SUMMARY OF DRAFT EIA / EMP REPORT

FOR

LIMEKANKAR QUARRY LEASE

Extent	**4.370 Ha**
Production	**0.097 Mil. T of Lime Kankar for a period of 5 Years**
Location	**Kallankurichi Village, Ariyalur Taluk, Ariyalur District, Tamil Nadu.**
Ultimate Depth	**2.55m bgl**

- Terms of Reference issued by SEIAA Tamil Nadu vide Lr.No.SEIAA-TN/F.No.7193/ SEAC/ToR-760/2020 Dated 24.09.2020
- Term of Reference -Extension Lr.No.SEIAA-TN/F.No.7193/SEAC/ToR-760/Extn, dated:08.08.2023
- Baseline Monitoring- Summer Season (March 2022 to May 2022)

PROJECT PROPONENT

CHETTINAD CEMENT CORPORATION PVT. LTD.

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

CONSULTANT

CREATIVE ENGINEERS & CONSULTANTS

NABET ACCREDITED CONSULTANCY, NABL ACCREDITED TESTING LAB

9B/4, Bharathwajar Street, East Tambaram, Chennai-600059.

Ph: 044-22395170, Cell: 09444133619 Email : cecgiri@yahoo.com,

Creating Possibilities

MAY 2023

SUMMARY

1.1 INTRODUCTION:

Chettinad Cement Corporation Pvt. Ltd. propose to operate Lime Kankar Quarry Lease over an area of 4.370 Ha in Kallankurichi Village, Ariyalur Taluk and District, Tamil Nadu and has initiated action towards obtaining environmental clearance.

This project involves the production of 97,196 Tonnes of Lime Kankar upto a depth of 2.55m bgl for the period of 5 years. It will meet the part requirement of the Kilapaluvur Cement Plant of the proponent. The lease period is 5 years. The entire land is in proponent's possession.

Although the individual lease area of this project is less than 5 Ha, the other other existing and proposed **lime kankar** quarries within the 500m radius along with this subject project works out to > 5Ha and as such this proposal is considered under Category – B1 Nessistating preparation of EIA/EMP Report and public hearing .

1.2 STATUTORY APPROVALS:

1.	Precise Area Communication Letter	Lr.No.9020/MMC.2/2018-1 dated 12.10.2018
2.	Mining Plan Approval	1507/MM10/2018/LK/Ary, dated 09.01.2019
3.	Terms of Reference	SEIAA-TN/F.No.7193/SEAC/ToR-760/2020. Dated:24.09.2020. SEIAA-TN/F.No.7193/SEAC/ToR-760/Extn. Dated:08.08.2023

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

Safety Distances

7.5m	All along the lease boundary
10m	Village road located in S.F. No. 226/2A on the north.
10m	Cart track in S.F. No. 241/9 passing on the east.
50m	Vari in S.F.No.240/10
50m	Vari in S.F.No.228/10
50m	Vari in S.F.No.226/1,2B,2C and 2D

Besides, the high tension powerline passing in S.F.Nos. 241/1B,6A,7 and 8 has to be shifted 50m away from periphery of the quarrying boundary before execution of lease deed.

As per TOR Condition, EIA/EMP report is prepared. Salent 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.
2.	Location of the project	Kallankurichi Village, Ariyalur Taluk and District, Tamil Nadu
3.	Latitude & Longitude	**Latitude:** 11°09'46.692" - 11°09'58.092" N **Longitude:** 79°05'41.346 - 79°05'48.888" E
4.	Mining Lease area	4.370 Ha
5.	Type of land	Private Patta Land in the name of the applicant
6.	Mine site topography	Plain terrain
7.	Accessibility	The lease area can be approached from Kollapuram – Illuppaiyur Road that is connected to NH-136 (Ariyalur – Perambur) on the southern side of the lease area.
8.	Nearest Highway	NH-136 (Ariyalur – Perambur) – 1.9Km (SW) SH-139 (Ariyalur – Reddipalayam) – 4.3Km (S) NH-81 (Chidambaram – Trichy) – 8.9Km (SE)
9.	Nearest Railway station	Ariyalur Railway Station – 3.3Km (SW)
10.	Nearest Airport	Trichy Airport – 60 Km (SW)
11.	Nearest major water bodies	**Name** / **Distance** / **Direction** Kallar River / 3.4Km / E Vanchyian odai / 3.7Km / SW Chempan Odai / 7.5Km / NW Mettal odai / 6.3Km / SW Marudaiyar River / 8.4km / SW Kundiyar River / 9.5km / SW
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	Nil within 10 Km radius
14.	Seismic Zone	Zone – II (Least Active)

