

## SUMMARY

### 1.0 INTRODUCTION:

**M/s. Chettinad Cement Corporation (P) Limited (CCCPL)** was established in the year 1962. M/S. CCCPL is operating three Cement Plants in Tamil Nadu. The present capacity of the Puliur Cement Plant, Karur Taluk & District is 1.7 million tons per annum and the capacity of the second Cement Plant at Karikali, Vedasandur Taluk, Dindigul District is 4.5 million tons per annum. The capacity of the third Cement Plant at Kilapaluvur Village, Ariyalur Taluk & District is 5.5 million tons per annum.

**M/S. CCCPL** has purchased Limestone bearing lands and applied for Mining Leases to meet the part of Limestone requirement of Ariyalur Cement Plant.

The Precise Area Communication (Letter of Intent) for grant of Mining Lease over an extent of 32.295 ha of patta lands has been issued vide letter No.7135/MMI/2010 dated 17.07.2012 for Limestone and Marl by the Commissioner of Geology and Mining.

The Mining Plan has been approved by IBM vide letter No.TN/ALR/MP/LST/2013.MDS dated 09.01.2017 for Limestone and Marl. Also, the Mining Lease has been granted vide letter RC.No.7135/MM1/2010 dated 09.01.2017 for Limestone and Marl by the Commissioner of Geology and Mining. The mining Lease was executed and registered on 11.01.2017.

As per MoEF&CC notification, it is mandatory for any new or expansion and modernization of existing projects or activities to obtain environmental clearance. This is a newly proposed Mine for the peak production capacity of 0.5004 MTPA of Limestone & Marl.

ToR for this project is received from SEIAA, Tamil Nadu, vide their letter No. SEIAA-TN/F.No.6283/M-XCIV/TOR-287/2017 dated: 11.09.2017.

Draft EIA/EMP report is prepared for the lease area of 32.295 Ha towards a peak production capacity of 0.5004 MTPA of Limestone & Marl is prepared in conformity with the conditions laid down in ToR.

### 1.1 BRIEF PROJECT PROFILE:

S.No	Particulars	Details
1.	Name of the Project	Periyathirukonam Limestone Mine of M/S. Chettinad Cement Corporation (P) Limited
2.	Project Proponent	M/S. Chettinad Cement Corporation (P) Ltd
3.	Location of the project	Periyathirukonam Village, Ariyalur Taluk and District, Tamil Nadu.
4.	Latitude & Longitude	Latitude, 11°3'19.02"N - 11° 3'47.03"N and Longitude, 79°10'15.40"E - 79°10'41.96"E
5.	Mine site topography	Flat terrain sloping towards East with elevation ranging from 34.5 to 37.0 m Above MSL.
6.	ML area	32.295 Ha
7.	Type of land	Patta land owned by the company
8.	Temperature °C (Minimum & Maximum)	22.5°C and 41°C
9.	Average Annual rainfall	1059 mm
10.	Nearest Highway	Ariyalur – Jayankondam State Highway
11.	Nearest Railway station	Ariyalur – 21 km (aerial distance, 14.7 km)
12.	Nearest Airport	Trichy - 83 km (aerial distance, 60 km)
13.	Nearest major water bodies	Marudaiyar River, Adjacent, S Vari Course, Adjacent, E, Periyapadayachi Eri, Adjacent, N Pungudi Kuttai, Adjacent, W Alagappan Kuttai, Adjacent, E Uppu Odai, 1.2 km, NW, Kallar River, 6.4 km, NW Ottan Odai, 4.6 km, SW Vilangudi Odai, 7.7 km, NE Sukra Eri, 5.5 km, S Pullambadi Canal, 9.2 km, SW
14.	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. Karaivetti Bird Sanctuary is located at 14.84 km (aerial) SW of the ML Area.

