

SUMMARY

OF

DRAFT EIA / EMP REPORT

FOR

LIMEKANKAR QUARRY LEASE

| | |
|-----------------------|---|
| Extent | 18.205 Ha |
| Production | 2,78,370 Tonnes of Lime Kankar for a period of 5 Years |
| Location | Sendurai Village, Sendurai Taluk, Ariyalur District, Tamil Nadu . |
| Ultimate Depth | 2.0m bgl |
| Mining Method | Opencast Mechanized Mining without drilling & blasting |

- Terms of Reference issued by SEIAA Tamil Nadu vide TO25B0108TN5564409N dated 02.03.2025
- Baseline Monitoring – Summer Season (March 2025 to May 2025)

PROJECT PROPONENT

CHETTINAD CEMENT CORPORATION PVT. LTD.

Ariyalur Works, Trichy Road, Keelapalur, Ariyalur District-621707.

CONSULTANT

CREATIVE ENGINEERS & CONSULTANTS

ABET ACCREDITED CONSULTANCY, NABL ACCREDITED TESTING LAB

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SUMMARY

1.1 INTRODUCTION:

Chettinad Cement Corporation Pvt. Ltd. propose to operate Lime Kankar Quarry Lease over an area of 18.205 Ha in Sendurai Village, Sendurai Taluk, Ariyalur District, Tamil Nadu and has initiated action towards obtaining environmental clearance.

This project involves production of 2,78,370 Tonnes of Lime Kankar (Peak production of 160920T during year 1) and 1,23,720 cubic meter of Topsoil upto a depth of 2.0 m bgl (1m top soil & 1m lime kankar) for the lease period of 5 years. It will meet the part requirement of the Kilapaluvur Cement Plant of the proponent.

Since the lease area is >5 Ha., this proposal is considered under Category – B1 and as per MoEF & CC notification necessitates preparation of EIA/EMP report and public hearing.

1.2 STATUTORY APPROVALS:

| | | |
|----|-----------------------------------|---|
| 1. | Precise Area Communication Letter | Lr.No. 5625/MMC.2/2020-1 dated 23.01.2024 |
| 2. | Mining Plan Approval | Rc.No.8883/MM7/2018 dated 30.05.2024 |
| 3. | Terms of Reference | Received from SEIAA, Tamil Nadu vide their TO25B0108TN5564409N . Dated:02.03.2025 |

As per TOR Condition, EIA/EMP report is prepared. Salient details of the report is given below:

2.1 SITE DESCRIPTION:

Table No.1: SITE DETAILS

| S.No | Particulars | Details |
|-------------|-------------------------|---|
| 1. | Name of the Project | Limekankar Quarry of Lease of Chettinad Cement Corporation Pvt. Ltd.(18.205 Ha) |
| 2. | Location of the project | Sendurai Village, Sendurai Taluk, Ariyalur District, Tamil Nadu |
| 3. | Latitude & Longitude | Latitude: 11°15'44.5312" - 11°16'1.4915" N Longitude: 79°10'54.9672 - 79°11'15.0083" E |
| 4. | Mining Lease area | 18.20.5 Ha |
| 5. | Type of land | Patta Land in the name of the applicant |
| 6. | Mine site topography | Plain terrain, dry lands with thorny bushes, shrubs |
| 7. | Accessibility | Lease area is approachable from sendurai – Udaiyarpalayam road passing 75m west of the lease area |

| S.No | Particulars | Details | | |
|------|---|---|-----------------|------------------|
| 8. | Nearest Highway | SH-217 - 0.5m - S | | |
| 9. | Nearest Railway station | Sendurai Railway Station – 1.6Km - (SW) | | |
| 10. | Nearest Airport | Trichy Airport – 75Km - (SW) | | |
| 11. | Nearest major water bodies | Name | Distance | Direction |
| | | Anaivari Odai | 2.2Km | NW |
| | | First order streams/ vari courses control the drainage near the lease area. | | |
| 12. | Environmental sensitive areas, Protected areas as per Wildlife Protection Act, 1972 (Tiger reserve, Elephant reserve, Biospheres, National parks, Wildlife sanctuaries, community reserves and conservation reserves) | Nil within 10 Km radius | | |
| 13. | Reserved / Protected Forests | Name | Distance | Direction |
| | | Sedalavadi RF | 4.2Km | SE |
| | | Vannankurichi RF | 5.3Km | S |
| | | Vangaram RF | 7.2Km | N |
| | | Kulumur RF | 7.5Km | NW |
| | | Palakkurichi RF | 9.5Km | SE |
| 14. | Seismic Zone | Zone – II (Least Active) | | |

