September 2023

Executive Summary for Conducting Public Hearing

FOR

"Tmt.S.Azhagu Rough Stone and Gravel Quarry over a total extent of 0.61.0 Ha"

At

S.F.No. 543/3A in Thulaiyanur Village, Thirumayam Taluk, Pudukkottai District, Tamil Nadu State

Project Proponent:

Tmt.S.Azhagu,
W/o. Sanmugam,
No.2/43-A, Thulaiyanur,
Melur Post, Thirumayam Taluk,
Pudukkottai District – 622 507

Project termed under schedule 1(a) Category B_1

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EXECUTIVE SUMMARY

1. Project Background:

The New Rough Stone Quarry over an extent of 0.61.0 Ha, Patta land (Consent registered) S.F.No: 543/3A of Thulaiyanur Village, Thirumayam Taluk, Pudukkottai District. The category of the project is B1 (cluster), The lease applied area is exhibits Plain terrain topography covered by gravel and rough stone formation and does not sustain any type of vegetation.

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

The quarry operation is proposed up to depth for 13.0m (Max) (Topsoil 3.0m & Rough stone 10.0m). The Total Geological reserve is about 18,522m^3 of Gravel and 4,01,310m^3 of Rough Stone. The Mineable Reserves are 11,118m^3 of Gravel and 25,250m^3 of Rough stone. Production schedule is proposed an average production of 11,118m^3 of Gravel and 25,250m^3 of rough stone for (Sixty months) Five years only.

The mining plan was approved by Geology and Mining department of Pudukkottai district letter vide no. Rc.No.580/2022 (G&M) Mines dated 15.11.2022 from the date of execution lease dead. The project area does not fall in Hill Area Conservation Authority region. There is no interstate boundaries, CRZ zone, Western Ghats, notified Bird sanctuaries, wildlife sanctuaries as per Wildlife protection Act 1972, within the radius of 15Km.

2. Nature & Size of the Project

The New Rough Stone and Gravel Quarry over an extent of 0.61.0 Hectares land is located Thulaiyanur Village of Thirumayam Taluk, Pudukkottai District.

Mineral intends to quarry	: Rough stone and Gravel.
District	: Pudukkottai
Taluk	: Thirumayam
Village	: Thulaiyanur
S. F. Nos.	: 543/3A
Extent	: 0.61.0 Hectares

Table 1: Brief Description of the Project

S. No	Particulars	Details
1	Latitude	10°12'32.75"N to 10°12'35.37"N
2	Longitude	78°42'32.49"E to 78°42'36.83"E
3	Site Elevation above MSL	118.0m above MSL.
4	Topography	Plain terrain
5	Land use of the site	Patta land (Consent registered)
6	Extent of lease area	0.61.0 Ha
7	Nearest highway	NH 36 – Manamadurai to Thanjavur Road – 0.77 Km - SE SH 201 – Namanasamudram to Ponnamravathi Road – 11.94 Km - SW
8	Nearest railway station	Thirumayam Railway Station – 6.40 km - NE
9	Nearest airport	Tiruchirapalli International Airport – 60.75 km - N
10	Nearest town / city	Town - Thirumayam – 5.10 km - NE City - Pudukkottai – 20.04 km - NE District - Pudukkottai – 20.04 km - NE
11	Rivers / Canal	Nil within 15km radius
12	Lake/Pond	❖ Kothai Kanmai – 180m – NE ❖ Melaparali Kanmai – 200m – SE ❖ Valayan Kanmai – 470m – NW ❖ Ammapatti Pudukanmai – 350m - S ❖ Olaikudipatti Lake – 5.27 Km – NE ❖ Oonaiyur Big Tank – 6.17 Km - E ❖ Vinayakar Temple Pond – 2.65 Km – NW ❖ Vengai Lake – 5.68 Km – NE ❖ Aalathikkanmai – 7.83 Km – S ❖ Vadakudipatty Kanmai – 7.53 Km – SE ❖ Thenkudi Irrigation Tank – 7.78 Km – SE ❖ Thiruvalakanmai – 8.84 Km – NW ❖ Palaiya Athangudi Kanmai – 4.35 Km - S
13	Hills / valleys	Nil in 15 km radius
14	Archaeologically places	❖ Stone and Brick Fort - Thirumayam – 6.21 Km – NE

		❖ Rock-cut Siva Temple (Satyagiriswara shrine) – Thirumayam – 6.19 Km - NE ❖ Rock-cut Vishnu Temple (Satyamurti shrine) – Thirumayam – 6.30 Km - NE ❖ Jain Tirthangara Idol – Kannangaraikudi – 10.19 Km – E ❖ Rock-cut Temples with inscriptions, Kunnakudi – 10.57 Km – S
15	National parks / Wildlife Sanctuaries	❖ Vettangudi Birds Sanctuary – 24.25 Km - SW
16	Reserved / Protected Forests	❖ Thulaiyanur RF – 1.412 Km - SWW
17	Seismicity	Proposed Lease area come under Seismic zone-II (Moderate risk area)

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 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.