15.	Reserved / Protected Forests	Vilangudi Reserve Forest, 3.6 km, NE Ulliyakkudi Reserve Forest, 4.7 km, NE Ambapur Reserve Forest, 4.8 km, NE Alvay Reserve Forest, 7.4 km, E Suttamalli Reserve Forest, 8.1 km, NE Sundaresvarapuram Reserve Forest, 6.0 km, NE Manageri Reserve Forest, 7.7 km, NE Vadakadal Reserve Forest, 9.9 km, NE Kallankadu Reserve Forest, 9.7 km, NE
16.	Nearest Town	Ariyalur - 19 km (aerial distance, 13.3 km) - NW
17.	Nearest villages	Chetti tirukonam, 0.14 km, NE Periyathirukkonam, 0.45 km, NW Alanduraiyarkattalai, 2.37 km, SE Nagamangalam, 2.0 km, NE Reddipalayam, 5.0 km, N Edayathankudi, 1.96 km, SW
18.	Other Industries	Chettinad Cement Corporation (P) Ltd, mines, Ultra Tech cements, mines and Ultra Tech cement plant, Dalmia mines The India cements limited mines Ramco cements limited mines Tamilnadu cements mines etc,
19.	Seismic Zone	ML Area falls in Zone – II (Least Active)

## 1.2 PROJECT DESCRIPTION:

S.No	Particulars	Details
1.	Mineable reserves	Limestone : 2.351 million tons Marl : 0.436 million ton <b>Total : 2.787 million tons</b>
2.	Production Capacity	0.5004 million ton of Limestone & Marl per annum
3.	Life of the mine	The life of the mine is estimated as 7 years. However, the life of the Mine may increase after shifting HT Line during the conceptual period, outside the applied ML area.
4.	Total Waste	Top Soil : 0.517 million ton Over Burden : 2.251 million tons Mineral Reject : 0.303 million ton <b>Total : 3.071 million tons</b>

5.	Waste management	The waste generated during mining includes top soil, over burden and mineral reject. During 1 <sup>st</sup> & 2 <sup>nd</sup> year, the top soil and over burden and the mineral reject will be dumped temporarily in the NE part of proposed Mining Lease Area. The over burden & mineral reject will be rehandled and used for backfilling in the worked out pit during 3 <sup>rd</sup> & 4 <sup>th</sup> year in the present plan period. Besides, 3 <sup>rd</sup> year onwards the over burden & mineral reject will be directly utilized for backfilling in the worked out pit and forming bunds along the Mining Lease boundary. The top soil will be used to develop greenbelt.
6.	Method of mining	Non-conventional, mechanized, Opencast mining method. Since the limestone formation is of soft sedimentary type and the overburden can also be removed by excavator/ripper, there will not be any drilling or blasting. The excavation of Overburden and Limestone will be done by deploying Hydraulic Excavator. The excavated Limestone/Marl will be broken into smaller pieces using Rock Breaker. Excavator is engaged for loading the material in to the tippers. The transportation of mined Limestone and Marl to the Cement Plant will done using tippers.
7.	Bench parameters	Height, 6m Width, 6m Ultimate pit Slope, less than 45°
8.	Ultimate mine depth	34 m bgl ( +3m RL)
9.	Ore end use	The Limestone & Marl produced from this Mine will be used for captive consumption at the Chettinad Cement Plant, located at Kilapaluvur Village, Ariyalur.
10.	Manpower	Directs About 59 persons including the contract employees will be employed and indirectly more than 200 people will derive benefit.
11.	Water Requirement & source	For domestic Purpose : 1.5 KLD, For dust suppression: 25.0 KLD, Greenbelt Development : 3.5 KLD , Total – 30.0

		KLD For drinking purpose, mineral water will be provided. For other purposes, Mine Pit water / Borewell water will be used.
12.	Power Requirement	The total energy requirement is 500 units per day and the same will be sourced for TNEB. Also a DG Set of 0.5 KVA will also be used.
13.	Site services	Mineral water for drinking will be provided at the rest shelter for the workers. Other facilities like First Aid, Training Centre etc., will also be provided.
14.	CSR activities	For CSR activities, as per company's act, 2% of the net profit will be spent every year based on needs & priority
15.	Project cost	Rs. 330 lakhs

