

SEPTEMBER

2023

**Executive Summary for Conducting Public Hearing
FOR**

**“Thiru. V. Maripandi Rough Stone, Jelly and Gravel
Quarry over a total extent of 2.23.0 Ha”**

At

**S.F.No. 155/3, 155/8B, 155/11, 155/13, 155/14, 155/15 &
155/16 of Kambaneri Puthukudi-1 Village, Kadayanallur
Taluk, Tirunelveli District, Tamilnadu State**

Project Proponent:

**Thiru. V. Maripandi,
S/o. T. Velusamy Thevar,
No. 4/66, Pillayar Koil Main Road,
Sundaresapuram (Post), Kadayanallur,
Tenkasi Taluk, Tirunelveli District.**

Project termed under schedule 1(a) Category B₁

Prepared By:

Ecotech Labs Pvt. Ltd.



NABET Accredited EIA Consultant

**48, 2nd Main Road, Ram Nagar South Extension,
Pallikaranai, Chennai -600100**

EXECUTIVE SUMMARY

1. Project Background:

The Proposed project total extent area is 2.23.0 Ha, It is a Patta land in 155/3, 155/8B, 155/11, 155/13, 155/14, 155/15 & 155/16 at Kampaneri Puthukudi-I Village, Kadayanallur Taluk, Tirunelveli District. The category of project is B1, It is a Rough stone, Jelly and Gravel quarry in Kampaneri Puthukudi-I village. The area is situated on slightly undulated topography covered by Gravel formation which does not sustain any type of vegetation.

The quarry operation is proposed to carry out with open cast mechanized mining with 5.0 meter bench for Top soil & Gravel followed by 5.0 meter vertical bench with a bench width not less than the bench height. The quarry operation involves shallow jack hammer drilling, slurry blasting, Loading and transportation of Rough stone and Gravel to the needy nearby crusher units / road formation works.

The quarry operation is proposed up to depth of 22m from the below ground level. Geological Resources is estimated at 2,54,870 Cum of Rough stone and 28,084 Cum of Gravel. Mineable Reserves is estimated as 82,900 Cum of Rough stone and 19,422 Cum of Gravel after leaving necessary safety distance from the lease boundary as indicated in the precise area letter and relevant mining laws in force. Production Schedule is production of 82,900 Cum of Rough Stone and 19,422 Cum of Gravel for the period of Five years. Mining Plan was approved by The Deputy Director, Department of Geology & Mining, Tirunelveli vide letter Rc.No.M1/61043/2009 dated 15.12.2017. Precise area communication letter received from the District Collector, Department of Geology and Mining; Tirunelveli vide letter Roc.No.M1/61043/2009 dated 11.05.2017.

The project area does not fall in Hill Area Conservation Authority region. There is no interstate boundary, CRZ zone, Western Ghats, notified Bird sanctuaries as per Wild life protection Act 1972, within the radius of 15 Km. Nellai Wildlife Sanctuary is located at the distance of 10 km, W from the project site.

2. Nature & Size of the Project

The Rough Stone and Gravel Quarry over an extent of 2.23.0 Hectares land is located at Kampaneri Puthukudi-I Village, Kadayanallur Taluk, Tirunelveli District.

| | |
|---------------------------|---|
| Mineral intends to quarry | : Rough stone, Jelly and Gravel Quarry |
| District | : Tirunelveli |
| Taluk | : Kadayanallur |
| Village | : Kampaneri Puthukudi - I |
| S. F. Nos. | : 155/3, 155/8B, 155/11, 155/13, 155/14, 155/15 & 155/16 |
| Extent | : 2.23.0 Hectares |

