

# **EXECUTIVE SUMMARY**

For

## **THOLLAMUR ROUGH STONE & EARTH QUARRY**

**Over an extent of 2.06.0Ha.**

**Cost of the Project: Rs. 66,74,000/-**

At

**Survey No: 8/1B & 8/2**

**Villages: Thollamur**

**Taluk: Vanur**

**District: Villupuram**

**State: Tamil Nadu**

By

**Tvl. Sri. Santhosh Blue Metals,**

**Represented by its Partner**

**Thiru.S.V.Venkatesh,**

**No.173/1, SarkkarThoppu,**

**Tindivanam Taluk, Villupuram District.**

**(Project termed under Schedule 1(a) Mining of Minor Minerals 'B2' category as per EIA Notification 2006 and its Amendments thereafter and As per the O.M issued vide F.No.**

**L-11011/175/2018-IA-II (M), dated: 12.12.2018 considering the cluster the project is termed under Schedule 1(a) Mining of Minor Minerals 'B1' category)**

**EIA Consultant**

**HUBERT ENVIRO CARE SYSTEMS PRIVATE LIMITED, CHENNAI**

**NOVEMBER 2021**

## **EXECUTIVE SUMMARY**

### **➤ Project Description**

The total extent area of the quarry is 2.06.0.Ha, situated at S.F.8/1B & 8/2 ThollamurVillage, VanurTaluk, VillupuramDistrict, TamilNadu State.

The District Collector of Villupuram had issued the precise area communication letter to produce the approved Mining Plan within a period 90 days as per Rule 8-C (3b) of Tamil Nadu Minor Mineral Concession Rules, 1959 vide **RC No.A/G&M357/2018,dated 04.01.2019.**

Subsequently, submitted the Mining Plan for the subject area and the same was approved by directorate of Geology and mining, Villupuramvide No.A/G&M/357/2018,**dated 04.02.2019.**

Projects termed under Schedule of 1(a) Mining of Minor Minerals 'B2' category as per EIA Notification 2006 and its Amendments thereafter and as per the O.M issued videF.No. L-11011/175/2018-IA-II (M), dated: 12.12.2018 considering the cluster the project is termed under Schedule 1(a) Mining of Minor Minerals 'B1' Category,**TN SEIAA vide File No. 6829/2021.**

The proposal was appraised during 213<sup>th</sup> SEAC meeting held on 11.06.2021 and 447<sup>th</sup> SEIAA meeting held on 05.07.2021 and ToR was issued vide **Letter No. SEIAA-TN/F.No.6829/SEAC/ToR-968/2021, dated: 05.07.2021** for the preparation of Draft EIA/EMP report.

The draft EIA/EMP report will be submitted for Public Hearing (PH). After completion of Public Hearing, the minutes issued will be incorporated in the EIA report along with action plan by the proponent. Final EIA will be submitted to TNSEAC for further appraisal of the project and obtaining Environment Clearance.

### **➤ Management Commitment**

Project Proponent will firmly address all the EC conditions and its requirements once obtained from SEIAA, TN and will execute the Environmental Management Plan.

### **➤ Environmental Sensitive Areas**

As seen in **Table-I** below,Ossudu Lake Birds Sanctuary ESZ ~ 11.25 km (SSE), Ossudu Lake Birds Sanctuary Core/Usudu/Usteri Tank ~ 11.83 km (SE).No other major

Environmental Sensitive areas are located within 15km Radius from the project site. Thus the project does not attract the special conditions and general conditions as per EIA Notification.

**Table-1 Salient Features within 15km of the project**

S. No	Particulars	Details			
1.	Latitude&Longitude	12°03'30" N to 12°03'36" N 79°40'23" E to 79°40'30" E			
2.	Site Elevation above MSL (m)	~ 94			
3.	Topography	Plain Topography			
4.	Lease area Topo Sheet details	57 P/12			
5.	Land classification	Patta land			
6.	Nearest highway	<ul style="list-style-type: none"> <li>➤ SH-136 (Mailam-Karasanur-Puducherry) is located ~0.58 km in (NNE).</li> <li>➤ NH-32(Chennai-Tindivanam-Thoothukudi) is located~7.67km in (ENE).</li> </ul>			
7.	Nearest Railway station	Villupuram Railway Station ~22.71 km (SW)			
8.	Nearest Airport	Pondicherry Airport ~ 17.33 km (SE) Chennai International Airport ~ 113.98 km (NNE)			
9.	Nearest Town / City	Pondicherry~ 15.84 km (SE)			
10.	Areas which are important or sensitive for ecological reasons – Wetlands, Watercourses or other water bodies, coastal zone, biospheres, mountains, forests	<b>Waterbodies:</b>			
		S. No	Places	Distance (~Km)	Direction
		1	VarahaNadi/Sankaraparani R/Gingee R	4.68	SW
		2	Vidur Dam	8.66	WNW
		3	Vidur Branch canal	1.30	SSW
		4	Kaliveli Tank	13.83	ENE
		5	SuttukanniVaykkal	5.59	S
		6	TondiAr	10.14	WNW
		7	Kondamur/NallavurAr	8.63	NNE
		8	PambaiAr	11.87	S
		<b>Reserve Forest:</b>			
		S. No	Description	Distance (~km)	Direction
		1	Melkondai RF	13.78	W
Ossudu Lake Birds Sancturay ESZ~11.25 km (SSE) Ossudu Lake Bird Sanctuary Core/Usudu/Usteri Tank ~ 11.83 km (SE)					
11.	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	Ossudu Lake Birds Sancturay ESZ~11.25 km (SSE) Ossudu Lake Bird Sanctuary Core/Usudu/Usteri Tank ~ 11.83 km (SE)			
12.	Environmental Sensitive areas: National parks / Wildlife Sanctuaries/etc/ Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	Ossudu Lake Birds Sancturay ESZ~11.25 km (SSE) Ossudu Lake Bird Sanctuary Core/Usudu/Usteri Tank ~ 11.83 km (SE)			

13.	Seismic Zone	Zone-III (Moderate Damage Risk Zone)
14.	Defense Installations	Nil within 15 km radius
15.	Interstate Boundary	TN-PY State Boundary is located~ 2.97 km in (SSE) (As per google) TN-PY State Boundary is located ~3.21 km in (SE) (As per SOI)
16.	HACA Regions	Nil within 15 km radius

