.4	6.0	10.0	24.0	20.0	0.7
11-Dec-21	8.0	8.0	21.0	12.0	0.4	8.0	11.0	33.0	17.0	0.2	8.0	2.0	35.0	29.0	0.6	7.0	10.0	28.0	21.0	0.7
12-Dec-21	8.0	16.0	16.0	10.0	0.5	8.0	11.0	28.0	16.0	0.4	8.0	2.0	31.0	50.0	0.5	8.0	10.0	22.0	20.0	0.7
13-Dec-21	8.0	10.0	17.0	9.0	0.4	8.0	11.0	29.0	18.0	0.3	8.0	2.0	31.0	39.0	0.5	9.0	10.0	23.0	8.0	0.7
14-Dec-21	8.0	6.0	19.0	13.0	0.5	8.0	11.0	34.0	22.0	0.3	8.0	3.0	32.0	12.0	0.5	9.0	10.0	27.0	17.0	0.7
15-Dec-21	8.0	2.0	43.0	32.0	0.5	8.0	11.0	42.0	19.0	0.3	8.0	2.0	56.0	22.0	0.5	8.0	10.0	54.0	20.0	0.8
16-Dec-21	9.0	6.0	56.0	43.0	0.6	8.0	11.0	62.0	26.0	0.4	8.0	3.0	71.0	31.0	0.5	8.0	10.0	50.0	38.0	0.8
17-Dec-21	9.0	8.0	39.0	43.0	0.6	9.0	8.0	24.0	27.0	0.4	8.0	3.0	68.0	51.0	0.6	7.0	8.0	34.0	29.0	0.9
18-Dec-21	9.0	6.0	47.0	37.0	0.6	10.0	6.0	39.0	34.0	0.4	8.0	2.0	62.0	23.0	0.6	8.0	5.0	28.0	23.0	0.9
19-Dec-21	9.0	2.0	41.0	29.0	0.6	10.0	6.0	30.0	35.0	0.4	8.0	2.0	52.0	31.0	0.6	8.0	5.0	20.0	29.0	0.9
20-Dec-21	10.0	4.0	29.0	27.0	0.5	9.0	9.0	45.0	23.0	0.3	8.0	2.0	40.0	29.0	0.6	8.0	8.0	19.0	29.0	0.8
21-Dec-21	9.0	7.0	37.0	43.0	0.6	8.0	11.0	61.0	20.0	0.4	8.0	2.0	53.0	20.0	0.5	7.0	10.0	35.0	29.0	0.9
22-Dec-21	9.0	8.0	42.0	32.0	0.6	8.0	11.0	33.0	32.0	0.4	8.0	2.0	56.0	8.0	0.4	7.0	10.0	24.0	27.0	0.9
23-Dec-21	6.0	7.0	45.0	33.0	0.6	8.0	7.0	36.0	36.0	0.3	8.0	2.0	59.0	18.0	0.3	8.0	8.0	26.0	23.0	0.9
24-Dec-21	7.0	10.0	30.0	24.0	0.5	8.0	7.0	16.0	28.0	0.3	8.0	2.0	44.0	23.0	0.4	7.0	8.0	25.0	29.0	0.9
25-Dec-21	9.0	11.0	15.0	7.0	0.5	8.0	7.0	12.0	18.0	0.3	8.0	2.0	31.0	20.0	0.4	9.0	8.0	23.0	11.0	0.8
26-Dec-21	8.0	10.0	15.0	6.0	0.5	8.0	7.0	9.0	18.0	0.3	8.0	2.0	29.0	20.0	0.4	9.0	8.0	23.0	12.0	0.9
27-Dec-21	8.0	12.0	28.0	18.0	0.5	8.0	7.0	21.0	22.0	0.3	8.0	2.0	29.0	20.0	0.4	8.0	8.0	20.0	31.0	0.9
28-Dec-21	8.0	12.0	32.0	23.0	0.5	8.0	8.0	21.0	28.0	0.3	8.0	2.0	46.0	29.0	0.4	8.0	10.0	12.0	27.0	0.9
29-Dec-21	9.0	13.0	26.0	16.0	0.5	8.0	11.0	30.0	5.0	0.2	8.0	2.0	40.0	22.0	0.4	7.0	11.0	24.0	26.0	0.9
30-Dec-21	9.0	11.0	24.0	18.0	0.5	8.0	11.0	40.0	9.0	0.3	9.0	2.0	39.0	15.0	0.4	8.0	13.0	42.0	39.0	0.9
31-Dec-21	9.0	12.0	10.0	7.0	0.5	8.0	11.0	23.0	14.0	0.3	9.0	2.0	24.0	14.0	0.5	9.0	16.0	21.0	#	1.1
Remarks:	# Analyzer problem.																			



Date	Ambient Temperature (°C)			Barometric Pressure (m.bar)			Predominant Wind direction Blowing from	Wind Speed (Km/Hr)			Relative Humidity (%)			Rain Fall (mm)
	Min	Max	Avg	Min	Max	Avg		Min	Max	Avg	Min	Max	Avg	
1-Jul-21	25.8	36.6	30.8	1034	1038	1036	East & West	1.2	8.8	1.2	45.5	82.5	64.8	0.0
2-Jul-21	24.5	37.2	30.5	1035	1038	1036	South & South West	1.2	8.5	1.2	35.7	81.4	59.1	0.0
3-Jul-21	25.9	36.3	30.5	1035	1038	1037	East & South West	1.2	1.6	1.2	45.5	75.6	63.0	0.0
4-Jul-21	22.0	36.6	28.7	1035	1038	1037	West & South West	1.2	22.4	1.3	44.8	94.5	72.1	12.5
5-Jul-21	24.0	33.8	29.2	1035	1037	1036	East & South East	1.2	9.5	1.2	53.1	96.2	74.8	0.0
6-Jul-21	25.8	35.6	29.6	1034	1037	1035	East & West	1.2	6.4	1.2	46.7	85.3	70.0	0.0
7-Jul-21	23.9	35.0	29.5	1034	1037	1036	East & West	1.2	4.9	1.2	52.4	86.4	70.1	0.0
8-Jul-21	25.9	38.2	30.5	1034	1037	1036	South West & East	1.2	4.8	1.2	37.7	85.6	68.3	0.0
9-Jul-21	24.5	36.2	30.1	1033	1036	1035	South West & South	1.2	3.7	1.2	40.5	90.0	63.0	0.0
10-Jul-21	26.1	30.5	27.9	1034	1037	1035	South West & South	1.2	10.4	1.3	53.3	72.2	63.5	0.0
11-Jul-21	26.6	35.4	30.0	1033	1037	1035	South & South West	1.2	4.9	1.2	38.3	68.5	56.0	0.0
12-Jul-21	27.4	35.5	30.7	1033	1036	1035	South West & South	1.2	1.5	1.3	41.3	68.3	56.9	0.0
13-Jul-21	27.9	36.0	31.0	1034	1037	1035	South & South West	1.2	1.6	1.2	41.0	66.1	55.5	0.0
14-Jul-21	26.0	34.5	29.3	1035	1037	1036	South & South West	1.2	1.5	1.2	41.2	82.2	61.9	0.0
15-Jul-21	25.8	36.5	30.4	1034	1037	1036	South West & South	1.3	2.1	1.3	34.8	83.5	58.8	0.0
16-Jul-21	27.3	36.0	30.6	1035	1038	1037	South West & South	1.3	1.3	1.3	40.3	73.3	58.4	0.0
17-Jul-21	25.6	34.7	29.9	1035	1038	1037	South West & East	1.3	1.6	1.3	44.6	77.4	64.1	0.0
18-Jul-21	27.0	34.1	29.8	1035	1037	1036	South West & South	1.3	2.8	1.3	42.9	67.3	59.5	0.0
19-Jul-21	27.1	35.9	29.9	1036	1038	1037	South & South West	1.3	1.7	1.3	39.1	68.1	58.7	0.0
20-Jul-21	*	*	*	*	*	*	*	*	*	*	*	*	*	0.0
21-Jul-21	*	*	*	*	*	*	*	*	*	*	*	*	*	0.0
22-Jul-21	*	*	*	*	*	*	*	*	*	*	*	*	*	0.0
23-Jul-21	28.8	31.1	29.4	1035	1037	1037	South West & South	1.3	2.3	1.4	53.7	62.9	60.2	0.0
24-Jul-21	27.1	36.2	30.7	1035	1038	1037	South & South West	1.3	2.6	1.3	38.0	70.6	57.3	0.0
25-Jul-21	27.6	35.2	30.9	1036	1039	1037	South West & South	1.3	2.9	1.4	39.6	69.9	55.7	0.0
26-Jul-21	27.9	36.8	31.4	1036	1039	1037	South & South West	1.3	4.4	1.4	37.7	65.7	53.0	0.0
27-Jul-21	27.9	36.2	31.2	1036	1038	1037	South & South West	1.3	2.0	1.4	38.8	65.3	53.9	0.0
28-Jul-21	27.5	36.6	30.9	1036	1039	1038	South & South West	1.3	3.9	1.5	35.9	66.4	54.9	0.0
29-Jul-21	26.9	37.7	31.2	1036	1039	1038	South West & South	1.3	3.0	1.4	34.3	67.9	55.0	0.0
30-Jul-21	24.6	37.0	30.8	1036	1040	1038	South West & South	1.3	3.8	1.3	35.2	72.6	55.2	0.0
31-Jul-21	26.9	38.2	32.1	1036	1040	1038	South West & South	1.3	1.9	1.3	28.6	68.1	49.8	0.0
Remarks: Total Rainfall for the month				12.5 mm.		* Internet problem								



Date	Ambient Temperature (°C)			Barometric Pressure (m.bar)			Predominant Wind direction Blowing from	Wind Speed (Km/Hr)			Relative Humidity (%)			Rain Fall (mm)
	Min	Max	Avg	Min	Max	Avg		Min	Max	Avg	Min	Max	Avg	
1-Aug-21	*	*	*	*	*	*	*	*	*	*	*	*	*	*
2-Aug-21	29.3	37.5	33.1	1036	1040	1038	South West & South	1.2	3.0	1.6	31.8	59.1	46.0	0.0
3-Aug-21	27.8	37.0	31.4	1037	1040	1039	South West & South	1.2	3.0	1.3	35.1	65.6	52.3	0.0
4-Aug-21	27.8	37.5	31.5	1037	1040	1039	South West & South	1.2	3.7	1.4	34.9	66.8	54.4	0.0
5-Aug-21	27.7	37.2	31.4	1036	1039	1038	South & South West	1.2	4.2	1.6	35.5	65.8	53.9	0.0
6-Aug-21	27.7	38.0	31.5	1035	1038	1037	South West & South	1.2	3.9	1.4	34.4	66.8	54.3	0.0
7-Aug-21	25.9	36.9	30.8	1035	1039	1037	South West & South	1.2	1.9	1.3	38.7	85.7	59.6	1.0
8-Aug-21	25.6	36.0	30.9	1036	1039	1038	South West & East	1.2	7.5	1.6	43.0	81.5	61.0	0.0
9-Aug-21	27.1	35.7	31.2	1036	1039	1038	South West & South	1.2	14.3	3.5	41.3	65.7	56.2	0.0
10-Aug-21	27.7	37.6	31.1	1036	1039	1038	South West & South	1.2	9.2	2.6	34.9	68.3	56.2	0.0
11-Aug-21	27.7	35.7	30.6	1037	1039	1038	South West & East	1.2	2.4	1.3	39.4	81.9	59.2	0.0
12-Aug-21	26.8	36.0	30.7	1037	1040	1038	South West & South	1.2	1.5	1.2	38.8	72.6	56.7	0.0
13-Aug-21	26.4	36.2	30.3	1036	1039	1038	South West & South	1.2	1.8	1.3	37.4	68.6	57.6	0.0
14-Aug-21	26.8	36.5	30.7	1035	1038	1037	South West & South	1.2	7.2	1.5	37.5	67.9	52.8	0.0
15-Aug-21	25.4	35.4	30.2	1035	1038	1037	South West & South	1.2	1.5	1.2	37.0	70.5	57.2	0.0
16-Aug-21	25.4	35.5	30.0	1036	1039	1037	South West & East	1.2	3.2	1.3	38.9	75.2	60.1	0.5
17-Aug-21	26.0	36.6	30.8	1036	1039	1038	South West & West	1.2	6.2	1.6	38.2	75.5	57.4	0.0
18-Aug-21	27.9	35.3	30.5	1036	1039	1038	South & South West	1.2	2.8	1.4	41.3	65.9	56.2	0.0
19-Aug-21	27.6	36.9	31.5	1035	1038	1037	South & South West	1.2	6.9	1.8	35.2	64.7	50.4	0.0
20-Aug-21	25.7	35.1	30.1	1035	1038	1037	East & West	1.2	16.2	1.9	44.4	78.3	62.7	0.0
21-Aug-21	27.3	34.3	29.5	1037	1040	1038	North West & West	1.2	2.0	1.3	48.1	83.0	67.2	0.0
22-Aug-21	26.5	32.2	28.4	1037	1040	1038	East & North East	1.2	1.3	1.2	61.5	91.9	77.5	1.5
23-Aug-21	24.4	34.5	28.5	1036	1040	1038	West & East	1.2	11.6	1.7	54.0	93.4	75.5	0.0
24-Aug-21	24.1	35.2	29.5	1036	1040	1038	South East & South	1.2	20.5	3.3	45.5	87.2	67.4	0.0
25-Aug-21	23.4	35.6	29.9	1035	1039	1037	South East & South	1.2	23.6	3.2	43.0	86.7	64.5	0.0
26-Aug-21	25.6	36.3	30.7	1034	1038	1036	South & South West	1.2	2.1	1.3	39.4	76.5	59.1	0.0
27-Aug-21	28.1	35.0	30.9	1035	1037	1036	South West & East	1.2	10.6	2.1	42.2	69.7	56.0	0.0
28-Aug-21	25.8	33.3	29.5	1034	1037	1036	South West & North West	1.2	17.3	2.6	45.1	75.1	60.1	0.0
29-Aug-21	26.8	33.3	29.2	1035	1037	1036	North West & West	1.2	9.2	1.8	40.4	70.7	58.9	0.0
30-Aug-21	26.8	34.3	29.8	1035	1037	1036	West & North West	1.2	3.5	1.4	42.9	70.1	58.0	0.0
31-Aug-21	26.6	36.5	31.0	1035	1038	1036	West & North West	1.2	1.8	1.2	37.5	71.0	57.7	0.0
Remarks: Total Rainfall for the month				3.0 mm.		* Internet problem								



Date	Ambient Temperature (°C)			Barometric Pressure (m.bar)			Predominant Wind direction Blowing from	Wind Speed (Km/Hr)			Relative Humidity (%)			Rain Fall (mm)
	Min	Max	Avg	Min	Max	Avg		Min	Max	Avg	Min	Max	Avg	
1-Sep-21	24.7	35.0	29.7	1035	1038	1037	North West & South	1.2	2.4	1.3	47.0	83.8	67.2	0.0
2-Sep-21	24.9	35.4	28.6	1035	1038	1037	South & West	1.2	2.2	1.2	42.4	91.4	75.1	0.5
3-Sep-21	24.6	31.4	27.2	1035	1039	1037	South & North West	1.2	2.7	1.3	67.4	93.1	81.1	2.5
4-Sep-21	23.5	35.7	29.3	1036	1038	1037	North West & West	1.2	5.7	1.5	40.4	89.1	64.4	0.0
5-Sep-21	26.5	36.3	30.6	1035	1038	1037	West & North West	1.2	5.3	1.7	38.7	71.0	57.2	0.0
6-Sep-21	27.0	35.8	30.5	1035	1039	1037	North West & West	1.2	10.2	2.0	39.4	73.6	57.0	0.0
7-Sep-21	27.8	36.1	31.0	1036	1039	1038	North West & West	1.2	6.3	2.0	39.3	66.2	53.7	0.0
8-Sep-21	25.7	37.3	31.1	1036	1039	1038	West & North West	1.2	5.8	1.7	32.9	76.1	53.3	0.0
9-Sep-21	26.0	37.1	30.6	1036	1039	1038	North West & West	1.2	4.6	1.4	31.9	70.5	58.3	0.0
10-Sep-21	26.3	37.5	31.1	1035	1039	1037	North West & West	1.2	15.9	1.6	35.7	78.1	58.5	0.0
11-Sep-21	27.0	37.9	31.6	1035	1039	1037	West & North West	1.2	14.1	2.5	31.2	69.9	53.3	0.0
12-Sep-21	27.0	35.7	30.6	1035	1038	1037	West & North West	1.2	20.3	3.6	38.9	72.0	56.4	0.0
13-Sep-21	28.1	36.5	31.3	1034	1038	1036	West & North West	1.2	11.8	4.0	38.1	65.9	54.9	0.0
14-Sep-21	28.4	37.7	32.2	1035	1038	1036	West & North West	1.2	3.9	1.6	35.5	67.1	53.2	0.0
15-Sep-21	25.9	36.4	31.7	1034	1038	1037	South & North West	1.2	2.3	1.3	38.3	75.0	56.2	0.0
16-Sep-21	26.8	38.3	31.1	1034	1038	1037	North West & West	1.2	1.8	1.2	34.0	83.2	61.5	0.0
17-Sep-21	26.5	37.2	30.1	1035	1038	1037	South & South Esst	1.2	1.5	1.2	41.3	84.2	69.0	0.0
18-Sep-21	24.5	35.1	28.4	1036	1040	1038	South & North West	1.2	5.1	1.3	51.3	92.7	78.3	0.0
19-Sep-21	25.0	34.0	29.1	1037	1040	1038	South & North West	1.2	1.3	1.2	57.4	90.5	76.0	0.0
20-Sep-21	26.6	34.2	29.4	1036	1040	1038	South East & South	1.2	1.4	1.2	26.6	34.2	29.4	0.0
21-Sep-21	25.3	37.4	30.3	1035	1039	1037	North West & South	1.2	2.4	1.3	41.2	92.4	68.5	0.0
22-Sep-21	24.1	35.3	29.5	1034	1038	1036	South & North West	1.2	5.8	1.4	44.1	89.2	67.4	1.0
23-Sep-21	24.0	36.6	28.5	1035	1039	1037	West & South	1.2	2.5	1.3	40.7	95.8	75.0	18.0
24-Sep-21	24.0	34.5	28.9	1035	1039	1037	South East & South	1.2	15.8	1.9	48.9	95.5	72.6	0.0
25-Sep-21	25.4	36.9	30.2	1035	1038	1037	North West & West	1.2	4.7	1.3	40.2	86.6	65.1	0.0
26-Sep-21	26.0	35.2	29.9	1034	1037	1036	West & North West	1.2	15.7	2.4	44.4	82.2	65.3	0.0
27-Sep-21	26.0	33.2	29.0	1034	1037	1035	West & North West	1.2	15.7	2.7	41.4	77.7	60.9	0.0
28-Sep-21	27.5	34.1	29.9	1035	1038	1037	West & North West	1.2	4.1	1.6	40.9	65.1	55.2	0.0
29-Sep-21	26.6	35.3	30.7	1035	1039	1037	North West & South	1.2	2.6	1.3	40.3	82.0	59.8	0.0
30-Sep-21	25.4	35.7	30.4	1036	1039	1038	North East & South	1.2	1.4	1.2	40.0	80.4	61.9	0.0
Remarks:	Total Rainfall for the month			22.0 mm.		Problem in Wind Speed Sensor								

