

Executive Summary

Devannagoundanur Limestone Mine

Mine Lease Area – 3.45.5ha

Project Proponent

**Thiru. J.MOHANKUMAR,
No. 2, Yercaud Main Road,
Hasthampatti,Salem – 636 007.**

PREPARED BY

M/s. Geo Exploration and Mining Solution,

Accredited for Sector 1, 28 & 38 Category 'A'

Quality Council of India – National Accreditation Board for Education & Training, New Delhi

Certificate No : NABET/EIA/1821/RA 0123

1. Introduction –

Thiru. J.Mohankumar was granted Limestone Mining lease vide Proceeding order Rc.No.12386/MM1/98, Dated: 13.08.1999 over an extent of 3.45.5ha patta land in Devannagoundanur village, Sankari taluk, Salem District for the period of twenty years.

As per Gazette Notification S.O. 1705 (E) Dated: 10.05.2016 and S.O. 804 (E) Dated: 14.03.2017, the proponent had submitted the Environmental Clearance Applications for ToR to MoEF & CC vide online proposal No. IA/TN/MIN/63943/2017 Dated: 04.12.2017.

Latter, as per Gazette Notification S.O. 1030(E) Dated: 08.03.2018, Category “B” Projects was redirected to respective SEIAA. Thus, the proponent’s submitted online proposal for Environmental Clearance to SEIAA – TN vides Proposal No. SIA/TN/MIN/23067/2018 on 03.04.2018.

The above proposal seeking ToR was placed in the 107th SEAC – TN meeting item held on 13.04.2018 Based on the document furnished, the SEIAA observed that the project falls under the Category “B1” and Schedule 1(a) of the EIA Notification, 2006. The committee recommended the Terms of Reference for the project for assessment of Ecological Damage, remediation plan and natural & Community resource augmentation plan to be prepared an independent chapter in the Environment Impact Assessment report by Accredited consultant.

Public hearing is mandatory as per the Hon’ble high court of Madras order dated 13.10.2017 in W.P.No 1189 of 2017.

The proposals were considered in 297th SEIAA – TN Meeting held on 11.05.2018 vide Item No. 297 –10 and issued Terms of Reference (ToR) vide Lr.No.SEIAA-TN/F.No.6259/TOR-332/2018 Dated: 11.05.2018.

In order to abide the above said Gazette Notification, the proponent applied for grant of Environmental Clearance and carried out Environmental Impact assessment study for Post monsoon season (October - December) 2018.

2. Project Description –

- The Mine Lease area over an extent of 3.45.5ha is located in S.F.Nos 183/1B (P) and 183/2 Patta land, Devannagoundanur village, Sankari Taluk, Salem District and Tamil Nadu State.
- The Topography of the area is elevated terrain with general gradient towards North; the maximum altitude of the lease area is RL.346.0m (South side) and the minimum altitude of the lease area is RL.342.0m (North side) AMSL Latitude between

11⁰30'03.94"N to 11⁰30'10.33"N and Longitude 77⁰49'33.13"E to 77⁰49'41.42"E and ground water table occurrence at 292m – 296m AMSL.

- The Review of Mining Plan (2019-20 to 2023-24) was got approval for an quantity of available Geological Resources of 14, 27,608Ts of ROM, Mineable reserves is about 2,97,721 Ts of ROM in this ROM 2,08,405Ts of High Grade Limestone @ 70% and 74,430Ts of Low grade limestone @ 25% recovery the quantity was approved by Indian Bureau of Mines vide Letter No. TN/DGL/LST/ROMP-1543.MDS dated 01.03.2019.
- Anticipated Quantity of Limestone with 95% recovery is about 1,04,323Ts (76,870Ts of high grade limestone 70% recovery and 27,453Ts of Low grade limestone @ 25% recovery) anticipated total waste is 23,517Ts (5% of Mineral rejects and side burden) for the present plan period (2019-20 to 2023-24).
- Dump dimension at the end of the life of the plan period

Proposed Mineral Reject – Temporary Dump – I 32m (L) X 15m (W) X 4.3m (h) - South

Proposed Top soil dump – Temporary Dump – II 25m (L) X 20m (W) X 13.4m (h) – SE

Proposed Side burden – Temporary Dump – III 32m (L) X 17m (W) X 3.2m (h) - South

- The mined out quantity of limestone will be transported to needy cement and lime based industries.
- Opencast, category “A” other than fully Mechanized Mining is proposed
 - There are four existing pits in the lease area the dimension of the pits as follows
 - Pit – I = 200m x 93m (Average width) x 33m (d)
 - Pit – II = 23m x 20m x 5m (d)
 - Pit –III= 20m x 10m x 2.5m (d)
 - Pit – IV = 20m x 12m x 5.0m (d)
 - Ultimate Pit Dimension is
 - Pit – I = 190m x 124m x 45m (d)
 - Proposed Bench Height, 5m Height, 6m Width with 45⁰ Slope in top soil 1st bench
 - 4m Height, 6m Width with 60⁰ Slope in Mineral 2nd to 11th bench (ten benches in mineral one bench in top soil)
- Short-hole drilling of 32-35 mm diameter by jackhammer drills with Air Compressor.

