

EXECUTIVE SUMMARY

For

ROUGH STONE, WEATHERED ROCK & GRAVEL QUARRY OVER AN EXTENT OF 2.45.5Ha.

Patta Land (Proponent Obtained Lease from Pattadhar)

Schedule & Project

Category : 1(a) Mining of Minerals 'B1' (Cluster)

TOR No. & Date : SEIAA-TN/F.No.9608/SEAC/ToR-1335/2022, 10.02.2023

Baseline period : March 2023 to May 2023

At

**SF. No. 3, Surandai Part-I Village
V.K. Pudur Taluk, Tenkasi District
TamilNadu.**

Proponent/Leasee

Thiru. K. Arumugasamy

S/o. Kajendran,

No. 14/1/185, Near Anna Statue, Surandai,

V. K. Pudur Taluk,

Tenkasi District - 627859

Environmental Consultant

M/s. EHS360 Labs Pvt. Ltd.,

Ashok Nagar, Chennai

NABET: Certificate No. NABET/EIA/2225/IA 0098 validity 24th June 2025

July- 2023

1 Introduction

Project proponent Thiru. K. Arumugasamy, a resident of Surandai Village in Tenkasi District of TamilNadu. He had proposed to extract Rough Stone, Weathered Rock & Gravel in an extent of 2.45.5 Hectares of Patta land, located in SF. No. 3 of Surandai Part I Village, V.K. Pudur Taluk of Tenkasi District in TamilNadu State. The Proposed land is having Patta in the name of Thiru. M.Abdul Ali (Pattadhar), where the proponent had obtained consent from the Pattadhar and lease agreement had been registered in the year 2020. The proponent had obtained lease for a period of 6 years (2020-2026).

The proponent had proposed to quarry Rough stone, Weathered Rock & Gravel over an extent of 2.45.5Ha of Patta land located in the SF. No. 3 of Surandai Part I Village, V.K. Pudur Taluk of Tenkasi District in TamilNadu State under Rule 19(1) of TamilNadu Minor Mineral Concession Rules, 1959. The Assistant Director, Department of Geology and Mining, Tenkasi District has issued a Precise area communication letter vide Rc. No. M1/23755/2020, Dated: 22.10.2021 to submit the Approved Mining Plan and Environmental Clearance from State Level Impact Assessment Authority (SEIAA) under the Rule 42 of TamilNadu Minor Mineral Concession Rules,1959.

The Mining Plan has been prepared by Recognised Qualified Person and the same was submitted to Department of Geology and Mining, Tenkasi for the approval. The Mining plan was approved by the Assistant Director, Department of G&M, Tenkasi vide Letter Rc. No. M1/23755/2020, dated: 22.10.2021.

Now, the Proponent had applied for Environmental Clearance (EC) from State level Environment Impact Assessment Authority (SEIAA), TamilNadu. In line with the provisions of Environment Impact Assessment (EIA) Notification 2006 (incl. its amendments from time to time), the SEIAA, TamilNadu had issued the Standard Terms of Reference (ToR) vide **Letter No. SEIAA-TN/F.No.9608/SEAC/ToR-1335/2022, Dated: 10.02.2023** along with additional Terms of Reference, for carrying-out EIA Studies and preparation of an EIA/EMP Report. Copy of the ToR issued by SEIAA, TamilNadu, is enclosed as **Annexure 1**.

This EIA report contains information as per TOR and has been prepared as per generic structure given in Appendix III of EIA notification 2006 by MOEF & CC, Govt. of India.

The draft EIA prepared will be submitted for Public Consultation. Upon incorporating the minutes of the public consultation along with proponent action plan the final EIA will be submitted to SEIAA-TN for further appraisal of the project and obtaining Environmental Clearance.

