

JULY

2023

**Executive Summary for Conducting Public Hearing
FOR**

**“M/s. Svart Sten Associates LLP Rough Stone and
Gravel Quarry over a total extent of 1.24.0 Ha”**

At

**S.F.No. 477/1, 477/2, 477/6, 478/2(P), 478/3(P) &
478/4(P) of A.P.Nadanoor Village, Alangulam Taluk,
Tenkasi (Tirunelveli) District, Tamilnadu State**

Project Proponent:

**M/s. Svart Sten Associates LLP,
Asum Tower, Ezhumangad,
Arangottukara Post,
Palakkad District, Kerala – 679 533.**

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 Proposed project total extent area is 1.24.0 Ha, It is a Patta land in 477/1, 477/2, 477/6, 478/2 (P), 478/3 (P) and 478/4 (P) in A.P. Nadanoor Village, Alangulam Taluk, Tenkasi (Tirunelveli) District. The category of project is B1, It is a Rough stone and Gravel quarry in A.P.Nadanoor village. The area is situated on plain topography covered by Gravel and Rough Stone formation 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 42 m from the below ground level. Geological Resources is estimated at 4,80,000 Cum of Rough stone and 24,000 Cum of Gravel. Mineable Reserves is estimated as 2,16,130 Cum of Rough stone and 22770 Cu.m of Gravel 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 2,16,130 Cum of Rough Stone and 22770 Cum of Gravel for the period of Five years. Mining Plan was approved by The Assistant Director, Geology & Mining, Tenkasi vide letter Rc.No.M2/36809/2020 dated 11.04.2022. Precise area communication letter received from Assistant Director, Department of Geology and Mining; Tenkasi vide letter Rc.No.M2/36809/2020 dated 24.01.2022

The project area does not fall in Hill Area Conservation Authority region. There is no interstate boundary, CRZ zone, Western Ghats, notified Bird sanctuaries, wild life sanctuaries as per Wild life protection Act 1972, within the radius of 15Km. Nellai Wildlife Sanctuary was situated at a distance of 15.50 kms, NW from the project site boundary.

2. Nature & Size of the Project

The Rough Stone and Gravel Quarry over an extent of 1.24.0 Hectares land is located at A.P. Nadanoor Village, Alangulam Taluk, Tenkasi (Tirunelveli) District.

Mineral intends to quarry	: Rough stone and Gravel Quarry
District	: Tenkasi (Tirunelveli)
Taluk	: Alangulam
Village	: A.P. Nadanoor
S. F. Nos.	: 477/1, 477/2, 477/6, 478/2 (P), 478/3 (P) and 478/4 (P)
Extent	: 1.42.0 Hectares

Table 1: Brief Description of the Project

S. No	Particulars	Details
1	Latitude	8° 48' 11.8373" N to 8° 48' 9.7487" N
2	Longitude	77° 26' 5.2133" E to 77° 25' 59.9788" E
3	Site Elevation above MSL	97 m MSL
4	Topography	Plain Terrain
5	Land use of the site	Patta Land
6	Extent of lease area	1.24.0 Ha
7	Nearest highway	<ul style="list-style-type: none"> • SH-41A - Tirunelveli to Pottalpuhur Road is about 2.26 Kms on S of the area • SH-40 – Tirunelveli – Shengottai Road is about 5.75 Kms on SW of the area • NH-74 - Kollam to Tenkasi Road is about 22.22 Kms on NW
8	Nearest railway station	Kizha Kadayam Railway Station – 6 km, NW Tenkasi Junction- 22.50 km, NW
9	Nearest airport	Tuticorin Domestic Airport – 65.70 km, E Madurai International Airport – 135.20 km, NE
10	Nearest town / city	Town - Alangulam – 8.84 Km -NE City - Tenkasi -20.70 km, NW District - Tenkasi – 20.70 km, NW

