

**BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL,  
SOUTHERN ZONE, CHENNAI**

**APPEAL NO. 27 OF 2024 (SZ)**

Dr. Sushmitha

... Appellant

**Versus**

State Level Environment Impact Assessment Authority and Ors.

... Respondents

<b>S No.</b>	<b>Date</b>	<b>Description</b>	<b>Page No.</b>
<b>1.</b>	<b>September 2017</b>	District Survey Report by DEIAA	<b>324</b>
<b>2.</b>	<b>24.06.2019</b>	Mining Plan of 3 <sup>rd</sup> Respondent	<b>395</b>
<b>3.</b>	<b>01.07.2019</b>	Pre-feasibility report	<b>438</b>
<b>4.</b>	<b>July 2023</b>	Final EIA Report	<b><u>480</u></b>
<b>5.</b>	<b>22.02.2024</b>	Consent to Operate granted under AIR and WATER Acts.	<b>685</b>
<b>6.</b>	<b>06.02.2024</b>	Quarry Lease Agreement	<b>700</b>

DATED AT CHENNAI ON THIS THE 29<sup>th</sup> DAY OF OCTOBER, 2024

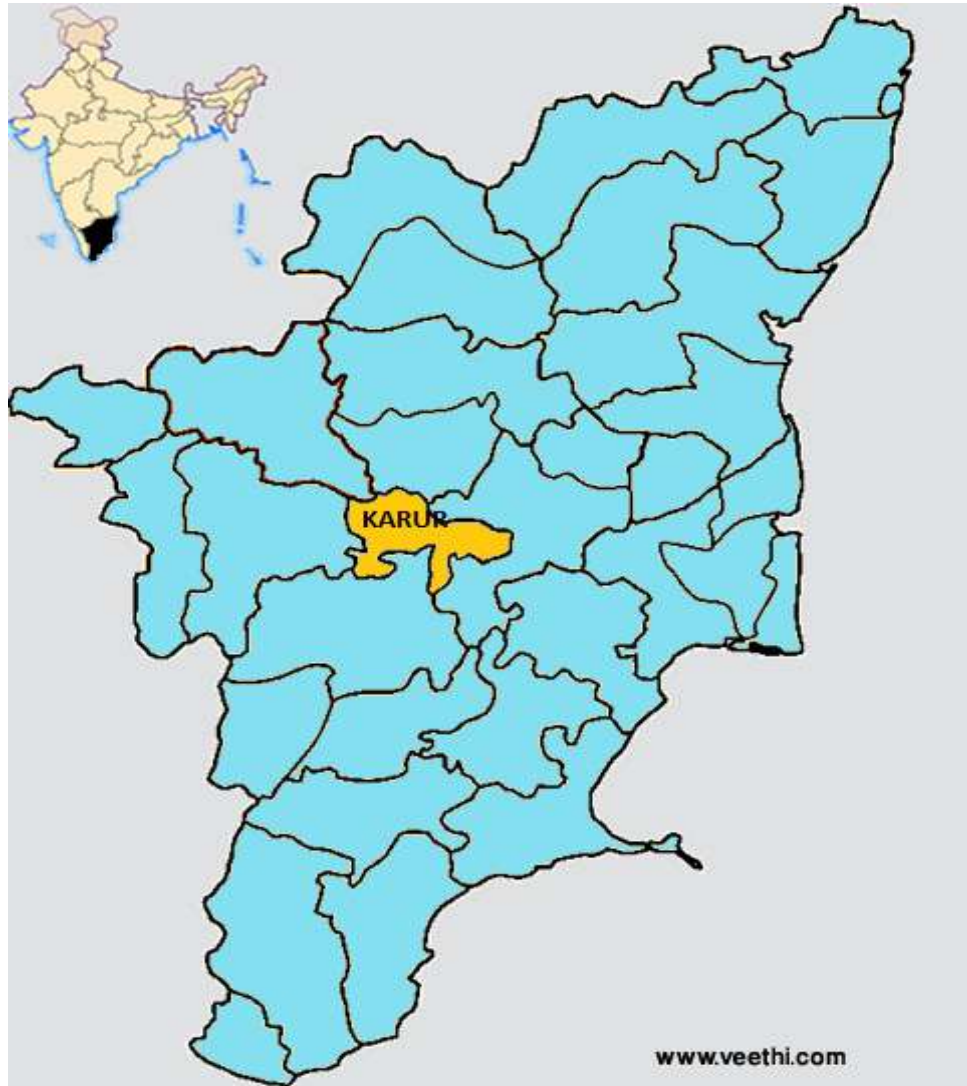
  
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# 324

## DISTRICT SURVEY REPORT

### KARUR DISTRICT



**DISTRICT ENVIRONMENT IMPACT ASSESSMENT  
AUTHORITY (DEIAA), KARUR**

**SEPTEMBER - 2017**

**DIRECTORATE OF GEOLOGY AND MINING  
MINERAL RESOURCE DEPARTMENT  
GOVERNMENT OF TAMILNADU**

**DISTRICT SURVEY REPORT  
KARUR**

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## Introduction

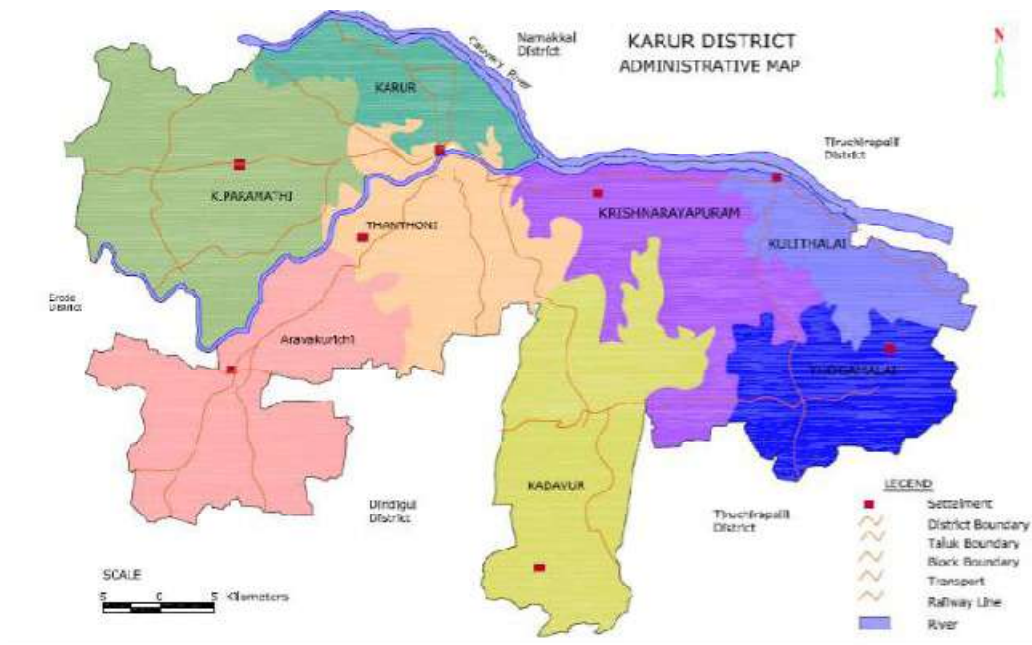
Karur district lies between 10 °63' and 11°14 ' north latitude and 77 °90' and 78° 61' east longitude. Karur town is located on the bank of Amaravathi river. Karur is one of the oldest towns in the State of Tamil Nadu and has played a very significant role in the history and culture of the Tamils. Its history dates back over 2000 years, and has been a flourishing trading centre even in the early Sangam days. In the ancient and medieval times, the area was ruled by the Cheras, Gangas and Cholas. Karur was the capital of Cheras during the past Karur district came to existence on 30<sup>th</sup> September 1995 by bifurcation of Tiruchirappalli district. According to 2011 census, Karur district had a population of 10,76,588 with a sex-ratio of 1,015 females for every 1000 males. The district average literacy is 81.74%. The total area of Karur district is 2,895 square kilo meter.

### DISTRICT AT A GLANCE :

	<b>Particulars</b>			<b>Statistics</b>
	<b>Geographical features</b>			
	<b>Geographical Data</b>			2895.57 Sq.Kms
	i)Latitude			10.45” to 11.45” North
	ii)Longitude			77.45” to 78.07 East
	iii)Geographical Area			
				<b>Administrative Units</b>
	i)Sub divisions			2
	ii)Tehsils			6
	iii)Sub – Tehsil			-
	v)Patwar Circle			-
	v)PanchayatSimitis			10
	vi) Nagar nigam			4
	vii) Nagar Palika 11			11
	viii) Gram Panchayat			158
	xi) Revenue villages			203
	x) Assembly Area			
	<b>II.Population</b>			
	Sex-wise			
	i)Male			534392
	ii) Female			542196
	Rural Population			642415
	<b>III.Agriculture</b>			
	Land Utilization			
	i)Total Area	2010-2011		289557 Hec
	ii)Forest Cover	2010-2011		6187 Hec

	iii)Non Agriculture Land	2010-2011		37264 Hec
	v)Cultivable Barren land	2010-2011		2901 Hec
<b>Forest</b>				
	(i)Forest	2010-2011		6187 Hec
<b>Livestock &amp; Poultry</b>				
	Cattle			
	i)Cows	2007		143953
	ii)Buffaloes	2007		73067
<b>Other Livestock</b>				
	i)Goats	2007		173591
	ii) Pigs	2007		10205
	iii)Dogs & Bitches			31746
<b>IV) Railways (in km.)</b>				
	(i)Length of rail line	2010-2011		93.85
<b>V)Roads</b>				
	(a)National Highway	2010-2011		118.8
	(b) State Highway	2010-2011		222.731
	(c) Main District Highway	2010-2011		348.120
	(d) Other district & Rural Roads	2010-2011		3769.03
	road/Agriculture Marketing Board Roads	2010-2011		
	f) Kachacha Road	2010-2011		
<b>VI) Communication</b>				
	(a)Telephone Connection	2010-2011		118268
	(b)Post offices	2010-2011		246
	(c)Telephone center	2010-2011		100
	(d)Density of Telephone	2010-2011	0 Person	126
	e) Density of Telephone	2010-2011	.Per KM	40
	(f) PCO Rural	2010-2011	No.	1339
	(g) PCO STD	2010-2011	No.	295
	(h) Mobile	2010-2011		373474
<b>(VII) Public Health</b>				
	(a) Allopathic Hospital	2010-2011		6
	(b) Beds in Allopathic Hospitals	2010-2011		419
	(c) Ayurvedic Hospital			-
	(d) Beds in Ayurvedic Hospital			-
	(e) Unani Hospitals			-
	(f) Community Health centers			-

(g) Primary health centers			36
(h) Dispensaries			104
i) Sub Health Centers			168
(j) Private Hospitals			32
<b>(VIII) Banking</b>			
<b>Commercial</b>			
(a) Commercial Bank			53
(b) Rural Bank Products			52
(c) Co-operative bank products			98
(d) PLDB Branches			03
<b>(IX) Education</b>			
(a) Primary School			568
(b) Middle Schools			186
(c) Secondary & Senior Secondary Schools			107
(d) Colleges			22
(e) Technical University			-



**Figure :Karur District Administrative Map**

## **Physiographic:-**

The entire area of the district is a pediplain. The Rangamalai hills and Kadavur hills occurring in the southern side of the district constitutes the remnants of the much denuded Eastern Ghats and rise to heights of over 1031m above mean sea level. The district general slopes gently towards north east and forms a vast stretch of plain country till the eastern boarder of the district. There are numerous small residual hills represented by Ayyarmalai, Thanthonimalai and Velayuthampalayam hills. The general elevation of the area is ranging between 100 m and 200m above mean sealevel. The prominent geomorphic units identified in the district through interpretation of Satellite imagery are 1) Structural hill, 2) Pediments, 3) Shallow Pediments, 4) Buried Pediments and 5) Alluvial plain. *(Reference : State Govt. district report)*

## **Location & accessibility:-**

There are two national highways: [NH-44](#) (North South Corridor Road (Kashmir to Kanyakumari)) Srinagar - Kanyakumari and [NH-67](#) (Nagapattinam - Trichy - Karur - Coimbatore - Gudalur), which connect with other major towns. The nearest airport is in [Tiruchirappalli Airport](#) (85 km). The nearest major sea port is at [Thoothukudi](#) (280 km).

