

April 2023

Executive Summary

**Thiru. V. Sivasubbu Rough Stone and Gravel Quarry-
0.50.58 Ha**

For

PUBLIC HEARING

At

**S.F Nos : 525/2(P) of Tharuvai Village, Palayamkottai Taluk,
Tirunelveli District, Tamil Nadu**

PROJECT PROPONENT

**Thiru. V. Sivasubbu,
S/o. Shri. Velu,
B4C, NGO B Colony,
Jawahar Nagar,
Palayamkottai Taluk,
Tirunelveli District
Pin Code: 627 011**

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

**Prepared By:
Ecotech Labs Pvt. Ltd.**



**NABET Accredited EIA Consultant
No.48, 2nd Main Road,
Ram Nagar South Extension,
Pallikaranai, Chennai-600100**

EXECUTIVE SUMMARY

1. Project Background

The Rough stone and Gravel quarry is proposed over an extent of **0.50.58 Ha** in **S.F. No. 525/2(P)** of **Tharuvai** Village, **Palayamkottai** Taluk, **Tirunelveli** District. As per 500m Radius letter obtained from Assistant Director, Geology and Mining Tirunelveli vide letter Rc.No.M1/8960/2018 mines dated 05.10.2020, the total cluster area is **13.72.08 Ha**.

The category of project is B1 (cluster). The lease area for quarry lease is almost Plain terrain and the area is covered by massive charnockite rough stone formation. which does not sustain any type of vegetation. The quarry operation is proposed to carry out with conventional open cast semi mechanized mining with 5.0 meter vertical bench and with a bench width of 5.0 meter. The Quarry operation involves shallow jack hammer drilling, slurry blasting, loading and transportation.

The quarry operation is proposed up to depth for 13 m below ground level. The Total Geological reserve is about 1,17,760 m³ of Rough Stone and 17,664 m³ Top soil with Gravel. The Mineable Reserves is estimated at 18,250 m³ of Rough Stone and 18,250 m³ Gravel to be mined for (Sixty months) Five years only.

Mining Plan was approved by The Joint Director/Assistant Director (i/c), Geology & Mining, Tirunelveli vide letter R.c. No. M1/19947/2014 dated 18.01.2021. 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 15 km.

2. Nature & Size of the Project

The proposed Rough stone quarry over an extent of 0.50.58 Hectares land is located Tharuvai Village of Palayamkottai Taluk, Tirunelveli District.

Mineral intends to quarry	: Rough stone and Gravel
District	:Tirunelveli
Taluk	: Palayamkottai
Village	: Tharuvai village
S.F.Nos	: 525/2(P)
Extent	: 0.50.58 hectares

Table 1: Brief Description of the Project

S. No	Particulars	Details
1	Latitude	08°38'36.78"N to 08°38'40.47"N
2	Longitude	77°40'46.12"E to 77°40'50.76"E
3	Site Elevation above MSL	53 m from MSL
4	Topography	Plain terrain
5	Land use of the site	Own patta land and non-agricultural land
6	Extent of lease area	0.50.58 Ha
7	Nearest highway	NH 44 (Srinagar Kanyakumari)- 2.37 km, E SH 40 (Tirunelveli- Shencottai Road) – 2.79 km N
8	Nearest railway station	Tirunelveli Junction Railway Station- 10.14 km, NE
9	Nearest airport	Tuticorin Domestic Airport – 39.22 km, NE
10	Nearest town / city	Tirunelveli – 11.44 km, NE
11	Rivers / Canal	<ul style="list-style-type: none">• Canal (Right of Tamilakurichi Dam) – 1.67 km SE• Pachaiyar River – 2.12 km, NW• Thamirabarani river- 2.95 km, NW• Canal (Left of Tamilkurichi Dam) – 3.44 km SW• Tirunelveli Channel – 4.97 km NW• Kodagan Channel – 7.17 km NW• Nainarkulam Channel – 7.36 km NW• Manimuthur canal – 9.71 km SE• Right Canal – 11.18 km SW• Canadian Canal – 12.13 km NW
12	Lakes/Dams	<ul style="list-style-type: none">• Brothers Lake, 2.28 km, E• Tamilakurichi Dam, 3.15 km, SW• Ponmathithan Kulam- 3.75 km NE• Nainar Kulam Lake, 9.50 km, NE• Elanthakulam Lake, 9.64 km, NE
13	Hills / valleys	Nil within 15 km radius
14	Archaeologically places	Nil within 15 km radius
15	National parks /Wildlife sanctuaries	Nil within 15 km radius
16	Reserved / Protected Forests	<ul style="list-style-type: none">• Muttur Malai (Wolf Hill) Reserve Forest – 8.55 km NE• Kolundumadai Reserve Forest- 11.82 km, SW

17	Seismicity	Proposed Lease area come under Seismic zone-II (low risk area)
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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 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.