Table 1: Brief Description of the Project

| S. No | Particulars | Details |
|-------|--------------------------|---|
| 1 | Latitude | Latitude : 09°05'32.17"N to 09°05'38.97"N |
| 2 | Longitude | Longitude : 77°23'07.87"E to 77°23'11.87"E |
| 3 | Site Elevation above MSL | 210 m MSL |
| 4 | Topography | Slightly Undulated Topography |
| 5 | Land use of the site | Patta Land |
| 6 | Extent of lease area | 2.23.0 Ha |
| 7 | Nearest highway | NH- 744 : Kollam – Thirumangalam Road – 4 kms, W SH 76 : Pulyangudi – Tirunelveli Road – 10.05 kms, N SH 39 A: Tenkasi – Surandai Road – 10.40 kms, S ODR:Kadayanallur – Virasigamani Road – 0.60 kms, S |
| 8 | Nearest railway station | Kadayanallur Railway Station – 2.42 km, SW Tenkasi Junction- 16.49 km, SW |
| 9 | Nearest airport | Tuticorin Domestic Airport – 81.30 km, SE Thiruvananthapuram International Airport – 83.83 kms, SW |
| 10 | Nearest town / city | Town - Kadayanallur - 3 km, SW City - Kadayanallur - 3 km, SW District - Tenkasi – 16 km, SW |

| | | |
|----|-----------------------|---|
| 11 | Water Bodies/Lake/Dam | <ul style="list-style-type: none"> ❖ Chidambaramperi Small Lake – 1.12 kms, N ❖ Shenbaganallur Lake – 1.18 Kms – W ❖ Bala Arunachalapuram Lake – 1.48 kms, S ❖ Kambaneri Puthukudi Lake – 2.21 kms, S ❖ Sanganaperi Lake – 2.34 kms, NE ❖ Chidambaramperi Lake – 2.39 kms, N ❖ Aavarantha Kulam – 2.63 kms, NW ❖ Tirumalapuram South Pond – 3.46 kms, SE ❖ Silambu Kulam – 3.58 kms, N ❖ Attakkulam – 4.12 kms, SW ❖ Puthukulam – 4.28 kms, W ❖ Periyakulam – 5 kms, E ❖ Pattaikulam – 6.27 kms, SE ❖ Chenkulam – 6.40 kms, E ❖ Urmelazhagiyan Lake – 7.60 kms, S ❖ Thannuthu Kulam – 7.80 kms, SE ❖ Samuthiram – 8 kms, NE ❖ Govoindaperi – 9.30 kms, N ❖ Naduvakurichi Lake – 9.70 kms, E ❖ Singathukulam – 10.10 kms, E ❖ Naranaperi – 10.20 kms, N ❖ Keezhakulam – 10.30 kms, SW ❖ Kokkoorani – 10.50 kms, N ❖ Mallarkulam – 10.60 kms, SW ❖ Ottankulam – 10.94 kms, S |
|----|-----------------------|---|

| | | |
|----|---------------------------------------|--|
| | | <ul style="list-style-type: none"> ❖ Sakkarakulam – 11.21 kms, SE ❖ Echantha Lake – 11.66 kms, SE ❖ Sundarapandiyapuram Tank – 11.87 kms, S ❖ Pottakulam – 13.62 kms, S ❖ Surandai Lake – 13.70 kms, SE ❖ Naanaa Kulam – 13.95 kms, S ❖ Thiruchitrabalam Kulam – 14.47 kms, S |
| 12 | Rivers/Canal/Dam | <ul style="list-style-type: none"> ❖ Periya Aaru – 1.65 kms, SW ❖ Kallaru River – 9.33 kms, NW ❖ Hanuman River – 10.15 kms, SW ❖ Kadayanallur River – 11.54 kms, W ❖ Chittraru River – 14.76 kms, SW ❖ Karuppanadhi Dam – 9.80 kms, NW ❖ Sambavarvadakarai Anaicut – 9.28 kms, SW |
| 13 | Hills / valleys | Nil in 15 km radius |
| 14 | Archaeologically places | Malayadikurichi Rockcut Cave Temple – 13.37 kms, NE |
| 15 | National parks / Wildlife Sanctuaries | ❖ Nellai Wildlife Sanctuary – 10 kms, W |
| 16 | Reserved / Protected Forests | <ul style="list-style-type: none"> ❖ Krishnapuram R.F – 6.60 kms, NW ❖ Vairavankulam R.F – 10 Kms, NW ❖ Kadayanallur Upper Slopes R.F – 11.30 kms, W ❖ Vellakaalthur R.F – 14 kms, W |
| 17 | Seismicity | Proposed Lease area come under Seismic zone-II(low risk area) |
| 18 | Defense Installations | Nil in 15 Km radius |

3. Need for the Project

- ❖ The mining activities as proposed are the backbone of all construction and infrastructure projects as the raw material for construction is available only from such mining. The Rough stone and Gravel extracted will be transported to be Stone crusher of district Tirunelveli.

