

**March'  
2017**

# **PRE-FEASIBILITY REPORT**

## **(TOWARDS GETTING TOR)**

**OF**

**M/s. TAMILNADU CEMENTS CORPORATION  
LIMITED**

**ALANGULAM LIMESTONE MINES**

**Lease Area: 180.83.0 Hectares,**

**Site Address:**

**Alangulam & Lakshmipuram Villages, Sivakasai Taluk,  
Virudhunagar District, Tamilnadu**

**REGISTRATION NUMBER:IBM/7446/2011 dated 24.11.2013**

**MINING PLAN PERIOD**

**24.11.2013-14 to 2017-18**



**REGISTERED OFFICE**

**735, ANNA SALAI, LLA BUILDING,  
2nd FLOOR CHENNAI -600 002**

**SUBMITTED BY**

**SV ENVIRO LABS & CONSULTANTS  
ENVIRO HOUSE, BLOCK-B, B-1, IDA  
AUTONAGAR, VISAKHAPATNAM**

**QCI NO: 140**



**Pre Feasibility Report for Alangulam Limestone Mines (G.O.No.215, Extent 180.83 Ha) of M/s.Tamilnadu Cements Corporation Limited, Alangulam, Lakshmipuram Village, Sivakasi Taluk &Virudhunagar District.**

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**EXECUTIVE SUMMARY**

**1.0 INTRODUCTION**

M/s. Tamilnadu Cements Corporation Limited, a Government of Tamilnadu undertaking has set up a Cement plant at Alangulam, near Rajapalayam in Virudhunagar District. The metamorphic Limestone available in the nearby areas is utilized for Cement Manufacture. The ground work for the cement plant was started in 1960. The plant was commissioned during 1969. The limestone mining operations were being carried out since 1968.

The installed capacity of the cement plant is 4 lakhs tons per annum with wet type process operation. Government of Tamilnadu has decided to convert the cement plant from wet process to dry process within two or three years. The limestone requirement of one kiln operation is 3.5 lakhs tons per annum.

The cement plant is located about 18 kms east of Rajapalayam and 20 kms west of Sivakasi. Both Rajapalayam and Sivakasi are on broad gauge section of Sengottai Chennai line of Southern Railway. It is well connected by road with major towns and cities. Virudhunagar is about 50 kms and Madurai is about 90 kms from Alangulam.

The mining lease of the above area was granted by Tamilnadu Govt in the year 1972 vide G.O MS No: 595/Ind dt: 03.04.72 for a period of 20years and renewed mining lease vide G.O Ms. No: 215/Ind dt: 18.09.95 over an extent of 180.83.0ha covering Alangulam and Lakshmipuram villages of Sivakasi taluk of Virudhunagar district and lease deed has been executed on 24.11.1993 for a period of 20 years from 24.11.1993 to 23.11.2013.

Subsequently the Scheme of Mining was prepared & approved in accordance with under Rule 12(3) of MCDR, 1988 for the period 2011 to 2014 vide letter no: TN/VRD/LST/MS-641-SZ/258 Dt: 14.06.2012.

Since the mining lease will be expiring on 23.11.2013 and mining plan is prepared for the period from 24.11.2013 to 31.03.2014 and 01.04.2014 to 31.03.2018 for renewal of mining lease over an extent of 180.83.0ha Alangulam and Lakshmipuram village of Sivakasi Taluk

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of Virudhunagar District under Rules of 24A of MCR, 1960 and Rule 23(A&B) of MCDR, 1988.

**Details of Mining lease held by M/s. Tamilnadu Cements Corporation Limited**

S.No.	District	Taluk	Village	Mining Lease Govt. Order & Date	Extent (Ha)	Date of grant & date of expiry/period
01	Virudhunagar	Sivakasi	Lakshmpuram Alangulam	G.O.No.215Ind Dated 18.09.95	180.83.0	24.11.1993 & 23.11.2013- 20years

The proposed mining project falls under Category 'A' as per EIA notification 2006 of Ministry of Environment and Forests, New Delhi as the total area is above 50 Ha.