Table No.2: TECHNICAL DESCRIPTION

<table>
<tr><th>S.No</th><th>Particulars</th><th>Details</th></tr>
<tr><td>1.</td><td>Geological reserve</td><td>2,21,231 T</td></tr>
<tr><td>2.</td><td>Mineable reserve</td><td>97,196 T</td></tr>
<tr><td>3.</td><td>Method of Mining</td><td>Opencast method without drilling and blasting will be carried out.</td></tr>
<tr><td>4.</td><td>Production</td><td>
<table>
<tr><th>Year</th><th>Block</th><th>Lime Kankar ROM (Tonnes)</th><th>Top Soil (Tonnes)</th></tr>
<tr><td>I</td><td>Block I & II</td><td>74,999.08</td><td>8,888.76</td></tr>
<tr><td>II</td><td>Block II</td><td>9,999.42</td><td>1,185.1</td></tr>
<tr><td>III</td><td>Block II</td><td>4,999.18</td><td>592.48</td></tr>
<tr><td>IV</td><td>Block II</td><td>4,999.18</td><td>592.48</td></tr>
<tr><td>V</td><td>Block II</td><td>2,199.24</td><td>260.64</td></tr>
<tr><td>Total</td><td></td><td>97,196.10</td><td>11,519.46</td></tr>
</table>
</td></tr>
<tr><td>5.</td><td>Life of the mine</td><td>5 Years</td></tr>
<tr><td>6.</td><td>Waste Generation and Management</td><td>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.</td></tr>
<tr><td>7.</td><td>Ultimate Mine depth</td><td>2.55m</td></tr>
<tr><td>8.</td><td>Manpower</td><td>Direct – 14, Indirect – 50</td></tr>
<tr><td>9.</td><td>Water Requirement & source</td><td>Total water – 5 KLD
Will be procured from outside agencies</td></tr>
<tr><td>10.</td><td>Power Requirement</td><td>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.</td></tr>
<tr><td>11.</td><td>Site services</td><td>Mine office, first aid room, rest shelters, toilets etc. will be provided as semi-permanent structures.</td></tr>
<tr><td>12.</td><td>Project cost</td><td>Rs. 50,00,000 /-</td></tr>
<tr><td>13.</td><td>CER cost</td><td>Rs.1.0 Lakh</td></tr>
</table>

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 2022 to May 2022)** 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 32 Rural villages from Ariyalur Taluk, & District.

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

Details	Population	Percentage
A. Gender-wise distribution		
Male Population	51773	49.75
Female Population	52303	50.25
Total	**104076**	**100**
B. Caste-wise population distribution		
Scheduled Caste	25922	24.91
Scheduled Tribes	527	0.51
Other	77627	74.59
Total	**104076**	**100**
C. Literate and Illiterate population		
Literate Males	36556	35.12
Literate Females	27334	26.26
Total Literate Population	**63890**	**61.39**
Illiterate Males	15217	14.62
Illiterate Females	24969	23.99
Others Population	**40186**	**38.61**
Total	**104076**	**100**
D. Occupational structure		
Main workers	43838	42.12
Marginal workers	9923	9.53
Total Workers	**53761**	**51.66**
Total Non-workers	50315	48.34
Total	**104076**	**100**

3.2.1 EXISTING ENVIRONMENTAL QUALITY:

Table 1: Baseline Data

A) METEOROLOGICAL DATA	**Monitoring Location -** Near Mine Lease Area	
PARAMETERS	**MINIMUM**	**MAXIMUM**
Temperature in °C	20.0	41.3
Humidity in %	26.0%	92.7%
Wind speed Km/Hr	<1.8	14.0
Predominant wind direction (From)	NE	
B) AMBIENT AIR QUALITY	**Monitoring Location –** 5 locations	

PARAMETER	RESULT (µg/m3)		*LIMIT (µg/m3)
Location	Core Zone	Buffer Zone	
Particulate Matter (Size <10 µm)	40.4 – 56.5	42.5 – 73.2	100
Particulate Matter (Size <2.5 µm)	18.6 – 26.0	19.6 – 34.4	60
Sulphur Dioxide (as SO_2)	3.9 – 8.5	4.7 – 10.4	80
Nitrogen Dioxide (as NO_2)	7.9 – 10.9	8.2 – 15.8	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)			

C) WATER QUALITY	Monitoring Location – 4 locations	
PARAMETER	Result	*LIMIT
pH at 25 °C	6.87 – 7.52	**6.5-8.5**
Total Dissolved Solids, mg/L	440 – 760	**2000**
Chloride as Cl-, mg/L	99.8 – 196	**1000**
Total Hardness (as CaCO3), mg/L	296 – 384	**600**
Total Alkalinity (as CaCO3), mg/L	242– 340	**600**
Sulphates as SO42-, mg/L	71 – 215	**400**
Iron as Fe, mg/L	BDL(D.L - 0.01) – 0.07	**0.3**
Nitrate as NO3, mg/L	1.80 – 3.97	**45**
Fluoride as F, mg/L	0.26 – 0.42	**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.		

