SUMMARY

FOR

OTTAKOVIL LIMEKANKAR QUARRY LEASE-2

SITE DETAILS	
Extent	57.36 Ha
Location	Ottakovil Village, Ariyalur Taluk and District, Tamil Nadu
Land Type	Own Patta Lands
PRODUCTION DETAILS	
Production	Limekankar-12,49,031 T, Topsoil - 6,66,150m3 over 5 years
Ultimate Depth	2.75m (1.50m Top soil + 1.25m Lime Kankar)
Lease Period	5 years
Mining Method	Opencast Mining without drilling and blasting & simultaneous backfilling
PROJECT DETAILS	
ToR Reference	SEIAA-TN/F.No.10503/2023/SEAC/ToR-1671/2024 dated 08.02.2024
Baseline Studies	Winter Season (December 2023 – February 2024)

PROJECT PROPONENT

THE RAMCO CEMENTS LIMITED

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CONSULTANT

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SUMMARY

1.1 INTRODUCTION:

Ottakovil Limekankar Quarry Lease-2 of The Ramco Cements Limited is in S.F.Nos. 204/10, 204/11, 204/12, etc. over an area of 57.36Ha in Ottakovil Village, Ariyalur Taluk, Ariyalur District Tamil Nadu. Considering that this is a limekankar mining project which is a minor mineral with a lease area of 57.36 Ha, this project falls under Sector 1(a) i.e.; Mining of Minerals under Category B1 as per MoEF & CC notification necessitating EIA/ EMP report preparation and public hearing.

This proposal is made for obtaining Environmental Clearance for Ottakovil Limekankar Quarry Lease-2 of The Ramco Cements Limited for the production of 12,49,031 Tons of Limekankar and 6,66,150m3 of Topsoil over a period of five years (Peak Production – 6,99,891 Tons of Limekankar in Year 1) upto a total depth of 2.75m. (1.50m Top soil + 1.25m Lime Kankar)

The limekankar mined out from this quarry would be used for captive purpose at the company's own cement plant, wherein it will be blended with limestone from other captive limestone mines to be utilized as raw material for cement manufacture.

1.2 STATUTORY APPROVALS:

1.	Precise Area Communication Letter	2962/MMC.2/2022-1 dated 19.05.2023
2.	Mining Plan Approval	Rc.No.1272/MM7/2021 dated 17.08.2023
3.	Terms of Reference	SEIAA-TN/F.No.10503/2023/SEAC/ToR-1671/2024 dated 08.02.2024

Based on the conditions of Precise Area Communication letter, 50m safety distance for Murugan Eri, Sadaiyappa Udaiyar Kuttai, Odai's, Vari Course, LT Powerlines and 10m safety distance for Government poromboke lands, Temple lands and 7.5m for Patta lands is left . No mining will be carried out in the safety zone and all the intervening lands will be provided with approach and left undisturbed.

As per TOR Condition, EIA/EMP report is prepared for Ottakovil Limekankar Quarry Lease-2 of The Ramco Cements Limited project. 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	Ottakovil Limekankar Quarry Lease-2 if The Ramco Cements Limited
2	Location of the project	Ottakovil Village, Ariyalur Taluk, Ariyalur District Tamil Nadu.
3	Latitude & Longitude	**Latitude :** 11º12'15" N to 11º11'45" N **Longitude :** 79º06'35" E to 79º06'32" E
4	Mining Lease area	57.36 Ha
5	Type of land	Own Patta Land
6	Mine site topography	Almost Plain Terrain
7	Accessibility	The lease area can be approached through a black top road from Ariyalur to Sendurai Village about 270m on the eastern side. This road joins SH-136 (Perambalur - Keezhapalur) which lies around 5.7Km on the southern side of the lease area.
8	Nearest Highway	SH-136 (Perambalur - Keezhapalur) – 5.7Km (S)
9	Nearest Railway station	Ariyalur Railway Station – 6.8Km (S)
10	Nearest Airport	Neyveli Airport – 63Km (NE)
11	Nearest major water bodies	Kallar River – 3.8Km (S) Venmani Odai – 6.4Km (NW) Anaivari Odai – 6.8Km (NW) Vanchiyam Odai – 7.0Km (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	Notified Archaeologically important places, Monuments	Nil within 10 Km radius
14	Reserved / Protected Forests	Vannankurichi RF – 8.05Km (E)
15	Seismic Zone	Zone – II (Least Active)