2 Project Description

Project summary

S. No	Particulars	Details
1.	Land classification	Non- Forest Land (Patta Land)
2.	Extent of lease area (Ha.)	2.45.50
3.	Quarry Lease	It's a Patta land in the name of Thiru. Abdul Ali vide Patta No: 4018, The applicant has obtained lease from the Pattadhar.
4.	Lease Period	6 years
5.	Estimated Geological Reserves	Rough stone : 8,59,250m ³ Weathered rock: 1,22,750m ³ Gravel : 49,100m ³
6.	Estimated Mineable Reserves	Rough stone : 2,83,500m ³ Weathered rock: 87,300m ³ Gravel : 38,400m ³
7.	Average production per annum	Rough stone : 2,83,500m ³ Weathered rock: 87,300m ³ Gravel : 38,400m ³
8.	Depth of Mining	42m Below Ground Level ((2m Gravel + 5m Weathered Rock+ 35m Rough Stone)
9.	Method of Mining	Open cast semi mechanized method
10.	Water Requirement (KLD)	3.0
11.	Source of Water	Private tankers
12.	Fuel requirements (Lts/Day) for machineries & vehicles	2,33,200 Litres for entire project life
13.	Direct Manpower (Nos)	36
14.	Municipal Solid Waste Generation (kg/day)	16.2
15.	Project Cost in Lakhs Rs.	140.72
16.	EMP Cost in Lakhs Rs.	73.00

2.1 Proposed Method of Mining

The Rough stone, weathered rock and gravel quarry in the lease area is extended upto an area of 2.45.50Ha. It is proposed to quarry the minerals by open cast, mechanized method by developing the bench of 5m height and the bench width not less than the height. The

development of benches in the sheet rock will be maintained at 60° safety slopes. Initially thorny shrubs present in the proposed area of excavation will be removed.

Based on the Recovery Factor (100%), it is proposed to adopt opencast mechanized method of mining with shallow drilling and blasting.

There is no blockage of minerals due to presence of / maintenance of benches, barriers, internal roads, electrical lines etc. The internal roads are of temporary in nature and suitable benches will be formed. No Electrical Lines are passing over the subject area.

Excavation and loading shall be carried out with simple excavators. These shall be utilized for developmental work, excavation and loading into the trucks. Tippers of 20T capacity shall be utilized for all transportation purposes. In addition, certain service equipment like water tanker (for dust suppression), pick-up vehicle etc. will be used.

3 Description of Environment

Study Period: The baseline environmental surveys were carried out during (March 2023 to May 2023) within the study area.

Ambient Air Quality

The monitoring results of ambient air quality were compared with the National Ambient Air Quality Standards (NAAQS) Prescribed by MoEFCC; GoI Notification dated 16.11.2009. The baseline levels of PM₁₀ (41.9 – 66.4 µg/m³), PM_{2.5} (17.3 – 31.5 µg/m³), SO₂ (7.6 – 15.4µg/m³), NO₂ (12.7 – 25.8 µg/m³). Thus, it was found that concentration of pollutants was within the limits of NAAQ standards.

All the results of ambient air quality parameters have been found within the limit as per NAAQS. Based on comparison study of results for tested parameters with NAAQS, it is interpreted that ambient air quality of studied locations is average. This interpretation narrates the results found for corresponding locations and study period.

Noise Environment

The observations of day equivalent and night equivalent noise levels at all locations are given below.

- In Industrial areas daytime noise levels were about 52.8 dB(A) and 42.2 dB(A) during nighttime, which is within prescribed limit by CPCB (75 dB(A) Day time & 70 dB(A) Nighttime).
- In residential areas daytime noise levels varied from 49.8 dB(A) to 52.9 dB(A) and nighttime noise levels varied from 38.2 dB(A) to 43.8 dB(A) across the sampling stations. The field observations during the study period indicate that the ambient noise levels are well within the prescribed limit by CPCB (55 dB(A) Day time & 45 dB(A) Nighttime).

Water Environment

The prevailing status of water quality at 8 locations for surface water and 8 locations for ground water were assessed during the study period. The standard methods prescribed in IS were followed for sample collection, preservation, and analysis in the laboratory for various physiochemical parameters.

Surface water quality

The surface water results were compared with IS 2296:1992 standard and in respect of CPCB water Quality Criteria for designated best use. Based on comparison study of test results with Surface water Quantity Standards (Is 2296 Class A), it is interpreted that water qualities of studied locations are classified under Class E, which can be used for irrigation industrial cooling, and controlled waste disposal.