D) NOISE LEVELS	Monitoring Location – 5 locations		
PARAMETER	RESULT dB(A)		*LIMIT
	Day Equivalent	Night Equivalent	
Core Zone	44.2	39.0	**90**
Buffer Zone	46.5 – 49.6	38.2 – 39.1	**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.			

E) SOIL QUALITY	Monitoring Location – 2 locations
PARAMETER	Range of values
pH	7.05 – 7.24

Electrical Conductivity (µmho/cm)	58.92 - 95.46
Organic matter (%)	0.54 – 0.65
Total Nitrogen (mg/kg)	186 – 212
Phosphorus (mg/kg)	0.65 – 0.92
Sodium (mg/kg)	940 – 1456
Potassium (mg/kg)	710 – 1072
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 13.96 % of the buffer area is classified under the Agriculture/ Plantation followed by 54.32 % of fallow land, 11.63 % constitutes land with scrub, 11.47 % 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. Lease area is a bushy area. The lease area is dominated with Prosopis juliflora.. The Dominated species in the buffer zone are Albizia lebbeck, Acacia auriculiformis, Sygygium cumuni, 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. There is no Schedule I species in the core & buffer zone.

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 2.55m only. 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 97,196T of Limekankar will be mined out during the period of 5 years. Out of this, 74,999T i.e; almost 77% of the total production quantity will be mined out in the first year itself. As such the production is very low.
- No Drilling and Blasting
- Less number of equipments of optimum capacity - Only 1 excavator and 2 tippers are proposed to be used in this project.
- Ultimate depth of mining is only 2.55m

4.1.1 AIR ENVIRONMENT:

The principal sources of air pollution in general due to mining and allied activities will be Excavation, Drilling, Movement of HEMM such as Excavators, tippers etc., Loading and unloading operation and transportation. Although no adverse impact on the environment is envisaged due to small scale mining operation for a shallow depth envisaged for this project, 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.
- Vehicular emission tests with digital smoke meter.
- 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 PM_{10} are in the range of 57.5 μg/m3 to 74.2 μg/m3 μg/m3 and with respect to PM2.5 are in the range of 27.0 μg/m3 to 35.4 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. The water will be sourced initially 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. The rain water falling in the quarry will be harvested in the sump at the lowest level of the quarry. This sump will act as a settling pond to prevent solids escaping along with discharge, before outlet. etc. 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 is a Vari flowing across the lease area in the east west direction. A safety distance of 50m has been left based on precise area conditions. Earthen bund formation on both sides within the lease will be done. Besides there are also other vari courses in S.F.No.240/10 on the western side and another vari in S.F.228/10. Safety distance of 50m has been left for this also. 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:

Ultimately the entire mined out area of 1.910 Ha will be used for storing rainwater. 0.03 Ha will be the mine roads & infrastructure, 2.430 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 or agricultural activity nearby. Greenbelt / Plantation will be carried out to enhance the vegetative growth and aesthetic in the safety zone 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 14 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.1.0 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:

The material mined out from this lease area will be directly transported to the proponent's cement plant. During the project operations, there will be 2 trips/hr during the first year. Considering that most of the production is during the first year only and the production will reduce in the forth coming years, the impact due to transportation will also be negligible. The transport route will be properly maintained to absorb this 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 mineral in the transport vehicles before transporting, so that no dust nuisance during transport will arise.
- Plantation on either side of the transport road in consultation with the concerned department.
- Proper maintenance of transport road.
- Proper maintenance of transport vehicles.
- Avoiding overloading of material.
- Covering of loaded vehicles with tarpaulins sheet.
- Keeping traffic regulators at vulnerable locations.
- Limiting of speed
- Installation of barriers at vulnerable locations

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 PROGRAME:

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.12.18 Lakhs is allocated under capital cost. Besides, Rs.12.18 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 2.55m. 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.

* * * * * * * * *