April

2024

Executive Summary for Conducting Public Hearing

FOR

"Thiru.N.H.M.Pandian Rough Stone and Gravel Quarry over a total extent of 3.31.00 Ha"

At

S.F.No. 302/1 (1.70.50Ha.), 304/1A (0.54.00Ha.) & 304/2A (0.76.50Ha.) of Anaikulam Village of VeerakeralamPudur Taluk, Tenkasi District.

Project Proponent:

Thiru.N.H.M.Pandian,
S/o.Navaneethakrishna Pandian,
D.No.4/7, Kurunthan Mozhi,
Kuruchampatti Post,
Veerakeralampudur Taluk.,
Tenkasi District - 627 860.

Project termed under schedule 1(a) Category B_1

Prepared By:

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EXECUTIVE SUMMARY

1. Project Background:

The Proposed project total extent area is 3.01.00 Ha, It is a Patta land in 302/1 (1.70.50Ha.), 304/1A (0.54.00Ha.) & 304/2A (0.76.50Ha.) at Anaikulam Village, Veerakeralampudur Taluk, Tenkasi District. The category of project is B1, it is a Rough stone and Gravel quarry in Anaikulam village. The applied lease area is Plain terrain topography and gentle slope towards south and covered by brownish red gravelly soil for 0.2m thick followed by gravel formation and massive Charnockite rock formation.

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. Quarrying operation is carried out Splitting of rock mass of considerable volume from the parent rock mass by jackhammer drilling and blasting, hydraulic excavators are used for loading the Rough stone from pithead to needy Crusher. Occasionally hydraulic excavators are attached with rock breakers for fragmentation to avoid secondary blasting.

The quarry operation is proposed up to depth for 49.0m fro the Ground Level. The Total Geological resources is about 14,02,830m^3 of Rough Stone and 1,24,696m^3 of Gravel. The Mineable Reserves are 3,03,165m^3 of Rough stone and 65,397m^3 of Gravel. Production schedule is proposed an average production of 3,03,165m^3 of Rough stone and 65,397m^3 of Gravel for (Sixty months) Five years only. Mining Plan was approved by the Joint Director/Assistant Director (i/c), Geology & Mining, Tenkasi vide letter Rc.No.M1/14953/2019 Dated 21.06.2023.

The project area does not fall in Hill Area Conservation Authority region. There is no interstate boundary, CRZ zone, Western Ghats, notified Bird sanctuaries as per Wildlife protection Act 1972, within the radius of 15 Km. Nellai Wildlife Sanctuary is located at the distance of 19.68 Km Northwest from the project site.

2. Nature & Size of the Project

The Rough Stone and Gravel Quarry over an extent of 3.01.00 Hectares land is located at Anaikulam Village, Veerakeralampudur Taluk, Tenkasi District.

Mineral intends to quarry : Rough stone and Gravel Quarry
District : Tenkasi
Taluk : Veerakeralampudur
Village : Anaikulam
S. F. Nos : 302/1, 304/1A & 304/2A
Extent : 3.01.00 Hectares

Table 1: Brief Description of the Project

S. No	Particulars	Details
1	Latitude	09°00' 05.83" to 09°00' 16.00" N
2	Longitude	77°28' 32.52" to 77°28' 37.57" E
3	Site Elevation above MSL	194.0m above MSL.
4	Topography	Plain Terrain
5	Land use of the site	Patta Land
6	Extent of lease area	3.01.0 Ha
7	Nearest highway	SH 39A – Surandai to Alankulam Road – 5.61 km – SW NH 744 – Tenkasi to Madurai Road – 15.47 km - W
8	Nearest railway station	Kadayanallur Railway Station – 15.02 km - NW
9	Nearest airport	Thoothukudi Airport – 67.87 km - NE
10	Nearest town / city	Town - VeerakeralamPudur – 7.25 km - SSE. City - Tenkasi – 16.34 km - W District - Tenkasi – 16.34 km - W
11	Rivers / Canal	❖ Chittraru River – 8.71Km – SW

