

**EXECUTIVE SUMMARY:**

## **1. INTRODUCTION –**

The proponent Thiru. G. Rajkumar is the Proprietor of M/s. Universal Mining Corporation having Magnesite mining lease over an extent of 2.56.9 ha patta land in Kondappanaickenpatty Village, Salem Taluk, Salem District and Tamil Nadu State. The lease was initially granted to Thiru. T. Gopal, Proprietor, M/s. Universal Mining Corporation in year 1997 under G.O 3 (D) No.84 Industries (MMD-1) Department Dated: 28.05.1997 for a period of 20 years (19.09.1997 to 18.09.2017). Then the lease was transferred to Thiru. G. Rajkumar, S/o. T. Gopal in G.O. 3(D) No. 60 Industries (MMD-1) Department Dated: 01.06.2004.

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. SIA/TN/MIN/63898/2017 Dated: 12.04.2017.

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/23056/2018 Dated: 03.04.2018.

The above proposal seeking ToR was placed in the 107<sup>th</sup> SEAC – TN meeting held on 12.04.2018 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

Application to The Member Secretary of the Tamil Nadu Pollution Control Board (TNPCB) to conduct Public Hearing in a systematic, time bound and transparent manner ensuring widest possible public participation at the project site or in its close proximity in the District is submitted along with this Draft EIA / EMP Report and the outcome of public hearing proceedings will be detailed in the Final EIA/EMP Report.

Later, as on the date of MoEF & CC Notification S.O. 1030 (E) Dated: 08.03.2018, Violation projects of Category B - the appraisal and approval thereof shall vest with the State or Union territory level Expert Appraisal Committees and State or Union territory Environment Impact Assessment Authorities in different States and Union territories, constituted under sub-section (3) of section 3 of the Environment (Protection) Act, 1986.

The Environmental Impact Assessment study was conducted for one season (summer) March – May 2019.

## 2. PROJECT DESCRIPTION –

- The Mine Lease area over an extent of 2.56.9ha is located in S.F.Nos 36 (P) Patta land and in Kondappanaickenpatty Village, Salem Taluk, Salem District and Tamil Nadu State.
- The Topography of the area is almost slightly undulated terrain with general gradient towards North West; the mine lease area is about 340m AMSL; Latitude between 11<sup>o</sup> 43' 22.08" N to 11<sup>o</sup> 43' 27.12" N and Longitude between 78<sup>o</sup> 09' 49.88" E to 78<sup>o</sup> 09' 59.17" E and ground water table occurrence at 55m – 50m AMSL.
- The Review of Mining Plan (2017-18 to 2021-22) was prepared and submitted for an quantity of available Geological Resources of 6,10,843Ts of ROM, Mineable Reserves is about 1,50,923Ts of ROM and Magnesite Recovery @ 40% 60,369Ts, for this plan period (2017-18 to 2021-22) it is proposed to excavate 1,50,923Ts ROM, and 60,369Ts of Magnesite @ 40% recovery. The quantity was approved by Indian Bureau of Mines vide Letter No. TN/SLM/MG/ROMP/1416-MDS, Dated: 15.05.2017.
- The waste is in the form of Mineral Rejects, total mineable waste is about 60,369Ts (60% of ROM), for this five year plan period the generation of waste is about 60,369Ts.
- Existing waste dump is located on the North west side of the area, for this plan period the waste is proposed to dump on the existing dump.
- The mineral rejects is proposed to be dumped on the earmarked area, after mines reaches the ultimate pit limit the waste will be backfilled in the mined out pits.
- Topsoil is red gravelly in nature found upto a depth of 1m. 3,314Ts of Top soil will be removed during this present plan period. The top soil will be stored separately on the South side of the area, after backfilling the top soil will be spread on the backfilled area to facilitate the greenbelt development

- Opencast, Category “A” other than fully Mechanized Mining with:
  - Present pit dimension:  
218m (L) X 70m (W) X 21m (D)
  - Proposed Pit Dimension for the Scheme period:  
222m (L) X 85m (W) X 21m (D)
  - The Ultimate Pit Dimension at the end of the lease period:  
222m (L) X 85m (W) X 21m (D)
- Proposed Bench Height, 5 benches of 4m Height, 6m Width with 60° Slope.
- No Drilling and Blasting is carried out.
- Project has provided direct employment opportunities to 23 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 700 Sq.m; proposed area for greenbelt development is 1000 Sq.m; greenbelt area at the end of life of mine is 1,700 Sq.m. It is proposed to plant predominant local species of Neem with anticipated survival rate of 70%.
- The project does not require power supply for the mining operations, but Electricity for use in office premises and other internal infrastructure will be obtained from TNEB. The Mining activity is proposed during day time only, General Shift 8 AM – 5 PM (Lunch Break 1 PM – 2 PM).
- The Project Site is well connected to
  - National Highway (NH 7) Salem – Krishnagiri 6.2 km South West
  - State Highway (SH 188) - Salem - Yercaud– 1.6KM East
  - Railway Station – Salem – 8KM South West
  - Airport – Salem Airport – 12.5 KM North West.
- 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, Reserve forest, Biosphere Reserves, Elephant Corridors, Mangrove Forest, Archeological Monuments, Heritage Site etc. within 10 KM Radius from Project Site.
- There are two water bodies within 5KM radius. Kannankurichi puthu Eri 2.80KM in South East, Kannankurichi Lake 3.70KM South East. There are no major water bodies within the radius of 5KM.

