**Chettinad Cement, KW,TN/ Cement Plant, CPP & SN Mines /Six Monthly Report / Apr'22-Sep'22 / EHS-225**
**24th Nov, 2022**

**Regional Office (SEZ)**
**MoEF & CC, Government of India,**
No.34, HEPC Campus, Cathedral Garden Road,
Nungambakkam, Chennai – 600 034
Ph No. 044-28222056/48613477
Email Id : eccompliance-tn@gov.in

Dear Sir,

**Subject** : **Submission of Six Monthly (April'2022 to September'2022) Compliance Report** of Environment Clearance for Cement Plant, Captive Power Plant and Seethai Nagar Limestone mines of Chettinad Cement Corporation Private Limited, located at Karikkali Village, Guziliamparai Taluk, Dindigul District, Tamil Nadu – 624703

**Reference** : **Environmental Clearance F.No.J-11011/518/2009-1A 11(i) dated 02.08.2010**

* * * * * * * * *

We hereby submit the **Six Monthly Compliance report (April'2022 to September'2022)** of above eferred Environmental clearance pertaining to our "**Cement Plant** (Expansion from 2.0 to 4.5 million tons per annum), **Captive Power Plant** (Expansion from 18 to 48mw) and **Seethai Nagar Limestone Mines** (Expansion from 2.0 to 4.5 million tons per annum) located at Karikkali Village, Guziliamparai Taluk, Dindigul District, Tamil Nadu-624703.

Thanking you

Yours faithfully
for **CHETTINAD CEMENT CORPORATION PRIVATE LIMITED**

CHETTINAD CEMENT CORPN. PVT. LTD. KARIKKALI 624703

**V.KRISHNAN**
**JOINT PRESIDENT [WORKS]**

Copy to:

1. Regional Director, CPCB, Bangalore, Email id : **zobangalore.cpcb@nic.in**
2. Member Secretary, TNPCB, Chennai, email id : **tnpcbmembersecretary@gmail.com**
3. JCEE, TNPCB, Madurai, email id : **tnpcbjceemdu@gmail.com**
4. DEE, TNPCB, Dindigul, email id : **pcbdgl@gmial.com**

**Chettinad Cement Corporation Limited**
Rani Meyyammai Nagar, Karikkali Po, Guziliamparai (Via)
Dindigul Dist 624 703, Tamilnadu, India.
T +91 4551 234431, 234441, 234602
F + 91 4551 234608
E-mail: karikkali@chettinadcement.com
www.chettinadcement.com

**Head Office :**
4th Floor, Rani Seethai Hall Building
603, Anna Salai, Chennai 600 006
T +91 44 2829 2727, 4214 9955
E info@chettinadcement.com
F +94 44 28291558
www.chettinadcement.com

Chettinad cement

KARIKKALI WORKS

# Six Monthly EC Compliance Report

## Period: April'2022 to September'2022

KARIKKALI WORKS

# CHETTIAND CEMENT CORPORATION PRIVATE LIMITED

**Cement Plant, Captive Power Plant & Seethai Nagar Limestone Mine**

Dindigul District, Tamil Nadu

## Six Monthly Compliance Report (Apr'22 – Sep'22)

**[Expansion of Cement Plant from 2.0 to 4.5 million tons per annum, Captive Power Plant from 18 to 48 MW & Seethai Nagar Limestone Mine from 2.0 to 4.5 million tons per annum]**

## CONTENTS


| Annexure No | Description of Report | Page Number | |
|---|---|---|---|
| | | From | To |
| 1 | Status of Compliance stipulated in Environmental Clearance | 01 | 14 |
| 2 | Stack Emission data (PM) for Cement Plant & Captive Power Plant | 15 | 15 |
| 3 | Stack Emission data (SO2 & NOx) for Cement Plant & Captive Power Plant | 16 | 16 |
| 4 | Fugitive Emission data for Cement Plant | 17 | 17 |
| 5 | Ambient Air Quality data for Cement Plant & Captive Power Plant | 18 | 19 |
| 6 | Ambient Air Quality data for Seethai Nagar Limestone Mines | 20 | 21 |
| 7 | Noise Level data for Cement Plant & Captive Power Plant | 22 | 23 |
| 8 | Noise Level data for Seethai Nagar Limestone Mines | 24 | 25 |
| 9 | Treated Effluent water Quality data | 26 | 26 |
| 10 | Ground Water Quality data for Cement Plant & Captive Power Plant | 27 | 27 |
| 11 | Ground water Quality data for Seethai Nagar Limestone Mines | 28 | 28 |
| 12 | Green Belt Development Photos for Cement Plant & Captive Power Plant | 29 | 33 |
| 13 | Green Belt Development Photos for Seethai Nagar Limestone Mines | 34 | 38 |

Annexure 1

# Chettinad Cement Corporation Private Limited

Karikkali Village, Dindigul District, Tamil Nadu

**Cement Plant, Captive Power Plant & Seethai Nagar Limestone Mine**

**Status of compliance Stipulated in Environmental Clearance**

**(For the Period of April'2022 to September'2022)**

**Reference** : *EC granted by MoEF vide Letter No* ***F.No.J-11011/518/2009-1A 11(i) dated 02.08.2010*** *for expansion of Cement Plant Capacity from 2.0 to 4.5 million tons per annum, Captive Power Plant Capacity from18 to 48 mw and Captive Limestone Mine Capacity from 2.0 to 4.5 million tons per annum ( Mining Lease Area 379 ha)*

**Present Status of Project** :
1. *Cement Plant : Expansion (4.5mtpa) Completed & Commissioned on July'2011*
2. *Captive Power Plant : Expansion (48mw) Completed & Commissioned on July'2011*
3. *Seethai Nagar Mines : Expansion (4.5mtpa) Completed & Commissioned on Jan'2013*

**A. Specific Conditions**

| S. No | Specific Condition | Compliance Status |
|---|---|---|
| 1. | The company shall comply with the condition stipulated in the environmental clearance Letter No.J-11011/11/2008-1A-11(I) dated 15.10.2008 | *Compliance with the conditions stipulated in the Environmental Clearance referred is Complied* |
| 2. | Continuous monitoring system to monitor gaseous emissions shall be provided and limit of Particulate emissions shall be controlled within 50 mg/Nm$^3$ by installing adequate air pollution control system and energy efficient technology. | *Complied*<br>*The continuous stack monitoring system to monitor gaseous emissions ($SO_2$ and $NO_X$) and dust (PM) has been provided and the concentrations of pollutants are being controlled by providing the following appropriate control measures to ensure compliance with prescribed norms.*<br>a. *Bag House – Raw Mill/kiln-1&2, Coal Mill-1&2, Cement Mill -1,2 &3*<br>b. *Low Nox burners – Pyro process*<br>c. *Electrostatic Precipitators – Clinker Coolers*<br>d. *As sulphur is getting converted into its compounds during the process of formation of clinker in the Kiln, the emission of SO2 is under control as stated.*<br>e. *Bag Filters – Limestone crushers at mines*<br>*The stack emission report of ROA of the survey conducted by TNPCB on 27.09.2022 & 28.09.2022 reveals that the emission from the all stacks are PM in the range of 21mg/Nm$^3$ to 30mg/Nm$^3$ which is below the prescribed limit of 30mg/Nm$^3$.* |

| S. No | Specific Condition | Compliance Status |
|---|---|---|
| | | *SO2 in the range of 11mg/Nm$^3$ to 64mg/Nm$^3$ which is below the prescribed limit of 100mg/Nm$^3$ and NOX in the range of 23mg/Nm$^3$ to 52mg/Nm$^3$ which is below the prescribed limit of 800mg/Nm$^3$*<br>*Manual monitoring is also carried out through external agency on monthly basis and ROA of the results reveals that emission values are maintaining below norms prescribed by MoEF /CPCB /TNPCB.*<br>*The consolidated manual stack emission monitoring reports (Apr'22 to Sep'22) are hereby enclosed vide* ***Annexure 2 & 3*** |
| 3. | Possibilities shall be explored for the proper and full utilization of gases generated from the kiln in waste heat recovery Boiler (WHRB) and a feasibility report should be prepared and submitted to the Ministry and its Regional office at Bangalore within 3 months from the date of issue of this letter | *The exit hot gases from kiln are being utilized for moisture removal in the raw materials and final exist gas in the range of 180$^O$c is insufficient for power generation using Waste Heat Recovery Boiler (WHRB).* |
| 4. | The National Ambient Air Quality Emission Standards issued by the Ministry vide G.S.R .No. 826 (E) dated 16$^{th}$ November, 2009 should be followed. | *Complied*<br>*The Ambient Air Quality (AAQ) manual monitoring is conducting at 8 locations through external agency on monthly basis and TNPCB once in six month.*<br>*In addition to the manual monitoring, two numbers online CAAQMS installed to monitor the Ambient emission levels and same is being connected to Air Care Centre, TNPCB and OCEMS, CPCB.*<br>*The ROA of the AAQ survey conducted by TNPCB on 27.09.2022 & 28.09.2022 reveals that the $PM_{10}$ is in the range of 55µg/m$^3$ to 78µg/m$^3$ which is below the prescribed limit of 100µg/m$^3$, $PM_{2.5}$ is in the range of 39µg/m$^3$ to 52µg/m$^3$ which is below the prescribed limit of 60µg/m$^3$ and SO2 in the range of 17µg/m$^3$ to 23µg/m$^3$ and NO2 in the range of 23µg/m$^3$ to 29µg/m$^3$ which is below the prescribed limit of 80µ/m$^3$*<br>*The consolidated AAQ monitoring reports (Apr'22 to Sep'22) are hereby enclosed vide* ***Annexure 5 & 6*** |

| S. No | Specific Condition | Compliance Status |
|---|---|---|
| 5. | Secondary fugitive emission from all the sources shall be controlled within the latest permissible limits issued by the Ministry and regularly monitored. Guidelines / Code of Practice issued by the CPCB shall be followed. | *Complied*<br>*Plant (Cement Plant & Captive Power Plant) :*<br>*To control Fugitive Emissions, all the raw materials and finished product cement are stored in closed RCC silos and sheds. All materials transfer through closed conveyors. The periodical fugitive emission monitoring at raw material storage areas*<br>*Captive Mines (Seethai Nagar Limestone Mines):*<br>*To control fugitive emissions in the Mines, permanent water sprinklers are installed in dust generation points, haul roads, etc., Fugitive Emissions in the mines were in compliance with AAQ Norms as well as IBM norms for Limestone Mines.*<br>*The consolidated Fugitive Emission monitoring reports (Apr'22 to Sep'22) are hereby enclosed vide* ***Annexure 4.*** |
| 6. | Asphalting/concreting of roads and water spray all around the critical areas prone to air pollution and having high levels of SPM and RPM should be ensured. | *Plant (Cement Plant & Captive Power Plant):*<br>*Concrete roads are provided in all vehicle movement area inside the plant and water sprinklers are also provided all materials storage areas.*<br>*Captive Mines (Seethai Nagar Limestone Mines):*<br>*Permanent water sprinklers are provided for dust control on the mine roads, crushers to suppress the dust.* |
| 7. | Efforts should be made to reduce impact of the transport of the raw materials and end products on the surrounding environment including agricultural land. All the raw materials including fly ash should be transported in the closed containers only and shall not be overloaded. Vehicular emissions shall be regularly monitored. | *Complied*<br>*Plant (Cement Plant & Captive Power Plant):*<br>*Raw materials are transport through both rail and road mode. Fly ash has been handled through closed bowsers and pneumatic transfers.*<br><br>*Captive Mines (Seethai Nagar Limestone Mines):*<br>*Crushed Limestone from mines transport to the Cement Plant through closed conveyors and Bag Filters provided at transfer points to collect dust.*<br>*Vehicles with Pollution Under Control Certificate only being permitted inside the premises.* |
| 8. | Rainwater harvesting measures shall be adopted for the augmentation of ground water at Cement Plant, Colony and Mine site. The company must also collect rain water in the mined out pits of captive lime stone mine and use the same water for the various | *Complied*<br>*Plant (Cement Plant & Captive Power Plant):*<br>*Rainwater harvesting pond with a capacity of 1200 $m^3$ has been provided in the Plant premises. The harvested water in the Plant is being used for dust suppression and greenbelt.* |

| S. No | Specific Condition | Compliance Status |
|---|---|---|
| | activities of the project to conserve fresh water and reduced the water requirement pressure from the river. An action plan should be submitted to Ministry's Regional Office at Bangalore within 3 months from the date of issue of this letter. | *Captive Mines (Seethai Nagar Limestone Mines):*<br>*Rain water harvesting measures like catch drains/garland drains had been provided to divert and collect the rainwater in the mined out pits (26,22,380 $m^3$).*<br>*The harvested rain water used for dust suppression and greenbelt development within the Mining Lease area and also in the Cement Plant, Captive Power Plant and Colony.*<br>*The EIA Report submitted to Regional Office of MoEF, Bangalore includes the details of rainwater harvesting measures and the utilization of harvested rainwater.* |
| 9. | The project proponent shall ensure that no natural water course shall be obstructed due to any mining operations. | *Complied*<br>*Natural water course not obstructed due to any mining operations.* |
| 10. | Catch drains and siltation ponds of appropriate size shall be constructed for the working pit, Inter burden and mineral dumps to arrest flow of silt and sediment. The water so collected shall be utilized for watering the mine area roads, green belt development etc. The drains should be regularly de silted, particularly after monsoon, and maintained properly. | *Complied*<br>*Catch drains/garland drains and siltation sump had been constructed to arrest flow of silt and sediment. The rain water is collected in the Mine Pits is utilized for sprinkling in the mine area, roads, greenbelt development etc., and also in the Cement Plant, Captive Power Plant and Colony.*<br>*The drains are regularly desilted, particularly after monsoon and maintained properly.* |
| 11. | Garland drain of appropriate & size, gradient and length shall be constructed for both mine pit and Inter burden dumps and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of slit material. Sedimentation pits should be constructed at the corners of the garland drains and de silted at regular intervals. | *Complied*<br>*Garland bund is made around the OB dump for a length of 4500m. A sump of 24,700m3 size capacity is made to collect the drain from the Garland Drain.*<br><br>*The sump capacity was designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoin the mine site.*<br>*The sump capacity is having adequate retention period to allow proper setting of slit material. Sedimentation pits also constructed at the corners of the garland drains and desilted at regular intervals.* |