## **Soil:-**

Soil types of the area are more important, since soil deposition is important for agricultural production and also for the recharge of ground water. Different types of soil are derived from a geological formations. On the basis soil map of Karur district based on the survey by the Tamil Nadu Agricultural Department indicates four different types of soils viz., Red Soil, Thin Red Soil, Red Loam and River Alluvium Soil. The red soils are predominantly seen in Kadavur, Kulithalai, Krishnarayapuram, Thanthoni and Thogamalai blocks. The thin red soils are seen in Aravakurichi and K. Paramathy blocks. Major portion of Karur block is covered by red loom.. Various types of crops raised in different types of soil in different parts of district.

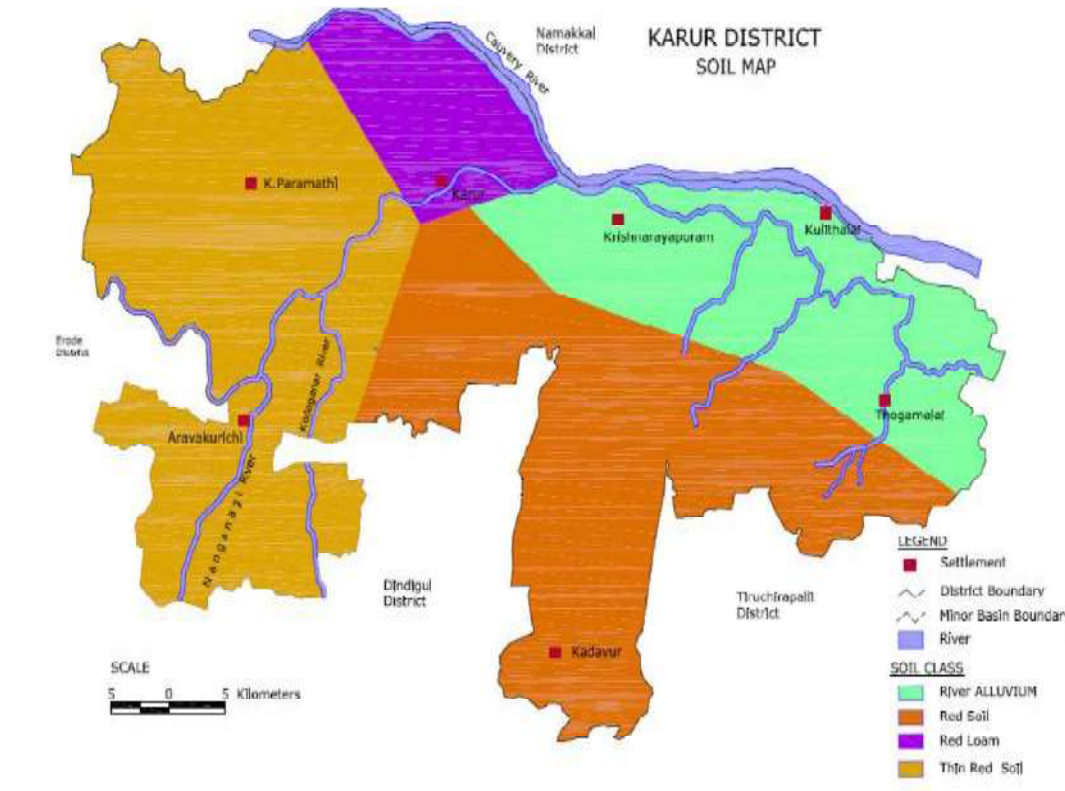


Fig: Karur District Soil Map

### Geomorphology :-

The entire area of the district is a pediplain. The Rangamalai hills and Kadavur hills occurring in the southern side of the district constitutes the remnants of the much denuded Eastern Ghats and rise to heights of over 1031m above mean sea level. There are numerous small residual hills represented by Ayyarmalai, Thanthonimalai and Velayuthampalayam hills. The general elevation of the area is ranging between 100 m and 200m above mean sea level. The prominent geomorphic units identified in the district through interpretation of Satellite imagery are 1) Structural hill, 2) Pediments, 3) Shallow Pediments, 4) Buried Pediments and 5) Alluvial plain. An overall appraisal of groundwater occurrence in each geomorphic unit and the significance of its hydro geological characters are given, geomorphology and lineament details are given in

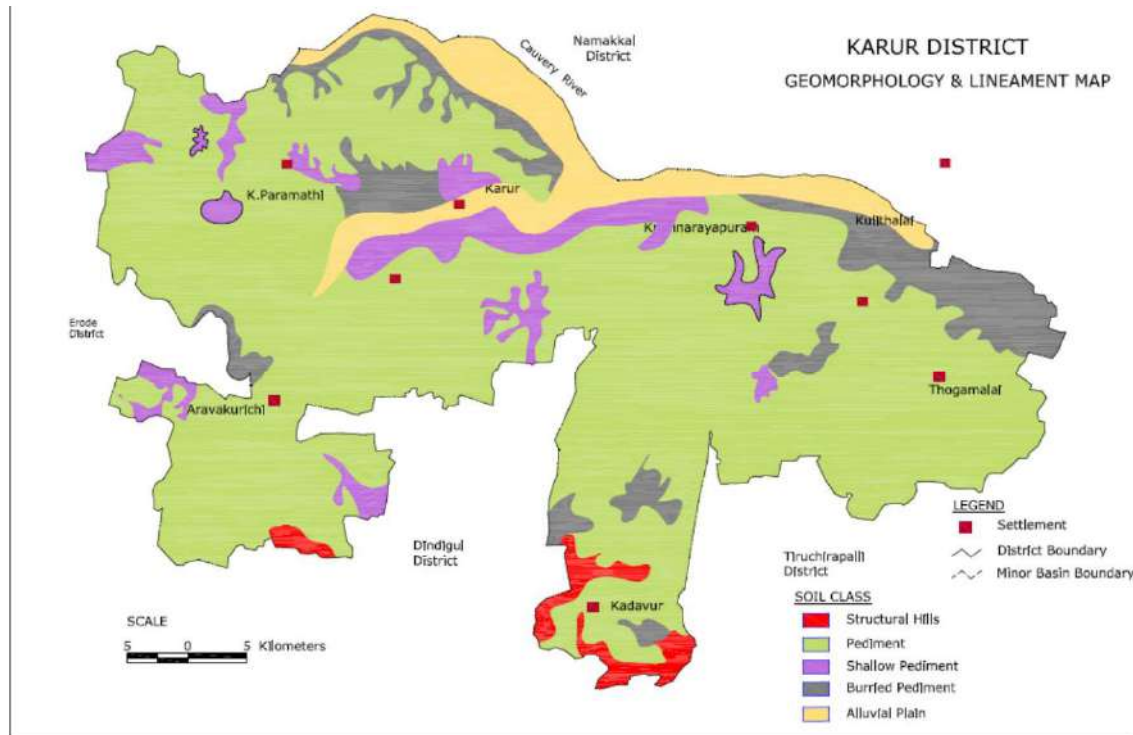
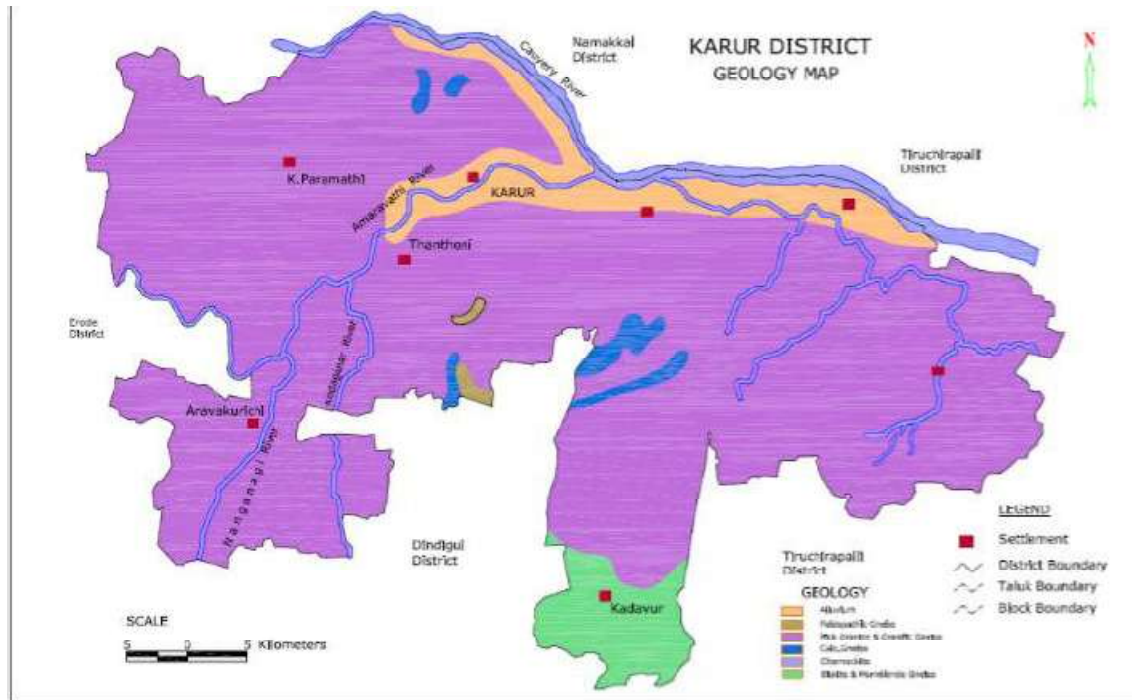


Fig: Karur District Geomorphology & Lineament Map

### GEOLOGY:

Geologically, the entire district can be classified into hard rock and sedimentary formations.

**Hard rock Formation:** - More than 90 percent of the district is underlain by hard rock of Archaean age. The gneissic type of Formation is the major formation among the various types of hard rocks. Charnockite occurs in this district as pockets in Karur and Aravakurichi taluks. Quartzites which are resistant to weathering are also seen as patches in Charnockite and gneissic varieties and the above rock types are shown in Figure 3.5. **Sedimentary Formation:** - Recent alluvial deposits such as sand, silt, clay, gravel etc. which are transported sediments by river are found on the other side of Cauvery river in Karur, Krishnarayapuram and Kulithalai blocks. These formations are overlying the hard rock.



Karur District Geological Map (Source: District report)

**Land utilization pattern in Karur District:-**

Karur District is a part of cauvery delta region and utilization of land area in the district is up to 44.59%. 4.76% of the land area remains as other uncultivated land. 2.74% is forest area in Karur district. Black soil is the predominant soil type in this district accounting for 35.51% followed by laterite soil for 23.85%. The remaining 20.31% is sandy, coastal and alluvium soil. The main crops are [paddy](#), [banana](#), [sugarcane](#), [beetle leaf](#), [grams&pulses](#), [tapioca](#), kora grass, [groundnuts](#), [oilseeds](#), tropical vegetables, [garland](#) flowers, and medicinal herbs.

