

July 2026

**Executive Summary for Conducting Public Hearing
FOR**

**“Thiru. J.Balasubramanian Rough Stone and Gravel
Quarry over a total extent of 3.50.0 Ha”**

At

**S.F.No. 68/1, 68/2, 68/3, 68/4A, 68/4B, 71/4A, 71/4B,
71/5A & 71/ 5B of Sillanatham Village, Ottapidaram
Taluk, Thoothukudi District, Tamilnadu State**

Project Proponent:

**Thiru. J.Balasubramanian,
S/o. Jegannathan,
Dhanasekaran Nagar,
Second Street, Polpettai West,
Thoothukudi – 628 002**

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 – 600 100**

EXECUTIVE SUMMARY

1. Project Background:

The Proposed project total extent area is **3.50.00 Ha**, it is a Patta land **S.F. No: 68/1, 68/2, 68/3, 68/4A, 68/4B, 71/4A, 71/4B, 71/5A & 71/5B of Sillanatham Village, Ottapidaram Taluk, Thoothukudi District**. The category of project is B1. It is a Rough stone and Gravel quarry in Sillanatham village. The lease area exhibits a plain terrain with very gentle slope towards south and covered by greyish black clayey soil followed by gravel/ weathered rock formation and massive Charnockite rock formation.

The quarry operation is proposed to carry out with conventional open cast mechanized mining with **5.0 m height and width of benches for gravel and rough stone**. The quarry operation involves shallow jack hammer drilling, slurry blasting, Loading and transportation of Rough stone and Gravel to the needy nearby crusher unit's / road formation works.

The quarry operation is proposed up to **depth for 30.0m** Below ground level for the proposed mining plan. The Total **Geological reserve** is about **20,54,811 MT of Rough stone** and **6,46,300 MT of Gravel**. The **Mineable Reserves** are **5,00,307.5 MT of Rough stone** and **2,38,319.5 MT of Gravel** for a period of **5 years**. Production schedule is proposed for the period of five years.

The precise area communication Letter was obtained from The Assistant Director, Geology & Mining Department, Thoothukudi District Precise area communication letter **Na.Ka.No.G.M1/600/ 2025** dated **12.01.2026**.

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

2. Nature & Size of the Project

The proposed Rough stone and Gravel quarry located over an extent of 3.50.00 Hectares land in Sillanatham Village of Ottapidaram Taluk, Thoothukudi District.

Mineral intends to quarry

: Rough stone and Gravel Quarry

District

: Thoothukudi

Taluk : Ottapidaram
Village : Sillanatham
S. F. Nos. : 68/1, 68/2, 68/3, 68/4A, 68/4B, 71/4A, 71/4B,
71/5A & 71/5B
Extent : 3.50.00 Hectares

Table 1: Brief Description of the Project

S. No	Particulars	Details
1	Latitude	08° 48' 11.00" to 08° 48' 22.96"N
2	Longitude	77° 45' 40.14" to 77° 45' 42.75"E
3	Site Elevation above MSL	The altitude of the lease area is 52 m above MSL.
4	Mining plan period	5 Years
5	Topography	Plain Terrain
6	Land use of the site	Patta Land
7	Extent of lease area	3.50.00 Ha
8	Nearest highway	➤ DR – 935 Pudur Pandiyapuram – Puthiampudur – 1.4 km S ➤ NH-38 Madurai - Thoothukudi road – 4.0 Km, E ➤ SH- 75 Palayamkottai – Ottapidaram – Vilathikulam – Pandalkudi – 5.0 Km, N
9	Nearest railway station	Thoothukudi Railway Station – 14.0 km, SE
10	Nearest airport	Madurai International Airport – 105.1 km – NW Thoothukudi Domestic Airport – 18.0km - SW
11	Nearest town / city	Town – Ottapidaram – 7.0 Km, NW City – Thoothukudi - 14.92 km - SE District – Thoothukudi - 14.92 km - SE
12	Rivers / Canal / Dam	Rivers ✓ Upparu River – 12.15 km, SW
13	Lake/Pond	✓ Oorani – 0.01 km, W ✓ Sillanatham Pond – 1.14 km S ✓ Sindalakattai Pond – 2.3 km NE ✓ Sillanatham Lake – 2.68 km N ✓ Valasamuthiram Lake – 3.09 km NE ✓ Melavelayudhapuram Water Storage Tank – 3.81 km SE ✓ Mel Arasadi Pond – 4.39 km E ✓ K Velayuthapuram Pond – 4.5 km N ✓ Kakkarampatti Lake – 4.53 km NW ✓ Muppilivetti Lake – 4.61 km W ✓ K Velayuthapuram Pond 2 – 4.7 km N ✓ Pudiyampudhur Lake – 4.74 km W ✓ Metupacheri Lake – 5.04 km W ✓ Kurukku Chalai Lake – 5.16 km NE ✓ Pudiyampudhur lake 2 – 5.78 km SW ✓ Puthur Pandiyapuram Pond – 6.02 km SE ✓ Elanthai Kulam – 6.16 km NW ✓ K Shanmugapuram Lake – 6.69 km NE ✓ Ottapidaram Lake – 6.74 km NW ✓ Puthur Pandiyapuram Lake – 6.75 km SE

