

OCTOBER

2023

**Executive Summary for Conducting Public Hearing
FOR**

**“Thiru.K.Anandavelu Rough Stone and Gravel Quarry
over a total extent of 2.18.0 Ha”**

At

**S.F.No. 76/2, 76/3A & 76/6 of Eraiyur Village, Vanur
Taluk, Villupuram District, Tamilnadu State**

Project Proponent:

**Thiru.K.Anandavelu,
S/o. Kesavan,
No. 225, Mettu Street, Eraiyur Village,
Vanur Taluk,
Villupuram District – 604 304**

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,
Pallikaranai, Chennai -600100**

EXECUTIVE SUMMARY

1. Project Background:

The existing project total extent area is 2.18.0 Ha, Patta land in Eraiyur Village of Vanur Taluk, Villupuram District. The category of project is B1, It is an Existing Rough stone and Gravel quarry in Eraiyur village. The area is situated on Plain topography gently sloping towards South Eastern side covered with Gravel and 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 shallow hand jack hammer drilling, mild explosives in blasting, excavation, Loading and transportation of Rough Stone to the needy crushers.

The quarry operation is proposed up to depth for 40 m BGL. The Total Geological reserve is about 7,31,480 m³ of Rough Stone and 22,728 m³ of Gravel. The Mineable Reserves of Rough stone is 2,26,322 m³ and Gravel is 16,554 m³. The yearwise production/recoverable resources of rough stone for 5 years are 2,26,322 m³ and Gravel is 16,554 m³.

Mining Plan was approved by The Deputy Director, Dept. of Geology & Mining, Villupuram vide Rc No. A/G&M/273/2020 dated 14.02.2023. The project area does not fall in Hill Area Conservation Authority region. There is no interstate boundary, CRZ zone, Western Ghats, Wildlife sanctuaries as per Wild life protection Act 1972, within the radius of 15 Km. Oussudu Lake Bird Sanctuary is located at a distance of 14.94 kms, SE from the project site and Kazhuveli Wetland Bird Sanctuary is located at a distance of 16.64 kms, NE from the project site. National Fossil/Petrified Wood Park is located at a distance of 5 kms, SE from the project site, which is a National Geo-heritage Monument maintained by Geological Survey of India.

2. Nature & Size of the Project

The Existing Rough Stone and Gravel Quarry over an extent of 2.18.0 Hectares land is located at Eraiyur Village of Vanur Taluk, Villupuram District.

Mineral intends to quarry	: Rough stone and Gravel
District	: Villupuram
Taluk	: Vanur
Village	: Eraiyur
S. F. Nos.	: 76/2, 76/3A & 76/6
Extent	: 2.18.0 Hectares

Table 1: Brief Description of the Project

S. No	Particulars	Details
1	Latitude	12° 04' 20.61" N to 12° 04' 28.15" N
2	Longitude	79° 38' 39.36" E to 79° 38' 45.89" E
3	Site Elevation above MSL	77 m from MSL
4	Topography	Plain
5	Land use of the site	Patta land
6	Extent of lease area	2.18.0 Ha
7	Nearest highway	<ul style="list-style-type: none"> ➤ MDR-808 : Perumbakkam to Pidaripattu Road is about 1.25 Kms on E of the area ➤ SH-136 Mailam to Puducherry Road is about 1 Kms on N of the area
8	Nearest railway station	<ul style="list-style-type: none"> ➤ Mailam Railway Station – 10.55 km, NW ➤ Villupuram Junction – 21.40 km, SW ➤ Puducherry Railway Station – 25.58 kms, SE
9	Nearest airport	<ul style="list-style-type: none"> ➤ Puducherry Domestic Airport – 21.20 km – SE ➤ Chennai International Airport – 114.76 km - NE
10	Nearest town / city	<ul style="list-style-type: none"> ➤ Town - Puducherry - 19.84 km - SE ➤ City - Villupuram - 19.89 km - SW ➤ District - Villupuram - 19.89 km – SW
11	Rivers / Canal / Dam	<ul style="list-style-type: none"> ➤ Sankarabarani River – 4.93 kms, S ➤ Gingee River – 6.35 kms, SW ➤ Tondi River – 8.49 kms, NW ➤ Varaga Nadhi – 8.80 kms, SW ➤ Chettipattu Small Dam – 5.24 kms, S ➤ Sankarabarani Reservoir – 7.42 kms, SE