12	Lake/Pond	❖ Kurichanpatti Kulam – 2.30 Km - E ❖ Kattu Kulam – 2.31 Km – S ❖ Semmannu kulam – 2.94 Km – S ❖ Mariathaipuram lake – 3.48 Km – SSW ❖ Periya Devan Kulam – 4.25 Km – E ❖ Surandai Lake – 5.98 Km – SW ❖ Arunthapet Lake – 6.57 Km – SW ❖ Echantha Lake – 6.79 Km – NNE ❖ Veeranam Lake – 7.19 Km – S ❖ Pattaikulam – 8.17 Km – NW ❖ Sakkarakulam – 8.48 Km – N ❖ Sundarapandiapuram Tank – 9.16 Km - W
13	Hills / valleys	Nil in 15 km radius
14	Archaeologically places	Nil in 15 km radius
15	National parks / Wildlife Sanctuaries	Nil in 15 km radius
16	Reserved / Protected Forests	❖ Vellakkalparambu RF – 7.13 Km – S ❖ Uthumalai RF – 9.36 – E ❖ Kottamalai RF – 13.04 Km - SE
17	Seismicity	Proposed Lease area come under Seismic zone-II (Moderate 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 Tirunelveli.
- ❖ 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.

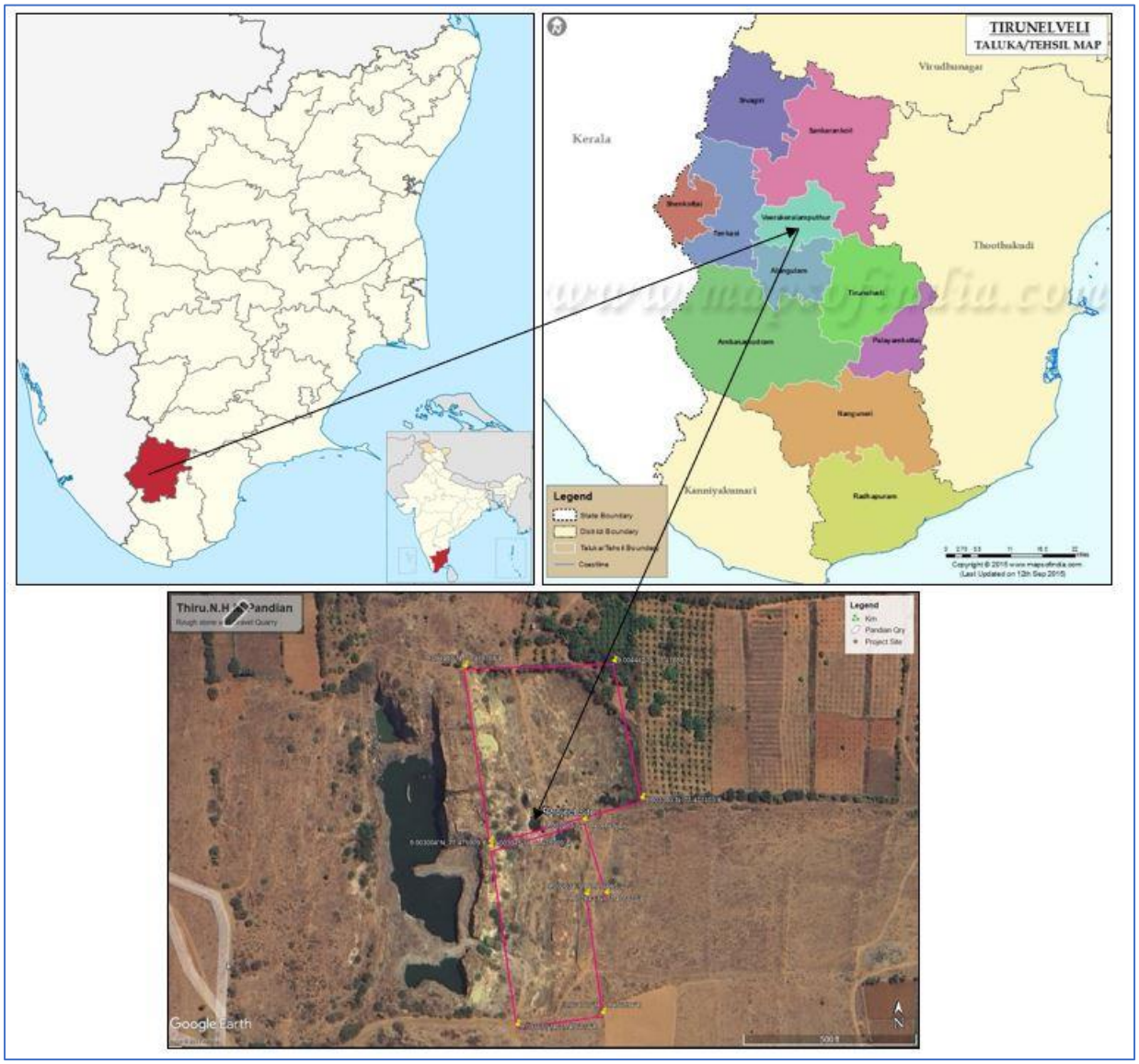

Figure 1: Location Map of the Project Site

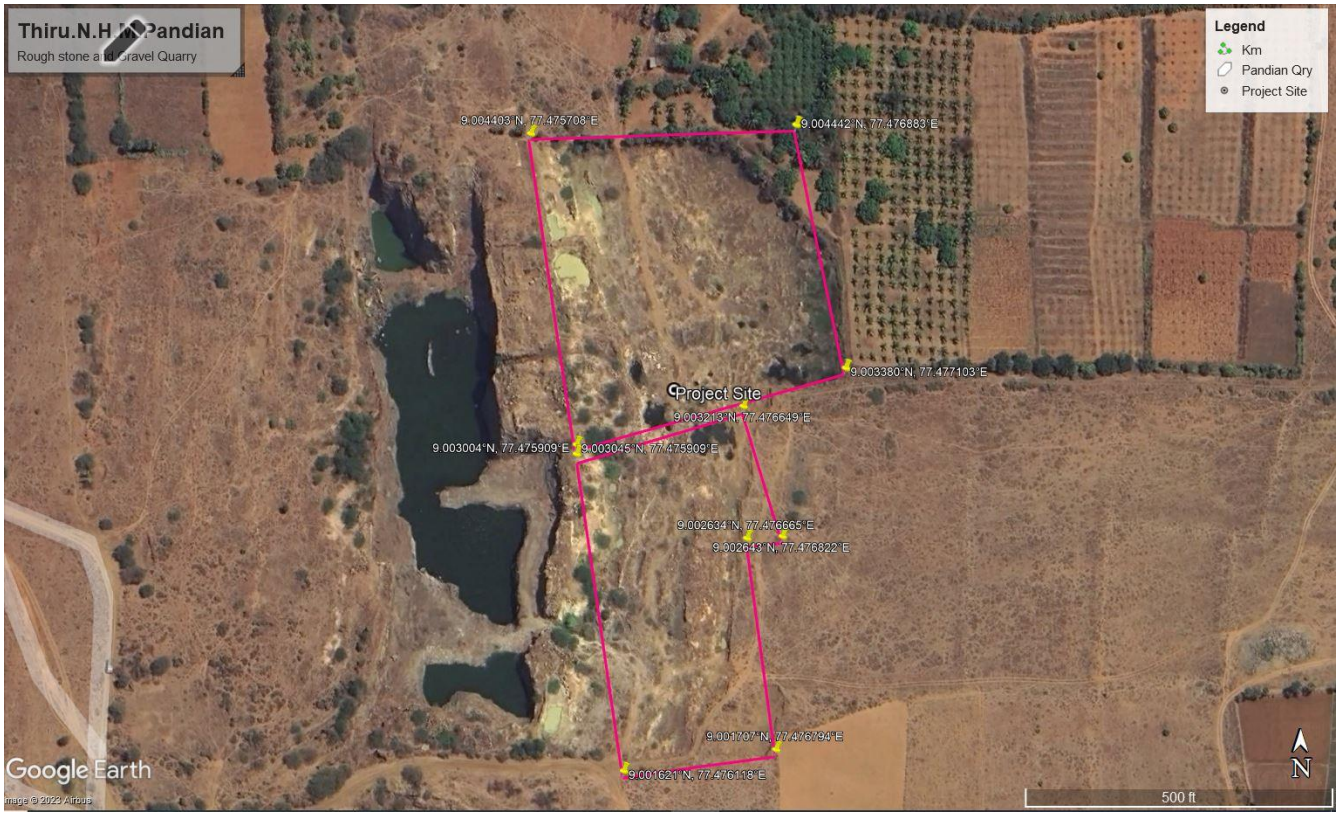

Figure 2: Google Image of the Project Site

4. Charnockite

Charnockite is 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, M-sand etc. Charnockite is exposed as a discontinuous body in NW-SE to WNW-ESE direction from Tenkasi in the west to Gangaikondan in the east and from Tiruvenkadanathapuram in the north to Vijayapathi in the south. An isolated Charnockite hill is exposed for a length of 5 km and 1 to 1.5 km width in Valliyur-Nanguneri-Radhapuram area and in the eastern slope of Western