- Project has provided direct employment opportunities to 18 peoples and indirect employment opportunities within the surrounding region for about 50 peoples in the field of Mineral transport, service sector, garages, shops/canteen, etc.,
- Existing greenbelt area is 600 Sq.m; proposed area for greenbelt development is 1,260 Sq.m in this plan period 2019-20 to 2023-24; greenbelt area at the end of life of mine is 5,000Sq.m. It is proposed to plant about 75 Nos of Neem trees for this plan period.
- The Project Site is well connected to
 - National Highway–(NH 47) Salem – Coimbatore – 5.60KM South East.
 - State Highway (SH 79A) – Sankari – Erode 5.50KM South
 - Railway Line – Salem – Erode – 7.50KM South East
 - Railway station – Sankari – 7.50KM South East
 - Airport – Salem Airport – 40 KM North East.
- There is No Protected Areas Notified under The Wild Life (Protection) Act, 1972, Critically Polluted Areas as notified by the Central Pollution Control Board constituted, Notified Eco-Sensitive Areas, Interstate boundaries and International Boundaries, besides there are No National Parks, Biosphere Reserves, Elephant Corridors, Mangrove Forest, Archeological Monuments, Heritage Site etc. within 10 KM Radius from Project Site.
- Suriyamalai reserve forest is about 1.0 km from the North West side of the area.
- The Nearest water bodies are Periya eri 7.10KM North side, Kullampatti tank 8.5KM North Western side, Veerachipalayam tank 5.50KM South West side, Sarapanga nathi is about 7KM North Western side, Cauvery river is 10.10KM West side of the area.
- Seasonal odai is on the Northern side of the area 10m safety distance has been maintained from the odai.
- The proponent has been carrying out CSR Activities in various fields for social welfare around the project site and will continue to do. The proponent has spent an amount of about Rs 10 Lakhs till date.
- The Seismic Sensitivity of the project area is categorized as Zone II, Moderate Risk Zone as per BMTPC, Vulnerability Atlas of Seismic Zone of India IS: 1893 – 2002.

3. Description of the Environment –

Baseline data generation forms a part of the Environment Impact Assessment Study, which helps to evaluate the predicted impacts on the various environmental attributes and helps in preparing an Environmental Management Plan (EMP) outlining the measures for improving the environmental quality and scope of future expansions for environmentally sustainable development.

Baseline data was generated for various environmental parameters including air, water (surface and ground water), land and soil, ecology and socio-economic status to determine quality of the prevailing environmental settings. The Base Line Study was conducted during Post -monsoon (October-December) season in 2018.

3.1 Land Environment

Existing land use pattern of the project area is dry barren land, patta and No forest land is involved within the project area. Land use pattern of the study area is studied through the Bhuvan (ISRO) by covering 10KM radius from the periphery of the project site.

Majority of the land covered in the study area is Agriculture Land 72.5%, Barren Land 10.1%, Total mining areas within the study area is 2.8% from this projection of mining areas the project area covers 0.37% only.

Soil Environment

Six soil sampling locations were selected and analysed. The physical properties of the soil samples were examined for texture, bulk density, porosity and water holding capacity. The soil texture varies from Loamy to sandy clay loam, whereas bulk density of soils in the study area varied between 1.25 to 1.34 gm /cc. The soil in nature was observed strongly alkaline with pH range (7.28 to 7.78). The fertility of the soil in the area considered to be low to medium.

3.2 Water Environment –

Around 8 ground water and 1 surface water samples were collected to assess the water quality. The ground water samples were drawn from bore wells of villages being used for domestic needs. Surface water samples were taken from mine pit.

Ground Water –

- The pH was varying from 7.25 to 7.99.
- Electrical conductivity ranges from 834 to 1109 $\mu\text{s}/\text{cm}$.
- The TDS values is ranging from 509 to 731 mg/l
- Hardness values is ranging from 201 to 343 mg/l

The heavy metal content has been found to be well within the limit. The physio-chemical and biological analysis revealed that these waters are well within the prescribed limits as per CPCB and the water can be used for drinking purpose in the absence of alternate sources.

3.3 Air Environment –

Meteorology (Climate) –

The study area is part of tropical savanna climate. January and February are generally pleasant; the hot summer begins in March, with the year's highest temperatures during April. Pre-monsoon thunderstorms occur during April and May. The Southwest monsoon season lasts from June to September. The northeast monsoon occurs from October to December. The nearest IMD station is Salem.