**b) LAND UTILIZATION DETAILS:-**

Sl. No.	Particulars	Area in ha	% to the Total geographical area
1	Total geographical area	289557	
2	Area under Forest	6187	2.14
3	Barren and uncultivable land	2901	1.00
4	Land put into non-agricultural uses	37264	12.87

5	Cultivable waste	67831	23.43
6	Permanent pastures and other grazing lands	10801	3.73
7	Miscellaneous tree crops and grooves not included in the net area sown	1278	0.44
8	Current Fallow	4774	1.65
9	Other Fallow	46802	16.16
10	Net Area Sown	111719	38.58
11	Area sown more than once	2835	0.98
12	Gross Cropped Area	114554	39.56

**Monthwise Rainfall details in Karur District for the last three years.**

*( Ref :Received from GW Board, Trichy)*

RAINFALL READING FOR THE YEAR 2015 in Millimeter(mm)													
SL. NO	STATION NAME	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUGUST	SEP	OCT	NOV	DEC
1	Anaipalayam	95.0	0.0	15.2	141.2	127.2	6.0	0.0	29.2	174.0	86.0	284.0	65.0
2	Aravakurichi	10.2	0.0	5.0	114.0	168.7	59.2	0.0	6.0	219.6	44.6	299.4	34.2
3	K.Paramathy	69.6	0.0	47.4	65.0	69.6	9.2	0.0	41.5	75.4	95.8	279.6	79.0
4	Kadavur	8.6	0.0	0.0	90.0	104.6	98.2	0.0	0.0	36.4	79.4	200.1	102.9
5	Karur	12.4	0.0	0.0	92.0	85.6	4.0	0.0	38.0	233.0	91.7	219.0	35.5
6	Krishnarayapuram	53.0	0.0	0.0	0.0	123.4	13.2	0.0	91.9	149.0	115.7	172.7	23.5
7	Kulithalai	2.0	0.0	0.0	90.9	84.8	11.0	0.0	9.0	99.1	79.8	178.9	29.1
8	Mayanur	29.0	0.0	0.0	107.6	101.0	31.0	0.0	90.6	165.0	103.6	193.8	25.4
9	Palaviduthy	15.5	0.0	0.0	220.4	152.6	104.3	7.2	0.0	29.2	74.0	230.0	80.6
10	Panjapatti	7.4	0.0	6.0	214.4	74.2	47.0	0.0	23.4	107.2	155.0	224.0	31.4
11	Thogaimalai	7.0	0.0	3.0	68.3	147.0	10.0	0.0	49.0	45.0	128.0	166.0	40.0

RAINFALL READING FOR THE YEAR 2016 in Millimeter (mm)													
SL. NO	STATION NAME	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUGUST	SEP	OCT	NOV	DEC
1	Anaipalayam	0.0	0.0	0.0	0.0	77.2	48.0	48.0	0.0	12.0	120.0	12.0	20.2
2	Aravakurichi	0.0	0.0	0.0	0.0	161.8	46.2	0.0	1.2	2.2	32.4	30.4	25.6
3	K.Paramathy	0.0	0.0	0.0	13.6	71.2	37.8	0.0	2.0	8.0	1.8	18.2	13.3
4	Kadavur	0.0	0.0	0.0	4.2	66.2	12.2	12.2	5.2	7.2	58.9	4.0	48.6
5	Karur	0.0	0.0	0.0	0.0	70.0	16.0	16.0	75.4	20.7	1.0	48.0	25.2
6	Krishnarayapuram	0.0	0.0	0.0	0.0	130.3	30.8	30.8	23.2	17.4	58.0	5.0	40.9
7	Kulithalai	0.0	0.0	0.0	0.0	149.1	22.1	0.0	40.9	16.0	68.6	4.1	46.2
8	Mayanur	0.0	0.0	0.0	0.0	121.0	29.0	78.0	8.0	25.0	37.0	3.0	34.0
9	Palaviduthy	0.0	0.0	0.0	15.2	137.3	20.6	129.2	6.6	0.7	55.7	32.7	51.0
10	Panjapatti	0.0	0.0	0.0	0.0	226.4	0.0	78.0	36.6	33.6	2.6	1.2	42.2
11	Thogaimalai	0.0	0.0	0.0	0.0	168.5	0.0	12.2	2.0	9.5	12.0	0.0	25.7

### Groundwater Potential of Karur District:-

Out of the total groundwater recharge, about 10% is kept reserved for natural recharge during non -monsoon period. The balance is earmarked a suitable groundwater recharge for further development of irrigation. When the groundwater development is more than 100%, it is categorized as over exploited. When it is between 90 and 100%, it is categorized as critical. When it is between 70 and 90%, it is categorized assemi-critical. When it is less than 70% it is categorized as safe.

### Groundwater Quality:-

The groundwater quality is being monitored by PWD by analysing water samples from the monitoring wells in pre and post monsoon period. In Karur district 18 shallow open wells and 21 boreholes were selected for groundwater monitoring since 1972. In 2005 report PWD states that the ground water quality of both shallow open well and borehole in Aravakurichi taluk is moderate with TDS values ranging between 818 to 1591 mg/L in the villages Karveli,Puduvadi,Thirumanickampatti, Vattamangalam, Karudayampalayam, Esanatham, Nagampalli, Kodanthuran Sendamangalam. The poor water quality for drinking purposes is observed in the villages of Paraiyur and Venjamangudalurwith TDS value of 2570 and 2536

mg/L respectfully. In Karur taluk in general the groundwater quality is moderate in the shallow open well and bore hole with TDS values ranging between 799 to 1703 mg/L in the villages of Kaliyappagoundanur, Puliur, Kakkavadi, Kuppachiaplayam, Pudupalayam, 136Jellipatti and Jagathapi. Only one village namely Kuppam is having poor quality water with TDS value of 6664 mg/L and the water is not suitable even for agricultural purposes. In Krishnarayapuram taluk, the quality of water is good in the villages of Devarmalai, Vengampatti and Kannimarpalayam with TDS values ranging between 321 to 500 mg/L both in shallow open well and bore holes. The moderate quality is observed in the villages of Manchanaikanpatti, Valayalkaranpudur and Palaviduthi with TDS values between 566 to 1482 mg/L. The poor quality of water is observed in the village of Vayalur with TDS value of 5205 mg/L. In Kulithalaitaluk, the quality is moderate in all villages of Pulitheri, Nachchalur, Nallur and Pillaigodangipatti with TDS values ranging between 532 to 1313 mg/L. The quality of water in this district is generally good for irrigate on with sodium adsorption ratio (SAR) less than 10. However the quality of water 137 in Kuppam villages of Karur taluk, Vayalur villages of Krishnarayapuram taluk is having poor quality water for irrigation with SAR value 17.8 and 10.5 respectively.

## **Over view of Mining Activity in the District**

Tamil Nadu is the leading holder of country's mineral resources of vermiculite, magnetite, dunite, rutile, garnet, molybdenum and ilmenite. The State accounts for the country's 81% lignite, 75% vermiculite, 69% dunite, 59% garnet, 52% molybdenum and 30% titanium minerals resources.

### **a) GRANITE**

There are good quality of hard rocks which are particularly available at Kulithalai and Aravakurichi Taluks. But the rocks available at Thogamalai, Naganur, Kalugur and Porunthalur of Kulithalai Taluk are of export worthy and they are being operated for the extraction of granite block both by M/s. TAMIN and private companies. Calc-Gneiss (called as colonial white occurs in Pitchampatti Village of Karur Taluk are of export worthy quality.



Tvl.Maducon Granites K/Pitchampatti ,KarurTaluk latitude 10° 43' 50.34" Longitude 78° 24' 56.57" ,Multicolour Granite.



Tvl.TAMIN Ltd. Naganur village , Kulithalai Taluk latitude 10° 44' 30.27" Longitude 78° 23' 53.03" ,Multicolour Granite. N30°W, 70°Southerly dipping.

**b) Limestone:-**

Low grade to Cement grade limestone is found extensively at Kulithalai Taluk (Thevarmalai, Melapaguthi, Varavanai, Vellalapatti, Keeranur, Pothuravuthampatti, Kalladai, Kaliyapatti etc., villages), at Aravakurichi Taluk (Esanatham, Ammapadi, Alamarathupatti, Thennilai etc., villages) and K.Pitchampatti of Karur Taluk. The limestone is being used at Cement industries, as fillers in the fertilizer and in the cem factories. Presently 30 leases are existing at Karur District.



Devarmalai and Melapaguthi village ,Kaduvur Taluk latitude 10° 44' 37.35" Longitude 78° 10' 45.80" ,Chettinad Cement Co. Ltd. Limestone Quarry E-W trending 70°-75° Southerly dipping

**c) Quartz and Feldspar:-**

Milky to glassy variety of Quartz and Potash feldspar with an average of 12% potash is the common economic mineral available extensively at Aravakurichi Taluk (Pungambadi-West, Nagampalli, Punjaikalakurichi, Pavithram, Soodamani, Venjamangudalur (East), Aravakurichi, Kodanthur (South), Rajapuram, Kodaiyur etc., villages) less prominently at Kulithalai Taluk (D.Edayapatti, Sengal, Varavanai, Pannapatti, Vadavambadi etc., Villages) and at Karur Taluk (Velliyanai South Village). High grade Quartz is being exported, low grade used in the manufacture of glass and Feldspar in the ceramic and tile manufacturing industries. Presently 42 leases are existing at Karur District.



**Quartz & Feldspar (T.S No.- 58F/13, Pungambadi Village Aravakurichi Taluk) latitude 10° 48' 5.48" Longitude 77° 57' 40.73". From E- W trending Pegmatite vein**



Quartz & Feldspar (T.S No.- 58F/13, Pungambadi Village Aravakurichi Taluk) latitude  $10^{\circ} 48' 5.48''$   
Longitude  $77^{\circ} 57' 40.73''$ . From E- W trending Pegmatite vein

#### d) ROUGHSTONE

The Charnockite rocks are found to occur in K.Paramathi, Punnam areas etc., of Aravakurichi Taluk which are exploited to produce building materials and road metals.

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Aravakurchi, Thennilai East, Rough Stone Charnockite, E- W trending  $60^{\circ}$  -  $70^{\circ}$  northly dipping latitude  $10^{\circ} 59' 3.29''$  Longitude  $77^{\circ} 53' 15.57''$ .

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Aravakurchi, Thennilai East, Rough Stone Charnockite, E- W trending  $60^{\circ} - 70^{\circ}$  northly dipping  
latitude  $10^{\circ} 57' 57.20''$  Longitude  $77^{\circ} 52' 33.92''$ .

e) Dunite Quarry:-Aravakurchi, Thenilai Latitude  $10^{\circ} 59' 03.29''$  Longitude  $77^{\circ} 53' 15.57''$ .

Latitude  $10^{\circ} 55' 45.56''$  Longitude  $77^{\circ} 48' 36.17''$ .



Fig: Dunite Quarry. Abandoned Mines.

## f) Gemstones:-

Apart from the above good quality of Gem variety such as Ruby (cordierite in the cordierite sillimanite gneiss) and beryl (aquamarine in the pegmatite vein in acicular shapes) are the common man's hunt at Keeranur, Muthunaickenpatti, Varavanai and Pannapatti villages of Kulithalai Taluk. Other gem variety such glassy crystallised quartz, amethyst and moonstone (catsey etc., are also found in this area)



Fig: Gemstone variety.

**g) Sand:-**

River Amaravathi and Cauvery are the sources of sand in Karur District. Due to lack of deposition Amaravathi is having poor sand deposition. The details of and present sand leases are in existence as detailed below.



Fig: Project of Sand quarry in upstream and downstream of Kattalai Bed regulator in main course of Cauvery River, near Mayanur

latitude 10° 57' 20.30" Longitude 78° 13' 56.28".T.S 58J/01.