**1.2 SALIENT FEATURES OF THE PROJECT**

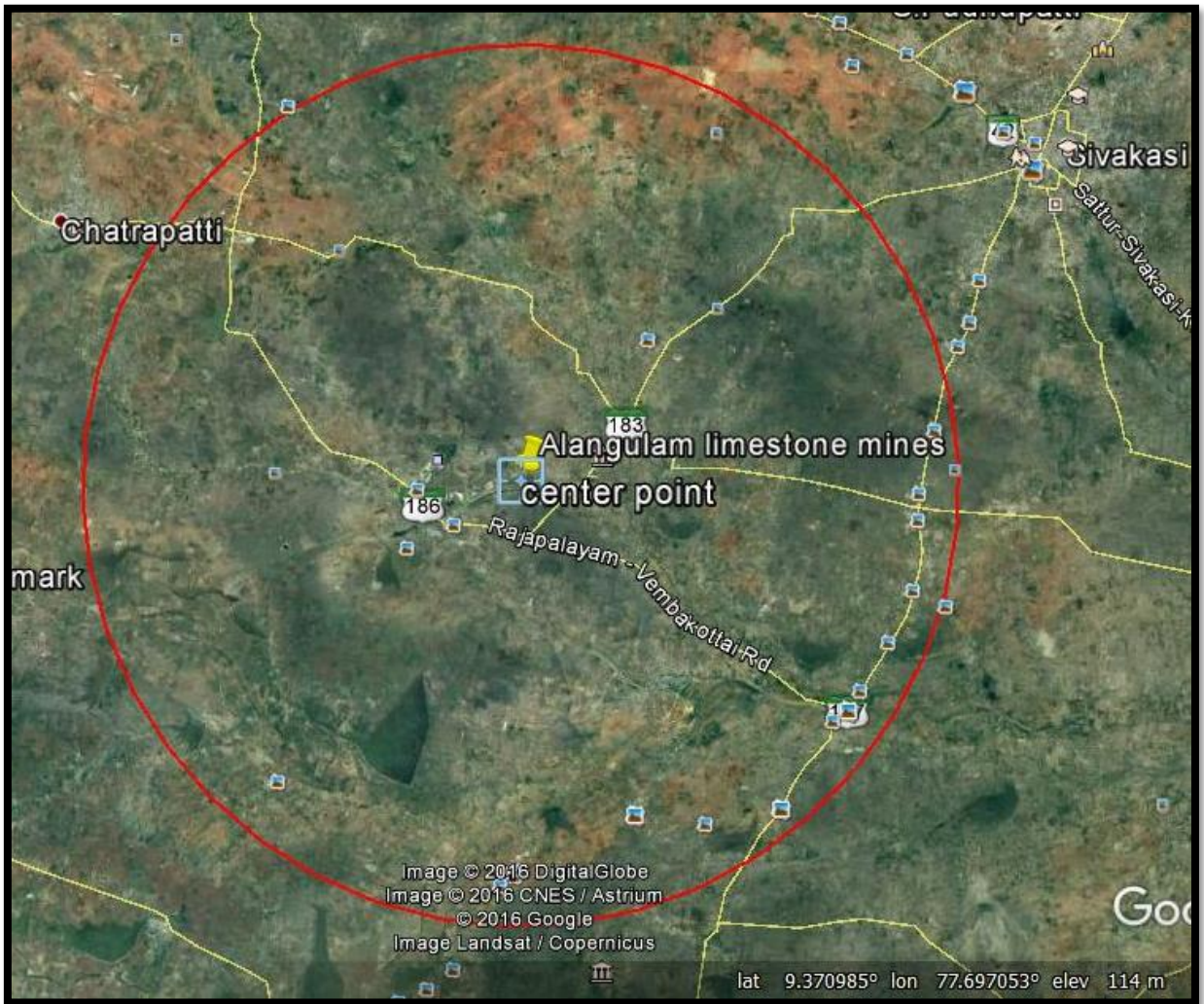
Nature of the project	Alangulam Limestone Mines M/s. Tamilnadu Cements Corporation Ltd.,			
Size of the Project	100000TPA (Max) of Limestone			
<b>LOCATION OF PROJECT</b>				
District & State	Virudhunagar District, Tamilnadu State			
Village & Taluk	Alangulam & Lakshmpuram villages of Sivakasi Taluk			
Land Availability	180.83.0 Ha			
Nearest Village	Alangulam Village at 0.5kms			
Toposheet No.	58 G/11			
Longitude	S.No.	North Latitude	East Longitude	
Latitude	1.	9°22'20"N	77°41'47"E	
	2.	9°21'25"N	77°40'24"E	
<b>GENERAL CLIMATIC CONDITIONS</b>				
Annual rainfall	850 mm			
Min and max temp.	25°C and 40°C			
Avg. relative humidity	70 %			

