

**February
2023**

Executive Summary

**Thiru.S.Marimuthu Rough stone & Gravel quarry-
4.24.0 Ha**

For

PUBLIC HEARING

At

**S.F Nos : 10/12, 11/2A, 11/2C, 11/2D, 11/2E, 11/2F,
11/2G(P), 11/2H(P), 11/2I(P), 11/2J2B and 15/2B1 of
Kottaiyur Village, Virudhunagar Taluk, Virudhunagar
District, Tamil Nadu**

PROJECT PROPONENT

**Thiru.S.Marimuthu,
S/O.Sundaram,
D.No. 1/177, Melatheru,
Kadaneri Village,
Wathirayiruppu taluk,
Virudhunagar District.
Pin Code: 626149.**

EIA Notification 2006 Schedule 1(a) Category B1 (Cluster)

**Prepared By:
Ecotech Labs Pvt. Ltd.**



**NABET Accredited EIA Consultant
No.48, 2nd Main Road,
Ram Nagar South Extension,
Pallikaranai, Chennai-600100**

EXECUTIVE SUMMARY

1. Project Background:

The Proposed project total extent area is 4.24.0 Ha, It is a Patta land in S.F.Nos. 10/12, 11/2A, 11/2C, 11/2D, 11/2E, 11/2F, 11/2G(P), 11/2H(P), 11/2I(P), 11/2J2B and 15/2B1 Kottaiyur Village, Virudhunagar Taluk, Virudhunagar District. The category of project is B1, It is a Rough stone and Gravel quarry in Kottaiyur village. The area is situated on plain terrain 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 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, slurry blasting, Loading and transportation of Rough stone and Gravel to the needy nearby crusher units / road formation works.

The quarry operation is proposed up to depth of 41m from the ground level. Geological Resources is estimated at 14,61,660 Cum of Rough stone and 1,39,422 of Gravel. Mineable Reserves is estimated as 4,89,305 Cum of Rough stone & 96,090 Cum of Gravel and after leaving necessary safety distance from the lease boundary as indicated in the precise area letter and relevant mining laws in force. Production Schedule is production of 489305 Cum of Rough Stone for the period of Five years. Mining Plan was approved by The Assistant Director, Geology & Mining, Virudhunagar vide letter Roc.No.KV1/519/2020 dated 27.05.2022. Precise area communication letter received from Assistant Director, Department of Geology and Mining; Virudhunagar vide letter Na.ka.No.KV1/519/2020-Kanimam dated 25.02.2021

The project area does not fall in Hill Area Conservation Authority region. There is no interstate boundary, CRZ zone, Western Ghats, notified Bird sanctuaries, wild life sanctuaries as per Wild life protection Act 1972, within the radius of 15Km.

2. Nature & Size of the Project

The Existing Rough Stone Quarry over an extent of 4.24.0 Hectares land is located at Kottaiyur Village, Virudhunagar Taluk, Virudhunagar District.

Mineral intends to quarry	: Rough stone and Gravel Quarry
District	: Virudhunagar
Taluk	: Virudhunagar
Village	: Kottaiyur
S. F. Nos.	: 10/12, 11/2A, 11/2C, 11/2D, 11/2E, 11/2F, 11/2G(P), 11/2H(P), 11/2I(P), 11/2J2B and 15/2B1
Extent	: 4.24.0 Hectares

Table 1: Brief Description of the Project

S. No	Particulars	Details
1	Latitude	Latitude : 09° 26' 11.60" to 09° 26' 19.15" N
2	Longitude	Longitude : 77° 58' 45.20" to 77° 58' 56.07" E
3	Site Elevation above MSL	86 m AMSL
4	Topography	Plain Terrain
5	Land use of the site	Patta Land
6	Extent of lease area	4.24.0 Ha
7	Nearest highway	NH- 44 (Srinagar - Kaniyakumari) – 6km, N
8	Nearest railway station	Sattur Railway Station – 11 km, S
9	Nearest airport	Madurai Airport – 55km, N
10	Nearest town / city	Town - Sattur - 11 Km -S City - Virudhunagar – 14km, N District - Virudhunagar – 14km, N
11	Rivers / Canal	Arjuna River – 4.7 km, S Vaippar River-11 Km, S
12	Lake	❖ Mannarkottai Village Tank – 1.2km, NW ❖ Malaiarasan koil lake –14 km NE ❖ Periya Kanmai –14 km, NE ❖ Kullursandai Reservoir – 12km, N

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	Vepillaipatti Open scrub – 3km, SSW Sandaiyur Open scrub – 2.85km, SSW
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.