		✓ Sevalkulam – 8.29 km W ✓ Oosanuthu Odai – 8.34 km W ✓ Duraisampuram Lake – 8.81 km NW ✓ Chettiurani Pond – 9.11 km SW ✓ Kulasekaranallur Lake – 9.53 km NW ✓ Marugal Odai – 10.3 km, SW ✓ Vellaram Lake – 10.68 km NW ✓ Kulasekarnallur Odai – 10.7 km NW ✓ Sengulam - 11.05 km SE ✓ Araikulam – 11.54 km NW ✓ Koram Pallam Tank – 12.71 km SE ✓ Thiruvananthapuram Periya Kulam – 14.34 km SW ✓ Kaatu Nayagan patti Lake – 14.37 km N ✓ Allikulam Lake – 14.61 km SW
14	Hills / valleys	Nil in 15 km radius
15	Archaeologically places	Nil in 15 km Radius
16	National parks / Wildlife Sanctuaries	Valanadu Wild Life Sanctuary – 27.87 km, SW
17	Reserved / Protected Forests	Salikulam R.F – 6.9 km NW
18	Seismicity	Proposed Lease area comes under Seismic zone-III (Low risk area)

3. Need for the Project

- ❖ The mining activities as proposed are the back bone 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 Thoothukudi.
- ❖ 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 artificial recharge to the nearby wells.
- ❖ No damage to the land is caused, no reclamation or backfilling is required.

