

EXECUTIVE SUMMARY

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1. INTRODUCTION

Tamil Nadu Minerals Limited, popularly known as TAMIN is a wholly owned by Government of Tamil Nadu, started in 1978. TAMIN is engaged in the exploitation, and marketing of limestone along with the other minerals like quartz & feldspar etc. The limestone mine at Periyagalur, Ariyalur district has been operated by M/s TAMIN for past three decades. The renewal of the mine lease has to be done which needs the Environmental clearance from the Ministry of Environmental and Forests, Government of India. The EIA is prepared in order to study the impact of operating the mine by renewing the lease. The report details about the existing environmental scenario of the buffer area of 10 km radius, impact of the mining operation to the environment, mitigation methods to be followed in order to minimize or eradicate the negative impacts. The Environmental management Plan is the part of the impact study, where the various management plan has been brought out in order to monitor and manage the air, water, soil and noise quality in and around the mining area.

M/s TAMIN assigned M/s Hubert Enviro Care Systems Chennai to conduct the Environmental impact assessment. The study period covers one season from the month of February to April 2010. The monitoring of air, water, and soil and noise quality has been studied in the season and the observations were analyzed to assess the existing environmental scenario. The impact of the mining operation has been studied against various environmental components which are narrated in the report. The mitigation methods recommended in the report is of conventional and has high probable to put in practice.

The Limestone mining operation has been carried out in the survey No. 292/4, 5&6, 301(P), 304/1, 305/1, 306(P) in Periyagalur Village of Ariyalur District. The site has an excellent access to State Roadways.

Details of Mining Lease

Village – Periyagalur

Tehsil – Ariyalur

District - Ariyalur

Area of Mining Lease – 12.74.5 Hectares

Production Capacity – 1.00 lakh tones per annum

Project Description

With the growth of country's infrastructure and real sector, the demand for the availability for cement in present day scenario has been increased . Lime stone is one of the most important raw materials for the cement production . M/s Tamin is operating the limestone mine in periyagalur village , Ariyalur District. The mining operation has been carried out last three decades. It is required to renew the mining lease from the year of 2010. The EIA report is prepared to seek the Environmental clearance from the Ministry of Environmental and forests, Government of India. The Environmental impact Assessment is conducted to study project area with respect to the Ecological components.

2.0 BASELINE DATA

The primary baseline data have been established by the field survey and subsequent lab analysis of the samples. The expert crew stayed in the field for the study of Air, water, land and noise quality of the core and buffer area.

Details of the sampling Locations for Air, water, soil and noise are tabulated as below:

| S.No. | Name of the station | Station code | Distance with respect to the project site |
|-------|----------------------------|--------------|---|
| 1. | Core Zone 1 – Project site | AAQ - 1 | --- |
| 2. | Walaja Nagar (West) | AAQ – 2 | 6 km |
| 3. | V. Kaikatti (east) | AAQ – 3 | 4 km |
| 4. | Kallankurichi (North) | AAQ – 4 | 4 km |
| 5. | Reddipalayam (South) | AAQ – 5 | 5 km |
| 6. | Core Zone 2 – Project site | AAQ – 6 | --- |

2.0 Data generation and Observation

2.1 Air Environment

The prime objective of the baseline air monitoring is to evaluate the existing air quality of the study area. This will also be useful for assessing the conformity to standards of the ambient air quality during the operation of the mine. Ambient Air Quality Monitoring stations were set up at six locations as mentioned above.

The SPM, RPM, SO_x and NO_x levels of the study area are examined and presented in the report. The monitoring is of 24 hourly basis for 6 locations for one season which covers three months (February 2010 to April 2010)

SPM: A maximum value of 105 µg/m³ for SPM was observed at Walaja Nagar (AAQ -2). All the observed values are within the prescribed limits. The 24 hourly applicable limit is 200 µg/m³ for residential area.

RPM: The maximum value 65 µg/m³ for RPM which was observed in Kallankurichi village (AAQ – 4). The 24 hours applicable limit is 100 µg/m³ for residential area.

SO₂ : The higher values of SO₂ are observed to be 12.8 µg/m³ at Kaikatti village (AAQ -3) The 24 hrs applicable limit is 80 µg/m³.

NO_x: The higher values of NO_x were observed to be 12.7 µg/m³ at Walaja village. The 24 hours applicable limit is 80 µg/m³ for the residential area.