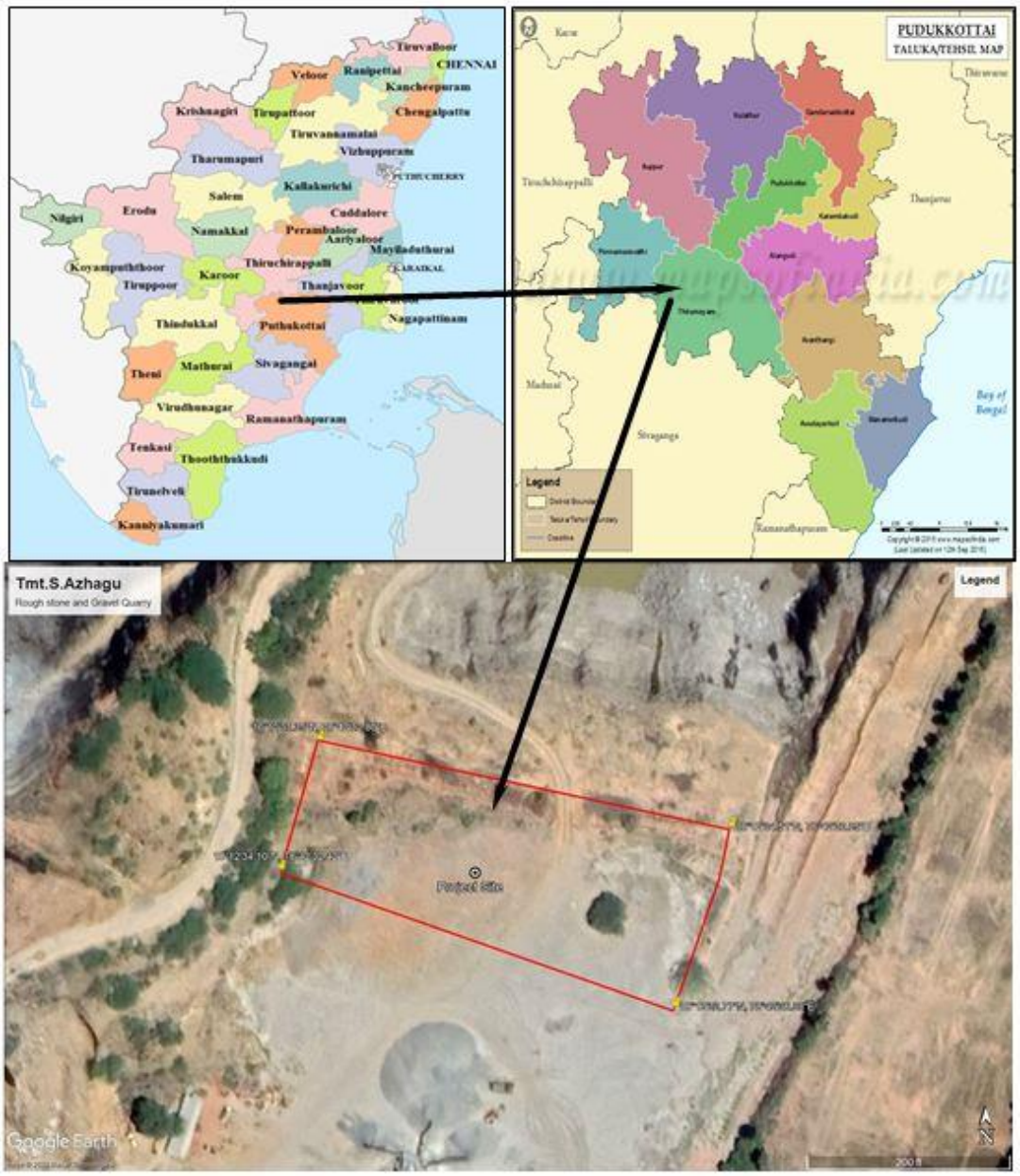

Figure 1: Location Map of the Project Site

Figure 2: Google Image of the Project Site

4. Charnockite

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 the areas of Kunnandavarkoil, Thirumayam, Thirumayam, 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 Resources is estimated as 4,01,310m^3 of Rough stone & 18,522m^3 Gravel up to a depth of 68.0m (3.0m Gravel & 65m Rough stone).