- ✓ The pH value ranges from 6.91 to 7.92 and within the limits (6.5 – 8.5) of IS 2296:1992.
- ✓ The Electrical Conductivity (EC) of the collected surface water ranges from 1358 µS/cm to 2241 µS/cm.
- ✓ The chloride content in the collected surface water ranges from 194.6 mg/l to 349.6 mg/l.
- ✓ The sulphate content in the collected surface water sample ranges from 88.1 mg/l to 154.3 mg/l.
- ✓ COD of the collected surface water sample ranges from 12.4 mg/l to 42.8 mg/l.
- ✓ BOD of the collected surface water sample ranges from 7.2 mg/l to 20.3 mg/l.

Ground Water Quality

Physio-chemical characteristics of ground water samples collected from the selected villages during Pre-monsoon 2022. The Ground water results were compared with drinking water standards (IS 10500:2012).

- ✓ The ground water results of the study area indicate that the pH range varies between 6.88 and 7.83. It is observed that the pH range is within the limit of IS 10500:2012.
- ✓ The Total Dissolved Solids range is varied between 803 mg/l – 1381 mg/l for the ground water. All the samples are well within the permissible limit of IS 10500: 2012.
- ✓ The acceptable limit of the chloride content is 250 mg/l and permissible limit is 1000 mg/l. The chloride content in the ground water for study area ranges between 197.6 mg/l – 392.4 mg/l. It is observed that all are well within the permissible limit of IS 10500:2012.
- ✓ The desirable limit of the sulphate content is 200 mg/l and permissible limit is 400 mg/l. The sulphate content of the ground water of the study area varies between 107.2 mg/l – 227.3 mg/l. It is observed that all the samples are within the permissible limit of IS 10500: 2012.
- ✓ Based on comparison study of test results with drinking water standard, it is interpreted that water qualities of studied locations meet with the drinking water standards as per IS 10500: 2012. These interpretations relate to the sample tested for location only. To prevent ground water contamination and improving the quality and Quantity, rainwater harvesting, and groundwater recharging may be helpful.

Soil Environment

Assessment of soil characteristics is of paramount importance since vegetation growth, agricultural practices and production is directly related to the soil fertility and quality. Soil sampling was carried out at eight (08) locations in the study area. It is observed that,

- ✓ The pH of the soil samples ranged from 6.8 to 7.9.
- ✓ The potassium content ranged from 43 mg/kg to 92 mg/kg.
- ✓ Nitrogen content ranged from 138 mg/kg to 233 mg/kg.
- ✓ Phosphorous ranged from 39 mg/kg to 81 mg/kg.

Biological Environment

- ✓ Baseline Biological survey was carried out to assess the ecology of the study area. The floral diversity is grouped into trees, shrubs, climbers, and herbs. Similarly, the faunal diversity is grouped into mammals, birds, reptiles, and amphibians. There are no extinct flora and fauna species found in the study area.
- ✓ The flora, which includes herbs, shrubs, and trees, were sparsely distributed within the

study area as per IUCN status Least concern, vulnerable species are observed within the study area. No rare and endangered faunalspecies are found in the project area as well as the study area.

Socio Economic Environment

- ✓ In the 10 km radius study area, as per 2011 census, the study area consists of 148320 persons inhabited in 26 villages. The statistics regarding the list of villages, number of households and human population.

4 Anticipated Environmental Impacts

4.1 Air Environment

The emissions mainly generated from the mining activities are Blasting, Drilling, Scrapping, Excavation, Loading, Unloading, and transportation etc. Machinery like compressors and jack hammers are used for Drilling.

The maximum ground level concentration observed due to mining activities and traffic movement for PM₁₀, PM_{2.5}, and NO_x are 3.37464 µg/m³, 0.33 µg/m³, and 1.0788 µg/m³ respectively. So, it can be concluded that even during operation of quarry the impact envisaged is moderate.