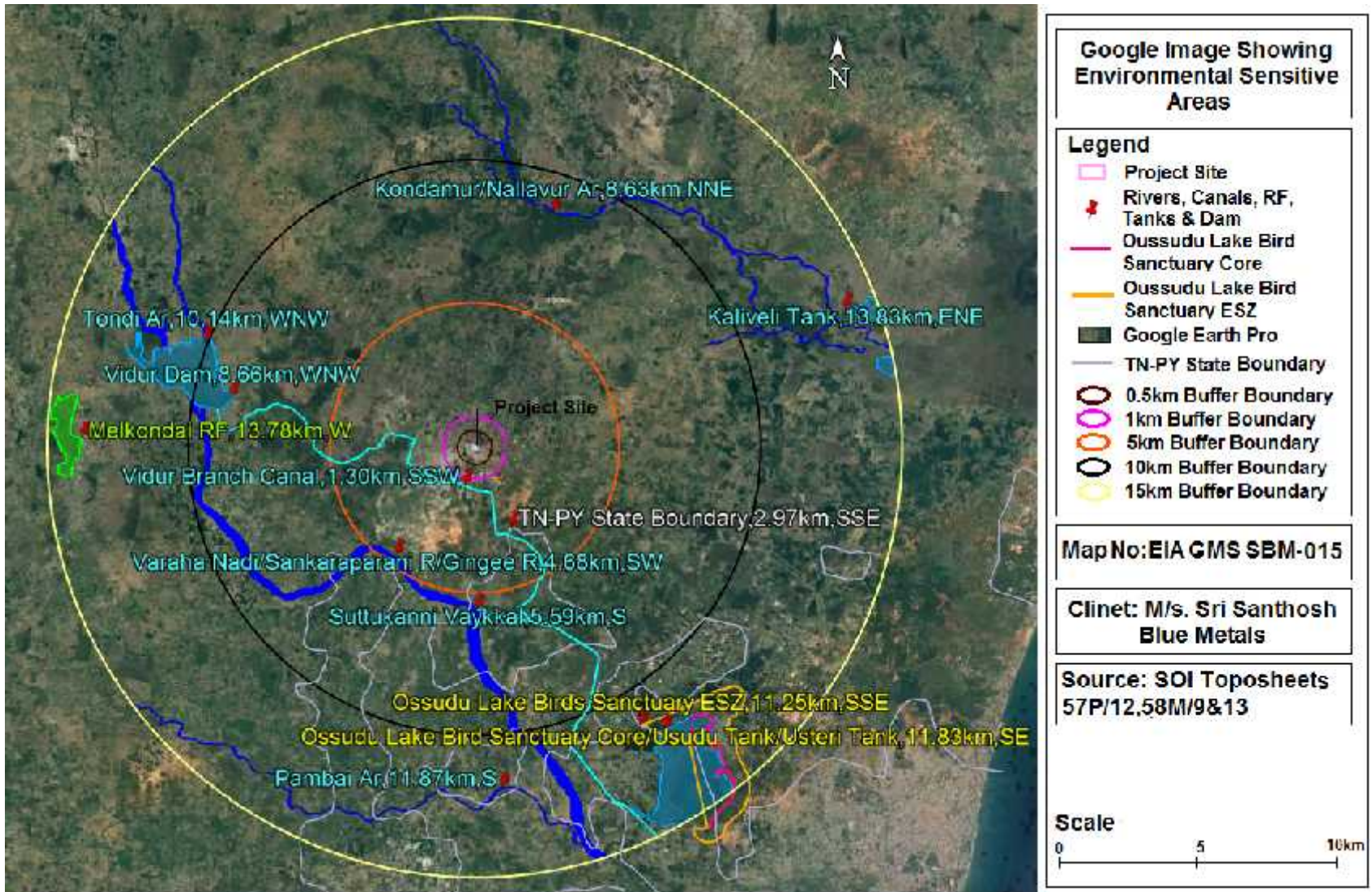


Figure-1 Google image for Environmental Sensitive areas demarcated within 15km radius of the project site

### Rough Stone Quarry Reserves

- The estimated Geological Reserves of Rough Stone estimated based on the Geological cross sections was 9,14,130m<sup>3</sup> of Rough Stone and 40,628m<sup>3</sup> of Earth.
- The Mineable Reserves have been arrived as 2,98,440m<sup>3</sup> of Rough Stone and 30,740m<sup>3</sup> of Earth.
- The Proposed production capacity is restricted to 2,89,870m<sup>3</sup> of Rough Stone and 30,740m<sup>3</sup> of Earth for five years.

**Table -2 Project Summary**

S. No	Particulars	Details
1.	Project Location	SF.No. 8/1B & 8/2 Thollamur village, Vanur Taluk, Villupuram District
2.	Land classification	Patta Land
3.	Extent of lease area (Ha.)	2.06.0Ha
4.	Geological Reserves m <sup>3</sup>	Rough stone: 9,14,130 & Earth : 40,628
5.	Mineable Reserves m <sup>3</sup>	Rough stone: 2,98,440 & Earth: 30,740
6.	Proposed Production capacity m <sup>3</sup>	Rough stone: 2,89,870 & Earth : 30,740 (Restricted as per ToR Issued)
7.	Depth of Mining	37 m Below Ground Level (Restricted as per ToR Issued)
8.	Method of Mining	Open cast semi mechanized method
9.	Water Requirement (KLD)	2.0
10.	Source of Water	Private tankers
11.	Fuel requirements (litres of HSD for 5 years)	1,54,340
12.	Manpower (Nos)	19
13.	Municipal Solid Waste Generation (kg/day)	3.8
14.	Waste Oil generation (Lts/Year)	3.0
15.	Project Cost in Crore	0.6674

**Table -3 Summary Project Reserves**

S. No	Description	Rough Stone (m <sup>3</sup> )	Earth (m <sup>3</sup> )
1	Geological Resource	9,14,130	40,628
2	Mineable Reserves	2,98,440	30,740
3	Production capacity (Restricted as per ToR Issued)	2,89,870	30,740

**Table-4 Geological Resources**

Section	Length in (m)	Width in (m)	Depth in (m)	Volume in m <sup>3</sup>	Earth Formation in m <sup>3</sup>	Geological Resources of Rough stone in m <sup>3</sup>
XY-AB	153	102	2	31212	31212	
	153	102	45	702270		702270
	Total				31212	702270
XY-CD	44	107	2	9416	9416	
	44	107	45	211860		211860
	Total				9416	211860
Grand Total					40628	914130

**Table-5 Mineable Resources**

Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in m <sup>3</sup>	Earth Formation in m <sup>3</sup>	Minable Reserve of Rough stone in m <sup>3</sup>
XY-AB	I	145	85	2	24650	24650	
	II	144	83	5	59760		59760
	III	139	73	5	50735		50735
	IV	134	63	5	42210		42210
	V	129	53	5	34185		34185
	VI	124	43	5	26660		26660
	VII	119	33	5	19635		19635
	VIII	114	23	5	13110		13110
	IX	109	13	5	7085		7085
	X	99	3	5	1485		1485
Total						24650	254865
XY-CD	I	35	87	2	6090	6090	
	II	34	85	5	14450		14450
	III	29	75	5	10875		10875
	IV	24	65	5	7800		7800
	V	19	55	5	5225		5225
	VI	14	45	5	3150		3150
	VII	9	35	5	1575		1575
	VIII	4	25	5	500		500
Total						6090	43575
Grand Total						30740	298440