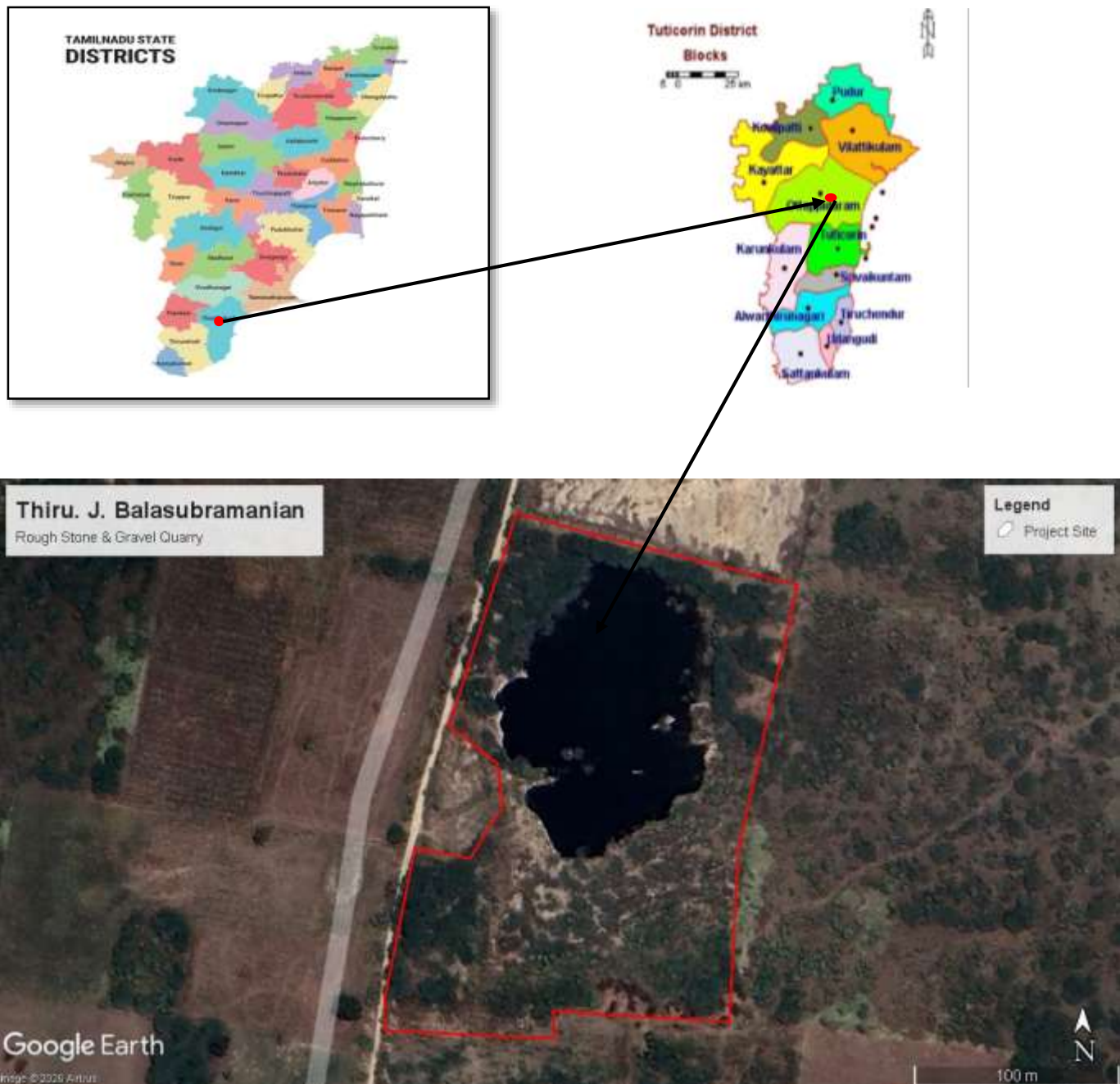


Figure 1: Location Map of the Project Site



Figure 2: Google Image of the Project Site

4. Charnockite

Thoothukudi district represents a well-developed lithopackage of meta-sedimentary sequence inter banded with charnockite Group of rocks. The rock types exposed are of quartzite, calc-granulite, garnet-biotite-sillimanite gneiss, garnet quartzo-feldspathic gneiss and garnet-biotite-cordierite gneiss belonging to Khondalite Group of rock. Charnockite and pyroxene Granulite are the Charnockite Group. Hornblende-biotite gneiss belongs to Migmatitic Complex. Besides, basic intrusive (pyroxenite) and acid intrusive (granite) are noticed. The younger intrusive are represented by pegmatite and quartz veins. Evidence of development of incipient / patchy charnockite along the shear plane is noticed in the district along the Western Ghat high hills.

The Charnockite includes felsic and rich in quartz and microcline, others mafic and full of pyroxene and olinine, a special feature, recurring in many members of the group, is the presence of a strongly pleochroic, reddish or green orthopyroxene (formerly known as hypersthene)..

Key Features:

- **Composition:** Mainly consists of **quartz, feldspar, and hypersthene** (a type of pyroxene mineral).
- **Colour:** Typically, **greyish black**
- **Texture:** Coarse-grained and crystalline.

- **Hardness:** Very hard and durable.

5. Geological Resources

The geological reserves have been calculated based on the cross-section method and the availability of Geological Resources in this land is given below.

Table 2. Geological Resources

SECTION	LENGTH (M)	WIDTH (M)	HEIGHT (M)	Tonnage Factor	ROUGH STONE – MT	GRAVEL – MT
A-A' & B-B'	46.0	152.5	10.0	2.0	-	1,40,300
	46.0	152.5	20.0	2.75	3,85,825	-
A-A' & C-C'	72.0	154.0	10.0	2.0	-	2,21,760
	72.0	154.0	20.0	2.75	6,09,840	-
A-A' & D-D'	68.0	160.0	10.0	2.0	-	2,17,600
	68.0	160.0	20.0	2.75	5,98,400	-
A-A' & E-E'	52.0	164.0	10.0	2.0	-	1,70,560
	52.0	164.0	20.0	2.75	4,69,040	-
TOTAL GEOLOGICAL RESERVES					20,63,105	7,50,220
LESS: Total Excavated Pit Quantity					(-)8,294	(-)1,03,920
BALANCE AVAILABLE GEOLOGICAL RESERVES					20,54,811	6,46,300

Gravel Formation

: 6,46,300MT

The Geological Resources of Rough stone : 20,54,811 MT

Mineable Resources:

The available mineable reserves are calculated for the proposed lease period of 5 years based on the total minable reserves calculated by providing safety distances of 50.0m to the Oorani /10.0m to the cart track at west and 7.5m to the patta lands on all the other sides of the boundary side of the applied area and Bench losses.