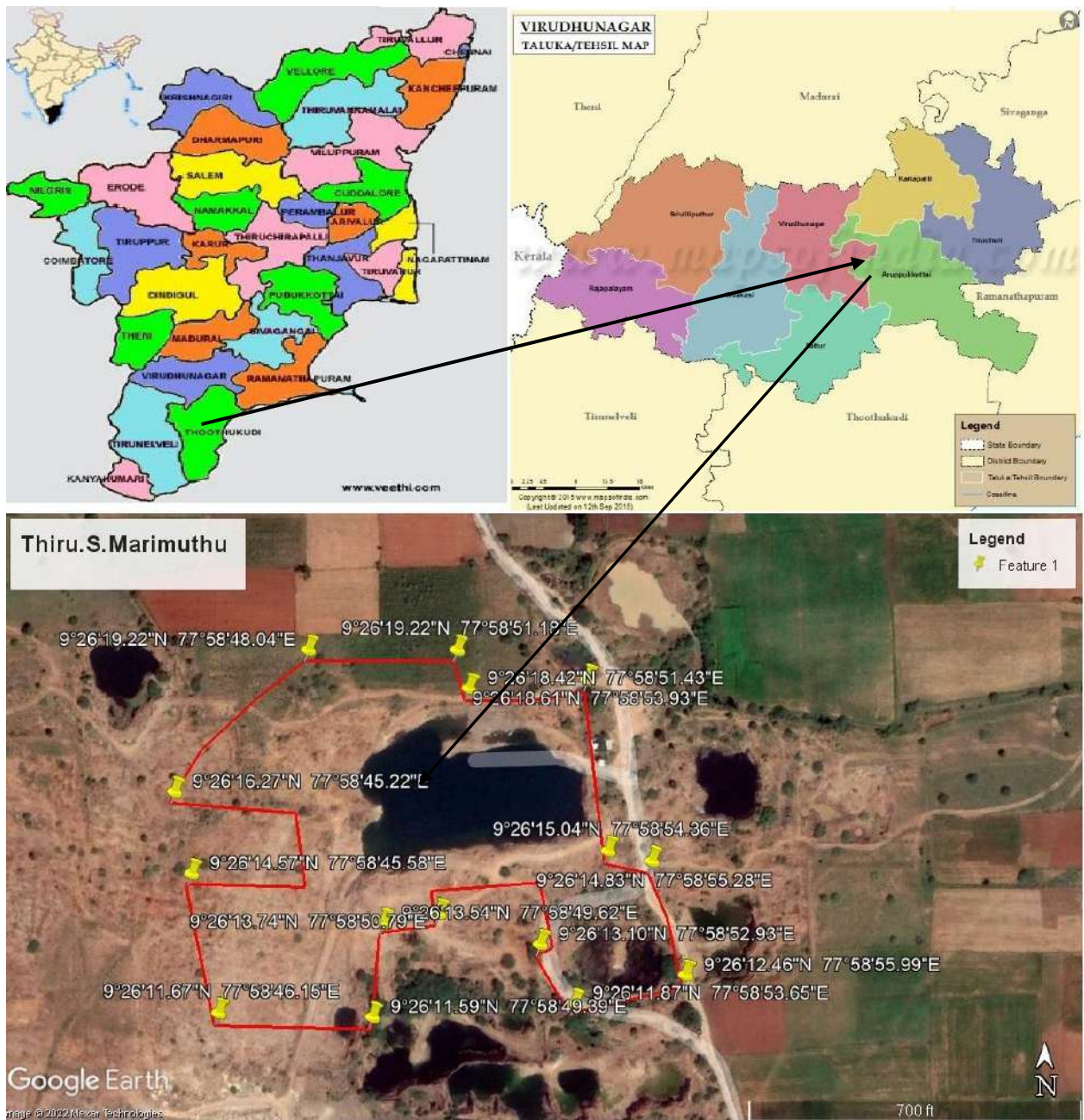


Figure 1: Location Map of the Project Site



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 Pandalgudi, Lakshmipuram, Gopalapuram, Sundakottai chinnakamanpatti, 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. The available geological reserve is estimated as 14,61,660 m³ of Rough Stone and 1,39,422 m³ of Gravel respectively. Availability of Resources is given below.

Table 2. Geological resources

SECTION	LENGTH (M)	WIDTH (M)	HEIGHT (M)	ROUGH STONE VOLUME M ³	TOP SOIL & GRAVEL VOLUME M ³
A-A' & B-B'	62	104	6.0	-	38,688
	62	104	35.0	2,25,680	-
A-A' & C-C'	168	110	3.0	-	55,440
	168	110	38.0	7,02,240	-
C-C' & D-D'	80	80	3.0	-	19,200
	80	80	38.0	2,43,200	-
E-E' & F-F'	110	86	6.0	-	56,760
	110	86	35.0	3.31.000	-
TOTAL GEOLOGICAL RESERVES				15,02,220	1,70,088
Existing pits A-A' & C-C'	134	55	3.0	-	(-)22,110
	132	38	5.0	(-)27,060	-
C-C' & D-D'	62	46	3.0	-	(-) 8,556
	60	45	5.0	(-)13,500	-