The anticipated emission of mining operations and the fugitive dust emission due to the mining activities, crushing plant and transportation activity by road is investigated. The mitigation measures for the emission are envisaged in the report and are recommended in the Environmental management Plan.

2.2 Noise Quality

The ambient noise environment of the mining site is studied and reported. Since the mining operation engages only a low noise causing explosives such as detonators, the noise generated due to the explosion is below 60 dB(A) within 100 m. Hence the noise is not a major problem in the mining activity.

2.3 Water Environment

The water quality of the area has been studied taking six locations in the core and buffer zone. The ground water analysis results were compared with the standards for drinking water as per IS: 10500- 1983 “Specification for drinking water” for ground water.

The water quality reveals that the ground water is safe and potable. The analysis shows that the average pH ranges from 46 – 139 mg/l. The electrical conductivity was observed to be in the range of 263 – 430 Micromhos/cm. The chloride values ranges from 65 – 89 mg/l. The impact of the mining activity to the water quality is studied and reported. It is observed that the mining operation is of safe mode since modernized techniques are utilized. Hence , no adverse impact on water quality is envisaged.

2.4 Ecology

The flora and fauna in the study area are explored by the expert crew. The land type, forest area and other ecological aspects are detailed in this section. The impact of the mining operations to the biodiversity, terrestrial and aquatic ecology has been studied.

2.5 Demography and Socio- Economics

The baseline data includes the socio economic status of the area. The data about the human settlements in and around the project site, health status of the community, existing infrastructure facilities for social welfare, job opportunities, safety and security of the workers and the surrounding population. The positive impact of the mining operations and the socio economic status in the buffer zone is reported.

2.6 Soil Characteristics

The physio-chemical and nutrient characteristics of the soil were monitored from February 2010 to April 2010 at 6 locations in the study area. At each location, soil samples were collected from three different depths viz 25 cm, 50 cm and 75 cm below the surface. The samples are transported and analyzed in the Lab.

It has been observed that the pH varies from 6.28 to 7.69 with the conductivity range of 80 – 124 micromhos. The average concentration of nitrogen, phosphorus and potassium

are 0.36 – 0.48%, 0.3 to 0.36% and 0.02% to 0.03% respectively. The average sodium absorption ratio is 0.0053%, which is much below 9; hence the permeability of the soil does not get affected.

3.0 ENVIRONMENTAL IMPACTS OF MINING

Impact on the Air:

During the operational phase, the major impacts envisaged on the air environment are the particulate matter emissions. Drilling operations and movements of trucks can cause the formation of dust clouds. However improvements in drilling methods should reduce the dust formation significantly. Also, water will be sprinkled during the operation to settle dust particles.

Noise impact:

Noise will be generated during drilling, blasting and transportation processes. However, the noise is not anticipated to affect any of the surroundings since there is no habitation in the nearby vicinity. Also animal habitats in the surroundings are non-existent. The advancements in blasting techniques is also expected to bring down noise levels further. All mining operations including blasting processes will be done during the day time to avoid disturbing any of the local communities surrounding the mining site.

Impacts on Water:

Impacts on water can be due to leaching of lime into the ground water sources or due to punctures in the local aquifers. The impacts are not significantly expected since careful measures will be taken to avoid such eventualities. Also, rain water harvesting will be done in the area as part of the management plan which in turn will recharge the ground water aquifers.

Health and Socio-economic impacts:

Impacts to health can be caused due to exposure to dust in large quantities or accidents that happen during the mining processes like drilling, blasting etc. The impacts can be nullified if safety measures like personnel protection equipment are worn and adequate safety procedures are followed during the mining operations. In terms of socio-economic

impacts, there will be a positive impact since jobs will be created for the local community.

3 ENVIRONMENTAL MONITORING PROGRAMME

During the operation of mining, it is important in terms of evaluating the performance of pollution control equipments installed in the project. The sampling and analysis of the environmental attributes will be as per the guidelines of CPCB/TNPCB. The number of samplings and parameters to be analyzed, in and around the project site is presented below.