Air quality Monitoring -

Ambient Air quality Stations were selected based on the Predominant downwind direction **with** respect to the project site. Six Ambient Air Quality Monitoring (AAQM) Stations were selected by considering the wind rose pattern for pre-monsoon season and the accessibility of the selected sites.

- The 98th Percentile Value of PM₁₀ varies between 38.5 µg/m³ at project site to 41.88µg/m³ at Devannagoundanur Village
- The 98th Percentile Value of PM_{2.5} varies between 16.0 µg/m³ at project site to 17.80µg/m³ at Pillupalikkadu Village
- The concentrations of PM₁₀, PM_{2.5}, SO₂ and NO₂ are observed to be well within the NAAQ standards prescribed by Central Pollution Control Board (CPCB) for industrial and rural/residential zone.
- All the values are found to be well within the prescribed standard as per CPCB norms.

3.4 Noise Environment –

- Baseline noise levels were monitored at 7 locations, using continuous noise measurement device. Day levels were monitored during 6 AM to 10 PM and the night levels during 10 PM to 6 AM.
- The day equivalents during the study period are ranging between 36.2 dB(A) to 58.7 dB(A).
- The night equivalents were in the range of 36.1 dB(A) to 56.7 dB (A).

From the results, it can be seen that the Day equivalents and the Night equivalents were within the Ambient Noise Standards of Industrial / Commercial / Residential Area.

3.5 Biological Environment –

Ecological survey has been carried out to understand baseline ecological status, important floristic elements and fauna structure.

There are No Schedule – I Species listed as per The Indian Wildlife (Protection) Act, 1972 or Threatened Species as per IUCN Red List noticed within the Study Area.

3.6 Socio Economics –

Sample survey was carried out to collect qualitative information about the socio-economic environment of the area. The Study area has all basic amenities such as roads, drinking water facilities, township, education institution, temples, medical facilities and electricity facilities and was evident during the site visit.

Though agriculture is the main occupation in the surrounding villages, it has provided employment opportunities to the nearby local community peoples.

4 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

4.1 Land Environment:

In the Opencast Mining method the major impact is Land Environment, The existing land use pattern of the area is dry barren land, No forest land is involved in this project. Total extent of 3.45.5ha about 2.35.6ha area is proposed for Mining activity which will have the impact during the mining. After end of the life of mine the mined out pits will be partially backfilled and partially allowed to store the rain water which act as a temporary reservoir. Total area of 1,260 sqm is proposed for green belt development.

There is no major vegetation found in the project area except greenbelt development at present, after the completion of the mining operation the rate of the green belt development will be increased.

4.2 Water Environment

The ultimate pit limit is 45m below the ground level; the water table in the area is 55m in summer and 50m in rainy season. The proposed depth for the mining operation is well above the water table and there is no intersection of surface water (streams, Canal, Odai etc.,) within the lease area. Seasonal odai is passing East west direction on the north side of the lease area, 10m safety distance has been maintained from the odai.

Mitigation Measures –

- Construction of garland drains to divert surface run – off in to the mining area
- Construction of retaining with weep holes around the Mineral reject dumps to prevent the siltation to the nearby lands.

4.3 Air Environment–

The air borne particulate matter generated by mining operations and transportation is the main air pollutant. The emissions of Sulphur Dioxide (SO₂), Nitrogen Oxides (NO_x) contributed by vehicles plying on haul roads will be marginal.

The Predicted maximum Ground level concentration of 24 Hour average of particulate matter concentration is superimposed on the maximum baseline concentration obtained during the study period to estimate the post project scenario, which would prevail at the post operational phase.

The maximum incremental ground level concentration of PM₁₀ is 1.5064 µg/m³ – in the project total value expected 39.61 µg/m³. This shows that the adverse impact of mining outside the ML area is marginal and has no adverse effect on health of human and animals and also on the flora of the area.

Mitigation Measures –

- Water spraying on working face to control dust emission due to loading & handling operations
- Water sprinklers along the mine haulage roads to reduce dust generation during plying of HEMM
- Controlled blasting techniques will be implemented (if required)
- Periodic water sprinkling on waste dumps and haul roads to minimize dust emissions.
- Practicing wet drilling procedures & Dust mask provision to workers
- Avoiding of overloading of tippers and covering of loaded tippers with tarpaulins during mineral transportation
- Green belt development will be carried out to arrest the dust particles
- Periodical monitoring of air quality to take steps to control the pollutants

4.4 Noise Environment

Noise pollution is mainly due to the blasting, Operation of machineries and Occasional plying of tippers in the mines and during transportation of minerals to needy customers.

Mitigation Measures –

- Controlled blasting techniques will be implemented, thus Noise due to the blasting from the mine site not going to be significant it will be upto a few seconds in the whole day.

