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## **EXECUTIVE SUMMARY**

### **1.0 INTRODUCTION:**

#### **1.1 GENERAL:**

MCL is operating a 0.50 MTPA of limestone mine from their Pudupalayam North mine situated in Pudupalayam & Periyanaalur villages of Ariyalur Taluk over an extent of 26.075 Ha after obtaining various statutory clearances.

The entire lime stone produced from this mine is catering to part needs of Ariyalur Cement Plant (Govindapuram) of 3.0 MTPA capacity located about 18 km from the lease area. Considering the cement demand, MCL is in the process of expanding their Ariyalur cement plant at Govindapuram from the existing 3.0 MTPA to 5.50 MTPA capacity. To meet the increasing limestone demand due to this expansion, it is planned to increase the production capacity of limestone from 0.50 MTPA to 1.50 MTPA.

TOR from SEAC for enhancement of limestone production was obtained vide letter No SEAC/F.No.327/TOR-58/2010 27.05.2010.

EIA/EMP report for Pudupalayam north Limestone mine expansion based on approved TOR and inline with MOEF notifications is prepared. Salient details of this EIA/EMP report are given in the following paras:

#### **1.2 SALIENT FEATURES OF THE PROJECT:**

- Name of the project : Pudupalayam North limestone mine expansion
  - District and State : District: Ariyalur, Tamil Nadu.
  - Taluk : Ariyalur
  - Villages : Pudupalayam & Periyanaalur
  - Capacity : Increase in lime stone production from 0.50 to 1.50 MTPA .
  - Extent : 26.075 ha of ML area  
The entire land is in MCL's possession
  - Latitude : 11°06'07" to 11°06'28"
  - Longitude : 79°08'52" to 79°09'15"
  - Toposheet : 58 M/4
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- Topography : Plain
- Forest land : Nil
- Vegetation : Bushes and shrubs
- Habitation : Nil
- Nearest habitated village : Kudikkadu Melur– 0.50(E)  
Kattupiringium– 1.1(NE)
- Nearest Railway station : Ariyalur -16.5 km, W
- Water courses in the area : Marudaiyar – 3.75 Km,S
- Sensitive zones like National parks
- Bio reserves, Tourist spots, historical  
Monuments etc nearby : Nil

Location Map shown in **Figure no. 1.**

## 2.0 BRIEF PROJECT DESCRIPTION:

### a) PROJECT DETAILS

- a) Limestone Production : 0.50 to 1.50 MTPA
- b) Total Reserves : 8.41 Mil.T
- c) Overburden/waste : 0.47 Mil.Cu.m (Top Soil)  
4.22 Mil.Cu.m. (Overburden waste)
- d) Ore to waste ratio : Average 1:0.56 (T: m<sup>3</sup>).
- e) Method of Mining : Mechanised Opencast
- f) Equipments to be deployed : Excavator (Tata Hitachi), Ripper,  
Tipper ,Water sprinkler,Fuel bowser,  
Drill and compressor
- g) Daily production
  - a. Limestone : 5000 Tonnes
  - b. O.B : 5616 Cu.m(Max)
- i) Man power : 30
- j) Mode of transport : By trucks to the cement plant  
located about 18 km (by road) away

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k)	Water requirement	:	46 KLD
l)	Source of water	:	Bore well & Mine sump water
m)	Life of the mine	:	6 years

**b) SITE SERVICES:**

All the existing support facilities will be suitably augmented to cater the envisaged increase in production.

**3.0 EXISTING ENVIRONMENTAL SCENARIO:**

Base line environmental data for various Environmental components were collected in the study area systematically and meticulously as per relevant IS codes, CPCB, MOEF guidelines and as per approved TOR during Winter season of 2010. For the purpose of the study, the study area is divided into two zones, namely, core zone and the buffer zone. Core zone comprises of the entire mining lease area of 26.075 Ha, while buffer zone encompasses an area of 10 km radius distance from the periphery of core zone.

The study details are briefly given below:

- The expansion will be within the existing mine lease / project area and as such no additional land acquisition is involved.
- The study details based on the 2001 census show that there are 23039 households in buffer zone. The total population works out to 132583 of which 66611 are males and 65972 are female.
- Meteorological study shows that the temperature in the area during the study period ranged from 21.0°C to 34.0°C while the relative humidity varied between 44-91%. The wind speed during the study period ranged from <1.8 to 15.3 Km/hr. The predominant wind direction is from ENE/ESE.