| S. No | Specific Condition | Compliance Status |
|---|---|---|
| 12. | Regular monitoring of ground water level and quality shall be carried out by establishing a network of existing wells and constructing new piezometers at suitable locations by the project proponent in and around project areal in consultation with Regional Director, Central Ground Water Board. The frequency of monitoring should be four times a year- pre-monsoon (April / May), monsoon (August), post-monsoon (November), and winter (January), Data thus collected shall be sent at regular Intervals to Ministry of Environment and Forests and its Regional Office at Bangalore Central Ground Water Authority and State Ground Water Board. | *Complied*<br>*Regular monitoring of ground water level and quality carried out by establishing a network of existing wells manually at suitable locations in and around plant area on quarterly basis and also by installing 2 Nos of Piezometers.*<br><br>*The collected data's are submitted to MoEF&CC and its Regional Office, Chennai, Central Ground Water Authority and State Ground Water Board regularly.*<br><br>*The consolidated Ground Water quality reports (Apr'22 to Sep'22) are hereby enclosed vide* ***Annexure 10 & 11.*** |
| 13. | Dimension of the retaining wall at the toe of Inter burden dumps and Inter burden benches within the mine to check run-off and siltation should be based on the rain fall data. | *Complied*<br>*The retaining wall of adequate dimension provided at the toe of waste dumps to check run-off.* |
| 14. | Suitable conservation measures to augment ground water resources In his area should be planned and implemented in consultation with Regional Director, Central Ground Water Board. | *Complied*<br>*Rain water is collected in the mine pit which helps to recharge the ground water in the vicinity.*<br>*Further, sedimentation pit is also be used for rain water harvesting system.* |
| 15. | All the bag filter dust, raw mill dust, coal dust. Clinker dust and cement dust from pollution control devices shall be recycled and reused In the process and used for cement manufacturing. | *Complied*<br>*The dust collected from the bad filters and pollution control measures are recycled and reused fully in the cement manufacturing process.* |

| S. No | Specific Condition | Compliance Status |
|---|---|---|
| 16. | An effort shall be made to use of high calorific hazardous waste in the cement kiln and necessary provision shall be made accordingly. | *Complied*<br><br>*Provisions like high efficiency multi-channel burner, feeding system etc., had been installed to facilitate co-processing of hazardous wastes in the Kiln.*<br><br>*Around 6207 Mts (dry quantity) of high calorific hazardous waste & 1832 Mts (dry Quantity) of CETP Sludge were used in our cement kiln for the period from Apr'22 to Sep'22.* |
| 17. | Efforts shall be made to use low grade lime. more fly ash and solid waste in the cement manufacturing. | *Complied*<br>*Fly Ash generated in our Captive Power Plant is 100% used for manufacturing Portland Pozzolana Cement (PPC) and Fly returns submitted to MoEF&CC & TNPCB regularly and last year (2021-22) returns submitted on 06.04.20221.*<br><br>*Low Grade Limestone is blended with available High Grade Limestone to conserve the natural resource. This blended Limestone used for raw meal preparation to produce clinker. Slag, a waste from Steel Industries is also used to produce Portland Slag Cement.* |
| 18. | All the fly ash shall be utilized as per Fly ash Notification, 1999 subsequently amended in 2003 and 210. Efforts should be made to use fly ash maximum in making Pozollona Portland Cement (PPC). | *Complied*<br>*Fly Ash generated in our Captive Power Plant is 100% used for manufacturing Portland Pozzolana Cement (PPC).*<br><br>*Fly returns submitted to MoEF&CC & TNPCB regularly and last year (2020-21) returns submitted on 06.04.2022.* |
| 19. | Risk and Disaster Management Plan along with the mitigation measures should be prepared and a copy submitted to the Ministry's Regional Office at Bangalore, SPCB and CPCB within 3 months of issue of environment clearance letter. | *Complied*<br>*There is a onsite Emergency Plan is in place and the EIA Report submitted to the Ministry's Regional Office at Bangalore, TNPCB and CPCB includes the Risk and Disaster Management Plan along with the mitigation measures.* |

| S. No | Specific Condition | Compliance Status |
|---|---|---|
| 20. | Blasting operation shall be carried out only during the daytime. Controlled blasting should be practiced. The mitigative measures for control of ground vibration and to arrest fly rocks and boulders should be implemented. | *Complied*<br>*Blasting operations are carried out during the daytime and controlled blasting method is followed to control ground vibration and arrest fly rocks and boulders.*<br>*Vibration study is carried by the periodically as per DGMS requirements.* |
| 21. | Wet drilling blasting method and provision for the control air emissions during blasting using duet collectors etc. , shall be used. | *Complied*<br>*Wet drilling and controlled blasting methods are adopted to control air emissions during drilling and blasting.* |
| 22. | Bench height, width and slope for individual bench should be properly assessed and implemented. Adequate measures should be adopted to stabilize the slope before abandonment. The fencing around the reservoir shall be provided to prevent accidents. | *Complied*<br>*Bench height, width and slope for individual bench are maintained as per Mining Plan/Scheme of Mining approved by Indian Bureau of Mines (IBM).*<br>*Adequate measures viz., gentle slope, terracing and plantation are carried out to stabilize the slope. Fencing around the rainwater harvesting reservoirs is provided to prevent accidents.* |
| 23. | Action plan for the mining management of over burden (removal, storage, disposal etc.), reclamation of the mined out area and mine closure shall be submitted to the Ministry and Its Regional Office at Bangalore. | *Complied*<br>*The EIA Report submitted to the Ministry and Its Regional Office at Bangalore includes the details of management of over burden (removal, storage, disposal etc.), reclamation of the mined out area and mine closure plan as per Mining Plan approved by IBM.* |
| 24. | The Inter burden and other waste generated shall be stacked at earmarked dump site(s) only and should not be kept active for long period. The total height of the dumps should not exceed 30 m in three terraces of 10 m each and the over all slope of the dump should be maintained to 28°. The inter burden dumps should be scientifically vegetated with suitable native species to prevent erosion and surface run off. Monitoring and management of rehabilitated areas should continue until the vegetation | *Complied*<br>*There is no inter burden and the other main waste is over burden (OB). This OB is stacked in an earmarked Dump site.*<br>*Presently, no OB generation from this mine. The existing OB dumps are inactive.*<br>*The OB dump heights are less than 30m and the slope is less than $28^{O}$. There are terraces on OB dumps. Plantation has been taken up on the OB dump.* |

| S. No | Specific Condition | Compliance Status |
|---|---|---|
| | becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment & Forests and Its Regional Office, Bangalore on six monthly basis. | *Compliance status report is submitted to the MoEF&CC once in every six months regularly. Previous returns (Oct'21-Mar'22) submitted on 28.05.2022* |
| 25. | The project proponent shall modify the mine plan of the project at the time of seeking approval for the next mining scheme from the Indian Bureau of Mines so as to reduce the area for external over burden dump by suitably increasing the height of the dumps with proper terracing. It should be ensured that 1he overall slope of the dump does not exceed 28°. | *Complied*<br>*As there is no storage of over burden outside the Mining Lease area. Hence, this condition is not applicable.* |
| 26. | The void left unfilled in the mining area shall be converted into water body. The higher benches of excavated void/mining pit should be terraced and plantation done to stabilize the slopes. The slope of higher benches should be, made gentler for easy accessibility by local people to use the water body, Peripheral fencing shall be carried out along the excavated area. | *Complied*<br>*Mined out pits are converted into rain water harvesting pits with fencing.*<br><br>*The Public access is restricted as the mining in other pits are carried out.* |
| 27. | Top soil, if any, shall be stacked with proper slope at earmarked site(s) only with adequate measures and should be used for reclamation and rehabilitation of mined out areas. | *Complied*<br>*Top soil generated from these mines pits were already used for green belt development. Now, no top soil is generated.* |
| 28. | As proposed, green belt shall be developed in at least 33 % In cement plant and all the mined out area except used for reservoir. | *Complied*<br>*Plant (Cement Plant & Captive Power Plant):*<br>*Total Plant area : 72.95 ha*<br>*33 % of Plant area : 24.07 ha*<br>*Actual Greenbelt developed area : 24.30 ha*<br>*Number of saplings planted so far : 53584 nos*<br>*Green Belt development photos enclosed vide* ***Annexure -12***<br><br>*Captive Mines (Seethai Nagar Limestone Mines):*<br>*Total Area of Mine : 379. 49 ha*<br>*Total Greenbelt development area : 30 ha*<br>*Actual Green belt developed area : 25.85 ha*<br>*Number of saplings planted so far : 32821 nos* |

| S. No | Specific Condition | Compliance Status |
|---|---|---|
| | | *Balance area/ Balance trees to be planted : 2.5 ha/6000*<br>*Green Belt development photos enclosed vide* ***Annexure -13***<br>*Target Date to complete Greenbelt Development : By 2030 (at the time of partial reclamation of mined pits). The balance mined out areas will be used as reservoir to harvest rainwater.* |
| 29. | All the safety norms stipulated by the Director General, Mine & Safety (DGMS) should be implemented. | *Complied*<br>*All the safety norms stipulated by the Director General, Mine & Safety (DGMS) were implemented.* |
| 30. | All the recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the Cement Plants shall be Implemented. | *Complied*<br>*The recommendations made in the Charter on Corporate Responsibility for Environment Protection (CREP) for the Cement Plants have been complied with except for the generation of power using hot gases from the Kiln. As the exit hot gases from kiln are being utilized for moisture removal in the raw materials and final exist gas in the range of 180$^{O}$c is insufficient for power generation using Waste Heat Recovery Boiler (WHRB).* |
| 31. | The company shall comply with the commitments made during public hearing held on 29th January, 2010 and a separate budget for Implementing the same should be allocated and information submitted to the Ministry's Regional Office at Bangalore. | *Complied*<br>*The details of commitments made to the public during public hearing and the action plan to implement the same had been submitted to Ministry's Regional Office at Bangalore on 27.03.2012. The commitments are being met form the budget allocated.* |
| 32. | At least 5 % of the total cost of the project should be earmarked towards the Corporate social responsibility and Item-wise details along with time bound action, plan should be prepared and submitted to the Ministry's Regional Office at Bangalore. Implementation of such program should be ensured accordingly in a time bound manner. | *Complied*<br>*As per latest CSR rules 2014 under section 135(5), We are spending the 2% of average net profit for CSR / CER activities such as local area development, Road laying, Social Welfare Program, Health Care Program, Education Development and Ecological conservation etc.,.* |

**B. General Conditions**

| Sl. No | General Condition | Compliance Status |
|---|---|---|
| i. | The Project authorities must strictly adhere to the stipulations made by the SPCB and State Government. | *Complied*<br>*All the stipulations made by the Tamil Nadu Pollution Control Board / State Government are being adhered.* |
| ii. | No further expansion or modifications in the plant shall be carried out without prior approval of this Ministry. | *Complied*<br>*No further expansion or modernization of the plant was carried out without prior approval of the MoEF & CC, New Delhi.* |
| iii. | The gaseous emissions from various process units shall conform to the load/mass based standards notified by this Ministry on 19th May, 1993 and standards prescribed from time to time. The SPCB may specify more stringent standards for the relevant parameters keeping in view the nature of the industry and its size and location. At no time, the emission level shall go beyond the prescribed standards. Interlocking facilities shall be provided so that process can be automatically stopped in case emission level exceeds the limit. | *Complied*<br>*The Installation of RABH/ESP/Pulse Jet Bag Filters for the point sources of emission, Use of low Ash and low Sulphur fuels and Use of low NOx Burners ensure that the Particulate Matter and gaseous emissions like $SO_2$ and $NO_x$ from various units are within the standards prescribed.*<br>*Interlocking facility had been provided in the pollution control equipment so that in the event of the pollution control equipment not working, the respective unit gets shut down automatically.* |
| iv. | The overall noise levels in and around the plant area shall be kept well within the standards(85dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under EPA Rules, 1989 viz. 75dBA (daytime) and 70 dBA (night time). | *Complied*<br>*Noise control measures like silencers, acoustic enclosures etc, are provided for all the sources of noise generation and good maintenance of Equipment & Machinery are also carried out.*<br>*The Noise levels are monitored at on monthly basis through external agency and levels are within the limits.*<br>*The consolidated Noise Level monitoring reports (Apr'22 to Sep'22) are hereby enclosed vide* ***Annexure 7 & 8.*** |
| v. | Occupational health surveillance of the workers should be done on a regular basis and records maintained as per the Factories Act. | *Complied*<br>*Occupational health surveillance of the workers is carried out on a regular basis and records are maintained as per the Factories Act.* |
| vi. | All the environment management measures given In the EIA/EMP shall be Implemented and complied with. | *Complied*<br>*All the environment management measures given In the EIA/EMP are being Implemented.* |

| Sl. No | General Condition | Compliance Status |
|---|---|---|
| vii. | The company shall develop surface water harvesting structures to harvest the rain water for utilization in the lean season besides recharging the ground water table. | *Complied*<br>*Plant (Cement Plant & Captive Power Plant) :*<br>*Rainwater harvesting pond with a capacity of 1200 $m^3$ has been provided in the Plant premises.*<br>*Captive Mine (Seethai Nagar Limestone Mines):*<br>*Rain water harvesting measures like catch drains/garland drains had been provided to divert and collect the rainwater in the mined out pits (26,22,380 $m^3$).*<br>*The rainwater harvested in the plant as well as in the Mine Pits is also used for cooling, dust suppression and greenbelt development and also for meeting the water requirement of Cement Plant, Captive Power Plant and Colony.* |
| viii. | Proper house keeping and adequate occupational health programmes shall be taken up as per the Factory Act. | *Complied*<br><br>*Two numbers of road sweeping machines uses plant's internal roads cleaning and vacuum cleaners as well as manual cleaning is done regular interval and ensured clean and good working atmosphere within the plant premises always.*<br><br>*And adequate occupational health programs are conducted as per the Factory Act.* |
| ix. | The company shall undertake eco-development measures including community welfare measures in the project area. | *Complied*<br><br>*Eco-development measures like rainwater harvesting, planting of saplings have been carried out in the nearby villages and community welfare measures such as Health (free medical camps, ambulance awareness programmes), Education (School buildings, furniture, drinking water, distribution of uniforms and notebooks) Infrastructure (village roads, drinking water etc., ) training for self-help groups are beings carried out in and the plant area.* |
| x. | A separate environmental management cell to carry out various management and monitoring functions shall be set up under the control of Senior Executive. | *Complied*<br>*There is a separate Environmental Management Cell under control of Unit Head. The pollution control equipments are maintained by the respective division.* |

| Sl. No | General Condition | Compliance Status |
|---|---|---|
| | | *Green Belt is carried out through their Horticultural person and ETP as well as STPs are maintained through their operators. The environmental monitoring is carried out through external agency on monthly basis.* |
| xi. | The requisite fund shall be earmarked towards capital cost and recurring cost/annum for environment pollution control measures to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government. The funds so provided shall not be diverted for any other purpose. | *Complied*<br>*As per latest CSR rules 2014 under section 135(5), We are spending the 2% of average net profit for CSR / CER activities such as local area development, Road laying, Social Welfare Program, Health Care Program, Education Development and Ecological conservation etc.,.* |
| xii. | The Project Authorities shall Inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work. | *Complied*<br>*As internally accrued funds had been invested there is no need of financial approval of project by any authority and the financial closure. The date of commencement of ground work had been communicated to MoEF, Delhi & MoEF, Bangalore.* |
| xiii. | A copy of clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parishad/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 web site of the company by the proponent. | *Complied*<br>*Environmental Clearance copy send to Gujiliyampari Panchayat, Karikkali village Guziliamparai Taluk, Dindigul District.*<br><br>*And the EC copy was uploaded in our web site.* |
| xiv. | The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the MOEF at Bangalore.,the respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely; $PM_{10}$, SO2, NOx (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the projects shall | *Complied*<br>*The status of compliance of the stipulated environment clearance conditions, including results of monitoring data are uploaded in our website and updated periodically.*<br>*Also, the same was submitted to Regional Office of the MoEF&CC, Chennai, Zonal Office of CPCB, Bangalore and TNPCB.*<br>*Last Submission date : 28.05.2022*<br>*(Oct'21 to Mar'22)* |