Impacts:

- ✓ Mining operation and associated activities are potentially air polluting, and the major air pollutant is suspended particulate matter.
- ✓ Impact of fugitive dust emission on flora and fauna
- ✓ Reduce photosynthesis in plants due to dust deposition.
- ✓ The intensity of dust generation in the mining is influenced by factors such as hardness of rock, mining technology and material handling etc.
- ✓ Fugitive dust from quarrying operation affects the mine workers who are directly exposed.
- ✓ Diseases like asthma and bronchitis are induced by particulate emission due to mining activities.

Proposed Mitigation Measure:

- ✓ Wet Drilling and Control Blasting will be used.
- ✓ Developing green belts which act as pollution sinks.

- ✓ Regular water sprinkling on haul and access roads.
- ✓ Material coverage during transportation to avoid Dust and Mist.
- ✓ Vehicular Emissions will be minimized by proper training and maintenance of vehicles and other oil - operated equipment.
- ✓ Speed controls on vehicle movements.
- ✓ Periodic health checkup for the workers shall be done.
- ✓ Dust masks will be provided to the workers.
- ✓ Greenbelt development along approach roads and surrounding the Quarry Lease area.

4.2 Noise Environment:

Impacts:

- ✓ Noise Generation by mining activities,
- ✓ Impact of vibrations including damage to materials/structures due to blasting.
- ✓ Hearing impairment problems in workers and nearby area people due to mining activities. Impact on ambient noise level due to rock excavation, transportation, processing equipment and ancillaries.

Proposed Mitigation Measure:

- ✓ Wet Drilling and Controlled Blasting will be adopted.
- ✓ Providing earmuffs for the workers working in the high noise prone areas.
- ✓ Development of greenbelts all along the boundary of the mining lease area will act as an effective noise barrier.
- ✓ Using acoustic enclosures for noise generating machines like generators, compressors to reduce the noise level.
- ✓ Ear plugs and Earmuffs will be provided to the drill machine operators and dumped drivers.
- ✓ Proper gradient of haul roads to reduce cumulative noise levels.
- ✓ All machinery will be maintained as per the maintenance schedule to prevent undesirable noise.

4.3 Water Environment

Impacts:

- ✓ Runoff from mining areas and contaminated the inland water bodies.

- ✓ Impact on groundwater regime/streams/odai/ springs due to mining activities,
- ✓ Runoff from Spillage during handling of materials.
- ✓ Loss of surface features such as lakes, streams, and ponds through settling.
- ✓ Ground water inflows into the quarry & may contact pollutants.

Proposed Mitigation Measure:

- ✓ There are no major streams and rivers which can be affected by the proposed mining. Hence there will be no major effect on the surface water environment.
- ✓ The building stone will not produce any harmful toxic effluence in the form of solid, liquid or gas.
- ✓ Garland drains will be constructed on all sides of the quarry.
- ✓ All the garland drains will be routed through adequately sized catchpits or settling pits to remove suspended solids from flowing into storm water.
- ✓ The water will be used after settling for irrigation/greenbelt and dust suppression.
- ✓ The overall drainage planning will be done so that the existing pre-mining drainage conditions will be maintained to the extent possible so that run off distribution is not affected.
- ✓ Rainwater harvesting by constructing check dams on natural nallah and developing water bodies should be planned for recharging groundwater.
- ✓ Sewage (0.64KLD) is being sent to septic tank followed by soak pit. There is no industrial effluent generation during quarry operation.
- ✓ Municipal Solid Wastes including food waste are being disposed of into municipal bins.

4.4 Biological Environment

Impacts:

- ✓ Loss of vegetation and wildlife habitat.
- ✓ Impact on surrounding agricultural land & Impact on groundwater quality due to leachate.

Proposed Mitigation Measure:

- ✓ There is no endangered and endemic species are found within the 10km radius of the project site.
- ✓ There is no National Parks, Sanctuary, Biosphere Reserve, Tiger Reserve, Elephant Reserve, wildlife migratory routes in core and buffer zones within the 1km radius of the project.

- ✓ No wildlife is found in the quarry Lease area. To minimize the impacts and to improve up on the existing eco system Afforestation plan will be envisaged with native plants.
- ✓ Lighting will be avoided during nighttime in the quarry. However, the operations will be carried out only in daytime.