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Avg. wind speed	3.32-4.82 KMPH
Predominant wind direction	
Summer	SW
Winter	NE
Monsoon	SE & NW
<b>HISTORICAL / IMPORTANT PLACES</b>	
Nearest human settlement	Alangulam Village at 0.5 km
Nearest highway	State highway-183 at a distance of 1 km State highway-186 at a distance of 1.6 km State highway-41 at a distance of 14.5 km State highway-44 at a distance of 12.5 km NH 7- Virudhunagar at a distance of 50 km AH-43 at a distance of 83.86 km
Nearest town	Sivakasi at a distance of 14.0 km
Nearest Railway Station	Sivakasi railway station at 14.6 km
Nearest seaport	Tuticorin port at a distance of 83.66 km
Nearest Airport	Madurai airport at a distance 75 km
Archaeological /Historically Important Site	None within 10 km radius of the site
Sensitive Places	None within 10 km radius of the site
Sanctuaries / National parks	None within 10 km radius of the site

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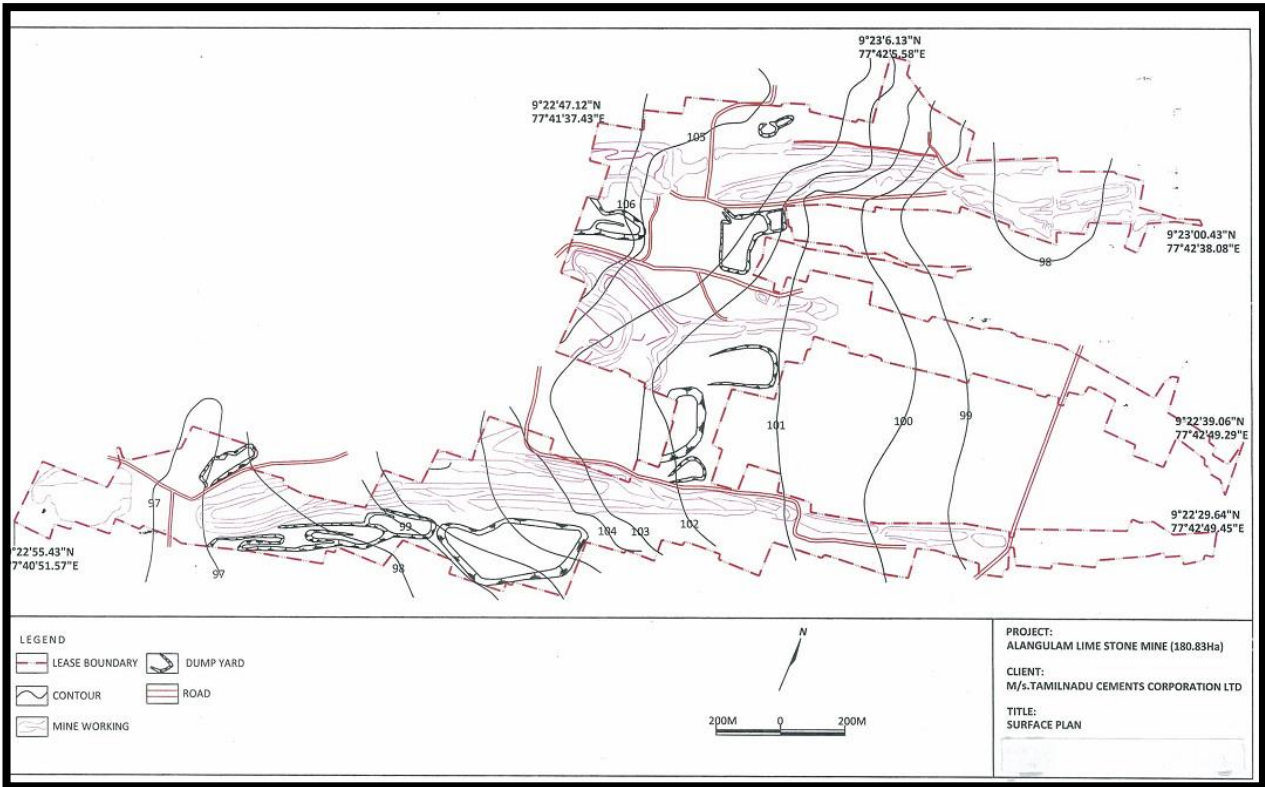
**Fig: Google Image of 10Km Radius**