<i>Sl. No.</i>	<i>Taluk</i>	<i>Village</i>	<i>S.F.No&amp; Extent in Hects</i>	<i>Details of EIAA Clearance order No &amp; Date</i>	<i>Collector's Proceedings No &amp; Date</i>	<i>Lease Period</i>
01	Krishnarayapuram	Mayanur	1 (Part) 256.06 hecets ( Top 213.85.0 hecets Bottom 42.21.0 hecets)	MoEF-No.J-11015/ 64/2014-IA-II(M), Dated:14.5.2015.	Proc No.225/Mines /2012, Dt:12.6.2015	12.6.2015 to 11.6.2017
02	Manmangalam	Nanjaithottakurichi	915 (Part) 24.00.0 hecets	Lr.No.SEIAA-TN/F.No.4027/EC /1(a)/2297/2015 Dated:27.10.2015	Proc.No.349/ Mines/2015 dt.09.12.2015	09.12.2015 to 08.12.2017
03	Manmangalam	Nanjaikadambankur ichi	246/1A (Part) 24.00.0 hecets	Lr.No.SEIAA-TN/F.No.4026/EC /1(a)/2290/2015 Dated:27.10.2015	Proc.No.350/ Mines/2015 dt.09.12.2015	09.12.2015 to 08.12.2017
04	Manmangalam	Nanjaipugalur	837 (Part) 24.00.0	Lr.No.SEIAA-TN/F.No.4025/EC /1(a)/2301/2014 Dated:27.10.2015	Proc.No.351/ Mines/2015 dt.09.12.2015	09.12.2015 to 08.12.2017
05	Krishnarayapuram	Sinthalavadi	1 (Part) 20.00.0 hecets	SEIAA, TN/F.No.5478/EC	Rc.No.117/ Mines/2016,	22.9.2016 to 21.9.2018

				/1(a)/3253/2016, Dt:10.8.2016.	dt:22.9.2016	
06	Manmangalam	Vangal	1499 (Part) 20.00.0 hecets	SEIAA, TN/F.No.5479/EC /1(a)/3528/2016, Dt:10.8.2016.	Rc.No.118/ Mines/2016, dt:14.10.2016	14.10.2016 to 13.10.2018

**List of existing Mining Leases as on 01.3.2017:-**

**Details of Mineralwise Royalty / Revenue received in Last Three Years**

Sl. No.	Year	Limestone	Quartz	Feldspar	Magnesite	Dunite	R.Stone	Granite	Gravel
1	2013-14	48699353	1492849	368199	533610	0	65448015	70325104	3080625
2	2014-15	53508311	868706	515490	683175	2625	53835975	104483826	3360000
3	2015-16	68225602	1513118	978165	334065	0	37551600	93937741	423750

**Details of Mineralwise Production during the last – 3 Years**

Sl. No.	Year	Limestone	Quartz	Feldspar	Magnesite	Dunite	R.Stone	Granite	Gravel
1	2013-14	716475	2730	6795	6765	0	1453992	31907.24	123225
2	2014-15	658260	5535	9810	8595	75	1192155	45105.678	134400
3	2015-16	839130	8670	14370	3345	0	834150	44601.803	16950

**Details of Sand production during Last Three Years**

Sl. No.	Year	Production	Revenue collected Rs.
1	2013-14	225358.77 Lorry Load	3,83,10,991
2	2014-15	145825.55 Lorry Load	2,47,90,344
3	2015-16	-	-

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Sl. No.	Major Mineral	Name of the lessee with address	Village & Taluk	S.F.No.	Extent in hectors	Classification Patta/ Poramboke	G.O. No and date/ Proc. No.	lease Period	Operation /Non Operation
1	2	3	4	5	6	7	8	9	10
1)	LIMESTONE	S.Sekar 73.Raja colony, Collector's Office Rd Cantonment, Tiruchirappalli-1	Varavanai Vge. Kulithalai Tk.	833/4B 836 (P) 843/2 <b>Total</b>	0.09.0 0.57.0 1.24.5 <b>1.90.5</b>	Patta Land	Ms.No.162 Ind. (MMA2) Dt: 14.6.94.	10.08.1994- 09.08.2014	Non operation
2)	LIMESTONE	E.Dhanapal, S/o.Erachi Reddiar, Pathiripatti, Kulithalai Taluk.	Thennilai Vge., Kulithalai Tk.,	806/5 806/6 807/3 <b>Total</b>	0.72.0 1.13.0 1.30.0 <b>3.15.0</b>	Poramboke Patta Patta	Ms.No.88 Ind. (MMA2) dt:29.3.95	17.06.1995- 16.06.2015	Non operation
3)	LIMESTONE	K.Panneerselvam Radha Chemicals, C.39.Cauvery Nagar, Kulithalai.	Thennilai Vge., Kulithalai Tk.	815/1 815/2 815/3 815/ 4A 815/ 4B 815/5 <b>Total</b>	0.19.5 0.37.0 0.58.5 0.57.0 0.53.0 0.79.5 <b>3.04.5</b>	Patta	3(D)No.261 Ind. (MMA.2) dt:20.09.95	31.10.1995- 30.10.2015	Non operation
4)	LIMESTONE	S.Sekar 73. Raja Colony, Collector's Office Rd., Cantonment, Tiruchirappalli-1.	Varavanai Vge. Kulithalai Tk.,	835/3 836 (P) 837/1B <b>Total</b>	0.32 1.41 3.80 <b>5.53 Acr</b>	Patta	3(D)No.292 Ind. (MMA.2) dt:04.10.95	18.11.1995- 17.11.2015	Non operation
5)	LIMESTONE	P.Muthukumarar, 33. Chinnappa Layout, Karungalpalayam, Erode-3.	K.Pitchampatti Karur Taluk.	441/3 (Part)	1.62.0 out of 3.60.5	Patta	Ms.No.64 Ind. (MMA2) dt:2.4.96	18.09.1996- 17.09.2016	Non operation

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6)	LIMESTONE	N.Elango, 5/3.East Thiyagarajar Polytechnic, Kasakaranur, Salem-5.	K.Pitchampatti Karur Taluk	250/2 (P)	1.38.2	Patta	3(D)No.65 Ind. (MMA2) dt:24.4.97	09.10.1997 08.10.2017	Non operation
7)	LIMESTONE	K. Gopal 22. Pandurenganathan Koil Street, Shevapet, Salem.	Devarmalai Vge Kulithalai Tk.,	5	4.93.5	Patta	3(D)No.66 Ind. (MMA2) dt:22.4.97	09.10.1997- 08.10.2017	Non operation
8)	LIMESTONE	E.Srinivasan, Sri Ambal Limestone Mines, 5/88.Chinnagoullapatti Kannankurichi Post, Salem-8.	PitchampattiVge Karur	380/1 385/1 386/1 386/2 386/3 <b>Total</b>	0.70.0 0.70.0 2.69.5 0.08.0 0.38.5 <b>4.56.0</b>	Patta	3(D)No.71 Ind. (MMA2) dt:30.4.97	09.10.1997- 08.10.2017	Non operation
9)	LIMESTONE	Sri Amara Ores, 48. No.1 Seerangam St., Dadagapatty, Salem	Devarmalai Vge Kulithalai Tk.,	65/2A (P) 66/1 66/2 66/3 (P) <b>Total</b>	0.65.0 0.50.0 0.14.5 1.47.0 <b>2.76.5</b>	Patta	3(D)No.70 Ind. (MMA2) dt:30.4.97.	23.10.1997- 22.10.2017	Non operation
10)	LIMESTONE	T.V.Elayaperumal 14B. Perumal Koil St, Peramanur, Salem.	Varavanai Vge. Kulithalai Tk.	847/3A2 847/3B 847/3C 847/3D 847/3E2 850/1 <b>Total</b>	0.02.0 0.13.0 0.25.5 0.22.0 0.02.0 0.64.5 <b>1.29.0</b>	Patta	3(D)No.83 Ind(MMA2) dt:26.5.97	29.10.1997- 28.10.2017	Non operation
11)	LIMESTONE	N.Subbiah 30.C. Velusamy St., Arisipalayam, Salem.	Varavanai Vge. Kulithalai Tk.	842/1A2 842/1B2 842/1C 842/1D 842/1E2 842/1G	0.07.0 0.06.5 0.39.0 0.38.5 0.05.5 0.37.0	Patta	3(D)No.142 Ind(MMA2) dt:19.8.97	11.12.1997- 10.12.2017	Non operation

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				842/1K 842/2 842/1F2 542/1H2 892/1I2 <b>Total</b>	0.14.0 0.69.0 0.05.0 0.05.5 0.04.0 <b>2.31.5</b>				
12)	LIMESTONE	J.M.Mines and Minerals 7/A1 Williams Road, Cantonment, Tiruchirappalli-1	Devarmalai Kulithalai Tk.,	9 (P) 11/3A (P) 11/3B (P) 11/3C (P) 11/3D (P) <b>Total</b>	2.21.0 0.40.5 0.41.0 0.71.5 0.71.0 <b>4.45.0</b>	Patta	3(D)No.111 Ind. MMA2 14.07.1997	10.01.1998- 09.01.2018	Non operation
13)	LIMESTONE	Raj Vignesh Mines and Minerals 84/2 Kannagi Street, Cauvery Nagar, Kulithalai	Thennilai Vge. Kulithalai Tk.	811/2 811/3 <b>Total</b>	1.18.0 1.19.0 <b>2.37.0</b>	Patta	3(D)No.137 Ind (MMA2) dt:7.8.97	04.02.1998 03.02.2018	Non operation
14)	LIMESTONE	Amara Ores 48- 1 Seerangam St., Dadagapatty, Salem.	Devarmalai Kulithalai Tk.,	691/1	2.00.0	Patta	3(D) No. 147 Ind. (MMA2) 26.8.97	04.02.1998 03.02.2018	Non operation
15)	LIMESTONE	M.K.Elango, Salem Chemicals, 14/22, Agraharam, Shevapet, Salem.	Varavanai Kulithalai tk.,	833/1B2 833/4A2 <b>Total</b>	1.21.5 1.13.0 <b>2.34.5</b>	Patta	3(D)No.136 Ind. (MMA.2) dt:7.8.97.	05.02.1998- 04.02.2018	Non operation
16)	LIMESTONE	Divyam Mines and Minerals 1/97. Thoppukadu, Fairlands, Salem-630 016.	Kalladai Vge. Kulithalai Tk.	41/5 41/6 41/7 41/8A 41/10A 41/11A 42/2B 42/2C <b>Total</b>	0.19.0 0.18.0 0.17.0 0.96.5 0.22.0 0.23.0 0.18.0 0.17.5 <b>1.81.0</b>	Patta	3(D)No.207 Ind. (MMA2) dt:10.12.97	23.03.1998- 22.03.2018	Non operation

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17)	LIMESTONE	N.Karunanidhi, Sathiya Maligai, Bye Pass Road, Thiruvakavendanur (East), Salem-636 005.	Thennilai Vge., Kulithalai Tk.,	843/1F1 844/6B 844/7B <b>Total</b>	0.40.5 0.55.5 0.04.0 <b>1.00.0</b>	Patta	3(D)No.87 Ind. (MMA2) Dt:29.5.97	28.03.1998- 27.03.2018	Non operation
18)	LIMESTONE	P.Nagarajan, Venkatramanan St., Gugai, Salem	Kaliyapatti Vge., Kulithalai Taluk	321/2A 321/2B <b>Total</b>	1.28.0 1.04.0 <b>2.32.0</b>	Patta	3(D)No.135 Ind. (MMA2) dt:7.8.97	25.07.1998- 24.07.2018	Non operation
19)	LIMESTONE	A.V. Elamurugu, Prop. Mother Earth Minerals No.8 30 feet Road, R.K.Puram, Karur	K.Pitchampatti Karur Tk.	644/2 (P) 645/2 (P) <b>Total</b>	0.74.5 0.27.5 <b>1.02.0</b>	Patta	3(D)No.215 Ind. (MMA2) 16.12.97	14.09.1998- 13.09.2018	Non operation
20)	LIMESTONE	M.Ramkumar, S/o.Muthusamy, No.2 Ashokapuram, Erode	Devarmalai Kulithalai Taluk.	35/2	2.26.5	Patta	3(D) No.30 Industries (MMA2) Dept Dated:3.4.98	24.9.1998- 23.9.2018	Non operation
21)	LIMESTONE	V.P.SakthiVel 184.D.1 Vinayagar Koil St Nedunsalai Nagar, Salem-636 005.	Varavanai Vge., Kulithalai Tk.	539/3A 539/3B 539/3C 539/5 539/3H 540 541/3 541/4 541/5 <b>Total</b>	0.06.5 0.03.5 0.02.5 0.13.0 0.11.5 0.79.0 0.22.5 0.38.0 0.65.0 <b>2.41.5</b>	Patta	3(D)No.92 Ind. (MMA2) dt:10.07.98	26.10.1998- 25.10.2018	Non operation
22)	LIMESTONE	Ragavendra Minerals And Chemicals, No.1. 4 <sup>th</sup> Cross (west) Annamalai Nagar, Salai Road, Tiruchirappalli.17.	Thennilai Vge., Kulithalai Tk.	809/2 809/3 809/4 809/5 (P) <b>Total</b>	0.42.0 0.40.0 0.42.0 1.27.5 <b>2.51.5</b>	Patta	3(D)No.63 Ind (MMA2) dt:19.05.98	12.11.1998- 11.11.2018	Non operation

