

February

2023

Executive Summary for Conducting Public Hearing

FOR

**“Rough Stone & Gravel Quarry –
2.86.0 Ha**

At

**S.F.Nos. 111/1B, 111/2, 115/9, 115/10 & 40/5 of
Themmavur & Killukulavaipatti Village, Kulathur
Taluk, and Pudukkottai District**

Project Proponent:

**Thiru K.Nataraj,
S/o. Krishnasamy,
No. 46A, Kallar Street,
Koppampatti Post, Kulathur Taluk,
Pudukkottai - 622 203.**

Project termed under schedule 1(a) Category B₁

Prepared By:

Ecotech Labs Pvt. Ltd.



NABET Accredited EIA Consultant

48, 2nd Main road, Ram Nagar South Extension,

Pallikarani

Chennai -600100

EXECUTIVE SUMMARY

1. Project Background:

The Rough Stone and Gravel Quarry over an extent of 2.86.0 Ha, Own Patta land S.F. No: 111/1B, 111/2, 115/9, 115/10 of Themnavur / Killukulavaipatti Village, Kulathur Taluk, Pudukkottai District. The category of the project is B1 (cluster), the lease area exhibits plain terrain covered by massive charnockite rough stone formation.

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

The quarry operation is proposed up to depth for 43m below ground level. The Total Geological reserve is about 1685375 m³ of Rough Stone and 53013 m³ of Gravel. The Mineable Reserves are 267745 m³ of Rough Stone and 37266 m³ of gravel. Production schedule is proposed an average production of 245195 m³ of Rough stone and 37266 m³ of Gravel for (Sixty months) Five years only.

Mining plan was approved by Geology and Mining department of Pudukkottai district letter vide no. R.c.No.04/2022 (G&M) dated 05.04.2022 from the date of execution 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, wildlife sanctuaries as per Wildlife protection Act 1972, within the radius of 15 Km.

2. Nature & Size of the Project

The New Rough Stone and Gravel Quarry over an extent of 2.86.0 Hectares land is located Themnavur/Killukulavaipatti Village of Kulathur Taluk, Pudukkottai District.

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

Village : Themmavur / Killukulavaipatti
S. F. Nos. : 111/1B, 111/2, 115/9, 115/10
Extent : 2.86.0 Hectares

Table 1: Brief Description of the Project

S. No	Particulars	Details
1	Latitude	10°37'04.30"N to 10°37'12.91"N
2	Longitude	78°55'17.35"E to 78°55'26.60"E
3	Site Elevation above MSL	125 m from MSL
4	Topography	Plain terrain
5	Land use of the site	Own Patta land
6	Extent of lease area	2.86.0 Ha
7	Nearest highway	SH 99 – Thirukattupalli-Sengipatti-Pattukkottai-8.43 km - E NH 36 – Pudukkottai to Tanjore – 10.75 Km - SE
8	Nearest railway station	Keeranur Railway Station – 14.93 Km – SEE
9	Nearest airport	Tiruchirappalli International Airport – 27.68 Km - NE
10	Nearest town / city	Town - Keeranur – 14.87 Km – SW City - Pudukkottai – 25.68 Km - SSW District - Pudukkottai – 25.68 Km - SSW
11	Rivers / Canal	Nil
12	Lake	❖ Karadivayal Lake - 3.32 km - SSW ❖ Karuputainpatti Lake – 13.75 km – W ❖ Karaya Karuppa Swami Temple Pond – 2.34 Km – SSE ❖ Patti Kanmoi – 0.050 Km - S
13	Hills / valleys	Nil in 15 km radius
14	Archaeologically places	❖ Rock-cut Siva cave temple and the hall of hundred pillars or car mantapam with wheels in front part of the plinth, Kunnandar Kovil – 4.60 Km – SW ❖ Perumal & Shiva Rock cut temple – Malayadipatti – 4.49Km – NW ❖ Siva Temple – Visalur – 6.43 Km – NW ❖ Dolmens & Urns – Sengalur – 6.69 Km - NW
15	National parks / Wildlife Sanctuaries	Nil in 15 Km radius
16	Reserved / Protected Forests	❖ Killukottai R.F – 3.95 km - N ❖ Komapuram R.F – 6.72 km - E ❖ Tudimparai R.F – 7.15 km - S
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 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.