Daily Average from 01.10.2021 to 31.10.2021

Date	Ambient Temperature (°C)			Barometric Pressure (m.bar)			Predominant Wind direction Blowing from	Wind Speed (Km/Hr)			Relative Humidity (%)			Rain Fall (mm)
	Min	Max	Avg	Min	Max	Avg		Min	Max	Avg	Min	Max	Avg	
1-Oct-21	25.2	33.5	27.5	1036	1039	1038	North East & South	1.2	1.6	1.2	53.1	92.0	77.8	3.0
2-Oct-21	24.7	31.5	27.5	1036	1039	1037	North East & South	1.2	1.5	1.2	64.9	94.9	81.1	0.0
3-Oct-21	26.0	33.5	28.3	1035	1039	1037	South & South East	1.2	1.3	1.2	58.8	90.0	78.6	0.0
4-Oct-21	25.4	33.3	28.3	1035	1039	1037	South East & North West	1.2	1.3	1.2	60.0	91.2	78.0	0.0
5-Oct-21	23.6	33.7	27.9	1035	1038	1037	South & South West	1.2	1.3	1.2	53.8	91.4	75.4	0.0
6-Oct-21	24.1	32.4	27.7	1034	1038	1036	South & South West	1.2	4.3	1.3	62.1	89.0	77.1	0.5
7-Oct-21	24.8	33.6	29.0	1035	1038	1037	South West & West	1.2	9.2	1.8	50.6	81.9	68.1	0.0
8-Oct-21	25.7	36.0	30.1	1035	1039	1037	West & South West	1.2	7.3	1.3	39.7	79.6	62.0	0.0
9-Oct-21	26.6	33.1	28.9	1037	1040	1038	West & North West	1.2	5.7	1.4	47.3	74.2	63.3	0.0
10-Oct-21	27.0	38.5	31.7	1035	1039	1037	West & North West	1.2	3.3	1.4	36.0	70.3	54.8	0.0
11-Oct-21	26.7	36.2	30.6	1035	1038	1037	West & North West	1.2	15.5	2.0	39.9	70.7	58.3	0.0
12-Oct-21	27.0	33.8	29.8	1035	1038	1037	North West & West	1.2	13.3	2.9	39.4	62.8	54.3	0.0
13-Oct-21	26.6	36.3	31.2	1034	1037	1036	North West & West	1.2	10.1	2.0	33.9	70.0	52.1	0.0
14-Oct-21	26.5	36.5	31.2	1034	1037	1036	West & North West	1.2	1.8	1.2	38.7	78.5	58.4	0.0
15-Oct-21	26.1	37.5	30.9	1032	1035	1034	West & South West	1.2	2.5	1.3	35.0	77.4	59.8	0.0
16-Oct-21	26.7	33.3	29.4	1032	1036	1034	West & South West	1.2	16.1	2.0	55.1	87.3	70.6	0.0
17-Oct-21	26.5	35.0	30.1	1034	1038	1036	West & South West	1.2	3.2	1.3	46.8	80.8	64.7	0.0
18-Oct-21	25.6	37.1	30.9	1035	1039	1037	West & North West	1.2	14.0	2.3	34.2	75.1	55.3	0.0
19-Oct-21	25.6	35.4	29.8	1037	1040	1039	South & North West	1.2	15.2	2.1	41.8	79.9	65.3	0.0
20-Oct-21	25.0	36.1	29.1	1038	1041	1040	North East & South East	1.2	6.6	1.3	40.8	81.9	69.8	0.0
21-Oct-21	25.0	32.4	28.4	1038	1041	1040	South & South East	1.2	4.9	1.3	63.5	95.0	79.4	6.5
22-Oct-21	23.8	33.3	28.8	1038	1042	1040	North East & South	1.2	1.5	1.2	56.5	94.5	76.2	5.5
23-Oct-21	25.0	33.5	27.6	1039	1042	1041	South West & East	1.2	1.3	1.2	58.1	95.2	82.9	1.0
24-Oct-21	23.7	34.5	28.3	1038	1041	1040	South & North East	1.2	12.1	1.6	45.8	96.2	74.9	0.5
25-Oct-21	23.4	33.0	27.5	1037	1041	1039	South East & West	1.2	2.1	1.3	56.2	93.5	78.8	0.5
26-Oct-21	24.6	32.5	27.4	1037	1040	1039	East & South East	1.2	1.2	1.2	56.0	94.5	82.8	0.0
27-Oct-21	23.4	33.2	27.0	1037	1040	1039	North West & West	1.2	2.3	1.2	54.6	95.0	80.7	3.0
28-Oct-21	23.8	33.5	27.8	1036	1040	1039	North West & North East	1.2	8.2	1.4	47.6	95.3	76.5	0.0
29-Oct-21	24.1	27.9	25.2	1037	1041	1039	West & North West	1.2	1.2	1.2	84.4	97.0	92.0	19.0
30-Oct-21	21.6	30.2	25.9	1038	1041	1040	North East & East	1.2	11.6	1.6	69.4	98.2	86.9	38.5
31-Oct-21	25.0	29.0	26.3	1038	1041	1039	North East & East	1.2	1.3	1.2	73.7	94.2	87.6	0.0
Remarks: Total Rainfall for the month				78.0 mm.		Problem in Wind Speed Sensor								



Date	Ambient Temperature (°C)			Barometric Pressure (m.bar)			Predominant Wind direction Blowing from	Wind Speed (Km/Hr)			Relative Humidity (%)			Rain Fall (mm)
	Min	Max	Avg	Min	Max	Avg		Min	Max	Avg	Min	Max	Avg	
1-Nov-21	24.4	27.5	25.6	1037	1040	1039	North West & West	1.2	1.3	1.2	81.4	96.6	92.0	17.5
2-Nov-21	24.3	30.2	26.6	1037	1040	1039	North East & East	1.2	1.3	1.2	75.7	96.5	88.7	4.5
3-Nov-21	24.4	30.8	26.6	1038	1041	1039	North East & East	1.2	1.3	1.2	68.8	95.5	86.4	2.0
4-Nov-21	24.0	30.9	26.3	1038	1041	1040	West & South East	1.2	1.4	1.2	68.4	96.4	87.4	1.0
5-Nov-21	23.3	33.0	26.7	1037	1041	1039	South & West	1.2	1.3	1.2	58.5	96.2	84.5	0.5
6-Nov-21	23.3	33.9	26.8	1036	1040	1039	South & South East	1.2	1.3	1.2	61.0	96.1	85.0	7.0
7-Nov-21	23.7	29.7	26.2	1037	1040	1038	North East & South West	1.2	1.3	1.2	69.9	96.6	87.8	0.5
8-Nov-21	22.6	27.6	25.2	1038	1041	1039	West & North East	1.2	1.4	1.2	84.9	97.2	94.1	31.0
9-Nov-21	22.6	25.9	23.8	1038	1040	1039	North East & North West	1.2	1.3	1.2	72.3	97.1	89.0	7.0
10-Nov-21	23.0	32.0	26.7	1036	1040	1038	North East & South West	1.2	1.3	1.2	54.0	93.3	78.7	0.0
11-Nov-21	23.7	33.6	27.8	1034	1038	1037	West & South West	1.2	1.4	1.2	56.2	95.4	77.9	0.0
12-Nov-21	25.5	31.6	27.8	1036	1039	1037	West & South West	1.2	1.4	1.2	57.8	84.4	71.8	0.0
13-Nov-21	24.7	28.9	26.4	1037	1040	1038	West & South West	1.2	1.3	1.2	72.9	93.5	84.2	0.5
14-Nov-21	24.2	33.1	28.2	1036	1040	1038	West & South West	1.2	1.4	1.2	55.3	91.9	74.4	0.0
15-Nov-21	24.8	32.9	28.4	1035	1039	1037	West & North West	1.2	1.3	1.2	53.1	89.2	72.0	0.0
16-Nov-21	24.0	32.1	27.3	1036	1039	1037	South West & West	1.2	1.3	1.2	59.3	94.9	81.5	0.0
17-Nov-21	22.3	31.3	26.4	1037	1041	1039	North East & East	1.2	1.5	1.2	66.0	98.1	86.8	42.5
18-Nov-21	23.2	31.4	26.6	1035	1040	1037	West & South West	1.2	1.3	1.2	61.5	97.5	82.8	0.0
19-Nov-21	22.7	32.7	27.5	1034	1037	1036	West & North West	1.2	3.1	1.3	55.8	93.0	75.9	0.0
20-Nov-21	22.8	33.7	28.1	1035	1039	1037	West & North West	1.2	1.3	1.2	43.0	89.8	69.9	0.0
21-Nov-21	20.1	31.4	25.9	1037	1040	1039	West & South East	1.2	1.2	1.2	55.2	97.5	78.3	0.0
22-Nov-21	22.6	33.0	27.0	1038	1041	1039	South East & North West	1.2	3.4	1.3	57.7	96.1	79.9	0.0
23-Nov-21	23.2	29.1	25.5	1037	1040	1039	South West & North East	1.2	3.5	1.3	76.0	96.3	89.9	9.0
24-Nov-21	23.9	26.7	25.1	1038	1041	1039	-	1.2	1.2	1.2	82.1	97.2	91.1	13.5
25-Nov-21	22.7	25.8	24.3	1038	1040	1039	-	-	-	-	79.9	98.5	91.1	112.5
26-Nov-21	23.6	28.1	25.4	1037	1041	1039	-	-	-	-	78.5	96.1	89.8	6.0
27-Nov-21	23.9	29.7	26.2	1037	1041	1039	-	-	-	-	68.4	92.9	82.9	0.0
28-Nov-21	23.8	29.2	25.6	1037	1041	1039	-	-	-	-	74.0	95.5	87.9	2.0
29-Nov-21	22.6	28.9	25.3	1038	1042	1040	-	-	-	-	73.9	97.4	88.0	15.5
30-Nov-21	23.0	30.8	26.0	1039	1042	1040	-	-	-	-	67.3	97.6	86.4	16.0
Remarks:	Total Rainfall for the month			288.5 mm.		Due to Anemometer bearing problem, Wind Sensor is not working from 25.11.2021.								



Date	Ambient Temperature (°C)			Barometric Pressure (m.bar)			Predominant Wind direction Blowing from	Wind Speed (Km/Hr)			Relative Humidity (%)			Rain Fall (mm)
	Min	Max	Avg	Min	Max	Avg		Min	Max	Avg	Min	Max	Avg	
1-Dec-21	23.4	32.0	26.7	1038	1041	1040	-	-	-	-	62.2	96.8	84.0	7.5
2-Dec-21	23.8	31.7	26.9	1038	1041	1040	-	-	-	-	64.5	95.4	83.7	1.0
3-Dec-21	24.1	31.9	27.4	1039	1042	1040	-	-	-	-	59.5	94.5	79.8	0.0
4-Dec-21	24.1	30.3	26.3	1039	1042	1041	-	-	-	-	67.7	96.4	87.3	3.5
5-Dec-21	24.4	32.2	27.5	1038	1042	1040	-	-	-	-	65.3	96.6	84.8	0.0
6-Dec-21	24.2	32.8	27.3	1039	1041	1040	-	-	-	-	59.1	96.0	83.8	0.0
7-Dec-21	24.8	32.2	27.7	1039	1042	1040	-	-	-	-	60.1	96.4	82.0	0.0
8-Dec-21	23.9	32.1	27.1	1039	1042	1040	-	-	-	-	55.6	95.1	80.5	0.0
9-Dec-21	23.5	31.5	26.6	1040	1043	1041	-	-	-	-	60.1	95.4	84.6	0.0
10-Dec-21	23.2	30.6	25.9	1040	1043	1041	-	-	-	-	63.0	95.2	82.7	0.0
11-Dec-21	23.2	32.0	27.1	1039	1042	1041	-	-	-	-	54.5	94.6	79.1	0.0
12-Dec-21	23.7	30.8	25.9	1040	1042	1041	-	-	-	-	65.2	92.1	83.8	1.0
13-Dec-21	23.7	31.7	26.7	1039	1042	1040	-	-	-	-	58.3	94.0	79.0	0.0
14-Dec-21	23.6	31.6	27.0	1038	1042	1040	-	-	-	-	54.1	94.3	77.5	0.0
15-Dec-21	23.8	31.8	27.3	1039	1042	1041	-	-	-	-	56.4	87.9	73.3	0.0
16-Dec-21	23.0	31.3	26.8	1040	1043	1041	-	-	-	-	49.1	88.1	70.7	0.0
17-Dec-21	23.3	31.7	26.9	1040	1043	1042	-	-	-	-	51.4	85.5	71.3	0.0
18-Dec-21	22.1	31.8	26.4	1039	1043	1041	-	-	-	-	41.0	89.6	70.6	0.0
19-Dec-21	22.0	30.6	25.7	1040	1044	1042	-	-	-	-	54.6	88.9	73.9	0.0
20-Dec-21	21.8	31.0	25.7	1040	1044	1042	-	-	-	-	49.2	87.5	71.3	0.0
21-Dec-21	21.5	31.2	25.6	1041	1044	1042	-	-	-	-	51.1	91.6	77.0	0.0
22-Dec-21	22.3	30.6	25.7	1040	1043	1041	-	-	-	-	63.9	95.1	79.9	0.0
23-Dec-21	20.9	30.6	25.0	1039	1043	1041	-	-	-	-	53.2	96.4	76.5	0.0
24-Dec-21	19.5	30.6	24.6	1040	1043	1041	-	-	-	-	46.0	95.1	76.0	0.0
25-Dec-21	19.8	29.9	24.6	1040	1043	1042	-	-	-	-	54.2	96.3	75.7	0.0
26-Dec-21	19.5	31.0	24.7	1041	1044	1042	-	-	-	-	49.2	96.0	76.4	0.0
27-Dec-21	20.1	31.5	25.2	1041	1044	1042	-	-	-	-	47.4	95.5	76.4	0.0
28-Dec-21	20.8	31.3	25.4	1040	1043	1042	East & North East	1.2	16.8	3.8	51.4	95.3	78.0	0.0
29-Dec-21	20.9	32.1	26.0	1039	1043	1041	East & North East	1.2	19.27	6.91	43.0	94.4	73.7	0.0
30-Dec-21	23.1	31.9	26.4	1040	1043	1041	East & North East	1.2	23.13	8.72	57.4	88.6	76.4	0.0
31-Dec-21	23.1	32.4	26.5	1040	1043	1042	East & North East	1.2	22.69	10.47	60.8	90.7	78.4	0.0
Remarks:	Total Rainfall for the month			13.0 mm.		Wind speed and Wind direction sensor bearing changed on 28/12/2021.								



COASTAL ENERGEN PRIVATE LIMITED
2 X 600 MW MUTIARA THERMAL POWER PLANT
CONTINUOUS STACK EMISSION MONITORING REPORT

Daily Average from 01.07.2021 to 31.12.2021

UNIT-1																							
Jul-21				Aug-21				Sep-21				Oct-21				Nov-21				Dec-21			
Date	SPM	SO2	NOx	Date	SPM	SO2	NOx	Date	SPM	SO2	NOx	Date	SPM	SO2	NOx	Date	SPM	SO2	NOx	Date	SPM	SO2	NOx
	mg/Nm³	mg/Nm³	mg/Nm³		mg/Nm³	mg/Nm³	mg/Nm³		mg/Nm³	mg/Nm³	mg/Nm³		mg/Nm³	mg/Nm³	mg/Nm³		mg/Nm³	mg/Nm³	mg/Nm³		mg/Nm³	mg/Nm³	mg/Nm³
1-Jul-21	Plant not in operation	1-Aug-21	Plant not in operation			1-Sep-21	Plant not in operation	1-Oct-21	Plant not in operation			1-Nov-21	Plant not in operation	1-Dec-21	Plant not in operation								
2-Jul-21		2-Aug-21				2-Sep-21		2-Oct-21				2-Nov-21		2-Dec-21									
3-Jul-21		3-Aug-21	39	130	228	3-Sep-21		3-Oct-21				3-Nov-21		3-Dec-21									
4-Jul-21		4-Aug-21	37	119	206	4-Sep-21		4-Oct-21				4-Nov-21		4-Dec-21									
5-Jul-21		5-Aug-21	*	119	192	5-Sep-21		5-Oct-21				5-Nov-21		5-Dec-21									
6-Jul-21		6-Aug-21	31	129	186	6-Sep-21		6-Oct-21				6-Nov-21		6-Dec-21									
7-Jul-21		7-Aug-21	32	160	183	7-Sep-21		7-Oct-21				7-Nov-21		7-Dec-21									
8-Jul-21		8-Aug-21	32	148	193	8-Sep-21		8-Oct-21				8-Nov-21		8-Dec-21									
9-Jul-21		9-Aug-21	28	142	231	9-Sep-21		9-Oct-21				9-Nov-21		9-Dec-21									
10-Jul-21		10-Aug-21	29	108	136	10-Sep-21		10-Oct-21				10-Nov-21		10-Dec-21									
11-Jul-21		11-Aug-21	32	99	128	11-Sep-21		11-Oct-21	44	148	340	11-Nov-21		11-Dec-21									
12-Jul-21		12-Aug-21	34	84	129	12-Sep-21		12-Oct-21	45	147	276	12-Nov-21		12-Dec-21									
13-Jul-21		13-Aug-21	41	97	100	13-Sep-21		13-Oct-21	40	142	253	13-Nov-21		13-Dec-21									
14-Jul-21		14-Aug-21	30	80	150	14-Sep-21		14-Oct-21	32	123	307	14-Nov-21		14-Dec-21									
15-Jul-21		15-Aug-21	Plant not in operation			15-Sep-21		15-Oct-21	31	104	275	15-Nov-21	Plant not in operation	15-Dec-21									
16-Jul-21		16-Aug-21				16-Sep-21		16-Oct-21	32	109	289	16-Nov-21		16-Dec-21									
17-Jul-21		17-Aug-21	42	127	71	17-Sep-21	25	94	111	17-Oct-21	32	124		298		17-Nov-21	17-Dec-21						
18-Jul-21		18-Aug-21	39	235	152	18-Sep-21	30	123	156	18-Oct-21	Plant not in operation			18-Nov-21		18-Dec-21							
19-Jul-21		19-Aug-21	37	236	212	19-Sep-21	25	135	154	19-Oct-21				19-Nov-21		19-Dec-21							
20-Jul-21		20-Aug-21	44	143	174	20-Sep-21	44	117	127	20-Oct-21				20-Nov-21		20-Dec-21							
21-Jul-21		21-Aug-21	43	135	233	21-Sep-21	44	108	93	21-Oct-21	31	133		193		21-Nov-21	21-Dec-21						
22-Jul-21		22-Aug-21	40	132	247	22-Sep-21	45	84	112	22-Oct-21	Plant not in operation			22-Nov-21		22-Dec-21							
23-Jul-21		23-Aug-21	40	135	205	23-Sep-21	45	*	*	23-Oct-21				23-Nov-21		23-Dec-21							
24-Jul-21		24-Aug-21	Plant not in operation			24-Sep-21	45	*	*	24-Oct-21				24-Nov-21		24-Dec-21							
25-Jul-21		25-Aug-21				25-Sep-21	45	*	*	25-Oct-21				25-Nov-21		25-Dec-21							
26-Jul-21		26-Aug-21				26-Sep-21	45	*	*	26-Oct-21				26-Nov-21		26-Dec-21							
27-Jul-21		27-Aug-21				27-Sep-21	44	*	*	27-Oct-21				27-Nov-21		27-Dec-21							
28-Jul-21		28-Aug-21				28-Sep-21	44	*	*	28-Oct-21				28-Nov-21		28-Dec-21							
29-Jul-21		29-Aug-21				29-Sep-21	30	*	*	29-Oct-21				29-Nov-21		29-Dec-21							
30-Jul-21		30-Aug-21				30-Sep-21	Plant not in operation			30-Oct-21				30-Nov-21		30-Dec-21							
31-Jul-21		31-Aug-21								31-Oct-21						31-Dec-21							
Remarks:	-			Remarks:	* SPM Analyser problem			Remarks:	* Analyzer problem			Remarks:	-			Remarks:	-			Remarks:	-		