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23)	LIMESTONE	Ganesh Mineral Industries 10/2-A Main Road, Palayam, Vedachandur Dindigul District	Devarmalai Vge., Kulithalai Tk.,	3/2 P 8/1 (P) 8/2 (P) 8/3 P <b>Total</b>	1.50.5 0.91.0 0.73.5 0.92.0 <b>4.07.0</b>	Patta	DGM's Proc No/15214/ MM4/ 98 dt:22.6.2000	11.12.2000- 10.12.2020	Non operation
24)	LIMESTONE	M.Thangaraj, Mettukadu, Makkiripalayam, Sowdhapuram, Tiruchengode Taluk, Namakkal District	Varavanai Vge., Kulithalai Taluk	636/2 (P) 637/1(P) 711/1 (P) 816/1 (P) 816/2A(P) 817/1(P) <b>Total</b>	0.10.0 0.20.0 1.45.5 0.76.0 0.22.0 1.20.0 <b>3.93.5</b>	Patta	DGM's Proc No/8033/ MM4/ 2000 23.01.2001	13.03.2001- 12.03.2021	Non operation
25)	LIMESTONE	K. Panneerselvam, M/s.Radha Chemicals, C.39 Cauvery Nagar, Kulithalai.	Thennilai Keeranur Kulithalai Taluk	812  903/2B1 <b>Total</b>	3.63.0  1.03.0 <b>4.66.0</b>	Patta	DGM'sProc No.1674/ MM4/98 27.02.2001	26.11.2001- 25.11.2021	Non operation
26)	LIMESTONE	Sree Ganesh Mines, 4A Madurai Road, Tiruchirappalli-620008	Kaliapatti Devarmalai Kulithalai Tk.,	323/6 24/1 <b>Total</b>	2.02.0 1.87.5 <b>3.89.5</b>	Patta	DGM'sProc No.15215/ MM4/1998 24.10.2001	30.01.2002- 29.01.2022	Non operation
27)	LIMESTONE	Tmt. G. Revathi, Sri Mahamuni Mining Com., 17/281-AB-1 M.M. Street Kodaikanal Dindigul District.	Gudalur Vge., Kulithalai Tk.,	837/2A2 838/2A2 839/1 <b>Total</b>	0.36.5 0.88.5 2.11.0 <b>3.36.0</b>	Patta	DGM'sProc No.9137/MM4/200 0 13.11.2001	25.02.2002- 24.02.2022	Non operation
28)	LIMESTONE	P. Murugesan, Pudhuvalasu, Sowdhapuram, Tiruchengode Tk.,	Varavanai Kulithalai Tk.,	815/1 (P) 815/2 (P) 815/3 (P) 815/4 (P) 815/5 (P) 815/6 (P) 815/7 (P)	0.02.0 0.18.0 0.22.5 0.16.0 0.15.5 0.50.0 0.34.0	Patta	DGM'sProc No.8029/ MM4/2000 28.03.2001	08.03.2002- 07.03.2022	Non operation

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				815/8 815/9 815/10 (P) 815/11(P) 816/2E(P) 816/2F 817/2(P) <b>Total</b>	0.03.5 0.07.0 0.10.5 0.29.0 0.21.0 0.02.0 1.55.0 <b>3.86.0</b>				
29)	LIMESTONE	C.Senthilkumar, Mayilankadu, Sowdhapuram, Tiruchengode Tk.,	Varavanai Kulithalai Tk.,	635/2A Pt 635/2B Pt 635/2C Pt 636/3 Pt 816/2A Pt 816/2B Pt 816/2C Pt 816/2D Pt 816/2E Pt 817/1P Pt <b>Total</b>	0.07.0 0.06.0 0.06.0 0.09.0 0.09.0 0.45.0 0.48.0 0.50.0 0.79.0 1.35.0 <b>3.94.0</b>	Patta	DGM's Proc No.8030/ MM4/2000 30.03.2001	08.03.2002- 07.03.2022	Non operation
30)	LIMESTONE	M.Murugesan, Angalamman Minerals, 2/103, S.Doctor's colony Sakthipuram, Reddipatty,	Melapaguthi Kulithalai Tk.,	337/1 337/4 338/2 <b>Total</b>	0.54.5 0.75.5 0.96.5 <b>2.26.5</b>	Patta	DGM's Proc No.15061/ MM4/ 2000 16.07.2001	08.03.2002- 07.03.2022	Non operation
31)	LIMESTONE	Sri Ganesh Mining Work 1Q2 Jai Nagar, Omalur, Salem District.	Venjamangudalur (East) Aravakurichi Tk.,	1104/1 (P)	4.05.0	Patta	DGM's Proc No.16095/MM4/20 00, 20.11.2001	13.03.2002- 12.03.2022	Non operation
32)	LIMESTONE	Sri Krishna Mining Works, 47-K. Bharathiyar St., Gandhi Nagar, Dharmapuri-1	Venjamangudalur (East) Aravakurichi Tk.,	1104/2 (P)	3.75.0	Patta	DGM's Proc No.16096/MM4/20 00 22.11.2001	13.03.2002- 12.03.2022	Non operation

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33)	LIMESTONE	E. Dhanapal, D/364 1 <sup>st</sup> Cross, Anna Nagar, Thennur, Trichy-17	Melapaguthy Vge., Kulithalai Tk.,	341/1A	1.63.0	Patta	DGM'sProc No.12938/ MM4/2000 05.09.2001	07.06.2002- 06.06.2022	Non operation
34)	LIMESTONE	Balaji Minerals, 10/2 8-A Main Road, Palayam Vedachandur Taluk Dindigul District	Devarmalai Kulithalai Tk.,	12/10	3.15.5	Patta	DGM'sProc No.15216/ MM4/1998 10.01.2001	02.08.2002- 01.08.2022	Non operation
35)	LIMESTONE	M/s. Suriya Mines, 62 Muniappan Koil St., Gugai, Salem – 636 006	Keeranur Vge., Kulithalai Tk	313/2 313/3 313/4 313/5 314/1A 314/1B 314/1C 314/1D 314/1E <b>Total</b>	0.31.0 0.29.0 0.28.0 0.50.0 0.59.0 0.57.0 0.57.0 0.45.0 0.39.5 <b>3.95.5</b>	Patta	DGM'sProc No.8032/ MM4/2000 29.03.2001	03.08.2002- 02.08.2022	Non operation

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Sl. No.	Major Mineral	Name of the lessee with address	Village & Taluk	S.F.No.	Extent in hectors	Classification Patta/ Poramboke	G.O. No and date/ Proc. No.	lease Period	Operation/ Non Operation
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	Quartz & Feldspar	B.Pasupathi, Navamani Traders, 530. Karuppayee Koil Street, Karur	Pungambadi (W) Aravakurichi Tk.,	186/1	0.61.0	Patta	4(D)No.12 Ind.(MMA 2) dt:3.4.96	29.11.1997 28.11.2017	Non operation
2	Quartz & Feldspar	R.M.Raamanathan, 13. Ponnagaram, Manapparai-621 306	Varavanai Vge., Kulithalai Tk.,	178/1C	0.44.0	Patta	3(D)No.219 Ind. (MMA 2) dt:23.12.97	28.03.1998 27.03.2018	Non operation
3	Quartz & Feldspar	M.Selvaraj, 32/H. MGR Nagar, Chinna Andan Koil Rd Karur	Pannapatti Vge., Kulithalai Tk.,	554/1 554/3 554/4 554/9A <b>Total</b>	0.05.0 0.03.0 0.03.0 0.35.0 <b>0.46.0</b>	Patta	3(D)No.172 Ind. (MMA 2) dt:13.10.97	28.03.1998 27.03.2018	Non operation
4	Quartz & Feldspar	Radha Chemicals, C.39.Cauvery Nagar, Kulithalai.	Vadavambadi Kulithalai Taluk	414/2A	0.40.5	Patta	DGM's Proc.1681/MM3/ 2000 26.6.2000	29.11.1998 28.11.2018 (Renewal of lease )	Non operation
5	Quartz & Feldspar	S.P.Vaiyapuri, G.K.Mines, 67. Perumal Koil St., Karur.	Velliyanai (S) Karur Taluk	834/1B	0.75.0	Patta	DGM's Proc.No. 1832/MM3/ 2000 dt:04.8.2000	27.09.2000 26.09.2020	Non operation
6	Quartz & Feldspar	S.P.Vaiyapuri, G.K.Mines, 67. Perumal Koil St., Karur.	Velliyanai (S) Karur Taluk	1862/6	0.76.0	Patta	DGM's Proc.No.1833/ 2000 dt:2.8.2000	28.09.2000 27.09.2020	Non operation

7	Quartz & Feldspar	JVS International, Prop. K.N.Venkateswaran TC.23/805 Sivaprasad, Valiachala Street, Thiruvananthapuram.	Kodanthur (N) Aravakurichi Tk	25/1 26/A1 <b>Total</b>	0.39.0 0.82.5 <b>1.21.5</b>	Patta	DGM's Proc.7437/MM3/ 2000 15.11.2000	19.03.2001 18.03.2021	Non operation
8	Quartz & Feldspar	Lilly Enterprises, 22.A.Ramakrishna Road, Salem-7	Punjaikalakur ichi Aravakurichi	844/1	1.58.0	Patta	DGM's Proc..7351/MM3 2000 dt:26.9.2000	16.04.2001 15.04.2021	Non operation
9	Quartz & Feldspar	Soundappan, 22.A.Ramakrishna Road, Salem-7	Punjaikalakur ichi Aravakurichi Tk.,	843/1B 843/ 2 <b>Total</b>	1.48.5 1.54.0 <b>3.02.5</b>	Patta	DGM's proc.No.152245/ 2000 dt:16.2.2001	09.07.2001 08.07.2021	Non operation
10	Quartz & Feldspar	Karur Mines and Minerals, 1Q2. Jay Nagar, Agraharam Omalur Post, Salem District.	Venjamangu dalur (East) Aravakurichi Tk.,	1281/1 1281/3 <b>Total</b>	1.56.0 0.50.0 <b>2.06.0</b>	Patta	DGM's Proc. Rc.No.13396/MM3/2000 dt:29.3.2001	05.10.2001 04.10.2021	Non operation
11	Quartz & Feldspar	Om Sakthi Granites, C.39. Cauvery Nagar, Kulithalai-639 104	Nagampalli Aravakurichi Tk.,	1231/2	3.44.0	Patta	DGM's proc.1988/MM3/ 98,Dt:2.8.2000	10.10.2001 09.10.2021	Non operation
12	Quartz & Feldspar	M.Faiza Begum, Chithara Mines and Minerals 64. Nehru Nagar, Dindigul	Pungambadi (W) Aravakurichi Tk.,	354/17B	0.65.0	Patta	DGM's Proc.14634/MM3/ 2000 DT:23.6.2001	20.12.2001 19.12.2021	Non operation
13	Quartz & Feldspar	T. Rajeswari, Onthampatti, Nagampalli-639 201	Nagampalli Aravakurichi Tk.	744 (Part)	2.02.0	Patta	DGM's Proc. 2295/MM3/ 2001, Dt;11.02.2002	03.04.2002- 02.04.2022	Non operation