**Table-6 Year wise production and development details**

YEARWISE PRODUCTION								
Year	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Volume in m <sup>3</sup>	Earth in m <sup>3</sup>	Minable Reserve of Rough stone in m <sup>3</sup>
I	XY-AB	I	145	85	2	24650	24650	

		II	144	83	5	59760		59760	
	TOTAL							24650	59760
II	XY-CD	I	35	87	2	6090	6090		
		II	34	85	5	14450		14450	
		III	29	75	5	10875		10875	
	XY-AB	III	94	73	5	34310		34310	
	TOTAL							6090	59635
III	XY-AB	III	45	73	5	16425		16425	
		IV	134	63	5	42210		42210	
	XY-CD	IV	4	65	5	1300		1300	
	TOTAL								59935
IV	XY-CD	IV	20	65	5	6500		6500	
		V	19	55	5	5225		5225	
	XY-AB	V	129	53	5	34185		34185	
		VI	64	43	5	13760		13760	
	TOTAL								59670
V	XY-AB	VI	60	43	5	12900		12900	
		VII	119	33	5	19635		19635	
		VIII	114	23	5	13110		13110	
	XY-CD	VI	14	45	5	3150		3150	
		VII	9	35	5	1575		1575	
		VIII	4	25	5	500		500	
	TOTAL								50870
GRAND TOTAL							30740	289870	



