

# EXECUTIVE SUMMARY

FOR

CAPACITY EXPANSION OF KALLANKURICHI LIMESTONE MINE (GO.456)  
FROM 0.28 MTPA TO 1.34 MILLION TPA

AT

VILLAGES- PERIYANAGALUR, KALLANKURICHI, AMEENABAD & KAIRULABAD,  
TALUK & DISTRICT-ARIYALUR, TAMIL NADU

MINE LEASE AREA- 194.16.5 HA

[CATEGORY 'A' AS MINING AREA IS MORE THAN 100 HECTARE]

## APPLICANT



**M/S TAMIL NADU CEMENTS CORPORATION LTD**

**(A Government of Tamil Nadu Undertaking)**

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**BASELINE STUDY PERIOD: MARCH-MAY 2019**

**MCPL/EMD/MIN/2018-19/06/01/(DEIA-V<sub>01</sub>)**

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## **EXECUTIVE SUMMARY**

### **1. INTRODUCTION**

The Proposal of G.O. no. 456, Kallankurichi Limestone Mines of M/s Tamil Nadu Cements Corporation Ltd. is for expansion in production capacity from 0.28 MTPA to 1.34 Million TPA, from Mine lease area of 194.16.5 Ha out of which 149.665 Ha is Patta Land and 44.5 ha is Govt. land. The mine is situated at Villages- Kurumbanchavadi (Ariyalur), Kairulabad Kallankurichi & Ameenabad, Taluk & District- Ariyalur, Tamil Nadu.

As per EIA notification 2006 and its subsequent amendments, the project activity has been categorized as “Category-A” due to of mining lease being more than 100 Hectare.

The Government of Tamil Nadu has granted Existing Kallankurichi limestone mining lease over an extent of 194.16.5 ha. survey No.130/2,327/2,329/2 etc., 38/25, 289/2, etc 29/1B, 30 etc at Villages- Periyagalur, Kallankurichi, Ameenabad & Khairulabad, Tehsil-Ariyalur, District Ariyalur, State-Tamil Nadu. vide G.O. Ms. No. 456, dated: 16.05.1985 and the Lease deed was executed for 20 years and is valid till 12.11.2005.

TANCEM Ltd., had submitted application for grant of renewal of mining lease for a further period of 20 years on 20.10.2004 and the renewal application under consideration of the Government, as per section 8A(5) of Mines and Minerals (Development & Regulation) Amendment Act, 2015 wherein the provision for renewal of mining lease has been dispensed with extension of lease period for 50 years from the date of first grant. In the instant case, the lease period has been extended upto 12.11.2035 subject to the statutory compliances including submission of environment clearance.

The Mining Plan for Kallankurichi limestone mining lease over an extent of 194.16.5 ha was approved by the Controller of Mines (SZ), Indian Bureau of Mines, Bangalore vide TN/ALR/MP/LST-1796-SZ/394, dated 12.07.2012. The present Scheme of Mining to the years 2015-2016 to 2019-2020 was submitted and approved by the Regional Controller of Mines, Indian Bureau of Mines. Chennai vide TN/ALR/MP/LST-1268-MDS/399 dated 16.11.2015.

Initially M/s Tamil Nadu Cements Corporation Ltd applied on 12.03.2014 in the Ministry for grant of Terms of References. The proposal was considered in EAC meeting held during May 28<sup>th</sup> -30<sup>th</sup>, 2014, the Committee observed that this is violation case as mine was operated without obtaining prior environmental clearance after lease fell, due for renewal in 2005 and also enhanced the production of limestone. PP submitted the past production details vide letter Rc.No.8/G&M/2019, dated 12.04.2019 from 1987-88 to 2017-18 as per production details it resembles that PP had been carried out the mining operations from 1987-1988 till 2017-18 without Environmental clearance. Ministry vide letter no. J-11015/137/2014\_IA.II (M) dated 14th July, 2014 issued the closure direction under section 5 of E (P) Act, 1986. TANCEM submitted the First Schedule Form-I of MMR, 1961 in respect of actual date of discontinuous of Kallankurichi Limestone Mines of Tamil Nadu Cements Corporation Ltd to the Director General of Mines Safety, Dhanbad, Eastern Railway, Jharkhand State vide letter no. TANCEM/ACW/KLSM FORM-1/2018 dated 25.01.2018. Thus the instant proposal is deemed fit in to the violation of E(P) Act, 1986 as the mine was in operation without obtaining Environmental Clearance.