4.5 Socio Economic

Impacts:

- Impact on the cropping pattern and crop productivity in the buffer zone
- Impact on community resources such as grazing land
- Mining activity may affect health of the workers and people from the nearest village directly.
- Existing road shall be damaged due to heavy vehicle movement.
- Spillages of material transportation
- Dust deposition on plants and trees.
- Accidental Risks during mining due to unsafe measures

Proposed Mitigation Measure:

- ✓ Quarrying in this area is not going to have any negative impact on the social or cultural life of the villagers in the nearby vicinity.
- ✓ The quarry activity will provide job opportunities, which will help them to develop economically.
- ✓ Around 36 people are directly employed, including mining operations. Local villagers residing in the nearby villages will be employed as semi-skilled workers.
- ✓ At the end of quarry operations, the total area excavated will be fenced properly and Greenbelt will be developed.
- ✓ Control of Spillages and Regular Water sprinkling.
- ✓ Avenue Greenbelt development with native plants.
- ✓ Renovation of existing roads will be done.
- ✓ Rainwater harvesting by constructing check dam on natural nallah and developing water bodies should be planned for recharging groundwater.
- ✓ CER is proposed to the nearby villages.

5 Alternative Studies

No Alternative Studies for Site and Technology are considered Since; Quarry project is a Site specific. The open cast mining method is sustainable method.

6 Environmental Monitoring Program

A monitoring schedule with respect to Ambient Air Quality, Water & Wastewater Quality, Noise Quality as per TamilNadu State Pollution Control Board (TNPCB) will be maintained.

7 Additional Studies

Public Hearing

This EIA report contains information as per TOR and has been prepared as per generic structure given in Appendix III of EIA notification 2006 by MOEF & CC, Govt. of India.

The draft EIA prepared will be submitted for Public Consultation. Upon incorporating the minutes of the public consultation along with proponent action plan the final EIA will be submitted to SEIAA-TN for further appraisal of the project and obtaining Environmental Clearance.

Disaster Management Plan

- ✓ The salient features of Disaster Management Plan shall be included.
- ✓ Emergency shutdown procedure
- ✓ Fire protection system, Emergency safety equipment & Reporting and response to emergency. Emergency Help from nearby industries and tie up with nearby industries.

Corporate Environmental Responsibility

No Relocation and Rehabilitation is involved in the proposed project since it is a pattaland. Most villages have benefitted mutually where the mining industry has provided indirect jobs for labor and villages provide accommodation for the labor and staff. Supportive industries like food supply and essential shops are economic growth in the villages.

8 Benefits of the Proposed Project

- ✓ The quarrying activities in this belt will benefit the local people of 36 Nos.
- ✓ Improvement in Per Capita Income.
- ✓ The socio - Economic conditions of the village and distance will enhance due to the project, hence the project should be allowed after considering all the parameters.

- ✓ It can thus be concluded that the project is environmentally compatible, financially viable and would be in the interest of the construction industry thereby indirectly benefiting the masses.

9 Environmental Benefit Analysis

Not recommended

10 Environment Management Plan

The EMP provides a delivery mechanism to address potential adverse impacts, to instruct contractors and to introduce standards of good practice to be adopted for all project works. For each stage of the programme, the EMP lists all the requirements to ensure effective mitigation of significant biophysical and socio-economic impacts identified in the EIA.

Proposed Project EMP budget is allocated Rs.73,00,000/- and under recurring cost Rs. 10,75,000/.

11 Conclusion

This is a proposal for mining Rough stone, Weathered Rock, and Gravel quarry over an extent of 2.45.50 Ha. where the material having a good requirement in the civil construction & other fields. The proposed quarry lease is well participating in “Corporate Responsibility Schemes”. The local employment is improving, and the local area development will be there.

A comprehensive listing of the mitigation measures (actions) will be prepared and implemented and the parameters that will be monitored to ensure effective implementation of the action. Also, the timing for implementation of the action to ensure that the objectives of mitigation are fully met to minimize the Impacts on environmental attributes.