Table 2. Geological resources

GEOLOGICAL RESOURCES						
Section	**Length in (m)**	**Width in (m)**	**Depth in (m)**	**Volume m^3**	**Geological Resources of Gravel in m^3**	**Geological Resources of Rough stone in m^3**
XY-AB	126	49	3	18522	18522	
	126	49	65	401310		401310
TOTAL					**18522**	**401310**

Table 2.1 Mineable Resources

MINEABLE RESERVES							
Section	**Bench**	**L (m)**	**W (m)**	**D (m)**	**Volume in m³**	**Gravel Formation in m³**	**Mineable Reserves of Rough stone in m³**
XY-AB	118-115	109	34	3	11118	11118	
	115-110	105	30	5	15750		15750
	110-105	95	20	5	9500		9500
	105-100	85	10	5	4250		4250
GRAND TOTAL						**11118**	**29500**

Table 3. Year wise Production Plan

YEARWISE DEVELOPMENT & PRODUCTION RESERVES								
Year	**Section**	**Bench**	**L (m)**	**W (m)**	**D (m)**	**Volume in m³**	**Gravel Formation in m³**	**Recoverable Reserves of Rough stone in m³**
I	XY-AB	118-115	109	17	3	5559	5559	
		115-110	105	12	5	6300		6300
TOTAL							**5559**	**6300**
II	XY-AB	118-115	109	17	3	5559	5559	
		115-110	105	12	5	6300		6300
TOTAL							**5559**	**6300**
III	XY-AB	115-110	105	6	5	3150		3150
		110-105	95	6	5	2850		2850
TOTAL								**6000**
IV	XY-AB	110-105	95	14	5	6650		6650
TOTAL								**6650**
GRAND TOTAL							**11118**	**25,250**

6. Mining

Opencast mining

The quarry operation is proposed to carry out with conventional open cast mechanized mining with 5.0meter 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 32mm 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 2.5 KLD. Domestic water will be sourced from nearby Thuaiyanur Village and other water will be source from nearby road tankers supply.

Table 4. Water Balance

Purpose	Quantity	Sources
Drinking Water	1.0 KLD	Packaged Drinking water vendors available in Thuaiyanur village which is about 1.37 km NNW 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	**2.0 KLD**	

8. Manpower

Total manpower required for the project is approximately 18 persons. Workers will be from nearby villages.

Table 5. Man Power

1.	Skilled	Operators	3 Nos
2.	Semi – skilled	Drivers	3 Nos
3.	Unskilled	Musdoor/Labours Cleaners & Office Boy	8 Nos
4.	Management & Supervisory staff (Second Class Mines Manager, Mines Foreman, Mines Mate and Blaster)		4 Nos
Total			**18 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	4.86 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 other quarries:

S. No.	Name of the lessee / Permit Holder	Village & Taluk	S. F. No.	Extent	Lease Period
1.	Thiru.S.Ramaiah, S/o.Sangarapillai, Thulaiyanur village, Thirumayam Taluk, Pudukottai District.	Thulaiyanur & Thiurmayam	409 (Q.No.2)	0.72.0	14.11.2018 to 13.11.2023
2.	Thiru.S.Ramaiah, S/o.Sangarapillai, Thulaiyanur village, Thirumayam Taluk, Pudukottai District.	Thulaiyanur & Thiurmayam	409 (Q.No.3)	0.70.0	14.11.2018 to 13.11.2023
3.	M/s.Eswar Enterprises, No.1, Nakkeerar street, Karaikudi, Sivagangai Dt	Thulaiyanur & Thiurmayam	409 (Q.No.4)	0.67.0	21.02.2020 to 20.02.2025

2) Proposed Area:

S. No.	Name of the applicant	Village & Taluk	S. F. No.	Extent
1.	Tmt.S.Azhagu, W/o.Sanmugam, No:2/43-A, Thulaiyanur, Thulaiyanur Post, Thirumayam Taluk, Pudukottai Dt.	Thulaiyanur & Thiurmayam	543/3A	0.61.0
2.	Thiru.A.Chinniah, S/o.Alagappan, No.217, Thulaiyanur, Thiurmayam Taluk, Pudukottai District.	Thulaiyanur & Thiurmayam	407/2	0.75.5