Based on the conditions of Precise Area Communication letter, the following safety distances will be maintained:

Safety Distances

| | |
|------|--|
| 50m | 6 Concrete Buildings (Houses), S.F.No - 66/3,11A, 127/1B |
| 50m | 3 Tiled Houses - S.F.No - 62/16, 66/4A, 127/1B |
| 50m | Vari Course - S.F.No - 67/1, 68, 124, 125, 134, 128/1B |
| 50m | LT Power Lines - S.F.No - 67/2 |
| 50m | LT Power Line – S.F.No - 127 |
| 10m | Cart Track - S.F.No - 64, 128/4 |
| 10m | Temple Land of Arulmigu Senthandeswarar - 62/22 |
| 7.5m | Adjoining Patta Land |
| 10m | Government Poromboke Lands |

Table No.2: TECHNICAL DESCRIPTION

| S.No | Particulars | Details |
|------|--------------------|--|
| 1. | Geological reserve | 4,09,948 T |
| 2. | Mineable reserve | 2,78,370 T |
| 3. | Method of Mining | Opencast method without drilling and blasting will be carried out. |

| S.No | Particulars | Details | | |
|------|---------------------------------|---|---------------------------------------|-------------------------------|
| 4. | Production | Year | Lime Kankar ROM (Tonnes) | Top Soil (cubic meter) |
| | | I | 160920 | 71520 |
| | | II | 117450 | 52200 |
| | | III | Afforestation in the safety zone area | |
| | | IV | | |
| | | V | | |
| | | Total | 278370 | 123720 |
| 5. | Life of the mine | 5 Years | | |
| 6. | Waste Generation and Management | There is no generation of mineral rejects in the applied area. The topsoil that would be generated during the present plan period is proposed to be utilized for afforestation. | | |
| 7. | Ultimate Mine depth | 2.00m (1m top soil & 1m lime kankar) | | |
| 8. | Manpower | Direct – 10, Indirect – 50 | | |
| 9. | Water Requirement & source | Total water – 5 KLD Will be procured from outside agencies | | |
| 10. | Power Requirement | All the equipment will be diesel operated. No electricity is needed for mining operation. The minimum power requirement for office, etc will be met from state grid. | | |
| 11. | Site services | Mine office, first aid room, rest shelters, toilets etc. will be provided as semi-permanent structures. | | |
| 12. | Project cost | Rs. 591.0 Lakhs. | | |
| 13. | CER cost | Rs.2.0 Lakh | | |

3.1 EXISTING ENVIRONMENTAL SCENARIO:

The studies and data collection have been carried out systematically and meticulously as per relevant IS codes, CPCB and MoEF&CC guidelines and as per approved ToR during **Summer Season (March 2025 to May 2025)** For the purpose of this study, the area has been divided into two zones, namely, core and buffer zones. Core zone is considered as the total lease area, while buffer zone encompasses an area of 10 km radius distance from the periphery of core zone. Based on 2011 census data, in the 10km radius there are 42 Rural villages from Sendurai Taluk, Ariyalur District.

Table No.3: SOCIAL, ECONOMIC AND DEMOGRAPHIC PROFILE OF THE STUDY AREA

| Details | Population | Percentage |
|--|---------------|--------------|
| A. Gender-wise distribution | | |
| Male Population | 79095 | 49.66 |
| Female Population | 80181 | 50.34 |
| Total | 159276 | 100 |
| B. Caste-wise population distribution | | |
| Scheduled Caste | 49691 | 31.20 |
| Scheduled Tribes | 1124 | 0.71 |
| Other | 108461 | 68.10 |
| Total | 159276 | 100 |
| C. Literate and Illiterate population | | |
| Literate Males | 55879 | 35.08 |
| Literate Females | 41056 | 25.78 |
| Total Literate Population | 96935 | 60.86 |
| Other Males | 23216 | 14.58 |
| Other Females | 39125 | 24.56 |
| Others Population | 62341 | 39.14 |
| Total | 159276 | 100 |
| D. Occupational structure | | |
| Main workers | 62095 | 39.00 |
| Marginal workers | 18962 | 11.90 |
| Total Workers | 81057 | 50.90 |
| Total Non-workers | 78219 | 49.10 |
| Total | 159276 | 100 |