COASTAL ENERGEN PRIVATE LIMITED
2 X 600 MW MUTIARA THERMAL POWER PLANT
CONTINUOUS STACK EMISSION MONITORING REPORT

Daily Average from 01.07.2021 to 31.12.2021

UNIT-2																							
Jul-21				Aug-21				Sep-21				Oct-21				Nov-21				Dec-21			
Date	SPM	SO2	NOx	Date	SPM	SO2	NOx	Date	SPM	SO2	NOx	Date	SPM	SO2	NOx	Date	SPM	SO2	NOx	Date	SPM	SO2	NOx
	mg/Nm ³	mg/Nm ³	mg/Nm ³		mg/Nm ³	mg/Nm ³	mg/Nm ³		mg/Nm ³	mg/Nm ³	mg/Nm ³		mg/Nm ³	mg/Nm ³	mg/Nm ³		mg/Nm ³	mg/Nm ³	mg/Nm ³		mg/Nm ³	mg/Nm ³	mg/Nm ³
1-Jul-21	23	92	207	1-Aug-21	Plant not in operation	Plant not in operation	Plant not in operation	1-Sep-21	Plant not in operation	Plant not in operation	Plant not in operation	1-Oct-21	Plant not in operation	Plant not in operation	Plant not in operation	1-Nov-21	Plant not in operation	Plant not in operation	Plant not in operation	1-Dec-21	Plant not in operation		
2-Jul-21	24	104	213	2-Aug-21				2-Sep-21				2-Oct-21				2-Nov-21				2-Dec-21			
3-Jul-21	28	119	245	3-Aug-21				3-Sep-21				3-Oct-21				3-Nov-21				3-Dec-21			
4-Jul-21	29	30	*	4-Aug-21				4-Sep-21				4-Oct-21				4-Nov-21				4-Dec-21	45	149	*
5-Jul-21	26	91	*	5-Aug-21				5-Sep-21				5-Oct-21				5-Nov-21				5-Dec-21	45	186	*
6-Jul-21	28	119	*	6-Aug-21				6-Sep-21				6-Oct-21				6-Nov-21				6-Dec-21	45	141	*
7-Jul-21	29	120	*	7-Aug-21				7-Sep-21				7-Oct-21				7-Nov-21				7-Dec-21	45	142	*
8-Jul-21	28	124	*	8-Aug-21				8-Sep-21				8-Oct-21				8-Nov-21				8-Dec-21	45	152	*
9-Jul-21	31	80	*	9-Aug-21				9-Sep-21				9-Oct-21				9-Nov-21				9-Dec-21	45	146	*
10-Jul-21	Plant not in operation	Plant not in operation	Plant not in operation	10-Aug-21				10-Sep-21				10-Oct-21				10-Nov-21				10-Dec-21	45	159	*
11-Jul-21				11-Aug-21				11-Sep-21				11-Oct-21				11-Nov-21				11-Dec-21	45	165	*
12-Jul-21				12-Aug-21				12-Sep-21				12-Oct-21				12-Nov-21	Plant not in operation	Plant not in operation	Plant not in operation	12-Dec-21	Plant not in operation		
13-Jul-21				13-Aug-21				13-Sep-21				13-Oct-21				13-Nov-21				13-Dec-21			
14-Jul-21				14-Aug-21				14-Sep-21				14-Oct-21				14-Nov-21				14-Dec-21			
15-Jul-21				15-Aug-21				15-Sep-21				15-Oct-21				15-Nov-21				15-Dec-21			
16-Jul-21				16-Aug-21				16-Sep-21				16-Oct-21				16-Nov-21				16-Dec-21	Plant not in operation		
17-Jul-21				17-Aug-21				17-Sep-21				17-Oct-21				17-Nov-21				17-Dec-21			
18-Jul-21				18-Aug-21				18-Sep-21				18-Oct-21				18-Nov-21				18-Dec-21			
19-Jul-21				19-Aug-21				19-Sep-21				19-Oct-21				19-Nov-21				19-Dec-21			
20-Jul-21				20-Aug-21				20-Sep-21				20-Oct-21				20-Nov-21				20-Dec-21			
21-Jul-21				21-Aug-21				21-Sep-21				21-Oct-21				21-Nov-21				21-Dec-21	45	164	*
22-Jul-21				22-Aug-21				22-Sep-21				22-Oct-21				22-Nov-21				22-Dec-21	45	162	*
23-Jul-21				23-Aug-21				23-Sep-21				23-Oct-21				23-Nov-21				23-Dec-21	45	153	*
24-Jul-21				24-Aug-21				24-Sep-21				24-Oct-21				24-Nov-21	*	*	*	24-Dec-21	45	152	*
25-Jul-21				25-Aug-21				25-Sep-21				25-Oct-21				25-Nov-21	*	*	*	25-Dec-21	45	142	*
26-Jul-21				26-Aug-21				26-Sep-21				26-Oct-21				26-Nov-21	45	122	*	26-Dec-21	45	136	*
27-Jul-21				27-Aug-21				27-Sep-21				27-Oct-21				27-Nov-21	Plant not in operation			27-Dec-21	45	158	*
28-Jul-21				28-Aug-21				28-Sep-21				28-Oct-21				28-Nov-21				28-Dec-21	45	**	**
29-Jul-21				29-Aug-21				29-Sep-21				29-Oct-21				29-Nov-21				29-Dec-21	Plant not in operation		
30-Jul-21				30-Aug-21				30-Sep-21				30-Oct-21				30-Nov-21				30-Dec-21			
31-Jul-21				31-Aug-21								31-Oct-21								31-Dec-21			
Remarks:	* Analyzer problem			Remarks:	-			Remarks:	-			Remarks:	* Analyzer problem			Remarks:	* Analyzer problem **Analyzers under maintainance						



SMS LABS SERVICES PRIVATE LIMITED

TEST REPORT



TC-6118

Page 1 of 1

Report No : QEN21120155-01

Report Date : 30 Dec 2021

Customer Name : M/s. COASTAL ENERGEN PVT LTD
Customer Address : 2 x 600 MW Mutiara Thermal Power Plant,
Melamaruthur Village, Ottapidaram Taluk, Tuticorin - 628105.
Sample Name : Air Sampling Date & Time : 21 to 22 Dec 2021
12.00 pm to 12.00 pm
Sample Description : Ambient Air Quality Sample Received on : 24 Dec 2021
Reference : Test Request Form Dated 22.12.2021 Test Started on : 24 Dec 2021
Sample Drawn By : Laboratory Test Completed on : 30 Dec 2021
Sample Location : Near Main Office Wind Direction : (SW-NE)
Sample Procedure : IS 5182 Ambient Condition : Partly Sunny
Relative Humidity : 59% Ambient Temperature : 32 °C

TEST RESULTS

S.NO	Parameter	Test Method	Results	Unit	Limit as per NAAQS Specification
Chemical					
1	Carbon Monoxide as CO (8 hrs)	IS 5182 (Part 10)	BLQ(LOQ:1.14)	mg/m ³	02 Max
2	Nitrogen dioxide as NO ₂	IS 5182 (Part 06)	23.0	µg/m ³	80 Max
3	Particulate Matter (PM ₁₀)	IS 5182 (Part 23)	61.8	µg/m ³	100 Max
4	Particulate Matter (PM _{2.5})	IS 5182 (Part 24)	27.3	µg/m ³	60 Max
5	Sulphur Dioxide as SO ₂	IS 5182 (Part 02)	10.6	µg/m ³	80 Max
Polycyclic Aromatic Hydrocarbons					
6	Benzo(a)Pyrene (Particulate Phase)	SMSLA/GS/SOP/06	BLQ (LOQ:0.05)	ng/m ³	01 Max
Trace Metal Elements					
7	Mercury	Compendium Method IO-3.4	BLQ(LOQ:11.0)	ng/m ³	--
Volatile Organic Compounds					
8	Benzene	SMSLA/GM/SOP/07	BLQ(LOQ:1.0)	µg/m ³	05 Max

Note : BLQ: Below Limit of Quantification LOQ: Limit of Quantification

Conclusion : The above tested sample conforms the NAAQ standards for the above tested parameters.

/***** End of the Report *****/

R. PRABHU
Senior Chemist

Laboratory Address : 39/6, Thiruvallur High Road, Puduchatram Post, Thirumazhisai Via, Poonamallee Taluk, Chennai - 600124.
Certified By : ISO 9001 & ISO 45001.

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SMS LABS SERVICES PRIVATE LIMITED

TEST REPORT



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Page 1 of 1

Report No : QEN21120155-02

Report Date : 30 Dec 2021

Customer Name : M/s. COASTAL ENERGEN PVT LTD
Customer Address : 2 x 600 MW Mutiara Thermal Power Plant,
Melamaruthur Village, Otta pidaram Taluk, Tuticorin - 628105.
Sample Name : Air Sampling Date & Time : 21 to 22 Dec 2021
12.30 pm to 12.30 pm
Sample Description : Ambient Air Quality Sample Received on : 24 Dec 2021
Reference : Test Request Form Dated 22.12.2021 Test Started on : 24 Dec 2021
Sample Drawn By : Laboratory Test Completed on : 30 Dec 2021
Sample Location : Near Salt Gate Wind Direction : (NE-SW)
Sample Procedure : IS 5182 Ambient Condition : Partly Sunny
Relative Humidity : 59% Ambient Temperature : 32°C

TEST RESULTS

S.NO	Parameter	Test Method	Results	Unit	Limit as per NAAQS Specification
Chemical					
1	Carbon Monoxide as CO (8 hrs)	IS 5182 (Part 10)	BLQ(LOQ:1.14)	mg/m ³	02 Max
2	Nitrogen dioxide as NO ₂	IS 5182 (Part 06)	21.7	µg/m ³	80 Max
3	Particulate Matter (PM ₁₀)	IS 5182 (Part 23)	63.4	µg/m ³	100 Max
4	Particulate Matter (PM _{2.5})	IS 5182 (Part 24)	28.9	µg/m ³	60 Max
5	Sulphur Dioxide as SO ₂	IS 5182 (Part 02)	11.0	µg/m ³	80 Max
Polycyclic Aromatic Hydrocarbons					
6	Benzo(a)Pyrene (Particulate Phase)	SMSLA/GS/SOP/06	BLQ (LOQ:0.05)	ng/m ³	01 Max
Trace Metal Elements					
7	Mercury	Compendium Method IO-3.4	BLQ(LOQ:11.0)	ng/m ³	--
Volatile Organic Compounds					
8	Benzene	SMSLA/GM/SOP/07	BLQ(LOQ:1.0)	µg/m ³	05 Max

Note : BLQ: Below Limit of Quantification LOQ: Limit of Quantification

Conclusion : The above tested sample conforms the NAAQ standards for the above tested parameters.

/***** End of the Report *****/

R.P.A.
R. PRABHU
Senior Chemist

Laboratory Address : 39/6, Thiruvallur High Road, Puduchatram Post, Thirumazhisai Via, Poonamallee Taluk, Chennai - 600124.
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TEST REPORT



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Report No : QEN21120155-03

Report Date : 30 Dec 2021

Customer Name : M/s. COASTAL ENERGEN PVT LTD
Customer Address : 2 x 600 MW Mutiara Thermal Power Plant,
Melamaruthur Village, Ottapidaram Taluk, Tuticorin - 628105.
Sample Name : Air Sampling Date & Time : 21 to 22 Dec 2021
12.45 pm to 12.45 pm
Sample Description : Ambient Air Quality Sample Received on : 24 Dec 2021
Reference : Test Request Form Dated 22.12.2021 Test Started on : 24 Dec 2021
Sample Drawn By : Laboratory Test Completed on : 30 Dec 2021
Sample Location : Near Watch Tower - 8 Wind Direction : (SW-NE)
Sample Procedure : IS 5182 Ambient Condition : Partly Sunny
Relative Humidity : 59% Ambient Temperature : 32°C

TEST RESULTS

S.NO	Parameter	Test Method	Results	Unit	Limit as per NAAQS Specification
Chemical					
1	Carbon Monoxide as CO (8 hrs)	IS 5182 (Part 10)	BLQ(LOQ:1.14)	mg/m ³	02 Max
2	Nitrogen dioxide as NO ₂	IS 5182 (Part 06)	19.3	µg/m ³	80 Max
3	Particulate Matter (PM10)	IS 5182 (Part 23)	55.6	µg/m ³	100 Max
4	Particulate Matter (PM2.5)	IS 5182 (Part 24)	26.1	µg/m ³	60 Max
5	Sulphur Dioxide as SO ₂	IS 5182 (Part 02)	9.9	µg/m ³	80 Max
Polycyclic Aromatic Hydrocarbons					
6	Benzo(a)Pyrene (Particulate Phase)	SMSLA/GS/SOP/06	BLQ (LOQ:0.05)	ng/m ³	01 Max
Trace Metal Elements					
7	Mercury	Compendium Method IO-3.4	BLQ(LOQ:11.0)	ng/m ³	--
Volatile Organic Compounds					
8	Benzene	SMSLA/GM/SOP/07	BLQ(LOQ:1.0)	µg/m ³	05 Max

Note : BLQ: Below Limit of Quantification LOQ: Limit of Quantification

Conclusion : The above tested sample conforms the NAAQ standards for the above tested parameters.

/***** End of the Report *****/

R.P.H.

R. PRABHU
Senior Chemist

Laboratory Address : 39/6, Thiruvallur High Road, Puduchatram Post, Thirumazhisai Via, Poonamallee Taluk, Chennai - 600124.
Certified By : ISO 9001 & ISO 45001.

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SMS LABS SERVICES PRIVATE LIMITED

TEST REPORT



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Report No : QEN21120155-04

Report Date : 30 Dec 2021

Customer Name : M/s. COASTAL ENERGEN PVT LTD
Customer Address : 2 x 600 MW Mutiara Thermal Power Plant,
Melamaruthur Village, Ottapidaram Taluk, Tuticorin - 628105.
Sample Name : Air **Sampling Date & Time** : 21 to 22 Dec 2021
01.00 pm to 01.00 pm
Sample Description : Ambient Air Quality **Sample Received on** : 24 Dec 2021
Reference : Test Request Form Dated 22.12.2021 **Test Started on** : 24 Dec 2021
Sample Drawn By : Laboratory **Test Completed on** : 30 Dec 2021
Sample Location : Near Batching Plant Gate **Wind Direction** : (SW-NE)
Sample Procedure : IS 5182 **Ambient Condition** : Partly Sunny
Relative Humidity : 59% **Ambient Temperature** : 32°C

TEST RESULTS

S.NO	Parameter	Test Method	Results	Unit	Limit as per NAAQS Specification
Chemical					
1	Carbon Monoxide as CO (8 hrs)	IS 5182 (Part 10)	BLQ(LOQ:1.14)	mg/m ³	02 Max
2	Nitrogen dioxide as NO ₂	IS 5182 (Part 06)	21.7	µg/m ³	80 Max
3	Particulate Matter (PM ₁₀)	IS 5182 (Part 23)	58.8	µg/m ³	100 Max
4	Particulate Matter (PM _{2.5})	IS 5182 (Part 24)	25.5	µg/m ³	60 Max
5	Sulphur Dioxide as SO ₂	IS 5182 (Part 02)	10.1	µg/m ³	80 Max
Polycyclic Aromatic Hydrocarbons					
6	Benzo(a)Pyrene (Particulate Phase)	SMSLA/GS/SOP/06	BLQ (LOQ:0.05)	ng/m ³	01 Max
Trace Metal Elements					
7	Mercury	Compendium Method IO-3.4	BLQ(LOQ:11.0)	ng/m ³	--
Volatile Organic Compounds					
8	Benzene	SMSLA/GM/SOP/07	BLQ(LOQ:1.0)	µg/m ³	05 Max

Note : BLQ: Below Limit of Quantification LOQ: Limit of Quantification

Conclusion : The above tested sample conforms the NAAQ standards for the above tested parameters.

/***** End of the Report *****/

R. Prabhu
R. PRABHU
Senior Chemist

Laboratory Address : 39/6, Thiruvallur High Road, Puduchatram Post, Thirumazhisai Via, Poonamallee Taluk, Chennai - 600124.
Certified By : ISO 9001 & ISO 45001.

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SMS LABS SERVICES PRIVATE LIMITED

TEST REPORT



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Report No : QEN21120155-05

Report Date : 30 Dec 2021

Customer Name : M/s. COASTAL ENERGEN PVT LTD
Customer Address : 2 x 600 MW Mutiara Thermal Power Plant,
Melamaruthur Village, Ottapidaram Taluk, Tuticorin - 628105.
Sample Name : Air **Sampling Date & Time** : 21 to 22 Dec 2021
01.30 pm to 01.30 pm
Sample Description : Ambient Air Quality **Sample Received on** : 24 Dec 2021
Reference : Test Request Form Dated 22.12.2021 **Test Started on** : 24 Dec 2021
Sample Drawn By : Laboratory **Test Completed on** : 30 Dec 2021
Sample Location : Near Crusher House **Wind Direction** : (NE-SW)
Sample Procedure : IS 5182 **Ambient Condition** : Partly Sunny
Relative Humidity : 59% **Ambient Temperature** : 32°C

TEST RESULTS

S.NO	Parameter	Test Method	Results	Unit	Limit as per NAAQS Specification
Chemical					
1	Carbon Monoxide as CO (8 hrs)	IS 5182 (Part 10)	BLQ(LOQ:1.14)	mg/m ³	02 Max
2	Nitrogen dioxide as NO ₂	IS 5182 (Part 06)	20.8	µg/m ³	80 Max
3	Particulate Matter (PM ₁₀)	IS 5182 (Part 23)	60.1	µg/m ³	100 Max
4	Particulate Matter (PM _{2.5})	IS 5182 (Part 24)	28.0	µg/m ³	60 Max
5	Sulphur Dioxide as SO ₂	IS 5182 (Part 02)	11.3	µg/m ³	80 Max
Polycyclic Aromatic Hydrocarbons					
6	Benzo(a)Pyrene (Particulate Phase)	SMSLA/GS/SOP/06	BLQ (LOQ:0.05)	ng/m ³	01 Max
Trace Metal Elements					
7	Mercury	Compendium Method IO-3.4	BLQ(LOQ:11.0)	ng/m ³	--
Volatile Organic Compounds					
8	Benzene	SMSLA/GM/SOP/07	BLQ(LOQ:1.0)	µg/m ³	05 Max

Note : BLQ: Below Limit of Quantification LOQ: Limit of Quantification

Conclusion : The above tested sample conforms the NAAQ standards for the above tested parameters.

/***** End of the Report *****/


R. PRABHU
Senior Chemist

Laboratory Address : 39/6, Thiruvallur High Road, Puduchatram Post, Thirumazhisai Via, Poonamallee Taluk, Chennai - 600124.
Certified By : ISO 9001 & ISO 45001.

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SMS LABS SERVICES PRIVATE LIMITED

TEST REPORT



TC-6118

Page 1 of 1

Report No : QEN21120155-06

Report Date : 30 Dec 2021

Customer Name : M/s. COASTAL ENERGEN PVT LTD
Customer Address : 2 x 600 MW Mutiara Thermal Power Plant,
Melamaruthur Village, Ottapidaram Taluk, Tuticorin - 628105.
Sample Description : Stack Monitoring Sampling Date : 22 Dec 2021
Reference : Test Request Form Dated 22.12.2021 Sample Received on : 24 Dec 2021
Sample Drawn By : Laboratory Test Started on : 24 Dec 2021
Sample Location : Boiler Unit - II Chimney Test Completed on : 30 Dec 2021
Sample Procedure : SMSLA/EN/SOP/035 & 046
Diameter of Stack (m) : 7.5 m Ambient Temperature : 32°C

TEST RESULTS

S.NO	Parameter	Test Method	Unit	Results	(*Values are corrected in 6% O2 level)	Limit as per CPCB
Chemical						
1	Carbon Dioxide as CO ₂	SMSLA/EN/SOP/046	%	12.1	--	--
2	Carbon Monoxide as CO	SMSLA/EN/SOP/046	mg/Nm ³	174	--	--
3	Moisture Content	EPA 1-3	%	2.3	--	--
4	Nitrogen Oxides as NO _x	SMSLA/EN/SOP/046	mg/Nm ³	355	420	450 Max
5	Oxygen as O ₂	SMSLA/EN/SOP/046	%	8.3	--	--
6	Particulate Matter	IS 11255 (Part 01)	mg/Nm ³	23.6	27.9	50 Max
7	Stack temperature	IS 11255 (Part 03)	°C	150	--	--
8	Sulphur Dioxide as SO ₂	IS 11255 (Part 02)	mg/Nm ³	159	188	200 Max
9	Velocity	EPA 1-3	m/s	32.4	--	--
10	Volume of Gas Discharged	IS 11255 (Part 03)	Nm ³ /Hr	3624584	--	--
Trace Metal Elements						
11	Arsenic	EPA - 29	mg/m ³	BLQ(LOQ:0.00002)	--	--
12	Chromium	EPA - 29	mg/m ³	BLQ(LOQ:0.00002)	--	--
13	Lead	EPA - 29	mg/m ³	BLQ(LOQ:0.00002)	--	--
14	Mercury	EPA - 29	mg/m ³	BLQ(LOQ:0.00002)	--	0.03 Max

Note : BLQ: Below Limit of Quantification LOQ: Limit of Quantification

Conclusion: The above tested sample complies the CPCB standards for the above tested parameters.

/***** End of the Report *****/

R. PRABHU
Senior Chemist

Laboratory Address : 39/6, Thiruvallur High Road, Puduchatram Post, Thirumazhisai Via, Poonamallee Taluk, Chennai - 600124.
Certified By : ISO 9001 & ISO 45001.