3) Lease Expired:

S. No.	Name of the lessee/ Permit Holder	Village & Taluk	S. F. No.	Extent	Lease Period
1.	R.M.Subbiah	Thulaiyanur & Thiurmayam	543 (pt)	1.21.5	23.01.2014 to 22.0012.2019
2.	Tmt.C.Chitra, W/o. AL.Chinniah,	Thulaiyanur & Thiurmayam	407/2 (Part)	0.70.0	20.09.2011 to 19.09.2016
3.	Valaiyanvayal Grama Kalludaikum Thozhilalargal Nala Sangam, Valaiyanvayal.	Thulaiyanur & Thiurmayam	432/2 (Q.No.1) (Govt Land)	0.40.0	30.10.2017 to 29.10.2022
4.	Thiru.K.Ramaiah	Thulaiyanur & Thiurmayam	409 (Part)	1.20.0	30.08.2017 to 29.08.2022
5.	Thiru.K.Subbiah	Thulaiyanur & Thiurmayam	432/2 (P) (Q.No.1) (N) (Govt. Land)	0.50.0	20.01.2017 to 19.01.2022

The Total extent of the Existing / Lease expired / Proposed quarries are 5.45.5 Ha.

10. Land Requirement

The total extent area of the project is 0.61.0 Ha, Own Patta land in Thulaiyanur Village of Thirumayam Taluk, Pudukkottai District.

Table 8 Land Use Breakup

S. No.	Land Use	Present Area (Hect)	Area in use during the quarrying period (Hect)
1.	Quarrying Pit	Nil	0.36.0
2.	Infrastructure	Nil	0.02.0
3.	Roads	Nil	0.02.0
4.	Green Belt	Nil	0.20.9
5.	Unutilized Area	0.61.0	0.00.1
	Total	**0.61.0 Ha**	**0.61.0 Ha**

11. Human Settlement

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

Table 9 Habitation

SL. NO.	DIRECTION	VILLAGE	DISTANCE	POPULATION
1	E	Parali	0.92 Km	260
2	SSW	Vengalur	2.17 Km	150
3	W	Valayanvayal	0.88 Km	280
4	NNW	Thulaiyanur	1.37 Km	350

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

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 : 3 3.7 ^{0}C

ii) Average Maximum Temperature. : 2 4 ^{0}C

iii) Average Annual Rainfall of the area : 922.8 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 PM_{10} (67 – 41 µg/m³), $PM_{2.5}$ (34 - 16 µg/m³), SO_2 (21 – 6 µg/m³), NO_2 (41 -11 µg/m³), all the parameters are well within the standards prescribed by National Ambient Air Quality during the study period from January to March 2023.

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 53 dB(A) respectively in S.M.S.Hr.Sec.School, Kilasevalpatti. The minimum Day Noise and Night noise were 57 dB(A) and 38 dB(A) respectively which was observed in Project Site.

13.4 Water Environment

- The average pH ranges from 6.81 - 7.99.
- TDS value varied from 392 mg/l to 784 mg/l
- Hardness varied from 188 to 357 mg/l
- Chloride varied from 25.4 to 182 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 6.77 to 7.43 with organic matter 0.12 % to 2.51 %. 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 61 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
2024	Neem, Pungam, Poovarasu	North	61	5m	80%
2025	Naval, Mantharai, Arasa Maram	South	61	5m	80%
2026	Magizham, Vilvam, Vaagai, Marudha maram	East	61	5m	80%
2027	Usil, Aaththi, Panai	South	61	5m	80%
2028	Illuppai, Eachai, Vanni maram	West	61	5m	80%
Total			**305**		

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. 30,38,000/-** 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 .11 Project Cost details

S. No.	Description	Cost
1	Fixed Asset cost	10,38,000
2	Expenditure Cost	20,00,000
	Total	**30,38,000**

Environmental Management Plan Cost – 25,26,525/-

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 Cost (Rs.)
1.	Government High School, Thulaiyanur – Provision of ➢ Levelling the floor inside the school perimeter and Playground by using gravel materials, ➢ Environmental books for library (in Tamil language), ➢ Greenbelt facilities and ➢ Basic amenities such as safe drinking water, furniture, Hygienic Toilet and maintenance of toilet upto lease period.	**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.

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