- In the high noise intensity working areas, earmuffs or earplugs or any other suitable personal protective equipment will be provided to the workers.
- Regular noise level monitoring shall be done periodically for taking corrective action.
- Green belt development around the mine site, office buildings and all along the internal road will be practiced as to create a barrier between the source and the receiver so that the noise is absorbed and the exposure level is minimized.

4.5 Biological Environment

The impact on biodiversity is minimal as there are no forest, wild life sanctuaries, and Eco sensitive zone within the radius of 10 KM.

The impact would be due to dust generated from drilling and blasting activities and emission of gaseous pollutant from HEMM and vehicle transportation. Adequate dust control measures will be taken to control dust emission. Thick Greenbelt development will be carried out in the mine area and haul roads to control the dust emission. Besides the air quality standards for PM₁₀, PM_{2.5}, SO₂ and NO_x and all other values are well within the AAQ standards.

4.6 Socio Economic Environment.

Due to the mining activity about 18 numbers of skilled and unskilled workers are benefitted through direct employment. About 50 numbers of peoples will be benefitted indirectly. Additional facilities such as medical, educational and infrastructural development will also take place under CSR/CER activities.

Considering the socio – economic and sociological impact it has been noticed that the economic level and living standard of the people will generally increase.

5 ANALYSIS OF ALTERNATIVES (TECHNOLOGY AND SITE)

Site Alternatives –

No alternative site has been proposed as Limestone occurrence is site specific in nature and the location of the proposed project is restricted to the geology and mineral deposition of the area.

Mining Technology alternatives –

Mining will be carried out through Open cast category “A” other than fully mechanized mine, as it is more economically viable, and preserves the conservation of minerals and environment. Unlike other industries, the project cannot be shifted to other sites.

The project will follow opencast mining method because of surface mineral deposits and to ensure higher mineral conservation. The mining by opencast method will be highly productive & economical as compared to underground method.

6 ENVIRONMENT MONITORING PROGRAM –

Usually an impact assessment study is carried over short period of time and the data cannot bring out all variations induced by natural or human activities. Hence regular monitoring program of Environmental parameters is essential to take into account the changes in the Environment. The Objective of Monitoring -

- To check or assess the efficiency of the controlling measures;
- To establish a data base for future impact assessment studies.

7 ADDITIONAL STUDIES - RISK ASSESSMENT & HAZARD –

The components associated with risk and hazard in these mines include drilling & blasting, waste dump, heavy earth moving machinery and explosive storage. Measures to reduce and avoid any incidents occurring from the above mentioned components shall be planned and implemented as soon as the mine starts commissioning; this includes measures to avoid the above discussed risk factors. Proper risk management plan is proposed to be followed to avoid any kind of accident/ disaster.

8 PROJECT BENEFITS –

- Improvement in physical infrastructure
- Improvement in Social Infrastructure
- Employment Potential
- Proponent will carry out CSR activities like community awareness program, health camps, Medical aid, family welfare camps etc.,
- A massive plantation will be carried out in the mine area to mitigate the ill-effects of mining and to improve the vicinity and environment of mine and its surrounding area.

9 ENVIRONMENTAL COST BENEFIT ANALYSIS.

Environmental cost benefit analysis is not recommended.

10 ENVIRONMENT MANAGEMENT PLAN –

The Environmental Management Plan (EMP) is a site specific plan developed based on the base line environmental status, mining methodology and environmental impact assessment. In each of the areas of impact, measures have to be taken to reduce potentially significant adverse impacts and where these are beneficial in nature, such impacts are to be enhanced/ augmented so that the overall adverse impacts are reduced to as low level as possible.

The proponent shall organize an Environment Monitoring Cell which is responsible for the management and implementation of the environmental control measures. Basically, this department shall supervise the monitoring of environmental pollution levels like ambient air quality, water quality, soil quality and noise level by appointing approved external agencies.

The working conditions in the mines are governed by the enactments of the Director General of Mines Safety (DGMS). The proponent shall take all necessary precautions regarding health and safety of workers as per the guidelines of the Mines Act, sanitary facilities shall be provided within the lease area; carry out periodic health check-up of workers.

The proponent will carry out CSR activities for overall development of the people in the area. The activities shall include medical camps, water supply, improvement of school infrastructure, etc. The proponent have been carrying out CSR Activities in various fields for social welfare around the project site and spent an amount of Rs 10 Lakhs till date.

11 CONCLUSION –

It can be concluded from overall assessment of the impacts, in terms of positive and negative effects on various environmental components, that the mining activities will not have any adverse effect on the surrounding environment.

To mitigate any impacts due to the mining activities, a well-planned EMP and a detailed post project monitoring system is provided for continuous monitoring and immediate rectification at site. Due to the mining activities, socio economic conditions in and around the project site will be improved substantially. Hence, the Environmental Clearance shall be granted at the earliest based on the merits of the project.