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Fig: Surface Geological Plan



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Village	Taluk/ District	Survey Field Number	Extent (in Ha)	Classificati on of Land
Alangulam	Sivakasi Taluk & Virudhunagar District	28,29,30/2,31,32/1,32/3,32,4,32/5,34-41,43,44/1,54,82/1,84/1B,86/2,87/2,88/2,89/B,90/2,125,126/2,126/3,157-162, 177, 209-222,224,226/1,227/1A,230/2,231/2, 232/2,235/2B235/2,237-241,245,252-257,258/1,259/1,263,266/1A,279/1B, 280/2,284/2,285/2,286,303/1A,305,306/1, 308/1,309/1,313/1A,314/1,316/1A, 319/1A,324/1A,1B,2A,2B,325,326/1A, 1B, 1C,331/2B,339/1B1,1B2,1B3,340/2, 341/1,2,3,350/1A,351/1A1,352/1A,1B, 370/1A,371/1,372/1,374/1A,1B,376/1,2,3, 457,459,460/1,461/1,462/1,472/2,473/1, 3A,474,475,476/1B,477,478,629,630,632/ 1,670,671,673-677,678/1,679-683,685/2, 689,690/2,704,708/2,709,710,711/1A,713/ 1,714,715/2,720/2,730-735, 737/1B,792, 793,935-937,977,978,1141-1143	163.87.5	Patta Land
		25,27,30/1,32/2,33,42/1,2,44/2,83,85,101, 108,121,122,223,225,236,229,342,375, 458,672/1,672/2,673/3,690/1,934	015.32.0	Govt. land
Lakshmpuram	Sivakasi Taluk & Virudhunagar District	169/3,169/4	001.63.5	Patta land
<b>TOTAL</b>			<b>180.83.0</b>	

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**2.0 INTRODUCTION OF THE PROJECT/BACKGROUND INFORMATION**

**2.1 Identification of project and project proponent. In case of mining project, a copy of mining lease/letter of intent should be given.**

**Details of Project Mine& Proponent:**

<b>ADDRESS OF THE MINE</b>	<b>ADDRESS OF THE LESSEE</b>
Alangulam Limestone Mines, Extent: 180.83.0 Ha, Alangulam & Lakshmipuram Village, Sivakasi Taluk, Virudhunagar District-626 127	Unit Head  M/s. Tamilnadu Cements Corporation Ltd., (A Govt. of Tamilnadu undertaking) 735, Anna Salai, L.L.A. Building, 2nd Floor, Chennai- 600 002, Tamilnadu

**2.2 Brief Description of nature of the project & geology:**

1. Name of the mine : Alangulam Limestone Mines  
G.O.Ms. No 215/IND dated 18.09.1995
2. Project Proponent : M/s.Tamilnadu Cements Corporation Limited
3. Extent : 180.83.0 Ha
4. Type of Land : Non-forest Patta & Govt land,
5. Location :Alangulam & Lakshmipuram Villages, Sivakasi Taluk,  
Virudhunagar District.
6. Topography : Flat plain having an elevation of 103m above MSL.
7. Production capacity : 100000 tons/annum (Max)
8. Total balance mineable Reserves as on 01.07.2012:
  - Limestone :7777975 tons

**2.3 Need for the project and its importance to the country and or region.**

In the present scenario, the Limestone has good market in the country for domestic consumption.

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**2.4 Demand-supply Gap.**

There is a demand of Limestone and is ever growing with the growth of industrial sector in the country. The requirement of the mineral is always found high in adjoining areas. The limestone thus produced from the proposed mine will be used as raw material in the cement industry of Tamilnadu Cements.

**2.5 Imports V/s Indigenous production**

Limestone mined from the proposed project will neither be exported nor imported. It is an indigenous production and will be used in our own cement plant.

**2.6 Export Possibility**

No export.

**2.7 Climate & Rainfall**

Maximum temperature recording during summer is 40°C and the minimum temperature during the winter season is 25°C. The area is generally dry during summer and receiving an average annual rainfall of 850mm.