- ❖ The raw Rough stone as well as the crushed material of stone is in high demand in real estate, construction projects as well as in building construction projects.
- ❖ Rough stone is quarried for producing crusher aggregates to the nearby building contractors, road contractors and nearby villagers.
- ❖ After quarrying the entire reserves mined out, the area will be used as water reservoir to have an artificial recharge to the nearby wells.
- ❖ No damage to the land is caused, no reclamation or back filling is required.



Figure 1: Location Map of the Project Site

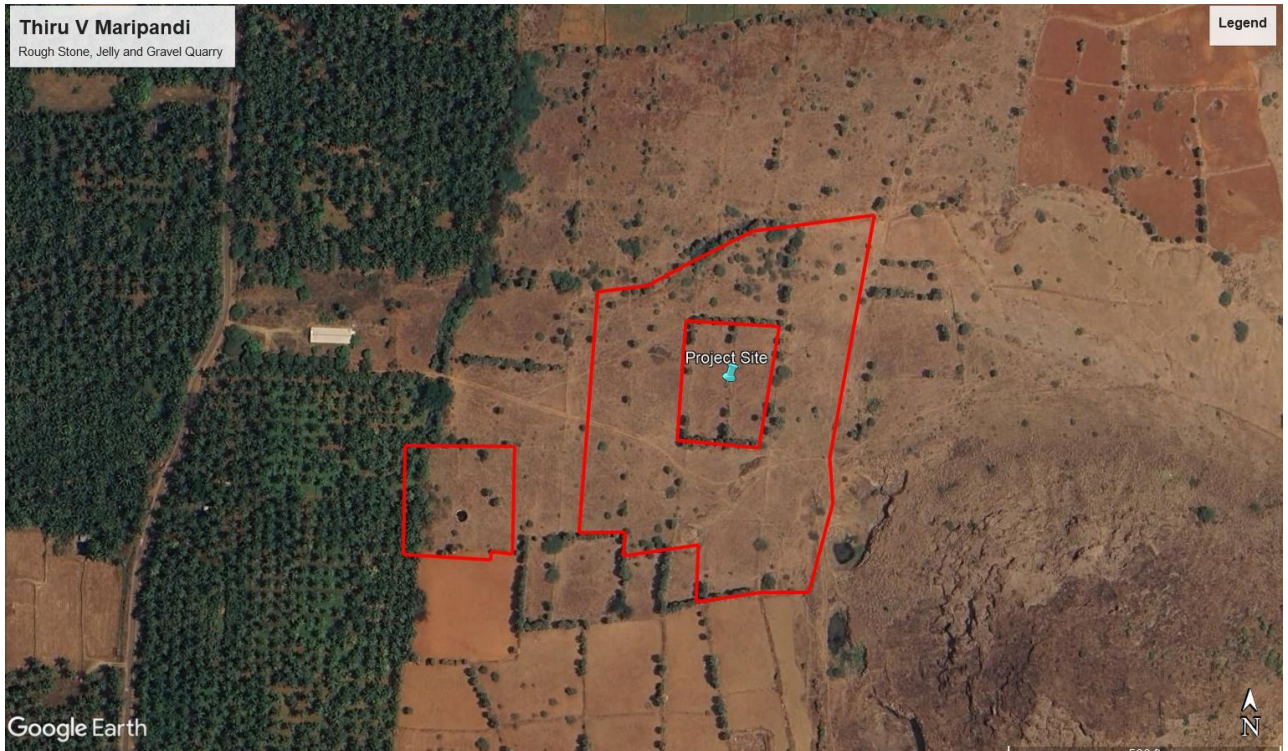


Figure 2: Google Image of the Project Site

4. Charnockite

Charnockite is extensively quarried as rough stone which is used as aggregates for construction of building, laying of roads and for preparation of value added products like hollow blocks, M-sand etc. Charnockite is exposed as discontinuous body in NW-SE to WNW-ESE direction from Tenkasi in the west to Gangaikondan in the east and from Tiruvenkadanathapuram in the north to Vijayapathi in the south. An isolated Charnockite hills is exposed for a length of 5 km and 1 to 1.5 km width in Valliyur-Nanguneri-Radhapuram area and in the eastern slope of Western Ghats hills of Tirunelveli district. The nature of occurrence of charnockite is ubiquitous, often in two modes. One type of occurrence is in the form of profuse enclaves as lensoid bodies etc; within granitoid gneiss and leptynite and other as massive crystalline variety as seen in large isolated hills (Western Ghats massifs). Basic nature of the charnockite has been preserved only at few places where in it contains occasionally noritic/pyroxene granulite patches and calc granulite pockets. Retrogression of mafics – pyroxenes to hornblende and biotite aggregates and granitisation with intercalations of quartzofeldspathic veinations are the common features that characterise these

enclaves. This retrograde hornblende biotite gneiss is also extensively quarried in Piranchery, Gangaikondan, and north of Manur and Rasta areas for road metals and earth fillings.

5. Geological Resources