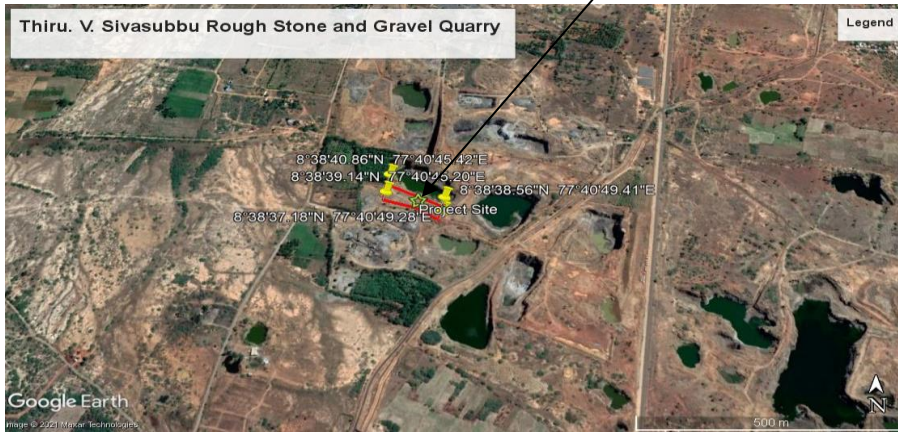
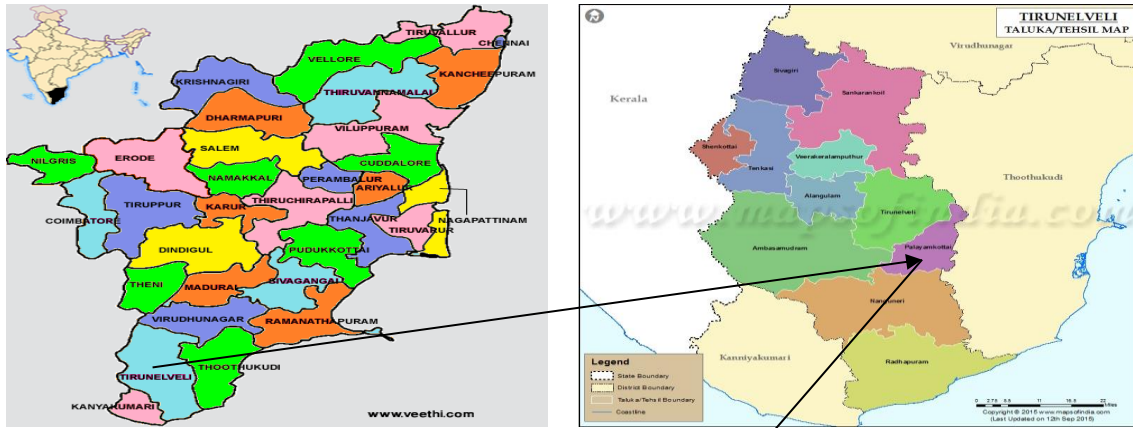


Figure 1: Location Map of the Project Site



Figure 2: Google Image of the Project Site

4. Charnokite

Generally, the Charnokite is grey to greenish colored, coarse to medium grained, greasy nature with or without garnet. Because of the limited outcrops, the quarry sections are studied to infer the various interrelationships between the litho units. Charnokite is interbanded nature with crystalline carbonate rocks are observed in most of the quarry in Tirunelveli, Weathering of the Charnokite on the surface gives a deceptive look of gneiss and in the quarry sections at depth the fresh charnockite is exposed, which are well exemplified in almost all the Charnokite quarry sections.

5. Geological Resources

The geological reserves have been calculated based on the cross-section method.

Table 2. Geological resources

SECTION	LENGTH (M)	WIDTH (M)	HEIGHT (M)	ROUGH STONE VOLUME (M ³)	TOP SOIL WITH GRAVEL VOLUME (M ³)
AA' & BB'	128	46	3.0	-	17,664
	128	46	20.0	1,17,760	-
TOTAL GEOLOGICAL RESERVES				1,17,760	17,664

Table 3. Year wise Production Plan

SECTION	LENGTH (M)	WIDTH (M)	HEIGHT (M)	ROUGH STONE VOLUME (M ³)	TOP SOIL WITH GRAVEL VOLUME (M ³)
AA' & BB'	30	28	3.0	-	2,520
	23	21	5.0	2,415	
	13	11	5.0	715	
First Year Excavation				3,130	2,520
AA' & BB'	30	21	3.0	-	1,890
	23	21	5.0	2,415	-
	13	21	5.0	1,365	-
Second Year Excavation				3,780	1,890
AA' & BB'	30	21	3.0	-	1,890
	23	21	5.0	2,415	-
	13	21	5.0	1,365	-
Third Year Excavation				3,780	1890
AA' & BB'	30	21	3.0	-	1,890