3.2.1 EXISTING ENVIRONMENTAL QUALITY:

Table 1: Baseline Data

| A) AMBIENT AIR QUALITY | | Monitoring Location – 5 locations | |
|---|----------------|-----------------------------------|----------------|
| PARAMETER | RESULT (µg/m3) | | *LIMIT (µg/m3) |
| Location | Core Zone | Buffer Zone | |
| Particulate Matter (Size <10 µm) | 45.2 – 54.5 | 48.7 – 68.2 | 100 |
| Particulate Matter (Size <2.5 µm) | 20.8 – 25.1 | 22.4 – 32.7 | 60 |
| Sulphur Dioxide (as SO ₂) | 4.9 – 7.4 | 5.1 – 9.6 | 80 |
| Nitrogen Dioxide (as NO ₂) | 8.3 – 10.6 | 8.4 – 14.1 | 80 |
| Conclusion: The existing Ambient Air Quality levels for PM10, PM2.5, SO2 and NO2, are within the NAAQ standards prescribed CPCB limits of 100 µg/m3, 60 µg/m3, 80 µg/m3 & 80 µg/m3. The CO values in all the locations were found to be below detectable limit. Silica values in the study area are found to be below detectable limit. (Detection limit – 0.05 mg/m3) | | | |
| B) WATER QUALITY | | Monitoring Location – 5 locations | |

| PARAMETER | Result | *LIMIT |
|---|-------------|----------------|
| pH at 25 °C | 6.72 – 7.46 | 6.5-8.5 |
| Total Dissolved Solids, mg/L | 442 – 774 | 2000 |
| Chloride as Cl ⁻ , mg/L | 112 – 450 | 1000 |
| Total Hardness (as CaCO ₃), mg/L | 305 – 392 | 600 |
| Total Alkalinity (as CaCO ₃), mg/L | 235– 345 | 600 |
| Sulphates as SO ₄ ²⁻ , mg/L | 73.6 – 225 | 400 |
| Iron as Fe, mg/L | 0.06 – 0.11 | 0.3 |
| Nitrate as NO ₃ , mg/L | 1.24 – 3.14 | 45 |
| Fluoride as F, mg/L | 0.35 – 0.46 | 1.5 |

Conclusion: * The water quality of ground water is found to be within the prescribed Permissible limits of IS: 10500 Norms in the absence of an alternative source as per Drinking Water Specifications.

| C) NOISE LEVELS | | Monitoring Location – 5 locations | |
|-----------------|----------------|-----------------------------------|---|
| PARAMETER | RESULT dB(A) | | *LIMIT |
| | Day Equivalent | Night Equivalent | |
| Core Zone | 46.2 | 41.0 | 90 |
| Buffer Zone | 48.5 – 51.6 | 40.2 – 41.1 | Day Equivalent - 55dB(A), Night Equivalent - 45dB(A) |

*Permissible noise for industrial workers as laid down by CPCB (at 8 hrs Exposure Time). While comparing with the MoEF&CC Norms, the monitored ambient noise levels are generally within the limit values.

| D) SOIL QUALITY | Monitoring Location – 5 locations |
|-----------------------------------|-----------------------------------|
| PARAMETER | Range of values |
| pH | 6.67 - 7.58 |
| Electrical Conductivity (µmho/cm) | 40.66 – 92.65 |
| Organic matter (%) | 0.74 – 1.02 |
| Total Nitrogen (mg/kg) | 192 – 306 |
| Phosphorus (mg/kg) | 0.56 – 1.34 |
| Sodium (mg/kg) | 675- 924 |
| Potassium (mg/kg) | 246 -394 |
| Soil is of Loam Type | |

3.2.2 LAND ENVIRONMENT:

Landuse pattern study carried out through remote sensing satellite data around the 10km buffer zone shows that 25.69 % of the buffer area is classified under the Agriculture/ Plantation

followed by 29.69 % of fallow land, 29.72 % constitutes land with scrub, 9.85 % constitutes land without scrub and the balance falls under other land use categories.

3.2.3 BIOLOGICAL ENVIRONMENT:

Flora: The lease area is a non forest, private land with thorny bushes and shrubs only. The lease area is dominated with *Prosopis juliflora* (seemakaruvelam), *Acacia nilotica*(*Karuvelam*), *Morinda tinctoria* (nuna), *Cassia auriculata* (Aavarampoo).