LESS - ALREADY EXCAVATED				(-)40,560	(-)30,666
BALANCE GEOLOGICAL RESERVES				14,61,660	1,39,422

Table 3. Mineable Resources

SECTION	LENGTH (M)	WIDTH (M)	HEIGHT (M)	ROUGH STONE VOLUME (M ³)	TOP SOIL & GRAVEL VOLUME (M ³)
A-A' & B-B' B'	53	86	6.0	-	27,348
	46	72	5.0	16,650	-
	41	62	5.0	12,710	-
	36	52	5.0	9,360	-
	31	42	5.0	6,510	-
	26	32	5.0	4,160	-
	21	22	5.0	2,310	-
	16	12	5.0	960	-
A-A' & C-C'	160	101	3.0	-	48,480
	153	94	5.0	71,910	-
	148	89	5.0	65,860	-
	143	84	5.0	60,060	-
	138	79	5.0	54,510	-
	133	74	5.0	49,210	-
	128	69	5.0	44,160	-
	123	59	5.0	36,285	-
C-C' & D-D'	72	62	3.0	-	13,392
	65	48	5.0	15,600	-
	60	38	5.0	11,400	-

	55	28	5.0	7,700	-
	50	18	5.0	4,500	-
	45	8	5.0	1,800	-
E-E' & F-F'	92	68	6.0	-	37,536
	78	54	5.0	21,060	-
	68	44	5.0	14,960	-
	58	34	5.0	9,860	-
	48	24	5.0	5,760	-
	38	14	5.0	2,660	-
TOTAL MINEABLE RESERVES				5,29,865	1,26,756
LESS : ALREADY EXCAVATED				(-)40,560	(-)30,666
BALANCE MINEABLE RESERVES				4,89,305	96,090

