

May 2023

Executive Summary

**Thiru.Joseph John Samuel Rough stone, Jelly &
Gravel quarry- 0.55.0 Ha**

For

PUBLIC HEARING

At

**S.F Nos : 845/1B and 845/2B of Tharuvai Village,
Palayamkottai Taluk, Tirunelveli District, Tamil Nadu**

PROJECT PROPONENT

**Thiru.Joseph John Samuel,
S/O.G.Jebarajan(Late),
No. 54, Chellathai nagar,
Mahilchi nagar,
Perumalpuram,
Tirunelveli District.
Pin Code: 627007.**

EIA Notification 2006 Schedule 1(a) Category B1 (Cluster)

**Prepared By:
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EXECUTIVE SUMMARY

1. Project Background:

The Proposed project total extent area is 0.55.0 Ha, It is a Patta land in 845/1B and 845/2B Tharuvai Village, Palayamkottai Taluk, Tirunelveli District. The category of project is B1, It is a Rough stone, Jelly and Gravel quarry in Tharuvai village. The area is situated on plain 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 17m from the below ground level. Geological Resources is estimated at 81,840 Cum of Rough stone and 10,912 Cum of Gravel. Mineable Reserves is estimated as 23,808 Cum of Rough stone and 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 23,808 Cum of Rough Stone for the period of Five years. Mining Plan was approved by The Assistant Director, Geology & Mining, Tirunelveli vide letter Rc.No.M1/21631/2017 dated 28.12.2020. Precise area communication letter received from Assistant Director, Department of Geology and Mining; Tirunelveli vide letter Rc.No.M1.21631/2017 dated 18.12.2020

The project area does not fall in Hill Area Conservation Authority region. There is no interstate boundary, CRZ zone, Western Ghats, notified Bird sanctuaries, wild life sanctuaries as per Wild life protection Act 1972, within the radius of 15Km.

2. Nature & Size of the Project

The Existing Rough Stone Quarry over an extent of 0.55.0 Hectares land is located at Tharuvai Village, Palayamkottai Taluk, Tirunelveli District.

Mineral intends to quarry : Rough stone, Jelly and Gravel Quarry
 District : Tirunelveli
 Taluk : Palayamkottai
 Village : Tharuvai
 S. F. Nos. : 845/1B and 845/2B
 Extent : 0.55.0 Hectares

Table 1: Brief Description of the Project

S. No	Particulars	Details
1	Latitude	Latitude : 08° 38' 10" to 08° 38' 16" N
2	Longitude	Longitude : 77° 41' 25" to 77° 41' 27" E
3	Site Elevation above MSL	118 m MSL
4	Topography	Plain Terrain
5	Land use of the site	Patta Land
6	Extent of lease area	0.55.0 Ha
7	Nearest highway	NH- 44 (Srinagar - Kaniyakumari) – 1.05km, E SH-40 (Tirunelveli- Shencottai road)- 3.91 km, NW
8	Nearest railway station	Melappalaiyam Railway Station – 7.42 km, N Tirunelveli Railway Junction- 11.02 km, NNE
9	Nearest airport	Tuticorin Domestic Airport – 38.17km
10	Nearest town / city	Town - Palayamkottai- 10.32 Km -NE City - Palayamkottai -10.32 km, NE District - Tirunelveli – 11km, NE
11	Rivers / Canal	❖ Pachaiyar river-4.17 km, NW ❖ Thamirabarani river-4.84 km, NNW ❖ Suthamalli reservoir dam-8.51 km, NW ❖ Seeniappan pond-12.04 km, NNE
12	Lake	❖ Brothers lake-1.38 km, ENE
13	Hills / valleys	Nil in 15 km radius
14	Archaeologically places	Nil in 15 km radius

15	National parks / Wildlife Sanctuaries	❖ Veinthankulam birds sanctuary-8.66 km, NE
16	Reserved / Protected Forests	Nil
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 Pudukkottai.
- ❖ 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.