**2.8 Local geology:**

The metamorphic limestone deposit of Alangulam block extends from Kallamanaickenpatti Village to Alangulam Village. Three limestone bands are noticed NNW of the Alangulam Village and the other two bands are seen about 4000 meters south of village. All these bands are running parallel and the bands show trend of ENE-WSW with a dip of 55 to 70 degrees towards South. The bands are named as K1, K2, K3, K4& K5, and Band HSL-North. Band HSL, ALS Band & ALQ band. The rock formation met in the area is of metamorphic origin completely crystalline in nature and forms part of Achaean complex of Peninsular India.

**2.9 Grade Of Limestone:**

The limestone of these areas can compositely be classified as Cement Grade Limestone. The deposit shows wide but gradual variation in their chemical

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composition. The variation in the chemical behavior of this limestone summarized

below:

Parameter	Composition %
SiO <sub>2</sub>	8.00-12.00
Fe <sub>2</sub> O <sub>3</sub>	0.5-1.0
Al <sub>2</sub> O <sub>3</sub>	1.0-2.5
CaO	45-48
MgO	0.5-4.0

### 3.0 RESERVES:

Substantial additional reserve is established as follows:

- The thickness of ore body that is now proved.
- No mineral rejects is encountered during the five years mining period and thus the recovery factor is taken as around 95% considering the other mining losses.

This is based on the present quarry depth and trend of limestone as seen in the cuttings.

#### SUMMARY OF UPDATED RESERVES/RESOURCES (AS ON 01.07.2012)

Category of Reserves		Total in Tons	Qty (in tons)	Grade
(Locked up) 7.5m safety zone & Benches	211 (Feasibility Mineral Resources)	3278900	3.28	Cement Grade
333(inferred Mineral Resources)		5741768	5.74	Cement Grade
111 (Proved Mineral Reserves)		7777975	7.78	Cement Grade

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**4.0 MINING:**

Mining is being carried out by fully mechanized opencast method utilizing Heavy earth moving equipment (HEME & Deep Hole drilling & Blasting) of mining maximum limestone production is 1,00,000 Tonnes/Annum.

The bench height of 9m and working bench width of 25 m will be maintained with bench slope of 60° to the vertical. Mine is worked by conventional system of mining i.e. by drilling and blasting. Wagon drill with 110 mm dia is used for drilling and blasting is conducted using slurry explosives with delay detonators. Limestone and OB is loaded into 35 ton dumper will be restricted to 50m bgl i.e. up to 53 m AMSL.

Lime stone from the mine is transported to the crushing plant located in adjoining mine of the company and crushed limestone from the crushing plant is dispatched to the cement plant of the company.

Top soil is stacked in the safety barrier zone all long the mining lease boundary for afforestation purpose. At present, there are 8 surface dumps consisting of 5870025 tonne OB/waste rocks spread over 49.215 Ha within the lease area. During mining, about 2, 50,000 tonnes/annum of OB/waste rock will be generated. The OB/waste rock will be temporarily stored in existing waste dumps and the total area under waste dumps at the end of mining plan period will be about 60.650 Ha. However, at conceptual stage, all the dumps will be re-handled and the OB/waste will be backfilled in the mined out pits after obtaining prior permission from IBM, thereby covering 50.0 Ha of the mined out pits. At conceptual stage, there will not be any surface dump. Garland drains and retention walls will be constructed around the surface dumps to arrest silt wash off. Grasses and shrubs will be planted on inactive dump slopes to avoid erosion due to rainwater.

At conceptual stage, out of the 126.0 Ha mined out area, 50 ha will be backfilled and afforested and in the remaining 76.0 ha mined out pits, a waste water reservoir will be developed. Greenbelt and plantation will be carried out on 35.0 Ha area. Roads & infrastructure will cover 81.63 Ha of the ML area and 1.20 Ha of the ML area will remain undisturbed.

The plantation and water reservoir will help in improving the aesthetics of the mine lease area.

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**PIT YEARWISE DEVELOPMENT FOR NEXT FIVE YEARS:**

The proposed mining operations in the pits namely North Limb & South Limb during next five years. First three years (i.e. from 24.11.2013 to March 2014 upto 2015-16) the production and development will be done.