11	Rivers / Canal / Dam	<ul style="list-style-type: none"> ❖ Thamirabharani River – 12.14 Kms – S ❖ Kadana Nathi Dam – 13.5 Kms – W ❖ Ramanathi Dam – 13.51 Kms – NW
12	Lake	<ul style="list-style-type: none"> • AP Nadanoor Pond – 0.52 Kms – SW • Sadayandiyoor Lake – 2.45 Kms – SE • Therkumadathur Pond – 4.71 Kms – NW • Adaichani Periyakulam – 5.07 Kms – S • Koviloothu North Pond – 5.78 Kms – N • Pappakudi Periyakulam – 8.47 Kms – SE • Keezha Kadayam Pond – 9 Kms – NW • Nagal Kulam – 10.50 Kms – N • Keezhpaavoor Kulam – 12.77 Kms – N • Thalar Kulam – 12.50 Kms – E • Korung Kulam – 11.71 Kms – SE
13	Hills / valleys	Nil in 15 km radius
14	Archaeologically places	Nil in 15 km radius
15	National parks / Wildlife Sanctuaries	<ul style="list-style-type: none"> ❖ Nellai Wildlife Sanctuary – 15.50 kms, NW
16	Reserved / Protected Forests	<ul style="list-style-type: none"> • Papanasam R.F – 13 Kms – SW • Courtallam Slopes R.F – 13.50 Kms – NW
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 Tenkasi.
- ❖ 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.