Table 3. Mineable Resources

SECTION	BENCH	LENGTH (M)	WIDTH (M)	HEIGHT (M)	Tonnage Factor	ROUGH STONE - MT	GRAVEL - MT
A-A' & B-B'	I	38.5	48.0	5.0	2.0	-	18,480.0
	II	33.5	85.0	5.0	"	-	28,475.0
	III	28.5	75.0	2.0	2.75	11,756.0	-
	III	28.5	113.0	3.0	"	26,569.0	-
	IV	23.5	103.0	5.0	"	33,282.0	-
	V	18.5	93.0	5.0	"	23,657.0	-
	VI	13.5	83.0	5.0	"	15,407.0	
A-A' & C-C'	I	72.0	7.5	2.0	2.0	-	2,160.0
	I	19.0	45.0	3.0	"	-	5,130.0
	II	72.0	55.5	5.0	"	-	39,960.0
	III	72.0	45.5	5.0	2.75	45,045.0	-
	IV	72.0	35.5	5.0	"	35,145.0	-
	V	72.0	25.5	5.0	"	25,245.0	-
	VI	72.0	15.5	5.0	"	15,345.0	-
A-A' & D-D'	I	32.0	18.0	2.0	2.0	-	2,304.0
	I	68.0	65.5	3.0	"	-	26,724.0
	II	68.0	54.5	5.0	"	-	37,060.0
	III	68.0	44.5	5.0	2.75	41,607.5	-
	IV	68.0	34.5	5.0	"	32,257.5	-
	V	68.0	24.5	5.0	"	22,907.5	-
	VI	68.0	14.5	5.0	"	13,557.5	-
A-A' & E-E'	I	44.0	145.5	5.0	2.0	-	64,020.0
	II	38.5	134.5	5.0	"	-	51,782.5
	III	33.5	124.5	5.0	2.75	57,348.0	-
	IV	28.5	114.5	5.0	"	44,869.5	-
	V	23.5	104.5	5.0	"	33,766.5	-
	VI	18.5	94.5	5.0	"	24,038.5	-
TOTAL MINEABLE RESERVES						5,01,803.5	2,76,095.5
Less: Refilling quantity within safety area						(-)1,496.0	(-)37,776.0
TOTAL MINEABLE RESERVES						5,00,307.5	2,38,319.5

The available mineable reserves have been computed as **5,00,307.5 MT** of **Rough Stone** and **2,38,319.5 MT** of **Gravel** up-to the **depth** of **30.0 meters** from the ground level.

Table 4. Year wise Production Plan

SECTION	YEAR	BENCH	LENGTH (M)	WIDTH (M)	DEPTH (M)	Tonnage Factor	ROUGH STONE - MT	GRAVEL - MT
A-A' & E-E'	I-Year	I	44.0	145.5	5.0	2.0	-	64,020.0
		II	33.5	134.5	5.0	“	-	45,057.5
		III	23.5	124.5	5.0	2.75	40,229.0	-
		IV	13.5	114.5	5.0	“	21,254.0	-
SUB-TOTAL							61,483.0	1,09,077.5
Less: Refilling quantity within safety area							(-)1,496.0	(-)37,776.0
I – YEAR PRODUCTION							59,987.0	71,301.5
A-A' & D-D'	II-Year	I	32.0	18.0	2.0	2.0	-	2,304.0
		I	68.0	65.5	3.0	“	-	26,724.0
		II	50.0	54.5	5.0	“	-	27,250.0
		III	45.0	44.5	5.0	2.75	27,534.0	-
		IV	40.0	34.5	5.0	“	18,975.0	-
A-A' & E-E'	II-Year	II	5.0	134.5	5.0	2.0	-	6,725.0
		III	10.0	124.5	5.0	2.75	17,119.0	-
		IV	15.0	114.5	5.0	“	23,616.0	-
		V	16.5	104.5	5.0	“	23,708.0	-
II – YEAR PRODUCTION							1,10,952.0	63,003.0
A-A' & C-C'	III-Year	I	72.0	7.5	2.0	2.0	-	2,160.0
		I	19.0	45.0	3.0	“	-	5,130.0
		II	67.0	55.5	5.0	“	-	37,185.0
		III	62.0	45.5	5.0	2.75	38,789.0	-
		IV	22.0	35.5	5.0	“	10,739.0	-
A-A' & D-D'		II	18.0	54.5	5.0	2.0	-	9,810.0
		III	23.0	44.5	5.0	2.75	14,073.0	-
		IV	28.0	34.5	5.0	“	13,282.0	-
		V	68.0	24.5	5.0	“	22,908.0	-
A-A' & E-E'		V	7.0	104.5	5.0	2.75	10,058.0	-
III – YEAR PRODUCTION							1,09,849.0	54,285.0
A-A' & B-B'	IV-YEAR	I	38.5	48.0	5.0	2.0	-	18,480.0
		II	33.5	85.0	5.0	“	-	28,475.0
		III	28.5	75.0	2.0	2.75	11,756.0	-