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14	Quartz & Feldspar	M/s.Chettinad MB-F Hi Silica Limited, Old Mahabalipuram Rd., Kazhipattur Village, Chengleput Taluk.	Chinthlavadi Krishnarayapuram Tk.,	512/2 512/3 512/4 <b>Total</b>	0.10.0 0.10.0 0.10.0 <b>0.30.0</b>	Patta	DGM's Proc.14846/ MM3/2000 Dt:17.7.2001.	26.04.2002 25.04.2022	Non operation
15	Quartz & Feldspar	Tvl.Samy and Swamy Minerals, 92. LGB Nagar, Karur.	Puthambur Vge., Karur Tk.,	177/2 1.06.0	1.06.0	Patta	DGM's Proc.8856/MM3/ 2001,Dt:6.12.2001.	13.05.2002 12.05.2022	Non operation
16	Quartz & Feldspar	K.Panneerselvam, M/s.Radha Chemicals, C.39, Cauvery Nagar, Kulithalai.	Rajapuram Aravakurichi Tk.,	425/1C 425/ 1D <b>Total</b>	0.88.5 1.02.0 <b>1.90.5</b>	Patta	DGM's Proc.5006/MM3/ 2001 Dt:9.1.2002.	19.07.2002 18.07.2022	Non operation
17	Quartz & Feldspar	Ramayee W/o.Raman, Veppankudi, Kaniyalampatti, Kulithalai Tk.,	Pannapatti Vge., Kulithalai Tk.,	530/1 530/ 2 530/ 3 530/4 <b>Total</b>	0.53.5 0.16.0 0.01.5 0.07.0 <b>0.78.0</b>	Patta	DGM's Proc.8193/ MM3/98 dt:27.3.2001	26.07.2002 25.07.2022	Non operation
18	Quartz & Feldspar	Chettinad MB-F Hi Silica (P) Ltd., Kazhipattur, Chengleput Taluk.	Thennilai (West) Vg Aravakurichi Tk.,	764/2	1.10.0	Patta	DGM's Proc.8961/ MM3/2001 dt.10.1.2002.	30.07.2002 29.07.2022	Non operation
19	Quartz & Feldspar	Chettinad MB-F Hi Silica (P) Ltd., Kazhipattur, Chengleput Taluk.	Thennilai (South) Aravakurichi Tk.,	932/2A	1.21.5	Patta	DGM's Proc.8963/ MM3/2001 dt.11.1.2002	30.07.2002 29.7.2022	Non operation
20	Quartz & Feldspar	S.P. Vaiyapuri, G.K.Mines, 67 Perumal Koil St.,	Uppidamangalam	1108/4 1108/5 <b>Total</b>	0.45.0 0.44.0 <b>0.89.0</b>	Patta	DGM's proc.13934/ MM3/2001 dt.7.3.2002.	31.07.2002 30.7.2022	Non operation

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		Karur.	(West)Vge Karur Taluk						
21	Quartz & Feldspar	K. Panneerselvam, Prop. Radha Chemicals, C.39 Cauvery Nagar Kulithalai.	Nagampalli Vge., Aravakurichi Tk.,	1359/B (P)	2.02.5	Patta	DGM's Proc.16423/ MM3/ 2001 dt.01.10.2002	22.11.2002 21.11.2022	Non operation
22	Quartz & Feldspar	K. Panneerselvam, Prop. Radha Chemicals, C.39 Cauvery Nagar Kulithalai.	Nagampalli Vge., Aravakurichi Tk.,	1366/2	1.39.5	Patta	DGM's Proc.16424/MM3/ 2001 dt.30.09.2002.	22.11.2002 21.11.2022	Non operation
23	Quartz & Feldspar	K. Panneerselvam, Prop. Radha Chemicals, C.39 Cauvery Nagar Kulithalai.	Nagampalli Vge., Aravakurichi Tk.,	1361/1	1.21.0	Patta	DGM's Proc.5007/ MM3/ 2001 dt.30.09.2002.	22.11.2002 21.11.2022	Non operation
24	Quartz & Feldspar	K.Ramachandran, S/o.Kasthuri, Kothapalayam, Aravakurichi Taluk, Karur District.	Aravakurichi Village, Aravakurichi Taluk	8/1(Part)	0.81.0	Patta	DGM's Proc.Rc.No.10310/MM3/ 99, Dated:25.10.2002.	11.12.2002 10.12.2022	Non operation
25	Quartz & Feldspar	K.K. Palanisamy, Prop. Southern Minerals and Abrasives, 1/38 Mallamoopanpatti, Ayyanperumalpatti. Salem Dt.,	Pungambadi (W) Aravakurichi Tk.,	428/1	1.01.0	Patta	CGM's Proc.17745/MM3/ 2001 dt:7.11.2002	02.01.2003 01.01.2023	Non operation
26	Quartz & Feldspar	K. Annammal, W/o.Kulandaisamy. 4/53 Thangavel Nagar Reddipalayam, Karur	P. Anaipalayam Aravakurichi Tk.,	220	3.02.5	Patta	CGM's Proc.1045/MM3/ 2002 dt:7.11.2002	08.01.2003 07.01.2023	Non operation
27	Quartz & Feldspar	K.P. Krishnan, 17 P. Rock Fort Nagar, Tiruchirappalli-21	D.Edayapatti Vge., Aravakurichi	395/1A 395/1B(P) <b>Total</b>	0.06.0 1.15.0 <b>1.21.0</b>	Patta	CGM's Proc.2834/ MM3/2002 dt.23.10.2003	29.01.2004- 28.01.2024	Non operation

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			Tk.,						
28	Quartz & Feldspar	Chettinad MB F Hi Silica Pvt., Ltd., Kazhipathur Village Chengleput Tk.,	Kodanthur Village, Aravakurichi Tk.,	569/1 569/ 2 571/2 571/3 <b>Total</b>	0.81.0 1.16.5 0.92.0 0.40.5 <b>3.30.0</b>	Patta	DGM's Proc.8964/MM6/2001 dt.22.12.2003	26.04.2004-25.04.2024	Non operation
29	Quartz & Feldspar	M/s.Surya Minerals, A.18, Thinnappa Nagar, Pasupathipalayam Post, Karur.	P. Anaipalayam Vge., Aravakurichi	129/B2 130/2A <b>Total</b>	0.85.5 0.36.0 <b>1.21.5</b>	Patta	DGM's Proc.4535/MM6/2002 :dt.22.12.2003	24.05.2004-23.05.2024	Non operation
30	Quartz & Feldspar	S. Sreenivasa Babu, Babu Prasanna Mineral Works, 21 Coimbatore Road, Sengunthapuram Post Karur	Pungambadi (W) Aravakurichi Tk.,	146/1B	1.10.5	Patta	CGM's Proc.12267/MM6/2001 dt.27.02.2004	27.05.2004 26.05.2024	Non operation
31	Quartz & Feldspar	Malaram Minerals Pvt Ltd 652, III Block, 46 <sup>th</sup> Cross "A" Rajaji Nagar, Bangalore-10	Punjaikalakur ichi Aravakurichi Tk	602/1E 602/1F 602/1J 602/1K1 <b>Total</b>	0.17.0 0.27.5 0.33.6 0.34.3 <b>1.12.4</b>	Patta	CGM's Proc.8643/MM6/2003 dt.01.03.2004.	04.06.2004-03.06.2024	Non operation
32	Quartz & Feldspar	Chettinad MB F Hi Silica Pvt., Ltd., Kazhipathur Vge., Chengleput Tk.,	Nagampalli Vge., Aravakurichi	613/1 613/ 2 <b>Total</b>	0.61.0 0.61.0 <b>1.22.0</b>	Patta	CGM's Proc.3568/MM6/2003 dt.17.3.2004	18.06.2004 17.06.2024	Non operation
33	Quartz & Feldspar	Chettinad MB F Hi Silica Pvt., Ltd., Kazhipathur Village Chengleput Tk.,	Kodanthur (South) Aravakurichi Tk	650/2 651/1 <b>Total</b>	0.85.0 0.20.0 <b>1.05.0</b>	Patta	CGM's Proc. 8962/MM6/2001 dt.2.9.2004	07.01.2005 06.01.2025	Non operation
34	Quartz & Feldspar	Chettinad MB F Hi Silica Pvt., Ltd., Kazhipathur Village Chengleput Tk.,	Kodanthur (North) Aravakurichi Tk.	137/1 (P) 137/2 <b>Total</b>	0.20.0 0.81.0 <b>1.01.0</b>	Patta	CGM's Proc.11522/MM6/2001dt.07.09.2004	07.01.2005 06.01.2025	Non operation

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35	Quartz & Feldspar	D. Ramesh Kumar, S/o.R. Duraisamy, D.V.R. Thottam, Pachudiyampalayam, Rasipuram, Namakkal	Nagampalli Vge., Aravakurichi Tk.,	1199/2 1202/1B (P) <b>Total</b>	0.61.0 0.60.5 <b>1.21.5</b>	Patta	DGM's Proc.14331/MM6/2002 dt.12.04.2005	18.05.2005-17.05.2025	Non operation
36	Quartz & Feldspar	V.S. Rajesh, 231, S.K.C. Road, Erode- 9	Thennilai (South) Aravakurichi	655/B2	2.02.0	Patta	DGM's Proc.14330/MM6/2002 dt.09.03.2005	19.08.2005-18.08.2025	Non operation
37	Quartz & Feldspar	Chettinad MB F Hi Silica Pvt., Ltd., Kazhipathur Village Chengleput Tk.,	Monjanur (East) Village, Aravakurichi Tk.,	306/1B	1.21.5	Patta	DGM's Proc.8642/MM6/2003 dt.21.06.2005	19.08.2005-18.08.2025	Non operation
38	Quartz & Feldspar	Chettinad MB F Hi Silica Pvt., Ltd., Kazhipathur Village Chengleput Tk.,	Anjur Village, Aravakurichi Tk.,	618/1C(P)	1.01.0 out of 4.13.0	Patta	DGM's Proc.6403/MM6/2003 dt.20.07.2005	15.09.2005-14.09.2025	Non operation
39	Quartz & Feldspar	Chettinad MB F Hi Silica Pvt., Ltd., Kazhipathur Village Chengleput Tk.,	Anjur Village, Aravakurichi Tk.,	619/1 (P) 620 (P) <b>Total</b>	0.90.5 0.11.5 <b>1.02.0</b>	Patta	DGM's Proc.6402/MM6/2003 dt.20.07.2005	15.09.2005-14.09.2025	Non operation
40	Quartz & Feldspar	N.R. Vijaya 22L Vivekananda Nagar 10 <sup>th</sup> Cross, Sengunthapuram, Karur-2	Nagampalli Aravakurichi Tk.,	1091	4.34.0	Patta	DGM's Proc.13214/MM6/2005 dt.29.07.2005	21.08.2006-20.08.2026	Non operation
41	Quartz & Feldspar	P. Kumarasamy, 22L Vivekananda Nagar 10 <sup>th</sup> Cross, Sengunthapuram, Karur-2	Kodanthur (South) Aravakurichi Tk.,	485/B	4.19.0	Patta	DGM's Proc.13215/MM6/2005 dt.19.05.2006	29.08.2006-28.08.2026	Non operation
42	Quartz & Feldspar	Jeya Murugan, M/s. Jai Enterprises,	Varavanai Kulithalai Tk.,	404/2 404/3	0.64.5 0.45.5	Patta	DGM's Proc.15601/MM6/2002	10.09.2007 to 09.09.2027	Non operation

		N0. 2 Ponnagaram, Manapparai – 621 306		404/4 404/5 <b>Total</b>	0.23.5 0.48.5 <b>1.82.0</b>		dt.19.01.2006		
43	Quartz & Feldspar	S.Sreenivasa Babu, Pro. Babu Prasana Mineral Works, Senguthapuram Road, Karur.	Pungambadi west, Aravakurichi Taluk.	199/3(P)	1.08.5	Patta	DGM'S Proc.10595/ MM6/2005 dt.27.07.2007	30.11.2007 to 29.11.2027	Non operation
44	Quartz & Feldspar	Tmt. B.Maheswari, prop. M/s. Nanthini Manufacturing company, 21, Coimbatore Road, Senguthapuram, Karur.	Nanjaikalaku richi, Aravakurichi Tk.,	260/1(P) 261/2(P) <b>Total</b>	0.22.5 0.99.0 <b>1.21.5</b>	Patta	DGM's Proc.10594/ MM6/2005 dt.27.07.2007	03.12.2007 --- 02.12.2027	Non operation
45	Quartz & Feldspar	Tvl.Sanjay Mines, 62/7-N.G.G.O. Nagar, Cauvery Nagar, Kulithaai Taluk, Karur District.	Kallai Village, Kulithalai Taluk.	377/2	1.89.0	Patta	DGM's Proc.7031/ MM6/2007 dt.07.03.2008	14.05.2008 to 13.05.2028	Non operation
46	Quartz & Feldspar	K.A. Santhosh Kumar, S/o.(Late) Arumugam, 283/5, Street, Anna Nagar, Bhavani Taluk, Erode District.	E.R.Puram Village, Aravakurichi Taluk.	147/B2	1.33.5 Hects	Patta	DGM's Proc.11390/MM6/ 2007 dt.17.04.2008	25.06.2008 to 24.06.2028	Non operation
47	Quartz & Feldspar	Tmt. Faiza Begum, Prop. M/s.Chithara Mines & Minerals, 64/77A Municipal Colony, Nehruji Nagar, Dindigul Taluk.	Pungambadi Village, Aravakurichi Taluk.	274/1B 274/2A	1.01.0 0.52.5 <b>1.53.5</b>	Patta	DGM's Proc.1399/ MMb/2007 dt.03.07.2008	22.09.2008 21.09.2028	Non operation

