

SUMMARY OF DRAFT EIA / EMP REPORT

FOR

LIMEKANKAR QUARRY LEASE

Extent	2.300 Ha
Production	Lime Kankar - 59,904T Topsoil - 7987T for 5 Years
Location	Karuppur (Senapathy) Village, Ariyalur Taluk, Ariyalur District, Tamil Nadu.
Ultimate Depth	2.3m bgl

- Terms of Reference issued by SEIAA Tamil Nadu vide Lr.No.SEIAA-TN/F.No.7192/SEAC/ToR-1145/2020 dated 05.05.2022
- Baseline Monitoring – Summer Season (March 2022 to May 2022)

PROJECT PROPONENT

CHETTINAD CEMENT CORPORATION PVT. LTD.

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

CONSULTANT

CREATIVE ENGINEERS & CONSULTANTS

NABET ACCREDITED CONSULTANCY, NABL ACCREDITED TESTING LAB

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MAY 2023

SUMMARY

1.1 INTRODUCTION:

Chettinad Cement Corporation Pvt. Ltd. proposed to operate Lime Kankar Quarry Lease over an area of 2.300 Ha in Karuppur (Senapathy), Ariyalur Taluk and District, Tamil Nadu and has initiated action towards obtaining environmental clearance.

This project involves the production of 59,904 Tonnes of Lime Kankar and 7987 Tonnes of Topsoil upto a depth of 2.3m bgl for the period of 5 years. It will meet the part requirement of the Kilapaluvur Cement Plant of the proponent. The entire land is in proponent's possession.

Although the individual lease area of this project is less than 5 Ha, the 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 Necessitating preparation of EIA/EMP Report and public hearing .

1.2 STATUTORY APPROVALS:

1.	Precise Area Communication Letter	Lr.No.9019/MMC.2/2018-1 dated 12.10.2018
2.	Mining Plan Approval	1510/MM10/2018/LK/Ary, dated 09.01.2019
3.	Terms of Reference	SEIAA-TN/F.No.7192/SEAC/ToR-1145/2020. Dated:05.05.2022

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	Cart Track located in S.F.No.192/6 and 193/11 on western side
50m	Vinayaga Educational Institution on south eastern side
50m	Vari course adjacent on eastern side

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
	Name of the Project	Limekankar Quarry of Lease of Chettinad Cement Corporation Pvt. Ltd.

S.No	Particulars	Details																														
2.	Location of the project	Karuppur (Senapathy) Village, Ariyalur Taluk & District, Tamil Nadu																														
3.	Latitude & Longitude	Latitude: 11°03'0.84" - 11°03'05.688" N Longitude: 79°04'46.542 - 79°04'52.392" E																														
4.	Mining Lease area	2.300 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 NH-81 (Chidambaram – Trichy) Road which lies on the southern side of the lease area at a distance of 0.15Km.																														
8.	Nearest Highway	NH-81 (Chidambaram – Trichy) – 150m (SE)																														
9.	Nearest Railway station	Ariyalur Railway Station – 10.8Km (N)																														
10.	Nearest Airport	Trichy Airport – 51.5 Km (SW)																														
11.	Nearest major water bodies	<table border="1"> <thead> <tr> <th>Name</th> <th>Distance</th> <th>Direction</th> </tr> </thead> <tbody> <tr> <td>Marudaiyar River</td> <td>2.0Km</td> <td>NE</td> </tr> <tr> <td>Ottan Odai</td> <td>2.2Km</td> <td>SE</td> </tr> <tr> <td>Kallar River</td> <td>4.8Km</td> <td>NE</td> </tr> <tr> <td>Uppu Odai</td> <td>8.6Km</td> <td>NE</td> </tr> <tr> <td>Aladi Odai</td> <td>5.8Km</td> <td>SW</td> </tr> <tr> <td>Kundiyar River</td> <td>8.3Km</td> <td>NW</td> </tr> <tr> <td>Mettal Odai</td> <td>6.1Km</td> <td>NW</td> </tr> <tr> <td>Chempan Odai</td> <td>3.9Km</td> <td>NW</td> </tr> <tr> <td>Uttankal Odai</td> <td>5.5Km</td> <td>NW</td> </tr> </tbody> </table>	Name	Distance	Direction	Marudaiyar River	2.0Km	NE	Ottan Odai	2.2Km	SE	Kallar River	4.8Km	NE	Uppu Odai	8.6Km	NE	Aladi Odai	5.8Km	SW	Kundiyar River	8.3Km	NW	Mettal Odai	6.1Km	NW	Chempan Odai	3.9Km	NW	Uttankal Odai	5.5Km	NW
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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)	<table border="1"> <thead> <tr> <th>Name</th> <th>Distance</th> <th>Direction</th> </tr> </thead> <tbody> <tr> <td>Karaivetti Bird Sanctuary Boundary</td> <td>6.9Km</td> <td>SW</td> </tr> <tr> <td>Karaivetti Bird Sanctuary ESZ Boundary</td> <td>6.8Km</td> <td>SW</td> </tr> </tbody> </table>	Name	Distance	Direction	Karaivetti Bird Sanctuary Boundary	6.9Km	SW	Karaivetti Bird Sanctuary ESZ Boundary	6.8Km	SW																					
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13.	Reserved / Protected Forests	Nil within 10 Km radius																														
14.	Seismic Zone	Zone – II (Least Active)																														
15.	Nearest Features	Vinayaga Collage – 100m																														