- 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 Rs 10 Lakhs till date.
- The Seismic Sensitivity of the project area is categorized as Zone II, Low Damage 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 pre-monsoon (March-May) season in 2019.

#### **3.1 Land Environment**

Existing land use pattern of the project area is dry barren land, partially patta land, No forest land is involved. 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 59.16%, Barren Land 26.6%, Total mining areas within the study area is 1.73% from this projection the project area covers 0.46% only.

#### **Soil Environment**

Six soil sampling locations were selected and analysed. It is observed that the pH of the Soil ranging from 8.81 to 8.22 indicating that the soils is Highly Alkaline in nature. The Electrical Conductivity of the Soil ranges from 560 to 713 indicating Low Conductivity. The concentration of Nitrogen is in the range 14mg/Kg to 56mg/kg and the Potassium ranges 0.2mg/100g which are very low in concentration.

The concentration of Chlorides is ranging from 3.7 to 6.5 which are found to be on the higher side, this is due to the dispersion of chlorides from the Magnesite to the nearby areas. The soil found in the area is semi fertile soil.

### **3.2 Water Environment –**

Around 5 ground water samples and 3 surface water sample 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 sample were taken from the mine pit.

#### **Ground Water –**

- The pH was varying from 7.29 to 7.53.
- The Calcium value was in the range of 82 to 106 mg/l.
- The TDS values is ranging from 517 to 1327 mg/l
- Hardness values is ranging from 287 to 521 mg/l

#### **Surface Water**

- The pH was varying from 7.07 to 7.48.
- The Calcium value was in the range of 88 to 109 mg/l.
- The TDS values is ranging from 543 to 1423 mg/l
- Hardness values is ranging from 327 to 504 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 standard.

### **3.3 Air Environment –**

#### **Meteorology (Climate) –**

Salem has a tropical savanna climate (Koppen climate classification Aw). 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 Temperature is maximum 42.2°C. The mean total rainfall is 1018.5mm. The least amount of rainfall occurs in February. The average in this month is 11 mm. With an average of 196 mm, the most precipitation falls in October. The temperatures are highest on average in May, at around 31.7 °C. December has the lowest average temperature of the year. It is 24.9 °C. The variation in the precipitation between the driest and wettest months is 185 mm. During the year, the average temperatures vary by 6.8°C.

### **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 98<sup>th</sup> Percentile Value of PM<sub>10</sub> varies between 36.616 µg/m<sup>3</sup> at Vinayakampatti Village to 37.616 µg/m<sup>3</sup> at Project Area.
- The 98<sup>th</sup> Percentile Value of PM<sub>2.5</sub> varies between 17.5 µg/m<sup>3</sup> at Vinayakampatti Village to 19.662 µg/m<sup>3</sup> at Project Area.
- The average concentration of SO<sub>2</sub> and NO<sub>2</sub> varies between 4.4 µg/m<sup>3</sup> and 15.8 µg/m<sup>3</sup> at Vinayakampatti Village to 4.7 µg/m<sup>3</sup> to 16.754 µg/m<sup>3</sup> Near Project Area; respectively.
- The concentrations of PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>x</sub> 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 35.9 dB (A) to 41.6 dB(A).
- The night equivalents were in the range of 36.6dB (A) to 49.5dB (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 59% of total workers. The remaining population is depended on the other type of employment opportunities mainly as laborers.

## **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 2.56.9 ha about 1.88.7 ha 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 1700 sqm is proposed for green belt development.

There is no vegetation found in the project area 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 21m 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 study area.



### **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 (SO<sub>2</sub>), Nitrogen Oxides (NO<sub>x</sub>) 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 concentrations of PM<sub>10</sub> were recorded as 42.85 µg/m<sup>3</sup> and 36.61 µg/m<sup>3</sup> respectively. The maximum concentration was recorded at the Periyapudur village and the minimum concentration was recorded at Vinayakampatti village and project site. 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
- No drilling and blasting is proposed in this quarrying operation
- Periodic water sprinkling on waste dumps and haul roads to minimize dust emissions.
- 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 Drilling and blasting, Operation of machineries and Occasional plying of tippers in the mines and during transportation of minerals to needy customers.

##### **Mitigation Measures –**

- The deposit is soft in nature hence drilling and blasting is not proposed in this plan period, mineral will be excavated only by the Excavator with bucket/ rock breaker attachment
- Noise generation due to drilling and blasting will not arise in this quarrying operation
- 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 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 PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>x</sub> and all other values are well within the AAQ standards.

#### **4.6 Socio Economic Environment.**

Due to the mining activities in the three leases about 23 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 Magnesite 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 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 will be proposed to avoid any kind of accident/ disaster.

## **8 PROJECT BENEFITS –**

- Improvement in physical infrastructure
- Improvement in Social Infrastructure
- Employment Potential
- Proponents will carry out CSR activities like community awareness program, health camps, Medical aid, family welfare camps etc.,

- A massive plantation will be done 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 in common 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.