TANCEM applied for Term of References (ToR) to MoEF&CC on 19.06.2017 under violation category for Existing G.O. No. 456, Kallankurichi limestone mining lease over an extent of 194.16.5 ha in pursuance of the MoEF&CC office memorandum vide F. No. Z-11013/22/2017-IA.II (M). The proposal was appraised in the EAC(V) meeting held during 29-31 January, 2019 wherein the committee deferred the proposal and sought the information PP submitted the information

accordingly the proposal was reconsidered in the EAC in its meeting held during 30th September - 1st October, 2019 wherein the committee recommended the proposal for grant of TOR vide **F.No.23-18/2019-IA.III (V) dated 16.12.2019** for preparation of

EIA report along with assessment of ecological damage, remediation plan and natural and community resource augmentation plan.

The production details are as follows.

Period 1987-88 to 2017-18.

Limestone Transported Quantity for the G.O.456	
Year	Quantity (in MT)
1987-88	286988.38
1988-89	0.00
1989-90	0.00
1990-91	0.00
1991-92	232620.46
1992-93	263146.95
1993-94	60455.38
1994-95	180592.79
1995-96	122471.34
1996-97	359634.15
1997-98	0.00
1998-99	162715.10
1999-2000	125721.17
2000-01	85163.85
2001-02	130007.13
2002-03	281202.50
2003-04	433672.11
2004-05	786771.64
2005-06	680875.24
2006-07	641336.82
2007-08	578202.97
2008-09	353506.05
2009-10	315315.90
2010-11	248732.21
2011-12	312445.21
2012-13	316133.08
2013-14	284780.64
2014-15	400524.77
2015-16	606526.28
2016-17	571143.38
2017-18	314421.55
<b>Total</b>	<b>9135107.05</b>

**Table 1: Brief Description of the Project**

S. No.	Particulars	Details	
A.	<b>Nature and Size of the Project</b>	Expansion in production capacity from 0.28 Million TPA to 1.34 Million TPA, of Kallankurichi Limestone Mines (G.O. No. 456) by Tamil Nadu Cement Corporation Limited.	
B.	<b>Location</b>		
	<b>Name of Unit</b>	<b>Khasra Number</b>	<b>Area of Block in ha</b>
	<b>Kallankurichi Limestone Mines</b>	Survey No.130/2,327/2,329/2 etc, 38/25, 289/2, etc 29/1B, 30 etc at Villages- Periyagalur, Kallankurichi, Ameenabad & Khairulabad, Tehsil- Ariyalur, District Ariyalur, State-Tamil Nadu	194.165

<b>Total</b>		<b>194.16.5</b>
<b>Village</b>	Periyagalur, Kallankurichi, Ameenabad & Khairulabad	
<b>Tehsil</b>	Ariyalur	
<b>District</b>	Ariyalur	
<b>State</b>	Tamil Nadu	
<b>Geographical Coordinates</b>	11° 07'5"N to 11° 10'56"N 79° 06'26"E to 79° 07'43"E	
<b>Toposheet (OSM) No.</b>	58 M/4	
<b>C.</b>	<b>Lease Area Details</b>	
	Lease Area	194.16.5 Ha
	Type of Land	Patta Land (149.665 Ha) and Government Land (44.5 Ha) Forest Land- NIL
	Depth of Mining	86.50 m to 67.50 m RL <i>Source: Mining Plan</i>
<b>D.</b>	<b>Cost Details</b>	
	Cost of the project	Approx. Rs. 250 Lakhs
	Cost for EMP	Rs. 10.0 Lakhs/Yr
	Cost for CER	Rs. 2.5 Lakhs/Yr
	OH&S	Rs. 2.0 Lakhs/Yr
	Cost For Biodiversity Conservation	Rs. 5.00 Lakhs/-
<b>E.</b>	<b>Environmental Settings of the area</b>	
	Ecological Sensitive Areas (National Park, Wild Life Sanctuary, Biosphere Reserve, Reserve/ Protected Forest etc.) within 10 Km radius	No such area is located within 10km radius of the mine lease area.
	Inter-state boundary within 5 Km radius	No such area is located within 10km radius of the mine lease area.
	Nearest Town/ Major City with 200000 population	Ariyalur ~ 2.8km (Population-7,54,894)
	Nearest Railway Station	Ariyalur Railway station approx 2.58 Km in W. Ottakkovil Railway station approx 5.22 Km in N
	Nearest State Highway/ National Highway	SH-217 Approx 98 meter, NW NH-227 Approx 2.83 km, SE
	Nearest Airport	Chennai International Airport approx 224 Km in NE direction. Trichy International Airport approx 70 Km in SW direction
	Medical Facilities	KVS hospital, Ariyalur~2.5 Km
	Education Facilities	Vidhya Mandir School, Ariyalur~1.5 Km Montfort Matriculation Higher Secondary School~2.0 Km
	Seismic Zone	Zone II
	Water Body	---