		<ul style="list-style-type: none"> ➤ Veedur Dam – 6.29 kms, W ➤ Sengadu-Mathur Small dam (Pambe Water Reservoir) – 13.23 kms, SW
12	Lake	<ul style="list-style-type: none"> • Konamangalam Lake – 1.81 kms, W • Thaludhali Lake – 2.62 kms, N • Thaludhali Kulam – 2.65 kms, N • Kunnam Lake – 3.86 kms, NE • Katterikuppam Lake – 9.05 kms, SE • Mailam Lake – 5.95 kms, NW • Avudayarpattu Lake – 9.57 kms, SW • Thirukkanur Lake – 8.87 kms, S • Mannadipet Pond – 8.90 kms, S • Purana Singa Palayam Lake – 11.93 kms, S • Sompet Lake – 11.32 kms, S • Kumalam Lake – 11.79 kms, S • Mathur Lake – 12.08 kms, SW • New Lake – 12.92 kms, SW • Thoravi Lake – 13.29 kms, SW • Katrambakkam Lake – 11.70 kms, E • Pulichapallam Lake – 12.87 kms, SE • Kodur Lake – 14.94 kms, E • Nallavur Lake – 13.97 kms, NE • Omandur Lake – 11.32 kms, NE • Annamputhur Lake – 11.38 kms, NE • Budhur Lake – 13.64 kms, SW • Thalavaipattu Lake – 14.75 kms, NW • Melakondai Pond – 11.61 kms, W
13	Hills / valleys	Nil in 15 km radius
14	Archaeologically places/Monuments	<ul style="list-style-type: none"> • National Petrified/Fossil Wood Park, Thiruvakkarai – 5 kms, SE
15	National parks / Wildlife Sanctuaries	<ul style="list-style-type: none"> • Oussudu Lake Bird Sanctuary – 14.94 kms, SE • Kazhuvveli Wetland Bird Sanctuary – 16.64 kms, NE
16	Reserved / Protected Forests	<ul style="list-style-type: none"> • Melkondai R.F – 10.71 Kms, W • Kongampoondi R.F – 10.79 kms, W • Vikravandi R.F – 10.85 kms, W
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

Figure 1: Location Map of the Project Site



Figure 2: Google Image of the Project Site

4. Charnockite

The greater part of the district is covered by rocks belonging to Archaean age comprising the Charnockite group, the Migmatite complex, Sathyamangalam group and the Bhavani group and the alkali complex of Proterozoic age. West of Kallakurichi (Southwestern part of the district), the area comprises the Charnockite Group of rocks, viz., Charnockite, pyroxene-granulite and garnetiferous gabbro. West of Tirukoilur (Central part of the district) and east of the Charnockite terrain (i.e., Kallakurichi area) the Migmatite complex is made up of Hornblende-Biotite gneiss. Peninsular gneiss forms the oldest rock formations, in which the massive formation of Charnockite body N30°E – S30°W with dipping towards SE60°.

The general geological sequences of the rocks in this area are given below:

	AGE		FORMATION
↑	Recent	-	Quaternary Formation (Earth)
	----- Unconfirmity -----		
	Archaean	-	Charnockite Peninsular Gneiss Complex