The Geological reserves have been calculated. The available geological reserve is estimated as 2,54,870 m³ of Rough Stone and 28,084 m³ of Gravel respectively. Availability of Resources is given below. The quarrying is restricted up to a depth of 22m below ground level only. Availability of Resources is given below.

Table 2. Geological resources

| SECTION | BENCH | LENGTH (M) | WIDTH (M) | HEIGHT (M) | VOLUME in M ³ | GRAVEL FORMATION in M ³ | GEOLOGICAL RESOURCES OF ROUGH STONE IN M ³ |
|--------------|-------|------------|-----------|------------|--------------------------|------------------------------------|---|
| XY-AB | I | 49 | 106 | 2 | 10388 | 10388 | |
| | II | 49 | 106 | 15 | 77910 | | 77910 |
| Total | | | | | | 10388 | 77910 |
| XY-CD | I | 83 | 49 | 2 | 8134 | 8134 | |
| | II | 83 | 49 | 20 | 81340 | | 81340 |
| Total | | | | | | 8134 | 81340 |
| XY-EF | I | 27 | 97 | 2 | 5238 | 5238 | |
| | II | 27 | 97 | 20 | 52380 | | 52380 |
| Total | | | | | | 5238 | 52380 |
| XY-GH | I | 47 | 46 | 2 | 4324 | 4324 | |
| | II | 47 | 46 | 20 | 43240 | | 43240 |
| Total | | | | | | 4324 | 43240 |
| | | | | | | 28084 | 254870 |

Table 3. Mineable Resources

| SECTION | BENCH | LENGTH IN (M) | WIDTH IN (M) | DEPTH IN (M) | VOLUME IN M ³ | GRAVEL IN M ³ | MINEABLE RESERVES OF ROUGH STONE IN M ³ |
|--------------------|--------------|------------------|-----------------|-----------------|-----------------------------|-----------------------------|--|
| XY-AB | I | 39 | 91 | 2 | 7098 | 7098 | |
| | II | 36 | 85 | 5 | 15300 | | 15300 |
| | III | 28 | 72 | 5 | 10080 | | 10080 |
| | IV | 15 | 59 | 5 | 4425 | | 4425 |
| | Total | | | | | | 7098 |
| XY-CD | I | 83 | 33 | 2 | 5478 | 5478 | |
| | II | 78 | 28 | 5 | 10920 | | 10920 |
| | III | 83 | 15 | 5 | 6225 | | 6225 |
| | Total | | | | | | 5478 |
| XY-EF | I | 27 | 82 | 2 | 4428 | 4428 | |
| | II | 27 | 76 | 5 | 10260 | | 10260 |
| | III | 27 | 69 | 5 | 9315 | | 9315 |
| | IV | 26 | 56 | 5 | 7280 | | 7280 |
| | V | 13 | 43 | 5 | 2795 | | 2795 |
| | Total | | | | | | 4428 |
| XY-GH | I | 39 | 31 | 2 | 2418 | 2418 | |
| | II | 36 | 25 | 5 | 4500 | | 4500 |
| | III | 30 | 12 | 5 | 1800 | | 1800 |
| | Total | | | | | | 2418 |
| Grand Total | | | | | | 19422 | 82900 |