## 2. PROJECT DESCRIPTION

### Method of Estimation Reserve

As per UNFC guide lines the project proponent has already carried out detailed exploration. The reserves are estimated as per UNFC classification. UNFC parameter for proved reserve in (UNFC Code 111).

The category wise Mineable Reserve using UNFC code with the quantity and grade of the mineral are tabulated as given as under:-

**Table 2: Category wise Reserve**

Classification	Category	Qty. (in tons)	Qty. (in Mill. tons)	Grade
Reserve	111	9188334	9.188	Cement Grade
	122	66388	0.066	Cement Grade
<b>Total Reserve</b>		<b>9254722</b>	<b>9.254</b>	<b>Cement Grade</b>
	211	11544364	11.544	Ferruginous
	333	<b>4646440</b>	4.646	Ferruginous
Resource	221 (Locked up)	<b>6308885</b>	6.309	Cement Grade and Ferruginous
<b>Total Resource</b>		<b>22499689</b>	<b>22.499</b>	

Source: Scheme of Mining with Progressive Mine Closure Plan at Page No. 30

**Proposed Production**= 1.34 Million Tons per Annum

**Working days**=300 days

**Daily Production**=4466 MT/Day

### Method of Mining

Mining is carried out by open cast fully mechanized method utilizing Heavy Earth Moving Equipment (HEME). In conjunction with drilling, blasting shall be carried out to create fragmented material, which shall be loaded using hydraulic excavator for 1 m<sup>3</sup> bucket capacity. The loaded material will be transported using 20 tons Tarus tippers, the benches shall be extended to the ultimate pit limit and shall be advanced from each bench.

The benches will be formed at an angle of 45° individual benches in limestone will be of 6m height and the width of the benches shall always be maintained more than the height.

### Drilling and Blasting

Deep hole blasting will be carried out to loosen the in-situ limestone. Slurry type of explosives with ANFO will be used for blasting. The spacing and burden will be 3.5m and 3.0m and the depth of the hole will be 6m. The hole is drilled to a depth of 6.5m, giving 10 % sub grade drilling to avoid toe formation. The blasting will be restricted to three to four rows of drilling with each row consisting of 10-12 holes. The holes are drilled either in a staggered pattern or square pattern.

Broad drilling and blasting parameter are as follows;

1. Depth of each hole -6m
2. Diameter of hole- 115mm

2. Spacing between holes-3.5m
3. Burden for holes-3.0m
4. Sub grade drilling-0.5m
5. Pattern of hole- Staggered
6. Inclination of holes-80 ° from horizontal
7. Use of delay detonators- 25m delays
8. Detonating fuse- Cordtex
9. Hole Pattern- Staggered in two rows

### Proposed Production Detail

Year wise proposed production (as per IBM's approved Scheme of Mining) is as given below:

Year	Pit no.	Total tentative Excavation Cu.M	Top Soil (Cum)	OB/SB/ IB (Cum)	ROM (Cu m)		Mineral reject	ROM/ Waste Ratio
					Ore Cu.M	Mineral reject (Cum)		
2015-16	3,5&5a	670000	Nil	Nil	670000	Nil	Nil	1:0
2016-17	3,5&5a	670000	Nil	Nil	670000	Nil	Nil	1:0
2017-18	3,5&5a	670000	Nil	Nil	670000	Nil	Nil	1:0
2018-19	3,5&5a	670000	Nil	Nil	670000	Nil	Nil	1:0
2019-20	3,5&5a	670000	Nil	Nil	670000	Nil	Nil	1:0
<b>Total</b>		<b>3350000</b>			<b>3350000</b>			

Source: Scheme of Mining with Progressive Mine Closure Plan at Page No. 33

### Stacking of mineral reject /sub grade material and disposal of waste

The mine lease area is covered by Red soil of 0.0 to 0.50m thickness. The test results of the soil samples collected from this are prove that the soil cover over is suitable for agriculture and for forestation purpose.