## ➤ Ambient air quality data:

Sl. No	Parameter	Buffer zone (10 locations)		NAAQ standards (Nov.2009)
		Min	Max	
1	Suspended Particulate Matter (SPM)	68.0	132.0	-
2	Particulate Matter(PM10)	31.0	59.0	<b>100</b>
3	Particulate Matter(PM 2.5)	18.0	34.2	<b>60</b>
4	Sulphur Di oxide (SO <sub>2</sub> )	6.0	16.0	<b>80</b>
5	Oxides of Nitrogen (NO <sub>X</sub> )	5.0	19.0	<b>80</b>

All, the monitored values of all pollutants levels in the areas were found to be within the limits.

- The results of the surface waters monitored in 6 locations & 7 ground waters samples in the bore wells and dug wells were found to be within the prescribed IS:10500 Norms for drinking in the absence of an alternative source. The mine pit water quality was found to be within the prescribed CPCB/TNPCB norms for discharge.
- The noise equivalent values in all the 10 observed locations shows that the day Equivalent Noise (Leq-d) level was found to be 39.8 to 46.3 dB(A) and Night Equivalent Noise (Leq-n) level was 37.9 to 41.7 dB(A). While comparing with the MOEF Norm of 55 dB(A) for day time and 45 dB(A) for night time, the monitored ambient noise levels were well within the limit values for Residential areas.
- Soil samples collected from 4 locations show that the soil pH values were found to be neutral and Nitrogen, Phosphorous and Potassium (NPK) values were in lower range.
- The land use map of the study area reveals that a major portion of the study area is dominated by agriculture landuse. Wet crop occupies 47.39% and dry crops occupies 28.05% of the study area. The plantation mostly of cashew which are found adjacent to the forest area covering 0.29% of the total area.

- In terms of flora, about 93 species were recorded at the study area. Among the species identified, Tamarind (*Tamarindus indicus*), Neem (*Azadirachta indica*), Kalli (*Euphorbia* spp.), Echam (*Phoenix sylvestris*), Mango (*Mangifera indica*), Palmyra (*Borassus flabellifer*) etc. were dominant with respect to other species.
- Among the faunal community birds are found in more numbers followed by other faunas found in the area. There is no Wildlife Sanctuary or National Park or Biosphere or Hotspots within a radius of 10 km from the study area. Also, there is no migratory path of avian fauna exist in the study area.

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

##### **4.1 IMPACT PREDICTIONS:**

As already mentioned, Pudupalayam North Limestone Mines is in operation. Environmental control measures already in place in Pudupalayam North mines are as follows:

- ◆ Planting -10000 no. of saplings at various places like mine periphery, external dump, along roads etc
- ◆ Deployment of 1 no. of 12KL mobile water tanker for fugitive dust suppression in haul roads
- ◆ Periodical maintenance of plant & machinery to avoid excessive noise and vibration
- ◆ Construction of garland drains & sedimentation ponds to arrest siltation and channelizing storm runoff water

The proposed expansion plan may slightly affect the existing environmental set up in the area on account of following factors, unless proper mitigation measures are planned and implemented:

1. Impact on air quality due to Gaseous and Particulate emission because of mining and HEMM operations, Limestone transportation to the Cement plant, etc.
2. Impact on water quality in the area due to effluents such as mine pit pumped water, domestic effluents, etc.
3. Impact on the existing hydrological status of the area.

4. Impact on noise level on account of mining, HEMM movement etc.
5. Impact on present land use pattern due to mining, dump formation, creation of mine voids, infrastructural set up of mine, etc.
6. Impact due to solid waste generated from mining operations.
7. Impact on biological factors of the area caused by project operations
8. Impact on socio-economic factors in the area

#### **4.2 AIR ENVIRONMENT:**

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

Peak hourly incremental concentrations under worst scenario have been computed using hourly meteorological data and from the study it is observed that the peak incremental 24 hourly SPM concentration works  $37.53 \mu\text{g}/\text{m}^3$  and the distance of occurrence of the peak concentration is within the mining lease area.

The cumulative Ground Level Concentration of (GLC) ( base line + incremental) after the implementation of the project under worst scenario is calculated and it is seen that on a post-project basis, the resultant added concentrations with baseline figures even at worst scenario, show values of ambient air quality well within the statutory stipulations.

