February

2022

Executive Summary

Proposed Rough stone and Gravel quarry- 1.05.0 Ha

For

PUBLIC HEARING

At

S.F.No. 909,911/2 (P) in Panaiyadipatti Village, Vembakottai Taluk, Virudhunagar District, Tamil Nadu State

Project Proponent
Thiru.A.Subbaraman
S/o Shri.Ayyappan
No.411-F, Kalugumalai Road,
Thiruvenkadam Post,
Tenkasi District-627719

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

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EXECUTIVE SUMMARY

1. Project Background:

The Proposed Rough stone and Gravel quarry over an extent of 1.05.0 Ha, Own patta land in S.F Nos : 909, 911/2 (Part) in Panaiyadipatti Village of Vembakottai Taluk, Virudhunagar District. The category of project is B1 (cluster), The lease area plain terrain which is covered by weathered rock formation and massive charnockite rock formation.

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.

The quarry operation is proposed up to depth for 27.0m below ground level. The Total Geological reserve is about 2,53,950 m3 of Rough stone and 20,316 m3 of Gravel. The Mineable Reserves is and Proposed Yearwise production is carried out 92,950 m3 of Rough stone and Gravel is 14,458 m3 of reserves to be mined for (Sixty months) Five years only.

Mining plan was approved, Roc.No.KV1/388/2019, dated 27.10.2020 by Deputy a Director, Geology and Mining Virudhunagar from the date of execution of lease dead. 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 Proposed Rough stone and Gravel Quarry over an extent of 1.05.0 Hectares patta land is located Panaiyadipatti Village of Vembakottai Taluk, Virudhunagar District.

Mineral intends to quarry	: Rough stone and Gravel
District	: Virudhunagar
Taluk	: Vembakottai
Village	: Panaiyadipatti
S. F. Nos.	: 909, 911/2 (Part)
Extent	: 1.05.0 Hectares

Table 1: Brief Description of the Project

S. No	Particulars	Details
1	Latitude	09^0 18' 46.48" to 09^0 18' 50.64" N
2	Longitude	77^0 49' 44.80" to 77^0 49' 49.37" E
3	Site Elevation above MSL	115 m from MSL
4	Topography	Plain terrain
5	Land use of the site	Own Patta land
6	Extent of lease area	1.05.0 Ha
7	Nearest highway	NH 44 -Kanyakumari to Srinagar –9.69 km towards Eastern side. SH 187 Sivakasi to Sattur road – 7.3 km W side
8	Nearest railway station	Sattur Railway Station – 11.15 km, NE
9	Nearest airport	Madurai Airport – 65 km, NE
10	Nearest town / city	Town – Sattur – 10.55 Km - NE
11	Rivers / Canal	Vaippar River – 2.60 Km N
12	Lake	Vaippar Dam – 8.70 Km NW Karisalpatti Lake – 6.50 Km SE Moonpanapatti lake – 14.1 Km SE
13	Hills / valleys	Nil in 15 km radius
14	Archaeologically places	Nil in 15 km radius
15	National parks / Sanctuaries	Nil in 15 Km radius
16	Reserved / Protected Forests	Nil in 15 Km radius
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 extracted will be transported to be Stone crusher of district Virudhunagar.
- 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.