Ghats hills of Tirunelveli district. The nature of occurrence of charnockite is ubiquitous, often in two modes. One type of occurrence is in the form of profuse enclaves as lensoid bodies etc; within granitoid gneiss and leptinite and other as massive crystalline variety as seen in large isolated hills (Western Ghats massifs). Basic nature of the charnockite has been preserved only at few places where in it contains occasionally noritic/pyroxene granulite patches and calc granulite pockets. Retrogression of mafics – pyroxenes to hornblende and biotite aggregates and granitisation with intercalations of quartzofeldspathic veinations are the common features that characterise these

enclaves. This retrograde hornblende biotite gneiss is also extensively quarried in Piranchery, Gangaikondan, and north of Manur and Rasta areas for road metals and earth fillings.

5. Geological Resources

The geological reserves have been calculated based on the cross-section method by deducing already excavated in the previous quarry workings and the availability of Geological Resources in this land is given below.

Table 2. Geological resources

SECTION	LENGTH (M)	WIDTH (M)	DEPTH (M)	ROUGH STONE VOLUME M^3	GRAVEL VOLUME M^3
A–A' & B–B'	136	130	4.0	-	70,720
	136	130	45.0	7,95,600	-
A–A' & C–C'	54	91	4.0	-	19,656
	54	91	45.0	2,21,130	-
A–A' & D–D'	110	78	4.0	-	34,320
	110	78	45.0	3,86,100	-
TOTAL GEOLOGICAL RESERVES				**14,02,830**	**1,24,696**
Less: Exiting Pit Excavated Already				-	21,355