### Nature and quantity of Top Soil

There will be no handling of Topsoil & Overburden during scheme period. The top soil of very larger quantity encountered will be temporarily stacked along the mining lease boundary and chemical composition of top soil is as follows:-

LOI	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>	CaO	MgO
13.80	59.50	11.70	7.20	5.20	1.30

Source: Scheme of Mining with Progressive Mine Closure Plan at Page No. 38

### Generation of waste in the plan period

Year	Waste / Sub grade material (in Tons)
2011 - 2012 to 2015-16	Nil

### Mineable reserve and anticipated life of the mines

Mineable reserve is now estimated to be 0.87 Million Tons of proved reserve of "111" as per UNFC classification. Considering 13.4 Lakh Tons of production per year life of the mine is expected to be 7 years.

## Project Requirements

### Land Requirements

Total Mine lease area is 194.16.5 Ha out of which 149.665 Ha Patta Land and 44.5 Ha Government Land.

### Water Requirement

Water requirement for plantation and dust suppression will be 10 KLD, which shall be met from water tanker through reservoir at G.O. 344.

### Power Requirement

No electrical power shall be required for operations as the mining will be worked out during day time in two shifts.

### Man power Requirement

It includes managerial & supervisory staff directly employed by the company and skilled, semi skilled workers through contractual. Therefore, total strength of workforce in the mine site is **26**.

## 3. DESCRIPTION OF ENVIRONMENT

Environmental data has been collected in relation to proposed mining for Air, Noise, Water, Soil, Socio-economic and Ecology & Biodiversity. The generation of primary data as well as collection of secondary data and information from the site and surroundings was carried out during pre monsoon season i.e. March to May, 2019.

**Table 3: Baseline Environment Status**

Parameter	Baseline Status
<b>Ambient Air Quality</b>	PM <sub>10</sub> -48.00 to 97.76 µg/m <sup>3</sup> PM <sub>2.5</sub> -28.00 to 58.00 µg/m <sup>3</sup> SO <sub>2</sub> -5.0 to 18.0µg/m <sup>3</sup> NO <sub>x</sub> -14 to 28.0µg/m <sup>3</sup>
<b>Noise Level</b>	Noise Level During Day Time -48.7-54.8 dB Noise Level During Night Time -36.2-46.4 dB
<b>Water Quality</b>	Surface Water: All the Parameters Like TDS (453 to 648 mg/L), pH (7.16 to 7.78), Total Hardness (202 to 312 mg/L) etc. are found within the permissible limits. Ground Water: All the Parameters Like TDS (602 to 706 mg/L), pH (7.49 to 7.81), Total Hardness (199 to 239 mg/L) etc. are found within the permissible limits.
<b>Soil Quality</b>	pH - 6.88 to 7.52, Texture -Sandy Loam, Organic Matter -1.04 % - 1.36%.
<b>Ecology And Biodiversity</b>	There is no wildlife sanctuary/biosphere reserve/national park present within 10 Km radius of the study area. One schedule-I specie

	was observed during study. Subsequently, a budget of Rs. 5.00 Lakhs has been earmarked for conservation of wildlife.
<b>Socio Economic</b>	The existing project will provide positive impact to the nearby area. The project will provide direct employment, which will be hired through the nearby villages.