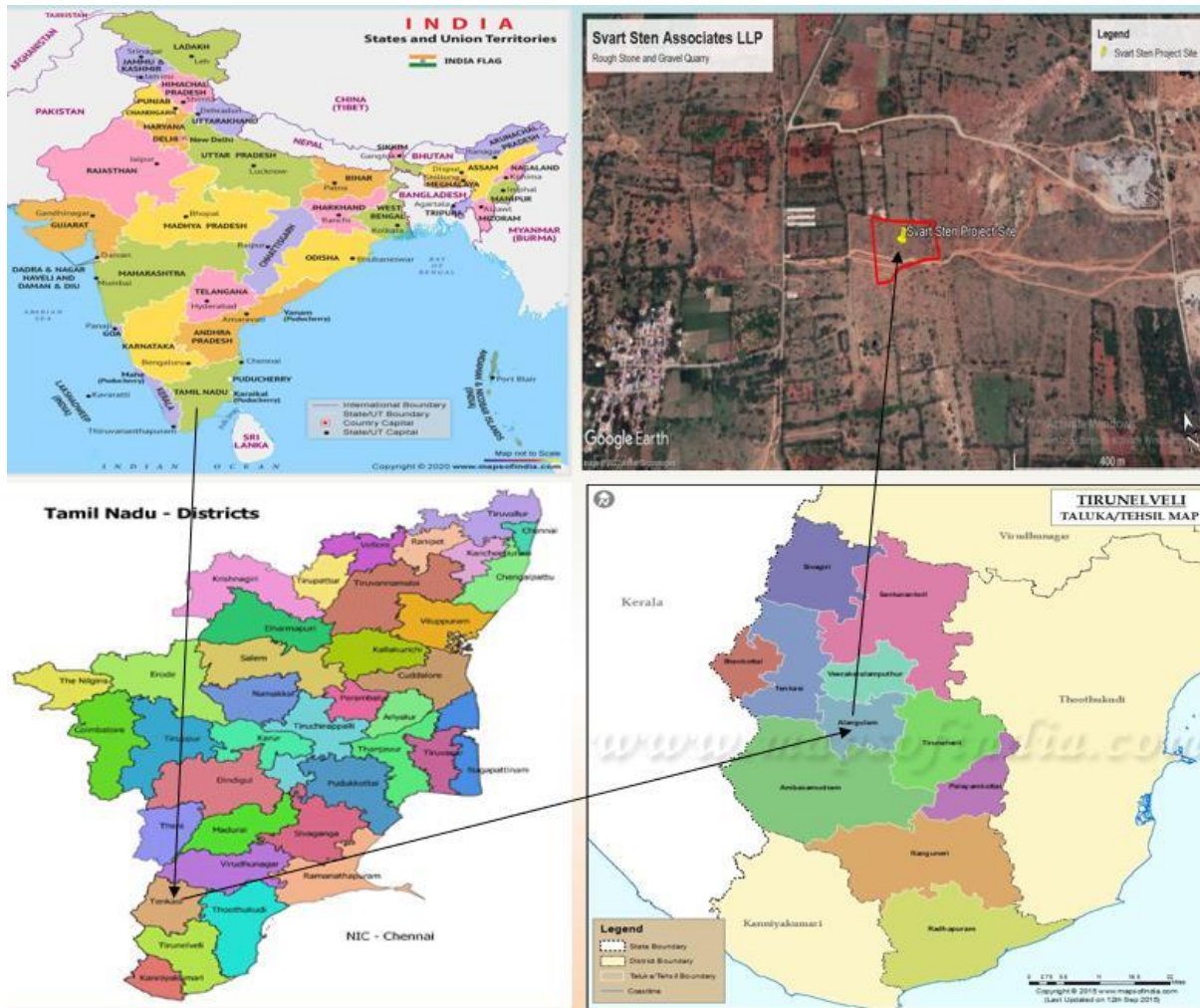


Figure 1: Location Map of the Project Site

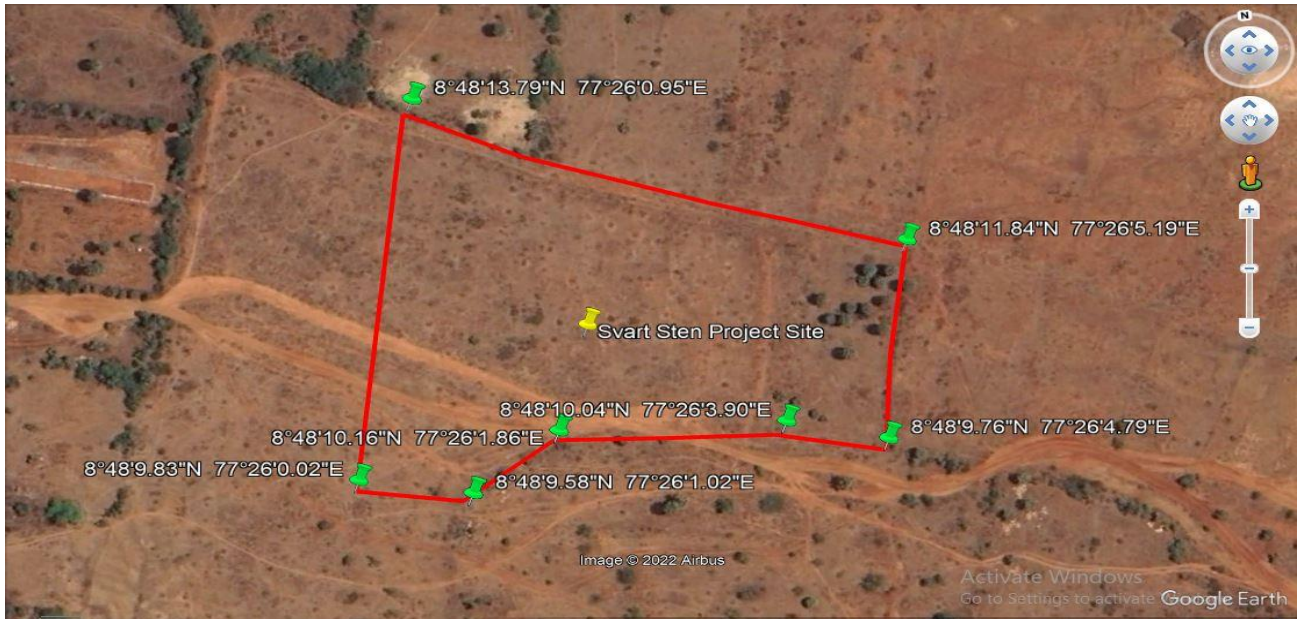


Figure 2: Google Image of the Project Site

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 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 hills 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 leptynite 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 is estimated as 4,80,000 m³ of Rough Stone and 24,000 m³ of Gravel upto a depth of 42 m (2.0 m Gravel and 40 m Rough Stone). Availability of Resources is given below.