BALANCE GEOLOGICAL RESERVES				**14,02,830**	**1,03,341**

Available Mineable reserves:

The available mineable reserves are calculated for the proposed lease period of 5 years based on the total minable reserves calculated by deducting 7.5m / 10.0m safety distances to the patta lands / govt. land / odai on along the boundary sides of the applied area, already excavated in the previous quarry workings and Bench losses.

Table 3. Mineable Reserves

SECTION	LENGTH (M)	WIDTH (M)	HEIGHT (M)	ROUGH STONE VOLUME(M^3)	GRAVEL VOLUME(M^3)
A–A' & B–B'	117	111	4.0	-	51,948
	107	101	5.0	54,035	-
	97	91	5.0	44,135	-

	87	81	5.0	35,235	-
	77	71	5.0	27,335	-
	67	61	5.0	20,435	-
	57	51	5.0	14,535	-
	47	41	5.0	9,635	-
	37	31	5.0	5,735	-
	27	21	5.0	2,835	-
A–A' & C–C'	43	72	4.0	-	12,384
	38	62	5.0	11,780	-
	33	52	5.0	8,580	-
	28	42	5.0	5,880	-
	23	32	5.0	3,680	-
	18	22	5.0	1,980	-
A–A' & D–D'	95	59	4.0	-	22,420
	90.	49	5.0	22,050	-
	85	39	5.0	16,575	-
	80	29	5.0	11,600	-
	75	19	5.0	7,125	-
TOTAL MINEABLE RESERVES				**3,03,165**	**86,752**
Less: Existing Pit- Already Excavated				**-**	**21,355**
BALANCE MINEABLE RESERVES				**3,03,165**	**65,397**

The available mineable reserves have been computed as 3,03,165 m^3 of Rough Stone and 65,397 m^3 of Gravel up-to the depth of 49.0 meters from the ground level.

Table 4. Year wise Production Plan

The applicant has proposed to carry out 3,03,165 m^3 of Rough Stone and 65,397 m^3 of Gravel production for the period of five years up to a depth of 49 m from the ground level.