		III	28.5	113.0	3.0	“	26,569.0	-	
		IV	23.5	103.0	5.0	“	33,282.0	-	
A-A’ & C-C’		II	5.0	55.5	5.0	2.0	-	2,775.0	
		III	10.0	45.5	5.0	2.75	6,256.0	-	
		IV	50.0	35.5	5.0	“	24,406.0	-	
		V	23.0	25.5	5.0	“	8,065.0	-	
IV – YEAR PRODUCTION							1,10,334.0	49,730.0	
A-A’ & B-B’	V-YEAR	V	18.5	93.0	5.0	2.75	23,657.0	-	
		VI	13.5	83.0	5.0	“	15,407.0	-	
A-A’ & C-C’		V	49.0	25.5	5.0	2.75	17,180.5	-	
		VI	72.0	15.5	5.0	“	15,345.0	-	
A-A’ & D-D’		VI	68.0	14.5	5.0	2.75	13,557.5	-	
A-A’ & E-E’		VI	18.5	94.5	5.0	2.75	24,037.5	-	
V – YEAR PRODUCTION							1,09,185.5	-	
TOTAL PRODUCTION FOR FIVE YEARS							5,00,307.5	2,38,319.5	

Year wise Production summary:

YEAR	ROUGH STONE -MT	GRAVEL -MT
I – Year	59,987.0	71,301.5
II – Year	1,10,952.0	63,003.0
III – Year	1,09,849.0	54,285.0
IV – Year	1,10,334.0	49,730.0
V – Year	1,09,185.5	-
Total for 5 Years	5,00,307.5	2,38,319.5

6. Mining

Opencast Mining

Open cast Semi-Mechanized Mining with 5.0m height and width of benches for gravel and roughstone. 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 4.0 KLD. Domestic water will be sourced from nearby Sillanatham Village and other water will be sourced from nearby road tankers supply.

Table 5. Water Balance

Purpose	Quantity	Sources
Drinking Water	0.5 KLD	Packaged Drinking water vendors are available in Sillanatham village which is about 1.0 Km-SW from the project site.
Afforestation & Green belt	1.5 KLD	From tankers supply
Dust suppression Sprinkling	2.0 KLD	
Total	4.0 KLD	

8. Manpower

Total manpower required for the project is approximately 12 persons. The workers will be from nearby villages.

Table 6. Man Power

S.No.	Levels & Details		Persons
1.	Skilled	Operators	1
		Mechanic	1
		Blaster/Mate	1
2.	Semi – skilled	Drivers	1
3.	Unskilled	Musdoor/Labours	4
		Cleaners	2
		Office Boy	1
4.	Management & Supervisory staff		1
Total			12

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	4.86 kg/day	Municipal bin including food waste
2	Inorganic	3.24 kg/day	TNPCB authorized recyclers