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48	Quartz & Feldspar	Thiru.N.Veeramalai, S/o. Nagamma Naickar, Manamettupatti, Easanatham Post, Aravakurichi Taluk, Karur District.	Easanatham Village, Aravakurichi Taluk,	540/2A	1.60.5	Patta	CGM Proc.15090/MM6/2007 dt: 5.11.08.	22.12.2008 to 21.12.2028	Non operation
49	Quartz & Feldspar	Thiru. M. Udhaya Kumar, No.55, Srivari Garden, New Siddhapudur, V.K.K.Memon Road, Coimbatore.	Veeriyampal ayam, Krishnarayapuram Tk.,	232/3	2.83.0	Patta	CGM R.C.No.16069/MM6/2007 dt. 21.11.2008.	24.12.2008 to 23.12.2028	Non operation
50	Quartz & Feldspar	Tmt.M.Shobha, 22/150, Kamarajapuram North Sengunthapuram, Karur.	Nagampalli Village, Aravakurichi Taluk	1275/1	1.58.0	Patta	CGM Proc.No.10969/MM6/2008, Dated:6.7.2009.	25.09.2009 24.09.2029	Non operation
51	Quartz & Feldspar	Chettinad MB F Hi Silica Pvt., Ltd., Kazhipathur Village Chengleput Tk.,	E.R.Puram Village, Aravakurichi Taluk	159/2	2.22.5	Patta	CGM Proc.No.13118/MM6/2008, dated:26.8.2009	6.10.2009 5.10.2029	Non operation
52	Quartz & Feldspar	Chettinad MB F Hi Silica Pvt., Ltd., Kazhipathur Village Chengleput Tk.,	Kodanthur Village, Aravakurichi Taluk	574/1B etc.,	1.62.0	Patta	CGM Proc.Rc.No.10596/MM6/2005, Dated:25.8.2009	6.10.2009 5.10.2029	Non operation
53	Quartz & Feldspar	Chettinad MB F Hi Silica Pvt., Ltd., Kazhipathur Village Chengleput Tk.,	Nagampalli Village, Aravakurichi Taluk	1216/1A etc.,	3.54.5	Patta	CGM Proc.No.3624/MM6/2007, Dated:03.07.2009	12.10.2009 11.10.2029	Non operation
54	Quartz & Feldspar	Chettinad MB F Hi Silica Pvt., Ltd., Kazhipathur Village Chengleput Tk.,	Kodanthur (North) Aravakurichi Taluk	64/1,2	1.13.5	Patta	CGM Pro Rc.No.10597/MM6/2005, Dated:28.5.2009.	12.10.2009 11.10.2029	Non operation
55	Quartz &	Tvl.Asphire Minerals,	Sengal	385/1,2	1.19.0	Patta	CGM	22.12.2009	Non

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	Feldspar	B-6 11 <sup>th</sup> Cross Thillai Nagar, Trichy.	Village, K.R.Puram Taluk				Proc.Rc.No.15091/MM6/ 2007, Dated:02.07.2009	21.12.2029	operation
56	Quartz & Feldspar	Sukumaran, S/o.Kamalakanan, No.3, Beerjath Subthar Street, Arcot, Arcot Taluk, V\Vellore District.	Pillur Village, Kulithalai Taluk	<b>38/1C</b>	<b>1.00.0</b>	Patta	CGM Proc Rc.No.14808/MM6/2007, Dated:02.07.2009	24.12.2009 23.12.2029	Non operation
57	Quartz & Feldspar	Thiru.R.Prabhakaran, S/o.Ramasamy, Panduthakaran pudhur Manmangalam Post, Karur District.	Aravakurichi Taluk, Elavanue Village	118/1A 118/5A	1.02.20 <u>0.73.0</u> <b>1.75.0</b>	Patta	DGM Proc 9382/MM6/2009, Dt:31.5.2013	20.11.2013 to 19.11.2033	Non operation
58	Multicolour Granite	Tvl.TAMIN Ltd., 31.Kamarajar Salai Chepauk Chennai-5	Thogamalai Vge., Kulithalai Tk.,	276/2 (Part)	3.47.5 out of 8.36.0	Government Poramboke land Rule – 8 C	3(D)No.22 Ind. (MME2) Dept., dt:19.7.2002	26.08.2002 – 25.08.2022	Operation
59	Multicolour Granite	Tvl.TAMIN Ltd., 31.Kamarajar Salai Chepauk Chennai-5	Thogamalai Vge., Kulithalai Tk.,	239 (Part)	0.80.0 out of 20.22.5	Government Poramboke land Rule – 8 C	3(D)No.22 Ind. (MME2) Dept., dt:7.8.2003	22.03.2003- 21.02.2023	Non Operation
60	Multicolour Granite	Tvl.TAMIN Ltd., 31.Kamarajar Salai Chepauk Chennai-5	Thogamalai Vge., Kulithalai Tk.,	276/2 (Part)	4.18.5 out of 8.36.0	Government Poramboke land Rule – 8 C	(MS)No.97 Ind. (MME1) Dept., dt:6.10.2003	27.12.2003- 26.12.2023	Operation
61	Multicolour Granite	Tvl.TAMIN Ltd., 31.Kamarajar Salai Chepauk	Naganur Vge., Kulithalai Tk.,	120 (Part)	10.12.0 out of 10.63.5	Government Poramboke land	Go (MS)No.14 Ind. (MME1) Dept., dt:27.1.2005	27.01.2005- 26.01.2025	Operation

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		Chennai-5				Rule – 8 C			
62	Multicolour Granite	Tvl.TAMIN Ltd., 31.Kamarajar Salai Chepauk Chennai-5	Naganur Vge., Kulithalai Tk.,	163	0.92.5	Government Poramboke land Rule – 8 C	Go 3(D) no.70. Idustries MME1 Department Dt:22.10.2008	18.12.2008 to 17.12.2038	Non Operation
63	Multicolour Granite	Millennium Granites, 127-B Cauvery Nagar, Kulithalai	Kodaiyur Village Aravakurichi Tk.,	649/2 650/2 650/4 Total	1.48.0 0.09.5 1.12.0 2.69.5	Patta	3(D) No.1 Ind. (MMB2) Dept., dt:04.01.2001	09.02.2001 – 08.02.2021	Non Operation
64	Multicolour Granite	Tvl. Maducon Granites, 1/7-70 jublipura Khamma Andhrapradesh.	K/Pitchampat ti, Karur Taluk.	424/2A 424/3A Total	0.50.0 0.88.5 1.38.5	Patta	3 (D) No.81/Ind. (MMB 11) Dept. dt: 4.11.2008.	5.12.2008 to 04.12.2028	Operation
65	Multicolour Granite	Thiru.K.S.Raja Mahendran, Kudeer 2nd Floor, Valmiki Nagar, Thiruvanimiyur, Chennai.	K.Pitchampat ti Village, Karur Taluk.	423/17 423/3 423/4 423/5 423/6 423/7B 452/15 452/16 452/17 452/22B Total	0.22.0 0.02.5 0.02.5 0.01.5 0.02.5 0.05.5 0.50.0 0.61.5 0.28.0 0.53.5 2.29.0	Patta	3(D) No.25 /Ind/MMB2/Dept, Dated:27.05.2010.	14.06.2010 to 13.06.2030	Non Operation
66	Multicolour Granite	Thiru.R.Anupkumar Lohia, 2/467, 6th Main Road, Gomathipuram. Madurai.	K.Pitchampat ti Village, Karur Taluk.	442/3 (Part)	4.80.0	Patta	G.O.(3D)No.15,Industries (MMB2) Department, dated :22.06.2012.	05.07.2012 to 04.07.2032	Operation
67	Multicolour Granite	Tvl.Blue Horse Granite Survey No.133-1	Aravakurichi Taluk	519/1 Part	01.03.0	Patta	Go.No(3D) No.42 Industries (MMB2)	05.07.2013 to 04.07.2033	Operation

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		2A Slvagangai Main Road Near Arabic College Varichur, Madurai District .	inunganoor Village				Department Dt:20.09.2010		
68	Multicolour Granite	Tvl. Booma Stone Metals No.85 South Street Pasupathipalayam Post, Karur Taluk Karur District.	Karur Taluk Paganatham Village	292/5 292/6 292/7 292/8 <b>Total</b>	0.26.0 0.21.5 0.15.5 0.65.5 <b>1.28.5</b>	Patta	Go No 3(D) No.21 Industries (MMB2) Department Dt:16.07.2014	22.08.2014 to 21.08.2034	Operation
69	Multicolour Granite	M. Gandhi, Karattupatti, Andipatti Taluk Theni District	Thogamalai Village Kulithalai Taluk	279/2A	0.75.5	Patta	3(D) No. 108 Ind. (MMB2) Dept., dt:29.12.2000	30.10.2001 – 29.10.2021	Non Operation
70	Multicolour Granite	P.R.P. Granites, Keelavalavu Post Melur Taluk Madurai District.	Kalugur Village Kulithalai Taluk	540/6C 540/6D  Total	0.50.5 0.49.5  1.00.0	Patta	3(D) No. 112 Ind. (MMB2) Dept., dt:29.12.2000	30.10.2001- 29.10.2021	Non Operation
71	Multicolour Granite	P.R.P. Granites, Keelavalavu Post Melur Taluk Madurai District.	Kalugur Village Kulithalai Taluk	536/1 536/4A 537/1B Total	0.71.0 0.20.5 0.65.5 1.57.0	Patta	3(D)No. 15 Ind. (MMB2) Dept., dt:14.02.2001	30.10.2001- 29.10.2021	Non Operation
72	Multicolour Granite	P.R.P. Granites, Keelavalavu Post Melur Taluk Madurai District.	Kalugur Village Kulithalai Taluk	902/2A2	2.16.5	Patta	3(D)No. 109 Ind. (MMB2) Dept., dt:29.12.2000	30.10.2001- 29.10.2021	Non Operation
73	Multicolour Granite	K. Yusuff Basha, 4/59 Bharathi Street, Swarnapuri, Salem	Naganur Village Kulitahali Taluk	164/1A 164/2A1 164/2A2 164/3 164/2A5	0.07.0 0.27.5 0.29.5 0.30.0 0.06.0	Patta	3(D)No. 111 Ind. (MMB2) Dept., dt:29.12.2000	20.06.2002- 19.06.2022	Non Operation