In the study area, Agriculture is seen mainly on the northern, North western side of the study area in proximity to odai, due to presence of rainfed irrigation facility and the favourable soil condition. Since the lithology of the eastern side of the study area, is predominantly mottled sandstone type. Munthiri (*Anacardium occidentale*) & mango (*Mangifera indica*) predominantly present in this area. The Dominated species in the buffer zone are *Anacardium occidentale*, *Mangifera indica*, *Albizia lebbek*, *Acacia auriculiformis*, *Syzygium cumini*, *Borassus flabellifer*, *Azadirachta indica*, *Prosopis juliflora*, etc.

Fauna: There is no Wild Life Sanctuary or National Park within the study area of 10 km. Domesticated animals are commonly found. No wild mammalian species was directly sighted during the field survey.

3.2.4 HYDROLOGICAL STUDY:

The water table aquifer is normally developed for domestic water supply and small irrigation needs, through dug wells, constructed in the past. The semi- confined aquifer is mostly developed through bore wells for agricultural purposes tapping this zone at depths of 60 to 80m. The ultimate mining depth is also 2.0m only(1m top soil & 1m lime kankar). Hence, no adverse impact on groundwater table is envisaged.

4.1 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

This is a proposed project and Semi – Mechanized Open Cast mining will be carried out to quarry out Lime Kankar. Negligible environmental impact is envisaged from this project owing to the following reasons:

- ❖ Low quantum of production – Only 278370T of Limekankar will be mined out during the period of 5 years. Since the available reserves are very less, the entire material will be mined in the first 2 years itself.
- ❖ No Drilling and Blasting

- ❖ Less number of equipment's of optimum capacity - Only 1 excavator and 2 tippers are proposed to be used in this project.
- ❖ Ultimate depth of mining is only 2.00m

4.1.1 AIR ENVIRONMENT:

The principal sources of air pollution in the area due to mining and allied activities are dust generation in the mine due to various activities such as excavation of material, movement of HEMM, loading, unloading and transportation operations.. Besides, Gas emission also occur as a result of emission of SO₂, NO_x, CO etc., from diesel driven mining equipment, compressors, generator sets, etc. The following measures will be adopted to control impact on the air quality due to mining operations in the lease area:

- Regular wetting of transport road using mobile water tanker.
- Proper maintenance of roads.
- Avoiding overloading of tippers & Transportation of material by tarpaulin covered trucks
- Proper maintenance of HEMM to minimize gaseous emission
- Setting up of tyre washing facility in the lease area exit.
- Provision green netting around the lease periphery on all sides.
- Development of green belt/ plantation in various areas within the mine lease area etc.

By adoption of all these measures, no adverse impact on air quality is envisaged due to this proposed opencast mining operation.

The impact on air quality due to the proposed project is estimated using AERMOD View Gaussian Plume Air Dispersion Model.

The resultant added concentrations with baseline figures even at worst scenario, show that the values of ambient air quality with respect to PM₁₀ are in the range of 57.8 µg/m³ to 69.2 µg/m³ and with respect to PM_{2.5} are in the range of 26.1 µg/m³ to 33.7 µg/m³ which are within the statutory limits in each case.

For preservation of environment in this mine strict enforcement of management schemes will be undertaken for taking corrective actions, as needed. By adopting the effective implementation

of all the mitigative measures, no adverse impact on Air quality due to the mining operation in this lease area is expected.

4.1.2 WATER ENVIRONMENT:

The total water requirement for this project will be 5.0 KLD comprising 1.0 KLD for drinking water and domestic use, 3.0 KLD for dust suppression and 1.0 KLD for greenbelt. The water will be sourced from outside agencies.

The domestic effluent to be generated from the project will be collected in septic tank with soak pits arrangements. This being a mining project there will not be any process effluent. Towards surface runoff management, garland drain will be constructed around the quarry and will be connected to a settling pond with silt traps. The supernatant clear water from the settling pond will be flow to the downstream users.

There are no perineal water courses in the lease area. South of the lease area, vari course situated in S.F.No. 67/1, 68, 124, 125, 134 and a channel situated in S.F.No.128/1B in the North eastern side. Safety distance of 50m has been left based on precise area conditions. As a protective measures, an Earthen bund of 3 ft height will be constructed in the safety zone and it will be developed with plantation.. Good plantation will also be carried out in the safety zone. Besides, There is no proposal to discharge any effluent into this water body. No major impact is envisaged on the nearby water bodies due to project operations.