5. Geological Resources

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

Table 2. Geological resources

GEOLOGICAL RESOURCES							
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume m ³	Rough Stone in m ³	Gravel in m ³
XY-AB	I	6	22	2	264		264
	I	6	23	3	414	414	
	II	6	26	1	156	156	
	II	107	98	4	41944	41944	
	III	107	98	5	52430	52430	
	IV	107	98	5	52430	52430	
	V	107	98	5	52430	52430	
	VI	107	98	5	52430	52430	
	VII	107	98	5	52430	52430	
TOTAL				35	304928	304664	264
X1Y1- CD	I	108	104	2	22464		22464
	I	108	104	3	33696	33696	
	II	108	104	5	56160	56160	
	III	108	104	5	56160	56160	
	IV	108	104	5	56160	56160	
	V	108	104	5	56160	56160	
	VI	108	104	5	56160	56160	
	VII	108	104	5	56160	56160	
	VIII	108	104	5	56160	56160	
TOTAL				40	449280	426816	22464
TOTAL					754208	731480	22728

Table 3. Yearwise Production Plan

YEARWISE PRODUCTION RESERVES								
Year	section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume m ³	Rough Stone in m ³	Gravel in m ³
1	X1Y1-CD	I	50	89	2	8900		8900
		II	50	89	3	13350	13350	
		III	50	79	5	19750	19750	
	TOTAL						42000	33100
2	X1Y1-CD	I	43	89	2	7654		7654
		I	43	89	3	11481	11481	
		II	33	79	5	13035	13035	
	XY-AB	II	74	72	4	21312	21312	
	TOTAL						53482	45828
3	XY-AB	II	18	72	4	5184	5184	
		III	82	62	5	25420	25420	
	X1Y1-CD	III	60	69	5	20700	20700	
	TOTAL						51304	51304
4	X1Y1-CD	III	13	69	5	4485	4485	
		IV	63	59	5	18585	18585	
	XY-AB	IV	72	52	5	18720	18720	
		V	40	42	5	8400	8400	
	TOTAL						50190	50190
5	XY-AB	V	22	42	5	4620	4620	
		VI	52	32	5	8320	8320	
		VII	42	22	5	4620	4620	
	X1Y1-CD	V	53	49	5	12985	12985	
		VI	43	39	5	8385	8385	
		VII	33	29	5	4785	4785	
		VIII	23	19	5	2185	2185	
	TOTAL						45900	45900
GRAND TOTAL						242876	242876	16554

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 hand jack hammer drilling, mild explosives in blasting, excavation, loading and transportation of rough stone to the needy crusher.

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 30-35 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 2.0 KLD. Domestic water will be sourced from nearby Thollamur Village and other water will be source from nearby road tankers supply.

Table 4. Water Balance

Purpose	Quantity	Source
Domestic and Drinking Water	1.0 KLD	Packaged Drinking water vendors available in Perumbakkam which is about 1.28 Km NE 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	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 Requirement

1.	Highly Skilled	IInd Class Mines Manager	1 No.
		Mine Geologist	1 No.
		Blaster	1 No.
2.	Semi – skilled	Driver	2 Nos
		Hitachi Operator	1 No.
3.	Unskilled	Musdoor/Labours	12 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	Name of the Mineral	Taluk & Village	S.F.Nos.	Extent in Hect.	Lease Period
1.	T. Vasudevan S/o. Thangavel, Eraiyur Village, Vanur Taluk, Villupuram District	Rough Stone	Vanur & Eraiyur	80/3, 80/4, 81/1, 81/3, 81/4, 81/5, 81/6, 94/1A, 94/2, 94/3	0.28.0 0.47.0 0.48.0 0.36.0 0.36.0 0.35.0 1.18.0 0.27.0 0.29.0 0.79.5 4.83.5	15.02.2019 to 14.02.2024
2	E. Jayasankar, S/o. Elumalai, No. 198, Vinayakar Koil Street, Eraiyur Village, Vanur Taluk, Villupuram District	Rough Stone	Vanur & Eraiyur	93/4 93/5 94/1B 94/4	1.14.0 0.21.0 0.27.0 1.75.5 Total 3.37.5	15.02.2019 to 14.02.2024