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ANNEXURE - 2



COASTAL ENERGEN PVT LTD

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- Environment Clearance Compliance Status
- CRZ Clearance Compliance Status
- MONTHLY FLY ASH REPORT

Our Projects

Tuticorin has been identified by both the Central Government of India and State Government of Tamilnadu as a power generating centre for southern Tamilnadu lying as it does in the middle of the power corridor.

Situated only 13 kms from Tuticorin town, our project enjoys the following advantages:

- Close proximity to a major town (13 kms)
- Within 21 kms of a major port
- Excellent road, Rail & Air connectivity
- Excellent grid connectivity

The project has achieved fast progress since its inception.

- Land fully acquired
- PPA Agreement Signed
- MOEF Clearance issued
- Funding fully tied up and secured
- BTG order finalized
- Discussion with PGCIL for power evacuation
- Engineering Consultants appointed
- Manpower in place
- Site preparation completed
- Geo-technical investigations completed
- Construction water and power in place
- Water allocated by TWAD Board for process requirements

Welcome to Coastal Energen Pvt. Ltd.

Coal and Oil Group is a Rs. 2400 crores (US\$ 550 million) Integrated Energy Company involved in various aspects of Energy supplies including Coal trading, Mining, Shipping, Logistics and Power Generation.

Coastal Energen Pvt Ltd (ENERGEN), the Power Generating Flagship Company of the Coal and Oil Group, is setting up a 1200 MW coal fired thermal power plant in the district of Tuticorin in the State of Tamil Nadu, India.

Our maiden power project in Tuticorin, Tamil Nadu, South India is a logical extension of our multi disciplinary capabilities building on our diverse strengths and leveraging our varied experiences in "Fuel Management" which gives Coastal Energen a distinct advantage as a low cost Power Producer.

Approximately 60% of the cost of power comprises of fuel cost. Our group is one of the top suppliers of imported coal to some of the leading private and public power producers in India like Tata, Reliance, Torrent Power, Gujarat Electricity Board, Maharashtra State Electricity Board, Calcutta Electric and others. With such experience under our belt and a top notch management team guiding the project, we are in a comfortable position to effectively manage the cost of fuel and finally the cost of power generated.

[Home](#) | [About Us](#) | [Key Strengths](#) | [Core Team](#) | [Careers](#) | [Contact Us](#) | [Tenders](#)

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fueled by ideasonic

ANNEXURE - 3



COASTAL ENERGEN PRIVATE LIMITED

2 X 600 MW MUTIARA THERMAL POWER PLANT

BOREWELL WATER ANALYSIS REPORT - July'21

Sample Collected on 08.07.2021

S. No	PARAMETERS	UNIT	SAMPLE 1	SAMPLE 2	SAMPLE 3	SAMPLE 4
1	pH		8.55	7.62	7.91	7.63
2	Electrical conductivity	(μ s/cm)	6440	17660	3210	1920
3	Total Suspended Solids	ppm	30	291	18	12
4	Total Dissolved Solids	ppm	4186	11479	2086	1248
5	Total Hardness	ppm	650	2650	380	390
6	Calcium Hardness	ppm	261	1100	140	160
7	Magnesium Hardness	ppm	389	1550	240	230
8	Total Chloride	ppm	1136	6390	411	364
9	Sodium	ppm	1310	2780	1230	1065
10	Potassium	ppm	48	89	72	66
11	Lead	ppm	BDL	BDL	BDL	BDL
12	Boron	ppm	0.13	0.12	0.14	0.15
13	BOD	mg/l	1.86	2.24	1.52	1.41
14	DO	mg/l	5.61	6.23	5.02	5.44
15	COD	mg/l	68	82	78	58
16	Sulphate	ppm	348	512	212	214
17	Oil & Grease	mg/l	0.02	0.06	BDL	BDL
18	Mercury	ppm	BDL	BDL	BDL	BDL
19	Arsenic	ppm	BDL	BDL	BDL	BDL
20	Chromium	ppm	BDL	BDL	BDL	BDL

Remark -

Borewell Locations:

Sl.No.	Sample Identification	Borewell Location
1	SAMPLE 1	South West of Ash Bund (Near CAAQMS-3)
2	SAMPLE 2	South of Ash Bund
3	SAMPLE 3	South East of Ash Bund
4	SAMPLE 4	North East of Ash Bund

SAMPLE COLLECTED BY

[S. RAJESH KUMAR]

LAB CHEMIST

I. Venkathara



COASTAL ENERGEN PRIVATE LIMITED

2 X 600 MW MUTIARA THERMAL POWER PLANT

BOREWELL WATER ANALYSIS REPORT - August'21


Sample Collected on 12.08.2021


S. No	PARAMETERS	UNIT	SAMPLE 1	SAMPLE 2	SAMPLE 3	SAMPLE 4
1	pH		7.4	7.31	7.65	7.55
2	Electrical conductivity	(μ s/cm)	9340	17900	2890	2100
3	Total Suspended Solids	ppm	67	187	14	12
4	Total Dissolved Solids	ppm	6071	11635	1879	1365
5	Total Hardness	ppm	900	2400	340	290
6	Calcium Hardness	ppm	400	900	120	120
7	Magnesium Hardness	ppm	500	1500	220	170
8	Total Chloride	ppm	1562	5325	396	328
9	Sodium	ppm	1220	2740	1180	888
10	Potassium	ppm	42	78	59	60
11	Lead	ppm	BDL	BDL	BDL	BDL
12	Boron	ppm	0.1	0.11	0.1	0.08
13	BOD	mg/l	1.66	2.05	1.72	1.62
14	DO	mg/l	5.04	5.12	5.31	5.27
15	COD	mg/l	62	78	69	72
16	Sulphate	ppm	322	508	234	194
17	Oil & Grease	mg/l	0.01	0.04	BDL	BDL
18	Mercury	ppm	BDL	BDL	BDL	BDL
19	Arsenic	ppm	BDL	BDL	BDL	BDL
20	Chromium	ppm	BDL	BDL	BDL	BDL

Remark -

Borewell Locations:

Sl.No.	Sample Identification	Borewell Location
1	SAMPLE 1	South West of Ash Bund (Near CAAQMS-3)
2	SAMPLE 2	South of Ash Bund
3	SAMPLE 3	South East of Ash Bund
4	SAMPLE 4	North East of Ash Bund


SAMPLE COLLECTED BY
[S. RAJESH KUMAR]


LAB CHEMIST
[L. Venkatarao]



COASTAL ENERGEN PRIVATE LIMITED

2 X 600 MW MUTIARA THERMAL POWER PLANT

BOREWELL WATER ANALYSIS REPORT - September'21


Sample Collected on 06.09.2021

S. No	PARAMETERS	UNIT	SAMPLE 1	SAMPLE 2	SAMPLE 3	SAMPLE 4
1	pH		8.32	8.02	7.78	7.33
2	Electrical conductivity	(μ s/cm)	7520	14550	2710	2060
3	Total Suspended Solids	ppm	177	155	12	10
4	Total Dissolved Solids	ppm	4888	9457	1762	1339
5	Total Hardness	ppm	840	2300	300	270
6	Calcium Hardness	ppm	240	800	110	110
7	Magnesium Hardness	ppm	600	1500	190	160
8	Total Chloride	ppm	1420	6035	374	290
9	Sodium	ppm	1210	2640	1140	745
10	Potassium	ppm	38	66	52	58
11	Lead	ppm	BDL	BDL	BDL	BDL
12	Boron	ppm	0.1	0.11	0.11	0.06
13	BOD	mg/l	1.62	2.02	1.65	1.78
14	DO	mg/l	6.4	6.8	5.24	5.09
15	COD	mg/l	58	68	61	64
16	Sulphate	ppm	312	496	212	188
17	Oil & Grease	mg/l	0.01	0.03	BDL	BDL
18	Mercury	ppm	BDL	BDL	BDL	BDL
19	Arsenic	ppm	BDL	BDL	BDL	BDL
20	Chromium	ppm	BDL	BDL	BDL	BDL
Remark -						

Borewell Locations:

Sl.No.	Sample Identification	Borewell Location
1	SAMPLE 1	South West of Ash Bund (Near CAAQMS-3)
2	SAMPLE 2	South of Ash Bund
3	SAMPLE 3	South East of Ash Bund
4	SAMPLE 4	North East of Ash Bund


SAMPLE COLLECTED BY
[S. RAJESH KUMAR]


LAB CHEMIST
L. Venkatharam

COASTAL ENERGEN PRIVATE LIMITED

2 X 600 MW MUTIARA THERMAL POWER PLANT

BOREWELL WATER ANALYSIS REPORT - October'21


Sample Collected on 12.10.2021

S. No	PARAMETERS	UNIT	SAMPLE 1	SAMPLE 2	SAMPLE 3	SAMPLE 4
1	pH		7.32	7.65	7.86	8.1
2	Electrical conductivity	(μ S/cm)	7660	15580	13650	5180
3	Total Suspended Solids	ppm	12	18	20	10
4	Total Dissolved Solids	ppm	4979	10127	8872	3367
5	Total Hardness	ppm	768	1432	1160	400
6	Calcium Hardness	ppm	372	400	400	280
7	Magnesium Hardness	ppm	396	1032	760	120
8	Total Chloride	ppm	1345	5487.6	4580.1	992.6
9	Sodium	ppm	1180	1120	1610	650
10	Potassium	ppm	58	86	92	62
11	Lead	ppm	BDL	BDL	BDL	BDL
12	Boron	ppm	0.2	0.11	0.18	0.16
13	BOD	mg/l	1.03	1.92	2.01	1.12
14	DO	mg/l	5.92	6.6	5.12	5.44
15	COD	mg/l	68	90	82	72
16	Sulphate	ppm	361	488	410	322
17	Oil & Grease	mg/l	0.02	0.1	0.12	0.1
18	Mercury	ppm	BDL	BDL	BDL	BDL
19	Arsenic	ppm	BDL	BDL	BDL	BDL
20	Chromium	ppm	BDL	BDL	BDL	BDL
Remark -						

Borewell Locations:

Sl.No.	Sample Identification	Borewell Location
1	SAMPLE 1	South West of Ash Bund (Near CAAQMS-3)
2	SAMPLE 2	South of Ash Bund
3	SAMPLE 3	South East of Ash Bund
4	SAMPLE 4	North East of Ash Bund


SAMPLE COLLECTED BY
S. RAJESH KUMAR


LAB CHEMIST
L. Varadachari

COASTAL ENERGEN PRIVATE LIMITED

2 X 600 MW MUTIARA THERMAL POWER PLANT

BOREWELL WATER ANALYSIS REPORT - November'21

Sample Collected on 10.11.2021

S. No	PARAMETERS	UNIT	SAMPLE 1	SAMPLE 2	SAMPLE 3	SAMPLE 4
1	pH		7.54	7.85	7.75	8.15
2	Electrical conductivity	(μ s/cm)	8800	1270	4750	1110
3	Total Suspended Solids	ppm	11	3	19	15
4	Total Dissolved Solids	ppm	5720	825.5	3087.5	721.5
5	Total Hardness	ppm	960	360	660	330
6	Calcium Hardness	ppm	440	120	290	110
7	Magnesium Hardness	ppm	520	240	370	220
8	Total Chloride	ppm	1219.48	226.88	680.64	141.8
9	Sodium	ppm	1210	1150	1710	720
10	Potassium	ppm	60	84	90	64
11	Lead	ppm	BDL	BDL	BDL	BDL
12	Boron	ppm	0.12	0.14	0.16	0.14
13	BOD	mg/l	1.12	1.82	1.97	1.14
14	DO	mg/l	4.16	6.08	4.8	6.4
15	COD	mg/l	70	86	78	68
16	Sulphate	ppm	358	496	416	342
17	Oil & Grease	mg/l	BDL	BDL	BDL	BDL
18	Mercury	ppm	BDL	BDL	BDL	BDL
19	Arsenic	ppm	BDL	BDL	BDL	BDL
20	Chromium	ppm	BDL	BDL	BDL	BDL
Remark -						

Borewell Locations:

Sl.No.	Sample Identification	Borewell Location
1	SAMPLE 1	South West of Ash Bund (Near CAAQMS-3)
2	SAMPLE 2	South of Ash Bund
3	SAMPLE 3	South East of Ash Bund
4	SAMPLE 4	North East of Ash Bund

S. Thy.
SAMPLE COLLECTED BY
[S. RAJESH KUMAR]

LAB CHEMIST
[Signature]



COASTAL ENERGEN PRIVATE LIMITED

2 X 600 MW MUTIARA THERMAL POWER PLANT

BOREWELL WATER ANALYSIS REPORT - December'21

Sample Collected on 06.12.2021

S. No	PARAMETERS	UNIT	SAMPLE 1	SAMPLE 2	SAMPLE 3	SAMPLE 4
1	pH		7.75	7.96	8.02	7.9
2	Electrical conductivity	(μ S/cm)	5170	1320	3600	2020
3	Total Suspended Solids	ppm	15	4	22	17
4	Total Dissolved Solids	ppm	3360.5	858	2340	1313
5	Total Hardness	ppm	500	220	440	400
6	Calcium Hardness	ppm	190	120	180	160
7	Magnesium Hardness	ppm	310	100	260	240
8	Total Chloride	ppm	779.9	127.6	432.49	368.68
9	Sodium	ppm	1040	1170	1250	1080
10	Potassium	ppm	52	76	80	70
11	Lead	ppm	BDL	BDL	BDL	BDL
12	Boron	ppm	0.11	0.15	0.18	0.19
13	BOD	mg/l	1.5	1.8	1.86	1.32
14	DO	mg/l	5.6	5.2	5.2	5.6
15	COD	mg/l	65	80	82	62
16	Sulphate	ppm	286	215	242	230
17	Oil & Grease	mg/l	BDL	BDL	BDL	BDL
18	Mercury	ppm	BDL	BDL	BDL	BDL
19	Arsenic	ppm	BDL	BDL	BDL	BDL
20	Chromium	ppm	BDL	BDL	BDL	BDL
Remark -						

Borewell Locations:

Sl.No.	Sample Identification	Borewell Location
1	SAMPLE 1	South West of Ash Bund (Near CAAQMS-3)
2	SAMPLE 2	South of Ash Bund
3	SAMPLE 3	South East of Ash Bund
4	SAMPLE 4	North East of Ash Bund

S. P. Jy.
SAMPLE COLLECTED BY
[S. RAJESH KUMAR]

[Signature]
LAB CHEMIST
[Signature]

Report No : QEN21120155-07

Report Date : 30 Dec 2021

Customer Name : M/s. COASTAL ENERGEN PVT LTD
 Customer Address : 2 x 600 MW Mutiara Thermal Power Plant,
 Melamaruthur Village, Ottapidaram Taluk, Tuticorin - 628105.
 Sample Name : Water Sample Quantity : 5 Ltr x 1 No
 Sample Description : Ground Water Sampling Date : 21 Dec 2021
 Reference : Test Request Form Dated 22.12.2021 Sample Received on : 24 Dec 2021
 Sample Drawn By : Laboratory Test Started on : 24 Dec 2021
 Sample Location : South of Ash Pond Test Completed on : 30 Dec 2021
 Sample Procedure : SMSLA/EN/SOP/001

TEST RESULTS

S.NO	Parameter	Test Method	Unit	Results
Clause 4, Table 1 Organoleptic And Physical parameters				
1	Colour	IS 3025 (Part 4)	Hazen	5
2	Odour	IS 3025 (Part 05)	--	Agreeable
3	pH Value	IS 3025 (Part 11)	--	7.89
4	Taste	IS 3025 (Part 08)	--	Dis Agreeable
5	Total Dissolved Solids	IS 3025 (Part 16)	mg/L	1048
6	Turbidity	IS 3025 (Part 10)	NTU	1.0
Clause 4, Table 2 General Parameters Concerning Substances Undesirable In Excessive Amounts				
7	Anionic Detergents (as MBAS)	Annex K of IS 13428	mg/L	BLQ(LOQ:0.05)
8	Calcium (as Ca)	IS 3025 (Part 40)	mg/L	80
9	Chloride (as Cl)	IS 3025 (Part 32)	mg/L	281
10	Fluoride (as F)	4500 F B,D APHA 23rd Edition 2017	mg/L	0.8
11	Free Residual Chlorine	IS 3025 (Part 26)	mg/L	BLQ(LOQ:0.1)
12	Iron (as Fe)	IS 3025 (Part 53)	mg/L	0.18
13	Magnesium (as Mg)	IS 3025 (Part 46)	mg/L	28
14	Mineral Oil	IS 3025 (Part 39)	mg/L	BLQ(LOQ:0.50)
15	Nitrate (as NO ₃)	IS 3025 (Part 34)	mg/L	27
16	Phenolic Compound (as C ₆ H ₅ OH)	IS 3025 (Part 43)	mg/L	BLQ(LOQ:0.001)

R.P.M.
R. PRABHU
 Senior Chemist

Report No : QEN21120155-07

Report Date : 30 Dec 2021

S.NO	Parameter	Test Method	Unit	Results
17	Sulphate (as SO ₄)	IS 3025 (Part 24)	mg/L	343
18	Total Hardness (as CaCO ₃)	IS 3025 (Part 21)	mg/L	316
Clause 4, Table 3 Parameters Concerning Toxic Substances				
19	Cyanide (as CN)	IS 3025 (Part 27)	mg/L	BLQ(LOQ:0.01)
Others				
20	Total suspended solids (TSS)	IS 3025 (Part 17)	mg/L	BLQ(LOQ:2.0)
21	BOD at 20°C for 5 days	APHA 23rd Edition:5210 B 2017	mg/L	BLQ(LOQ:2.0)
22	Chemical Oxygen Demand	IS 3025 (Part 58)	mg/L	10
Polycyclic Aromatic Hydrocarbons				
23	PAHs	SMSLA/GS/SOP/01	mg/L	BLQ(LOQ:0.00001)each
Trace Metal Elements				
24	Aluminium	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
25	Arsenic	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
26	Boron	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
27	Cadmium	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
28	Chromium	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
29	Copper	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
30	Lead	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
31	Manganese	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
32	Mercury	EPA 200.8	mg/L	BLQ (LOQ:0.0005)
33	Nickel	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
34	Selenium	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
35	Zinc	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)

Note : BLQ: Below Limit of Quantification, LOQ: Limit of Quantification.

/***** End of the Report *****/

R. Prabhu
R. PRABHU
Senior Chemist

Laboratory Address : 39/6, Thiruvallur High Road, Puduchatram Post, Thirumazhisai Via, Poonamallee Taluk, Chennai - 600124.
Certified By : ISO 9001 & ISO 45001.

- ★ The results relate only to the items tested.
- ★ Reports shall not be reproduced except in full without the approval of the Laboratory.
- ★ The Laboratory's responsibility under this report is limited to proven wilful negligence and will in no case be more than the invoiced amount. The Laboratory accepts no liability with regard to the origin or source from which the sample(s) is/are said to be extracted.