## 2.0 SELECTION OF MINING AREA:

Vari (water course) passing through the lease area divides the lease area in to two parts – West Block and the East Block. The East block is small in area and EB transmission line is also passing through the middle of this block. As per the letter of Intent After leaving sufficient barrier for this power line, AlagappanKuttai (50 m) and Burial Ground (50m), not much area is available for mining and as such this block is not considered for mining now. Presently, entire mining activity is planned in the West Block only now. Adequate safety barriers as per LOI for PeriyaPadayachi Lake (50 m), HT Line (50 m), PoongodiKuttai (50 m), Vari course (50 m), Marudhaiyar River (50 m), either side of foot path (10 m) besides mine area in West Block is selected only after leaving 50m barrier from the actual course of Marudaiyar river in the SE corner.

### 3.0 EXISTING ENVIRONMENTAL SCENARIO:

#### 3.1 GENERAL:

The existing environmental data for various Environmental components were collected in the study area systematically and meticulously as per relevant IS codes, CPCB, MOEF&CC guidelines and as per approved ToR during **Summer season (March – May 2017)**. 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 of Periyathirukonam Limestone Mine lease, while buffer zone encompasses an area of 10 km radius distance from the periphery of core zone.

#### 3.2 SOCIO-ECONOMIC STATUS:

##### i. Core Zone:

The total mine lease area of 32.295Ha is a Patta land owned by the company.

##### ii. Buffer Zone:

Based on 2011 census, 41 rural villages from 2 taluks namely Ariyalur taluk and Udayarpalayam taluk are falling within 10-km radius of this limestone mine. The 10-km radius study area is falling in Ariyalur districts. The distribution of population is as below:

• Male	-	72589 (50.03 %)
• Female	-	72495 (49.97 %)
• Total	-	145084
• Scheduled caste	-	32375 (22.31%)
• Scheduled tribes	-	1525 (1.05%)
• Total literacy rate in the area	-	59.67%
• Total illiteracy rate in the area	-	40.33%

The occupational structure of the area is as below:

Total main workers	-	60259 (41.53 %)
Total marginal workers	-	12401 (8.55 %)
Total non-workers	-	72424 (49.92 %)

#### 3.2.1 SAMPLE SURVEY:

In order to prepare a complete and comprehensive report, 4 villages were visited for conducting sample Village survey containing questions on all socio-economic aspects, including questions on the aspirations and requirements of the people for a better living.

Apart from this, Focused Group Discussion (FGD) were conducted with leading opinion makers in the village in order to capture the overall scenario of the village including the aspirations and desires of the community in overall terms.

### 3.3 EXISTING ENVIRONMENTAL QUALITY:

#### 3.3.1 Micro-Meteorology:

<b>METEOROLOGICAL DATA</b>			
1	Season/ Period	SUMMER – MARCH - MAY 2017	
2	Location	Periyathirukonam Village	
3	Methodology	Automatic weather monitoring system	
4	Frequency	Data Recorded at hourly intervals throughout the monitoring period of three months	
5	<b>DATA DESCRIPTION</b>		
	<b>PARAMETERS</b>	<b>MINIMUM</b>	<b>MAXIMUM</b>
	Temperature in °C	19.8	41.8
	Humidity in %	19	99
	Wind speed Km/Hr	< 1.8	20.4
	Total Rainfall in mm	60.9	
	Predominant wind direction	S	
6	<b>Remarks:</b> No major variation from the general trend observed.		