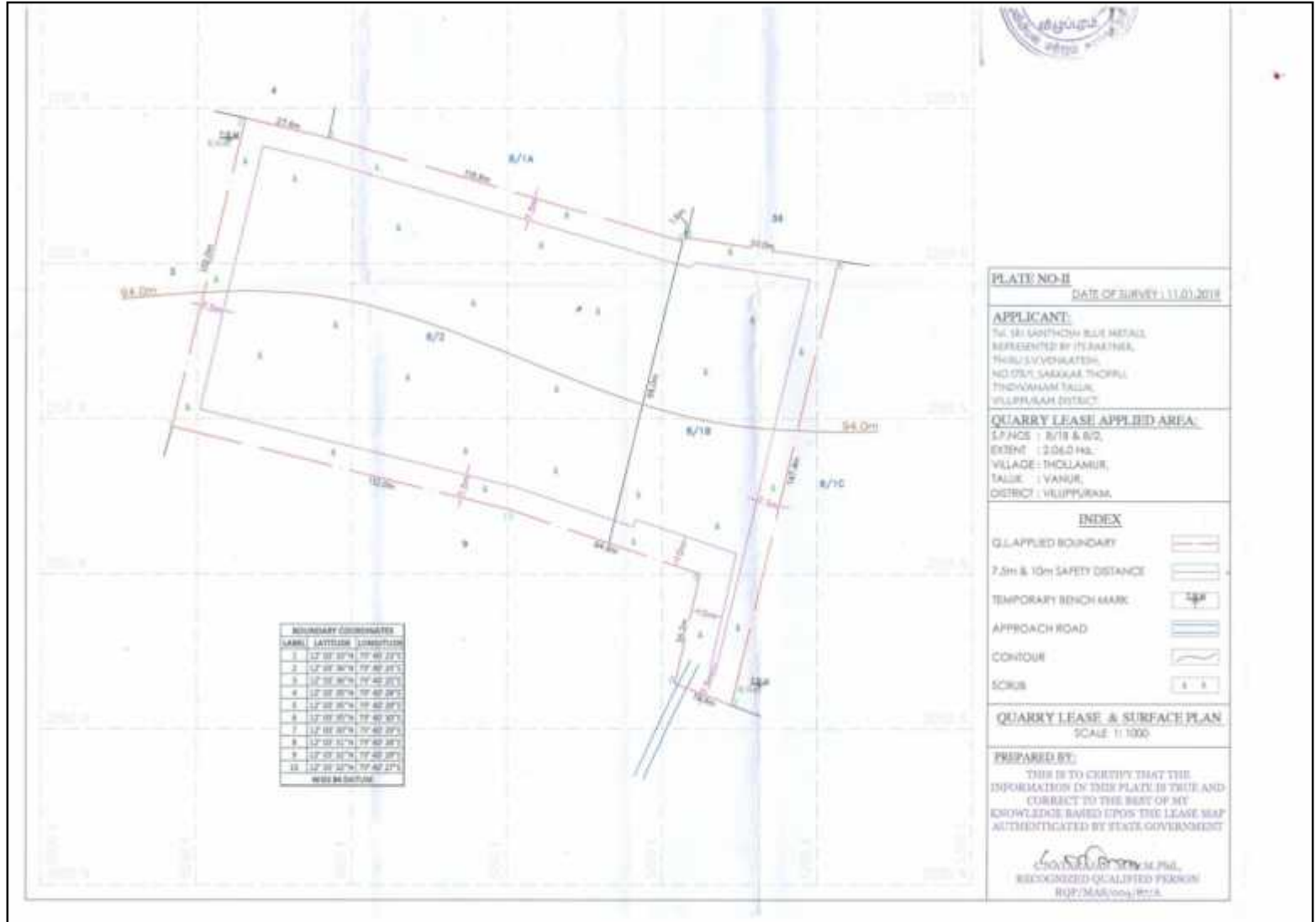


Figure-2 Quarry Lease & Surface Plan of the Quarry

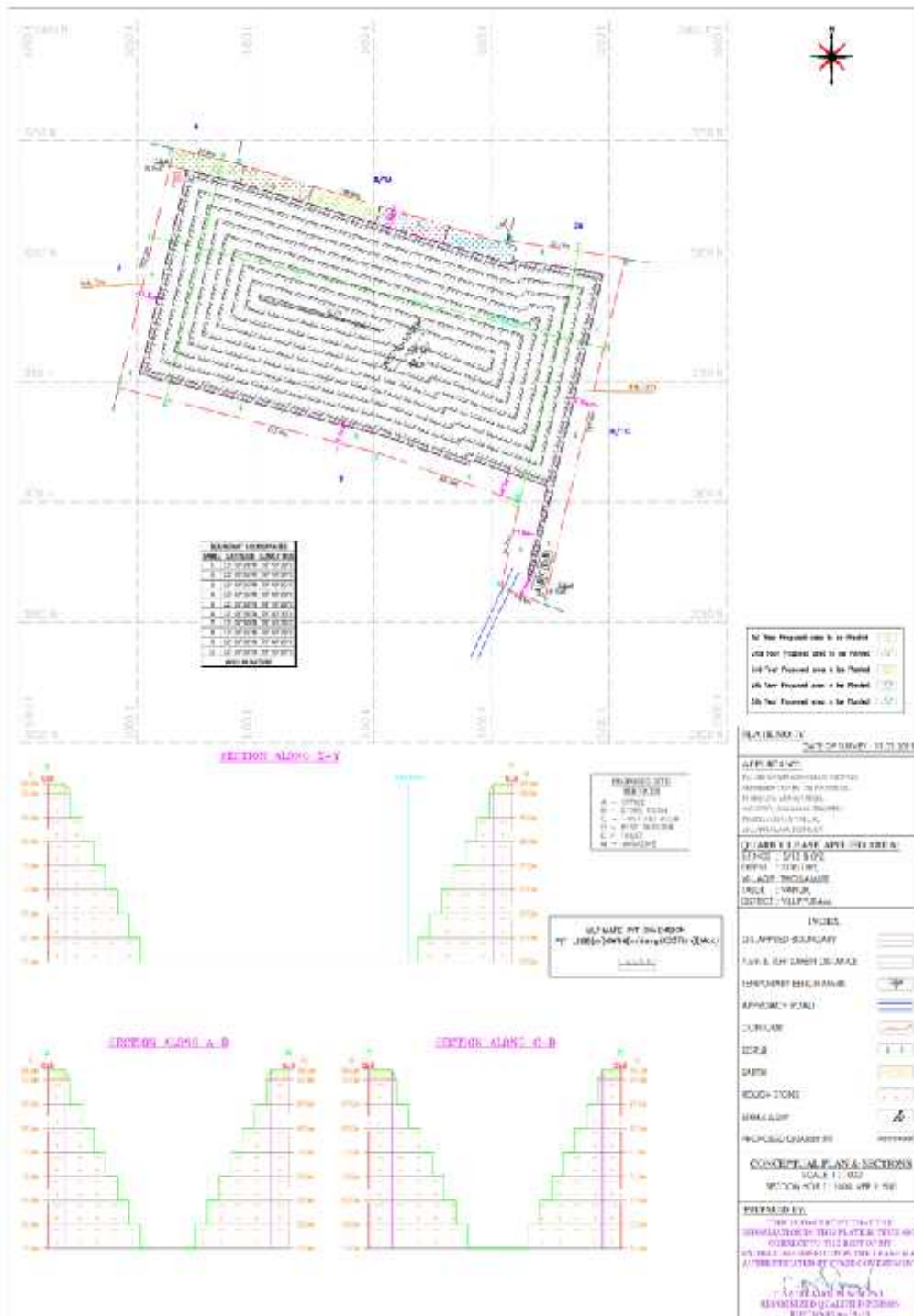


Figure-3 Conceptual Plan & Section of the Quarry

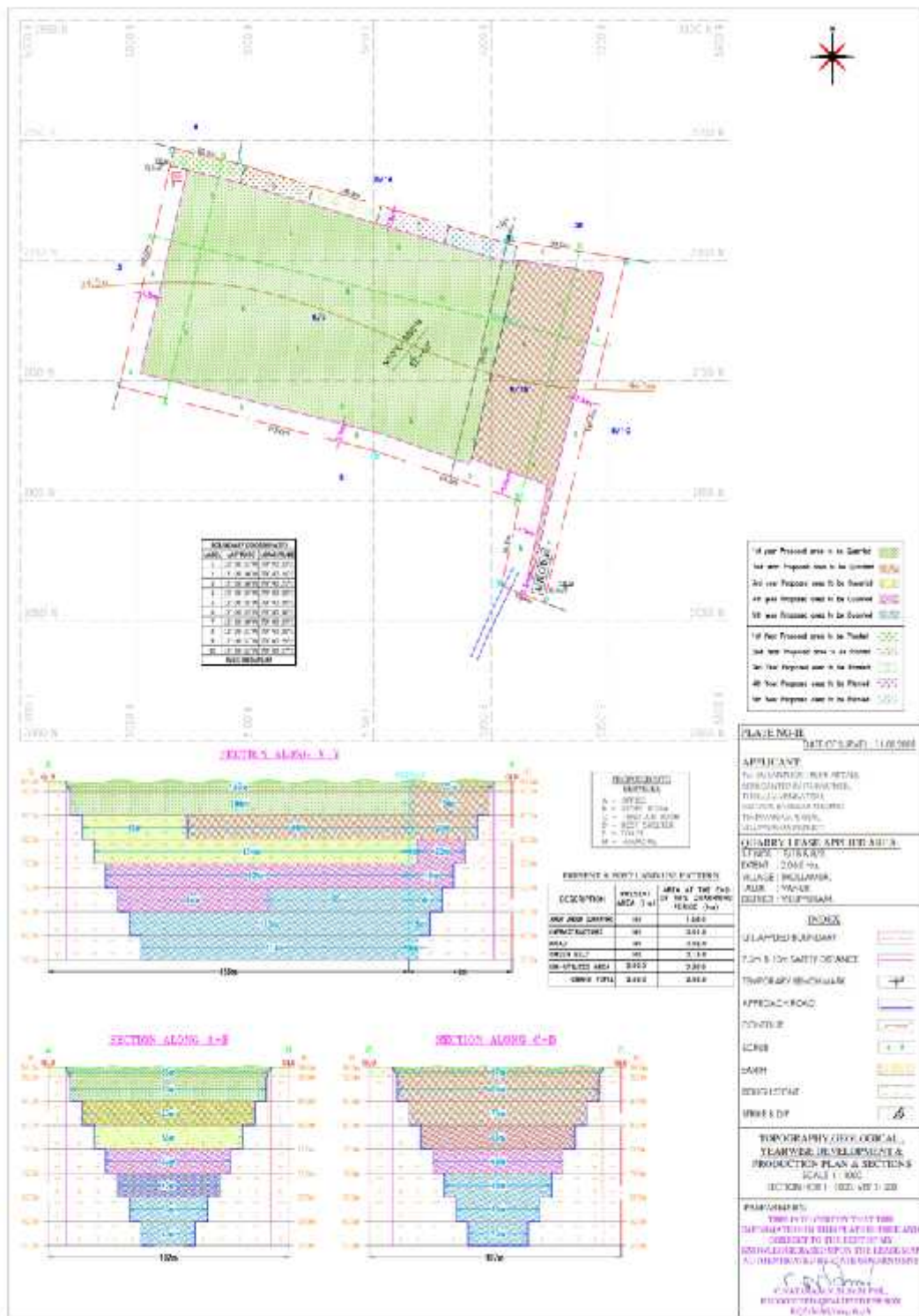


Figure-4 Year wise Production Plan & Section of the Quarry

**Table- 9 Quarry Details within 500m Radius**

Existing Quarries- 6 No's					
S.No	Name of the lessee/permit holder	Name of the Mineral	Taluk & Village	S.F.Nos.	Extent (in ha)
E1	Tmt.S.Nanthini, W/o.Sankar, No.14, 3 <sup>rd</sup> street, Jayapuram, Tindivanam Taluk	Rough Stone	Vanur, Thollamur	11/5A,	0.14.0
				11/6,	0.17.0
				11/7,	0.19.0
				16/2,	0.11.0
				16/3,	0.11.0
				16/4,	0.15.0
				16/5,	0.12.0
				16/6,	0.16.0
				16/7,	0.24.0
				16/8B,	0.23.0
				16/9,	0.08.5
16/10	1.62.0				
					3.32.5
E2	Thiru.V.Sankar, S/o.Vivekandan, 14, Jayapuram Colony, Tindivanam Town & Taluk, Villupuram District	Rough Stone	Vanur, Thollamur	2/1	0.45.5
				2/2	0.22.0
				2/3	0.22.0
				2/4	0.23.5
				2/5	0.25.0
				3/1	0.32.5
				3/2	0.33.5
				3/3	0.81.0
				3/4	0.20.0
				3/5	0.22.5
				3/6	0.21.0
3/7	0.18.0				
					3.66.5
E3	R.Alagurajan, S/o.Ramaswamy, No.41,Erikaran Street, Nerkundram, Chennai - 107	Rough Stone	Vanur, Thollamur	35/1B	1.04.0
				35/2A2(P)	0.19.5/0.48.0
				35/2B(P)	0.23.0/0.48.0

E4	Thiru.V.Sadaiyappan, No.18, Amal Nagar, West Tambaram, Chennai- 600 045.	Rough Stone	Vanur, Thollamur	1/3A, 12/3 12/5B1	0.58.0
					0.60.5
					2.38.5
					3.57.0
E5	M/s.Aswani Enterprises, No.49/A, Jayapuram colony, Tindivanam Taluk, Villupuram.	Black Granite	Vanur, Karasanur	169/9 169/10 169/12 172/1(P)	0.25.0
					0.25.0
					0.28.5
					0.60.0
					1.38.5
E6	G.Raja, S/o. Gopal, Sivaraj Street, Thiruneermalai, Chennai.	Rough Stone	Vanur, Thollamur	26/1	2.42.5

**Expired(Abandon Quarry - 3 No's**

<b>S.No</b>	<b>Name of the lessee/permit holder</b>	<b>Name of the Mineral</b>	<b>Taluk &amp; Village</b>	<b>S.F.Nos.</b>	<b>Extent (in ha)</b>
A1	D.Sundaramurthy, Santhosh Blue metals, Thollamur Village, Eraiur Post, Vanur Taluk	Rough Stone	Vanur, Thollamur	35/2A1 9/3	1.06.0
					0.33.5
					1.39.5
A2	S.IrusappaGounder, S/o.SrinevasaGounder, Karasanur Village, Vanur Taluk.	Rough Stone	Vanur, Thollamur	4/1 4/2A 4/2B 4/2C 6/2B	0.40.0
					0.04.5
					0.10.0
					0.80.5
					0.61.0
					1.96.0
A3	R.Periyasamy, S/o.Rangasamy, Karasanur Village, V.Parangini Post, Vanur Taluk	Rough Stone	Vanur, Thollamur	1/3B	1.52.0

Proposed Quarry- 1 No's					
S.No	Name of the lessee/permit holder	Name of the Mineral	Taluk & Village	S.F.Nos.	Extent (in ha)
P1.	Santhosh Blue metals, Represented by its Partner Thiru.S.V.Venkatesh, No.173/1, SarkkarThoppu, Tindivanam Taluk, Villupuram District	Rough Stone	Vanur, Thollamur	8/1B and 8/2	2.06.0

❖ **Proposed Quarry Details (Santhosh Blue metals Quarry):**

**Table-10 Salient features of Proposed Quarry Details (Santhosh Blue metals Quarry)**

S. No	Particulars	Details
1.	Project Location	SF.No. 8/1B & 8/2 Thollamur village, Vanur Taluk, Villupuram District
2.	Land classification	Patta Land
3.	Extent of lease area (Ha.)	2.06.0Ha
4.	Geological Reserves m <sup>3</sup>	Rough stone: 9,14,130 & Earth : 40,628