The Available mineable reserve is computed as 82,900 m³ of Rough stone and 19,422 m³ of Gravel formation upto a depth of 22 m below ground level only.

Table 4. Year wise Production Plan

The applicant has proposed to carry out 82,900 m³ of Rough stone and 19,422 m³ of Gravel at the rate of 100% recovery upto a depth of 22 m below ground level for the period of five years only.

| YE A R | SECTIO N | BENC H | LENGT H IN (M) | WIDT H IN (M) | DEPT H IN (M) | VOLUM E IN M ³ | GRAVEL IN M ³ | ROUGH STONE IN M ³ |
|--------------------|--------------|-----------|----------------------|---------------------|---------------------|---------------------------------|-----------------------------|-------------------------------------|
| I | XY-GH | I | 39 | 31 | 2 | 2418 | 2418 | |
| | | II | 36 | 25 | 2 | 4500 | | 4500 |
| | XY-EF | I | 27 | 82 | 2 | 4428 | 4428 | |
| | | II | 27 | 76 | 5 | 10260 | | 10260 |
| | XY-CD | I | 83 | 33 | 2 | 5478 | 5478 | |
| | | II | 11 | 28 | 5 | 1540 | | 1540 |
| Total | | | | | | | 12324 | 16300 |
| II | XY-CD | II | 67 | 28 | 5 | 9380 | | 9380 |
| | XY-AB | I | 39 | 91 | 2 | 7098 | 7098 | |
| | | II | 16 | 85 | 5 | 6800 | | 6800 |
| | Total | | | | | | | 7098 |
| III | XY-AB | II | 20 | 85 | 5 | 8500 | | 8500 |
| | XY-CD | III | 83 | 15 | 5 | 6225 | | 6225 |
| | XY-EF | III | 5 | 69 | 5 | 1725 | | 1725 |
| | Total | | | | | | | |
| IV | XY-EF | III | 22 | 69 | 5 | 7590 | | 7590 |
| | | IV | 26 | 56 | 5 | 7280 | | 7280 |
| | XY-GH | III | 30 | 12 | 5 | 1800 | | 1800 |
| | Total | | | | | | | |
| III | XY-AB | III | 28 | 72 | 5 | 10080 | | 10080 |
| | | IV | 15 | 59 | 5 | 4425 | | 4425 |
| | XY-EF | V | 13 | 43 | 5 | 2795 | | 2795 |
| | Total | | | | | | | |
| Grand Total | | | | | | | 19422 | 82900 |

6. Mining

Opencast mining

Open cast Semi-Mechanized Mining with one 5.0 meter bench for Top soil & Gravel followed by 5.0 meter vertical bench with a bench width not less than the bench height.

The Quarry operation involves shallow jack hammer drilling, blasting, loading and transportation.

Process Description

- The reserves and resource are arrived based upon the Geological investigation
- Removal of Gravel by Excavators and directly Loaded into Tippers.
- Removal of Rough Stone by Excavators by Drilling and Blasting.
- Shallow Drilling With Jackhammer of 30-32 mm Dia.
- Minimum Blasting With Class 3 Explosives.
- Loading of Rough Stone By Excavators Into Tippers.

7. Water Requirement

Total water requirement for the mining project is 2.0 KLD. Domestic water will be sourced from nearby Sundaresapuram Village and other water will be source from nearby road tankers supply.