**YEARWISE DEVELOPMENT AND PRODUCTION FOR THE NEXT FIVE YEARS**

<b>YEAR</b>	<b>WASTE ROCK(TONS)</b>	<b>LIMESTONE (TONS)</b>	<b>ORE TO WASTE RATIO</b>
2013-14 (with effect from 23.11.2013)	125000	50000	1:2.5
2014-15	250000	100000	1:2.5
2015-16	250000	100000	1:2.5
2016-17	250000	100000	1:2.5
2017-18	250000	100000	1:2.5
<b>Total</b>	<b>1125000</b>	<b>450000</b>	

At the proposed rate of production of 100000tons/annum and the life of the mine is expected to be **50years**. The rate of production and life of the mine will vary depending upon the quantity requirement from the plant as well as addition of new mining leases.

**5.0 PROJECT DESCRIPTION**

**5.1 Details of alternate sites considered**

The mineral is site specific, hence there are no alternative sites considered. Mining activities are carried out based on local geology and availability of the mineral.

**5.2 Size or magnitude of operation**

The proposed mine has lease over an area of 180.83.0 Ha. The total extractable material would be approx. 1, 00,000 Tonnes/annum (Max).

**5.3 Project description with process details**

Mining is being carried out by fully mechanized opencast mining method. The development and production will be done by deploying labors. The labors will do work with the help of crowbars, picks, addis and hammers. When hardness will come then

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drilling will be done and blasting will be done will be done with gunpowder. The bench height will be kept 9m. The width of bench will be more than the bench height. The removal of losses over-burden will be removed from mine with the tipper by manual loading.

**5.4 Raw Material Required Along With Estimated Quantity, Likely Source, Marketing Area of Final Product/S, Mode of Transport of Raw Material and Finished Product**

No raw material will be required in the proposed project. Except removal of overburden in the upper layer, no mineral processing will be carried out in the mine lease area.

**5.5 Resource optimization/ recycling and reuse.**

Minerals are depleting asset once mined; they cannot be replenished like agriculture, vegetation thus a scientific approach will be taken up in exploitation of mineral with systematic method. Mining work will be carried out by fully-mechanized open cast method. Overburden will be disposed in proposed dumps and reclamation and rehabilitation of the dump by way of afforestation will be taken up once the dump becomes stabilized or rehandled.

**5.6 Availability of water its source, energy/ power requirement and source Water Requirement**

Around 23.0KLD of water will be required for the project activity. Water requirement will be met through water tankers.

Water is required in the mine for spraying on the roads and working faces to suppress the dust and also for use in the garage. Also a small quantity of drinking water is required.

**5.7 Quantity of wastes to be generated (liquid and solid) and scheme for their Management/ disposal**

Solid wastes like OB etc will be generated and will be stacked separately in dump yard.

YEAR	WASTE ROCK (TONS)
2013-14	125000
2014-15	250000
2015-16	250000

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2016-17	250000
2017-18	250000
<b>Total</b>	<b>1125000</b>

The rejected material from mines to waste dump yard plant dumpers of 30 Tons capacity will be used for the transportation of reject material.

The daily required of transportation is around 600 tons of waste material to the dump yard from this lease. So, if 30 tons dumpers are used for transportation, then the number of trips to be made per day to transport the targeted quantity of reject is

$$= \frac{600}{30}$$

$$= 20 \text{ trips}$$

The cycle time requires for a dumper to get loaded at mines site transporting the reject material to dump yard factory, unloading and travelling back to mines, involves average of one hour. Hence on a single working day shift operation each dumper can make 5 trips per day.

$$\text{No. of dumpers required to transpire 20 trips} = 5 \text{ No.} + 2 \text{ reserves} = 7 \text{ nos.}$$

**6.0 MACHINERY:**

S.No	Name of the machine	Nos.	Capacity
1	Wagon drill (Ingersoll Rand)	1	110 mm dia
2	Compressor	1	460 cfm, 150 psi
3	Hydraulic excavator	1	2.1m <sup>3</sup>
	Hydraulic excavator	1	0.9m <sup>3</sup>
4	Dozer	1	D10 dozer
5	Front end Loader	1	1.53 m <sup>3</sup>
6	Dumper	6	35 tons
7	Explosive van	1	7.5 tons
8	Water bouser	1	4000 lts.
9	Pumps	1	540 hp/25 hp
10	Mobile lighting tower	1	
11	Tractor	1	
12	Jeep	1	

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**7.0 BLASTING:**

It was proposed in the mining plan to do drilling with deep hole and necessary permission was obtained from DGMS to conduct the deep hole blasting, the same was hardly practiced.