| Sl. No | General Condition | Compliance Status |
|---|---|---|
| | be monitored and displayed at a convenient location near the main gate of the company in the public domain. | *The monitoring data are displayed on main gate of the company of public domain.* |
| xv. | The project proponent shall also submit six monthly reports on the status of the compliance of the stipulated environmental conditions including results of monitored data (both in hard copies as well as by e-mail) to the Regional Office of MOEF, the respective Zonal Office of CPCB and the SPCB. The Regional Office of this Ministry at Bangalore/ CPCB / SPCB shall monitor the stipulated conditions. | *Complied*<br>*Six monthly EC compliance reports and the monitoring data are submitted to the Regional Office of MoEF & CC, Chennai, CPCB & TNPCB regularly.*<br><br>*Last Submission date : 28.05.2022*<br>*(Oct'21 to Mar'22)* |
| xvi. | The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental conditions and shall also be sent to the respective Regional Office of the MOEF at Bangalore by e-mail. | *Complied*<br>*Environmental Statement of Form V submitted to TNPCB and the Regional Office of MOEF & CC, Chennai at Bangalore in hard copy as well as by e-mail regularly.*<br><br>*The status of compliance of EC conditions and the Environmental Statement are uploaded in our company website.*<br><br>*Last Submission date :29.09.2022* |
| xvii. | The Project Proponent shall Inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the SPCB and may also be seen at the Website Of the Ministry of Environment and Forests at http:/envfor.nic.in, This should be advertised within seven days from the date of issue of the clearance letter at least in two local newspapers that are widely circulated In the region of which one shall be In the vernacular language of the locality concerned and a copy of the same shall be forwarded to the Regional office at Bangalore. | *Complied*<br>*Environmental Clearance copy send to Gujiliyampari Panchayat, Karikkali village Vedasandur Taluk, Dindigul District and advertisement were given in two local newspapers (Dinna Bhoomi – Tamil , The New Indian Express – English on 06.08.2010) and copies of the same were submitted to Regional office, Bangalore.*<br><br>*Also, the EC granted copy is uploaded in our web site.* |

**C. Other Condition**

| Sl. No | Other Condition | Compliance Status |
|---|---|---|
| 10 | The Ministry may revoke or suspend the clearance, if Implementation of any of the above conditions is not satisfactory. | *Guidelines noted.* |
| 11 | The Ministry reserves the right to stipulate additional conditions If found necessary. The Company In a time bound manner shall implement these conditions. | *Guidelines noted.* |
| 12 | 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. | *Guidelines noted and there is no appeal against this EC.* |
| 13 | The above conditions shall be enforced, Inter-alia under the provisions of Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, Hazardous Wastes (Management and Handling) Rules. 2008 and the Public (Insurance) Liability, Act.1991 along with their amendments and rules. | *Guidelines noted.* |

**for CHETTINAD CEMENT CORPORATION PRIVATE LIMITED**

**V.KRISHNAN**
**JOINT PRESIDENT [WORKS]**

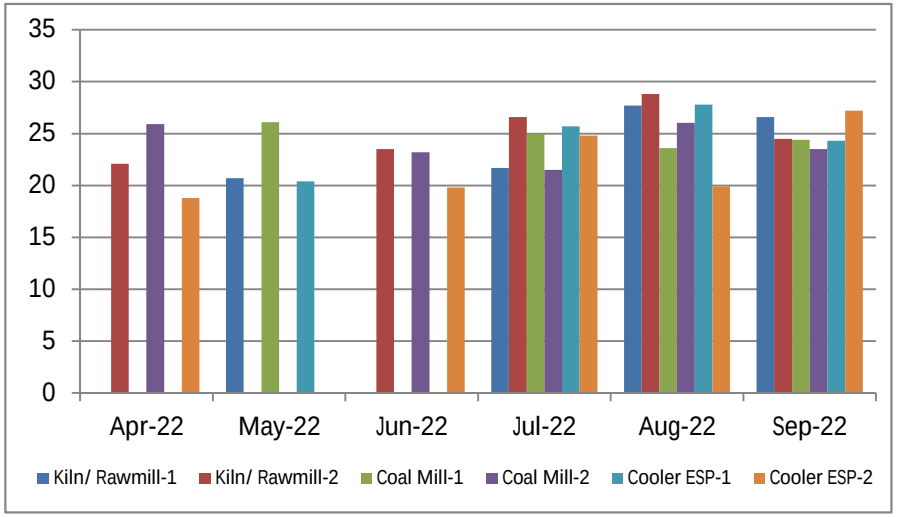
CHETTINAD CEMENT CORPN. PVT. LTD. KARIKKALI 624703

## Chettinad Cement Corporation Private Limited, Karikkali Works

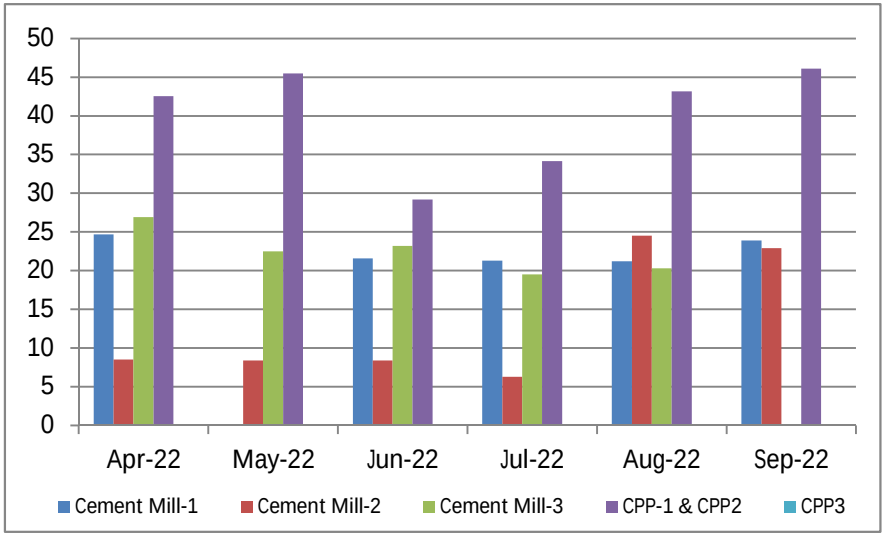
(Cement Plant & Captive Power Plant)

### Stack Emission Data (PM - mg/Nm$^3$) from April'2022 to September'2022

| Month | Kiln/ Rawmill-1 | Kiln/ Rawmill-2 | Coal Mill-1 | Coal Mill-2 | Cooler ESP-1 | Cooler ESP-2 | Permissible Limit |
|---|---|---|---|---|---|---|---|
| Apr-22 | Shutdown | 22.1 | Shutdown | 25.9 | Shutdown | 18.8 | Cement Plant : 30mg/Nm$^3$<br>Power Plant : 50mg/Nm$^3$ |
| May-22 | 20.7 | Shutdown | 26.1 | Shutdown | 20.4 | Shutdown | |
| Jun-22 | Shutdown | 23.5 | Shutdown | 23.2 | Shutdown | 19.8 | |
| Jul-22 | 21.7 | 26.6 | 25 | 21.5 | 25.7 | 24.8 | |
| Aug-22 | 27.7 | 28.8 | 23.6 | 26.04 | 27.8 | 19.9 | |
| Sep-22 | 26.6 | 24.5 | 24.4 | 23.5 | 24.3 | 27.2 | |
| Max | 27.7 | 28.8 | 26.1 | 26.04 | 27.8 | 27.2 | |
| Min | 20.7 | 22.1 | 23.6 | 21.5 | 20.4 | 18.8 | |
| Avg | 24.2 | 25.1 | 24.8 | 24.0 | 24.6 | 22.1 | |




| Month | Cement Mill-1 | Cement Mill-2 | Cement Mill-3 | CPP-1 & CPP2 | CPP3 | Permissible Limit |
|---|---|---|---|---|---|---|
| Apr-22 | 24.67 | 8.5 | 26.9 | 42.54 | Shut down | Cement Plant : 30mg/Nm$^3$<br>Power Plant : 50mg/Nm$^3$ |
| May-22 | Shutdown | 8.4 | 22.5 | 45.5 | | |
| Jun-22 | 21.6 | 8.4 | 23.2 | 29.2 | | |
| Jul-22 | 21.3 | 6.3 | 19.5 | 34.15 | | |
| Aug-22 | 21.2 | 24.5 | 20.3 | 43.15 | | |
| Sep-22 | 23.9 | 22.9 | Shutdown | 46.1 | | |
| Max | 21.2 | 6.3 | 19.5 | 29.2 | | |
| Min | 24.67 | 24.5 | 26.9 | 46.1 | | |
| Avg | 22.5 | 13.2 | 22.5 | 40.1 | | |




for **Chettinad Cement Corporation Private Limited**

**V.Krishnan**
**Joint President[works]**

CHETTINAD CEMENT CORPN.PVT.LTD. KARIKKALI 624703

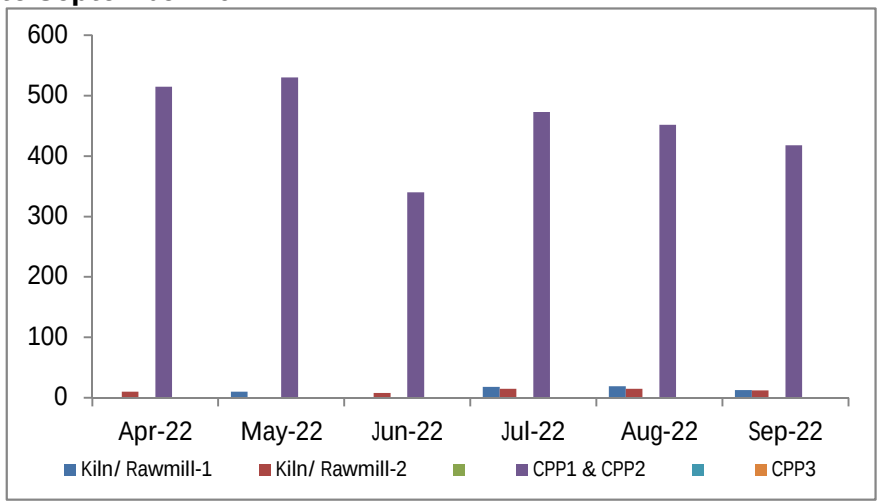
Annexure - 3

## Chettinad Cement Corporation Private Limited, Karikkali Works

(Cement Plant & Captive Power Plant)

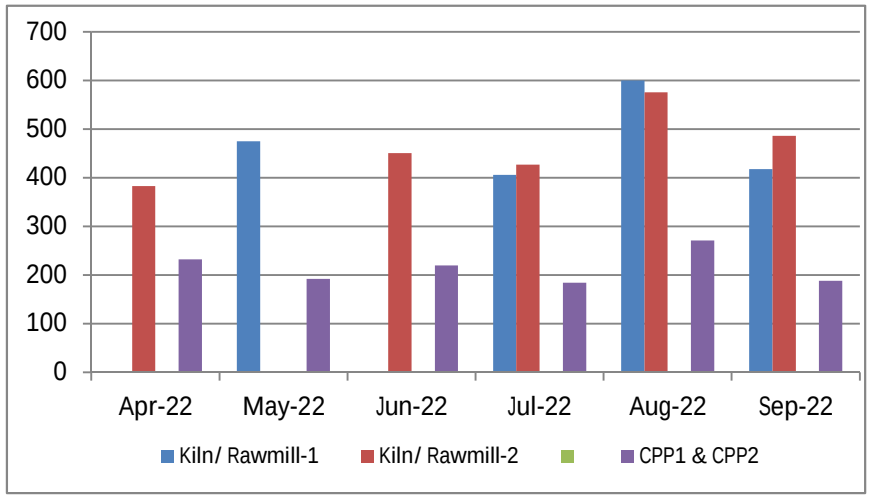
### Stack Emission Data ($SO_2$ - mg/$Nm^3$) from April'2022 to September'2022

| Month | Kiln/ Rawmill-1 | Kiln/ Rawmill-2 | CPP1 & CPP2 | CPP3 | Permissible Limit |
|---|---|---|---|---|---|
| Apr-22 | Shut down | 10 | 515 | Shut Down | Cement Plant : 100mg/$Nm^3$<br>Power Plant : 600mg/$Nm^3$ |
| May-22 | 10 | Shutdown | 530 | | |
| Jun-22 | Shutdown | 8 | 340 | | |
| Jul-22 | 18 | 14.9 | 473 | | |
| Aug-22 | 19 | 15 | 452 | | |
| Sep-22 | 13 | 12 | 418 | | |
| Max | 19 | 15 | 530 | | |
| Min | 10 | 8 | 340 | | |
| Avg | 15.0 | 12.0 | 455 | | |