Table 5. Water Balance

| Purpose | Quantity | Source |
|------------------|----------------|--|
| Drinking Water | 1 KLD | Packaged Drinking water vendors available in Sundaresapuram village which is about 0.67 Km N of the area |
| Green belt | 0.5KLD | Other domestic activities through road tankers supply |
| Dust suppression | 0.5KLD | From road tankers supply |
| Total | 2.0 KLD | |

8. Manpower

Total manpower required for the project is approximately 16 persons. Workers will be from nearby villages.

Table 6. Man Power

| | | | |
|----|---------|--------------------|-------|
| 1. | Skilled | Mines Manager/Mate | 1 No. |
| | | Operator | 6 No. |

| | | | |
|----|--------------|-----------------|--------|
| | | Mechanic | 1 No. |
| 2. | Semi-Skilled | Driver | 3 Nos |
| 3. | Unskilled | Musdoor/Labours | 6 Nos |
| | | Total | 17 Nos |

No child less than 18 years will be entertained during quarrying operations.

9. Solid Waste Management

Table 7 Solid Waste Management

| S. No | Type | Quantity | Disposal Method |
|-------|-----------|-------------|------------------------------------|
| 1 | Organic | 3.06 kg/day | Municipal bin including food waste |
| 2 | Inorganic | 4.59 kg/day | TNPCB authorized recyclers |

As per CPCB guidelines: MSW per capita/day =0.45 kg/day

Table 8. 500m Radius Cluster Mine

1) Existing other quarries:

| S. No. | Name of the Owner | Village & Taluk | S.F.Nos. | Extent in Hect. | Lease Period |
|--------|--|------------------|-------------------------------------|-----------------|---|
| 1 | S. Arunachalam, S/o. Subbaiah, 295, Main Road, Krishnapuram, Kadayanallur, Tenkasi | Ariyanayagipuram | S.F.No. 729 (Pt-1) – Poramboke Land | 2.00.0 | Proceeding No. M3/67787/2004, dt. 19.01.2016 for a period 5 years from 08.02.2016 to 07.02.2021 |
| 2 | S. Arunachalam, S/o. Subbaiah, 295, Main Road, Krishnapuram, | Ariyanayagipuram | S.F.No. 729 (Pt-II) – | 3.00.0 | Proceeding No. M3/67787/2004, dt. 19.01.2016 |

| | | | | | |
|------------------------------------|--------------------------|--|-------------------|--------|--|
| | Kadayanallur, Tenkasi | | Poramboke Land | | for a period of 5 years from 08.02.2016 to 07.02.2021 |
| Total extent of abandoned quarries | | | | 5.00.0 | |

2) Details of abandoned /Old Quarries

| S. No. | Name of the Owner | Village & Taluk | S.F.Nos. | Extent in Hect. | Lease Period |
|------------------------------------|--|---------------------------|--------------------|-----------------|--|
| 1. | K. Selvakumar, 136/46, LRD, Palayam, Tenkasi | Kadayamperumpathu - II | S.F.No. 829 (P) | 2.00.0 | Proceeding No. M1/11147/2013, dt. 10.06.2014 for a period of 5 years from 10.06.2014 to 09.06.2019 |
| Total extent of abandoned quarries | | | | 2.00.0 | |

3) Details of Present Proposed quarries

| S. No. | Name of the Owner | Village & Taluk | S.F.Nos. | Extent in Hect. | Lease Period |
|-----------------------------------|---|--|---|-----------------|--------------------|
| 1. | V. Maripandi, S/o. Velusamy Thevar, 4/66, Pillayar Kovil Main Road, Sundaresapuram Post, Kadayanallur Taluk, Tenkasi | Kambaneri Pudukudi - I village, Kadayanallur Taluk | S.f. No. 155/3, 155/8B, 155/11, 155/13, 155/14, 155/15 & 155/16 | 2.23.0 | Proposed Quarry |
| Total extent of proposed quarries | | | | 2.23.0 | |

| | | |
|---|---------------|--|
| Grand Total extent of all quarries | 9.23.0 | |
|---|---------------|--|

10. Land Requirement

The total extent area of the project is 0.55.0 Ha, Patta Land in Tharuvai Village of Palayamkottai Taluk, Tirunelveli District.