	23	21	5.0	2,415	-
	13	21	5.0	1,365	-
IV YEAR EXCAVATION				3,780	1890
AA' & BB'	30	21	3.0	-	1,890
	23	21	5.0	2,415	-
	13	21	5.0	1,365	-
V YEAR EXCAVATION				28,275	6,669
TOTAL FIVE YEARS PRODUCTION				18,250	10,080

6. Mining

Opencast mining

The quarry operation is proposed to carry out with conventional open cast semi mechanized mining with 5.0 meter vertical bench with a bench width of 5.0 meter. The Quarry operation involves shallow jack hammer drilling, slurry blasting, loading and transportation.

Process Description

- The reserves and resource are arrived based upon the Geological investigation
- Removal of Topsoil by Excavators and directly Loaded Into Tippers.
- Removal of Rough Stone by Excavators by Drilling and Blasting.
- Shallow Drilling With Jackhammer of 32-36mm Dia.
- Minimum Blasting With Class 2 Explosives.
- Loading of Rough Stone By Excavators Into Tippers.

7. Water Requirement

Total water requirement for the mining project is 1.5 kLD. The 90% water will be required for the suspension of dust and green belt development domestic water will be sourced from nearby Tharuvai Village (NW) and other water will be source from nearby road tankers supply.

Table 4. Water Balance

Purpose	Quantity	Sources
Drinking Water	0.5KLD	Packaged Drinking water vendors available in Tharuvai village which is about 3.10 km NW from the
Green belt	0.5KLD	Other domestic activities through road tankers
Dust suppression	0.5KLD	From road tankers supply

Total	1.5 KLD	
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8. Man Power

Total manpower required for the project is approximately 7 persons. Workers will be from nearby villages.

Table 5. Man Power Requirement

1.	Skilled	Operator	2 No.
		Mines Manager/Mate	1 No.
2.	Semi – skilled	Driver	2 No
3.	Unskilled	Musdoor / Labors	2 No
	Total		07 Nos

No child less than 21 years will be entertained during quarrying operations.

9. Solid Waste Management

Table .6 Solid Waste Management

S.No	Type	Quantity	Disposal Method
1	Organic	1.3 kg/day	Municipal bin including food waste
2	Inorganic	1.9 kg/day	TNPCB authorized recyclers

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

Table.7 500m Radius Cluster Mine

1) Existing quarries:

S. No.	Name of the lessee / Permit Holder	Village & SF.No.	Extent	Lease Period
1.	S. Shankar, S/o.Subramanian, 131/1, A.P.T Road, Erode-638 003.	Tharuvai (v) & SF.No.524(P)	1.60.0	Proceeding No.M1/43375/2015, dt.31.03.2018 for a period 5 years from 17.04.2018 to 16.04.2023
2.	P. Marimuthu, S/o.Petchithevar, Ponnakudi,	Tharuvai (v) & SF.Nos.522/1,	4.73.5	Proceeding No.M1/36802/2014, dt.22.03.2018 for a period 5

	Palayamkottai Taluk, Tirunelveli.	522/2, 534 & 535(P)		years from 19.04.2018 to 18.04.2023
3.	Sri Durgambika Blue Metals, Seevalaperi, Palayamkottai Taluk, Tirunelveli District.	Tharuvai (v) & SF.No.570(P)	1.38.5	Proceeding No.M1/3390/2017, dt.18.07.2018 lease transferred to Sri Durgambika Blue Metals vide proceedings in M3/6065/2019, dated 02.03.2019 for a period of 5 years from 24.07.2018 to 23.07.2023
Total extent of existing quarries			7.72.0	

2) Abandoned Quarries:

S. No.	Name of the applicant	Village & SF.No.	Extent	Lease Period
1.	V. Sivasubbu, S/o. Velu, B4C, N.G.O 'B' Colony, Jawahar Nagar, Palayamkottai, Tirunelveli District.	Tharuvai (v) & SF.Nos. 525/1, 525/2, 530/2, 530/3B	1.40.0	Proceeding No.M1/84390/2008, dt.10.02.2009 for a period 5 years from 28.05.2009 to 27.05.2014
2.	S. Subbaiah, S/o. Sorna Thevar, Seevalaperi, Palayamkottai Taluk, Tirunelveli District.	Tharuvai (v) & SF.Nos. 568/1, 569/1B)	2.63.5	Proceeding No.M1/41558/2011, dt.02.01.2012 for a period 5 years from 07.02.2012 to 06.02.2017
3.	M. Murugaiah, S/o. Muthaiah Thevar, 2/72, West Street, Palayamkottai Taluk, Tirunelveli	Tharuvai (v) & SF.Nos. 527 (P), 528/1B, 529/1A & 529/3B	4.81.0	Proceeding No.M1/63874/2011, dt.22.07.2012 for a period 5 years from 22.07.2012 to 21.07.2017
Total extent of abandoned quarries			8.84.5	