#### 3.3.2 Ambient Air Quality:

Season: Summer – March - May 2017

Values in  $\mu\text{g}/\text{m}^3$

S. N O	PARAMETERS	Cat.* (R,I,S)	PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>
1	<b>CORE ZONE</b> (1 Location)	R	37.2 to 53.8	17.0 to 24.8	3.2 to 4.4	7.0 to 9.7
2	<b>BUFFER ZONE</b> (7 Locations)	R	40.6 – 65.8	17.8 – 27.2	BDL(D.L-3.0) – 5.8	6.6 – 11.7
<b>CPCB LIMITS</b>			<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>SO<sub>2</sub></b>	<b>NO<sub>2</sub></b>
<b>2009 Notification</b>		I & R	<b>100</b>	<b>60</b>	<b>80</b>	<b>80</b>
		S	<b>100</b>	<b>60</b>	<b>80</b>	<b>80</b>
* Note: Category - R - Residential, I - Industrial, S – Sensitive BDL- Below Detectable Limit, DL- Detectable Limit.						
<b>Conclusion:</b> The existing Ambient Air Quality levels for PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> and NO <sub>2</sub> are within the prescribed CPCB limits of 100 $\mu\text{g}/\text{m}^3$ , 60 $\mu\text{g}/\text{m}^3$ , 80 $\mu\text{g}/\text{m}^3$ & 80 $\mu\text{g}/\text{m}^3$ . The CO values in all locations						

were found to be below detectable limit (DL – 1144 µg/m<sup>3</sup>). Silica values in the study area are found to be below detectable limit (Detection limit – 0.05mg/m<sup>3</sup>) which is well within the prescribed limit of 5mg/m<sup>3</sup>.

### 3.3.3 Water Environment:

No of Samples – 8 Bore well water samples					Season: Summer – March - May 2017				
Parameter	pH	TDS (mg/L)	Chloride (mg/L)	Total Hardness (mg/L)	Total Alkalinity (mg/L)	Sulphate (mg/L)	Iron (mg/L)	Nitrate (mg/L)	Fluoride (mg/L)
Results	6.56 to 6.95	402 to 1540	39.1 to 656	147 to 578	25.5 to 392	32.1 to 394	BDL(DL-0.01) to 0.13	BDL(DL-1.0) to 7.9	0.46 to 0.84
Limits* Permissible	6.5-8.5	2000	1000	600	600	400	0.3	45	1.5

**Conclusion:** The water quality of the collected ground water samples was found to be within the prescribed permissible limits of IS: 10500:2012 Norms for Drinking in the absence of an alternative source\*. It is observed that in certain places south of Marudaiyar River, Ground water is not potable.

### 3.3.4 Noise Environment:

No of locations –8		Season: Summer – March - May 2017		
Noise Level In dB(A)	Core Zone dB(A) (1 Location)	*Work zone exposure limit dB(A)	Buffer Zone dB(A) (7 Locations)	MOEF&CC Norms dB(A)
Day Equivalent	43.7	90	43.2 to 49.0	55
Night Equivalent	38.5		37.6 to 43.0	45
*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 within the limit values for Residential areas.



### 3.3.5 SOIL QUALITY:

Soil samples collected from 7 locations show that the pH values were ranging between 5.21 to 7.56 and Electrical Conductivity values were ranging between 47.79 to 173.5  $\mu\text{mhos/cm}$ . Soils are generally Sandy Loam to Clay type.

### 3.4 LAND ENVIRONMENT:

#### i. Core zone:

Entire ML area of 32.295 Ha is Patta-dry land with no forest or agricultural area involved. There are no habitations within the lease area and hence the question of rehabilitation does not arise.

#### ii. Buffer zone:

For the present study on land use pattern of buffer area around the Periyathirukonam Limestone mine, remote sensing satellite data of IRS Resourcesat2 of LISS IV has been used to prepare land use map of the 10 Km buffer area.

Agricultural land (crop, fallow, plantation) occupies about 69.94% of buffer area, settlements occupy 4.37%, Open Scrub Forest occupies 6.41%, waste land occupies 14.48% (Land with Scrub, Barren / Stony area, Mining Area & Mining Dump), water bodies occupies 2.70% and remaining areas (Industrial Area, Buildings & River / Stream) occupies 2.1 %.

### 3.5 BIOLOGICAL ENVIRONMENT:

The entire proposed mine area is mainly covered by of *Prosopis juliflora* and some seasonal crops. There is no Wild Life Sanctuary or National Park within the study area of 10 km. Other than Peafowl there are no schedule – I items in the study area. Conservation Plan is prepared and financial provision of Rs. 3.50 Lakhs is provided for this purpose. Karaivetti Bird Sanctuary is located at 14.84 km (aerial) SW of the ML area.