SMS LABS SERVICES PRIVATE LIMITED

TEST REPORT



TC-6118

Page 1 of 2


Report No : QEN21120155-08

Report Date : 30 Dec 2021

Customer Name : M/s. COASTAL ENERGEN PVT LTD
Customer Address : 2 x 600 MW Mutiara Thermal Power Plant,
Melamaruthur Village, Ottapidaram Taluk, Tuticorin - 628105.
Sample Name : Water Sample Quantity : 5 Ltr x 1 No
Sample Description : Ground Water Sampling Date : 21 Dec 2021
Reference : Test Request Form Dated 22.12.2021 Sample Received on : 24 Dec 2021
Sample Drawn By : Laboratory Test Started on : 24 Dec 2021
Sample Location : North East of Ash Pond Test Completed on : 30 Dec 2021
Sample Procedure : SMSLA/EN/SOP/001

TEST RESULTS

S.NO	Parameter	Test Method	Unit	Results
Clause 4, Table 1 Organoleptic And Physical parameters				
1	Colour	IS 3025 (Part 04)	Hazen	50
2	Odour	IS 3025 (Part 05)	--	Dis Agreeable
3	pH Value	IS 3025 (Part 11)	--	8.24
4	Taste	IS 3025 (Part 08)	--	Dis Agreeable
5	Total Dissolved Solids	IS 3025 (Part 16)	mg/L	4228
6	Turbidity	IS 3025 (Part 10)	NTU	26.3
Clause 4, Table 2 General Parameters Concerning Substances Undesirable In Excessive Amounts				
7	Anionic Detergents (as MBAS)	Annex K of IS 13428	mg/L	BLQ(LOQ:0.05)
8	Calcium (as Ca)	IS 3025 (Part 40)	mg/L	180
9	Chloride (as Cl)	IS 3025 (Part 32)	mg/L	783
10	Fluoride (as F)	4500 F B,DAPHA 23rd Edition 2017	mg/L	4.1
11	Free Residual Chlorine	IS 3025 (Part 26)	mg/L	BLQ(LOQ:0.1)
12	Iron (as Fe)	IS 3025 (Part 53)	mg/L	0.68
13	Magnesium (as Mg)	IS 3025 (Part 46)	mg/L	68
14	Mineral Oil	IS 3025 (Part 39)	mg/L	BLQ(LOQ:0.50)
15	Nitrate (as NO3)	IS 3025 (part 34)	mg/L	41
16	Phenolic Compound (as C6H5OH)	IS 3025 (Part 43)	mg/L	BLQ(LOQ:0.001)


R. PRABHU
Senior Chemist

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Report No : QEN21120155-08

Report Date : 30 Dec 2021

S.NO	Parameter	Test Method	Unit	Results
17	Sulphate (as SO ₄)	IS 3025 (Part 24)	mg/L	980
18	Total Hardness (as CaCO ₃)	IS 3025 (Part 21)	mg/L	743
Clause 4, Table 3 Parameters Concerning Toxic Substances				
19	Cyanide (as CN)	IS 3025 (Part 27)	mg/L	BLQ(LOQ:0.01)
Others				
20	Total suspended solids (TSS)	IS 3025 (Part 17)	mg/L	53
21	BOD at 20°C for 5 days	APHA 23rd Edition:5210 B 2017	mg/L	13
22	Chemical Oxygen Demand	IS 3025 (Part 58)	mg/L	69
Polycyclic Aromatic Hydrocarbons				
23	PAHs	SMSLA/GS/SOP/01	mg/L	BLQ(LOQ:0.00001)each
Trace Metal Elements				
24	Aluminium	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
25	Arsenic	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
26	Boron	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
27	Cadmium	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
28	Chromium	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
29	Copper	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
30	Lead	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
31	Manganese	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
32	Mercury	EPA 200.8	mg/L	BLQ (LOQ:0.0005)
33	Nickel	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
34	Selenium	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
35	Zinc	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)

Note : BLQ: Below Limit of Quantification, LOQ: Limit of Quantification.

/***** End of the Report *****/

R. PRABHU
Senior Chemist

Laboratory Address : 39/6, Thiruvallur High Road, Puduchatram Post, Thirumazhisai Via, Poonamallee Taluk, Chennai - 600124.
Certified By : ISO 9001 & ISO 45001.

- ★ The results relate only to the items tested.
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Report No : QEN21120155-09

Report Date : 30 Dec 2021

Customer Name : M/s. COASTAL ENERGEN PVT LTD
 Customer Address : 2 x 600 MW Mutiara Thermal Power Plant,
 Melamaruthur Village, Ottapidaram Taluk, Tuticorin - 628105.
 Sample Name : Water Sample Quantity : 5 Ltr x 1 No
 Sample Description : Ground Water Sampling Date : 21 Dec 2021
 Reference : Test Request Form Dated 22.12.2021 Sample Received on : 24 Dec 2021
 Sample Drawn By : Laboratory Test Started on : 24 Dec 2021
 Sample Location : South East of Ash Pond Test Completed on : 30 Dec 2021
 Sample Procedure : SMSLA/EN/SOP/001

TEST RESULTS

S.NO	Parameter	Test Method	Unit	Results
Clause 4, Table 1 Organoleptic And Physical parameters				
1	Colour	IS 3025 (Part 04)	Hazen	10
2	Odour	IS 3025 (Part 05)	--	Dis Agreeable
3	pH Value	IS 3025 (Part 11)	--	8.13
4	Taste	IS 3025 (Part 08)	--	Dis Agreeable
5	Total Dissolved Solids	IS 3025 (Part 16)	mg/L	10757
6	Turbidity	IS 3025 (Part 10)	NTU	2.8
Clause 4, Table 2 General Parameters Concerning Substances Undesirable In Excessive Amounts				
7	Anionic Detergents (as MBAS)	Annex K of IS 13428	mg/L	BLQ(LOQ:0.05)
8	Calcium (as Ca)	IS 3025 (Part 40)	mg/L	416
9	Chloride (as Cl)	IS 3025 (Part 32)	mg/L	3100
10	Fluoride (as F)	4500 F B,D APHA 23rd Edition 2017	mg/L	6.8
11	Free Residual Chlorine	IS 3025 (Part 26)	mg/L	BLQ(LOQ:0.1)
12	Iron (as Fe)	IS 3025 (Part 53)	mg/L	0.09
13	Magnesium (as Mg)	IS 3025 (Part 46)	mg/L	170
14	Mineral Oil	IS 3025 (Part 39)	mg/L	BLQ(LOQ:0.50)
15	Nitrate (as NO3)	IS 3025 (Part 34)	mg/L	60
16	Phenolic Compound (as C6H5OH)	IS 3025 (Part 43)	mg/L	BLQ(LOQ:0.001)


R. PRABHU
 Senior Chemist



SMS LABS SERVICES PRIVATE LIMITED

TEST REPORT



TC-6118

Page 2 of 2

Report No : QEN21120155-09

Report Date : 30 Dec 2021

S.NO	Parameter	Test Method	Unit	Results
17	Sulphate (as SO ₄)	IS 3025 (Part 24)	mg/L	2612
18	Total Hardness (as CaCO ₃)	IS 3025 (Part 21)	mg/L	1743
Clause 4, Table 3 Parameters Concerning Toxic Substances				
19	Cyanide (as CN)	IS 3025 (Part 27)	mg/L	BLQ(LOQ:0.01)
Others				
20	Total suspended solids (TSS)	IS 3025 (Part 17)	mg/L	BLQ(LOQ:2.0)
21	BOD at 20°C for 5 days	APHA 23rd Edition:5210 B 2017	mg/L	12
22	Chemical Oxygen Demand	IS 3025 (Part 58)	mg/L	66
Polycyclic Aromatic Hydrocarbons				
23	PAHs	SMSLA/GS/SOP/01	mg/L	BLQ(LOQ:0.00001)each
Trace Metal Elements				
24	Aluminium	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
25	Arsenic	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
26	Boron	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
27	Cadmium	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
28	Chromium	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
29	Copper	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
30	Lead	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
31	Manganese	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
32	Mercury	EPA 200.8	mg/L	BLQ (LOQ:0.0005)
33	Nickel	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
34	Selenium	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
35	Zinc	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)

Note : BLQ: Below Limit of Quantification, LOQ: Limit of Quantification.

/***** End of the Report *****/

R. Prabh
R. PRABHU
Senior Chemist

Laboratory Address : 39/6, Thiruvallur High Road, Puduchatram Post, Thirumazhisai Via, Poonamallee Taluk, Chennai - 600124.
Certified By : ISO 9001 & ISO 45001.

- ★ The results relate only to the items tested.
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SMS LABS SERVICES PRIVATE LIMITED

TEST REPORT



TC-6118

Page 1 of 2

Report No : QEN21120155-10

Report Date : 30 Dec 2021

Customer Name : M/s. COASTAL ENERGEN PVT LTD
Customer Address : 2 x 600 MW Mutiara Thermal Power Plant,
Melamaruthur Village, Ottapidaram Taluk, Tuticorin - 628105.
Sample Name : Water Sample Quantity : 5 Ltr x 1 No
Sample Description : Ground Water Sampling Date : 21 Dec 2021
Reference : Test Request Form Dated 22.12.2021 Sample Received on : 24 Dec 2021
Sample Drawn By : Laboratory Test Started on : 24 Dec 2021
Sample Location : South West of Ash Pond Test Completed on : 30 Dec 2021
Sample Procedure : SMSLA/EN/SOP/001

TEST RESULTS

S.NO	Parameter	Test Method	Unit	Results
Clause 4, Table 1 Organoleptic And Physical parameters				
1	Colour	IS 3025 (Part 04)	Hazen	30
2	Odour	IS 3025 (Part 05)	--	Dis Agreeable
3	pH Value	IS 3025 (Part 11)	--	7.61
4	Taste	IS 3025 (Part 08)	--	Dis Agreeable
5	Total Dissolved Solids	IS 3025 (Part 16)	mg/L	3894
6	Turbidity	IS 3025 (Part 10)	NTU	13.1
Clause 4, Table 2 General Parameters Concerning Substances Undesirable In Excessive Amounts				
7	Anionic Detergents (as MBAS)	Annex K of IS 13428	mg/L	BLQ(LOQ:0.05)
8	Calcium (as Ca)	IS 3025 (Part 40)	mg/L	220
9	Chloride (as Cl)	IS 3025 (Part 32)	mg/L	856
10	Fluoride (as F)	4500 F B,D APHA 23rd Edition 2017	mg/L	3.0
11	Free Residual Chlorine	IS 3025 (Part 26)	mg/L	BLQ(LOQ:0.1)
12	Iron (as Fe)	IS 3025 (Part 53)	mg/L	0.41
13	Magnesium (as Mg)	IS 3025 (Part 46)	mg/L	90
14	Mineral Oil	IS 3025 (Part 39)	mg/L	BLQ(LOQ:0.50)
15	Nitrate (as NO ₃)	IS 3025 (Part 34)	mg/L	7.9
16	Phenolic Compound (as C ₆ H ₅ OH)	IS 3025 (Part 43)	mg/L	BLQ(LOQ:0.001)

R.P.M.
R. PRABHU
Senior Chemist

Laboratory Address : 39/6, Thiruvallur High Road, Puduchatram Post, Thirumazhisai Via, Poonamallee Taluk, Chennai - 600124.
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S.NO	Parameter	Test Method	Unit	Results
17	Sulphate (as SO ₄)	IS 3025 (Part 24)	mg/L	1143
18	Total Hardness (as CaCO ₃)	IS 3025 (Part 21)	mg/L	910
Clause 4, Table 3 Parameters Concerning Toxic Substances				
19	Cyanide (as CN)	IS 3025 (Part 27)	mg/L	BLQ(LOQ:0.01)
Others				
20	Total suspended solids (TSS)	IS 3025 (Part 17)	mg/L	21
21	BOD at 20°C for 5 days	APHA 23rd Edition:5210 B 2017	mg/L	10
22	Chemical Oxygen Demand	IS 3025 (Part 58)	mg/L	50
Polycyclic Aromatic Hydrocarbons				
23	PAHs	SMSLA/GS/SOP/01	mg/L	BLQ(LOQ:0.00001)each
Trace Metal Elements				
24	Aluminium	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
25	Arsenic	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
26	Boron	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
27	Cadmium	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
28	Chromium	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
29	Copper	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
30	Lead	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
31	Manganese	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
32	Mercury	EPA 200.8	mg/L	BLQ (LOQ:0.0005)
33	Nickel	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
34	Selenium	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
35	Zinc	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)

Note : BLQ: Below Limit of Quantification, LOQ: Limit of Quantification.

/***** End of the Report *****/

R.P.
R. PRABHU
Senior Chemist



SMS LABS SERVICES PRIVATE LIMITED

TEST REPORT



TC-6118

Page 1 of 2

Report No : QEN21120155-11

Report Date : 30 Dec 2021

Customer Name : M/s. COASTAL ENERGEN PVT LTD
Customer Address : 2 x 600 MW Mutiara Thermal Power Plant,
Melamaruthur Village, Ottapidaram Taluk, Tuticorin, 628105.
Sample Name : Water Sample Quantity : 5 Ltr x 1No
Sample Description : Ground Water Sampling Date : 21 Dec 2021
Reference : Test Request Form Dated 22.12.2021 Sample Received on : 24 Dec 2021
Sample Drawn By : Laboratory Test Started on : 24 Dec 2021
Sample Location : Main Office Test Completed on : 30 Dec 2021
Sample Procedure : SMSLA/EN/SOP/001

TEST RESULTS

S.NO	Parameter	Test Method	Unit	Results
Clause 4, Table 1 Organoleptic And Physical parameters				
1	Colour	IS 3025 (Part 04)	Hazen	2
2	Odour	IS 3025 (Part 05)	--	Dis Agreeable
3	pH Value	IS 3025 (Part 11)	--	7.51
4	Taste	IS 3025 (Part 08)	--	Dis Agreeable
5	Total Dissolved Solids	IS 3025 (Part 16)	mg/L	128
6	Turbidity	IS 3025 (Part 10)	NTU	0.6
Clause 4, Table 2 General Parameters Concerning Substances Undesirable In Excessive Amounts				
7	Anionic Detergents (as MBAS)	Annex K of IS 13428	mg/L	BLQ(LOQ:0.05)
8	Calcium (as Ca)	IS 3025 (Part 40)	mg/L	6.4
9	Chloride (as Cl)	IS 3025 (Part 32)	mg/L	22
10	Fluoride (as F)	4500 F B,DAPHA 23rd Edition 2017	mg/L	0.2
11	Free Residual Chlorine	IS 3025 (Part 26)	mg/L	BLQ(LOQ:0.1)
12	Iron (as Fe)	IS 3025 (Part 53)	mg/L	BLQ(LOQ:0.05)
13	Magnesium (as Mg)	IS 3025 (Part 46)	mg/L	2.4
14	Mineral Oil	IS 3025 (Part 39)	mg/L	BLQ(LOQ:0.50)
15	Nitrate (as NO3)	IS 3025 (part 34)	mg/L	4.3
16	Phenolic Compound (as C6H5OH)	IS 3025 (Part 43)	mg/L	BLQ(LOQ:0.001)

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Report No : QEN21120155-11

Report Date : 30 Dec 2021

S.NO	Parameter	Test Method	Unit	Results
17	Sulphate (as SO ₄)	IS 3025 (Part 24)	mg/L	31
18	Total Hardness (as CaCO ₃)	IS 3025 (Part 21)	mg/L	26
Clause 4, Table 3 Parameters Concerning Toxic Substances				
19	Cyanide (as CN)	IS 3025 (Part 27)	mg/L	BLQ(LOQ:0.01)
Others				
20	Total suspended solids (TSS)	IS 3025 (Part 17)	mg/L	BLQ(LOQ:2.0)
21	BOD at 20°C for 5 days	APHA 23rd Edition:5210 B 2017	mg/L	BLQ(LOQ:2.0)
22	Chemical Oxygen Demand	IS 3025 (Part 58)	mg/L	BLQ(LOQ:4.0)
Polycyclic Aromatic Hydrocarbons				
23	PAHs	SMSLA/GS/SOP/01	mg/L	BLQ(LOQ:0.00001)each
Trace Metal Elements				
24	Aluminium	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
25	Arsenic	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
26	Boron	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
27	Cadmium	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
28	Chromium	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
29	Copper	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
30	Lead	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
31	Manganese	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
32	Mercury	EPA 200.8	mg/L	BLQ (LOQ:0.0005)
33	Nickel	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
34	Selenium	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)
35	Zinc	IS 3025 (Part 65)	mg/L	BLQ (LOQ:0.001)

Note : BLQ: Below Limit of Quantification, LOQ: Limit of Quantification.

/***** End of the Report *****/

R.P.A.
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ANNEXURE - 4



PARIVESH
परिवेश

“Pro Active and Responsive facilitation by Interactive, Virtuous and Environmental Singlewindow Hub”

Ministry of Environment, Forest and Climate Change
Government of India



🏠 My Account ▾ My Proposals Environment Clearance ▾ My Proposals Forest Clearance ▾ My Proposals Wildlife Clearance ▾ Help ▾

12:08:46 PM



View Report of Submitted Proposals

Help

Click on  this icon for Viewing Report of WildLife fresh proposal (Part-1),



Enter value for Search :

Search

Sno.	Proposal No.	Proposal Name	Category	User Agency Name	Protected Area(ha.)	Proposal received on	Proposal Status	View Report of WildLife fresh proposal (Part-1)
1	FP/TN/THE/1838/2017	2 X 600 MW Thermal Power Plant of Coastal Energen Pvt Ltd	Thermal	COASTAL ENERGEN PRIVATE LIMITED	0	17 Oct 2017	Under Examination	



ANNEXURE - 5

Greenbelt Maintenance Photos (July 2021 to December 2021)

View of Greenbelt Area



View of Greenbelt Area



View of Greenbelt Area



View of Greenbelt Area



View of Greenbelt Area



View of Greenbelt Area



View of Greenbelt Area



View of Greenbelt Area



View of Greenbelt Area



ANNEXURE - 6

CSR Activities

(July 2021 to December 2021)

COVID-19 – Donation of Oxy Flow meter on 5th June 2021 to Government Hospital, Tuticorin



COVID-19 – Donation of Copper tube & Body Bags on 20th July 2021 to Government Hospital, Tuticorin



Sponsoring to the event (Mini Marathon) at Tharuvaikulam Beach Volley Ball Ground
Participants – Students of Government Hr. Sec School, Tharuvaikulam.



Sponsoring to the event (Mini Marathon) at Tharuvaikulam Beach Volley Ball Ground
Participants – Students of Government Hr. Sec School, Tharuvaikulam.



Sponsoring to the event (Mini Marathon) at Tharuvaikulam Beach Volley Ball Ground
Participants – Students of Government Hr. Sec School, Tharuvaikulam.



Sponsoring to the event (Mini Marathon) at Tharuvaikulam Beach Volley Ball Ground
Participants – Students of Government Hr. Sec School, Tharuvaikulam.



CEPL has been distributed Prize to the School Students along with Mr. N K Parameswar – Station Director



ANNEXURE - 7

**COMPLIANCE TO THE CONDITIONS STIPULATED BY TAMILNADU COASTAL ZONE
MANAGEMENT AUTHORITY VIDE LETTER DATED 03.04.2009**

Period : July 2021 to Decemembr 2021

Sl.No.	CONDITIONS STIPULATED BY TNCZM AUTHORITY	COMPLIENCE
a)	The unit should adhere to the norms prescribed by Ministry of Environment and Forests, Government of India and State Pollution Control Board in respect of discharging of cooling water / treated effluent in to sea.	Complied.
b)	The unit shall consider adopting the latest technologies such as providing cooling towers to reduce the temperature of the condenser cooling water, so as to safe guard the marine eco-system	Complied.
c)	Marking the intake and outfall pipelines adequately such that fishing vessels and fishermen are made aware of its presence.	Complied.
d)	It may be ensured that mercury concentration is not present in the end product.	Ensured. Mercury is not used in our power plant.
e)	The activities such as intake pipeline and outfall line and intake arrangement in sea and the pipeline should not cause hindrance to fishing activities and to boat movement.	Complied.
f)	The proposed activities should not cause coastal erosion and alter the beach configuration	Complied.
g)	No blasting activities in Coastal Regulation Zone is permissible	Complied.
h)	The proponent should not prevent public from easy access to the beach.	Complied.
i)	Untreated chemical waste generated due to membrane protection activity and the sewage generated should not be discharged into the sea.	Complied.
j)	The proponent should ensure that the saline water shall not gain access into ground while conveying or processing the sea water	Complied.
k)	The project activity should not affect the coastal ecosystem including marine flora and fauna.	Complied.
l)	There should not be any extraction of ground water in Coastal Regulation Zone.	Complied. There is no water drawn in Coastal Regulation Zone.
m)	The proponent shall not undertake any activity, which is violative of the provisions of Coastal Regulation zone Notification 1991 and the subsequent amendments.	Complied.
n)	The Coastal Regulation Zone clearance will be revoked if any of the condition stipulated is not complied with	Agreed.