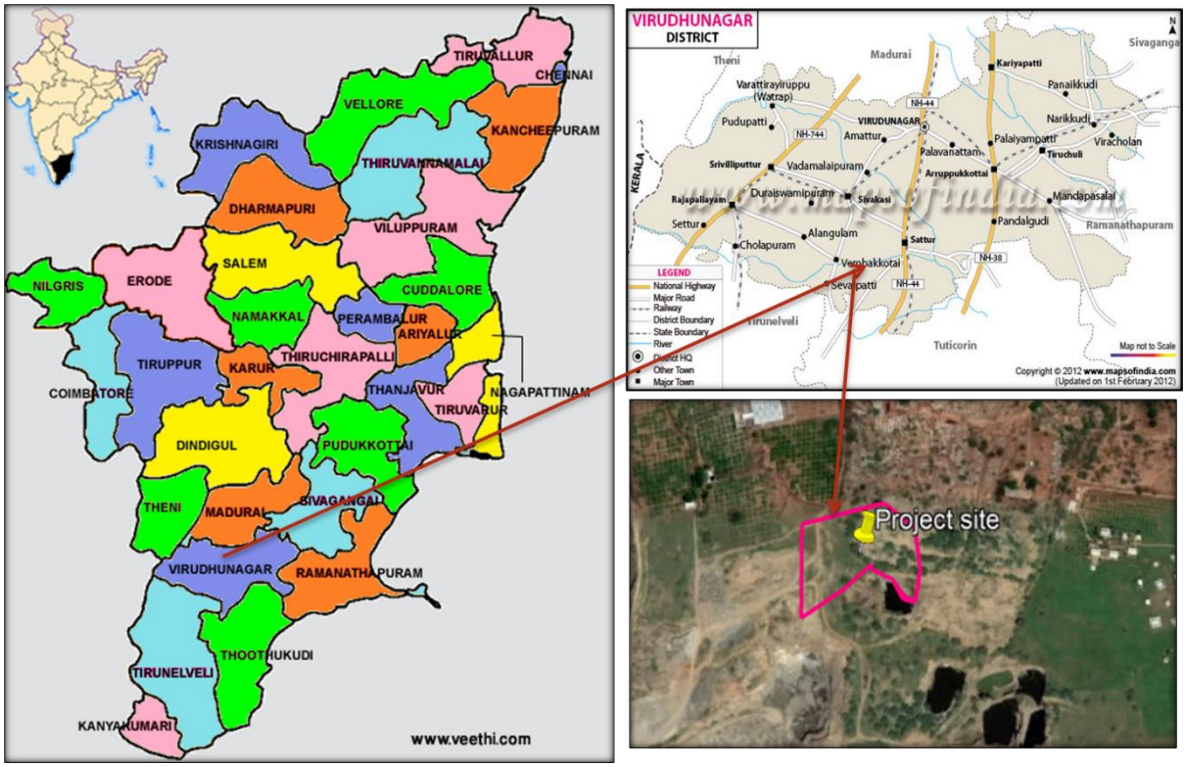

Figure 1: Location Map of the Project Site

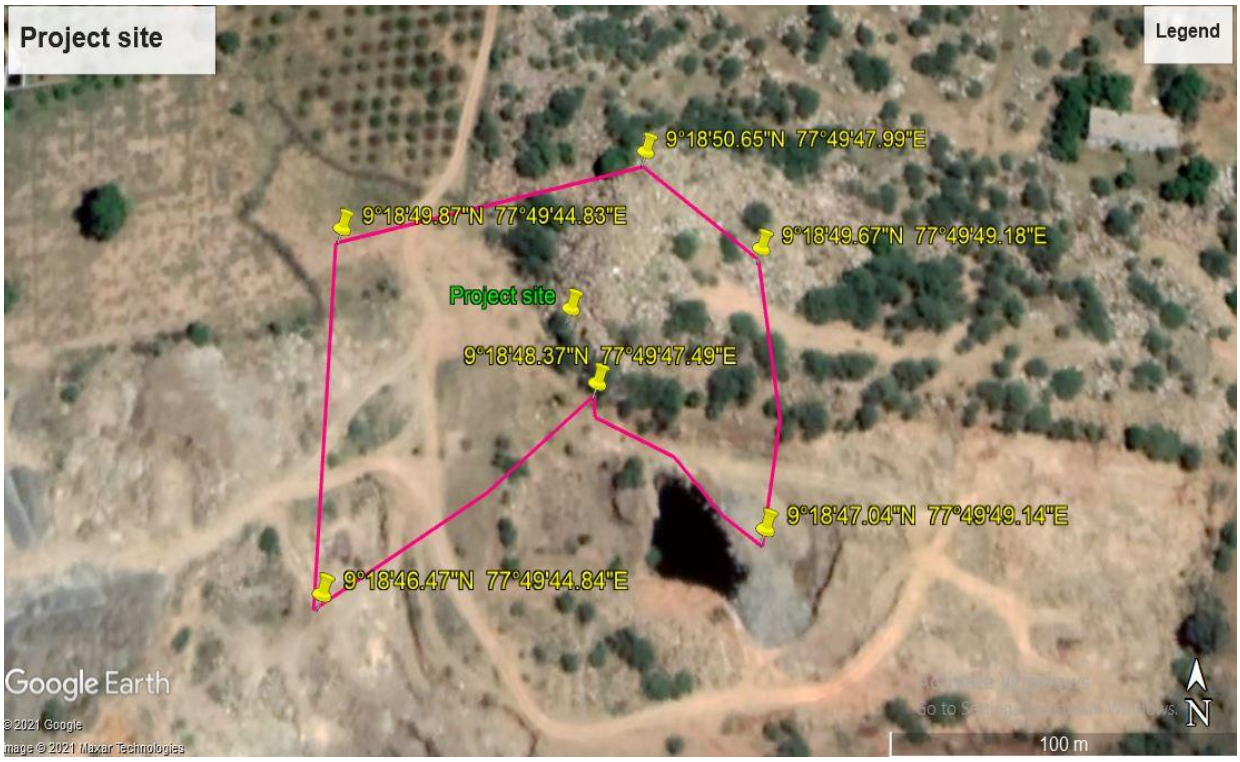

Figure 2: Google Image of the Project Site

4. Charnokite

Generally, the Charnockite 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. Charnockite is interbanded nature with crystalline carbonate rocks are observed in most of the quarry in Pandalgudi, Lakshmipuram, Gopalapuram, Sundakottai chinnakamanpatti, Weathering of the Charnockite 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 Charnockite quarry sections.

5. Geological Resources

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

Table 2. **Geological Resources**

SECTION	LENGT (M)	WIDTH (M)	HEIGHT (M)	ROUGH STONE VOLUME (M^3)	TOP SOIL with GRAVEL VOLUME (M^3)
A-A'– B-B'	84	76	2.0	-	12,768
	84	76	25	1,59,600	-
A-A'– C-C'	74	51	2.0		7,548
	74	51	25	94,350	
TOTAL GEOLOGICAL RESERVES				**2,53,950**	**20,316**

Table 3. Year wise Production Plan

SECTION	LENGTH (M)	WIDTH (M)	HEIGHT (M)	ROUGH STON VOLUME (M^3)	TOP SOIL WITH GRAVELVOLUME (M^3)
A-A'– B-B'	63	69	2	-	8,694
	58	64	5	18,560	
I YEAR EXCAVATION				**18,560**	**8,694**
A-A'– B-B'	5	69	2	-	690
	8	64	5	2,560	
A-A'– C-C	59	43	2	-	5,074