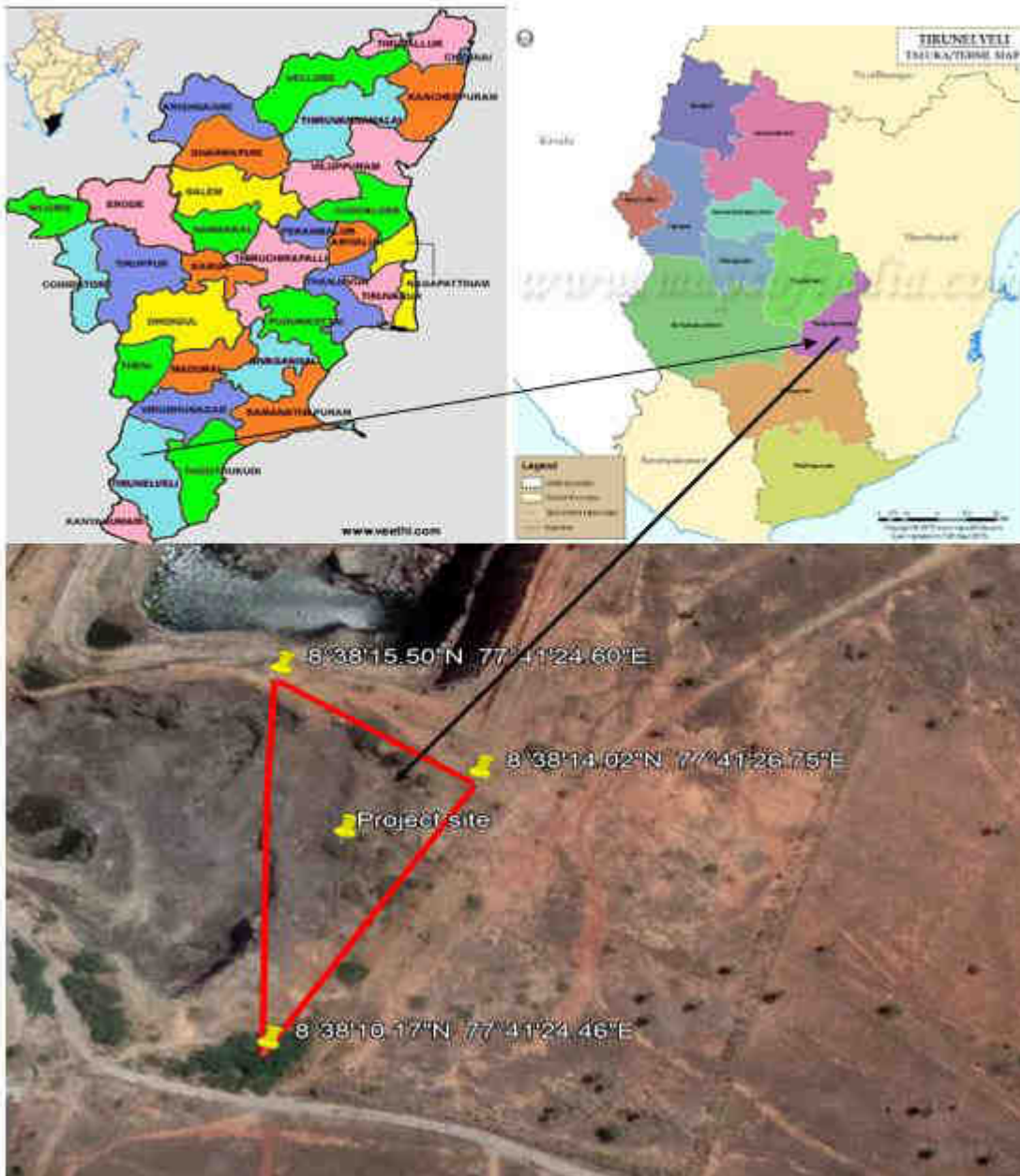


Figure 1: Location Map of the Project Site



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 based on the cross section method. The available geological reserve is estimated as 81,840 m³ of Rough Stone and 10,912 m³ of Gravel respectively. Availability of Resources is given below. The quarrying is restricted up to a depth of 17m below ground level only. Availability of Resources is given below.

Table 2. Geological resources

SECTION	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	124	44	2	10912	10912	
	124	44	15	81840		81840
Total					10912	81840

Table 3. Mineable Resources

SECTION	BENCH	LENGTH IN (M)	WIDTH IN (M)	DEPTH IN (M)	VOLUME IN M ³	MINEABLE RESERVES OF ROUGH STONE IN M ³
XY-AB	II	105	27	4.5	12758	12758
	III	95	17	5	8075	8075
	IV	85	7	5	2975	2975
Total						23808

The Available mineable reserve is computed as 23,808m³ of Rough stone upto a depth of 17m below ground level only.

Table 4. Year wise Production Plan

The applicant has proposed to carry out 23,808m³ of Rough stone at the rate of 100% recovery upto a depth of 17m below ground level for the period of five years only.

YEAR	SECTION	BENCH	LENGTH IN (M)	WIDTH IN (M)	DEPTH IN (M)	VOLUME IN M ³	MINEABLE RESERVE OF ROUGH STONE IN M ³
I	XY-AB	II	39	27	4.5	4739	4739
	Total						4739
II	XY-AB	II	39	27	4.5	4739	4739
	Total						4739
III	XY-AB	II	27	27	4.5	3281	3281
		III	17	17	5	1445	1445
	Total						4726
IV	XY-AB	III	56	17	5	4760	4760
	Total						4760
III	XY-AB	III	22	17	5	1870	1870
		IV	85	7	5	2975	2975
	Total						4845
Grand Total							23808

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 1.5 KLD. Domestic water will be sourced from nearby Ponnakudi Village and other water will be source from nearby road tankers supply.