ANNEXURE -8

Comprehensive Environmental Monitoring for 2 X 600 MW Mutiara Thermal Power Plant at Pattinamaruthoor, Tuticorin

Monitoring Report

(July 2021 - December 2021)

Executive Summary



Submitted to

**Mutiara Thermal Power Plant
Melamaruthur Village, Ottapidaram Thaluk
Tuticorin District - 628 105**

by



Suganthi Devadason Marine Research Institute (SDMRI)

(Recognized by Manonmaniam Sundaranar University and U.G.C. &
Recognized Scientific and Industrial Research Organization by the DSIR, GOI)

44 - Beach Road, Tuticorin - 628 001, Tamil Nadu

Tel: 0461 - 2336488, 2323007; E.mail: director@sdmri.in

Web: <http://www.sdmri.in>

06 January 2022

**Comprehensive Environmental Monitoring for 2 X 600 MW
Mutiara Thermal Power Plant at Pattinamaruthoor,
Tuticorin**

Monitoring Report

Executive Summary

(July 2021 - December 2021)

to

**M/S. Mutiara Thermal Power Plant,
Melamaruthur Village, Ottapidaram Thaluk,
Tuticorin District - 628 105**



by

Suganthi Devadason Marine Research Institute

(Recognized by Manonmaniam Sundaranar University and U.G.C. &
Recognized Scientific and Industrial Research Organization by the DSIR, GOI)

**44 - Beach Road, Tuticorin - 628 001
Tamil Nadu**

06 January 2022

Contents

Chapter No.	Chapter title	Page
1.	Background	3
2.	Methodology	3
2.1.	Fixing Permanent Monitoring Locations	3
2.2.	Parameters are being monitored	9
2.3.	Analysis and monitoring methods	9
3.	Results-Executive summary(January 2020toJune 2020-Half Yearly Report)	13
3.1.	Marine water and sediment quality	13
3.2.	Coral monitoring	13
3.3.	Seagrass and fish population monitoring	15
3.4.	Cage culture of fishes near outfallin Pattinamaruthoor coast	15
3.5	FishLanding Data	16
4.	Remarks	23
5.	References	23
6.	Photos	24

Comprehensive Coastal Environmental Monitoring for 2 X 600 MW Mutuara Thermal Power Plant at Pattinamaruthur, Tuticorin

1. Background

M/S. Mutuara Thermal Power Plant has started production of its first unit of 2 x 600 MW coal based thermal power plant near Pattinamaruthur village of Tuticorin District, Tamilnadu and comprehensive coastal monitoring has been started from February 2015.

The comprehensive baseline data collection on physical, chemical and biological, covering all marine flora & fauna covering four seasons in each year was conducted for 3 years from 2010 to 2013 and comprehensive data on fish landings and catch details in was collected for one year from 10 coastal villages located within 10 km radius of the project site.

While granting No Objection Certificate to establish the Thermal Power Plant, the Tamil Nadu Forest Department made it compulsory to implement the following Coastal Environmental Management Plan and Monitoring Protocol.

1. Marine Water Quality
2. Marine Sediment Quality
3. Coral Reef Monitoring
4. Seagrass Monitoring
5. Fish Production Monitoring

The details of parameters, monitoring locations and monitoring frequency provided by the Tamil Nadu Forest Department are followed and the present half yearly report provides the results of the monitoring from July 2021 to December 2021.

2. Methodology

2.1. Fixing Permanent Monitoring Locations

Permanent monitoring locations were fixed to study the marine water and sediment quality and to monitor seagrasses and coral reefs. Totally 4 locations were fixed for the analysis of marine water and sediment quality at intake site. Location 1 is on the intake point and locations 2 and 3 are 100 m away in each side of the intake point while location 4 is 200 m away from the intake point into the sea. Totally 12 stations were fixed at discharge point. Locations 2 and 3 occur near the discharge point and locations 1 and 4 are 100 m away from locations 2 and 3 respectively. Locations 5 and 6 occur 25 m away from Location 2 and 3 and locations 7 and 8 fixed at 50m away from location 5 and 6 respectively. Locations 9 and 10 were fixed at 200m away from discharge point and Locations 11 and 12 were located 400m away from discharge point towards marine side. Parameters monitored in water samples were physical parameters such as pH, salinity, temperature, turbidity and total suspended solids; chemical parameters such as dissolved oxygen, nutrients, BOD and COD; heavy metals were Copper, Lead, Nickel, Cadmium, Chromium and Mercury; bacterial parameter coliform count; marine biological parameters such as phytoplankton and zooplankton. Parameters monitored in sediment samples were pH, organic matter and nutrients.

For coral monitoring, totally 13 sites were selected. Three locations were selected around each of the Tuticorin islands Vaan, Koswari, Kariyachalli and Vilanguchalli and one location at Vilanguchalli patch reef. Physical parameters such as temperature, turbidity, total suspended solids and sedimentation were analysed in these locations and biological parameters such as coral status, growth, recruitment, diseases and bleaching were monitored. Temperature loggers will be deployed in these locations also. For seagrass monitoring, totally 13 sites were selected randomly within 3 km radius from the discharge point. Physical parameters such as temperature, turbidity, total suspended solids and sedimentation were assessed. Biological properties such as seagrass status, growth, shoot density, diseases, productivity and biomass were monitored. Fish diversity and abundance were also monitored in all the seagrass monitoring locations.

The details of monitoring locations and GPS coordinates are given in Figs. 1 to 3 and Tables 1 to 3.

The fish landing data and catch details will be collected from 10 landing centres / villages (Thirespuram, Mottaigopuram, Siluvaipatti, Vellapatti, Tharuvaikulam, Pattinamaruthoor, Sippikulam, Vaipar, Periyasamipuram and Vembar) located in and around Pattinamaruthur coast, covering 10 km radius from the project site (Fig.4)



Fig.1: Monitoring Locations Marine Water and Sediment Quality Monitoring

Table 1: GPS Mark for locations for Marine water and sediment quality monitoring

Intake point	GPS Mark
Location- 1	N8 55.084 E78 11.229
Location- 2	N8 55.143 E78 11.252
Location- 3	N8 55.046 E78 11.357
Location- 4	N8 55.007 E78 11.198
Discharge point	
Location- 1	N8 55.125 E78 11.252
Location- 2	N8 55.189 E78 11.285
Location- 3	N8 55.266 E78 11.333
Location- 4	N8 55.336 E78 11.374
Location- 5	N8 55.086 E78 11.654
Location- 6	N8 55.067 E78 11.624
Location- 7	N8 55.070 E78 11.666
Location- 8	N8 55.059 E78 11.657
Location- 9	N8 55.112 E78 11.409
Location- 10	N8 55.186 E78 11.461
Location- 11	N8 55.071 E78 11.540
Location- 12	N8 55.168 E78 11.610

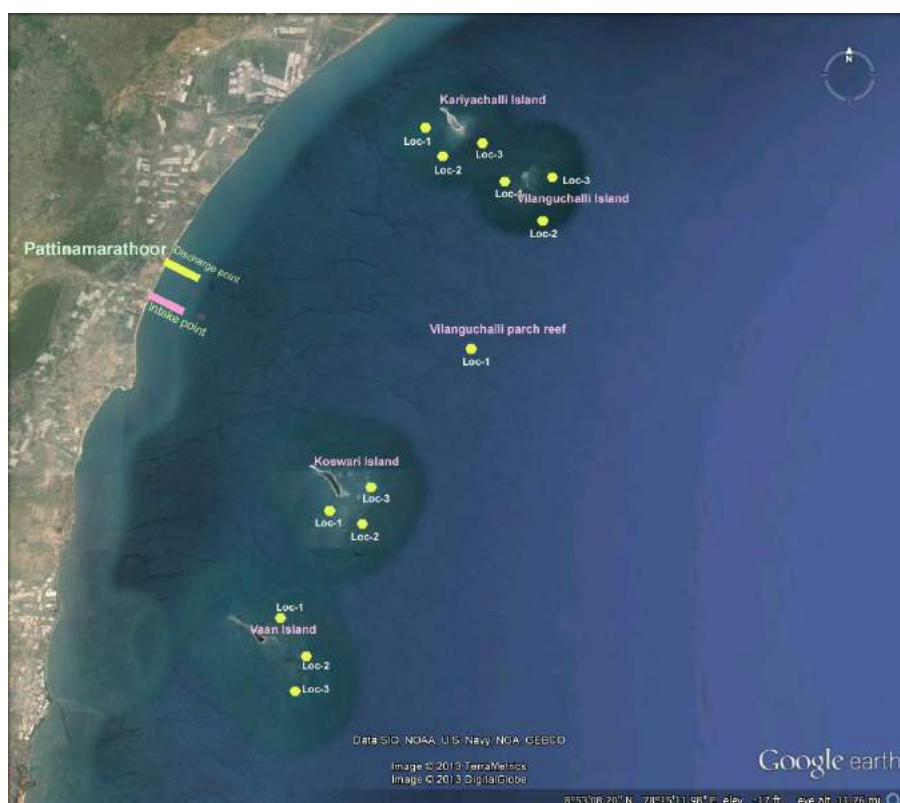


Fig.2: Locations for coral reef monitoring

Table 2: Coral reef monitoring locations

Location	GPS Mark
Vaan Island	
Location 1	N8 50.487 E78 12.759
Location 2	N8 50.099 E78 12.974
Location 3	N8 49.729 E78 12.881
Koswari Island	
Location 1	N8 51.829 E78 13.376
Location 2	N8 51.791 E78 13.793
Location 3	N8 52.193 E78 13.909
Vilanguchalli patch reef	
Location 1	N8 54.127 E78 15.391
Vilanguchalli Island	
Location 1	N8 56.606 E78 16.423
Location 2	N8 56.109 E78 16.245
Location 3	N8 56.369 E78 15.936
Kariyachalli Island	
Location 1	N8 57.185 E78 14.921
Location 2	N8 56.950 E78 15.202
Location 3	N8 57.198 E78 15.584

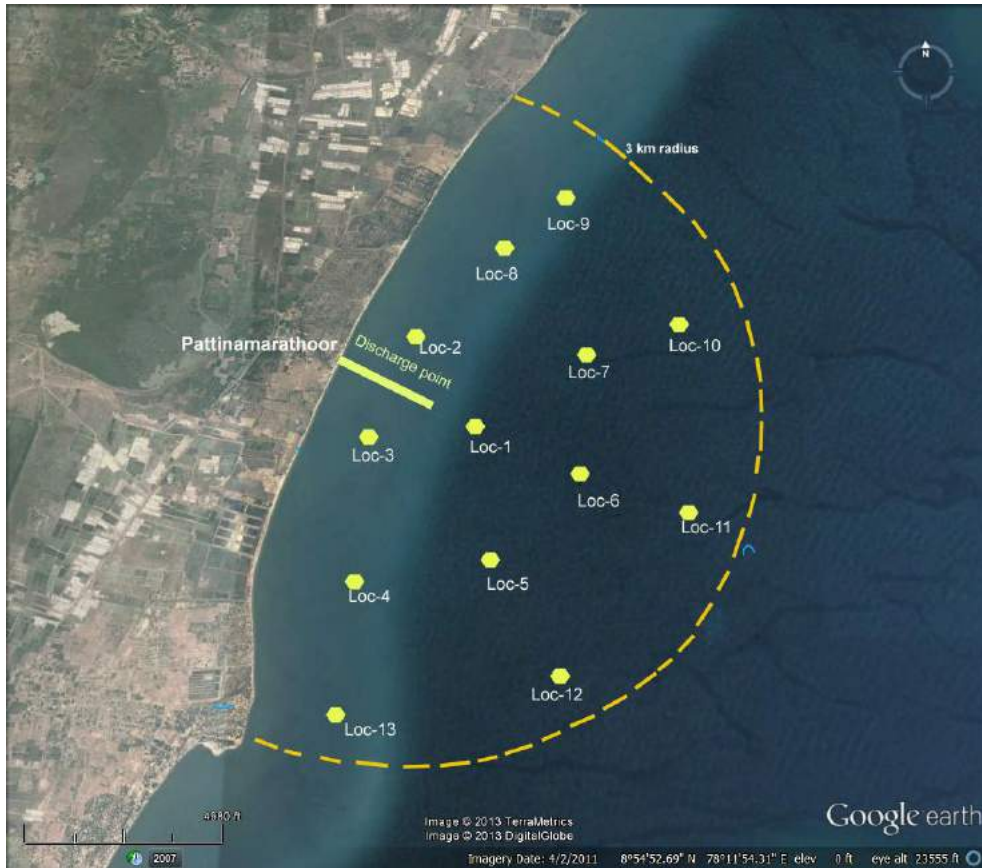


Fig.3: Seagrass and fish population monitoring locations

Table 3: GPS Mark for Seagrass and Fish Population monitoring locations

Location	GPS Mark
Location 1	N8 54.919 E78 11.338
Location 2	N8 55.043 E78 11.244
Location 3	N8 54.589 E78 11.177
Location 4	N8 54.128 E78 11.209
Location 5	N8 54.342 E78 11.921
Location 6	N8 54.652 E78 12.110
Location 7	N8 55.019 E78 11.971
Location 8	N8 55.351 E78 11.618
Location 9	N8 55.701 E78 11.940
Location 10	N8 55.224 E78 12.588
Location 11	N8 54.526 E78 12.508
Location 12	N8 53.885 E78 12.203
Location 13	N8 53.799 E78 11.357

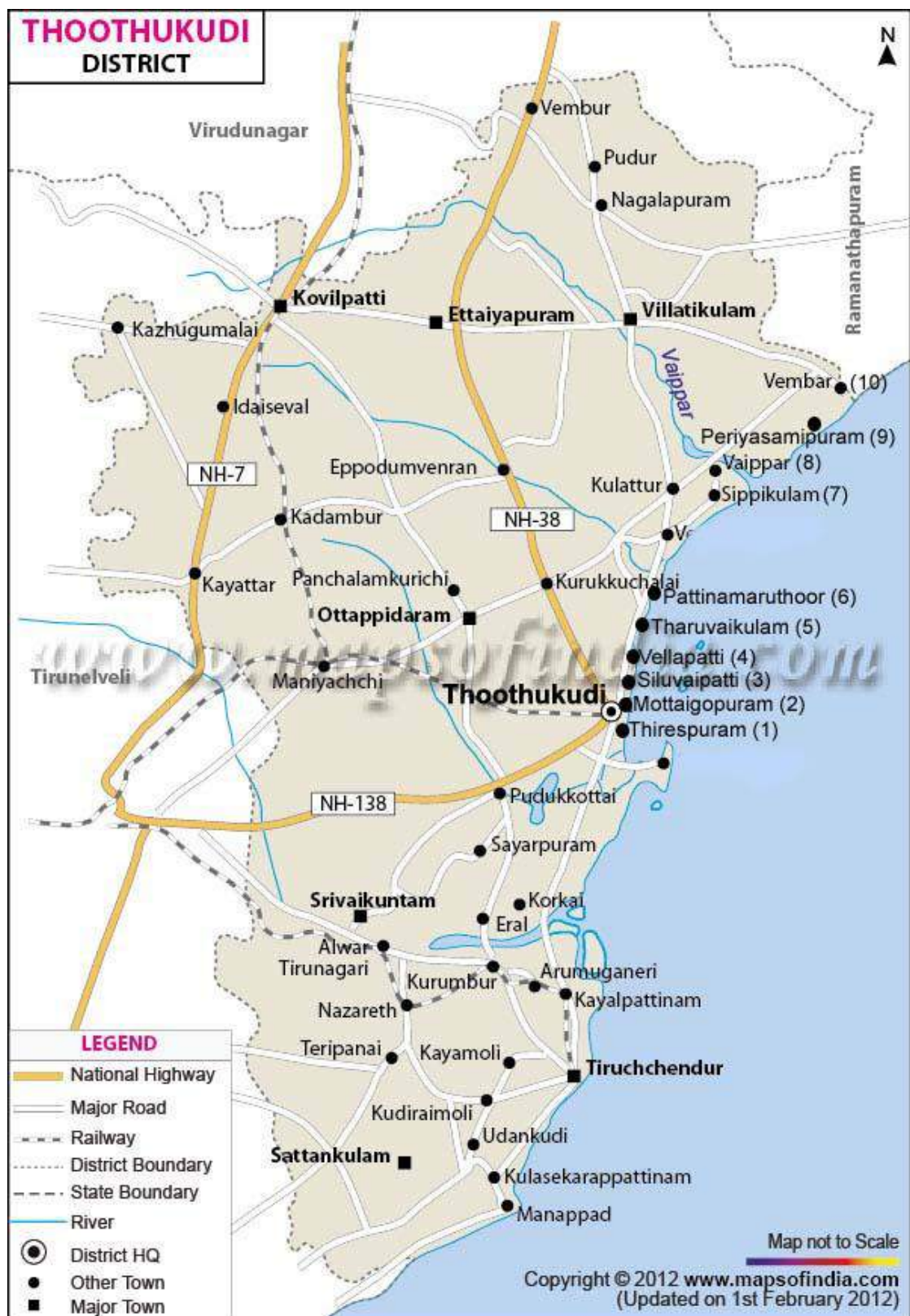


Fig.4: Map showing the 10 coastal villages / fish landing centres for fish landing data and catch details monitoring

2.2. Parameters are being monitored

Marine Water Quality

Physical properties: pH, Salinity, Temperature, Turbidity, Total Suspended Solids

Chemical Properties: Dissolved Oxygen, Nutrients, BOD, COD

Heavy metals: Cu, Pb, Ni, Cd, Cr, Hg

Bacteriological parameters: Coliform Count

Marine Biology: Phytoplankton, Zooplankton

Monitoring frequency - Fortnight Sampling

Marine Sediment Quality

Physical & Chemical properties: pH, Organic Matter, Nutrients

Heavy metals: Cu, Pb, Ni, Cd, Cr, Hg

Bacteriological parameters: Coliform Count

Marine Biology: Macro and meio benthic fauna and Macro flora

Monitoring frequency - Fortnight Sampling

Coral Reef Monitoring

Physical properties: Temperature, Turbidity, Total Suspended Solids, Sedimentation

Biological properties: Status, Coral growth, recruits, disease, bleaching

Monitoring frequency - Fortnight Sampling

Seagrass Monitoring

Physical properties: Temperature, Turbidity, Total Suspended Solids, Sedimentation

Biological properties: Status, Growth, shoot density, disease, Productivity, Biomass

Monitoring frequency - Fortnight Sampling

Fish Population Monitoring

Diversity and Abundance

Monitoring frequency - Fortnight Sampling

Fish Landing and Catch Monitoring

Common fish landed

Seasonal landing pattern

Total fish landing - quantity, species wise, landing as per craft and gear

Monitoring frequency - Daily

2.3. Analysis and monitoring methods

Physico-chemical parameters

Seawater temperature was measured using a standard digital thermometer. Salinity was determined using refracto meter. Seawater pH was measured soon after collection by using pre-calibrated digital pH-meter. Turbidity was measured using Elico water quality analyzer. Total Suspended Solids (TSS) was measured by filtering a known volume of sample through a pre-weighed 0.45μ Whatman glass fibre filter paper (GF/C) using a Millipore filtering system. Dissolved oxygen (DO), Biological Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) were analyzed by following Strickland and Parsons

method (1972). Analyses of calcium (Ca), magnesium (Mg) and chlorides will be done titrimetrically. Nitrates (NO₃) and nitrites (NO₂) were measured spectrophotometrically by following the method of Strickland and Parson (1972). Total coliform bacteria were measured using MPN method.

Sediment samples were collected from all the sites by using Van Veen Grab sampler. Sediment pH was measured using pH meter. Oil and grease in sediment was analysed using separating funnel method. Organic matter in sediment was estimated by the method described by El Wakeel and Riley (1957). Phytoplankton and zoo plankton samples were collected from the surface water at all the stations. For the quantitative estimation, a Sedgewick Rafter Counting Cell was used. The sediment samples pre stained with Rose Bengal was sieved through 1 mm and 63µ mesh sieves by adding copious amount of water for separating macro and meio benthic fauna respectively. The organisms retained in the sieves were preserved in 5% formalin and were identified using standard manuals. Heavy metals such as lead, nickel, cadmium, chromium and mercury in the water samples and heavy metals such as manganese, lead, nickel, cadmium, chromium and mercury in the sediment samples were analysed using Atomic Absorption Spectrophotometer (AAS). Sedimentation rate was measured by deploying sediment traps (English et al, 1997) under the water.

Coral monitoring

The percentage cover of corals and other sessile benthic categories were assessed by Line Intercept Transect (LIT) method following English *et al.*, (1997). The survey was started with mapping of Island reef areas, using manta tow technique (Done *et al.*, 1982). The assessment involved SCUBA diving. Depending on the size of the reefs, 15 to 25 transects were laid on each Island. The percentage cover of each life form category, percentage of bleaching and disease prevalence were calculated following the method of English *et al.*, (1997). Coral recruitment was recorded using haphazardly placed permanent 1 m² quadrats. The permanent quadrats, used for long term monitoring of recruits, were placed on substrates suitable for coral settlement, in particular dead reefs (Tamelander, 2002). Linear growth coral of coral colonies were measured by tagging the colony and measuring the distance from the baseline to the end of the branch with flexible plastic ruler (Gladfelter, *et al.*, 1978). Coral diseases were identified by following the coral disease handbook of Raymundo and Harvell, (2008). Disease prevalence in a study location were calculated by a simple formula; percentage of diseases is the proportion of diseased colonies to the total measured population of colonies.