### 3.6 HYDROLOGICAL STUDY:

As per the ground water resource estimation Report, the stage of Ground water in the study area falls in “**Safe category**”. A detailed Hydrological study is carried out. The ground water levels have been observed in 25 bore wells in the study area. Subsequent to monsoon from the perched water table where water stored in the cracks and cleavages gets permeated. The realistic water level and other aquifer characteristics in the lease area are studied by conducting pump test.

The water table in and around the mine area is generally more than 18 m. Seepage mainly occurs due to the fissures in aquifer. Besides, since limestone is an intrusive body and acts as a ground water barrier which arrests the occurrence movement and distribution of the groundwater either from the limestone to country rock or vice versa, *there is no hydraulic continuity between the limestone and to the country rocks in the adjoining core and buffer zone areas.*

During working at bottom most level maximum quantity of 173 cum per day of ground is expected to be pumped out. Quality of water is expected to be good. This pumped out water shall be used for consumption in other CCCPL projects or can be discharged into the nearby water bodies for irrigating nearby agricultural field of the locals. The cone of depression created due to the mining activity in the Mines is within the limits of the area owned by Chettinad Cement Corporation (P) Ltd and there will not be any adverse impact on the adjacent lands.

Adequate Rain water Harvesting structures will be created in this project for effective harvesting of rainwater during monsoon.

#### **4.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES:**

##### **4.1 GENERAL:**

Mining and allied operations in this new lease may affect the existing environmental set up in the area unless proper mitigation measures are not taken. Hence it is essential to assess the impacts of mining on various environmental parameters so that abatement measures could be planned in advance for systematic, sustainable and eco-friendly mining in the area.

Detailed impact assessment studies and planning of appropriate control measures have been undertaken for the proposed project. The study details are elaborately described below:

##### **4.2.1 AIR ENVIRONMENT:**

The proposed mining and allied operations may cause deterioration of air quality due to pollution arising from the project operation if prompt care is not taken.

The following measures will be adopted to control impact on the air quality due to mining in the Periyathirukonam Limestone Mine area.

- Water Sprinkling on the mined Limestone/Marl before loading into trucks
- Water Sprinkling on the haul roads within the mine area
- Proper maintenance of haul road and other roads
- Using tarpaulin to cover the materials before commencing transportation
- Good maintenance of vehicles and mining machinery

- Ensuring Speed Control
- Avoiding overloading
- Imparting sufficient training to operators on safety and environmental parameters
- Development of green belt/plantation around mine periphery including safety barrier area, along the roads, backfilled area, in various undisturbed areas within the mine lease areas etc.

Due to adoption of all these measures, no major impact on air quality is envisaged due to this proposed opencast mining and allied activities.

Impact on air quality due to fugitive emissions consequent to this proposed project operation was estimated based on the latest computer model – **ISCST (Industrial Source Complex Short Term Model)**.

Peak hourly incremental concentrations have been computed using hourly meteorological data and from the study it is observed that the peak incremental 24 hourly PM<sub>10</sub> concentration under worst scenario works out to **9.668µg/m<sup>3</sup>** which is occurring very near the source. However at away from the source the values are getting reduced. From the study it is seen that the resultant added concentrations with baseline figures even at worst scenario, show values of ambient air quality in the range of **52.9 µg/m<sup>3</sup> to 66.8µg/m<sup>3</sup>** which are within the NAAQ limits (**100 µg/m<sup>3</sup>**).

For preservation of environment in this proposed mine strict enforcement of management schemes and regular air quality monitoring 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 is expected.