#### **4. ANTICIPATED ENVIRONMENT IMPACT AND MITIGATION MEASURES**

The proposed mining operations are not anticipated to raise the concentration of the pollutants beyond prescribed limits. However, the mitigate measures are suggested to control harmful impacts of pollutants, like the plantation of trees along haul roads, especially near settlements, to help to reduce the impact of dust on the nearby villages; regular water sprinkling on unpaved roads to avoid dust generation during transportation etc. There are one species of Schedule I observed during the study period hence, for the same conservation plan was prepared. Subsequently, a budget of Rs. 5.0 Lakhs has allotted for the conservation of wildlife species. The mining of Limestone is likely to increase the per capita income of local people by which the socioeconomic status of the people will be improved. The local people have been provided with either direct employments or indirect employment such as business, contract works and development work like roads, etc. and other welfare amenities such as medical facilities, conveyance, free education, drinking water supply etc. Except dust generation, there is no source which can show a probability for health related diseases. Regular water sprinkling will be done with sprinkles mounted tankers and dust masks will be provided to the workers. All workers will be subjected to a medical examination as per Mines Rule 1955 both at the time of appointment and at least once in a year.

#### **5. ANALYSIS OF ALTERNATIVES**

We have analyzed all the option for alternatives of the Limestone Mining Project. Since it is an existing and mineral specific project therefore, analysis of alternative site is not applicable.

#### **6. ENVIRONMENTAL MONITORING PROGRAM**

TANCEM has formulated well laid-out Environmental Policy, wherein preservation of environment has been accorded a most strategic and prime position. The various protocol procedures in connection with communication channels upwards and downwards, for dealing with violations or departures in environmental standards involvement of Board of Directors as well as shareholders about such incidences, etc, have been described in detail in chapter-6.

Regular monitoring of implementation of various control measures in respect of air quality, meteorology, water quality, noise levels, biological status, land environment, socioeconomic factors, occupational health, etc. is most important to ensure that the project operations do not deteriorate the environmental status of the area at any point of time and environmental quality in respect of above parameters are kept well within the statutorily sustainable levels, as prescribed by CPCB, MOEF&CC and State Pollution Control Board.

A full-fledged environment cell is operating in the Kallankurichi Limestone mine. This cell 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 programmes, social



development schemes, construction of garland drains, etc. in the cement plant and all the working mines in the area.

## **7. ADDITIONAL STUDIES**

M/s Tamil Nadu Cement Corporation Limited has formulated a disaster management plan for Emergency Preparedness & Responses.

The salient features are elaborated as below.

- Emergency response Organization
- Communication System
- Action on the site
- Facilities available at site.

## **8. PROJECT BENEFITS**

The management will recruit the semi-skilled and unskilled workers from the nearby villages. The project activity and the management will definitely support the local Panchayat and provide another form of assistance for the development of public amenities in this region. The company management will contribute to the local schools, dispensaries for the welfare of the villagers. It is proposed to plant 96111 no's till 5th year. The project proponent has allocated Rs. 2.50 Lakhs per annum for CER Activities. The officers of the State pollution control Board will strictly monitor the compliance of the lease holder in this regard.

## **9. ENVIRONMENT MANAGEMENT PLAN**

### **AIR QUALITY MANAGEMENT**

- Proper mitigation measures like water sprinkling on haul roads will be adopted to control dust emissions.
- To control the emissions regular preventive maintenance of equipments will be carried out on contractual basis.
- Plantation will be carried out along approach roads & mine premises.
- It shall be ensured that all transportation vehicles carry a valid PUC certificate.

### **WATER MANAGEMENT**

No waste water will be generated from the mining activity of minor minerals as the project only involves lifting of over burden from mine site.

### **NOISE MANAGEMENT**

- Periodical monitoring of noise will be done.
- No other equipments except the Transportation vehicles and Excavator (as & when required) for loading will be allowed at site.
- Noise generated by these equipments shall be intermittent and does not cause much adverse impact.
- Plantation will be carried out along approach roads. The plantation minimizes propagation of noise and also arrest dust.

### **SOLID WASTE MANAGEMENT**

No solid waste will be generated from the said mining operations.

#### **OCCUPATIONAL HEALTH & SAFETY**

- Dust masks will be provided as additional personal protection equipment to the workers working in the dust prone area.
- No, occupational health hazards is reported till date from this activity.
- Workers are informed, kept aware and trained about occupational health hazards, due to such activities and preventive measures.
- Workers health related problem if any, will be properly addressed.

#### **10. Conclusion**

The project has positive impact to the local people as direct and indirect employment opportunity have been generated. There will be no significant pollution of air, water, soil and noise. Regular monitoring of all the components of environment will be done. Increased social welfare measures taken by the company. All possible environment aspects have been adequately assessed and necessary control measures have been formulated to meet statutory requirement.