Table 2. Geological resources

Section	Bench	L (m)	W (m)	D (m)	Volume In m ³	Geological Reserves in m ³ @ 100 %	Gravel in m ³
XY-AB	I	78	99	2			15444
	II	78	99	5	38610	38610	
	III	78	99	5	38610	38610	
	IV	78	99	5	38610	38610	
	V	78	99	5	38610	38610	
	VI	78	99	5	38610	38610	
	VII	78	99	5	38610	38610	
	VIII	78	99	5	38610	38610	
	IX	78	99	5	38610	38610	
TOTAL					308880	308880	15444
XY-CD	I	62	69	2			8556
	II	62	69	5	21390	21390	
	III	62	69	5	21390	21390	
	IV	62	69	5	21390	21390	
	V	62	69	5	21390	21390	
	VI	62	69	5	21390	21390	
	VII	62	69	5	21390	21390	
	VIII	62	69	5	21390	21390	
	IX	62	69	5	21390	21390	
TOTAL					171120	171120	8556
GRAND TOTAL					480000	480000	24000

Table 3. Mineable Resources

The Available mineable reserve is computed as 216130 m³ of Rough stone and 22770 m³ of Gravel upto a depth of 42 m below ground level only.

Section	Bench	L (m)	W (m)	D (m)	Volume in m ³	Rough Stone in m ³	Gravel in m ³
XY-AB	I	99	100	2	--	--	19800
	II	97	96	5	46560	46560	--
	III	92	86	5	39560	39560	--
	IV	87	76	5	33060	33060	--
	V	82	66	5	27060	27060	--
	VI	77	56	5	21560	21560	--
	VII	72	46	5	16560	16560	--
	VIII	62	36	5	11160	11160	--
	IX	52	26	5	6760	6760	--
TOTAL					202280	202280	19800
XY-CD	I	27	55	2	--	--	2970
	II	25	51	5	6375	6375	--
	III	20	41	5	4100	4100	--
	IV	15	31	5	2325	2325	--
	V	10	21	5	1050	1050	--
TOTAL					13850	13850	2970
GRAND TOTAL					216130	216130	22770

Table 4. Year wise Production Plan

The proposed rate of production of Rough Stone is about 2,16,130 m³ of Rough Stone and 22,770 m³ of Gravel upto a depth of 42.0 m (Max) (2.0 m Gravel and 40 m Rough Stone) for the lease period of five years only.

YEAR	Section	Bench	L (m)	W (m)	D (m)	Volume in m ³	Reserve in m ³ @ 95%	Gravel in m ³
	XY-AB	I	99	100	2			19800

I- YEAR	XY-CD	II	97	96	5	46560	46560	
		I	27	55	2			2970
		II	25	51	5	6375	6375	
	TOTAL					52935	52935	22770
II- YEAR	XY-AB	III	92	86	5	39560	39560	
	XY-CD	III	20	41	5	4100	4100	
	TOTAL					43660	43660	
III- YEAR	XY-AB	IV	87	76	5	33060	33060	
	XY-CD	IV	15	31	5	2325	2325	
	TOTAL					35385	35385	
IV- YEAR	XY-AB	V	82	66	5	27060	27060	
	XY-CD	V	10	21	5	1050	1050	
	TOTAL					28110	28110	
V- YEAR	XY-AB	VI	77	56	5	21560	21560	
		VII	72	46	5	16560	16560	
		VIII	62	36	5	11160	11160	
		IX	52	26	5	6760	6760	
	TOTAL					56040	56040	
GRAND TOTAL						216130	216130	22770

6. Mining

Opencast mining

Open cast Semi-Mechanized Mining with one 5.0 meter bench for Rough Stone and 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 2.0 KLD. Domestic water will be sourced from nearby Murugandiyur Village and other water will be source from nearby road tankers supply.

Table 5. Water Balance

Purpose	Quantity	Source
Drinking Water	1.0 KLD	Packaged Drinking water vendors available in Murugandiyur village which is about 0.50 Km W of the area
Green belt	0.5KLD	Other domestic activities through road tankers supply
Dust suppression	0.5KLD	From road tankers supply
Total	2.0 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	Operator, Mechnic, Blaster/Mat	2 No. 1 No. 1 No.
2.	Semi – skilled	Driver	2 Nos
3.	Unskilled	Musdoor / Labors Cleaners & Office Boy	4 Nos 2 No 1 No
4.	Management & Supervisor Staff	Mines Foreman	2 No
Total			15 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	Disposal Method
1	Organic	2.7 kg/day	Municipal bin including food waste
2	Inorganic	4.05 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.N.Mohamed Mahaboob, S/o. Nagoor Pitchai, No. 8/143, Main Road, Pottalpurur Village Kaspas, Ambasamudram Taluk, Tenkasi	A.P Nadanoor & Alangulam	434/1C, 434/4E, 434/4F, 434/4G, 434/4H, 434/4I, 434/4J, 470/1, 471/2, 471/3, 472/1B & 472/1C	3.74.5	Proceedings No. M1/44736/2016, dt. 20.03.2018 for a period of 5 years from 16.04.2018 to 15.04.2023
Total extent of abandoned quarries				3.74.5	