Table 4. Year wise Production Plan

YEAR	SECTION	LENGTH (M)	WIDTH (M)	HEIGHT (M)	ROUGH STONE VOLUME (M ³)	GRAVEL VOLUME (M ³)
I-Year	A-A' & B-B'	18	86	6.0	-	9,288
		10	72	5.0	3,600	-
	A-A' & C-C'	160	101	3.0	-	48,480
		153	94	5.0	71,900	-
	C-C' & D-D'	78	89	5.0	34,710	-
		72	62	3.0	-	13,392
		65	48	5.0	15,600	-
		60	38	5.0	11,400	-
SUB – TOTAL I-YEAR					1,37,220	71,160
LESS: ALREADY EXCAVATED PITS					(-)40,560	(-)30,666
I – YEAR PRODUCTION					96,660	40,494
II-Year	A-A' & B-B'	35	86	6.0	-	18,060
		36	72	5.0	12,960	-
		41	62	5.0	12,710	-
		36	52	5.0	9,360	-
	A-A' & C-C'	70	89	5.0	31,150	-
		79	84	5.0	33,180	-
II – YEAR PRODUCTION					99,360	18,060
III-Year	A-A' & B-B'	31	42	5.0	6,510	-
		26	32	5.0	4,160	-
	A-A' & C-C'	64	84	5.0	26,880	-
		138	79	5.0	54,510	-
	C-C' & D-D'	55	28	5.0	7,700	-
III – YEAR PRODUCTION					99,760	-
IV-YEAR	A-A' & B-B'	21	22	5.0	2,310	-
		16	12	5.0	960	-
	A-A' & C-C'	133	74	5.0	49,210	-
		128	69	5.0	44,160	-

IV – YEAR PRODUCTION					96,640	-
V-YEAR	A-A' & C-C'	123	59	5.0	36,285	-
	C-C' & D-D'	50	18	5.0	4,500	-
		45	8	5.0	1,800	-
	E-E' & F-F'	92	68	6.0	-	37,536
		78	54	5.0	21,060	-
		68	44	5.0	14,960	-
		58	34	5.0	9,860	-
		48	24	5.0	5,760	-
		38	14	5.0	2,660	-
	V – YEAR PRODUCTION					96,885
TOTAL PRODUCTION FOR FIVE YEARS					4,89,305	96,090

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 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 30-32 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 4.5 KLD. Domestic water will be sourced from nearby MC Puram Village and other water will be source from nearby road tankers supply.

Table 5. Water Balance

Purpose	Quantity	Source
Drinking Water	1.5KLD	Packaged Drinking water vendors available in MC Puram which is about 0.45 Km N of the area
Green belt	1.5KLD	Other domestic activities through road tankers supply
Dust suppression	1.5KLD	From road tankers supply
Total	4.5 KLD	

8. Manpower

Total manpower required for the project is approximately 16 persons. Workers will be from nearby villages.

Table 6. Man Power

1.	Skilled	Mine Foreman/ Permit	1No.
		Mines Manager	
		Jack hammer operator	3 No.
		Blaster /Mate	2 No.
2.	Unskilled	Musdoor / Labours	7 Nos
		Cleaners	2 Nos
		helper	1 No
		Total =	16Nos

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	Disposal Method
1	Organic	2.8 kg/day	Municipal bin including food waste
2	Inorganic	4.32 kg/day	TNPCB authorized recyclers

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

Table 8. 500m Radius Cluster Mine

1) Existing other quarries:

S. No	Name of the Owner	Village & Taluk	S.F.Nos.	Extent in Hect.	Lease Period
1	Thiru.C.Selvarajpandi, D.No.676-D, Andal Nagar, 2 nd Street, Kunnoor, Srivilliputhur.	Kottaiyur	S.F.No.18 /3, 19/3, 19/5, 20/1, 20/2A, 20/2B, 20/3A, 20/3B, 20/4A1, 20/4A2, 20/4B	Ext: 4.03.00 Hects	17.05.2018 to 16.05.2023
2	Thiru.R.Rajeshkanna, S/o.P.Ramraj, Andipatti Pandalgudi Post, Aruppukottai Taluk, Virudhunagar District.	Kottaiyur	S.F.No.2/ 3, 2/6, 2/7	Ext:1.20.5 0 Hects	KV1/15033/2015 dated:16.11.2017 Modified MP KV1/15033/2015 -1 dated:28.05.2019 27.12.2017 to 26.12.2022 Modified MP 27.09.2018 to 26.12.2022
3	Tmt.C.Vannamuthu W/o.Chellakanni 2/183A, Thathampatti, T.Sedapatti post.	Kottaiyur	13/3A1	Ext:0.46.0 0 Hects	KV1/482/2018 Dated:18.07.2020 26.08.2020 to 25.08.2025