3) Proposed Quarries:

S. No.	Name of the applicant	Village & SF.No.	Extent	Lease Period
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1.	V. Sivasubbu, S/o. Velu, B4C, N.G.O 'B' Colony, Jawahar Nagar, Palayamkottai, Tirunelveli	Tharuvai (v) & SF.No. 525/2(P)	0.50.58	Proposed Quarry
2.	Sri Durgambika Blue Metals, Seevalaperi, Palaymkottai Taluk, Tirunelveli District.	Tharuvai (v) & SF.Nos. 570(P) & 571(P)	1.95.5	Proposed Quarry
3.	S. Satheesh, S/o.Subramanian, 133, Erode.	Tharuvai (v) & SF.No. 523	1.97.5	Proposed Quarry
4.	Murugaiah, S/o. Muthaiah, 2/72, Mela Theru, Thirumalaikozhunthupuram, Palayamkottai Taluk, Tirunelveli.	Tharuvai (v) & SF.No. 529/1A	1.56.50	Proposed Quarry
Total extent of proposed quarries			6.00.8	

10. Land Requirement

The total extent area of the Existing project is 0.50.58 Ha, Own patta land in Tharuvai Village of Palayamkottai Taluk, Tirunelveli District.

Table 8. Land Use Breakup

Sl. No.	Land Use	Present Area (Hect)	Area in use during the quarrying period (Hect)
1.	Quarrying Pit	0.00.0	0.30.28
2.	Infrastructure	Nil	0.01.0
3.	Roads	0.00.0	0.02.0
4.	Green Belt	Nil	0.17.30
5.	Unutilized	0.50.58	0.00.0
Total		0.50.58	0.50.58

11. Human Settlement

There are no habitations within 500m radius. There are villages located in this area within 5km radius of the quarry.

Table.9 Habitation

S.No	Direction	Village	Distance	Population
1	North east	Araikulam	1.0 Km	800
2	South	Kandithankulam	2.0 Km	900
3	South west	Keela Omanallur	2.0 Km	600
4	North	Tharuvai	1.0 Km	1000

12. Power Requirement

The Rough stone quarry project does not require huge water and electricity for the project.

16 Litre diesel per hour for excavator for mining and loading for Rough stone needed.

13.Scope of the Baseline Study

The 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 : 32 °C
- ii) Average Maximum Temperature. : 36 °C
- iv) Average Annual Rainfall of the area : 700-800 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 over a period of Post Monsoon Season. 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 (39-63 µg/m³), PM2.5 (18-30 µg/m³), SO₂ (4-19µg/m³), NO₂ (9-32 µg/m³), all the parameters are well within the standards prescribed by National Ambient Air Quality during the study period from October 2021 to December 2021.

13.3 Noise Environment

Ambient noise levels were measured at 5 locations around the proposed project site. The maximum Day noise and Night noise were found to be 65 dB(A) and 48 dB(A) respectively in the project site. The minimum Day Noise and Night noise were 55 dB(A) and 42 dB(A) respectively which was observed in CSI Christ Church, Moondradaippu. The observed values are all well within the Standards prescribed by CPCB.

13.4 Water Environment

- The average pH ranges from 6.65-8.15.
- TDS value varied from 115 mg/l to 705 mg/l
- Hardness varied from 60 to 296 mg/l
- Chloride varied from 21.5 to 225 mg/l

13.5 Land Environment

The analysis results show that soil is neutral in nature as pH value ranges from 6.56 to 8.05 with organic matter 0.07 % to 0.12 %. 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 private 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 , Pungam, Naval etc will be planted along the lease boundary and avenues as well as over Non-active dumps at a rate of 51 trees per annum with interval 5m.
4. The rate of survival expected to be 70% in this area.

Table.10 Plantation/ Afforestation Program

Name of the 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%	255
Total		255

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 10,35,080** 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 .11 Project Cost details

S.No.	Description	Cost
1	Fixed Asset Cost	Rs. 50,000
2	Operational cost	Rs.9,85,080
	Total	Rs. 10,35,080/-

Environmental Management Cost : Rs. 20,68,885/-

20. Corporate Environmental Responsibility

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

Table 12 CER Cost

S.No.	CER Activity	CER project cost (Rs)
1.	Government School in Tharuvai Village <ul style="list-style-type: none"> ➤ RO Water facility ➤ Developing Sports facilities ➤ Environmental awareness books in Library for Students, ➤ Green belt development ➤ Toilet rooms and maintenance of Toilet rooms up to 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.