Table No.2: TECHNICAL DESCRIPTION

S.No	Particulars	Details
1	Geological reserve	16,13,250 T of Limekankar
2	Mineable reserve	12,49,031 T of Limekankar
3	Method of Mining	•Opencast Mining without drilling and blasting using HEMM of low HP will be carried out. •During the plan period, the deposit will be mined by a simple system of simultaneous development, production and refilling by the same excavator called strip mining. •The depth of mining will be 2.75m only.
4	Production	It is proposed to mine 12,49,031T of Limekankar and 6,66,150m3 of Topsoil upto a total depth of 2.75m for a period of 5 years.
5	Life of the mine	5 Years
6	Waste Generation and Management	During the plan period, 6,66,150m3 of topsoil will be generated which will be used for backfilling of the mined out pit.
7	Ultimate Mine depth	2.75m
8	Manpower	16 People directly and more than 50 people indirectly
9	Water Requirement & source	Total water – 15 KLD Water requirement will be met from the borewells from the cement plant.
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.491.50 Lakhs
13	CER cost	Rs.10.0 Lakhs

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 **Winter Season (December 2023 – February 2024)** 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.

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

Details	Population	Percentage
A. Gender-wise distribution		
Male Population	93803	50.84
Female Population	90719	49.16
Total	**184522**	**100**
B. Caste-wise population distribution		
Scheduled Caste	41568	22.53
Scheduled Tribes	906	0.49
Other	142048	76.98
Total	**184522**	**100**
C. Literacy Levels		
Total Literate Population	118629	64.29
Others	65893	35.71
Total	**184522**	**100**
D. Occupational structure		
Main workers	81120	44.00
Marginal workers	22453	12.20
Total Workers	**103573**	**56.20**
Total Non-workers	**80949**	**43.80**
Total	**184522**	**100**

3.2.1 EXISTING ENVIRONMENTAL QUALITY:

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)	39.8 – 51.3	41.1 – 56.9	100
Particulate Matter (Size <2.5 µm)	18.3 – 23.6	19.3 – 27.4	60
Sulphur Dioxide (as SO_2)	5.1 – 7.4	5.2 – 8.9	80
Nitrogen Dioxide (as NO_2)	8.2 – 10.5	8.4 – 14.5	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 (µg/m3)**
pH at 25 ˚C	6.79 – 7.81	**6.5-8.5**
Total Dissolved Solids, mg/L	616 – 1035	**2000**
Chloride as Cl-, mg/L	139 – 271	**1000**
Total Hardness (as CaCO3), mg/L	269 – 560	**600**
Total Alkalinity (as CaCO3), mg/L	304– 398	**600**
Sulphates as SO42-, mg/L	78.60 – 292	**400**
Iron as Fe, mg/L	0.03 – 0.08	**0.3**
Nitrate as NO3, mg/L	1.76 – 4.65	**45**
Fluoride as F, mg/L	0.33 – 0.54	**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 –** 6 locations	
PARAMETER	**RESULT dB(A)**		***LIMIT (µg/m3)**
	Day Equivalent	**Night Equivalent**	
Core Zone	51.0	41.7	**90**
Buffer Zone	47.3 – 50.1	37.8 – 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 –** 3 locations
PARAMETER	**Range of values**
pH	6.69 – 7.45
Electrical Conductivity (µmho/cm)	76.58 – 120.3
Organic matter (%)	0.64 – 2.12
Total Nitrogen (mg/kg)	162 – 640
Phosphorus (mg/kg)	1.75 – 3.36
Sodium (mg/kg)	266 – 632
Potassium (mg/kg)	292 – 532
Soil is of Sandy Loam Type.	

3.2.2 LAND EVIRONMENT:

Landuse pattern study carried out through remote sensing satellite data around the 10km buffer zone shows that 22.99 % of the study area constitute fallow land and 27.75% under plantation.

3.2.3 BIOLOGICAL ENVIRONMENT:

Flora: The lease area is a non forest, private land. The lease area is mostly barren interspersed with mainly *Nuna tree*. In the lease periphery few vembu and panai trees are observed. Common species are like Morinda tinctoria, Prosopis juliflora, Sygygium cumuni, Azadirachta indica, Borassus flabellifer, Albizia lebbeck, Acacia auriculiformis, etc are dominated in the buffer zone.