5.	Mineable Reserves m <sup>3</sup>	Rough stone: 2,98,440 & Earth: 30,740
6.	Proposed Production capacity m <sup>3</sup>	Rough stone: 2,89,870 & Earth : 30,740 (Restricted as per ToR Issued)
7.	Depth of Mining	37 m Below Ground Level (Restricted as per ToR Issued)
8.	Method of Mining	Open cast semi mechanized method
9.	Water Requirement (KLD)	2.0
10.	Source of Water	Private tankers
11.	Fuel requirements (litres of HSD for 5 years)	1,54,340
12.	Manpower (Nos)	19
13.	Municipal Solid Waste Generation (kg/day)	3.8
14.	Waste Oil generation (Lts/Year)	3.0
15.	Project Cost in Crore	0.6674

## Summary of the Magnitude of Operation

- The Rough Stone quarrying operation is proposed to be carried out by opencast semi mechanized method by formation of benches. Benches are proposed with a height of 5m & 5m width. Major machineries are Compressor, Jack hammer, and excavator is used in proposed quarry. Tippers and dumpers will be used for transportation.
  - The Proposed production capacity is 2,89,870 m<sup>3</sup> of Rough Stone and 30,740 m<sup>3</sup> of Gravel for five years (Restricted as per ToR Issued).
  - The mineable reserves have been computed 2,98,440 m<sup>3</sup> of Rough Stone and 30,740 m<sup>3</sup> of Gravel for five years.
  - The effective geological reserves and mineable have been worked out 9,14,130 m<sup>3</sup> of Rough Stone and 40,628 m<sup>3</sup> of Gravel.
  - The depth of the mine will be 37 m (Restricted as per ToR Issued).
- **Project Requirements**

### I. Land requirement:

- The Thollamur Rough Stone Quarry is over an extent of 2.06.0 Ha.
- Lease area located at S. F. No. 8/1B, 8/2 Thollamur Village, Vannur Taluk, Villupuram District, Tamil Nadu State, lies in the latitude of 12°03'30" N to 12°03'36" N and longitude of 79°40'23" E to 79°40'30" E.
- The lease area topography is plain topography; site elevation is ~94m. The area is marked in the survey of India Topo sheet No. 57 P/12. The lithology of the mining lease will be submitted on final EIA report. Land use Patterns is given in **Table-11**.

**Table-11 Quarry Lease area breakup**

S. No	Description	Present Area (Ha.)	Area in use during the quarrying period (Ha.)
1	Under quarrying area	Nil	1.57.00
2	Infrastructure	Nil	0.01.00
3	Roads	Nil	0.02.00
4	Unutilized	2.06.0	0.31.00
5	Green Belt	Nil	0.15.00
Total		2.06.0	2.06.00

### II. Quarry Reserves

**Table-12 Rough stone Quarry Reserves**

S. No	Description	Rough Stone (m <sup>3</sup> )	Earth (m <sup>3</sup> )
1	Geological Resource	9,14,130	40,628
2	Mineable Reserves	2,98,440	30,740
3	Production capacity	2,89,870	30,740

(Restricted as per ToR Issued)		
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### III. Water Requirement

- The total water requirement is 2.0KLD (Drinking & Domestic purpose – 0.5KLD, Dust suppression -1.0 KLD & for Greenbelt- 0.5KLD). The total water requirement will be met from private tankers.
- The Rough Stonequarry will not produce any toxic effluent in the form of solid, liquid or gas.
- No wastewater will be discharged by quarry operation. Domestic wastewater will be disposed to Septic Tank followed by soak pit.