Continuing various mitigative measures like development of extensive green barrier around mine, workshop, along roads, along periphery of mine, dumps, etc, avoiding overloading of dumpers, frequent water spraying / sprinkling on the roads, stock-piles, OB dumps and transfer points where dust is produced, wet drilling etc, Laying and maintenance of haul roads and other roads will be strictly as per standards, blacktopping of roads wherever necessary, to minimize air-borne dust, development Improved preventive maintenance practices of machinery, Using sharp teeth for shovel etc., will ensure that the impact on air quality due to this proposed mine expansion will not be appreciable.

**4.3 WATER ENVIRONMENT:**

The water requirement for dust suppression, plantation etc. in Pudupalayam North mine will be met from bore well water / mine sump water

Since this is a mining project, there will be no process effluent arising from the project. For domestic effluent, septic tank with soakpits are provided.

Besides, to avoid any impact due to mine discharge water and wash out from dumps, limestone piles various measures like, Providing sump of adequate capacity for settling of suspended solids, providing garland drains at the periphery of active edge of mine and around dumps , etc are and will be adopted.

**4.4 NOISE ENVIRONMENT :**

During mining operation there will be noise generation due to working of shovels, drilling, blasting, movement of vehicles, etc. 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, 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.

Avenue plantations and green belt are and will be created around mine periphery, around dump areas, around offices and other infrastructural buildings, etc, to abate noise levels in the area to the minimum.

**4.4.1 GROUND LEVEL VIBRATIONS:**

As already mentioned, mining is primarily using rippers and excavators. Drilling and blasting will be used only for construction of garland drains, sumps and as such no ground vibration is expected.

**4.5 LAND ENVIRONMENT:**

The total mine lease area of 26.075 Has, comprises 21.08 Ha. of mine area Presently the entire land is in MCL's possession. No additional land is required for expansion.

Waste generated in the initial years will be dumped externally within the mine

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lease in the temporary external dump and thereafter entirely rehandled and refilled within the mined out area. As such the entire waste of 4.22 Mil cu.m to be removed from this mine will be backfilled within the mined out area and as such there will not be any external dump in the post mining stage.

In terms of area, out of 21.08 Ha of mine area, about 7.91 Ha of area will be back filled and the remaining 13.17 Ha will remain as water body.

The total green belt and plantation development in the area will be to the tune of 12.43 Ha, including reclaimed mined out areas, which reveals great augmentation of vegetated green belt reclaimed area to a percentage factor of 47.67%.

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

The project proponent is already carrying out good green belt development in all possible areas to improve the biological status of the area.

In the expansion project also, extensive green belt cover, will be created in various areas around mine, in backfilled areas, along roads, etc. to boost the biological, visual and aesthetic outlook of the area. The backfilled mine area will be fully restored to better than original use, etc. with an ultimate land restoration to better than original conditions at more than 47.67%.

#### **4.7 SOCIO-ECONOMIC ENVIRONMENT :**

The project proponent has already spent a financial outlay of Rs.43.39 lakhs for social outreach programmes. The social welfare activities will be continued in the some beneficial manner during the expansion operational phase also.

M/s. MCL will also ensure that adequate financial outlays are earmarked in future for social outreach purposes of the local area and local community.

The project will provide direct employment to about 30 persons and indirectly to more than 100 persons, the latter arising from various spheres like ancillary units, trading operations, contractual needs, casual labor, green belt development, etc. Financial gains will also be derived by Panchayats, State and Central Governments due to collection of royalties, VAT, cess, taxes, etc. Various facilities in the area will be improved in great measure in different spheres like education, medical health care, infrastructural development, communication, drinking water supply, vocational training, etc.

**5.0 ENVIRONMENTAL MONITORING PROGRAMME :**

Regular monitoring programme for prescribed statutory environmental parameters are being carried out in the present working mines in the area. In case of proposed expansion project also, this programme will be implemented vigorously. Adequate budgetary allocation is made towards this objective.

**6.0 CONCLUSION:**

The expansion project is planned for ensuring long term sustained supply of limestone for MCL's Govindapuram Cement Plant, whose cement capacity is being expanded from 3.0 to 5.5 MTPA. As such, the expansion project will contribute to infrastructural and industrial growth at national and local area level.

A meticulously well planned Environmental Management Plan, with various programme schedules and timely execution objectives, as above, will ensure that the post-project environmental quality in the area will be maintained within statutory limits.

This accomplishment will prove that industrial growth, if properly planned with all environmental concerns being addressed with necessary and apt remedial measures, will go a long way to improve life pattern and living conditions of the local community around the project.

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Figure no 1

**LOCATION MAP**