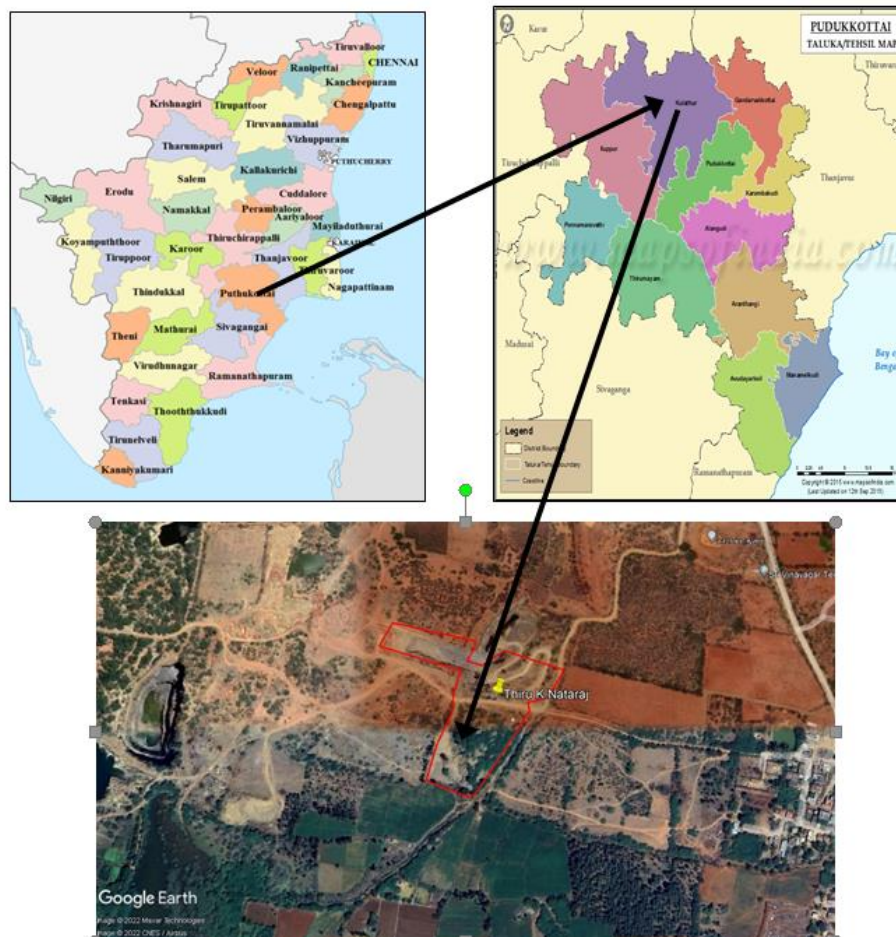


Figure 1: Location Map of the Project Site



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, Kulathur, 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

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	38	105	47	187530		187530
XY-CD	33	74	3	7326	7326	
	33	74	28	68376		68376
	33	114	37	139194		139194
XY-EF	157	97	3	45687	45687	
	157	97	65	989885		989885
X1Y1-GH	38	42	65	103740		103740
X1Y1-IJ	95	46	45	196650		196650
TOTAL					53013	1685375

Table 3. Mineable Reserves

Mineable Reserves							
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in m ³	Gravel Formation in m ³	Mineable Reserves of Rough stone in m ³
XY-AB	117-112	29	13	5	1885		1885
	112-107	29	40	5	5800		5800
	107-102	25	70	5	8750		8750
	102-97	20	60	5	6000		6000
	97-92	15	50	5	3750		3750
	92-87	10	40	5	2000		2000
	87-82	5	30	5	750		750
TOTAL							28935
XY-CD	125-122	18	57	3	3078	3078	
	122-117	18	52	5	4680		4680
	117-112	18	47	5	4230		4230
	112-107	18	42	5	3780		3780
	107-102	33	37	5	6105		6105
	102-97	33	32	5	5280		5280