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

Table 8: 500m Radius Cluster Mine

S. No.	Quarry details	Village	S.F. Nos & Extent (Ha)	Lease Status
I. Existing Quarries				
1.	Thiru. P. Pungaraj	Sillanatham	S.F.No 71/3A, 71/3B Extent – 1.61.0 Ha	Operational
2.	Thiru. B. Murugan	Sillanatham	S.F.No. 94/2(P) Extent – 1.89.0 Ha	Operational
3.	Thiru. S. Pachaimal	Ottapidaram	S.F.No. 178/1B(P), 178/2A2(P), 178/2B(P), 179/3B(P), 179/4B(P) Extent – 3.08.00 Ha	Operational
4.	Thiru. S. Pandi	Sindalakattai	S.F.No. 374/1A, 374/1B Extent – 4.08.32 Ha	Operational
II. Abandoned Quarry				
1.	Tmt. S. Veeralakshmi	Sillanatham	S.F.No. 65 Extent – 2.11.0 Ha	Non Operational
2.	Thiru. S. Madasamy	Sillanatham	S.F.No. 24/5 Extent – 1.37.5 Ha	Non Operational
3.	Thiru. M. Kanagaraj	Sillanatham	S.F.No. 122/1B1 Extent – 0.53.5 Ha	Non Operational
4.	Tmt. S. Subbammal	Sillanatham	S.F.No. 68/1, 2, 3, etc. Extent – 3.50.0 Ha	Non Operational
5.	Thiru. A. Sanga Reddiyar	Sillanatham	S.F.No. 68/7 Extent – 1.32.50 Ha	Non Operational
6.	Thiru. S. Chinnasamy	Ottapidaram	S.F.No. 174/3, 177/3 Extent – 1.43.50 Ha	Non Operational
7.	Thiru. K. Balasubramanian	Ottapidaram	S.F.No. 177/3B Extent – 1.14.00 Ha	Non Operational
8.	Thiru. A. Jeyapalan	Ottapidaram	S.F.No. 171/3B Extent – 2.19.50 Ha	Non Operational
9.	Tmt. P. Mariyammal	Ottapidaram	S.F.No. 173 Extent – 3.02.00 Ha	Non Operational
10.	Tmt. R.R. Pushpam	Ottapidaram	S.F.No. 174/1A Extent – 1.70.50 Ha	Non Operational
11.	Thiru. S. Pachaimal	Ottapidaram	S.F.No. 178/2A, 2B, 179/3B, 4B Extent – 4.61.50 Ha	Non Operational

12.	Thiru. M. Sathiyavasagam	Sinthalakattai	S.F.No. 376/2, 376/3B Extent – 1.08.50 Ha	Non Operational
III. Present Proposed Quarry:				
1.	Thiru. J. Balasubramanian	Sillanatham	S.F.No. 68/1, 68/2, 38/3, 68/4A, 68/4B, 71/4A, 71/4B, 71/5A & 71/5A Extent – 2.06.00 Ha	Proposed Quarry
Total Cluster area			12.72.32 Ha	

10. Land Requirement

The total extent area of the project is **3.50.00 Ha**, Patta Land in Sillanatham Village of Ottapidaram Taluk, Thoothukudi District

Table 9 Land Use Breakup

S. No.	Land Use	Present Area (Ha)	Area after the quarrying period of 5 years (Ha)
1.	Area under quarrying	1.08.90	2.06.00
2.	Infrastructures	Nil	0.01.00
3.	Roads, cart tracks etc.,	Nil	0.03.00
4.	Green Belt	Nil	1.40.00
5.	Unutilized Area	2.41.10	0.00.00
	Total	3.50.00	3.50.00

11. Human Settlement

There are no habitations within 300m radius. There are villages located in this area within a 5 km radius of the quarry.

Table 10 Habitation

SL.No.	DIRECTION	VILLAGE	POPULATION	DISTANCE
1	N	Sindalakattai Periyanatham	2,450 350	3.2 Km 4.2 km
2	NE	Venkateswarapuram Valasamudram	350 500	2.7 Km 3.5 Km
3	NW	Lakshmipuram M.Subramaniapuram	550 650	3.3 Km 3.4 Km
4	SE	Nayinapuram Velayuthapuram / Pudupandiyapuram	600 1,800	2.3 Km 3.5 Km

5	SW	Sillanatham Swaminatham	1,600 2,600	0.8 Km 3.0 Km
6	East	MelArasadi	1,840	4.2 Km
7	West	Puthiamputhur	1,200	4.8 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 Topsoil.

13. Scope of the Baseline Study

This chapter contains information on existing environmental scenarios 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: 23° C
- ii) Average Maximum Temperature: 42°C
- iii) Average Annual Rainfall of the area: 820 mm

13.2 Air Environment

Ambient air monitoring was carried out on a 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 (SO₂), Nitrogen Dioxide (NO₂) were monitored, and the results are summarized below.