SECTION	YEAR	LENGTH (M)	WIDTH (M)	HEIGHT (M)	ROUGH STONE VOLUME (M^3)	GRAVEL VOLUME (M^3)
A-A' & B-B'	I-Year	58	111	4.0	-	25,752
		48	101	5.0	24,240	-
		38	91	5.0	17,290	-
		28	81	5.0	11,340	-
		18	71	5.0	6,390	-

Less Gravel pit A-A' & B-B'		SUB-TOTAL			59,260	25,752
		58	111	1.0	-	(-)6,438
I – YEAR PRODUCTION					**59,260**	**19,314**
A-A' & B-B'	II-Year	29	111	4.0	-	12,876
		29	101	5.0	14,645	-
		29	91	5.0	13,195	-
		29	81	5.0	11,745	-
		29	71	5.0	10,295	-
		37	61	5.0	11,285	-
Less Gravel pit A-A' & B-B'		SUB-TOTAL			61,165	12,876
		29	111	1.0	-	(-)3,219
II – YEAR PRODUCTION					**61,165**	**9,657**
A-A' & B-B'	III-Year	30	111	4.0	-	13,320
		30	101	5.0	15,150	-
		30	91	5.0	13,650	-
		30	81	5.0	12,150	-
		30	71	5.0	10,650	-
		30	61	5.0	9,150	-
Less Gravel pit A-A' & B-B'		SUB-TOTAL			60,750	13,320
		30	111	1.0	-	(-)3,330
		54	12	1.0	-	(-)648
III – YEAR PRODUCTION					**60,750**	**9,342**
A-A' & C-C'	IV-YEAR	43	72	4.0	-	12,384
		38	62	5.0	11,780	-
		33	52	5.0	8,580	-
A-A' & D-D'		95	59	4.0	-	22,420
		90	49	5.0	22,050	-
		85	39	5.0	16,575	-
Less Gravel pit A-A' & C-C' A-A' & D-D'		SUB-TOTAL			58,985	34,804
		140	54	1.0	-	(-)7,560
		16	10	1.0	-	(-)160
IV – YEAR PRODUCTION					**58,985**	**27,084**
A-A' & C-C'	V-YEAR	28	42	5.0	5,880	-
		23	32	5.0	3,680	-
		18	22	5.0	1,980	-
A-A' & D-D'		80	29	5.0	11,600	-
		75	19	5.0	7,125	-
A-A' & B-B'		57	51	5.0	14,535	-
		47	41	5.0	9,635	-
		37	31	5.0	5,735	-
		27	21	5.0	2,835	-
V – YEAR PRODUCTION					**63,005**	**-**
TOTAL PRODUCTION FOR FIVE YEARS					**3,03,165**	**65,397**

6. Mining

Opencast

mining

Open cast Semi-Mechanized Mining with one 5.0 meter bench for Top soil & Gravel followed by 5.0 meter vertical bench with a bench width not less than the bench height. The Quarry operation involves shallow jack hammer drilling, blasting, loading and transportation.

Process Description

- The reserves and resources 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 30-32 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 6.0 KLD. Domestic water will be sourced from nearby Anaikulam Village and other water will be source from nearby road tankers supply.

Table 5. Water Balance

Purpose	Quantity	Source
Drinking Water	1.0KLD	Packaged Drinking water vendors available in Anaikulam village which is about 2.43 km W from the project site.
Green belt	1.5KLD	Other domestic activities through road tankers supply
Dust suppression	3.5KLD	From road tankers supply
Total	**6.0 KLD**	

8. Manpower

Total manpower required for the project is approximately 11 persons.

Workers will be from nearby villages.

Table 6. Man Power

a. Skilled labour	
Mines Manager	1 No
Mine foreman	1 No
Jack Hammer operator	2 Nos
Blaster / Mate	1 No
b. Unskilled – helpers	6 Nos
Total	**11 Nos**

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

9. Solid Waste Management

Table 7 Solid Waste Management

S.No	Type	Quantity	Dispossal Method
1.	Organic	1.98 kg/day	Municipal bin including food waste
2.	Inorganic	2.97 kg/day	TNPCB authorized recycler

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

Table 8. 500m Radius Cluster Mine

S. No.	Name of the Lessee	Village & S.F.No.	Extent - Hects	Lease Status
a. Details of abandoned quarries:				
……. Nil…….				
b. Details of Expired quarries				
……. Nil…….				
c. Details of Existing Quarries				
1.	Thiru.M.Abdul Ali, S/o.Mohammed Sharffudhin, No.8, Moonusuzhi road, Vadakarai village, Shenkottai Taluk, Tenkasi District.	S.F.Nos: 1,2,11/2 & 12, Surandai Part-I (V)	4.00.0	27.03.2023 to 26.03.2024
2	Thiru.D.Sankaranarayanan, S/o. Durairaj, 9-7-7/1, Bus stand Road, Surandai,	S.F. Nos: 279/3A (P) & 279/4 (P)	0.98.50	10.10.2022 to 09.10.2027