Table No.2: TECHNICAL DESCRIPTION

S.No	Particulars	Details
1.	Geological reserve	1,03,500 T
2.	Mineable reserve	59,904 T

S.No	Particulars	Details			
3.	Method of Mining	Opencast method without drilling and blasting will be carried out.			
4.	Production	Year	Lime Kankar ROM (Tonnes)	Top Soil (Tonnes)	Ore: OB Ratio
		I	27,720.00	3,696.00	1 : 0.13
		II	15,066.00	2,008.80	1 : 0.13
		III	10,143.00	1,352.40	1 : 0.13
		IV	3,766.50	502.20	1 : 0.13
		V	3,208.50	427.80	1 : 0.13
		Total	59,904.00	7,987.20	1 : 0.13
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	2.3m			
8.	Manpower	14 People directly and more than 50 people indirectly			
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. 30,00,000 /-			
13.	CER cost	Rs.1.0 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 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 30 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	45999	49.84%
Female Population	46293	50.16%
Total	92292	100
B. Caste-wise population distribution		
Scheduled Caste	18546	20.09%
Scheduled Tribes	480	0.52%
Other	73266	79.39%
Total	92292	100
C. Literate and Illiterate population		
Literate Males	31901	34.57%
Literate Females	23893	25.89%
Total Literate Population	55794	60.45%
Illiterate Males	14098	15.28%
Illiterate Females	22400	24.27%
Others Population	36498	39.55
Total	92292	100
D. Occupational structure		
Main workers	38055	41.20%
Marginal workers	9569	10.40%
Total Workers	47624	51.60%
Total Non-workers	44668	48.40%
Total	92292	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)	45.8 – 59.6	39.8 – 68.6	100
Particulate Matter (Size <2.5 µm)	21.2 – 27.5	18.5 – 32.2	60

Sulphur Dioxide (as SO ₂)	5.7 – 8.4	3.8 – 9.8	80
Nitrogen Dioxide (as NO ₂)	8.1 – 13.8	7.5 – 14.9	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 – 5 locations	
PARAMETER	Result	*LIMIT (µg/m³)	
pH at 25 °C	7.20 – 7.77	6.5-8.5	
Total Dissolved Solids, mg/L	550 – 856	2000	
Chloride as Cl ⁻ , mg/L	122 – 378	1000	
Total Hardness (as CaCO ₃), mg/L	172 – 580	600	
Total Alkalinity (as CaCO ₃), mg/L	176– 447	600	
Sulphates as SO ₄ ²⁻ , mg/L	23.0 – 152	400	
Iron as Fe, mg/L	BDL(D.L - 0.01)	0.3	
Nitrate as NO ₃ , mg/L	1.89 – 3.26	45	
Fluoride as F, mg/L	0.19 – 0.49	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 (µg/m³)
	Day Equivalent	Night Equivalent	
Core Zone	49.1	38.8	90
Buffer Zone	44.8 – 50.2	38.8 – 39.9	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	7.32 – 7.65	
Electrical Conductivity (µmho/cm)	68.94 – 102.4	
Organic matter (%)	0.48 – 0.65	
Total Nitrogen (mg/kg)	340 – 1264	
Phosphorus (mg/kg)	10.09 – 20.91	

Sodium (mg/kg)	0.75 – 0.82
Potassium (mg/kg)	864 – 1630
Soil is of Sandy Loam Type	

3.2.2 LAND ENVIRONMENT:

Landuse pattern study carried out through remote sensing satellite data around the 10km buffer zone shows that 16.57 % of the buffer area is classified under the Agriculture/ Plantation followed by 42.67 % of fallow land, 14.57 % constitutes land with scrub, 19.17 % 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: Domesticated animals are commonly found. . karaivetti Bird Sanctuary is located at a distance of about 6.9 km (SW). Karaivetti Bird Sanctuary is the fresh water feeding ground for migratory water birds frequent this bird sanctuary .

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 2.3m 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 59,904 Tonnes of Limekankar will be mined out during the period of 5 years.
- ❖ 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 2.3m

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 PM₁₀ are in the range of 55.5 µg/m³ to 69.6 µg/m³ and with respect to PM_{2.5} are in the range of 26.3 µg/m³ to 33.2 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 adjacent to the lease area on the eastern side flowing in north-south direction. A safety distance of 50m has been left based on precise area conditions. Earthen bund formation within the lease will be done. 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.

4.1.5 IMPACT ON LAND ENVIRONMENT:

Ultimately the entire mined out area of 1.250 Ha will be used for storing rainwater, 0.03 Ha will be the mine roads & infrastructure, 1.020 Ha will be covered with vegetation. Entire mined out area will be properly fenced to prevent inadvertent entry of men and animals.

4.1.6 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.

Karaivetti Bird Sanctuary is located at a distance of 6.9Km in the south western side of the lease area. The eco sensitive zone is located at a distance of 6.8Km from the lease area. As the lease area is outside the ESZ, NBWL clearance is not applicable.

4.1.7 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.

4.1.8 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 1 trip/hr. 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 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

4.1.9 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.9.74 Lakhs is allocated under capital cost. Besides, Rs.11.16 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 2.3m. 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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