4.1.3 NOISE ENVIRONMENT:

In this project, there is no drilling and blasting involved. There will be hardly operation of 1 loader and 2 tippers in the lease area. Hence the effects of noise from the mining operation will be insignificant. There will also be attenuation due to vegetation, green netting to be erected by the proponent all around the lease and as such there will not be any adverse noise propagation outside the lease boundary Due to natural attenuation effects, by proper green belt development, design / maintenance of machines, etc., the impact on noise levels will be negligible and are expected to be well within the prescribed limits.

4.1.4 IMPACT ON LAND ENVIRONMENT:

The lease area of 18.205 Ha is a patta land in the name of the applicant Chettinad Cement Corporation Pvt Ltd. Ultimately the entire mined out area of 12.3780Ha will be used for rainwater

harvesting. 5.827 Ha will be covered with vegetation. Entire mined out area will be properly fenced to prevent inadvertent entry of men and animals.

4.1.5 BIOLOGICAL ENVIRONMENT:

Necessary mitigative measures like dust suppression, proper maintenance of equipment's, greenbelt and plantation etc., will be carried out to prevent dust generation & any further impact on the vegetation. In the lease area, Greenbelt / Plantation will be carried out to enhance the vegetative growth and aesthetic in the safety zone area. About 2910 trees will be planted in and around the lease area.

4.1.6 SOCIO ECONOMIC ENVIRONMENT:

The entire lease area is private patta land owned by the applicant. There are no habitations or hutments in the core zone area and no rehabilitation or resettlement problems will arise here.

The mining operations in the proposed mine will provide the following socio-economic benefits:

- Direct Employment for about 10 persons.
- Besides through allied opportunities in logistics, trading, repairing works etc. good employment potential will arise in this area, which will provide raising income levels and standards of living in the area through various service-related activities connected with the project operations.
- Benefit to State and central exchequer by way of royalty, taxes.

Towards the socio-economic development of the surrounding area, the proponent has earmarked an amount of Rs.2.0 Lakh under Corporate Environmental Responsibility. The activities identified under CER will be implemented in a phased manner in the nearby Government school. In consultation with the locals based on the need & priority it will be implemented.

By carrying out systematic and scientific mining and implementing all the environmental mitigative measures it will be ensured that there will be no adverse impact on this front.

4.1.7 IMPACT ON LOCAL LOGISTICAL SYSTEM DUE TO PROJECT:

There will be hardly about 3 trips per hour of mineral transportation during the first year. Then there will be reduced production in year 2 due to which the number of trips will further reduce. The transport route can easily absorb this negligible traffic due to this project. The following mitigative measures are suggested for mitigation of adverse impacts on the logistical aspect of the project:

- ❖ Water sprinkling on Rough stone in the transport vehicles before transporting, so that no dust nuisance during transport will arise.
- ❖ Proper maintenance of transport roads
- ❖ Proper maintenance of transport vehicles.
- ❖ Avoiding overloading of material
- ❖ Covering of loaded vehicles with tarpaulins sheet
- ❖ Plantation on either side of the road in consultation with concerned department.

4.1.8 WASTE MANAGEMENT:

There is no process effluent generation from this mine. Hence no liquid waste is generated. Single use plastics/ use and throwaway plastics will be banned in the site as directed by the Tamil Nadu Government vide GO(Ms)No.84 regarding ban on use of plastic products. The employees will be encouraged to use compostable material or reusable material.

5.1 ENVIRONMENTAL MONITORING PROGRAMME:

Regular, systematic and sustained programme schedules for implementation and monitoring of various control measures are devised with clear cut guidelines of various concerned plans for keeping a continuous surveillance on the various environmental quality parameters in the area. The Mines Manager in the mine project site will be directly responsible for various environmental activities in the mine and will undertake effective monitoring and implementation of various environmental control measures promptly and effectively and to oversee various environmental management schemes for air quality control, water quality status, noise level control, plantation programme, social development schemes, etc in the mine. Towards EMP measures, Rs.9.67 Lakhs is allocated under capital cost. Besides, Rs.13.97 Lakhs per annum is allocated as recurring cost. The baseline monitoring carried out for this project reflects the cumulative impact of this existing quarry.

6.1 CONCLUSION:

By systematic and scientific mining adhering to all the statutory norms and enforcing and strictly implementing the above said mitigation measures mentioned in this report, no adverse impact is envisaged. The proposed mining activity will be carried out without drilling and blasting, with low quantum of production, less number of equipments and also a meagre depth of only 2.0m. Hence, no adverse impact on the environment due to mining operations is envisaged. Besides, this project will also provide employment, social welfare facilities by way of CER activities and also meet the raw material requirement of their plant.

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