**Table-13 Water requirement breakup**

S. No	Description	Water Requirement(KLD)
1	Drinking & Domestic purpose	0.5
2	Dust suppression	1.0
3	Green Belt	0.5
Total		2.0

### IV. Power & Fuel Requirement

- No power is required during mining operations. Working is restricted on day time only between 9AM to 6PM.
- 1,54,340liters of HSD for the entire project life will be brought from nearby diesel pumps.

**Table-14 Power & Fuel Requirement**

S. No	Details	Rough stone (Liters)	Source
1	Diesel Requirements approx. (Litres of HSD for 5 years)	1,54,340	HP/BPCL/IOCL/Reliance

### V. Manpower

Manpower requirement for the proposed project is 19 Nos.

**Table -15 Manpower requirement of the Project**

S.No	Description	No of Persons
1.	<b>Skilled</b>	
	Operator	7
	Mechanic	1
	Mines manager/Mate	1
2.	<b>Semi – skilled</b>	
	Driver	3



3.	<b>Unskilled</b>	
	Musdoor / Labours	7
	<b>Total</b>	<b>19</b>

## VI. Solid Waste Generation & Management

### ❖ Municipal Solid Waste Management

**Table -16 Municipal Solid Waste generation & Management**

S. No	Type	Quantity Kg/day	Disposal method
1	Organic	2.28	Municipal bin including food waste
2	Inorganic	1.52	TNPCB authorized recyclers
<b>Total</b>		<b>3.8</b>	

As per CPHEEO guidelines: MSW per capita/day =0.45

### ❖ Hazardous Waste Management

**Table -17 Hazardous Waste Generation and Management**

Waste Category No	Description	Quantity (L/Year)	Mode of Disposal
5.1	Waste Oil	3.0	Will be Collected in leak proof containers and disposed to TNPCB Authorized Agencies for Reprocessing/Recycling

## VII. Nearest Human Settlement

The detail of nearest human settlement from the project site is provided in **Table-9**.

**Table-18 Nearest Human Settlement**

S. No	Places	Distance (~Km)	Direction	Population as per Census 2011
1	Karasanur	0.75km	N	2,862
2	Thollamur	0.94km	S	1,419
3	Eriyur	1.56km	W	3,257
4	Parankani	1.87km	E	3,393
5	Ambuzhikkali	2.69km	WSW	558

### ➤ Industries

The details of Industries within 15km radius from the project site are given in **Table -10**.

**Table -19 Industries within 15km radius from the project site**

<b>Industries</b>			
1.	Mahabir packaging	9.60km	SE
2.	Sona Metachempvt ltd	9.76km	SE
3.	Larsen & Toubro Limited Formwork Factory	9.67km	SE
4.	L&T Formwork Factory	9.69km	SE
5.	United spirits limited	9.97km	SE
6.	Suolificio Linea Italia India Pvt Ltd	10.05km	SE
7.	Adithya Package Industry	10.33km	SE
8.	Vimal Paper Packing Unit	10.35km	SE
9.	Fine Automotive & Industrial Radiators Pvt. Ltd	10.32km	SE
10.	Aparna Paper Processing Industry P Ltd	10.31km	SE
11.	Metal Scope India pvt ltd	10.25km	SE
12.	Aromatics (India) Pvt. Ltd	10.46km	SE
13.	Tensonite PVT LTD	10.56km	SE
14.	Larsan Tin Printers	10.48km	SE
15.	ATC Chemicals India	10.12km	SE
16.	Sri Narayani Pack	10.60km	SE
17.	LD Packaging	10.63km	SE
18.	Anbu Steel Traders-Old Pipe Dealers	10.72km	SE
19.	Eaton Power Quality Pvt Ltd	10.72km	SE
20.	Emox Manufacturing PVT. LTD	10.83km	SE
21.	Crimson Metal Engineering Company Ltd	10.46km	SE
22.	Acer India Private Limited	11.04km	SE
23.	Chennai alum chemical pvt ltd	11.19km	SE
24.	Kaveri Alloy Castings Pvt. Ltd	11.01km	SE
25.	Pondy Die Castings (p) Ltd	10.99km	SE
26.	Mass Packagings Pvt Ltd	10.71km	SE
27.	RauschertIndiaPrivate LTD	10.79km	SE
28.	Puducherry Industries Promotion Development and Investment Corporation	10.80km	SE
29.	Aditya Better Containers Private Limited	10.53km	SE
30.	Siechem Technologies Pvt. Ltd	10.97km	SE
31.	Nanoceut Therapeutics Pvt. Ltd	11.21km	SE
32.	The Supreme Industries Limited	13.98km	SSW

33.	Teleflex Medical Private Limited	14.42km	S
34.	Whirlpool of India Ltd	13.85km	S
35.	Safetab Life Science	14.05km	S
36.	Marico Limited	14.27km	S
37.	Vell Biscuits Private Limited	14.34km	SSW
38.	Swashthik Preforms PVT LTD	13.96km	S
39.	Vital Industries India Pvt Ltd Plastic Division	0.57km	SE
40.	Helix Global Bio Avenir	1.99km	SSE
41.	Zion Poultry farm	3.91km	E

➤ **Project Cost**

The total capital investment on the project is Rs. 66,74,000/- including EMP cost is 1,20,000/-. The Capital investment of the Project is given in **Table-20**.

**Table-20 Capital Investment on the Project**

S. No	Description of the Cost	Amount in Rs.
<b>A. Fixed Cost</b>		
1	Land Cost	8,24,000/-
2	Labour shed	1,00,000/-
3	Sanitary facilities	1,00,000/-
4	First Aid room and accessories	1,00,000/-
Total		11,24,000/-
<b>B. Operational Cost</b>		
1	Machinery Cost	50,00,000/-
2	Fencing Cost	1,00,000/-
Total		51,00,000/-
<b>C. EMP Cost Budget Provision for the entire quarrying period</b>		
1.	Air Quality Sampling	40,000/-
2.	Water quality sampling	40,000/-
3.	Noise Monitoring	20,000/-
4	Ground vibration test	20,000/-
<b>D. Total Expenditure Cost (for 5 years)</b>		
1	Drinking water facility	1,00,000/-
2	Sanitary maintenance	25,000/-
3	Safety Kits	50,000/-
4	Water Sprinkling	1,00,000/-
5	Afforestation, etc.,	30,000/-
6	Cost towards charity	25,000/-
Total		4,50,000/-
Total Cost of the Project (A+B+C+D)		66,74,000/-

➤ **Mine Closure Plan:**

- There is no proposal for back filling reclamation and rehabilitation. The Quarried pits after the end of the life of lease will be fenced using Barbed wire fencing to prevent inherent entry of public and cattle.
- Measures will be taken as per the Acts and Rules.
- Drilling will be carried out by wet drilling mode to control the dust propagation into the air.
- Blasting will be carried out on limited scale. Mist water spraying on haul road is proposed to prevent the dust propagation into the air.