### Stack Emission Data ($NO_x$ - mg/$Nm^3$) from April'2022 to September'2022

| Month | Kiln/ Rawmill-1 | Kiln/ Rawmill-2 | CPP1 & CPP2 | CPP3 | Permissible Limit |
|---|---|---|---|---|---|
| Apr-22 | Shutdown | 383 | 232 | Shut Down | Cement Plant : 800mg/$Nm^3$<br>Power Plant : 450mg/$Nm^3$ |
| May-22 | 475 | Shutdown | 192 | | |
| Jun-22 | Shutdown | 451 | 220 | | |
| Jul-22 | 406 | 427 | 184 | | |
| Aug-22 | 600 | 576 | 271 | | |
| Sep-22 | 418 | 486 | 188 | | |
| Max | 600 | 576 | 271 | | |
| Min | 406 | 383 | 184 | | |
| Avg | 475 | 465 | 215 | | |




for **Chettinad Cement Corporation Private Limited**

**V.Krishnan**
**Joint President[works]**

CHETTINAD CEMENT CORPN.PVT.LTD. KARIKKALI 624703

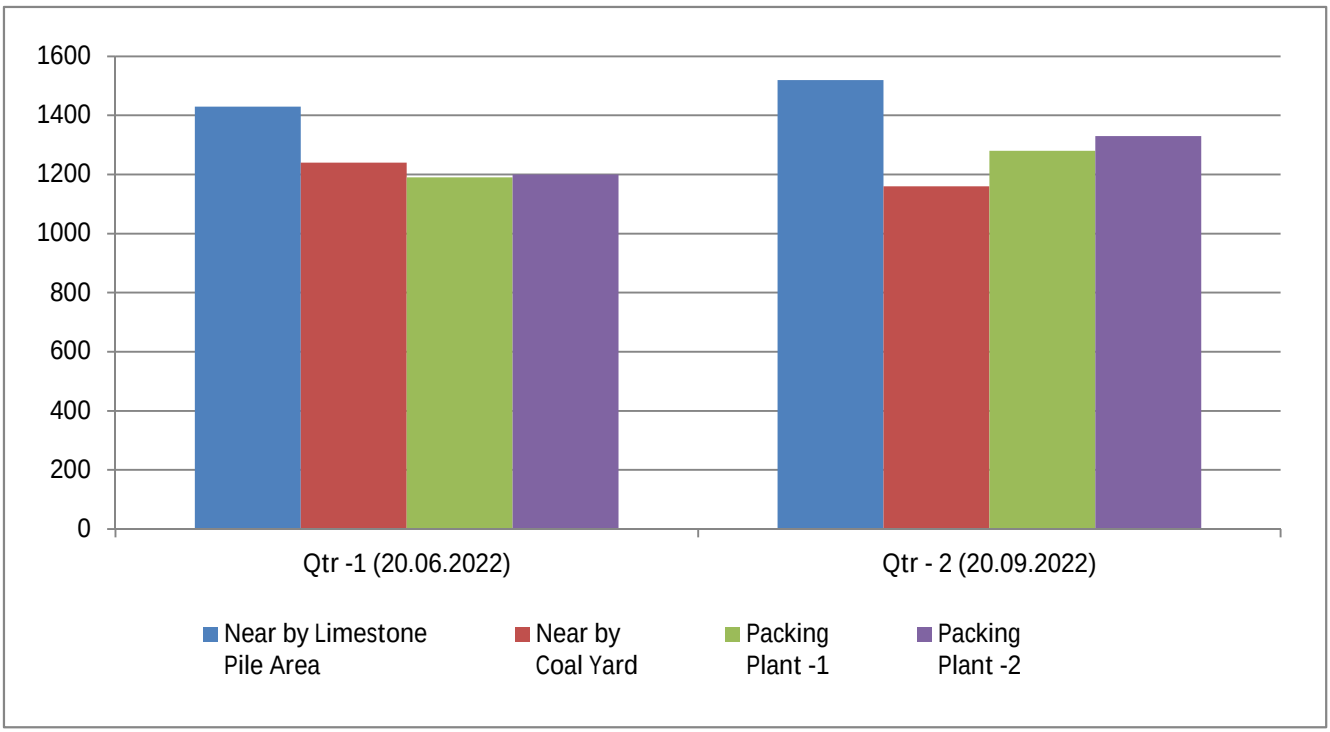
**Annexure - 4**

## Chettinad Cement Corporation Private Limited, Karikkali Works

(Cement Plant )

**Fugitive Emission Data (SPM - µg/m$^3$) from April'2022 to September'2022**

| Date | Near by Limestone Pile Area | Near by Coal Yard | Packing Plant -1 | Packing Plant -2 | Permissible Limit |
|---|---|---|---|---|---|
| Qtr -1 (20.06.2022) | 1430 | 1240 | 1190 | 1200 | 2000 |
| Qtr - 2 (20.09.2022) | 1520 | 1160 | 1280 | 1330 | |
| Max | 1520 | 1240 | 1280 | 1330 | |
| Min | 1430 | 1160 | 1190 | 1200 | |
| Avg | 1475 | 1200 | 1235 | 1265 | |




for **Chettinad Cement Corporation Private Limited**

**V.Krishnan**
**Joint President[works]**

CHETTINAD CEMENT CORPN.PVT.LTD. KARIKKALI 624703

## Chettinad Cement Corporation Private Limited, Karikkali Works

(Cement Plant & Captive Power Plant)

**Ambient Air Quality Data ($PM_{10}$, $PM_{2.5}$, $SO_2$ & $NO_X$ - µg/$Nm^3$) from April'2022 to September'2022**

| Month | Sukkanatham Village (North) | | | | kanagupillaiyar Village (North East) | | | | Near East Security Gate (East) | | | | On top of B2 Quarters (South East) | | | | Permissible Limit | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $PM_{10}$ | $PM_{2.5}$ | $SO_2$ | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ | $SO_2$ | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ | $SO_2$ | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ | $SO_2$ | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ | $SO_2$ | $NO_2$ |
| Apr-22 | 58.2 | 28.3 | 10.1 | 21.6 | 55.1 | 26.4 | 9.1 | 19.4 | 54.3 | 27.9 | 11.1 | 24.5 | 54.5 | 54.5 | 9.5 | 22.2 | 100 | 60 | 80 | 80 |
| May-22 | 56.4 | 24.5 | 10.8 | 23.4 | 56.5 | 29.3 | 9.7 | 20.5 | 57.2 | 25.0 | 9.1 | 21.7 | 58.5 | 27.2 | 10.5 | 19.4 | | | | |
| Jun-22 | 59.3 | 28.1 | 9.2 | 21.4 | 54.8 | 27.1 | 10.5 | 19.6 | 57.4 | 26.0 | 9.9 | 22.8 | 56.6 | 25.9 | 10.0 | 20.5 | | | | |
| Jul-22 | 57.4 | 27.6 | 9.8 | 21.0 | 55.4 | 28.5 | 10.3 | 22.8 | 54.7 | 29.6 | 11.3 | 20.0 | 58.3 | 26.6 | 8.0 | 19.3 | | | | |
| Aug-22 | 57.3 | 28.3 | 10.8 | 22.9 | 57.4 | 29.6 | 9.9 | 19.7 | 58.0 | 26.9 | 10.1 | 21.8 | 54.8 | 27.3 | 11.2 | 23.9 | | | | |
| Sep-22 | 56.1 | 26.3 | 10.3 | 23.6 | 59.5 | 30.1 | 11.4 | 21.3 | 57.0 | 27.2 | 10.9 | 19.6 | 58.1 | 28.3 | 9.6 | 20.5 | | | | |
| Max | 59.3 | 28.3 | 10.8 | 23.6 | 59.5 | 30.1 | 11.4 | 22.8 | 58.0 | 29.6 | 11.3 | 24.5 | 58.5 | 54.5 | 11.2 | 23.9 | | | | |
| Min | 56.1 | 24.5 | 9.2 | 21.0 | 54.8 | 26.4 | 9.1 | 19.4 | 54.3 | 25.0 | 9.1 | 19.6 | 54.5 | 25.9 | 8.0 | 19.3 | | | | |
| Avg | 57.5 | 27.2 | 10.2 | 22.3 | 56.5 | 28.5 | 10.2 | 20.6 | 56.4 | 27.1 | 10.4 | 21.7 | 56.8 | 31.6 | 9.8 | 21.0 | | | | |

| Month | On top of C5 Quarters (South) | | | | Near Workers Quarters (South West) | | | | Near Karikkali Village (West) | | | | Near Vasavanaikanpatti Village (North West) | | | | Permissible Limit | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $PM_{10}$ | $PM_{2.5}$ | $SO_2$ | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ | $SO_2$ | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ | $SO_2$ | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ | $SO_2$ | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ | $SO_2$ | $NO_2$ |
| Apr-22 | 55.2 | 26.3 | 10.5 | 20.3 | 58.2 | 27.8 | 9.3 | 22.1 | 56.3 | 24.6 | 9.9 | 19.4 | 53.4 | 24.1 | 10.8 | 24.1 | 100 | 60 | 80 | 80 |
| May-22 | 54.2 | 24.0 | 9.6 | 19.8 | 56.8 | 26.3 | 8.8 | 21.5 | 54.5 | 26.3 | 10.5 | 23.0 | 58.4 | 25.4 | 11.0 | 22.5 | | | | |
| Jun-22 | 56.9 | 25.5 | 10.1 | 22.2 | 58.7 | 27.8 | 9.0 | 23.6 | 57.1 | 25.9 | 10.7 | 19.9 | 56.5 | 28.4 | 9.2 | 20.1 | | | | |
| Jul-22 | 54.3 | 25.7 | 9.4 | 20.3 | 59.4 | 26.6 | 10.6 | 22.3 | 56.2 | 28.8 | 10.1 | 18.7 | 57.4 | 27.3 | 8.3 | 21.8 | | | | |
| Aug-22 | 57.7 | 29.8 | 10.9 | 22.5 | 53.6 | 31.1 | 9.3 | 21.2 | 58.4 | 27.5 | 10.4 | 19.6 | 57.1 | 26.0 | 9.0 | 20.8 | | | | |
| Sep-22 | 56.3 | 28.4 | 10.1 | 21.7 | 59.1 | 29.9 | 9.0 | 20.6 | 57.4 | 26.1 | 10.8 | 19.0 | 58.8 | 25.8 | 8.6 | 22.7 | | | | |
| Max | 57.7 | 29.8 | 10.9 | 22.5 | 59.4 | 31.1 | 10.6 | 23.6 | 58.4 | 28.8 | 10.8 | 23.0 | 58.8 | 28.4 | 11.0 | 24.1 | | | | |
| Min | 54.2 | 24.0 | 9.4 | 19.8 | 53.6 | 26.3 | 8.8 | 20.6 | 54.5 | 24.6 | 9.9 | 18.7 | 53.4 | 24.1 | 8.3 | 20.1 | | | | |
| Avg | 55.8 | 26.6 | 10.1 | 21.1 | 57.6 | 28.3 | 9.3 | 21.9 | 56.7 | 26.5 | 10.4 | 19.9 | 56.9 | 26.2 | 9.5 | 22.0 | | | | |

for **Chettinad Cement Corporation Private Limited**

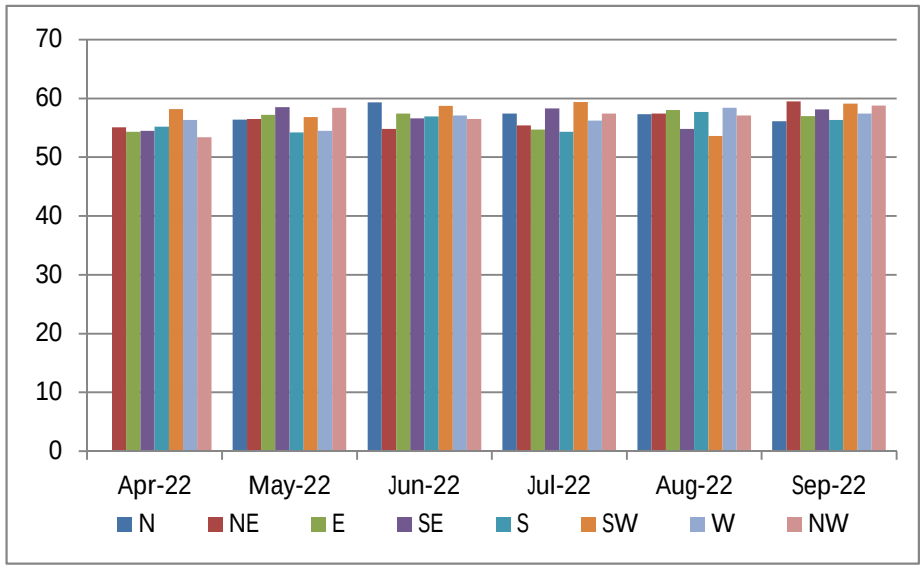
**V.Krishnan**
**Joint President[works]**

CHETTINAD CEMENT CORPN.PVT.LTD. KARIKKALI 624703

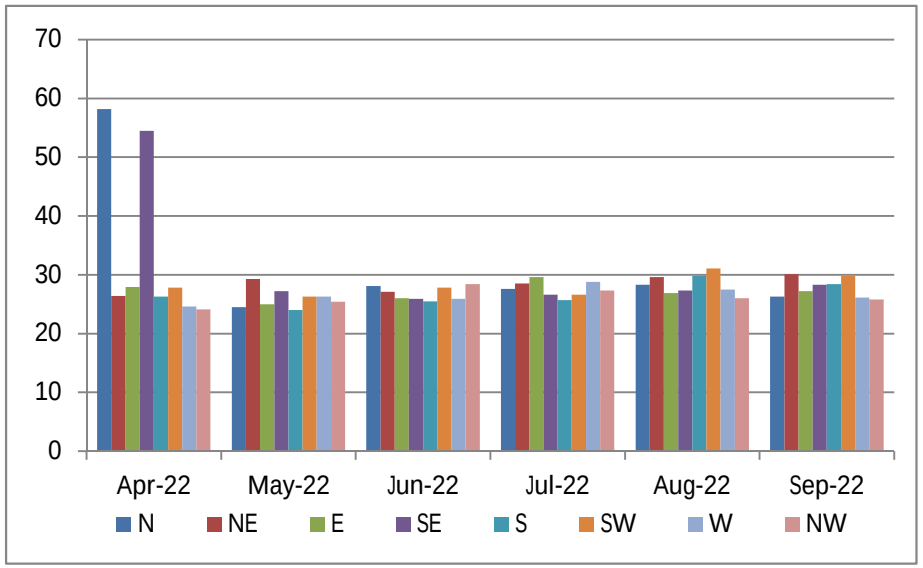
## Chettinad Cement Corporation Private Limited, Karikkali Works

(Cement Plant & Captive Power Plant)

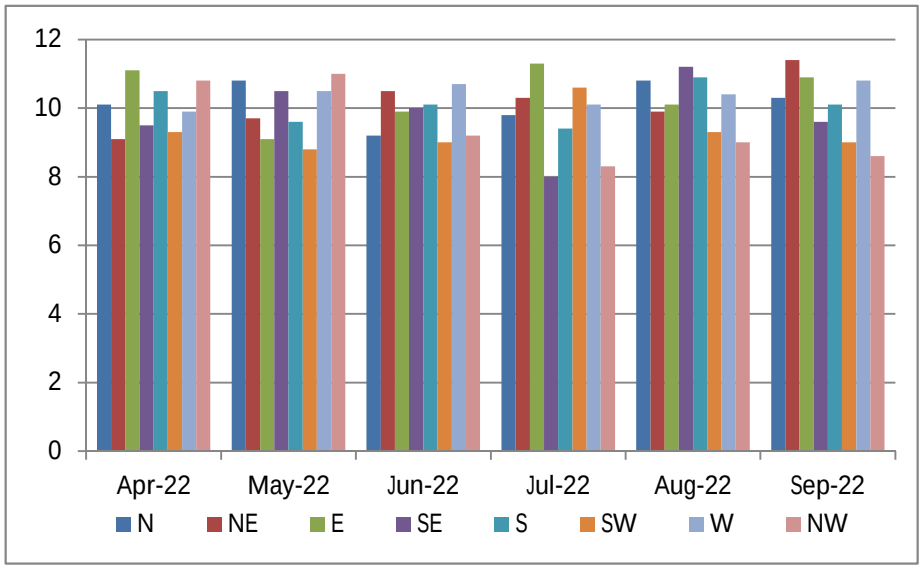
### Trend Graph - Ambient Air Quality Data from April'2022 to September'2022