Number of diseased colonies per site

Disease prevalence = X 100

Number of colonies examined per site

Life form Categories and codes

CATEGORIES		CODE	NOTES / REMARKS
Dead Coral		DC	recently dead, white to dirty white
Dead Coral with Algae		DCA	this coral is standing, skeletal structure can still be seen
Acropora	Branching	ACB	at least 2° branching, e.g. <i>Acropora palmate</i> , <i>A. formosa</i>
	Encrusting	ACE	usually the base-plate of immature <i>Acropora</i> forms, e.g. <i>A. palifera</i> and <i>A. cuneata</i>
	Sub massive	ACS	robust with knob or wedge-like form e.g. <i>A. palifera</i>
	Digitate	ACD	no least 2° branching, typically includes <i>A. humilis</i> , <i>A. digitifera</i> and <i>A. gemmifera</i>
	Tabular	ACT	horizontal flattened plates e.g. <i>A. hyacinthus</i>
Non – Acropora	Branching	CB	at least 2° branching e.g. <i>Seriatopora hystrix</i>
	Encrusting	CE	major portion attached to substratum as a laminar plate e.g. <i>Porites vaughani</i> , <i>Montipora undata</i>
	Foliose	CF	Coral attached at one or more points, leaf-like, or plate-like appearance e.g. <i>Merulina ampliata</i> , <i>Montipora aequituberculata</i>
	Massive	CM	Soild boulder or mound e.g. <i>Platygyra daedalea</i>
	Submassive	CS	tends to form small columns, knobs, or wedges e.g. <i>Porites lichen</i> , <i>Psammocora digitata</i>
	Mushroom	CMR	solitary, free-living corals of the <i>Fungia</i>
	Heliopora	CHL	blue coral
	Millepora	CME	fire coral
	Tubipora	CTU	organ-pipe coral, <i>Tubipora musica</i>
Other Fauna:			
Soft Coral		SC	soft bodied coral
Sponge		SP	
Zoanthids		ZO	examples are <i>Platythoa</i> , <i>Protopalythoa</i>
Others		OT	Ascidians, anemones, gorgonians, giant clams etc.
Algae	Algal Assemblage	AA	consists of more than one species
	Coralline Algae	CA	
	Halimeda	HA	
	Macroalgae	MA	weedy/fleshy browns, reds, etc.
	Turf Algae	TA	lush filamentous algae, often found inside damselfish territories
Abiotic	Sand	S	
	Rubble	R	unconsolidated coral fragments
	Silt	SI	
	Water	WA	fissures deeper than 50 cm
	Rock	RCK	
Other		DDD	Missing data

Seagrass monitoring

Quadrates (50 cm×50 cm) divided into 25 squares (10 cm × 10 cm) were used to study the percentage cover of seagrass species through visual estimation (Saito and Atobe,

1970). 100 m transects were made on the seagrass meadows and transects were separated from each other by a reasonable distance (50 -100 m) and were parallel to each other and perpendicular to the shore. Quadrates were laid at regular intervals (5 m) along each transect. Minimum 2-4 replicates of quadrates were laid depending on the abundance of the seagrass. Individual shoots were also counted randomly at every transect. Each seagrass species was collected and sorted by taxonomical order for further identification (English *et al.*, 1997). Biomass was estimated using the method of Mellors (1991). The biomass or standing crop is expressed in dry weight m^2 .

Fish population monitoring

Fish density and diversity was assessed by visual census applying Belt Transect method (English *et al.*, 1997).

Fish Landing Data

Fish landing data was collected by following the method of Srinath *et al.*, (2005). The following are the steps:

- i. Enquiring of the total number of fishing days in the particular village (Sampling will be done normally for 16-18 days per month in each selected village).
- ii. Enquiring of the total number of fishing crafts on the particular fishing day.
- iii. 1: 6 boats will be surveyed in case of large numbers of boats (Random). A minimum total of 15 boats at least will be surveyed in which 100% of the catch has to be checked.
- iv. The different fishing gears will be surveyed. Fish catch by different gears will be noted down if necessary.
- v. Species composition of the fish landed will be checked out.
- vi. Weight of a group (eg: carangids, groupers) / genus (*Scomberoides*, *Tylosurus* etc.) / species (*Sardinella longiceps*, *Rastrelliger kanagurta*) per the fishing crafts surveyed to be calculated. For this the weight of a standard basket will be enquired and the total number of standard baskets in that boat has to be enquired (Eg:- Weight of one standard basket of Grouper in Tuticorin landing center = 10 kg. Total number of standard baskets in the boat 'A' = 5. Groupers landed in boat 'A' = $10 \times 5 = 50$).
- vii. Similarly the weight of groupers in all the boats surveyed is calculated. The resultant data gives the total groupers landed in the given day in the surveyed boats. This data is then made up to the total number of boats gone for fishing in the particular fishing day. The resultant data is further calculated up to one month by multiplying the total number of fishing days during that month.

3. Results - Executive Summary

(July 2021 to December 2021 - Half Yearly Report)

3.1. Marine water and sediment quality

The water temperature ranged between 27.9 and 30.0°C; Salinity value was recorded between 34 and 36 ppt; pH level was recorded between 7.77 and 8.22; turbidity level ranged from 6.1 to 7.2 NTU; the TSS level ranged from 112 to 145 mg/l; the dissolved oxygen level was recorded between 4.3 and 5.2 mg/l; BOD level ranged from 2.15 to 2.6 mg/l; COD level ranged from 1.33 to 1.60 mg/l; calcium ranged from 480 and 645 mg/l; magnesium value ranged from 1257 to 1379 mg/l; nitrate level ranged from 1.35 to 1.58 µg at/l; nitrite level ranged from 0.28 to 0.52 µg at/l; chloride level ranged from 17.5 to 17.9 g/l; and oil and grease level was recorded between 0.33 and 0.5 mg/l.

In sediment samples, the pH value varied from 8.17 to 8.34; oil and grease level ranged from 0.30 to 0.47 mg/kg; organic matter value ranged from 2.402 to 3.505%; and heavy metal level in water and sediment samples was within the acceptable limits.

No coliform bacteria were recorded in water and sediment samples. The phytoplankton density was recorded between 346.31 and 417.09 cells/l. The zooplankton density was recorded between 211517 and 312303 no/m³. Among the benthic macro fauna, gastropods and bivalves were the dominant categories.

In coral reef area, the water temperature was recorded between 27.75 and 29.65°C; turbidity level ranged from 4.43 to 6.77 NTU; TSS level ranged from 93.6 to 155 mg/l and sedimentation rate ranged from 60.36 to 78.24 mg/cm²/day.

In sea grass area, the water temperature was recorded between 27.6 and 29.8°C; turbidity level varied from 5.53 to 7.32 NTU; TSS level ranged from 94 to 140.5 mg/l and sedimentation rate was recorded between 40.83 and 79.34 mg/cm²/day.

3.2. Coral monitoring

The live coral cover in Vaan Island was 22.11, 31.63 and 34.56% respectively in sites 1, 2 and 3 during July 2021; it was 22.18, 31.75 and 34.58% respectively during August 2021; it was 22.26, 31.73 and 34.63% respectively during September 2021; it was 22.36, 31.79 and 34.71% respectively during October 2021; it was 22.42, 31.95 and 34.65% respectively during November 2021; and during December 2021 it was 22.48, 31.98 and 34.69% respectively. In July 2021, the soft coral cover was 7.35, 1.84 and 1.94% respectively in sites 1, 2 and 3; it was 7.42, 1.87 and 1.98% respectively during August 2021; it was 7.45, 1.90 and 1.98% respectively during September 2021; during October 2021, it was 7.48, 1.97 and 2.11% respectively; during November 2021, it was 7.49, 1.92 and 2.16% respectively and it was 7.51, 1.96 and 2.16% respectively during December 2021. CM and ACB were the dominant coral life form categories during July to December 2021. Coral recruitment was highest for the genera *Acropora*, *Porites* and *Montipora* and most common coral species were *Acropora formosa*, *A. cytherea*, *A. intermedia*, *A. nobilis*, *Montipora foliosa*, *Pocillopora damicornis* and *Porites* sp. In Vaan Island, eight types of coral health issues were recorded which include bleaching, BBD, BSD, PSD, WBD, WPD, WSD and YBD. Among disease type, BBD was the most dominant category with 2.22%, 2.19% and 1.66% respectively during July to December 2021 mainly in genus *Montipora*. Totally six coral genera were affected by them which are *Goniastrea*, *Favia*, *Favites*, *Porites*, *Turbinaria* and *Acropora*.

The live coral cover in Koswari Island was 21.11, 20.65 and 19.34% respectively in sites 1, 2 and 3 during July 2021; it was 21.15, 20.68 and 19.30% respectively during August 2021; it was 21.19, 20.71 and 19.38% respectively during September 2021; during October 2021, it was 21.22, 20.74 and 19.41% respectively; during November 2021, it was 21.26, 20.78 and 19.47% respectively and during December 2021, it was 21.29, 20.79 and 19.51% respectively. In July 2021, the soft coral cover was 1.63, 3.18 and 2.35% respectively; it was 1.65, 3.20 and 2.36% respectively during August 2021; it was, 1.68, 3.22 and 2.41% respectively during September 2021; during October 2021, it was 1.71, 3.24 and 2.43% respectively; during November 2021, it was 1.73, 3.27 and 2.45% respectively and it was 1.73, 3.39 and 2.46% respectively during December 2021. CM and ACB were the dominant coral life form categories during July to December 2021. Coral recruitment was highest for the genera *Turbinaria*, *Acropora* and *Porites* and most common coral species were *Acropora formosa*, *A. cytherea*, *A. intermedia*, *A. nobilis*, *Montipora foliosa*, *Pocillopora damicornis* and *Porites* sp. In Koswari Island, eight types of coral health issues were recorded which are BBD, BSD, PSD, WBD, WPD, WSD and YBD. Among disease type, PSD was the most dominant category with 2.23%, 2.41% and 1.32% respectively during July to December 2021 mainly in genus *Acropora*. Totally six coral genera were affected which are *Goniastrea*, *Favia*, *Favites*, *Porites*, *Turbinaria* and *Acropora*.

The live coral cover in Kariyachalli Island was 33.71, 33.36 and 32.91% respectively in sites 1, 2 and 3 during July 2021; it was 33.77, 33.31 and 32.83% respectively during August 2021; it was 33.79, 33.35 and 32.80% respectively during September 2021; during October 2021, it was 33.84, 33.38 and 32.86% respectively; during November 2021, it was 33.9, 33.35 and 32.91% respectively and during December 2021 it was 33.94, 33.37 and 32.96% respectively. The soft coral cover in July 2021 was 4.48, 4.22 and 7.22% respectively; it was 4.51, 4.22 and 7.19% respectively during August 2021; it was 4.52, 4.22 and 7.21% respectively during September 2021; it was 4.56, 4.24 and 7.25% respectively during October 2021; it was 4.58, 4.25 and 7.23% respectively during November 2021; and it was 4.59, 4.25 and 7.26% respectively during December 2021. The CM and ACB were the dominant coral life form categories during July to December 2021. Coral recruitment was highest for the genera *Acropora*, *Porites* and *Turbinaria* and most common coral species were *Acropora formosa*, *A. cytherea*, *A. intermedia*, *A. nobilis*, *Montipora foliosa*, *Pocillopora damicornis* and *Porites* sp. Totally eight types of coral health issues were recorded which include bleaching, BBD, BSD, PSD, WBD, WPD, WSD and YBD. Among disease type, BBD was the most dominant category with 1.35%, 2.23% and 2.04% respectively during July to December 2021 mainly in genus *Acropora*. Totally seven coral genera were affected by them which are *Montipora*, *Goniastrea*, *Favia*, *Favites*, *Porites*, *Turbinaria* and *Acropora*.

The live coral cover in Vilanguchalli Island was 19.33, 19.78 and 26.33% respectively in sites 1, 2 and 3 during July 2021; it was 19.37, 19.83 and 26.37% during respectively August 2021; it was 19.41, 19.86 and 26.35% respectively during September 2021; it was 19.36, 19.91 and 26.39% respectively during October 2021; it was 19.41, 19.86 and 26.45% respectively during November 2021; and during December 2021 it was 19.45, 19.89 and 26.47% respectively. In July 2021, the soft coral cover was 1.7, 1.56 and 1.56 respectively; it was 1.72, 1.54 and 1.59% during August 2021; it was 1.75, 1.56 and 1.59% respectively during September 2021; it was 1.79, 1.62 and 1.64% respectively during October 2021; 1.81, 1.64 and 1.65% respectively during November 2021; and during December 2021, it was 1.82, 1.66 and 1.67% respectively. The CF and CM were the dominant coral life form categories during the period July to December 2021. Coral recruitment was highest for the genera

Turbinaria and *Porites* while most common coral species were *Acropora formosa*, *A. cytherea*, *A. intermedia*, *A. nobilis*, *Pocillopora damicornis* and *Porites* sp. In Vilanguchalli Island eight types of coral health issues were recorded which are bleaching, BBD, BSD, PSD, WBD, WPD, WSD and YBD. Among disease type, WBD was the most dominant category with 2.25%, 1.19% and 1.303% respectively during July to December 2021 mainly in genus *Acropora*. Five coral genera were affected by them which are *Goniastrea*, *Porites*, *Montipora*, *Turbinaria* and *Acropora*.

The live coral cover in Villanguchalli Patch reef was 43.32, 43.15, 43.11, 43.15, 43.19 and 43.26% respectively during July, August, September, October, November and December 2021. Soft coral cover was 3.17, 3.13, 3.15, 3.16, 3.18 and 3.17% respectively. The ACB and CM were the dominant coral life form categories during the period between July to December 2021. Coral recruitment was highest for the genera *Turbinaria*, *Acropora*, *Porites* and *Goniastrea* while most common coral species were *Acropora formosa*, *A. cytherea*, *A. intermedia*, *A. nobilis*, *Montipora foliosa*, *Pocillopora damicornis* and *Porites* sp. Totally eight types of coral health issues were recorded which are bleaching, BBD, BSD, PSD, WBD, WPD, WSD and YBD. Among disease type, BBD was the most dominant category with 1.16 % respectively during July to December 2021 mainly in genus *Acropora*. Five coral genera were affected by them *Goniastrea*, *Porites*, *Montipora*, *Turbinaria* and *Acropora*.

3.3. Seagrass and fish population monitoring

During study period from July to December 2021, seagrass overall percentage cover was observed with 66.53% in November 2021 followed by October 2021 with 66.50%. No diseases were observed. In total, seven seagrass species were recorded and they are *Thalassia hemprichii*, *Halophila stipulacea*, *Halophila ovalis*, *Cymodocea serrulata*, *Halodule pinifolia*, *Halodule uninervis* and *Syringodium isoetifolium*. Among the seven seagrass species, dominant shoot density was recorded in *Cymodocea serrulata* as 171.31m⁻² in September 2021 and the maximum productivity was recorded in *Halophila ovalis* as 73.33cm⁻²day⁻¹ in August 2021 followed by *Cymodocea serrulata* as 61.16cm⁻²day⁻¹ in September 2021. Maximum seagrass biomass was recorded in *Cymodocea serrulata* as 153.35g dry weight m⁻² in September 2021 followed by *Thalassia hemprichii* as 97.5g dry weight m⁻² in September 2021.

A total of 18 fish species were recorded and among them, *Lutjanus* sp. was dominant followed by *Epinephelus* sp. Maximum number of fish density were observed during November 2021 with 2070 / 50 m⁻² followed during August 2021 with 1956 / 50 m⁻².

3.4. Cage culture of fishes near outfall in Pattinamaruthoor coast

In Pattinamaruthoor fish cage, observations on fish revealed 11 species were recorded during July 2021 to December 2021. Among them, *Lutjanus* sp. was the dominant followed by *Caranx* sp. Maximum number of fish density was observed during October 2021 with 262 Nos. followed during July 2021 with 257 nos.

A mild algal bloom was noticed during October 2021 in the coral reef and seagrass habitat due to the outbreak of *Noctiluca scintillans* around the project location. Corals and seagrass were not affected; however, prolonged poor visibility prevailed in sea waters because of intensified algal cell accumulation.

3.5. Fish Landing Data

Study area: Landing areas of ten fishing villages - Thirespuram, Mottaigopuram, Siluvaipatti, Vellapatti, Tharuvaikulam, Pattinamaruthoor, Sippikulam, Vaipar, Periyasamipuram, Vembar.

The major fishery resources of Tuticorin coast are Tuna, Seer fishes, Groupers, Ribbon fishes, Penaeid shrimps, Crabs, lobster and so on. The fish stocks from the coast tend to concentrate along the continental shelf and the biodiversity is substantially higher than in temperate waters. Tuticorin is one of the major fish landing center along the Gulf of Mannar coast by both mechanized as well as traditional crafts. Tuticorin coast has 21 fishing villages which include 2 major landing and 20 minor landing areas. Among the 22 fish landing areas of Tuticorin coast, 10 major and minor landing areas have been randomly surveyed for the fish species and weight of fishes landed from July 2021 to December 2021. Major fishing gears operated in Tuticorin fishing area is Trawl net, Long line fishing, Gill net, Drift net, Purse seine, Trammel net, Stake net, traps and Hand line nets. Fishing activity in Tuticorin region was carried out by Deep Sea, Traditional and mechanized fishing vessels like Trawlers, Kattumaram, Fiber boats and Vallams. Commercial fish species and total catch landed at each village during this period was recorded and illustrated as follows.

The survey recorded maximum landing in Tharuvaikulam with about 371131 kg. followed by Thirespuram with about 370672 kg during July 2021 to December 2021. The catch is less when compared with January - June 2021 data which may be due to varied fishing activities due to Covid 19 pandemic and seasonal changes. The catch yield obtained in all ten landing areas has been illustrated in the table 4 and Fig. 5. During the study, 93 fish genus have been identified under the commercial fishery resource and are illustrated in the following table 5.