	54	41	5	11,070	
	23	44	5	5,060	
II YEAR EXCAVATION				**18,690**	**5,764**
A-A'– C-C	13	44	5	2,860	-
A-A'– B-B'	61	54	5	16,470	-
III YEAR EXCAVATION				**19,330**	**-**
A-A'– C-C	56	44	5	12,320	-
A-A'– B-B'	34	31	5	5,270	-

IV YEAR EXCAVATION				**17,590**	**-**
A-A'– B-B'	51 46	34 24	5 5	8,670 5,520	-
A-A'– C-C	24 14	26 21	5 5	3,120 1,470	
V YEAR EXCAVATION				**18,780**	**-**
TOTAL FIVE YEARS PRODUCTION				**92,950**	**14,458**

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 Diamond wire saw cutting, 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 1.3 KLD. Domestic water will be sourced from nearby Panaiyadipatti Village which is 0.80 km NW and other water will be source from nearby road tankers supply.

Table 4. Water Balance

Purpose	Quantity	Source
Drinking Water	0.3 KLD	Packaged Drinking water vendors available in Panaiyadipatti village which is about 0.80 km NW from the project site
Green belt	0.5 KLD	Other domestic activities through road tankers supply.
Dust suppression	0.5 KLD	From road tankers supply.
Total	**1.3 KLD**	

8. Man Power

Total manpower required for the project is approximately 12 persons. Workers will be from nearby villages.

