

Executive Summary

For

Public Hearing

**Thiru. G.Durai Rough Stone and Gravel Quarry-
2.52.5 Ha**

At

**S.F.Nos. 149/1A2, 149/1B2 & 149 of Udaiyalippatti
Village, Kulathur Taluk, Pudukkottai District.**

Sector No. 1(a) (Sector No. 1 as per NABET)

Category of the Project: B1 Cluster Mining

Project Proponent:

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Prepared By:

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ETL/EAQM/6/October/1(a)/ Thiru. G.Durai

OCTOBER 2023

EXECUTIVE SUMMARY

1. Project Background:

The Proposed project total extent area is 2.52.5 Ha, Own Patta land in Udaiyalippatti Village of Kulathur Taluk, Pudukkottai District. The category of project is B1, It is a Existing Rough stone and Gravel quarry in Udaiyalippatti village. The area is situated on Plain terrain sloping towards Eastern side covered with Rough Stone 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 vertical bench with a bench width of 5.0 meter. The Quarry operation involves shot hole drilling with the help of compressor and jack hammers and smooth blasting, loading and transportation.

The quarry operation is proposed up to depth for 38 m (Max) (3.0m Gravel and 35m Rough stone). The Total Geological reserve is about 14,93,830 m³ of Rough stone & 65,283 m³ Gravel . The Mineable Reserves of Rough stone is 3,59,703 m³ of Rough stone and 50,454 m³ of Gravel. The year-wise production/recoverable resources of rough stone for 5 years are 3,59,703 m³ of Rough stone and 50,454 m³ of Gravel.

Mining Plan was approved by The Assistant Director, Dept. of Geology & Mining, Pudukkottai vide Rc.No.683/2021(G&M) dated 16.02.2022.. The project area does not fall in Hill Area Conservation Authority region. There is no interstate boundary, CRZ zone, Western Ghats, notified Bird sanctuaries, wildlife sanctuaries as per Wild life protection Act 1972, within the radius of 15 Km.

2. Nature & Size of the Project

The Fresh Rough stone and Gravel Quarry over an extent of 2.52.5 Hectares land is located at Udaiyalippatti Village of Kulathur Taluk, Pudukkottai District.

Mineral intends to quarry : Rough stone and Gravel
District : Pudukkottai
Taluk : Kulathur

Village : Udaiyalippatti
S. F. Nos. : 149/1A2, 149/1B2 & 149/2A
Extent : 2.52.5 Hectares

Table 1: Brief Description of the Project

S. No	Particulars	Details
1	Latitude	10°36'35.86"N to 10°36'43.09"N
2	Longitude	78°53'10.15"E to 78°53'16.02"E
3	Site Elevation above MSL	121 m AMSL
4	Topography	Plain Terrain
5	Land use of the site	Own Patta Land
6	Extent of lease area	2.52.5 Hectares
7	Nearest highway	SH 99 (Thirukattupalli-Pattukkottai) - 12 km, E NH 83 (Trichy-Tanjore) - 13.5 km, N
8	Nearest railway station	Keeranur Railway Station - 11.8 km, SW
9	Nearest airport	Tiruchirappalli Airport - 24.5 km, NW
10	Nearest town / city	Town - Udaiyalippatti - 1.1 km - SE City - Kulathur - 26 Km - E District - Pudukkottai - 25.9 Km - SW
11	Rivers / Canal	•Agni river- 8.3 km, SW •Mayanur Barrage Canal-10.6 km, N
12	Lake	•Chetti Kulam- 0.1 km, S •Chinna Urani- 0.3 km, N •Udaiyalipatti Lake- 0.5 km, E •Charmani Kulam- 0.7 km, SE •Malavaram Kulam- 0.7 km, S •Kilukkottai Kulam- 1.5 km, SE •Alvanpatti Lake- 3 km, S •Vanthanakottai Lake- 3.4 km, S •Oduvampatti Kulam- 4.3 km, SW •Veerapatti Lake- 4.3 km, NW •Veerakudi Lake- 6.5 km, S •Marutham Lake- 8.9 km, NE •Karuputainpatti- 10.4 km, W