Table 5. Water Balance

Purpose	Quantity	Source
Drinking Water	0.5KLD	Packaged Drinking water vendors available in Ponnakudi village which is about 1.03 Km SSE of the area
Green belt	0.5KLD	Other domestic activities through road tankers supply
Dust suppression	0.5KLD	From road tankers supply
Total	1.5 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	Operator	4No.
		Mechanic	1 No.
		Mines manager /Mate	1 No.
2.	Semi-Skilled	Driver	2 Nos
3.	Unskilled	Musdoor/ Labours	4 Nos
		Total =	12Nos

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	4.8 kg/day	Municipal bin including food waste
2	Inorganic	7.2 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	Tmt.D.Mercy Mery, W/o.Jebarajan, 54, Sivan West car Street, Palayamkottai	Tharuvai (V)	851	2.51.5	25.10.2017 to 24.10.2022
2	Tmt.D.Mercy Mery, W/o.Jebarajan, 54, Sivan West car Street, Palayamkottai	Tharuvai (V)	847	1.62.5	17.07.2018 to 16.07.2023
3	Thiru.Sankaranarayanan@ Sankaran, S/o.Arunachalam, 24-B, Pillamar Street, Tisaiyanvilai, Radhapuram taluk, Tirunelveli.	Tharuvai (V)	844, 848 & 849/2	2.36.5	17.07.2018 to 16.07.2023
Total extent of abandoned quarries				6.50.5	

2) Details of abandoned /Old Quarries

S. No.	Name of the Owner	Village & Taluk	S.F.Nos.	Extent in Hect.	Lease Period
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1.	A.S.Kumar, 52A/3, Thiruvananthapuram Road, Palayamkottai, Tirunelveli	Tharuvai(V)	855/2, 856, 857/1, 858/1,2,3, 859/2, 860/2	3.96.0	07.02.2012 to 06.02.2017
Total extent of abandoned quarries				3.96.0	

3) Details of Present Proposed quarries

S. No.	Name of the Owner	Village & Taluk	S.F.Nos.	Extent in Hect.	Lease Period
1.	Thiru.Joseph John Samuel, S/o.G.Jebarajan(late) 54, Chellathai Nagar, Mahilchi Nagar, Perumalpuram, Tirunelveli District.	Tharuvai(V)	S.F.No. 845/1B & 845/2B	Ext: 0.55.0 Hects	Under proposed quarry
2.	G.Jebarajan, No.54, Sivan west Car Street, Palayamkottai, Tirunelveli	Tharuvai(V)	S.F.No.1,2, 856/2, 858/1B, 2B, 3B	Ext: 2.63.0 Ha	Proposed quarry
3.	Thiru.K.Selvaraj, S.o.Kandasamy, 212A, Udankudi road, Tisayanvilai taluk, Tirunelveli District.	Tharuvai(V)	824/2, 825/2A, 825/2B, 826/1(P), 826/2(P), 842/2(P), 843, 845/1A and 845/2A(P),	4.45.20 Ha	Proposed quarry

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	Area in use during the quarrying period (Hect)
1.	Quarrying pit	0.31.0
2.	Infrastructure	0.01.0
3.	Mine Road	0.01.0
4.	Green belt	0.10.0
5.	Unutilized area	0.12.0
	Total	0.55.0

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.	Caussanelpuram	2.0km - NE	300
2.	Keelaomanallur	3.5km - NW	200
3.	Ponnakudi	1.0Km – SE	600
4.	Kandithankulam	1.5Km-SW	400

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 (38- 65 µg/m³), PM_{2.5} (16- 35 µg/m³), SO₂ (5-18 µg/m³), NO₂ (10-35 µg/m³), all the parameters are well within the standards prescribed by National Ambient Air Quality during the study period from December 2022 to February 2023.

13.3 Noise Environment

The maximum Day noise and Night noise were found to be 61 dB(A) and 47 dB(A) respectively in CSI St Thomas Church . The minimum Day Noise and Night noise were 43 dB(A) and 36 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 7.55 – 8.02.
- TDS value varied from 452 mg/l to 1245 mg/l
- Hardness varied from 226 to 507 mg/l
- Chloride varied from 86 to 350 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 7.47 to 8.59 with organic matter 0.31 to 0.65 %. 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 275 trees per annum with interval 5m.
4. The rate of survival expected to be 70% 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	70%	275
Total		275

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 46,20,000/-** 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	5,20,000/-
2	Operational Cost	41,00,000 /-
	Total	46,20,000/-

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.	Government Higher Secondary School Provision of <ul style="list-style-type: none">➤ Infrastructure, additional class room➤ Environmental books for library (in Tamil language),➤ Greenbelt facilities and➤ Basic amenities such as safe drinking water, Hygienic Toilets facilities, furniture.	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.