**DRILLING AND BLASTING:**

Broad drilling and blasting parameters are as follows:

1. Depth of each hole : 10 meters
2. Diameter of each hole : 110mm
3. Spacing between holes : 3 meters
4. Burden for holes : 3 meters
5. Pattern of hole : Square Pattern
6. Inclination of holes : 80° form horizontal
7. Use of delay detonators : 25ms delay
8. Detonating fuse : Telcord plus
9. Hole Pattern : Staggered in two to three rows

Deep hole blasting will be carried out to loosen the in-situ limestone. Slurry type of explosives will be used for blasting. The spacing and burden will be 3m and the depth of the hole will be 10m. The hole is drilled to a depth of m, giving 10% sub grade drilling to avoid toe formation. The blasting will be restricted to Two to Three rows of drilling with each row consisting of 10. The holes are drilled either in a staggered pattern or square pattern.

In a single blast 15 to 25 holes will be blasted by using millisecond delay detonators and the holes are fired by means of series connection using “V” pattern initiation.

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**8.0 HANDLING OF WASTE / SUBGRADE MATERIAL:**

**GENERATION OF WASTE IN THE SCHEME PERIOD:**

<b>YEAR</b>	<b>WASTE ROCK ( in Tons)</b>
2013-14	125000
2014-15	250000
2015-16	250000
2016-17	250000
2017-18	250000
<b>Total</b>	<b>1125000</b>

**8.1 Location of dump:**

The waste dump yards are located in the barren, non-mineral bearing areas within the mining leases area. The dump yards have been planned and formed in such a manner so as to facilitate safe and convenient dumping operations as per the guidelines given by IBM.

**8.2 Liquid Effluent**

1.6 KLD of domestic effluent will be generated from the proposed project. Domestic Waste Water generated will be send to septic tank followed by soak pit.

**9.0 USE OF MINERAL:**

The entire mineral mined will be used for the manufacture of different types of cements in the cement plant located at Alangulam, Sivakasi Taluk, and Virudhunagar district with limestone received from other leases.

The mined out limestone will be exclusively for captive use in the company's cement plant.

The limestone mined from all of captive limestone mines will be utilized for the cement manufacturing only.

**BENEFITS OF MINERAL BENEFICIATION:**

As a result of the primary crushing and beneficiation, the improvement in the grade of limestone is in the range of 8% to 10% in terms of  $\text{TCO}_3$ . The handpicked reject materials which are dumped below the picking platform is transported to the waste dump

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yards located nearer to the Crushing Plant by loading with a Front End Loader of 1.53 m<sup>3</sup> bucket capacity.

**8.0 EMPLOYMENT POTENTIAL**

<b>Manpower calculation for Pandapuli Limestone Mines</b>			
<b>S.No</b>	<b>Operations</b>	<b>No. of persons required per day</b>	
		<b>Departmental</b>	<b>Contractors</b>
1	Mines Manger	1	--
2	Asst.mines Manager & Mining Engineer	2	--
3	Geologist	1	--
4	Mines Foreman	2	--
5	Elec. Foreman	1	--
6	Mech. Engineer	1	--
7	Mech Foreman	1	--
	<i>Sub-total</i>	9	--
9	Drillers		2
10	Blaster	--	1
12	H.E.O	--	4
13	Mechanic cum fitter	--	3
14	Helper, Mazdoors	--	4
15	Electrician	--	1
16	Watchman cum Challan issuer	--	2
17	Explosive Van & Trucker Driver	--	1
18	Clerk	--	1
	<i>Sub-total</i>	--	19
<b>Grand Total</b>		<b>28</b>	

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**Additional Requirement:**

Transportation of waste material and Limestone

The following additional contractual man power required for handling of waste material and limestone apart from above departmental manpower:

Tarus Drivers : 10 nos. (Skilled)

Spotters & Helpers : 05 Nos. (Unskilled)

**9.0 POWER DETAILS**

To operate the plant, we are getting power supply from TNEB at 11 KV systems. The maximum demand sanctioned is 1200 KVA. 1 KV supply voltage is stepped down to 3.3 KV and 433 volts through 2 no. of transformers of 800 KVA and 433 volts through 2 Nos. of transformers of 800 KVA capacities and 1250 KVA respectively.