		<ul style="list-style-type: none"> •Mayanur Barrage Canal-10.6 km, N •Asoor Lake- 13.1 km, N •Gantharvakottai Lake- 13.6 km, S •Aayalkudi Vayal Kulam- 14.1 km, SW •Pudukariyappatti Lake- 14.9 km,
13	Hills / valleys	•Malayadipatti Hill- 5.3 km, N
14	Archaeologically places	Nil in 15 km radius
15	National parks / Wildlife Sanctuaries	•Karaivetti Bird Sanctuary- 42.9 km, N
16	Reserved / Protected Forests	<ul style="list-style-type: none"> •Kilayur RF- 0.5 km, W •Killukkottai R.F – 6.1 km, NE •Tudiamparai R.F. – 7.1 km, SE •Virakkudi R.F. – 8.2 km, SW •Komapuram RF- 10.6 km, E
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.

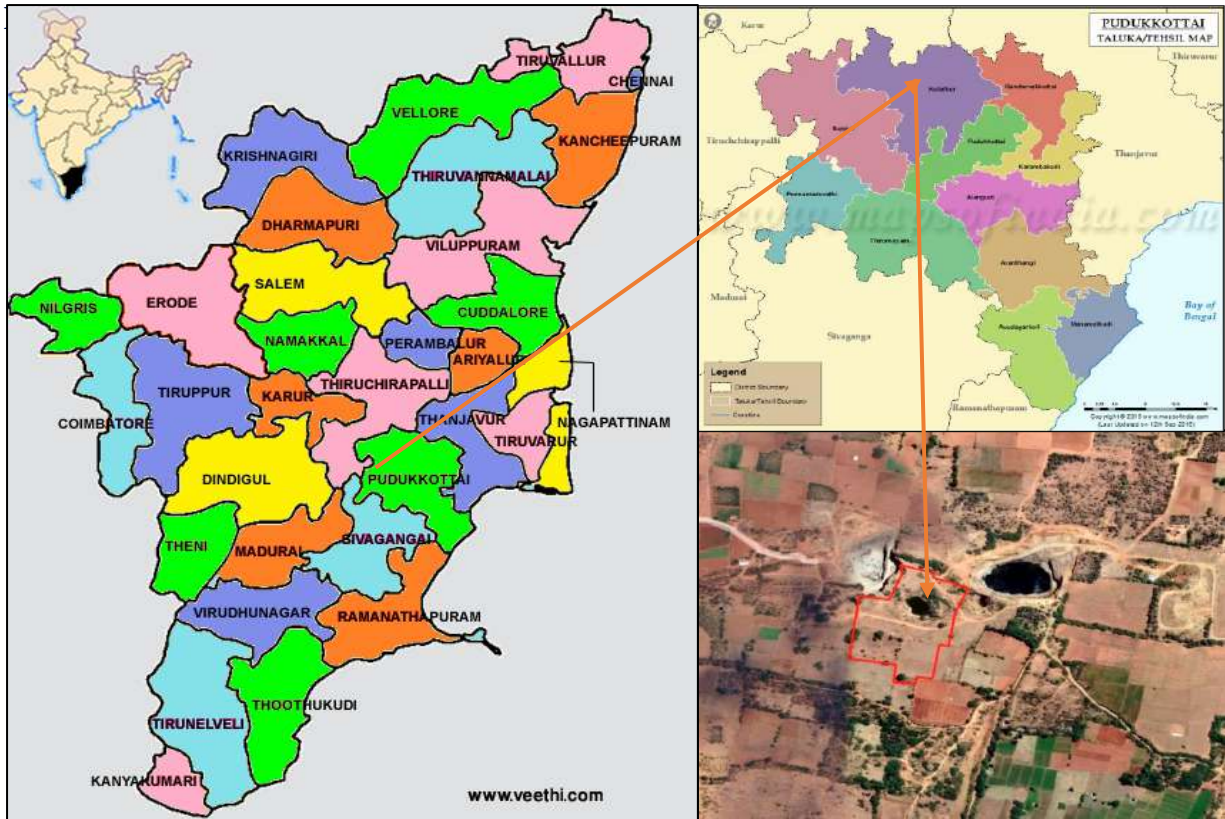


Figure 1: Location Map of the Site



Figure 2: Google Image of the Project Site

4. Charnockite

Charnockite and granitic gneisses are 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, pillar stones, M-sand etc. Charnockite occurs as massive bodies, greyish colour, medium to coarse grained, composed quartz, feldspar and orthopyroxene. At places, metamorphic gneissic banding (alternate dark and black colour) in Charnockite is noticed. Top portion, it gives gneissic appearance but 1-5m depth below it is typical Charnockite of grey colour. The area is mainly composed of Archaean Crystalline Metamorphic Complex. The rock type noticed in the area for lease is Charnockite which contains mostly Quartz and Feldspar with some ferromagnesian minerals. The Charnockite is part of peninsular Gneisses, a high grade metamorphic rock. The general trend of formation is E-W dip S60°.