	97-92	33	60	5	9900		9900
	92-87	33	50	5	8250		8250
	87-82	33	40	5	6600		6600
TOTAL						3078	48825
XY-EF	125-122	148	77	3	34188	34188	
	122-117	144	68	5	48960		48960
	117-112	139	58	5	40310		40310
	112-107	134	48	5	32160		32160
	107-102	129	38	5	24510		24510
	102-97	124	28	5	17360		17360
	97-92	119	18	5	10710		10710
TOTAL						34188	174010
X1Y1-GH	122-117	28	21	5	2940		2940
	117-112	23	11	5	1265		1265
TOTAL							4205
X1Y1-IJ	102-97	77	21	5	8085		8085
	97-92	67	11	5	3685		3685
TOTAL							11770
GRAND TOTAL						37266	267745

Table 4. Year wise Production Plan

Yearwise Development & Production Reserves								
Year	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in m ³	Gravel Formation in m ³	Recoverable Reserves of Rough stone in m ³
I	XY-CD	125-122	18	57	3	3078	3078	
		122-117	18	52	5	4680		4680
		117-112	18	47	5	4230		4230
		112-107	18	42	5	3780		3780
	XY-AB	117-112	29	13	5	1885		1885
		112-107	29	40	5	5800		5800
		107-102	25	70	5	8750		8750
	XY-EF	125-122	148	26	3	11544	11544	
122-117		144	21	5	15120		15120	

TOTAL							14622	44245
II	XY-EF	125-122	148	26	3	11544	11544	
		122-117	144	26	5	18720		18720
	XY-CD	107-102	33	37	5	6105		6105
		102-97	33	32	5	5280		5280
		97-92	33	60	5	9900		9900
	XY-AB	102-97	20	60	5	6000		6000
97-92		15	50	5	3750		3750	
TOTAL							11544	49755
III	XY-EF	125-122	148	25	3	11100	11100	
		122-117	144	21	5	15120		15120
		117-112	139	58	5	40310		40310
TOTAL							11100	55430
IV	XY-EF	112-107	134	48	5	32160		32160
		107-102	129	38	5	24510		24510
TOTAL								56670
V	XY-EF	102-97	124	28	5	17360		17360
		97-92	119	18	5	10710		10710
	X1Y1-GH	122-117	28	21	5	2940		2940
	X1Y1-IJ	102-97	77	21	5	8085		8085
TOTAL								39095
GRAND TOTAL							37266	245195

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 25.5mm 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 2.62 KLD. Domestic water will be sourced from nearby Killukulavaipatti Village and other water will be source from nearby road tankers supply.

Table 4. Water Balance

Purpose	Quantity	Source
Drinking Water	1.62 KLD	Packaged Drinking water vendors available in Killukulavaipatti village which is about 0.48 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	2.62 KLD	

8. Manpower

Total manpower required for the project is approximately 36 persons. Workers will be from nearby villages.

Table 5. Man Power

1.	Skilled	Operators – Excavator & Jack hammer	2 No.
2.	Semi – skilled	Drivers	2 Nos
3.	Unskilled	Musdoor / Labors, Cleaners & Watch man	28 Nos
4.	Management & Supervisory	Mines Manager, Foreman, Mines Mate & Blaster	4 Nos
Total			36 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
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1	Organic	6.48 kg/day	Municipal bin including food waste
2	Inorganic	9.72 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.	Deepam Magalir Ponvizha Grama Suya Velai Vaippu Thitta Nala Sangam, Themmavur, Kulathur Taluk, Pudukottai District.	Themmavur & Kulathur	127/1	0.19.5	27.06.2017 to 26.06.2022
2.	Thiru. Meda Ramesh, H.NO.1-378, Manikandan Complex, Killukottai village, Kulathur Taluk, Pudukottai District	Killukulavaipatti & Kulathur	44/4 & etc.,	2.15.0	28.07.2017 to 27.07.2022
3.	Thiru Rajmohan No.2/248-1, Karaiyanpudur, Pappinaickenpatti (post), Namakkal Taluk, Namakkal District	Thenmavur & Kulathur	117/1B, 115/1, 115/8 and 118/1	2.41.0	08.07.2021 to 07.07.2026

2) Proposed Area:

S. No.	Name of the applicant	Village & Taluk	S. F. No.	Extent
1.	Thiru S.Balasubramanian S/o. Sepperumal, No.1241, NGO Colony, Subramaniyapuram, Pudukottai Collectorate Post, Pudukkottai	Themmavur & Killukulavaipatti Kulathur	117/3 (1.13.5) & 117/1A (1.83.5) of Themmavur village and 44/10 (0.10.5) & 44/9B (0.13.0) of Killukulavaipatti	3.20.5
2	Thiru.K.Nataraj, S/o.Krishnasamy, No.46A, Kallar Street, Koppampatti (post), Kulathur Taluk, Pudukkottai District.	Themmavur & Killukulavaipatti Kulathur	111/1B (0.64.0), 111/2 (0.65.0), 115/9 (0.40.0), 115/10 (0.50.5) of Killukulavaipatti village and 40/5	2.86.0

			(0.66.5) of Themnavur village	
3	Thiru S Devendiran, S/o A.R.Srinivasan, No.25,I.A.S Nagar, Thiruverumbur, Trichy	Killukulavaipatti	40/4	0.53.5

3) Lease Expired:

S. No.	Name of the lessee/ Permit Holder	Village & Taluk	S. F. No.	Extent	Lease Period
1.	K.Nataraj, S/o Krishnasamy, Koppampatti (V), Themnavur (P)	Kulathur Killukulavaipatti & Themnavur	40/5 (0.66.5), 111/1B(0.64.0),	1.30.5	25.07.2014 – 24.07.2019
2.	A.Mahalakshmi W/o Andiyappan, Koppampatti, Themnavur post	Kulathur Themnavur	127/23	0.78.0	13.06.2014 to 12.06.2019
..... Nil.....					

The Total extent of the Existing / Lease expired / Proposed quarries are 11.35.5 Ha.

10. Land Requirement

The total extent area of the project is 2.86.0 Ha, Own Patta land in Themnavur / Killukulavaipatti Village of Kulathur Taluk, Pudukkottai District.

Table 8 Land Use Breakup

S.No.	Land Use	Present Area (Ha)	Area in use during the quarrying period (Ha)
1.	Quarrying Pit	0.72.7	2.13.5
2.	Infrastructure	0.02.0	0.03.0
3.	Roads	0.01.0	0.02.0
4.	Green Belt	0.05.0	0.67.5
5.	Unutilized	2.05.3	0.00.0
	Total	2.86.0	2.86.0

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	Name of the Village	Approximate Distance	Direction From Lease Applied Area	Approximate Habitations
1.	Koppampatti	0.4km	South - East	481
2.	Rakkadanppatti	2.7km	North - West	217
3.	Udaiyalipatti	3.1 Km	South - West	235
4.	Nathamadipatti	3.7 Km	North - East	472

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 °C

ii) Average Maximum Temperature. : 2 4 °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 PM₁₀ (63 – 39 µg/m³), PM_{2.5} (30 - 18 µg/m³), SO₂ (14 - 4µg/m³), NO₂ (28 -10µg/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

Ambient noise levels were measured at 5 locations around the proposed project site. The maximum Day noise and Night noise were found to be 53 dB(A) and 43 dB(A) respectively in Sri Ayyanar Temple, Ulagankathanpatti. The minimum Day Noise and Night noise were 49 dB(A) and 39 dB(A) respectively which was observed in Project Site.

13.4 Water Environment

- The average pH ranges from 7.23-7.85.
- TDS value varied from 115 mg/l to 885 mg/l
- Hardness varied from 249 to 543 mg/l
- Chloride varied from 83.6 to 228 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 6.79 to 7.15 with organic matter 0.32 % to 0.49 %. 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 80 trees per annum with interval 5m.
4. The rate of survival expected to be 70% in this area

Table.10 Plantation/ Afforestation Program

Year	Name of species	Place of planted	No of species	Spacing	Survival
2023	Neem, Pungam, Poovarasu	North	280	5m	80%
2024	Naval, Mantharai, Arasa Maram	South	280	5m	80%
2025	Magizham, Vilvam, Vaagai, Marudha maram	East	280	5m	80%
2026	Usil, Aaththi, Panai	South	280	5m	80%
2027	Illuppai, Eachai, Vanni maram	West	280	5m	80%
Total			1400		

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. 69,38,000** 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	29,38,000
2	Expenditure Cost	40,00,000
	Total	69,38,000

Environmental Management Plan Cost – 16,20,000/-

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 (Rs)
1.	Provision of basic amenities such as safe drinking water, Hygienic toilet facilities, furniture's, Greenbelt development and Environmental awareness books in library, Solar lights to Govt Middle School, Koppampatty – 0.5km, E	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.