2) Details of abandoned /Old Quarries

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

Total extent of abandoned quarries	0	
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3) Details of Present Proposed quarries

S. No.	Name of the Owner	Village & Taluk	S.F.Nos.	Extent in Hect.	Lease Period
1.	Thiru M Mohammed Ismail, S/o. Mohammed Mahaboob, 8/143, Main Road, Pottalpuhur, Tenkasi District	A.P Nadanoor & Alangulam	467/2, 467/3, 468/1, 477/3, 477/4 & 477/5	4.38.0	Proposed Quarry
2.	M/s. Svart Sten Associates LLP, Asum Tower, Ezhumangad, Arangottukkara Post, Palakkad District, Kerala – 679 533	A.P Nadanoor & Alangulam	477/1, 477/2, 477/6, 478/2(P), 478/3(P) & 478/4(P)	1.24.0	Proposed quarry
Total Extent of Proposed Quarries				5.62	

10. Land Requirement

The total extent area of the project is 1.24.0 Ha, Patta Land in A.P. Nadanoor Village of Alangulam Taluk, Tenkasi (Tirunelveli) District.

Table 9 Land Use Breakup

Sl. No.	Land Use	Area in use during the quarrying period (Hect)
1.	Quarrying pit	0.91.0

2.	Infrastructure	0.01.0
3.	Road	0.01.0
4.	Green belt	0.18.0
5.	Unutilized area	0.13.0
	Total	1.24.0

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	Name of the Village	Approximate distance & Direction from lease applied area	Approximate population
1.	Theertharappapuram	0.65 km – NE	1875
2.	Murugandiyur	0.50 km – W	1456
3.	Chellapillayarkulam	0.80 km – S	1374
4.	Kalitheerthaanpatti	3 km - SE	1565

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 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 : 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 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 (36-62 µg/m³), PM_{2.5} (14- 32 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 March 2023 to May 2023.

13.3 Noise Environment

The maximum Day noise and Night noise were found to be 61 dB(A) and 50 dB(A) respectively in Merit Polytechnic College . The minimum Day Noise and Night noise were 43 dB(A) and 38 dB(A) respectively which was observed in Sri Seevalperi Sudalai Mada Swamy Kovil, Pottalpudhur. The observed values are all well within the Standards prescribed by CPCB.

13.4 Water Environment

- The average pH ranges from 7.26 – 8.08.
- TDS value varied from 121 mg/l to 1030 mg/l

- Hardness varied from 90.9 to 1384 mg/l
- Chloride varied from 21.5 to 1384 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 6.32 to 7.41 with organic matter 0.7 to 5.43 %. 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 140 trees per annum with interval 5m.
4. The rate of survival expected to be 80% in this area

Table.11 Plantation/ Afforestation Program

Name of species proposed	Survival	No of species
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Neem, Vilvam, Vaagai, Eachai, Naval, Mantharai, Magizha Maram, Vila Maram, Poo Marudhu, Panai, Marudha maram, Thandri, Sengondrai, Poovarasu, Thethankottai Maram, Pungam	80%	700
Total		700

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 45,70,000/-** 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 .12 Project Cost details

S. No.	Description	Cost (Rs.)
1	Fixed Asset Cost	15,70,000/-
2	Operational Cost	30,00,000 /-
	Total	45,70,000/-

EMP Cost – Rs. 81,80,759 (Rs. 81 Lakhs)

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.	Roselin (Government Aided) Primary School, A.P. Nadanoor Village, Alangulam Taluk, Tenkasi District – 1.11 km, SW Providing facilities are: <ul style="list-style-type: none">➤ Computer – 2 No's.➤ Steel bench and table➤ Chairs➤ R.O Water Facility➤ Planting trees in and around the periphery of the school campus – 50 No's.➤ Environmental Science books in Tamil Language for Library➤ Smart Classroom facility➤ Hygienic Toilet Facility and maintenance upto 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.