2) Proposed Quarries

S. No.	Name of the Lessee/Permit Holder	Name of the Mineral	Taluk & Village	S.F.Nos.	Extent in Hect.
1.	Thiru. K. Anandavelu, S/o. Kesavan, No. 225, Mettu Street, Eraiyr Village, Vanur Taluk, Villupuram District	Rough Stone & Gravel	Vanur & Eraiyr	76/2 76/3A 76/6	0.86.0 0.22.0 1.10.0 2.18.0

3) Abandoned Quarries

S. No.	Name of the Lessee/Permit Holder	Name of the Mineral	Taluk & Village	S.F.Nos.	Extent in Hect.	Lease Period
-----Nil-----						

The Total extent of the Existing / Lease expired / Proposed quarries are 10.39.0 Ha

10. Land Requirement

The total extent area of the project is 2.18.0 Ha, Patta land in Eraiyur Village of Vanur Taluk, Villupuram District.

Table 8 Land Use Breakup

Sl. No.	Description	Present Area (Ha.)
01.	Area under Quarrying	0.79.50
02.	Infrastructure	Nil
03.	Roads	0.01.0
04.	Green Belt	1.37.50
05.	Unutilized Area	Nil
	TOTAL	2.18.0 Ha

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	South East	Eraiyr	1.71 Kms	3257
2	North	Thaludhali	1.81 Kms	2257
3	North West	Kanniyam	1.38 Kms	919
4	West	Konamangalam	1.56 Kms	907
5	South	Ambuzhukkai	2.42 Kms	558
6	North East	Perumbakkam	1.28 Kms	2184
7	East	Karasanur	2.66 Kms	2862

12. Power Requirement

The Rough Stone and Earth 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 Earth.

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 26⁰ C
- ii) Average Maximum Temperature. : 30⁰ C to 40⁰ C

iii) Average Annual Rainfall of the area : 985 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 (62-36 µg/m³), PM_{2.5} (32-14 µg/m³), SO₂ (20-5 µg/m³), NO₂ (39-9 µg/m³), all the parameters are well within the standards prescribed by National Ambient Air Quality during the study period from June to August 2023.

13.3 Noise Environment

The maximum Day noise and Night noise were found to be 62 dB(A) and 53 dB(A) respectively in Shri Ayyanar Temple & Mailam Engineering College. The minimum Day Noise and Night noise were 45 dB(A) and 39 dB(A) respectively which was observed in Project Site and Government High School, Kunnam. The observed values are all well within the Standards prescribed by CPCB.

13.4 Water Environment

- The average pH ranges from 7.02 – 8.09.
- TDS value varied from 285 mg/l to 1179 mg/l
- Hardness varied from 137 to 515 mg/l
- Chloride varied from 49.2 to 292 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 6.97 to 8.72 with organic matter 0.13 to 1.6 %. 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, Vilvam, Panai, etc will be planted along the lease boundary and avenues as well as over Non-active dumps at a rate of 218 trees per annum with interval 5m.
4. The rate of survival expected to be 80% in this area

Table.10 Plantation/ Afforestation Program

Name of species proposed	Survival	No of species
Neem, Vilvam, Vaagai, Eachai, Naval, Mantharai, Magizha Maram, Vila Maram, Poo Marudhu, Panai, Marudha maram, Thandri, Sengondrai, Poovarasu, Pungam, Sandhana Vembu, Uva, Uzha, Illuppai, Sarakondrai, Puthranjivi, etc.,	80%	1090
Total		1090

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. 1,14,99,388/-** 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	13,87,500/-
2	Machinery Cost	25,00,000 /-
3.	EMP Cost	76,11,888 /-
	Total	1,14,99,388 /-

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.	<p>Government High School, Eraiyur – 1.76 km, SE</p> <ul style="list-style-type: none"> ➤ Painting of Classroom, Compound Walls and Entire School Campus ➤ R.O. Water Purifier ➤ Tables, Desk and Bench ➤ Smart Classroom facility (Projector Attached) ➤ Environmental books, General Awareness and Social Leaders books for library (in Tamil language), ➤ Greenbelt facilities in and around the campus – 50 No's ➤ Hygienic Toilet Facilities and maintenance upto the 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.