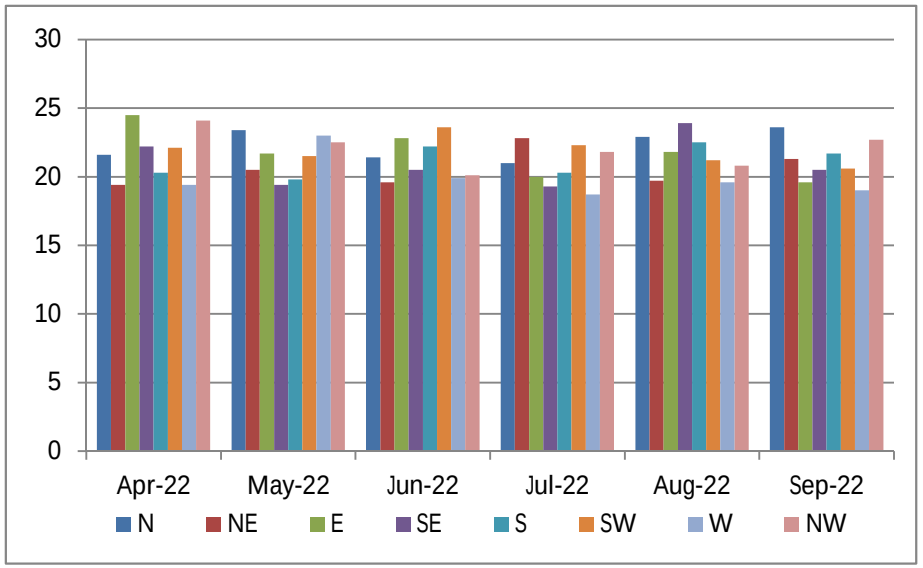

PM 10




PM2.5




SO2




NO2

## Chettinad Cement Corporation Private Limited, Karikkali Works

(Seethai Nagar Limestone Mines)

**Ambient Air Quality Data ($PM_{10}$, $PM_{2.5}$, $SO_2$ & $NO_X$ - µg/$Nm^3$) from April'2022 to September'2022**

| Month | Near by RMRC School (North) | | | | Near by Coloby STP (North East) | | | | Near by Rangasamy Naidu Garden (East) | | | | Near Perumal Koil (South East) | | | | Permissible Limit | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $PM_{10}$ | $PM_{2.5}$ | $SO_2$ | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ | $SO_2$ | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ | $SO_2$ | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ | $SO_2$ | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ | $SO_2$ | $NO_2$ |
| Apr-22 | 52.3 | 28.6 | 9.7 | 22.8 | 57.2 | 26.2 | 10.4 | 19.9 | 55.3 | 24.3 | 9.0 | 21.8 | 56.1 | 25.6 | 10.9 | 24.1 | | | | |
| May-22 | 54.3 | 24.4 | 10.2 | 24.4 | 56.0 | 25.9 | 10.7 | 21.5 | 54.3 | 24.0 | 8.4 | 20.2 | 55.7 | 25.9 | 9.7 | 19.3 | | | | |
| Jun-22 | 59.4 | 27.8 | 10.0 | 22.5 | 56.7 | 26.0 | 9.2 | 19.0 | 58.5 | 28.3 | 10.4 | 21.1 | 54.6 | 24.1 | 9.7 | 20.9 | | | | |
| Jul-22 | 57.8 | 28.1 | 10.8 | 21.9 | 52.5 | 30.1 | 9.7 | 19.8 | 56.1 | 29.4 | 11.3 | 23.6 | 55.8 | 25.3 | 8.1 | 18.3 | | | | |
| Aug-22 | 59.9 | 26.4 | 10.1 | 20.8 | 57.1 | 27.4 | 9.0 | 23.6 | 58.3 | 29.0 | 9.7 | 21.1 | 56.7 | 27.0 | 10.3 | 19.6 | 100 | 60 | 80 | 80 |
| Sep-22 | 56.3 | 27.0 | 10.6 | 21.7 | 58.6 | 26.1 | 9.1 | 22.9 | 54.0 | 23.6 | 8.3 | 18.6 | 57.6 | 24.7 | 11.0 | 20.1 | | | | |
| Max | 52.3 | 24.4 | 9.7 | 20.8 | 52.5 | 25.9 | 9.0 | 19.0 | 54.0 | 23.6 | 8.3 | 18.6 | 54.6 | 24.1 | 8.1 | 18.3 | | | | |
| Min | 59.9 | 28.6 | 10.8 | 24.4 | 58.6 | 30.1 | 10.7 | 23.6 | 58.5 | 29.4 | 11.3 | 23.6 | 57.6 | 27.0 | 11.0 | 24.1 | | | | |
| Avg | 56.7 | 27.1 | 10.2 | 22.4 | 56.4 | 27.0 | 9.7 | 21.1 | 56.1 | 26.4 | 9.5 | 21.1 | 56.1 | 25.4 | 10.0 | 20.4 | | | | |

| Month | Near by Mallapuram Mine Pit (South) | | | | Near by south Alambadi Mine Pit (South West) | | | | Near by West Alambadi Mine Pit (West) | | | | Near by Ammonium Nitrite Shed (North West) | | | | Permissible Limit | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $PM_{10}$ | $PM_{2.5}$ | $SO_2$ | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ | $SO_2$ | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ | $SO_2$ | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ | $SO_2$ | $NO_2$ | $PM_{10}$ | $PM_{2.5}$ | $SO_2$ | $NO_2$ |
| Apr-22 | 56.9 | 28.2 | 10.7 | 21.8 | 59.5 | 29.8 | 9.4 | 23.7 | 58.4 | 25.3 | 8.7 | 19.0 | 54.8 | 26.4 | 10.0 | 20.7 | | | | |
| May-22 | 54.8 | 27.3 | 10.4 | 23.5 | 57.5 | 24.9 | 9.8 | 21.6 | 59.0 | 26.4 | 8.4 | 20.1 | 57.5 | 28.0 | 9.1 | 18.9 | | | | |
| Jun-22 | 55.2 | 26.3 | 10.5 | 19.4 | 54.8 | 27.9 | 9.6 | 22.0 | 58.1 | 28.2 | 10.9 | 23.4 | 58.2 | 26.7 | 11.1 | 22.5 | | | | |
| Jul-22 | 57.0 | 24.9 | 9.2 | 21.1 | 58.3 | 26.3 | 10.3 | 19.5 | 59.0 | 29.9 | 9.0 | 24.0 | 56.3 | 28.4 | 11.0 | 20.3 | | | | |
| Aug-22 | 56.1 | 27.1 | 9.8 | 20.5 | 59.3 | 29.6 | 9.0 | 19.0 | 58.6 | 28.7 | 10.5 | 21.7 | 57.8 | 26.6 | 10.9 | 22.9 | 100 | 60 | 80 | 80 |
| Sep-22 | 57.4 | 26.0 | 9.0 | 19.4 | 55.9 | 27.9 | 10.3 | 18.4 | 58.1 | 25.7 | 10.9 | 22.6 | 56.3 | 28.5 | 8.2 | 21.1 | | | | |
| Max | 54.8 | 24.9 | 9.0 | 19.4 | 54.8 | 24.9 | 9.0 | 18.4 | 58.1 | 25.3 | 8.4 | 19.0 | 54.8 | 26.4 | 8.2 | 18.9 | | | | |
| Min | 57.4 | 28.2 | 10.7 | 23.5 | 59.5 | 29.8 | 10.3 | 23.7 | 59.0 | 29.9 | 10.9 | 24.0 | 58.2 | 28.5 | 11.1 | 22.9 | | | | |
| Avg | 56.2 | 26.6 | 9.9 | 21.0 | 57.6 | 27.7 | 9.7 | 20.7 | 58.5 | 27.4 | 9.7 | 21.8 | 56.8 | 27.4 | 10.1 | 21.1 | | | | |

for **Chettinad Cement Corporation Private Limited**

**V.Krishnan**

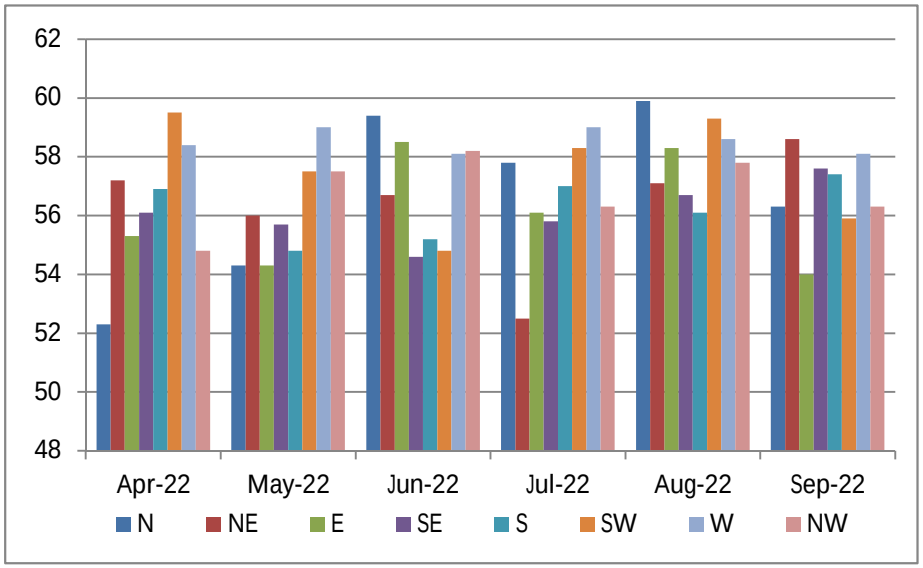
**Joint President[works]**

CHETTINAD CEMENT CORPN.PVT.LTD. KARIKKALI 624703

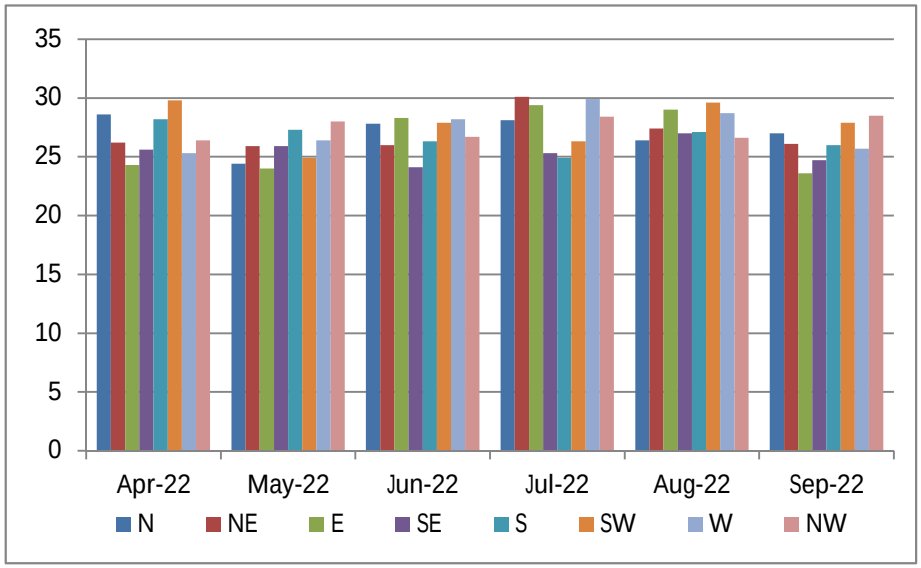
## Chettinad Cement Corporation Private Limited, Karikkali Works

(Seethai Nagar Limestone Mines)

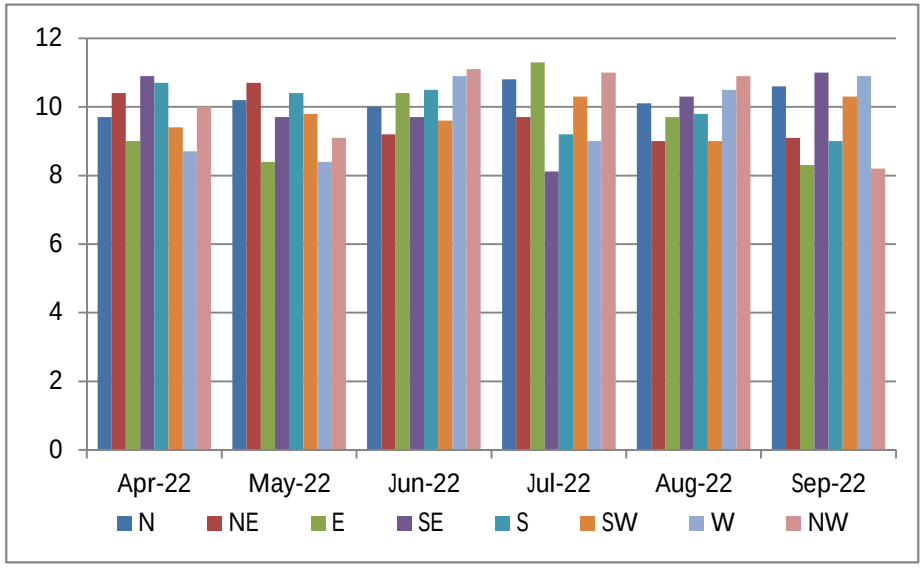
**Trend Graph - Ambient Air Quality Data from April'2022 to September'2022**



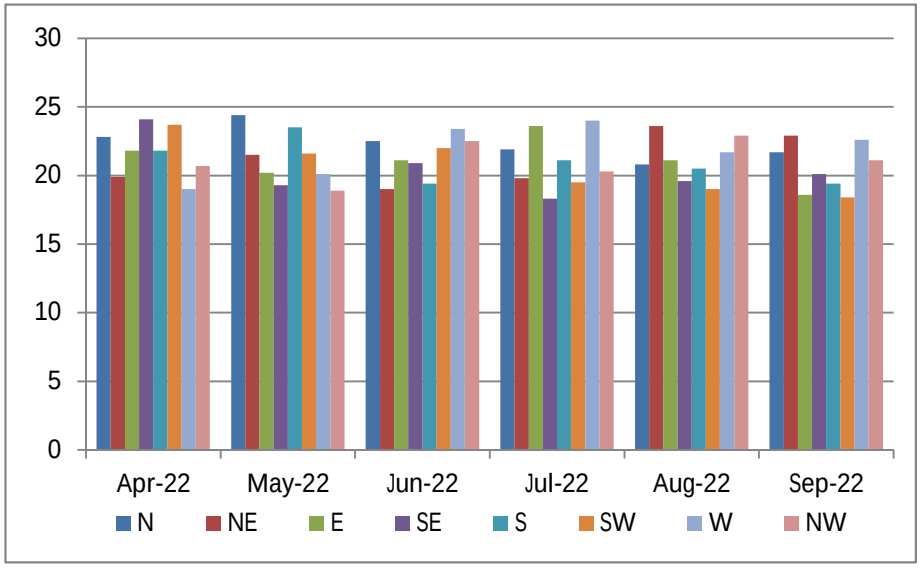

**PM 10**




**PM2.5**




**SO2**




**NO2**

Chettinad cement

## Chettinad Cement Corporation Private Limited, Karikkali Works

(Cement Plant & Captive Power Plant)