The baseline levels of PM₁₀ (47– 51 µg/m³), PM_{2.5} (19.8-23.9 µg/m³), SO₂ (6.5-10.5 µg/m³), NO₂ (16.6-47.7 µg/m³), all the parameters are well within the standards prescribed by National Ambient Air Quality during the study period from April 2026 to June 2026 .

13.3 Noise Environment

The maximum Day noise and Night noise were found to be 58 dB(A) and 47 dB(A) respectively in Karu Mari Amman Temple and Delight Public School. The minimum Day Noise and Night noise were 48 dB(A) and 38 dB(A) measured in Project site and Shri Mayilerum Perumal Ayyanar Temple respectively. The observed values are all well within the Standards prescribed by CPCB.

13.4 Water Environment

Bore well:

- The pH ranges from 7.0 – 8.11.
- TDS value varied from 425 mg/l to 7458 mg/l.
- Hardness varied from 176 to 4770 mg/l.
- Chloride varied from 66.5 to 1315 mg/l.

Surface Water:

- The average pH ranges from 7.12 – 7.47
- TDS value varied from 325 mg/l to 615 mg/l.
- Hardness varied from 111 to 185 mg/l.
- Chloride varied from 55.1 to 96.9 mg/l.

13.5 Land Environment

The analysis results show that the majority of soil in the project and surrounding area is alkaline in nature and pH value ranges from 7.18 to 8.07 with organic matter 0.09 to 1.09 mg/kg. 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 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, Pungam, etc. will be planted along the lease boundary and avenues as well as over Non-active dumps at a rate of 100 trees per annum with interval 5m.
4. The rate of survival expected to be 70% in this area

Table.11 Plantation/ Afforestation Program

Year	No. of trees proposed to be planted	Survival rate %	Area to be covered Sq.m	Name of the species	No. of trees expected to be grown
I	245	70%	2,800	NEEM / PUNGAI	280

II	245	70%	2,800	USILAM / TAMARIND	280
III	245	70%	2,800	NAVAL / PUVARASU	280
IV	245	70%	2,800	PANAI / SAVUKKU	280
V	245	70%	2,800	MANTHARAI / OAK	280

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. 67,50,000/-** 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.

(a) Investment Cost

Table .12 Project Cost details

S. No	DETAILS	COST in Rs. /-
i)	Lease rent / Land Cost	7,50,000
ii)	Machinery to be used	Hired machinery
iii)	Fencing	2,50,000
iv)	Labourers Shed	50,000
v)	Sanitary facility	50,000
vi)	Other Items	50,000
TOTAL		11,50,000

(b) Expenditure/ Machinery and Equipment Cost.

- i. Excavator 200 Capacity = 1 Nos.
- ii. Tractor Mounted Compressor = 1 Nos.
- iii. Tippers = 2 Nos and including other Accessories

Total Budgetary Cost = Rs. 56,00,000/-

Total Project Cost (a+b) = Rs.67,50,000/-.

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.	Panchayat Union Primary School, Sillanatham Panchayat, Ottapidaram Block, Thoothukudi District. Providing facilities are: ➤ Carrying out provisions for Drinking Water with dispenser, Library Racks & books and Toilet /sanitary facilities	5,00,000
Total		5,00,000

21. Project Implementation Schedule

The implementation schedule of the proposed Mine Lease of Thiru.J.Balasubramanian (3.50.00 ha) is as follows.

Table 14: Mining Schedule

Activity	March-27	March-28	March-29	March-30	March-31
Site Clearance & Formation of Approach Road					
I Year Production – 59,987.0 MT of Rough Stone and 71,301.5 MT of Gravel					
II Year Production – 110,952.0 MT of Rough Stone and 63,003.0 MT of Gravel					
III Year Production – 109,849.0 MT of Rough Stone and 54,285.0 MT of Gravel					
IV Year Production – 110,334.0 MT of Rough Stone and 49,730.0 MT of Gravel					
V Year Production – 109,185.5 MT of Rough Stone					
Progressive Mine Development & Bench Formation					
Plantation & Environmental Protection Measures					

22. Benefits of the Project

- ✓ There is positive impact on socio-economics of people living in the villages. Mining operations in the subject area has a 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 near vicinity.