Table 9 Land Use Breakup

| Sl. No. | Land Use | Present Area (Ha) | Area in use during the quarrying period (Ha) |
|---------|-----------------|-------------------|--|
| 1. | Quarrying pit | Nil | 1.32.0 |
| 2. | Infrastructure | Nil | 0.01.0 |
| 3. | Roads | Nil | 0.01.0 |
| 4. | Green belt | Nil | 0.10.0 |
| 5. | Unutilized area | 2.23.0 | 0.79.0 |
| | Total | 2.23.0 | 2.23.0 |

11. Human Settlement

There are no habitations within 300m radius. There are villages located in this area within 15 km radius of the quarry.

Table 10 Habitation

| S.No | Name of the Village | Approximate distance & Direction from lease applied area | Approximate population |
|------|----------------------|--|------------------------|
| 1. | Sundaresapuram | 0.67 km - N | 323 |
| 2. | Meenakshipuram | 2.57 km - NE | 425 |
| 3. | Bala Arunachalapuram | 0.67 km - S | 300 |
| 4. | Shenbaganallur | 1.77 km - W | 350 |
| 5. | Achampatti | 2.67 km - NE | 450 |

12. Power Requirement

The proposed Rough stone quarrying does not require any power supply for the quarrying operation.

16 Litre diesel per hour for excavator for mining and loading for Rough stone needed and **10 Litre** diesel per hour for excavator for mining and loading for Top soil.

13. Scope of the Baseline Study

This chapter contains information on existing environmental scenario on the following parameters.

1. Micro – Meteorology
2. Water Environment
3. Air Environment
4. Noise Environment
5. Soil / Land Environment
6. Biological Environment
7. Socio-economic Environment

13.1 Micro – Meteorology

Meteorology plays a vital role in affecting the dispersion of pollutants, once discharged into the atmosphere. Since meteorological factors show wide fluctuations with time, meaningful interpretation can be drawn only from long-term reliable data.

- i) Average Minimum Temperature : 31° C
- ii) Average Maximum Temperature. : 34°C
- iii) Average Annual Rainfall of the area : 792 mm

13.2 Air Environment

Ambient air monitoring was carried out on monthly basis in the surrounding areas of the Mine Lease area to assess the ambient air quality at the source. To know the ambient air quality at a larger distance i.e. in the study area of 5 km. radius, air quality survey has been conducted at 5 locations. Major air pollutants like Particulate Matter (PM₁₀), Sulphur Dioxide (SO₂), Nitrogen Dioxide (NO₂) were monitored and the results are summarized below.

The baseline levels of PM₁₀ (33-60 µg/m³), PM_{2.5} (13-31 µg/m³), SO₂ (5-20 µg/m³), NO₂(9-39 µg/m³), all the parameters are well within the standards prescribed by National Ambient Air Quality during the study period from March 2023 to May 2023.

13.3 Noise Environment

The maximum Day noise and Night noise were found to be 61 dB(A) and 50 dB(A) respectively in Sri Santhana Mariyamman Kovil, Achampatti. The minimum Day Noise and Night noise were 43 dB (A) and 38 dB(A) respectively which was observed in Project site. The observed values are all well within the Standards prescribed by CPCB.

13.4 Water Environment

- The average pH ranges from 7.15 – 8.21.
- TDS value varied from 245 mg/l to 1350 mg/l
- Hardness varied from 58.2 to 651 mg/l
- Chloride varied from 90 to 557 mg/l

13.5 Land Environment

The analysis results shows that the majority of soil in the project and surrounding area is slightly alkaline in nature and pH value ranges from 5.89 to 8.24 with organic matter 0.37 to 1.96 %. The concentration of Nitrogen, Phosphorus & Potassium has been found to be in good amount in the soil samples.