Table 5. Man Power

	Skilled	Operator	4
		Mechanic	1
		Mines Manager/Mate	1
	Semi skilled	Driver	2
	Unskilled	Musdoor/Labours	4
Total			12 Nos

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

9. Solid Waste Management

Table 6 Solid Waste Management

S. No	Type	Quantity	Disposal Method
1	Organic	3.24 kg/day	Municipal bin including food waste
2	Inorganic	2.16 kg/day	TNPCB authorized recyclers
Total		5.4 kg/day	

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

Table.7 500m Radius Cluster Mine

1) Existing other quarries:

S. No.	Name of the owner	Village	S. F. No.	Extent
1.	M.Paramasivam	Panaiyadipatti	913	1.73.5
2.	Thiru.A.Subbaraman	Panaiyadipatti	662/1, 665/1 etc	1.09.5
3.	P.Padmavathi	Panaiyadipatti	979	3.43.5
4.	V.Balakirshnan	Panaiyadipatti	973 part	1.21.5

2) Expired Area:

S. No.	Name of the owner	Village	S. F. No.	Extent
1.	Thiru.A.Subbaraman	Panaiyadipatti	908,914	2.93.0

2.	Thiru.V.N.P Gomathisankara Narayanan	Panaiyadipatti	878/1,2	1.13.5
3.	Thiru.S.Theiva pandian	Panaiyadipatti	883/1	1.03.5
4.	A.Gunasekaran	Panaiyadipatti	898 & 899	1.69.5
5.	Thiru.A.K.A Rajan	Panaiyadipatti	881 part	2.88.0

3) Proposed Area:

S. No.	Name of the owner	Village	S. F. No.	Extent
1.	Thiru.A.Subbaraman	Panaiyadipatti	909, 911/2 Part	1.05.0

The Total extent of the Existing / Lease expired / Proposed quarries are 18.20.5 Ha

10. Land Requirement

The total extent area of the project is 1.05.0 Ha, Own Patta land in Panaiyadipatti Village of Vembakottai Taluk, Virudhungar District

Table.8 Land Use Breakup

Description	Present Area (Ha.)	Area to be required at the present scheme period (Ha)
Area under Quarry	Nil	0.42.0
Infrastructure	Nil	0.01.0
Roads	Nil	0.02.0
Green Belt	Nil	0.60.0
Unutilized Area	1.05.0	0.00.0
Grand Total	**1.05.0**	**1.05.0**

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	Name of the Village	Approximate Distance	Approximate population
1	NE	Kandiyapuram	0.65 km	1000
2	NW	Panaiyadipatti	0.67 km	3005
3	SE	Kangarakottai	0.70 km	5302
4	SW	Marakanathapuram	1.0 km	1200

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 and 10 litre for Gravel needed.

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 : 30^0C

ii) Average Maximum Temperature. : 38.5^0C

iii) Average Relative Humidity (%) : 65 to 85 %

iv) Average Annual Rainfall of the area : 1061.3 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 (59-36 µg/m³), PM2.5 (25-12 µg/m³), SO2 (18-13µg/m³), NO2 (22-9 µg/m³), all the parameters are well within the standards prescribed by National Ambient Air Quality during the study period from June to August 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 54 dB(A)and 46 dB(A) respectively in Kangarakottai and Eravarpatti village. The minimum Day Noise and Night noise were 41 dB(A)and 35 dB(A) respectively which was observed in Eravarpatti and Manjolaipatti village

13.4 Water Environment

- The average pH ranges from 7.09 - 7.55.
- TDS value varied from 286 mg/l to 1518 mg/l
- Hardness varied from 159 to 857 mg/l
- Chloride varied from 27.4 to 396 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 7.38 to 8.11 with organic matter 0.08 % to 0.34 %. 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 50 trees per annum with interval 5m.
4. The rate of survival expected to be 80% in this area

Table.10 Plantation/ Afforestation Program

Year	Name of species	Place of planted	No of species	Spacing	Survival
2022	Neem/Pungam	North	50	5m	80%
2023	Naval	South	50	5m	80%
2024	Poovarasu/Pungam	East	50	5m	80%
2025	Naval/Pungam	South	50	5m	80%
2026	Neem	West	50	5m	80%
Total			**250**		

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 46,67,760** 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	Project Cost	60,000
2	Expenditure Cost	42,47,760
3	EMP Cost	3,80,000
	Total	**46,67,760**

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 2% of the project cost (Rs.)
1.	Developing Sports facilitates and Providing Toilet, Water Filter facilities to Government Schools in Panaiyadipatti Village	**93,000**

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.