	Veerkeralampudur, Tenkasi Taluk and District.			
d. Present Proposed Quarries				
1.	N.H.M. Pandian, S/o. Navaneethakrishna Pandian, 4/7, Kuruthanmozhi, Kuruchampatti Post, V.K.Pudur Taluk, Tenkasi District.	S.F.Nos: 302/1, 304/1A & 304/2A Anaikulam Village	3.01.0	Instant Proposal
Total cluster area			**7.99.5**	

10. Land Requirement

The applied land use pattern is given as under

Table 9 Land Use Breakup

Sl. No.	Land Use	Details
1.	Mining / Excavation at present	0.00.00 Hectares
2.	Storage of topsoil & weathered rock	0.00.00 Hectares
3.	Stocking & Mineral Dressing Yard	0.00.00 Hectares
4.	Infrastructure	0.01.00 Hectares
5.	Mine Road	0.03.00 Hectares
6.	Afforestation & Mine safety	0.82.30 Hectares
7.	Future Mining	2.14.70 Hectares
8.	Undisturbed area	0.00.00 Hectares
Total		**3.01.00 Hectares**

11. Human Settlement

There are no habitations within 300m radius. There are villages located in this area within 15 km radius of the quarry.

Table 10 Habitation

SL. NO.	DIRECTION	VILLAGE	DISTANCE	POPULATION
1	East	Kurichanpatti	1.56 Km	1000
2	West	Anaikulam	2.43 Km	2794
3	Northwest	Arunachalapuram	1.54 Km	550
4	Southeast	Karaiyalanur	1.12 Km	600

12. Power Requirement

The proposed Rough stone quarrying does not require any power supply for the quarrying operation.

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 Topsoil.

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 : 31° C

ii) Average Maximum Temperature. : 34°C

iii) Average Annual Rainfall of the area: 792 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 10 km. radius, air quality survey has been conducted at 7 locations. Major air pollutants like Particulate Matter (PM10), Sulphur Dioxide (SO_2), Nitrogen Dioxide (NO_2) were monitored and the results are summarized below.

The baseline levels of PM_{10} (31-57 µg/m³), $PM_{2.5}$ (12-29 µg/m³), SO_2 (5-19 µg/m³), NO_2 (8-31 µg/m³), all the parameters are well within the standards prescribed by National Ambient Air Quality during the study period from December 2023 to February 2024.

13.3 Noise Environment

The maximum Day noise and Night noise were found to be 61 dB(A) and 52 dB(A) respectively in P.J.Sweet, Kadayanallur Road, Sendamaram. The minimum Day Noise and Night noise were 39 dB (A) and 32 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 7.06 – 8.24.
- TDS value varied from 274 mg/l to 1673 mg/l
- Hardness varied from 87.4 to 699 mg/l
- Chloride varied from 33.5 to 495 mg/l

13.5 Land Environment

The analysis results show that the majority of soil in the project and surrounding area is slightly alkaline in nature and pH value ranges from 6.89 to 7.86 with organic matter 0.21 to 0.45 %. 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 is 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 components 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 140 trees per annum with interval 5m.
4. The rate of survival expected to be 80% in this area

Table.11Plantation/ 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, Thethankottai Maram, Pungam	80%	1500
Total		**1500**

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 1,28,68,000/-** 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 .12 Project Cost details

S. No.	Description	Cost (Rs.)
1	Investment Cost	10,00,000/-
2	Mining Cost	1,18,68,000 /-
	Total	**1,28,68,000/-**

Total Environmental Management Plan Cost – Rs. 71,73,504 /-

(Seventy-one lakh seventy-three thousand five hundred and four rupees only) for 5 years.

20. Corporate Environmental Responsibility

The Corporate Environment Responsibility (CER) fund will be provided to the below activity.

Table 13 CER Cost

S.No.	CER Activity	CER value (Rs)
1.	Panchayat Union Primary School, Anaikulam, Kadayanallur Union – 627 859, Provision of ❖ LCD Smart Board and ❖ Amenities such as Environmental awareness books (Tamil) in Library for students, Green Belt development, Drinking water facility, Hygienic Toilet and maintenance of toilet upto lease period.	5,00,000
Total		**5,00,000**

21. Benefits of the Project

- There is a positive impact on socioeconomics 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 the 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 nearby vicinity.