2) Details of abandoned /Old Quarries

S. No.	Name of the Owner	Village & Taluk	S.F.Nos.	Extent in Hect.	Lease Period
Nil					

3) Details of Present Proposed quarries

S. No.	Name of the Owner	Village & Taluk	S.F.Nos.	Extent in Hect.	Lease Period
1.	Thiru.S.Marimuthu, S/o.S.Sundaram, D.No.4/117, Melatheru, Kadaneri village, Wathraytiruppu Taluk, Virudhunagar District.	Kottaiyur	S.F.No. 10/12, 11/2A, 11/2C, 11/2D, 11/2E, 11/2F, 11/2G(P), 11/2H(P), 11/2I(P), 11/2J2B, 15/2B1	Ext: 4.24.00 Hects	KV1/519/2020 Dated:23.09.2020

10. Land Requirement

The total extent area of the project is 4.24.0 Ha, Patta Land in Kottaiyur Village of Virudhunagar Taluk, Virudhunagar District.

Table 9 Land Use Breakup

Sl. No.	Land Use	Area in use during the quarrying period (Hect)
1.	Mining / Excavation at present	1.22.2

2.	Storage of top soil & weathered rock	0.00.0
3.	Stocking & Mineral Dressing Yard	0.00.0
4.	Infrastructure	0.01.0
5.	Mine Road	0.03.0
6.	Afforestation & Mine safety	0.86.3
7.	Future Mining	2.11.5
8.	Undisturbed area	0.00.0
	Total	4.24.0

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

S. NO	DIRECTION	VILLAGE	POPULATION	DISTANCE
1	North	M.Chinnaiyapuram	1,000	0.5 Km
		Valayapatti	1138	2.0 Km
		Meenakshipuram	727	3.0 Km
		Chokkalingapuram	500	4.0 Km
2	NorthEast	Koothiparai	500	4.0 Km
3	NorthWest	Ramakudumbanpatti	350	3.0 Km
		Sanapatti	450	4.0 Km
		Vachakarapatti	1,700	5.0 Km
4	South	Virarpatti	1,000	2.0 Km
		Appaiyanaickerpatti	1500	3.0 Km
		Puthupatti	650	3.5 Km
		Nallamanaickerpatti	1,200	4.5 Km
5	SouthEast	Sundaralingapuram	400	4.5 Km
6	SouthWest	Sundarlingapuram	500	4.0 Km
		Golwarpatti	450	4.5 Km
7	East	Kottaiyur	1,000	1.5 Km
		Bommaiyapuram	550	4.0 Km
8	West	Mannarkottai	650	2.0 Km
		Aavudaiyapuram	1,500	3.5 Km

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 Top soil.

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 : 30° C
- ii) Average Maximum Temperature. : 38°C
- iii) Average Annual Rainfall of the area : 829 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 (41- 61 µg/m³), PM_{2.5} (17- 30 µg/m³), SO₂ (5-13 µg/m³), NO₂ (9-27 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 60 dB(A) and 49 dB(A) respectively in Bommayapuram Primary school. The minimum Day Noise and Night noise were 40 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 7.56 – 8.16.
- TDS value varied from 575 mg/l to 2112 mg/l
- Hardness varied from 93.8 to 898 mg/l
- Chloride varied from 89.8 to 476 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 6.99 to 7.69 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 a 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 440 trees per annum with interval 5m.
4. The rate of survival expected to be 70% in this area

Table.11 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, Thethankottai Maram, Pungam	70%	2200
Total		2200

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 (TNPCCB), shall be maintained.

19. Project Cost

The total project cost is **Rs 1,12,22,850/-** 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	8,25,000/-
2	Expenditure Cost	1,09,67,765 /-
	Total	1,12,22,850/-

Environmental Management Cost : Rs.6,65,000 /-

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.	Government Higher Secondary School, Appayanaickenpatti Provision of <ul style="list-style-type: none">➤ Infrastructure, additional class room➤ Environmental books for library (in Tamil language),➤ Greenbelt facilities and➤ Basic amenities such as safe drinking water, Hygienic Toilets facilities, furniture.	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.