**Ambient Noise Level Data [dB(A)] from April'2022 to September'2022**

| Month | Sukkanatham Village (North) | | kanagupillaiyar Village (North East) | | Near East Security Gate (East) | | On top of B2 Quarters (South East) | | On top of C5 Quarters (South) | | Near Workers Quarters (South West) | | Near Karikkali Village (West) | | Vasavanaikanpatti Village (North West) | | Permissible Limit | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Day Time | Night Time | Day Time | Night Time | Day Time | Night Time | Day Time | Night Time | Day Time | Night Time | Day Time | Night Time | Day Time | Night Time | Day Time | Night Time | Day Time | Night Time |
| Apr-22 | 52.4 | 42.9 | 52.4 | 43.2 | 52.4 | 42.5 | 53.1 | 44.0 | 53.0 | 42.4 | 52.6 | 43.0 | 52.7 | 43.7 | 53.3 | 42.8 | 55 | 45 |
| May-22 | 52.0 | 41.7 | 51.9 | 42.0 | 52.3 | 42.2 | 53.3 | 42.3 | 52.5 | 41.8 | 51.9 | 43.3 | 52.3 | 42.2 | 52.9 | 42.2 | | |
| Jun-22 | 52.3 | 42.8 | 52.5 | 42.6 | 52.8 | 41.7 | 53.6 | 43.3 | 52.6 | 41.9 | 52.0 | 42.2 | 52.1 | 42.8 | 52.2 | 53.1 | | |
| Jul-22 | 52.2 | 41.9 | 51.9 | 41.6 | 51.7 | 41.3 | 52.7 | 42.6 | 53.2 | 42.2 | 52.4 | 42.5 | 53.1 | 42.3 | 52.5 | 41.9 | | |
| Aug-22 | 52.4 | 42.1 | 51.3 | 42.8 | 51.8 | 43.1 | 52.2 | 42.6 | 52.9 | 42.9 | 53.2 | 42.1 | 51.7 | 42.2 | 52.3 | 42.5 | | |
| Sep-22 | 52.1 | 42.0 | 52.0 | 41.9 | 52.2 | 41.9 | 52.8 | 42.4 | 52.9 | 41.6 | 52.4 | 43.1 | 53.1 | 42.7 | 52.2 | 42.4 | | |
| Max | 52.4 | 42.9 | 52.5 | 43.2 | 52.8 | 43.1 | 53.6 | 44.0 | 53.2 | 42.9 | 53.2 | 43.3 | 53.1 | 43.7 | 53.3 | 53.1 | | |
| Min | 52.0 | 41.7 | 51.3 | 41.6 | 51.7 | 41.3 | 52.2 | 42.3 | 52.5 | 41.6 | 51.9 | 42.1 | 51.7 | 42.2 | 52.2 | 41.9 | | |
| Avg | 52.2 | 42.2 | 52.0 | 42.4 | 52.2 | 42.1 | 53.0 | 42.9 | 52.9 | 42.1 | 52.4 | 42.7 | 52.5 | 42.7 | 52.6 | 44.2 | | |

**Source Noise Level Data [dB(A)] from April'2022 to September'2022**

| Month | Kiln-1 Area | | Kiln-2 Area | | CPP1 & CPP2 Area | | CPP3 Boiler Area | | Permissible Limit | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Day Time | Night Time | Day Time | Night Time | Day Time | Night Time | Day Time | Night Time | Day Time | Night Time |
| Apr-22 | 63.4 | 52.9 | 63.6 | 53.3 | 64.1 | 52.3 | 63.0 | 52.6 | 75 | 70 |
| May-22 | 62.6 | 51.7 | 65.5 | 52.3 | 63.4 | 50.9 | 63.0 | 56.2 | | |
| Jun-22 | 62.9 | 41.7 | 61.8 | 42.3 | 62.5 | 54.2 | 62.5 | 52.6 | | |
| Jul-22 | 62.4 | 51.9 | 63.4 | 52.9 | 63.3 | 52.9 | 63.7 | 51.6 | | |
| Aug-22 | 66.7 | 53.6 | 63.9 | 52.2 | 66.4 | 52.1 | 65.7 | 52.7 | | |
| Sep-22 | 62.4 | 52.4 | 62.4 | 46.7 | 63.0 | 52.3 | 61.7 | 48.8 | | |
| Max | 66.7 | 53.6 | 65.5 | 53.3 | 66.4 | 54.2 | 65.7 | 56.2 | | |
| Min | 62.4 | 41.7 | 61.8 | 42.3 | 62.5 | 50.9 | 61.7 | 48.8 | | |
| Avg | 63.4 | 50.7 | 63.4 | 50.0 | 63.8 | 52.5 | 63.3 | 52.4 | | |

for **Chettinad Cement Corporation Private Limited**

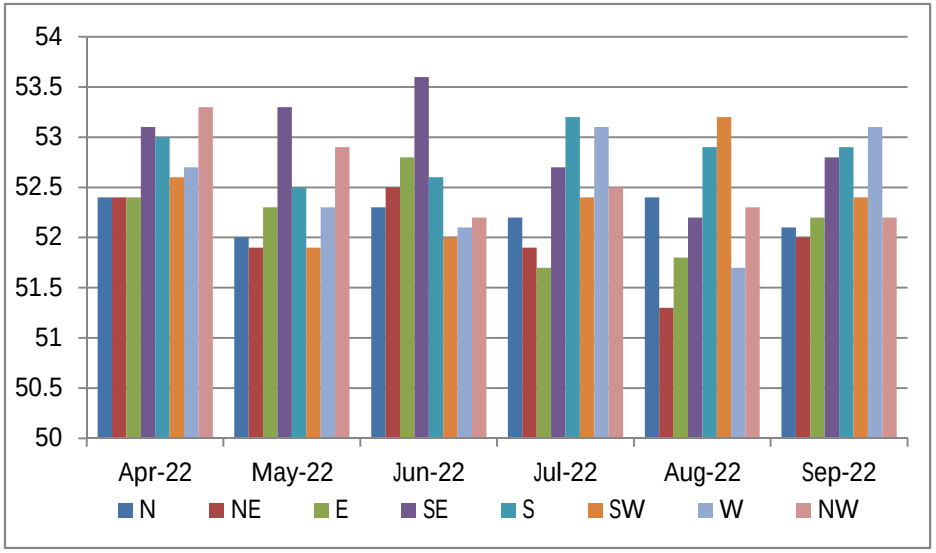
**V.Krishnan**
**Joint President[works]**

CHETTINAD CEMENT CORPN.PVT.LTD. KARIKKALI 624703

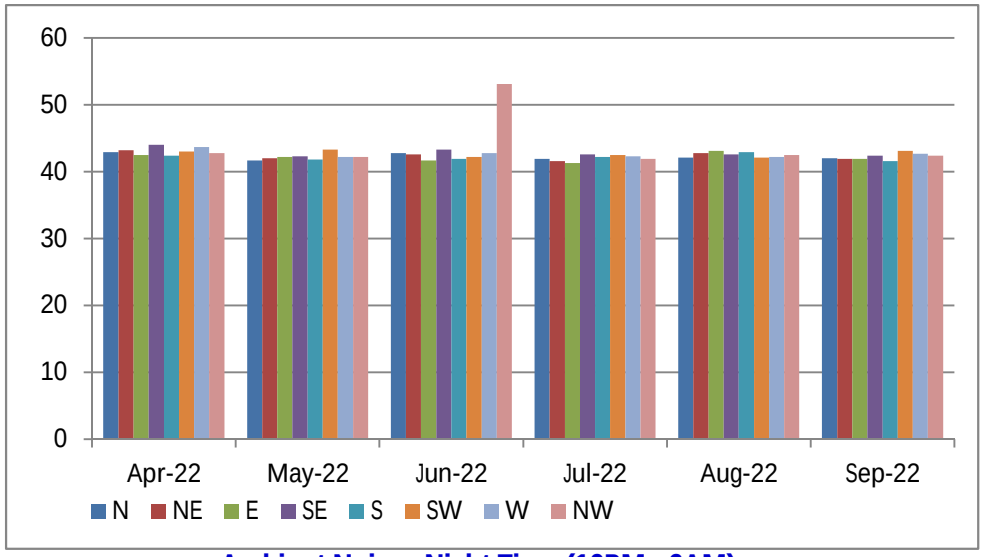
## Chettinad Cement Corporation Private Limited, Karikkali Works

(Cement Plant & Captive Power Plant)

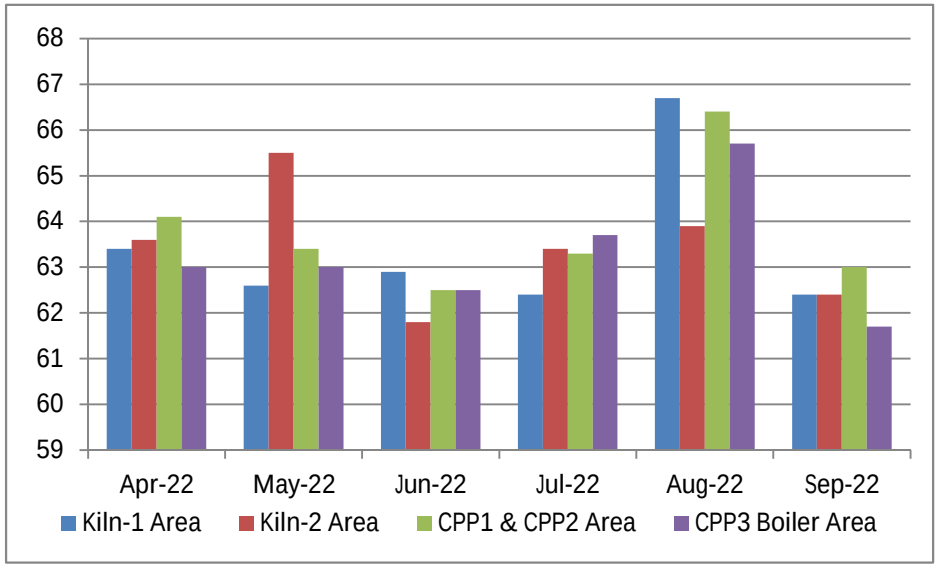
**Trend Graph - Noise Level Data from April'2022 to September'2022**



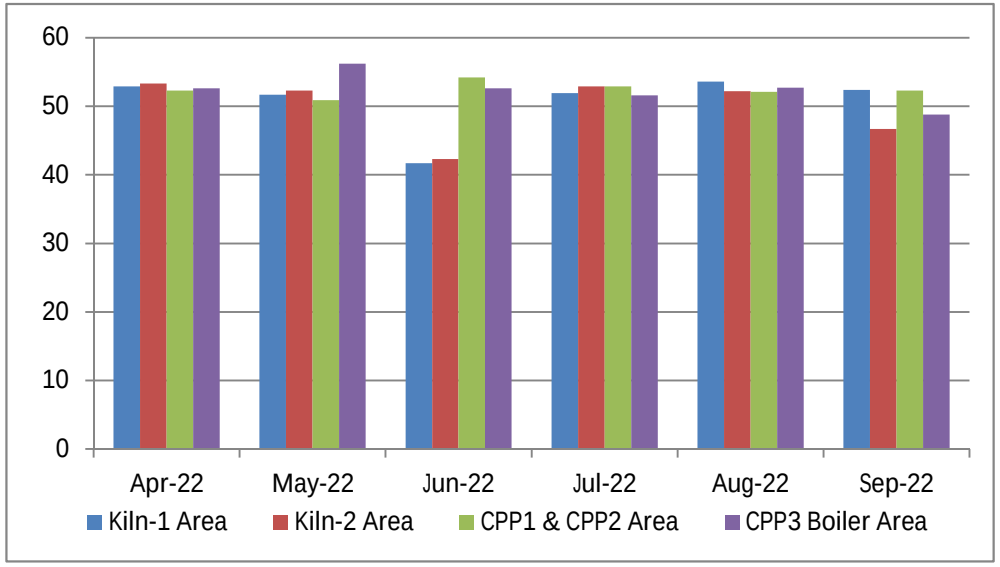

Ambinet Noise - Day Time (6 AM - 10PM)




Ambient Noise - Night Time (10PM - 6AM)




Source Noise - Day Time (6 AM - 10PM)




Source Noise - Night Time (10PM - 6AM)

## Chettinad Cement Corporation Private Limited, Karikkali Works

(Seethai Nagar Limestone Mines)

**Ambient Noise Level Data [dB(A)] from April'2022 to September'2022**

| Month | RMRC School (North) | | Coloby STP (North East) | | Rangasamy Naidu Garden (East) | | Perumal Koil (South East) | | Mallapuram Mine Pit (South) | | South Alambadi Mine Pit (South West) | | West Alambadi Mine Pit (West) | | Ammonium Nitrite Shed (North West) | | Permissible Limit | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Day Time | Night Time | Day Time | Night Time | Day Time | Night Time | Day Time | Night Time | Day Time | Night Time | Day Time | Night Time | Day Time | Night Time | Day Time | Night Time | Day Time | Night Time |
| Apr-22 | 52.6 | 41.2 | 52.1 | 42.0 | 52.1 | 42.8 | 51.8 | 41.6 | 52.8 | 42.4 | 52.3 | 42.8 | 51.0 | 41.0 | 52.4 | 41.5 | 55 | 45 |
| May-22 | 51.7 | 41.2 | 52.2 | 42.0 | 51.3 | 41.8 | 51.8 | 42.0 | 52.5 | 42.4 | 52.4 | 41.5 | 52.7 | 42.1 | 51.8 | 41.5 | | |
| Jun-22 | 52.6 | 41.5 | 51.6 | 42.7 | 43.6 | 43.1 | 51.4 | 41.9 | 52.4 | 41.2 | 52.0 | 42.5 | 51.3 | 41.6 | 52.6 | 42.2 | | |
| Jul-22 | 52.3 | 41.3 | 52.8 | 42.2 | 50.9 | 42.9 | 52.3 | 41.5 | 51.9 | 42.7 | 52.6 | 41.5 | 51.5 | 42.0 | 51.3 | 41.3 | | |
| Aug-22 | 52.4 | 41.9 | 52.8 | 42.6 | 52.7 | 42.5 | 52.5 | 42.9 | 52.4 | 42.4 | 52.6 | 42.7 | 52.1 | 42.8 | 52.2 | 42.3 | | |
| Sep-22 | 52.8 | 41.3 | 52.5 | 43.0 | 51.7 | 42.3 | 51.9 | 42.3 | 51.9 | 43.0 | 53.1 | 43.1 | 52.7 | 42.5 | 51.6 | 43.4 | | |
| Max | 52.8 | 41.9 | 52.8 | 43.0 | 52.7 | 43.1 | 52.5 | 42.9 | 52.8 | 43.0 | 53.1 | 43.1 | 52.7 | 42.8 | 52.6 | 43.4 | | |
| Min | 51.7 | 41.2 | 51.6 | 42.0 | 43.6 | 41.8 | 51.4 | 41.5 | 51.9 | 41.2 | 52.0 | 41.5 | 51.0 | 41.0 | 51.3 | 41.3 | | |
| Avg | 52.4 | 41.4 | 52.3 | 42.4 | 50.4 | 42.6 | 52.0 | 42.0 | 52.3 | 42.4 | 52.5 | 42.4 | 51.9 | 42.0 | 52.0 | 42.0 | | |