#### **4.3 WATER ENVIRONMENT**

The total water requirement for the mine is 30 m<sup>3</sup>/day with Domestic activities - 1.5 m<sup>3</sup>/day, Dust suppression - 23.0m<sup>3</sup>/day, Green belt development – 3.5 m<sup>3</sup>/day & Workshop - 2.0 m<sup>3</sup>/day. For drinking purpose, mineral water will be provided. For other purposes, Mine Pit water / Bore well water will be used.

**A.** In this proposed mining project, there is no process effluent. A workshop for regular maintenance of equipment is proposed. Effluent mainly containing oil & grease from the work shop will be treated through an Effluent treatment plant comprising oil & grease trap and clear water tank. Treated water confirming limits will be re used in the workshop.

**B.** There is no perennial water body within the proposed ML Area. Marudaiyar River is passing on the South side of the ML Area and a Vari course is passing on the East side of the Lease boundary. Besides, Periyapadayachi Eri, Pungudi Kuttai, & Alagappan Kuttai are located adjacent to the Lease boundary on the Northern, Western and Eastern side.

To prevent any impact on these water bodies, safety barrier as suggested in the precise area communication letter will be provided. Safety barrier for Periyapadayachi Lake (50 m), HT Line (50 m), Poongodi Kuttai (50 m), Alagappan Kuttai (50 m), Vari course (50 m), Burial Ground (50m), Marudhaiyar River (50 m) will be provided from ML boundary. It is suggested to Construct Retaining wall and Garland drain with settling pond inside the mine lease area along the periphery of the southern and southeastern part of Marudaiyar River & Vari course to prevent impact on these water courses due to mining and vice versa.

**C.** Waste material removed in initial year 1 will be used for formation of embankment / protective bund on either side of the odai passing through the lease area. Then simultaneous backfilling of the mined out area is proposed and as such there will not be any external waste dump. Besides, Construction of Retaining wall and Garland drain with settling pond inside the mine lease area along the periphery in the southern and southeastern part for Marudaiyar River & Vari course to control the impact on water environment due to mining and vice versa.

**D.** Domestic effluent is mainly sewage only. Septic tank with soak pit arrangement will provided at the mine site.

Besides, rain water falling within the mine pit area is made to drain to the mine sump in the lowest level of working through proper bench slopes towards the peripheral drains in the bench end. Mine sump itself acts as a good rain water harvesting pit. The 2 proposed settling pits connected to the garland drain will also act as a good Rainwater harvesting system during rainy days.

#### **4.4 NOISE & VIBRATION LEVELS:**

##### **4.4.1 Noise Environment:**

During mining operation there will be noise generation due to working of shovels, movement of vehicles, etc. There will not be any drilling and blasting in the mine. Except the active mine area, the noise level in the other areas say at a distance of 10m or so, will be less and within the tolerance limits. Thus due to natural attenuation effects, by proper green belt

development, Providing in-built mechanism for reducing sound emissions, design / maintenance of machines, etc., the impact on noise levels will be negligible and are expected to be well within the limits prescribed by Environment Protection Rules 1986 and CPCB.

Anticipated noise levels in lease boundary & nearby villages due to proposed mining activities of operating various machineries like excavator, Tippers, have been computed using point source model.. From the studies, it is found that due to proposed mining operation the predicted Noise Levels at the periphery of the mine lease itself is low and within the limits and as such there will not be any adverse noise propagation outside the lease boundary

#### **4.5 IMPACT ON LAND ENVIRONMENT:**

The entire lease area of 32.295 Ha is Patta land owned by the company. In the pre-mining stage, most of the area is dry barren land. In the post mining stage, out of 32.295 Ha of lease area, about 27.18 Ha comprising 11.187 Ha of mine area (6.562 ha - backfilled mined out area & 4.625 ha - mined out benches) & 15.993 Ha of Green Belt & Safety Zone area will be covered under plantation, about 4.083 Ha of mined out area will be left as water body, about 0.6 Ha will be left for Public use and about 0.432 Ha will remain undisturbed. The rainfall precipitation within the mine pits area collected as rain water harvesting at the bottom of pit.