5. Geological Resources

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

Table 2. Geological resources

GEOLOGICAL RESOURCES						
Section	Length in (m)	Width in (m)	Depth in (m)	Volume m³	Geological Resources of Gravel in m³	Geological Resources of Rough stone in m³
XY-AB	49	101	3	14847	14847	
	49	101	65	321685		321685
XY-CD	33	64	3	6336	6336	
	33	101	65	216645		216645
XY-EF	100	147	3	44100	44100	
	100	147	65	955500		955500
TOTAL					65283	1493830

Table 3. Year wise Production Plan

YEARWISE DEVELOPMENT & PRODUCTION RESERVES								
Year	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in m³	Gravel Formation in m³	Recoverable Reserves of Rough stone in m³
I	XY-EF	123-120	93	130	3	36270	36270	
		120-115	91	126	5	57330		57330
		115-110	86	35	5	15050		15050
TOTAL							36270	72380
II	XY-EF	115-110	86	81	5	34830		34830

	XY-CD	123-120	33	44	3	4356	4356	
		120-115	33	40	2	2640		2640
		120-115	33	77	3	7623		7623
		115-110	33	67	5	11055		11055
	XY-AB	123-120	39	84	3	9828	9828	
		120-115	37	80	5	14800		14800
TOTAL							14184	70948

III	XY-AB	115-110	32	70	5	11200		11200
		110-105	27	60	5	8100		8100
		105-100	22	50	5	5500		5500
	XY-CD	110-105	33	57	5	9405		9405
		105-100	33	47	5	7755		7755
		100-95	33	37	5	6105		6105
	XY-EF	110-105	81	60	5	24300		24300
TOTAL								72365
IV	XY-EF	110-105	81	46	5	18630		18630
		105-100	76	96	5	36480		36480
	XY-CD	95-90	33	27	5	4455		4455
		90-85	33	17	5	2805		2805
	XY-AB	100-95	17	40	5	3400		3400
		95-90	12	30	5	1800		1800
		90-85	7	20	5	700		700
TOTAL								68270
V	XY-EF	100-95	71	86	5	30530		30530
		95-90	66	76	5	25080		25080
		90-85	61	66	5	20130		20130
TOTAL								75740
GRAND TOTAL							50454	359703

6. Mining

Opencast mining

The quarry operation is proposed to carry out with conventional open cast mechanized mining with 5.0 meter vertical bench with a bench width of 5.0 meter with slope of 60°. 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 25.5 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 3.0 KLD. Domestic water will be sourced from nearby Udaiyalippatti Village and other water will be source from nearby road tankers supply.

Table 4. Water Balance

Purpose	Quantity	Source
Domestic and Drinking Water	3.0 KLD	Packaged Drinking water vendors available in Udaiyalippatti Village which is about 0.9 km on SE side of the area.
Green belt	0.5 KLD	Other domestic activities through road tankers supply
Dust suppression	0.5 KLD	From road tankers supply
Total	3.0 KLD	

8. Manpower

Total manpower required for the project is approximately 42 persons. Workers will be from nearby villages.