**Source Noise Level Data [dB(A)] from April'2022 to September'2022**

| Month | SLM Crusher -1 | | SLM Crusher -2 | | Near Compressor Room | | Near Work Shop | | Permissible Limit | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Day Time | Night Time | Day Time | Night Time | Day Time | Night Time | Day Time | Night Time | Day Time | Night Time |
| Apr-22 | 62.6 | 41.5 | 62.3 | 42.2 | 63.0 | 42.8 | 61.9 | 43.2 | 75 | 70 |
| May-22 | 62.4 | 42.1 | 62.8 | 41.9 | 63.5 | 42.9 | 61.6 | 42.3 | | |
| Jun-22 | 68.4 | 41.4 | 67.6 | 42.4 | 61.6 | 42.7 | 62.9 | 41.3 | | |
| Jul-22 | 71.2 | 41.6 | 72.6 | 42.5 | 61.7 | 41.8 | 61.6 | 41.9 | | |
| Aug-22 | 62.5 | 42.3 | 62.6 | 42.7 | 62.8 | 42.9 | 634.0 | 43.2 | | |
| Sep-22 | 63.7 | 42.4 | 69.0 | 43.1 | 68.3 | 43.9 | 62.9 | 43.2 | | |
| Max | 71.2 | 42.4 | 72.6 | 43.1 | 68.3 | 43.9 | 634.0 | 43.2 | | |
| Min | 62.4 | 41.4 | 62.3 | 41.9 | 61.6 | 41.8 | 61.6 | 41.3 | | |
| Avg | 65.1 | 41.9 | 66.2 | 42.5 | 63.5 | 42.8 | 157.5 | 42.5 | | |

for **Chettinad Cement Corporation Private Limited**

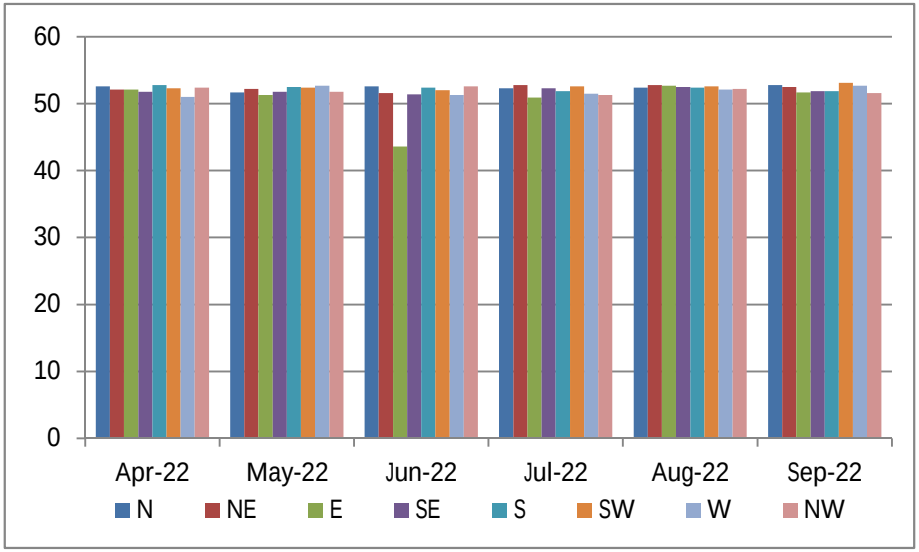
**V.Krishnan**
**Joint President[works]**

CHETTINAD CEMENT CORPN. PVT. LTD. KARIKKALI 624703

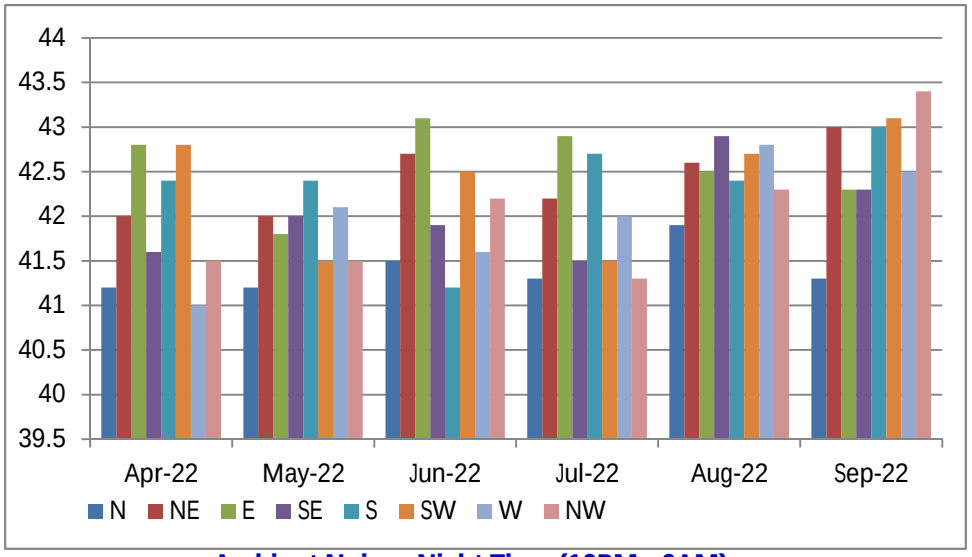
## Chettinad Cement Corporation Private Limited, Karikkali Works

(Seethai Nagar Limestone Mines)

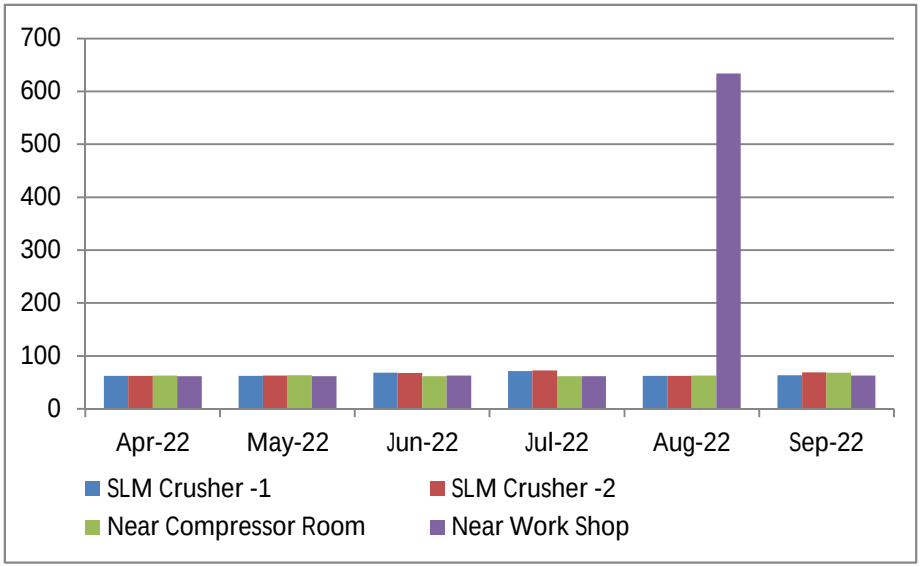
**Trend Graph - Noise Level Data from April'2022 to September'2022**



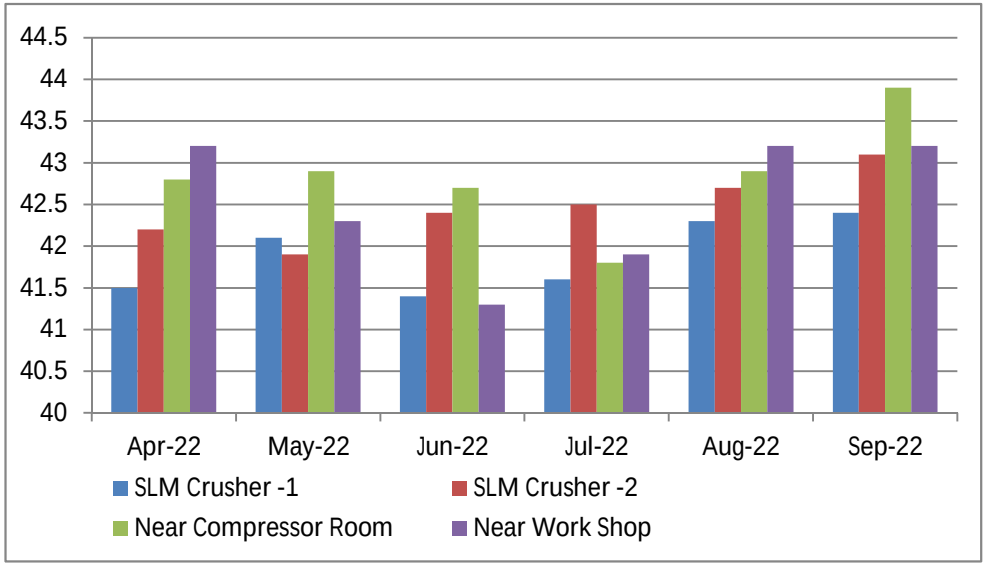

**Ambinet Noise - Day Time (6 AM - 10PM)**




**Ambient Noise - Night Time (10PM - 6AM)**




**Source Noise - Day Time (6 AM - 10PM)**



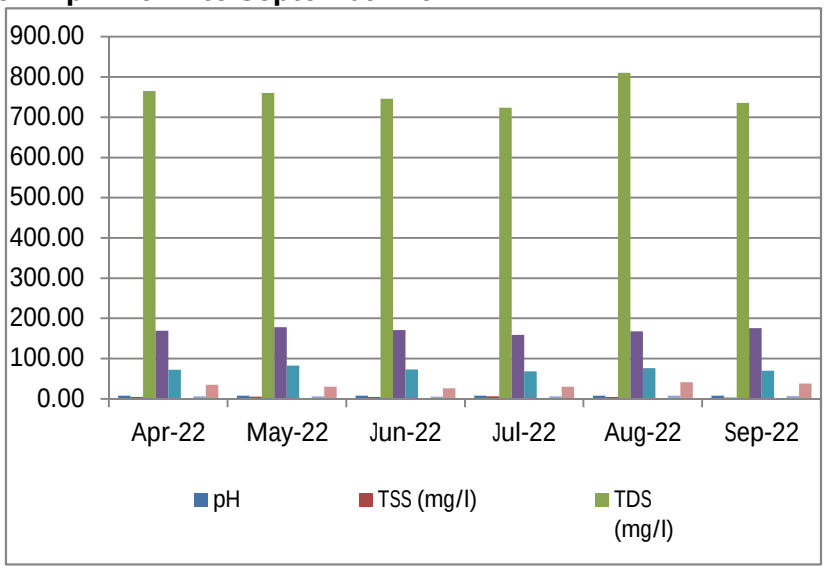

**Source Noise - Night Time (10PM - 6AM)**

## Chettinad Cement Corporation Private Limited, Karikkali Works

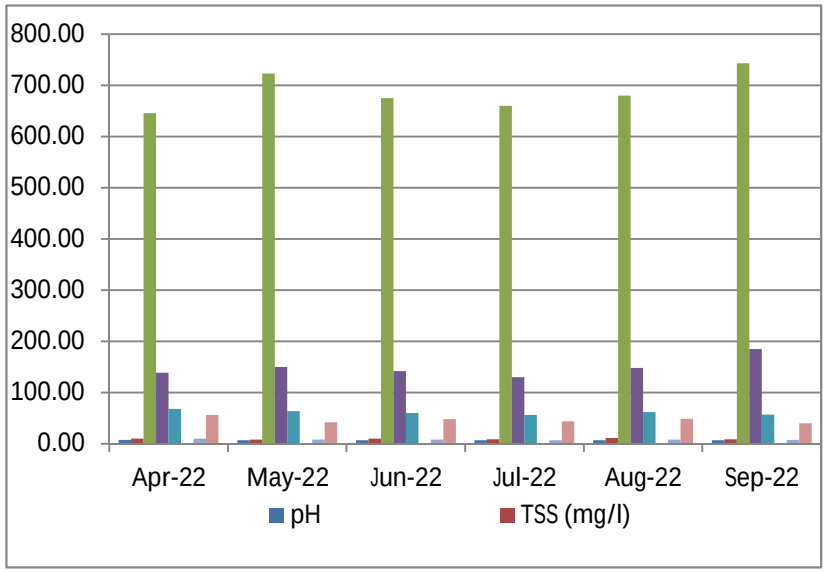
(Cement Plant & Captive Power Plant)

**Treated Effluent Water Quality Data from April'2022 to September'2022**

| Month | Treated Trade Effluent (CPP) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | pH | TSS (mg/l) | TDS (mg/l) | Chloride (mg/l) | Sulphate (mg/l) | Oil & grease (mg/l) | BOD (mg/l) | COD (mg/l) |
| Apr-22 | 7.94 | 4.8 | 765 | 169 | 72 | 0.1 | 6.6 | 35.0 |
| May-22 | 8.05 | 5.6 | 760 | 178 | 83 | 0.1 | 6.0 | 30.0 |
| Jun-22 | 7.98 | 4.9 | 746 | 171 | 73 | 0.1 | 5.2 | 26.0 |
| Jul-22 | 7.81 | 6.0 | 724 | 159 | 68 | 0.1 | 6.0 | 30.0 |
| Aug-22 | 7.74 | 4.9 | 810 | 168 | 76 | 0.1 | 8.0 | 41.0 |
| Sep-22 | 7.81 | 2.9 | 736 | 176 | 70 | 0.1 | 7.0 | 38.0 |
| Max | 8.05 | 6.0 | 810 | 178 | 83 | 0.1 | 8.0 | 41.0 |
| Min | 7.74 | 2.9 | 724 | 159 | 68 | 0.1 | 5.2 | 26.0 |
| Avg | 7.89 | 4.9 | 757 | 170 | 74 | 0.1 | 6.5 | 33.3 |
| Permissible Limit | 5.5-9.0 | 2100 | 100 | 1000 | 1000 | 10 | 30 | 250 |




| Month | Treated Sewage (Cement Plant & Power Plant ) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | pH | TSS (mg/l) | TDS (mg/l) | Chloride (mg/l) | Sulphate (mg/l) | Oil & grease (mg/l) | BOD (mg/l) | COD (mg/l) |
| Apr-22 | 7.21 | 10.0 | 646 | 139 | 68 | 0.0 | 10.0 | 56.0 |
| May-22 | 7.11 | 8.2 | 723 | 150 | 64 | 0.0 | 8.0 | 42.0 |
| Jun-22 | 7.03 | 10.0 | 675 | 142 | 60 | 0.0 | 8.3 | 48.0 |
| Jul-22 | 7.11 | 9.0 | 660 | 130 | 56 | 0.0 | 7.0 | 44.0 |
| Aug-22 | 7.08 | 11.0 | 680 | 148 | 62 | 0.0 | 8.1 | 49.0 |
| Sep-22 | 7.14 | 9.0 | 743 | 185 | 57 | 0.0 | 7.6 | 40.0 |
| Max | 7.21 | 11.0 | 743 | 185 | 68 | 0.0 | 10.0 | 56.0 |
| Min | 7.03 | 8.2 | 646 | 130 | 56 | 0.0 | 7.0 | 40.0 |
| Avg | 7.11 | 9.5 | 688 | 149 | 61 | 0.0 | 8.2 | 46.5 |
| Permissible Limit | 5.5-9.0 | 2100 | 100 | 1000 | 1000 | 10 | 30 | 250 |




for **Chettinad Cement Corporation Private Limited**

**V.Krishnan**

**Joint President[works]**

CHETTINAD CEMENT CORPN.PVT.LTD. KARIKKALI 624703

## Chettinad Cement Corporation Private Limited, Karikkali Works

(Cement Plant & Captive Power Plant)