Table: 4.1: Environmental Monitoring Programme

| S.No | Monitoring Component | Number of Sampling stations | Frequency of sampling | Parameters to be analyzed | Monitoring cost |
|------|----------------------|--|---------------------------------|---|-----------------|
| 1. | Meteorology | One station – Automatic | Hourly and daily basis | Wind speed and direction, Temperature, Relative humidity, Atmospheric pressure, Rainfall. | 900 |
| 2. | Ambient air quality | 4 stations | Twice a week: 24 hourly period. | SPM, RPM, SO ₂ , and NO _x | 1500/sample |
| 3. | Noise | Two within plant premises and three outside the plant premises | Once in every season | Ambient Equivalent Continuous sound pressure levels (Leq) at day and night time. | 500/location |
| 4. | Stack emission | All the stacks | Once a fortnight | SPM, SO ₂ , and NO _x . | |

| | | | | | | |
|----|---|--|---------------------|---|----------------|-------------|
| 5. | Liquid waste (leachate during rainy season) | Main mining area | Monthly | pH, conductivity, TDS, BOD, heavy metals. | temp, TSS, O&G | 800/samples |
| 6. | Water quality | Ground water | Quarterly | pH, conductivity, TDS, BOD, heavy metals. | temp, TSS, O&G | 4800/sample |
| 7. | Soil | Around the ash disposal area and close to Air monitoring stations. | Once in three years | Physiochemical properties Nutrients, heavy metals | | 6500/sample |
| 8. | Terrestrial Ecology | Within 10 km, around the project site. | Once in three years | Symptoms of injuries on plants | | 5000 |

5.0 OCCUPATIONAL HEALTH AND SAFETY PLANS

As part of EIA, this aspect is also been studied in detail and an occupational health and safety plan has been recommended for implementation of site. During the mining operation air and noise pollution are the main area of concern. It is recommended that adequate pollution control and sanitation facilities, emergency medical facilities and safety equipments should be provided.

Accidents, exposure to heat, dust and noise, exposure to hazardous chemicals and gases are the prime considerations. It is recommended that suitable personnel protective equipments should be provided to all the employees likely to be exposed to these conditions.

6.0 DISASTER MANAGEMENT PLAN

The EIA report includes a DMP covering elements of emergency planning like organization, communication, co-ordination, procedure, accident reporting, safety review check list, on-site emergency plan and off-site emergency plan. The on-site and off-site emergency plans recommend various preventive and protective systems. A protective system includes Site controller, Incident controller and coordinators. Personnel protective equipments to be deployed at the site, control systems and mock drill and simulation exercises, mutual aid schemes, and procedures for Communications, Medical facilities to be provided and procedure for reporting to external agencies.

7.0 PROJECT BENEFITS

- The basic amenities like education, medical, drinking water, approach roads etc. would be established in and around the project location.
- The mining operation provides direct employment opportunities to the neighbour villages.
- Usage of barren land which is rich in limestone resources.
- Increase in cement production in the district which gives financial improvement in the district.

8.0 ENVIRONMENTAL MANAGEMENT PLAN

The Environmental Management Plan (EMP) for the proposed mining operation has to ensure that the residual environmental impacts are minimized, by adopting best possible economically viable techniques. The environmental Management Plan during the operation of the mine shall be directed to the following:

1. It should be ensured that all the pollution control/environment management systems are commissioned as part of main equipments, before the commencement of operation.
2. Regular monitoring of various components of environment should be undertaken to ensure effective functioning of pollution control measures as well as to safeguard against any unforeseen changes in the environment.

3. The recommendations for Disaster Management Plan / Occupational Health and safety Plan should also be implemented along with the commissioning of the project.

9.0 SALIENT FEATURE OF THE PROJECT

- The mining operation brings direct and indirect employment to the nearby village people, enhancing the socio – economic status of the surrounding area.
- Provides necessary facilities in the fields of education, health, social awareness on ecology, human welfare etc.
- Regular health checkup will be carried out by the company as social measure which will minimize on mortality rate.
- Development of green belt in the project site.
- Regular monitoring of environmental quality in the project site.

10.0 CONCLUSION

Assessment of the impacts due to various emissions and discharges from the mining indicate that the environmental quality will remain within the stipulated standards even after commissioning and operation of the project. All the impacts due to the operation of the mine shall be mitigated by adopting state of art technologies and management systems. In addition, the benefits of the project in terms of raw material production for cement plants, utilization of barren land, improvement of living standards of the local population, improvements in infra structure etc. will add positive impacts of the project. Hence, the project has been strongly recommended by the consultant.

VICINITY OF THE PROJECT SITE