➤ **Description of Environment**

**Project Influence Area (PIA)/Study Area:**

An area covering 10 km radius from Thollamur Rough Stone quarry boundary has been earmarked as study area for baseline studies.

**Study Period:**

The baseline environmental surveys were carried out during (June to August 2021) within the study area.

**Summary of Baseline Studies:**

- Site has a plain topography with level ~94m maximum from the MSL.
- The project site falls under Zone- III (Moderate Damage Risk Zone) as per IS 1893 (Part- I).
- The predominant wind direction is West during study period.
- Max Temperature: 40<sup>0</sup>C Min Temperature:24<sup>0</sup>C&Avg. Temperature: 30.87<sup>0</sup>C
- Average Relative Humidity:67.65 %
- Average Wind Speed: 3.34 m/s.

**Table-21 Total maximum GLCs from emissions**

Pollutant	Max. Base Line Conc. ( $\mu\text{g}/\text{m}^3$ )	Estimated Incremental Conc ( $\mu\text{g}/\text{m}^3$ )	Total Conc. ( $\mu\text{g}/\text{m}^3$ )	NAAQ standard	% contribution of concentration above Base line
TSPM	138	205	343	500	148.55
PM <sub>10</sub>	55	42	97	100	76.36
PM <sub>2.5</sub>	30	25	55	60	83.33

SO <sub>2</sub>	13	2	15	80	15.38
NO <sub>x</sub>	23	27	50	80	117.39

### Ambient Air Quality Monitoring

The ambient air quality has been monitored at 8 locations for 12 parameters as per NAAQS, 2009 within the study area. Maximum concentrations of all the parameters are well within the National Ambient Air Quality Standards (CPCB, NAAQS, 2009):

- PM<sub>10</sub> ranged between 49 to 55µg/m<sup>3</sup>(NAAQ standard 100 µg/m<sup>3</sup>).
- PM<sub>2.5</sub> values varied from 23µg/m<sup>3</sup>to 30µg/m<sup>3</sup>(NAAQ standard 60 µg/ µg/m<sup>3</sup>).
- SO<sub>2</sub> levels varied from 9µg/m<sup>3</sup>to 13µg/m<sup>3</sup>(NAAQ standard is 80 µg/m<sup>3</sup>).
- NO<sub>x</sub> ranged between 18µg/m<sup>3</sup> to 23µg/m<sup>3</sup>(NAAQ standard is 80 µg/m<sup>3</sup>).

### Noise Environment

- In project site day time noise levels was about 59.2dB(A) and 53.8dB(A) during night time, which is within the prescribed limit by CPCB (75 dB (A) Day time & 70 dB (A) Night time).
- In residential area day time noise levels varied from 47.4dB(A) to 49.7dB(A) and night time noise levels varied from 40.1dB(A) to 41.6dB(A) across the sampling stations. The field observations during the study period indicate that the ambient noise levels in Residential area is within the limit prescribed by CPCB (55 dB (A) Day time & 45 dB (A) Night time).

### Ground Water Quality

- The prevailing status of water quality at 8 locations for ground water has been assessed during the study period. Groundwater samples are within the permissible limits specified for drinking water quality standards as per IS: 10500 (2012).
- The average pH ranges from 7.35to 8.04.
- TDS value varied from varied from 517mg/l – 958mg/l.
- The Sulphate content of the ground water of the study area is varied between 28.4mg/l – 107.23mg/lmeeting the acceptable limit of the IS 10500: 2012.

### Surface Water Quality

- Surface water sample are within the limits as per ISI-IS2296-1982 Class C (Drinking water source with conventional treatment followed by disinfection).
- pH ranges from 7.26 to 8.13
- Total Dissolved Solids range from 568 mg/l to 1047 mg/l.
- Total hardness ranges between 200.5 mg/l to 437.8 mg/l.

- The BOD value ranges from 1.9 mg/l to 34.9 mg/l.
- COD value 12 to 74 mg/l.
- The concentration of heavy metals like As, Cd, Cr, Pb, Mn, Hg, Ni and Se at all locations are within the limits of IS 2296:1992(Class-C: Drinking water with conventional treatment followed by disinfection.)

#### **Soil Quality**

- Soil sampling was carried out at eight (08) locations in the study area. It is observed that, Soil types are Sandy Clay Loam, Loam, Loam sand, and clay and the soil samples are slightly alkaline in nature.
- The pH of the soil samples ranged from 7.35 to 8.01
- Conductivity of the soil samples ranged from 142 to 294µmho/cm
- Nitrogen content ranged from 240 mg/kg to 391 mg/kg.
- Phosphorous ranged from 7.1 mg/kg to 11.6 mg/kg.
- Potassium content ranges from 158 mg/kg to 297 mg/kg.

#### **Biological Environment**

- The Rough Stonequarry is located at Thollamur village. The proposed project will not have any impact of terrestrial ecology of the area. Quarry area will be developed with greenbelt by planting native species to maintain the good environment.
- There is no extinct flora and fauna species found in the study area. Observed species comes under least concern as per IUCN status
- There is no National Park, Wildlife Sanctuary, Biosphere Reserve, Wildlife corridors and Tiger/Elephant Reserve found within 10 km radius of the project site.
- Therefore, no management plan is required.

#### **Socio-economic Conditions:**

The project is located at Thollamur village, Vanur Taluk, Villupuram District, Tamil Nadu. The total population of Viluppuram district are 2195776 of which 1234479 are males while 961297 are females. Average literacy rate of Viluppuram city is 71.88 percent of which male and female literacy was 80.55 and 63.15 percent. The sex ratio of the district was 987, lower than the State sex ratio of 996.

Average literacy rate of Viluppuram in 2011 were 71.88. Male and female literacy were 80.55 and 63.15 respectively. The rural and urban literacy in the district has recorded significant disparity. The rural literacy was 61% in 2001 which has marginally increased to 69.6% in 2011. While the urban literacy in the district was 80.3% in 2001 and 84.7% in 2011. The urban literacy in the district has seen significant increase in 2011 census compared to 2001 census.

## Anticipated Environmental Impacts with Mitigation Measures

Anticipated impacts on the environmental and social attributes, which are likely to arise due to quarry operations have been identified, predicted and evaluated.