Table 5. Man Power

1.	Skilled	Operator	7 No.
		Blaster	1 No.
2.	Semi-skilled	Driver	7 No.
3.	Unskilled	Musdoor / Labours	21 Nos
		Cleaners	2 Nos
		Watch Man	1 No
4.	Management and supervisory Staff		3 No
		Total =	42 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 Owner	Village & Taluk	S.F.Nos.	Extent in Hect.
1.	Thiru.R.Rajmohan	Udaiyalippatti Kulathur	124/1, 2B, 3A, 125/2, 3A, 3B, 4& 148/5F	1.64.0
2	Tmt.U.Vijayalakshmi	Udaiyalippatti Kulathur	161/3C2, 162/8	0.53.5

2) Proposed Area

S. No.	Name of the Owner	Village & Taluk	S.F.Nos.	Extent in Hect.
1.	Thiru.G.Durai	Udaiyalippatti Kulathur	149/1A2, 149/1B2, 149/2A	2.52.5

3) Lease Expired

S. No.	Name of the Owner	Village & Taluk	S.F.Nos.	Extent in Hect.	Lease Period
1.	Tmt.U.Vijayalakshmi	Udaiyalippatti Kulathur	425/11	153/1,2,3,4,5 etc.,	03.10.2016 to 02.10.2021

The Total extent of the Existing / Lease expired / Proposed quarries are 6.59.5 Ha

10. Land Requirement

The total extent area of the project is 2.52.5 Ha, Own Patta land in Udaiyalippatti Village of Kulathur Taluk, Pudukkottai District.

Table 8 Land Use Breakup

Sl. No.	Land Use	Present Area (Ha)	Area in use during the period (Ha)
1	Quarrying Pit	0.10.8	1.61.7
2	Infrastructure	0.03.0	0.03.0
3	Roads	0.02.0	0.02.0
4	Green Belt	0.08.0	0.56.3
5	Unutilized	2.28.7	0.29.5
	Total	2.52.5	2.52.5

11. Human Settlement

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

Table 9 Habitation

S.No	Direction	Village	Distance in kms	Population
1	North–East	Rakkadanppatti	1.2Km	327
2	North - West	T.Kizhaiyur	2.2Km	174
3	South - West	Valiyampatti	4.0 Km	215
4	South - East	Udaiyalippatti	0.9 Km	482

12. Power Requirement

The Rough Stone and Gravel 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 and **10 Litre** diesel per hour for excavator for mining and loading for Gravel.

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 : 18⁰ C to 23⁰ C
- ii) Average Maximum Temperature. : 30⁰ C to 40⁰ C
- iii) Average Annual Rainfall of the area : 821 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 (42-68 µg/m³), PM_{2.5} (16-35 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 June to August 2022.

13.3 Noise Environment

The maximum Day noise and Night noise were found to be 65 dB(A) and 53 dB(A) in Balaji Stores, Visalur. The minimum Day Noise and Night noise were 48 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 – 7.80.
- TDS value varied from 313 mg/l to 632 mg/l
- Hardness varied from 144 to 327 mg/l
- Chloride varied from 41.1 to 113 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 6.62 to 8.37 with organic matter 0.26 to 0.42 %. 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 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, Panai, etc will be planted along the lease boundary and avenues as well as over Non-active dumps at a rate of 200 trees per annum with interval 5m.
4. The rate of survival expected to be 70% in this area

Table.10 Plantation/ Afforestation Program

Scientific Name	Local Name
<i>Pterospermum canscens</i>	Vennangu
<i>Streblus asper</i>	Piriya Maram
<i>Wrightia tinctoria</i>	Vepa
<i>Lagerstromia speciosa</i>	Poo Marudhu
<i>Toona ciliate</i>	Sandhana Vembu
<i>Morinda citrifolia</i>	Vellai nuna

<i>Pongamia Pinnata</i>	Pungam
<i>Strychnos potatorum</i>	Therthang Kottai
<i>Cordia dichotoma</i>	Mookuchali Maram
<i>Borassus flabellifer</i>	Panai
<i>Albizia lebbeck</i>	Vaagai
<i>Premna tomentosa</i>	Purangai Naari
<i>Litsea glutinosa</i>	Pisinpattai

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 65,70,000/-** 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 (Rs.)
1	Fixed Asset Cost	25,70,000/-
2	Operational Cost	40,00,000 /-
	Total	65,70,000/-

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 value (Rs)
1.	Panchayat Union High School, Udaiyalippatti <ul style="list-style-type: none"> ➤ Construction of Children’s Playground ➤ R.O.Water Purifier ➤ Printer ➤ Projector attached Smart Class ➤ Drinking Water Tank ➤ Environmental books for library (in Tamil language), ➤ Greenbelt facilities in and around the campus ➤ Hygienic Toilet Facilities 	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.