13.6 Biological Environment

The proposed Mining lease area is mostly dry barren ground with small shrubs and bushes. No specific endangered flora & fauna exist within the mining lease area.

14. Rehabilitation/ Resettlement

The overall land of the mine is a Patta land. There are no displacement of the population within the project area and adjacent nearby area. Social development of nearby villages will be considered in this project.

The mine area does not cover any habitation. Hence the mining activity does not involve any displacement of human settlement.

15. Greenbelt Development

1. The development of greenbelt in the peripheral buffer zone of the mine area.

2. Green belt has been recommended as one of the major component of Environmental Management Plan, which will improve ecology, environment and quality of the surrounding area.
3. Local trees like Neem, Vilvam, Panai, etc will be planted along the lease boundary and avenues as well as over Non-active dumps at a rate of 140 trees per annum with interval 5m.
4. The rate of survival expected to be 80% in this area

Table.11 Plantation/ Afforestation Program

| Name of species proposed | Survival | No of species |
|---|-----------------|----------------------|
| Neem, Vilvam, Vaagai, Eachai, Naval, Mantharai, Magizha Maram, Vila Maram, Poo Marudhu, Panai, Marudha maram, Thandri, Sengondrai, Poovarasu, Thethankottai Maram, Pungam | 80% | 1115 |
| Total | | 1115 |

16. Anticipated Environmental Impacts

16.1 Air Environment and Mitigation Measures

1. Water sprinkling will be done on the roads & unpaved roads.
2. Proper mitigation measures like water sprinkling will be adopted to control dust emissions.
3. Plantation will be carried out on approach roads, solid waste site & nearby mine premises.
4. To control the emissions regular preventive maintenance of equipments will be carried out.

16.2 Noise Environment and Mitigation Measures

1. Periodical monitoring of ambient noise will be done as per CPCB guidelines.
2. No other equipment except the transportation vehicles and excavator for loading will be allowed.
3. Noise generated by these equipments shall be intermittent and does not cause much adverse impact

17. Responsibilities for Environmental Management Cell (EMC)

The responsibilities of the EMC include the following:

- i. Environmental Monitoring of the surrounding area
- ii. Developing the green belt/Plantation
- iii. Ensuring minimal use of water
- iv. Proper implementation of pollution control measures

18. Environmental Monitoring Program

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

19. Project Cost

The total project cost is **Rs 52,92,000/-** for deployment of machinery and creation of infrastructural facilities like approach road, mine office / Workers Shed, First Aid Room etc., including electrifications and water supply.

Table .12 Project Cost details

| S. No. | Description | Cost (Rs.) |
|--------|------------------|--------------------|
| 1 | Fixed Asset Cost | 11,92,000/- |
| 2 | Operational Cost | 41,00,000 /- |
| | Total | 52,92,000/- |

Total EMP Cost – Rs. 80,89,232 (Rs. 80 Lakhs)

20. Corporate Environmental Responsibility

The Corporate Environment Responsibility (CER) fund will be provided to the below activity.

Table 13 CER Cost

| S.No. | CER Activity | CER value |
|-------|--------------|-----------|
|-------|--------------|-----------|

| | | (Rs) |
|--------------|---|-----------------|
| 1. | Panchayat Union Middle School, Nagaram, Vasudevanallur Union, Tirunelveli Provision of <ul style="list-style-type: none"> ➤ R.O Water Facility ➤ Smart Classroom facility ➤ Soil filling ➤ Painting of school campus ➤ Environmental science books for library (in Tamil language), ➤ Greenbelt facilities in and around the periphery of the school campus – 50 No's and ➤ Hygienic Toilet facilities and maintenance upto lease period | 5,00,000 |
| Total | | 5,00,000 |

21. Benefits of the Project

- There is positive impact on socio-economics of people living in the villages. Mining operations in the subject area has positive impact by providing direct and indirect jobs opportunities
- The project is environmentally compatible, financially viable and would be in the interest of construction industry thereby indirectly benefiting the masses.
- Quarrying in this area is not going to have any negative impact on the social or cultural life of the villagers in the near vicinity.