Table 4: Total catch in major landing centres during July 2021 to December 2021 in Tuticorin coast

Landing areas	Catch landed /year
Thirespuram	370672
Mottaigopuram	44860
Siluvaipatti	37397
Vellapatti	160083
Tharuvaikulam	371131
Pattinamaruthoor	87926
Vaipar	259916
Sippikulam	159807
Periyasamipuram	29613
Vembar	171252
Total catch	1692657

Table 5: Species recorded in landing areas - Tuticorin coast

1	<i>Ablennes hians</i>	32	<i>Epinephelus merra</i>	63	<i>Penaeus</i> sp.
2	<i>Acanthocybium solandri</i>	33	<i>Euthynnus affinis</i>	64	<i>Plectrohinchus</i> sp.
3	<i>Acanthurus</i> sp.	34	<i>Gerres</i> sp.	65	<i>Portunus pelagicus</i>
4	<i>Aetoplatea</i> sp.	35	<i>Harpulina</i> sp.	66	<i>Portunus sannguineolatus</i>
5	<i>Alectis indicus</i>	36	<i>Hemiramphus far</i>	67	<i>Rastrelliger kanangurta</i>
6	<i>Alopias</i> sp.	37	<i>Hilsa keele</i>	68	<i>Rhizoprionodon</i> sp.
7	<i>Arius substratus</i>	38	<i>Himantura uarnak</i>	69	<i>Sardinella albella</i>
8	<i>Atule mate</i>	39	<i>Irundichthys</i> sp.	70	<i>Sardinella longiceps</i>
9	<i>Auxis thazard</i>	40	<i>Istiophorus</i> sp.	71	<i>Sargocentron rubrum</i>
10	<i>Carangoides armatus</i>	41	<i>Isurus oxyrinchus</i>	72	<i>Saurida tumbil</i>
11	<i>Carangoides</i> sp.	42	<i>Katsuwonas pelamis</i>	73	<i>Scarus ghibbus</i>
12	<i>Caranx</i> sp.	43	<i>Lates calcarifer</i>	74	<i>Scarus ghobban</i>
13	<i>Cardisoma canarium</i>	44	<i>Leiognathus equulus</i>	75	<i>Scolopsis vosmeri</i>
14	<i>Cephalopholis boenack</i>	45	<i>Lethrinus</i> sp.	76	<i>Scomberoides commersonianus</i>
15	<i>Cephalopholis formosa</i>	46	<i>Liza tade</i>	77	<i>Scomberoides lysan</i>
16	<i>Cephalopholis sonnerati</i>	47	<i>Lobotes surinamensis</i>	78	<i>Scomberomorous commerson</i>
17	<i>Charybdis cruciata</i>	48	<i>Loligo duvauceli</i>	79	<i>Scylla tranquebarica</i>
18	<i>Chichoreus ramosus</i>	49	<i>Lutjanus lutjanus</i>	80	<i>Sepia pharonis</i>
19	<i>Chirocentron</i> sp.	50	<i>Mene maculata</i>	81	<i>Sepioteuthis</i>
20	<i>Coryphaena hippurus</i>	51	<i>Metapenaeus</i> sp.	82	<i>Siganus javus</i>
21	<i>Cynoglossus</i> sp.	52	<i>Mobula japanica</i>	83	<i>Sphyræna barracuda</i>
22	<i>Dasyatis kuhlii</i>	53	<i>Mugil Cephalus</i>	84	<i>Stolephorus commersonnii</i>
23	<i>Dasyatis</i> sp.	54	<i>Nemapterus japonicus</i>	85	<i>Strongylurus leiura</i>
24	<i>Dasyatis uarnak</i>	55	<i>Nemapteryx caelata</i>	86	<i>Synatpura</i> sp.
25	<i>Destodus erumi</i>	56	<i>Octopus aegina</i>	87	<i>Thunnus albacares</i>
26	<i>Diagramma pictum</i>	57	<i>Octopus cyaneus</i>	88	<i>Thunnus thynnus</i>
27	<i>Dorytheuthis</i> sp.	58	<i>Octopus dofusii</i>	89	<i>Trachurus japonicus</i>
28	<i>Drepane punctata</i>	59	<i>Pampus pampus</i>	90	<i>Trichurus saavala</i>
29	<i>Epinepheleus undulosus</i>	60	<i>Paniluris homorus</i>	91	<i>Turbinella pyrum</i>
30	<i>Epinephelus areolatus</i>	61	<i>Panilurus ornatus</i>	92	<i>Tylosurus</i> sp.
31	<i>Epinephelus malabaricus</i>	62	<i>Paraupeneus indicus</i>	93	<i>Upeneus vittatus</i>

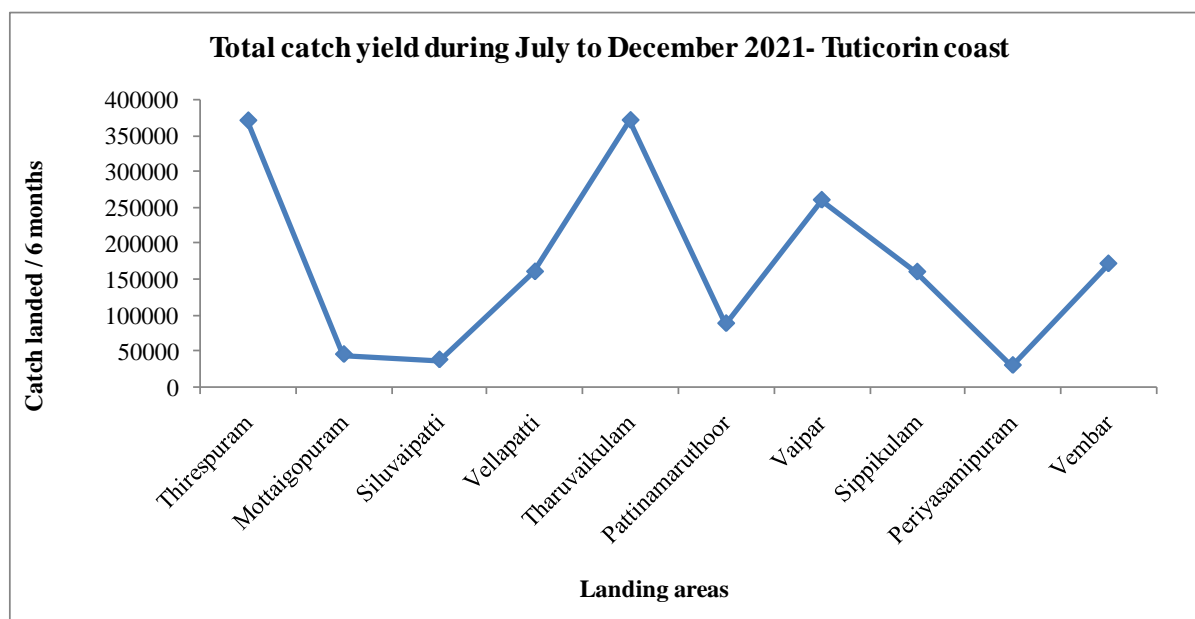


Fig.5: Total catch obtained during July 2021 to December 2021 in Tuticorin coast

Thirespuram

Total landing was recorded as 370672 Kg. Maximum landing was recorded in October 2021 to about 71358 kg and minimum in November 2021 to about 43366 kg. Species dominantly observed varies according to the season - Emperors (*Lethrinus* sp.) dominantly recorded in October 2021; *Lutjanus* sp. dominantly found throughout the season; and *Caranx* sp. dominantly landed during November 2021. Species commonly landed includes Sardines -*Sardinella* sp., *Auxis thazard.*, *Scomberomorous commerson* etc.

- Dominant species - *Lethrinus* sp., *Lutjanus* sp., *Caranx*, *Sardinella* sp., *Auxis thazard*, *Scomberomorous commerson*
- Maximum catch recorded - October 2021.
- Minimum catch recorded - November 2021.

Mottaigopuram

Total landing was recorded as 44860 Kg. Maximum landing was recorded in September 2021 to about 9672 kg and minimum in November 2021 to about 4822 kg. Species dominantly landed varies according to the season - Shrimp (*Penaeus* sp.) dominantly found during the entire survey period; and Emperor fish - *Lethrinus* sp. dominance in September 2021. Species commonly found includes *Parupeneus* sp., *Sepiella* sp., *Upeneus* sp. etc.

- Dominant species - *Penaeus* sp., *Lethrinus* sp., *Sepiella* sp., *Parupeneus* sp., *Sepiella* sp., *Upeneus* sp., etc
- Maximum catch recorded - September 2021
- Minimum catch recorded - November 2021

Siluvaipatti

Total landing was recorded as 37397 Kg. Maximum landing was recorded in September 2021 to about 8526 kg and minimum in November 2021 to about 4061 kg. Species dominantly landed varies according to the season - Shrimp (*Penaeus* sp.) dominantly observed throughout the season; Emperors- *Lethrinus* sp. found in September 2021 and Crab- (*Portunus* sp) dominantly recorded in September 2021. Species commonly observed includes *Sepiella* sp., *Paraupeneus* sp., *Lutjanus* sp., etc.

- Dominant species - *Lethrinus* sp, *Penaeus* sp., *Portunus* sp, *Sepiella* sp., *Paraupeneus* sp., *Lutjanus* sp.,
- Maximum catch recorded - September 2021.
- Minimum catch recorded - November 2021.

Vellapatti

Total landing was recorded as 160083 Kg. Maximum landing was recorded in September 2021 to about 29207 kg and minimum in November 2021 to about 18416 kg. Species dominantly found varies according to the season – Crustaceans - crab (*Portunus pelagicus*,) dominantly found in December 2021 and *Paraupeneus indicus* found in October 2021; and *Lethrinus* sp., recorded during the month of July 2021. Species commonly found includes *Siganus* sp., *Portunus sanguineolatus*, *Lethrinus* etc.

- Dominant species – *Portunus pelagicus*, *Paraupeneus indicus*, *Lethrinus* sp *Lutjanus* sp., *Siganus* sp., *Portunus sanguineolatus*.
- Maximum catch recorded - September 2021.
- Minimum catch recorded - November 2021.

Tharuvaikulam

Total landing was recorded as 371131 Kg. Maximum landing was recorded in October 2021 to about 69335 kg and minimum in November 2021 to about 44386 kg. Species dominantly landed varies according to the season – Fin fishes includes Tunas (*Euthynnus affinis*) dominantly recorded in December 2021 and *Tylosurus* sp. found during the month of December 2021. Species commonly found includes *Lutjanus* sp. *Coryphaenae* sp. *Sphyraena* sp *Thunnus albacares* etc.

- Dominant species – *Euthynnus affinis* , *Tylosurus* sp – *Lutjanus* sp. *Coryphaenae* sp. *Sphyraena* sp *Thunnus albacares*
- Maximum catch recorded - October 2021
- Minimum catch recorded - November 2021

Pattinamaruthoor

Total landing was recorded as 87926 Kg. Maximum landing was recorded in September 2021 to about 17582 kg and minimum in November 2021 to about 10445 kg. Species dominantly found varies according to the season – *Hemiramphus far* dominantly found during the month of September 2021 followed by Crustaceans - crabs (*Portunus pelagicus*) found during the month of December 2021. Species commonly observed includes *Lutjanus*, *Lethrinus* sp. *Portunus sanguineolatus* *Paraupeneus indicus*

- Dominant species – *Hemiramphus far*, *Portunus pelagicus*, *Lutjanus* sp., *Lethrinus* sp.
Portunus sannguineolatus, *Paraupeneus indicus*
- Maximum catch recorded - September 2021.
- Minimum catch recorded - November 2021.

Vaipar

Total landing was recorded as 259916 Kg. Maximum landing was recorded in August 2021 to about 46910 kg and minimum in November 2021 to about 30750 kg. Species dominantly found varies according to the season – fin fishes includes Sardines (*Sardinella* sp.) dominantly found throughout the season; Needlefish (*Strongylera* sp.) recorded doiminantly in July 2021; and Emperors (*Lethrinus* sp.) found in December 2021. Species commonly found includes *Sphyaena* sp., *Tylosurus* sp. *Alectis indicus*

- Dominant species – *Sardinella* sp., *Strongylera* sp., *Lethrinus* sp., *Sphyaena* sp., *Tylosurus* sp. *Alectis indicus*
- Maximum catch recorded - August 2021
- Minimum catch recorded - November 2021

Sippikulam

Total landing was recorded as 155415 Kg. Maximum landing was recorded in September 2021 to about 31729 kg and minimum in November 2021 to about 15741 kg. Species dominantly observed varies according to the season – fin fishes (*Strongylera* sp) dominantly recorded in September 2021; and Barracuda (*Sphyaenae* sp.) landed in September 2021. Species commonly recorded includes *Sardinella* sp., *Upeneus* sp. *Tylosurus* sp. *Rastrelliger kanangurta*

- Dominant species – *Strongylera* sp ., *Sphyaenae* sp ., *Sardinella* sp., *Upeneuss* sp. *Tylosurus* sp. *Rastrelliger kanangurta*.
- Maximum catch recorded - September 2021.
- Minimum catch recorded - November 2021.

Periyasampuram

Total landing was recorded as 39613 Kg. Maximum landing was recorded in July 2021 to about 7644 kg and minimum landing in November 2021 to about 4049 kg. Species dominantly landed varies according to the season – Crustaceans – Crab (*Portunus* sp.) were dominantly found throughout the season; *Sepiella* were dominantly found in July 2021; and *Doryteuthis* found during the month of July 2021. Species commonly found includes *Loligo* sp., *Lutjanus* sp., *Lethrinus* sp etc.

- Dominant species – *Portunus* sp., *Sepiella* sp., *Loligo* sp., *Doryteuthis* sp., *Lutjanus* sp., *Lethrinus* sp., *Sphyaenae* sp.,
- Maximum catch recorded - July 2021.
- Minimum catch recorded - November 2021.

Vembar

Total landing was recorded as 171252 Kg. Maximum landing was recorded in September 2021 to about 36918 kg and minimum in November 2021 to about 15312 kg. Species dominantly observed varies according to the season – Fin fishes Emperors – (*Lethrinus* sp., *Lutjanus* sp.) and Barracuda - *Sphyraenae* sp. were dominantly found during the month of December 2021. Species commonly found includes *Atule mate.*, *Upeneus* sp., *Scomberomorus* sp., etc.

- Dominant species –*Lethrinus* sp., *Lutjanus* sp., *Sphyraenae* sp., *Scomberomorous* sp., *Epinepheleus* sp., *Trichurus savalaa*, *Portunus* sp., etc.
- Maximum catch recorded - September 2021
- Minimum catch recorded - November 2021

The major dominant fishery resources and the peak landing month in the 10 landing areas are given in Table 6.

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Table 6: Dominant fishery resources and maximum catch month/s in the 10 landing areas of Tuticorin coast during July 2012-December 2021

Landing areas	Dominant fishery resources	Peak season
Therespuram	Emperors (<i>Lethrinus</i> sp <i>Lutjanus</i> sp))	Oct & Dec 21
	Caranx sp.	Nov-21
	Sardines(<i>Sardinella</i> sp)	July-21
Mottaigopuram	Shrimp(<i>Penaeus</i> sp)	all seasons
	Emperors (<i>Lethrinus</i> sp)	Sep-21
	Parupeneus sp.	Sep-21
	Cephalopods (<i>Sepiella</i> sp)	Sep-21
Siluvaipatti	Emperors (<i>Lethrinus</i> sp)	Sep-21
	Shrimp (<i>Penaeus</i> sp)	all seasons
	Crustaceans (<i>Portunus pelagicus</i>)	Sep-21
	Cephalopods (<i>Sepiella</i> sp)	Sep-21
Vellapatti	Crustaceans (<i>Portunus pelagicus</i>)	all seasons
	Paraupeneus indicus	Oct-21
	Emperors(<i>Lethrinus</i> sp& <i>Lutjanus</i> sp)	Jul-21
Tharuvaikulam	Tuna (<i>Euthynnus affinis</i>)	Dec-21
	Needlefish (<i>Tylosurus</i> sp)	Dec-21
	Emperors (<i>Lutjanus</i> sp)	Dec-21
Pattinamaruthoor	Hemiramphus far	Sep-21
	Crustaceans (<i>Portunus pelagicus</i>)	Dec-21
	Emperors (<i>Lutjanus</i> sp, <i>Lethrinus</i> sp)	Aug-21 & Sep-21
Sippikulam	Needlefish (<i>Strongylura</i> sp)	Sep-21
	Barracuda (<i>Sphyraena</i> sp)	Sep-21
	Sardines (<i>Sardinella</i> sp)	Aug-21
Vaipar	Sardine (<i>Sardinella</i> sp)	all seasons
	Needlefish (<i>Strongylura</i> sp)	Jul-21
	Emperors (<i>Lethrinus</i> sp)	Dec-21
Periyasampuram	Crustaceans (<i>Portunus</i> sp)	all seasons
	Cephalopods(<i>Sepiella</i> sp, <i>Doryteuthis</i> ,sp <i>Loligo</i> sp)	Jul-21
Vembar	Emperors (<i>Lethrinus</i> sp)	Dec-21
	Barracuda (<i>Sphyraena</i> sp)	Dec-21

4. Remarks

The marine environmental monitoring during the period from July 2021 to December 2021 recorded no impact on the coastal ecology of Pattinamarudur coast including the coral reefs, seagrasses, associated fish population and other biological properties like macro and meio benthos and plankton. There was also no notable impact on the physical and chemical properties and heavy metal values in the marine water and sediment. The overall quantity of fish catch was reduced and it may be due to COVID-19 pandemic and seasonal changes. There was an outbreak of *Noctiluca scintillans* in October 2021 and a mild algal bloom around the project location, however Coral and seagrass habitats and associated biodiversity were not affected. The monitoring of cage culture of fish showed good fish population within and outside the cage which indicates the environment is healthy and conducive for biological resources.

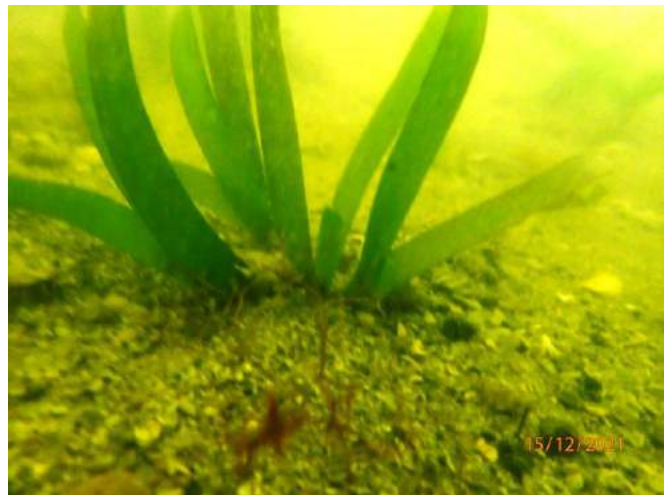
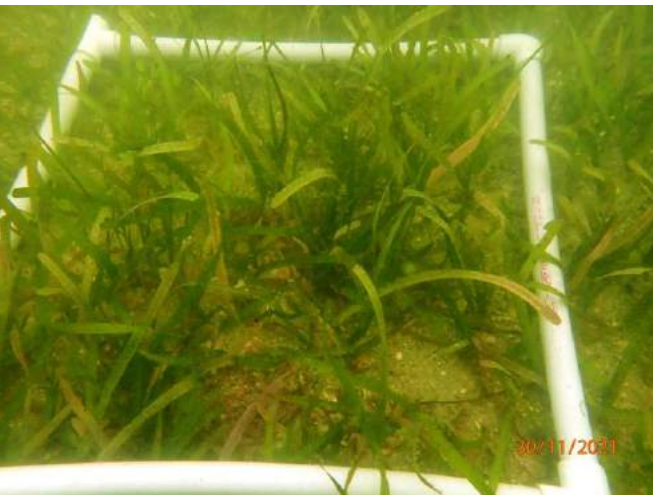
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6. Photos

Status of seagrass, corals and fish population





Fishing Landing & Catch Monitoring

Therespuram



Mottaigopuram



Siluvaipatti



Vellapatti



Tharuvaikulam



Pattinamaruthoor



Sippikulam



Vaipar



Periyachamypuram



Vembar





28/09/2021

ANNEXURE - 9

**COMPLIANCE TO THE CONDITIONS LAID BY MoEF VIDE OFFICE MEMORANDUM
No.F.No.J-13012 /8/2009-IA.II(T) dated 11.11.2020**

Period: July 2021 to December 2021

Sl.No.	CONDITIONS STIPULATED BY MoEF	COMPLIANCE
a)	Details regarding change in source (Location of the source, Proposed Quantity, Distance from the power plant and mode of transportation), Quality (Ash, Sulphur, Moisture Content and Calorific Value) shall be informed to the Ministry and its Concerned Regional Office .The Quantity of coal transported from each source along with the mode of transportation shall be submitted as part of EC Compliance Report.	Agreed For Compliance.
b)	The Applicable flue gas emissions standards for particulate matter, Sulphur Dioxide, Oxides of Nitrogen and Mercury Shall be complied in line with Ministry's Notification Vide S.O 3305 (E) dated 7.12.2015 and subsequent emissions. A Progress of implementation and its compliance shall be submitted as part of Compliance Report.	Continuous Stack emission and ambient air quality monitoring are being carried out and records are being maintained. The monitored data for the period of July 2021 to December 2021 is enclosed as Annexure - 1. The results are well within the prescribed norms. FGD Feasibility Study is in Progress.
c)	Ash Content in the coal and coal Transportation is governed by the Ministry's Notification Vide S.O 1561(E) dated 21.5.2020.As far as possible, Coal Transportation shall be done by rail/conveyor or other eco-friendly modes. However, road transportation is allowed with tarpaulin covered trucks till the railway / conveyor belt infrastructure is made available. A Progress (Physical and Financial) of rail connectivity from nearest railway siding or conveyor connectivity to the power plant shall be submitted in the EC Compliance Report.	At present Coal is being transported to our plant through trucks which are fully covered with tarpaulin. Railway line laying work is under Progress by Southern Railways close to our Plant. Engineering Scale Plan for "Takeoff line" to our Plant submitted to Southern Railways for Approval.
d)	Additional ash pond is not allowed due to increase in ash content in the raw coal as against the ash pond permitted in the Environment Clearance. The 100% Fly ash utilization is to be achieved within four years in line with fly ash notification dated 14.09.1999, 27.8.2003,03.11.2009 & 25.01.2016 and amended time to time or extant regulation on fly ash utilization.	Agreed For Compliance.
e)	In case of exceptional circumstances project proponents may approach the ministry for seeking permission to use an emergency ash pond with cogent reasons if any.	Noted.
f)	The Details Regarding monthly generation , utilization and disposal of fly ash (including bottom ash) shall be submitted to the ministry and its regional office	Agreed For Compliance.