### Ground Water Quality Data from April'2022 to September'2022

| Sr. No | Parameter | UoM | Karikkali Village | | Dholipatti Village | | Kottanatham Village | | Palayam Village | | Acceptable Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 24.6.22 | 22.9.22 | 24.6.22 | 22.9.22 | 24.6.22 | 22.9.22 | 24.6.22 | 22.9.22 | |
| **I. Physical Examination** | | | | | | | | | | | |
| 1 | Appearance | - | Clear | Clear | Clear | Clear | Clear | Clear | Clear | Clear | Clear |
| 2 | Colour, Hazen Units | - | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 15 |
| 3 | Odour | - | Agreeable | | | | | | | | Agreeable |
| 4 | pH value | - | 7.96 | 8.09 | 8.01 | 7.89 | 8.05 | 8.23 | 7.99 | 8.02 | 6.5-8.5 |
| 5 | Turbidity | NTU | 0.50 | 0.30 | 0.30 | 0.90 | 0.50 | 0.40 | 0.30 | 0.80 | 5 |
| 6 | Total dissolved Solids | mg/l | 569 | 540 | 620 | 639 | 666 | 608 | 539 | 588 | 2000 |
| 7 | Total suspended Solids | mg/l | BLQ (LOQ : 2.0) | | | | | | | | - |
| **II. Chemical Examination** | | | | | | | | | | | |
| 8 | ph.Alkanity as $CaCO_3$ | mg/l | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | - |
| 9 | Total Alkanity as $CaCO_3$ | mg/l | 154 | 148 | 167 | 182 | 160 | 170 | 113 | 156 | 600 |
| 10 | Total Hardness as $CaCO_3$ | mg/l | 158 | 142 | 180 | 193 | 165 | 186 | 149 | 158 | 600 |
| 11 | Calcium Hardness as CaCO3 | mg/l | 90 | 81 | 101 | 122 | 90 | 112 | 82 | 90 | - |
| 12 | Magnesium Hardess as CaCO3 | mg/l | 68 | 61 | 79 | 71 | 75 | 74 | 67 | 68 | |
| 13 | Calcium as Ca | mg/l | 36 | 32 | 40 | 49 | 36 | 45 | 33 | 36 | 200 |
| 14 | Magnesium as Mg | mg/l | 16 | 15 | 19 | 17 | 18 | 18 | 16 | 16 | 100 |
| 15 | Sodium as Na | mg/l | 79 | 76 | 92 | 98 | 86 | 90 | 75 | 84 | - |
| 16 | Iron as Fe | mg/l | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.05 | 0.3 |
| 17 | Silica as SiO2 | mg/l | 43 | 36 | 46 | 51 | 37 | 48 | 40 | 41 | - |
| 18 | Manganese as Mn | mg/l | BLQ(LOQ:0.001) | | | | | | | | 0.3 |
| 19 | Free Ammonia as $NH_3$ | mg/l | BDL(DL:0.03) | | | | | | | | 0.5 |
| 20 | Nitrite as NO2 | mg/l | BDL(DL:0.01) | | | | | | | | - |
| 21 | Nitrate as NO3 | mg/l | 15 | 10 | 18 | 19 | 16 | 16 | 13 | 12 | 45 |
| 22 | Chloride as Cl | mg/l | 137 | 130 | 151 | 169 | 146 | 155 | 125 | 148 | 1000 |
| 23 | Fluride as F | mg/l | 0.2 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.2 | 1.5 |
| 24 | Boron as B | mg/l | BLQ(LOQ:0.001) | | | | | | | | 1 |
| 25 | Copper as Cu | mg/l | BLQ(LOQ:0.001) | | | | | | | | 1.5 |
| 26 | Free residual chlorine | mg/l | BDL(DL:0.1) | | | | | | | | 1 |
| 27 | Mineral Oil | mg/l | BLQ(LOQ:0.5) | | | | | | | | 0.5 |
| 28 | Sulphate as SO4 | mg/l | 51 | 53 | 63 | 72 | 58 | 66 | 50 | 59 | 400 |
| 29 | Selenium as Se | mg/l | BLQ(LOQ:0.001) | | | | | | | | 0.05 |
| 30 | Anionic detergents as MBAS | mg/l | BDL(DL:0.05) | | | | | | | | - |
| 31 | Phenolic Compound as $C_6H_5OH$ | mg/l | BDL(DL:0.001) | | | | | | | | 0.001 |
| 32 | Cadmium as Cd | mg/l | BLQ(LOQ:0.001) | | | | | | | | 0.003 |
| 33 | Cyanide as CN | mg/l | BDL(DL:0.01) | | | | | | | | 0.05 |
| 34 | Lead as Pb | mg/l | BLQ(LOQ:0.001) | | | | | | | | 0.01 |
| 35 | Mercury as Hg | mg/l | BLQ(LOQ:0.0005) | | | | | | | | 0.001 |
| 36 | Total Arsenic as As | mg/l | BLQ(LOQ:0.001) | | | | | | | | 0.05 |
| 37 | Total Chromium as Cr | mg/l | BLQ(LOQ:0.001) | | | | | | | | 0.05 |
| **III. Bacteriological Examination** | | | | | | | | | | | |
| 38 | Total Coliform | - | Absent / 100ml | | | | | | | | Absent /100ml |

BDL : Below Detectable Level, LOQ : Limit of Quantification, BLQ :Below Quanitication Limit

**for Chettinad Cement Corporation Private Limited**

**V.Krishnan**
**Joint President[works]**

CHETTINAD CEMENT CORPN.PVT.LTD. KARIKKALI 624703

## Chettinad Cement Corporation Private Limited, Karikkali Works

(Seethai Nagar Limestone Mines)

### Ground Water Quality Data from April'2022 to September'2022

| Sr. No | Parameter | UoM | Alambadi Village | | Mallapuram Village | | Vasavanayakanpatti Village | | kattareddiyar Village | | Acceptable Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 22.6.22 | 21.9.22 | 22.6.22 | 21.9.22 | 22.6.22 | 21.9.22 | 22.6.22 | 21.9.22 | |
| **I. Physical Examination** | | | | | | | | | | | |
| 1 | Appearance | - | Clear | Clear | Clear | Clear | Clear | Clear | Clear | Clear | **Clear** |
| 2 | Colour, Hazen Units | - | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | **15** |
| 3 | Odour | - | Agreeable | | | | | | | | **Agreeable** |
| 4 | pH value | - | 7.53 | 7.80 | 8.06 | 8.11 | 7.78 | 7.43 | 7.91 | 7.98 | **6.5-8.5** |
| 5 | Turbidity | NTU | 0.80 | 0.40 | 0.70 | 0.90 | 0.50 | 0.40 | 0.30 | 0.70 | **5** |
| 6 | Total dissolved Solids | mg/l | 539 | 590 | 497 | 531 | 500 | 484 | 490 | 460 | **2000** |
| 7 | Total suspended Solids | mg/l | BDL (DL : 2.0) | | | | | | | | **-** |
| **II. Chemical Examination** | | | | | | | | | | | |
| 8 | ph.Alkanity as $CaCO_3$ | mg/l | NIL | NIL | NIL | NIL | NIL | NIL | NIL | NIL | **-** |
| 9 | Total Alkanity as $CaCO_3$ | mg/l | 126 | 148 | 112 | 133 | 120 | 124 | 109 | 118 | **600** |
| 10 | Total Hardness as $CaCO_3$ | mg/l | 150 | 181 | 142 | 173 | 146 | 155 | 136 | 130 | **600** |
| 11 | Calcium Hardness as CaCO3 | mg/l | 91 | 101 | 80 | 90 | 80 | 91 | 72 | 69 | **-** |
| 12 | Magnesium Hardess as CaCO3 | mg/l | 59 | 80 | 62 | 83 | 66 | 64 | 64 | 61 | |
| 13 | Calcium as Ca | mg/l | 36 | 40 | 32 | 36 | 32 | 36 | 29 | 28 | **200** |
| 14 | Magnesium as Mg | mg/l | 14 | 19 | 15 | 20 | 16 | 15 | 15 | 15 | **100** |
| 15 | Sodium as Na | mg/l | 66 | 78 | 60 | 77 | 58 | 60 | 55 | 65 | **-** |
| 16 | Iron as Fe | mg/l | 0.05 | 0.05 | 0.05 | 0.50 | 0.05 | 0.05 | 0.05 | 0.05 | **0.3** |
| 17 | Silica as SiO2 | mg/l | 29.0 | 38.0 | 25.0 | 31.0 | 27.0 | 26.0 | 19.0 | 23.0 | **-** |
| 18 | Manganese as Mn | mg/l | BLQ(LOQ:0.001) | | | | | | | | **0.3** |
| 19 | Free Ammonia as $NH_3$ | mg/l | BDL(DL:0.03) | | | | | | | | **0.5** |
| 20 | Nitrite as NO2 | mg/l | 1.9 | 2.3 | 1.6 | 1.8 | 2.3 | 1.9 | 2.0 | 1.3 | **-** |
| 21 | Nitrate as NO3 | mg/l | 12 | 17 | 16 | 18 | 14 | 13 | 10 | 10 | **45** |
| 22 | Chloride as Cl | mg/l | 103 | 137 | 91 | 126 | 97 | 120 | 89 | 110 | **1000** |
| 23 | Fluride as F | mg/l | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | **1.5** |
| 24 | Boron as B | mg/l | BLQ(LOQ:0.001) | | | | | | | | **1** |
| 25 | Copper as Cu | mg/l | BLQ(LOQ:0.001) | | | | | | | | **1.5** |
| 26 | Free residual chlorine | mg/l | BDL(DL:0.1) | | | | | | | | **1** |
| 27 | Mineral Oil | mg/l | BLQ(LOQ:0.5) | | | | | | | | **0.5** |
| 28 | Sulphate as SO4 | mg/l | 49 | 39 | 41 | 49 | 45 | 45 | 40 | 53 | **400** |
| 29 | Selenium as Se | mg/l | BLQ(LOQ:0.001) | | | | | | | | **0.05** |
| 30 | Anionic detergents as MBAS | mg/l | BDL(DL:0.05) | | | | | | | | **-** |
| 31 | Phenolic Compound as $C_6H_5OH$ | mg/l | BDL(DL:0.001) | | | | | | | | **0.001** |
| 32 | Cadmium as Cd | mg/l | BLQ(LOQ:0.001) | | | | | | | | **0.003** |
| 33 | Cyanide as CN | mg/l | BDL(DL:0.01) | | | | | | | | **0.05** |
| 34 | Lead as Pb | mg/l | BLQ(LOQ:0.001) | | | | | | | | **0.01** |
| 35 | Mercury as Hg | mg/l | BLQ(LOQ:0.0005) | | | | | | | | **0.001** |
| 36 | Total Arsenic as As | mg/l | BLQ(LOQ:0.001) | | | | | | | | **0.05** |
| 37 | Total Chromium as Cr | mg/l | BLQ(LOQ:0.001) | | | | | | | | **0.05** |
| **III. Bacteriological Examination** | | | | | | | | | | | |
| 38 | Total Coliform | - | Absent / 100ml | | | | | | | | **Absent /100ml** |

BDL : Below Detectable Level, LOQ : Limit of Quantification, BLQ :Below Quanitication Limit

**for Chettinad Cement Corporation Private Limited**

**V.Krishnan**
**Joint President[works]**

CHETTINAD CEMENT CORPN.PVT.LTD. KARIKKALI 624703

Annexure - 12

## CHETTINAD CEMENT CORPORATION PRIVATE LTD, KARIKKALI WORKS

(Cement Plant & Captive Power Plant)

### GREEN BELT DEVELOPMENT PHOTOS

Green Belt Development area : 24.30 ha
So far, total no. of trees planted : 53584 nos. (as on 30.09.2022)

1. Plant Premises:

Latitude : 10°71'27.47" N
Longitude : 78°09'61.31" E

GREEN BELT DEVELOPMENT PHOTOS (Cont..)

2 PLANT COLONY AREAS:

Latitude : 10°70'85.04" N
Longitude : 78°09'44.45" E

GREEN BELT DEVELOPMENT PHOTOS (Cont..)

**3**. PLANT – OUT SIDE PREMISES

Latitude : 10°70'78.92" N

Longitude : 78°11'40.81" E

GREEN BELT DEVELOPMENT PHOTOS (Cont..)

for CHETTINAD CEMENT CORPORATION PRIVATE LIMITED

V.KRISHNAN
JOINT PRESIDENT [WORKS]

CHETTINAD CEMENT CORPN.PVT.LTD. KARIKKALI 624703

CHETTINAD CEMENT CORPORATION PRIVATE LTD, KARIKKALI WORKS
(Seethai Nagar Limestone Mines)

GREEN BELT DEVELOPMENT PHOTOS

Green Belt Developed area : 25.85 ha
So far, total no. of tree planted : 32821 nos as on 30.09.2022

**1. Mines Office**

Latitude : 10°71'38.57" N
Longitude : 78 °06'05.79" E

GREEN BELT DEVELOPMENT PHOTOS (Cont..)

2. Mines & Crusher area:

Latitude : 10°71'15.83" N

Longitude : 78°06'97.66" E

2. Mines Garden

Latitude : 10°71'98.29" N

Longitude : 78°05'63.87"E

GREEN BELT DEVELOPMENT PHOTOS (Cont..)

GREEN BELT DEVELOPMENT PHOTOS (Cont..)

**5**. Colony Area:

Latitude : 10°72'03.27" N

Longitude : 78°06'66.22" E

for CHETTINAD CEMENT CORPORATION PRIVATE LIMITED

V.KRISHNAN
JOINT PRESIDENT [WORKS]

CHETTINAD CEMENT CORPN.PVT.LTD. KARIKKALI 624703