- Thollamur Rough Stone Quarry is Pattaland, over an extent of 2.06.0.Ha, at Thollamur village, Vanur Taluk, Villupuram District, Tamil Nadu State. There are no R&R issues as it is Pattaland.
- The lease area plain topography with site elevation is ~94m maximum MSL. Thollamur Rough Stone quarry will be provided with self-sufficient infrastructure like office, Toilets, to minimize impact/strain on the existing infrastructure.
- All the necessary Air pollution control measures will be adopted to control the fugitive emissions, particulates, SO<sub>2</sub> and NO<sub>x</sub>.
- The impact on air environment was studied through air quality modeling studies. The 1<sup>st</sup> highest 24hour average concentrations of NO<sub>x</sub>, PM<sub>10</sub>, PM<sub>2.5</sub> and SO<sub>2</sub> at all receptor locations are found to be well within the National Ambient Air Quality Standards (NAAQS), 2009. The maximum concentration observed due to proposed mining for TSPM is 343µg/m<sup>3</sup>, PM<sub>10</sub> is 97µg/m<sup>3</sup>, PM<sub>2.5</sub> is 55µg/m<sup>3</sup>, SO<sub>2</sub> is 15µg/m<sup>3</sup> and NO<sub>x</sub> is 50µg/m<sup>3</sup>, respectively. So it can be concluded that even after operation of quarry the impact envisaged is moderate.
- Baseline study showed that the noise levels in both Industrial area and in Residential area are observed that the day equivalent and night equivalent noise levels at all locations are within the prescribed CPCB standards. The designed equipment with noise levels not exceeding beyond the requirements of Occupational Health and Safety Administration Standard will be employed.
- The water demand for the project will be met from private tankers. Proper garlands will be provided around the quarry. Domestic sewage will be disposed to septic tank followed by soak pit. Septic Tank will be cleaned periodically. There is no effluent generation due to mining activities.
- The solid waste generated may impact soil quality, water quality and public health if not regulated properly. Municipal Solid Wastes including food waste are disposed to municipal bin. Waste Diesel oil will be properly disposed through authorized recyclers as per the Hazardous and Other wastes (Management and Transboundary Movement) Rules 1989 and subsequent amendment in 2016. Top soil will be stored and used for afforestation within lease area.
- To reduce the adverse effects on flora/fauna status that are found in project area due to deposition of dust generating from mining operations, water sprinkling and water

spraying systems will be ensured in all dust prone areas to arrest dust generation.

### ➤ Risk Identification & Management

#### ❖ Identification of Hazards in Open Cast Mining

There are various factors, which can cause disaster in the mines. These hazards are as follows:

- Drilling
- Blasting
- Overburden handling
- Heavy Machinery

#### ❖ Safety Measures at the quarry

- Adequate care has been taken in deciding the size of the bench for the working pit.
- The benches are properly sloped at an angle of 60 degree to avoid any spillage of benches.
- Adequate drainage system at the top of the pit and also on the benches shall be made to prevent erosion of the benches.
- The quarries will be protected by garland drains around the periphery for storm water drainage.

### ➤ Post Project Environmental Monitoring

**Table -22 Post Project Environmental Monitoring Program**

S. No	Area of Monitoring	Number of Sampling Stations	Frequency of Sampling	Parameters to be Analysed
1.	Meteorology	One	Hourly and Daily basis.	Wind speed and direction, Temperature, Relative Humidity, Atmospheric pressure, Rainfall.
2.	Ambient Air Quality	2 Stations (In downwind)	Twice a week:24 hourly period	PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> , and NO <sub>2</sub>
3.	Noise	2 (two within site premises and two outside site premises)	Once every season	Ambient Equivalent continuous Sound Pressure Levels (Leq) at day and Night time.
4	Exhaust from DG set	Stack of DG set	Quarterly	PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> & CO
5	Vehicular Emissions	Parking area	Periodic monitoring of vehicles	Air emission and noise, PCU
6	Soil	Two Locations within the Project Site	Yearly Once	Physico chemical properties, Nutrients, Heavy metals



7	Terrestrial Ecology	Within 10km, around the project	Once in three years	Symptoms of injuries on plants
8	Surface/ Ground water quality	Two Locations Within Project Site	Yearly Once	As per ISO 10500 Standard parameters

➤ **Disposal of Waste:**

The overburden in the form of Earth, after the excavation of Earth will be directly loaded into tipper to the needy buyers for road project and construction works for filling and leveling of low lying areas. A sustainable plastic waste management plan by installing bins for collection/Segregation of recyclable and non-recyclable plastic waste at the proposed project site will be implemented.

➤ **Occupational Health Measures**

- Adoption of dust suppression measures like spraying water, use of drill with dust collection system or wet drills etc.
- Plantation.
- Avoid blasting during unfavorable wind & atmospheric conditions.
- Use of personal protective equipment. Compliance with DGMS circulars.
- Emergency response plan that includes installation of emergency response equipment to combat events such as fire.
- All personnel required to handle hazardous materials will be provided with personal protective equipment suitable for the hazardous material being handled.
- On-site first aid facilities will be provided and employees will be extended to the local community in emergencies.

➤ **Greenbelt Development**

An area of 0.15.00Haland was allotted for greenbelt development during 5 years of mining plan. Santhosh blue metals have proposed to plant 25 No's of trees per year and Rs. 30,000/- will be spent for proposed greenbelt development and maintenance.

➤ **Analysis of Alternatives**

The mineral deposits are site specific in nature; hence question of seeking alternate site does not arise. No R&R, no Sensitive area etc., making the site suitable for the mining of rough stone & gravel. The site meets the requirement of all critical factors that are important for success of mining in the state and could be a pre-eminent location.

➤ **Environment Monitoring Programme**

Environmental monitoring programme has been formulated for the environmental attributes (Air, Water, Noise, and Soil) and the same will be implemented as per CPCB guidelines. The effective implementation and close supervision of the environmental management to mitigate the environmental impacts due to mining activities.

➤ **Emergency Management Plan**

The salient features of Disaster Management Plan include

- Emergency shutdown procedure
- Fire protection system
- Emergency safety equipment & Reporting and response to emergency
- Emergency Help from nearby industries and tie up with nearby industries

➤ **Corporate Environmental Responsibility**

- The site has no Relocation and Rehabilitation.
- Most villages have benefited mutually at Thollamur where the mining industry has provided indirect jobs for labor and villages provide accommodation for the labor and staff.
- Supportive industries like food supply and essential shops promote economic growth in the villages.
- 2 % (Rs.1,33,480) on total cost will be allocated for CER activities as per MoEF&CC Office memorandum dated 1<sup>st</sup> May, 2018.

➤ **Benefits of the Proposed Project**

- The quarrying activities in this belt will benefit to the local people 19 Nos.
- Improvement in Per Capita Income can be expected.
- The socio - Economic conditions of the village and distance will enhance due to the project, hence the project should be allowed after considering all the parameters.
- It can thus be concluded that the project is environmentally compatible, financially viable and would be in the interest of construction industry thereby indirectly benefiting the masses.

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