The 3.3 KV supply from the transformer is fed to the HI motors for the DTJ crusher and impact or through HTPMCC. The 433 V supply from the 1350 KVA transformer is fed to the rest of the LT motor and other system through LT MCC.

**10.0 WATER REQUIREMENT AND WASTE WATER GENRATION:**

S.No	Description	Fresh water	Waste water	Disposal
1	Domestic	3.0 KLD	1.6 KLD	Septic Tank Followed by soak pit
2	Dust Suppression	15.0 KLD	0	Nil
3	Green Belt	5.0 KLD	0	Nil
<b>TOTAL</b>		<b>23.0 KLD</b>	<b>1.6 KLD</b>	

The waste water generated is of less quantity i.e. 1.6 KLD will be disposed to septic tank followed by soak pit.

**Pre Feasibility Report for Alangulam Limestone Mines (G.O.No.215, Extent 180.83 Ha) of M/s.Tamilnadu Cements Corporation Limited, Alangulam, Lakshmipuram Village, Sivakasi Taluk &Virudhunagar District.**

**11.0 GREENBELT DETAILS**

**EXISTING AFFORESTRATION DETAILS:**

Year	No of saplings	Area covered in Ha	Survival rate	Species	Location
2004-05	500	1.20.0	80%	NEEM &Eucalyptus	West of HSL pit and North of K1 pit
2005-06	500	1.20.0	80%		
2006-07	500	1.20.0	80%		
2007-08	500	1.20.0	80%		
2008-09	500	1.20.0	80%		
2009-10	500	0.50.0	80%		
2011-12	2500	0.50.0	80%		
<b>TOTAL</b>	<b>5500</b>	<b>7.00.0</b>			

**PROPOSED AFFORESTRATION PROGRAMME:**

Year	No of saplings	Area covered in Ha	Survival rate	Species	Location
2013-14	500	0.25.0	80%	NEEM & Eucalyptus	Road sides and vacant land
2014-15	500	0.25.0	80%		
2015-16	500	0.25.0	80%		
2016-17	500	0.25.0	80%		
2017-18	500	0.25.0	80%		
<b>TOTAL</b>	<b>2500</b>	<b>1.25.0</b>			

**Table: Present Land use Pattern**

Activities	As on date	End of five year mining plan period	End of life of Mine (in Ha)
Mining pit	32.00.0	45.60.0	76.00.0
Over Burden dump	49.21.5.0	60.65.0	0
Green belt	7.50.0	8.75.0	35.00.0
Infrastructure	8.63.0	8.63.0	18.63.0
Roads	9.20.0	10.00.0	10.00.0
Back filling	0.00.0	0.00.0	50.00.0
Undisturbed area	74.28.5	47.20.0	1.20.0
<b>TOTAL</b>	<b>180.83.0</b>	<b>180.83.0</b>	<b>180.83.0</b>

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**12.0 LAND USE PATTERN:**

Land use planning explained under Existing Land Use Pattern.

<b>Activities</b>	<b>As on date</b>
Mining pit	32.00.0
Back filling	0
Overburden dump	49.21.5
Green belt	7.50.0
Infrastructure	8.63.0
Roads	9.20.0
Undisturbed area	74.28.5
<b>Total</b>	<b>180.83.0</b>

**Amenities/facilities**

The following facilities will be extended by the mine management:

- i. Basic amenities like education, medical, drinking, water and approach roads are available.
- ii. Direct and indirect Employment.
- iii. Arrangement for safe and healthy working conditions.
- iv. Provision of drinking water.
- v. Conducting medical camps for workers and nearby villagers at regular intervals.

**13.0 PROJECT SCHEDULE AND COST ESTIMATES:**

The cost of the project: 16.13 Crores

The cost estimated for Environmental Management is Rs. 80 Lakhs

**16.0 ANALYSIS OF PROPOSAL (Final recommendations)**

The project will bring financial benefits to the state by the ways of royalty of mineral. The mining operations shall be providing employment to approximately 28 people and benefitting more than 100 people indirectly through mineral based industries and people related form product to end consumer.

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Socio-economic condition of area will improve as mining activity will create additional employment for the local habitants raising their socioeconomic status. Significant contribution will be made towards education, medical facilities and cultural aspects.

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