#### **4.6 BIOLOGICAL ENVIRONMENT:**

The entire proposed mine area is mainly dry barren land covered by *Prosopis juliflora*, small shrubs, bushes and few trees. As such no major clearance of vegetation is involved in this project.

Necessary mitigation measures like dust suppression, proper maintenance of equipment, etc., will be carried out to prevent dust generation & any further impact on the vegetation.

Green belt over an area of 15.993 Ha will be carried out along mine periphery and in the safety zone area during the entire life of mine out of which 10.00 Ha will be covered within the plan period to improve the floral content and attract fauna to the mined out area. Thus the project shall ultimately leave a congenial environment for improvement of floral and faunal population. Local native species will be selected for planting. Final selection of species shall be done in consultation with local forest department.

#### 4.7.1 SOCIO ECONOMIC ENVIRONMENT:

Entire ML Area is a non-forest, dry and barren patta land owned by the company and as such there will be no land losers due to this project operations. Since there are no habitations or hutments in the core zone area, no rehabilitation or resettlement problems will arise.

It will be ensured that the area is well preserved environmentally in all respects within sustainable limits by adopting proper mitigative measures and through necessary monitoring.

The Mining and Cement Plant operations of CCCPL in the region have already brought about substantial positive impact locally, especially in the socio economic front. Conclusively, it can be stated that the proposed mining operations in Periyathirukkonam Village, Ariyalur District will further bestow positive and tangible benefits in the region on the employment arena as well as on physical and social infrastructural status. Many other tangible benefits will be gained by the local people in the surrounding areas due to ancillary units, trading operations, contractual needs, casual labour, green belt development, etc. Financial gains will be derived by Panchayats, State and Central Governments due to collection of royalties, taxes, DMF and NMET etc.

Besides, various welfare schemes formulated and being implemented by CCCPL in the region proves to be a tremendous boon to the local population on socio economic front. For future CSR activities, as per company's act, 2% of the net profit will be spent every year based on needs & priority.

#### 4.8 IMPACT ON LOCAL LOGISTICAL SYSTEM DUE TO PROJECT:

The Mine is approachable from Ariyalur –Trichy - Jayankondam National Highway (NH – 227) through a small connecting kutchra road. The Limestone & Marl produced from this Mine will be used for captive consumption at the Chettinad Cement Plant, located at Kilapaluvur Village, Ariyalur. Since the transportation from the mine lease to the cement plant will be through dedicated black top road, the existing well laid black top road can easily absorb this additional 5 number of trips load per hour without causing significant impact on logistical system in the area.

The following mitigation measures will be implemented:

- ❖ Water sprinkling of ore in the transport vehicles before transporting, so that no dust nuisance during transport will arise.
- ❖ Proper maintenance of transport roads
- ❖ Proper maintenance of transport vehicles.
- ❖ Avoiding overloading of material

- ❖ Covering of loaded vehicles with tarpaulins sheet if warranted.
- ❖ Keeping traffic regulators at vulnerable locations.
- ❖ Plantation along the roads

## 5.0 ENVIRONMENTAL MONITORING PROGRAMME:

In this proposed project, appropriate environmental monitoring programme will be adopted. 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 environmental cell will monitor and implement the Environmental Control Measures effectively and 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.

A financial provision of **Rs. 88.00 lakhs** is made for various environmental control measures proposed in this report under capital cost. Besides, **Rs. 51.00 lakhs** per annum will be spent under recurring cost. In case of any further necessity for funds for implementation of control measures arises, these will be met from operation cost without any constraint as and when required.

The company has a well laid out and integrated Environmental policy, with corporate motto for environmental preservation in its mines and cement plants, etc.

## 6.0 CONCLUSION:

During mining, it will be ensured that the area is well preserved environmentally in all respects within sustainable limits by adopting proper mitigative measures and through necessary monitoring.

By adopting systematic and scientific mining adhering to all the statutory rules and regulations and ensuring that the area is well preserved environmentally in all respects within sustainable limits by adopting proper mitigative measures, mining activity in this lease will benefit more in the positive way due to accrual of benefits on all fronts arising from project and its allied operations.

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