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 Hydrological setting of this area is characterized generally by two aquifer system, comprising a water table aquifer in the over burden and limestone and a semi-confined one in the sandstone occur below the limestone formation. 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. In these wells, the limestone zone is also screened for better yield. The over burden and limestone together could be grouped under one water table zone for hydrological purposes.

In the case of Ottakovil mining is proposed to be carried for kankar for a depth of 2.75m. Hence the effect on water table will be insignificant.The stage of ground water development of the Ariyalur block is < 70% & falls in " Safe Category" as per CGWB Report of Perambalur..

4.1 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

In case of this mine, no major impact is envisaged due to the following reasons:

- No drilling or blasting is involved.

- Depth of mining is just 2.75 m only and the ore excavated in the mine face will be directly loaded in to the trucks for transportation.
- The waste material will be simultaneously re-casted back into the mined out void and as such will not be any transportation of waste material or external waste dumps.
- Less fleet of mining equipment's only is involved.

The identified impacts due to this mine during mining and associated activities have been studied in relation to various environmental components like Air, water, noise, vibration, land, transport etc.

4.1.1 AIR ENVIRONMENT:

The principal sources of air pollution in general due to mining and allied activities will be Excavation, Movement of HEMM such as Excavators, tippers etc., Loading and unloading operation and transportation. In case of this mine, 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 of green netting around the lease periphery as per requirement
- 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 53.6μg/m3 to 57.9μg/m3

and with respect to PM2.5 are in the range of 25.7μg/m3 to 28.4μg/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 15.0 KLD. Water requirement will be met from the borewells from the cement plant. 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.

Since simultaneous mining and backfilling method is proposed in the quarrying lease area, in the post mining stage also there will not be much change in the topography. The rain water falling within the mined out and backfilled area will get infiltrated through the backfilled waste and in turn recharge the ground water. During working proper drainage arrangements like earth bunds around working block will be made to avoid surface runoff. The proponent will also contribute for the up keeping of nearby natural water bodies like pond, kanmai by periodical desilting in coordination with village people and local administrative bodies.

In the safety distance of 50m, earthern bund will be formed and good plantation will be carried out within the safety zone. Besides, all these drainage channels are very small and seasonal drainage courses for draining rainwater during monsoon only. There will be no discharge of any waste into this water body. No major impact is envisaged on the water bodies due to project operations.

4.1.3 NOISE ENVIRONMENT:

During mining operation there will be noise generation due to working of excavators, movement of vehicles, etc. However, it will be felt near the active working area only and at away from its source it will get reduced. There will also be attenuation due to vegetation 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 VIBRATION:

The limekankar in this area is in friable form and can be excavated directly by using excavator and there will not be any drilling and blasting involved in the mining operation. Hence, vibration due to blasting is not envisaged.

4.1.5 IMPACT ON LAND ENVIRONMENT:

At the end of the life of the mine, out of 44.41.0Ha of mined out area, 26.08Ha will be backfilled and restored to premining condition and balance 18.33Ha will be left for rainwater harvesting. 0.01Ha will be infrastructure, 5.00Ha will be greenbelt and 7.94Ha will be the safety distance in which plantation will be carried out. 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

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 16 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.

The proponent has already carried out extensive CSR activities in the areas around the lease area. So far they have spent Rs.3.19 Crores between 2021-2024 for the development of the local areas. Further, the proponent has earmarked an amount of Rs.10 Lakhs under Corporate

Environmental Responsibility. The activities identified under CER will be implemented in a phased manner in provision of facilities in nearby Government School.

4.1.8 IMPACT ON LOCAL LOGISTICAL SYSTEM DUE TO PROJECT:

The limekankar mined out from this quarry would be used for captive purpose at the company's own Govindapuram Cement Plant, located at a distance of about 6Km. During peak production year 1, there will be about 6 Trips per hour. In the subsequent years the production will also reduce and the number of trips per house will be ranging from 1 – 4 Trips per hour. The existing road can 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

4.1.9 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 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. Mines manager & The Environmental Engineer 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.34.81 Lakhs is allocated under capital cost. Besides, Rs.31.42 Lakhs per annum is allocated as recurring cost.

7.1 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 less number of equipments and also a meagre depth of only 2.75m. 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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