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			Thogamalai Village	449/8 279/1A Total	0.27.0 0.61.0 1.88.0				
74	Multicolour Granite	E. Rengar, Pathiripatti, Kulithalai Tk Karur District.	Thogamalai Village Kulithalai Taluk	240 (Part)	0.20.0	Patta	Go No. 7 Ind. (MMB2) Dept., dt:02.02.2001	20.06.2002-19.06.2022	Operation
75	Multicolour Granite	Sri Balaji Granites, 21/7A, Chathram St, Trichy Road, Thogamalai Kulithalai Taluk. Karur District.	Kalugur Village Kulithalai Taluk	843/3C1	1.16.0	Patta	Go No. 20 Ind. (MMB2) Dept., dt:28.07.2003	23.09.2003-22.09.2023	Non Operation
76	Multicolour Granite	G.V. Granites, 19 G Main Road, Thogamalai, Kulithalai Taluk Karur District.	Naganur Village Kulithalai Taluk	160/2B 160/5A 160/5C 449/1B Total	0.62.5 0.60.0 0.04.5 0.12.0 1.39.0	Patta	3(D) No. 84 Ind. (MMB2) Dept., dt:10.08.2004	21.09.2004-20.09.2024	Operation
77	Multicolour Granite	P.R.P. Exports, Velu Complex, Madurai Main Road, Melur, Madurai Dist	Naganur Village Kulithalai Taluk	158/1A 158/1E 160/1A1 160/1A2 160/1A3 160/1B1 160/1B2 160/1B3 160/1B4 449/1A 449/2A 449/2B 449/4C1	0.04.0 0.12.0 0.09.0 0.18.5 0.18.0 0.20.5 0.06.0 0.02.0 0.07.0 0.50.5 0.09.5 0.27.0 0.26.0	Patta	3(D)No.113 Ind. (MMB2) Dept., dt:21.12.2004	21.01.2005-20.01.2025	Non Operation

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				Total	2.10.0				
78	Multicolour Granite	P.R.P. Exports, Velu Complex, Madurai Main Road, Melur, Madurai Dist	Naganur Village Kulithalai	149/1B1 (P) 149/3A1 (P) 149/3B (P) 150 (P) Total	0.05.0 0.08.0 1.33.0 0.55.5 2.015	Patta	3(D)No. 13 Ind. (MMB2) Dept., dt:14.03.2005	08.06.2005-07.06.2025	Non Operation
79	Multicolour Granite	P.R.P. Granites, Keelavalavu Post Melur Taluk Madurai District.	Naganur Village Kulithalai Taluk	119/1	1.35.5	Patta	3(D)No. 71 Ind. (MMB2) Dept., dt:21.07.2005	28.07.2005-27.07.2025	Non Operation
80	Multicolour Granite	P.R.P. Exports, Velu Complex, Madurai Main Road, Melur, Madurai Dist	Kalugur Village Kulithalai Taluk	539/4 540/1 541/3 (P) 541/4 (P) 541/5 (P) Total	0.09.5 0.80.5 0.18.0 0.07.5 0.06.5 1.22.0	Patta	3(D)No. 67 Ind. (MMB2) Dept., dt:21.07.2005	28.07.2005-27.07.2025	Non Operation
81	Multicolour Granite	E. Rengar, Pathiripatti, Kulithalai Taluk	Thogamalai Village Kulithalai Taluk	240 (Part)	0.81.0	Patta	3(D)No. 37 Ind. (MMB2) Dept., dt:01.06.2005	16.08.2005 – 15.08.2025	Non Operation
82	Multicolour Granite	M. Gandhi, S/o.Masanam Karattupatti Andipatti Tk., Theni Dist.	Kalugur Village Kulithalai Taluk	536/2A2 536/3 536/4B Total	0.50.5 0.50.0 0.33.0 1.33.5	Patta	3(D)No. 75 Ind. (MMB2) Dept., dt:02.11.2006	14.11.2006-13.11.2026	Non Operation
83	Multicolour Granite	M. Singaram, 21/B Chathiram St	Naganur Village	161/3 449/6	0.68.5 0.32.5	Patta	3(D) No. 4 Ind. (MMB2) Dept.,	03.02.2007 – 02.02.2027	Non

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		Thogamalai Kulithalai Taluk	Kulithalai Taluk	Total	1.01.0		dt:05.01.2007		Operation
84	Multicolour Granite	M. Singaram, 21/B Chathiram St Thogamalai Kulithalai Taluk	Naganur Village Kulithalai Taluk	148/1F2 (P) 160/2A1 160/.3 160/4 Total	0.61.0 0.07.5 0.25.0 0.08.0 1.01.5	Patta	3(D) No.84 Ind. (MMB1) Dept., dt:14.11.2006	06.07.2007 – 05.07.2027	Non Operation
85	Multicolour Granite	M/s. P.R.P. Exports, Tberkkuthuru Village, Metur, Madurai District.	Naganoor, Kulithalai.	149/3B (Part) 150(Part) Total	0.83.0 1.00.0 1.83.0	Patta	3(D) No.94/Ind. (MMB 11/ Dept. dt: 27.11.2008.	17.12.2008 to 16.12.2028	Non Operation
86	Multicolour Granite	M/s. P.R.P. Exports, Tberkkuthuru Village, Metur, Madurai District.	Veeriyampala yam K.R.Puram Taluk.	25/4A2 25/4B2 26/1A 26/1B 26/1C 26/1D 26/1E 26/1F 26/2A 26/2B 26/2C 26/2D 26/2E 26/2F 26/2G1 43/1 Total	0.20.0 0.20.0 0.17.0 0.07.0 0.20.0 0.17.5 0.19.0 0.20.5 0.25.0 0.10.0 0.27.5 0.23.5 0.25.5 0.26.0 0.37.0 1.62.0 4.77.5	Patta	3(D) No.91, Ind. /MMB11 dept. dt: 27.11.2008	17.12.2008 to 16.12.2028	Non Operation
87	Multicolour Granite	M/s. P.R.P. Exports, Tberkkuthuru Village,	Naganoor, Kulithalai	123/4 134/1	0.83.5 1.11.5	Patta	3(D) No.96/Ind. MMB11/Dept. dt:	17.12.2008 to 16.12.2028	Non Operation

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		Metur, Madurai District.	Taluk.	Total	1.95.0		27.11.2008		
88	Multicolour Granite	M. Gandhi, S/o. Masanam, Karuttupatti Village, Andipatti Taluk, Teni district.	Naganoor, Kulithalai Taluk.	135/1A 136/1A 136/2 Total	1.88.5 0.73.0 0.31.5 2.93.0	Patta	3(D) No.123/Ind. MMB11 Dept. dt: 10.12.2008.	25.12.2008 to 24.12.2028	Non Operation
89	Multicolour Granite	Thiru. M.Gandhi, S/o. Masanam, Karuttupatti Village, Andipatti Taluk, Theni Dist.	Veeriyapalay am K.R.Puram Taluk.	44/2B 44/2C 44/2D 44/2E Total	0.20.0 0.19.5 0.41.0 0.97.5 1.78.0	Patta	3(D) nO.116/iND. mmb11 dEPT. DT: 10.12.2008.	26.12.2008 TO 25.12.2028	Non Operation
90	Multicolour Granite	Thiru E.Dhanapal S/o Errachi Rddiyar Old NO D/364 New No.D/11 Ukkara Kaliamman Street Anna Nagar Thennur , Trichy District.	Krishnarayap uram Taluk Veeriyapalay am Village	74/2 74/3A1A 74/3A1B 74/3A2 74/3B 75/2A1 75/1A 75/2A2 75/2B 75/3B 75/3D Total	0.89.0 0.08.5 0.40.5 0.20.0 0.20.0 0.61.0 0.27.0 0.75.5 0.40.0 0.26.5 0.81.0 4.89.0	Patta	Go 3(D) No. 3 Industries (MMB2) Department Dt:12.02.2014	21.02.2014 to 20.02.2034	Operation
91	Multicolour Granite	Thiru.P.Sathish Kumar S/o Paranasivam 22 Sastha Illam Ponnagaram Broadway, Madurai	Kadavur Taluk Pannappatti Village	481/1(P) 482/4(p) 482/5(P) Total	0.08.0 0.67.5 0.35.5 1.11.0	Patta	Go No 3(D) Industries (MMB2) Department Dt:28.02.2014	04.03.2014 to 03.03.2034	Operation

92	Multicolour Granite	Tvl.S.R.P. Rock Exports, 12/51, Maruthapandiyar Street, K.K.Nagar, Madurai	Karur Taluk, K.Pitchampatti Village	394/1B2 394/2 397/4	3.60.0	Patta	G.O.3(D) No.27, Industries (MMB2), Department, Dated:19.10.2015.	29.11.2016 to 28.11.2036	Operation
93	Multicolour Granite	M/s.M.P. Granite, No.131/29, R.R. Complex, Kollapatti, Animoor Post, Tiruchengode Taluk, Namakkal District	Karur Taluk, K.Pitchampatti	343/1B, 343/2, 343/3, 343/4, 343/5, 343/6, 343/7, 343/8, 343/9, 343/10(P)34 3/11B (P), 344/A1, 354/A2, 354/A3, 354/A4, 354/A5, 354/B1A, 354/B13, 354/B14, 354/B15, 354/B16 <b>Total</b>	0.69.0 0.20.0 0.22.0 0.04.5 0.02.5 0.01.5 0.02.5 0.03.5 0.26.5 0.10.5 0.10.0 0.14.0 0.06.5 0.06.5 0.07.0 0.06.5 0.10.5 0.14.0 0.01.5 0.02.0 0.02.5 <b>2.43.5</b>	Patta	G.O.3(D) No.10, Industries (MMB2), Department, Dated:23.01.2016.	15.02.2016 14.02.2036	Operation
94	Multicolour Granite	Tmt.V.Shanthi, W/o.P.Velusamy, Kunnagoundampatty, Cudalore Village, Kulithalai Taluk, Karur District.	Krishnarayapuram Taluk, Sivayam (South) Village	1116/ 1A 1116/2	2.13.5	Patta	G.O.3(D) No.68, Industries (MMB2), Department, Dated:28.11.2016.	09.12.2016 to 08.12.2036	Operation
95	Multicolour Granite	M/S.Himalaya Enter Prises 255/C4 Anna Nagar	Kulithalai Taluk	544/1H2 549/2A1	3.31.5 0.23.0	Patta	Go No 3(D) No.11 Industries (MMB.2)	18.08.2017 to 17.08.2037	Operation

		Pillaiyar Koil Street Kulithalai Taluk, Karur District.	Gudalur Village	<b>Total</b>	<b><u>3.54.5</u></b>		Department Date: 11.08.2017		
96	Multicolour Granite	Thiru E.Dhanapal S/o Errachi Rddiyar Old NO D/364 New No.D/11 Ukkara Kaliamman Street Anna Nagar Thennur Trichy District.	Aravakurichi Taluk Venjamangu dalur East	1079/2B2 1081/1B 1086/A2B 1087/2B <b>Total</b>	2.38.0 1.05.0 0.74.0 0.08.0 <b><u>4.25.0</u></b>	Patta	Go No 3(D) No.7 Industries (MMB.2) Department Date: 11.08.2017	18.08.2017 to 17.08.2037	Operation
97	Multicolour Granite	M/S.PRS Granite D.No. Old No.7/2A New No.88 Gnanagiri Road Sivagasi	Kadavur Taluk Thennilai Village	775/3 775/4D 775/4A 790/1 775/1F 775/4F 775/1E 775/4H 775/4C 775/4E 775/4G 775/1G 775/1HB 775/4B2 <b>Total</b>	0.18.0 0.61.0 0.33.5 0.45.0 0.05.5 0.31.0 0.04.0 0.06.5 0.14.0 0.03.5 0.14.0 0.03.0 0.17.5 0.08.2 <b><u>2.64.7</u></b>	Patta	Go No 3(D) No.09 Industries (MMB.2) Department Date: 11.08.2017	18.08.2017 to 17.08.2037	Operation
98	Multicolour Granite	M/s M.P.Granite No.131/29 R.R.Complex Kollapatti Animoor Post Tiruchengodu Taluk Namakkal District.	Karur Taluk K.Pitchampat ti Village	260/A1 260/A2 260/A3 260/B1 260/B2 260/B3 260/C 262/A3(P) 262/A4	0.03.5 0.27.5 0.25.5 0.27.5 0.14.0 0.12.5 0.17.0 0.59.5	Patta	Go No 3(D) No.10 Industries (MMB.2) Department Date: 11.08.2017	18.08.2017 to 17.08.2037	Operation

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				(P) 262/A5 0.29.0 (P) 262/A6 0.36.5 (P) 262/A7 0.78.0 262/A8 (P) 0.11.0 0.16.0 262/B1 0.05.5 262/B2 0.38.5 <b>Total</b> <b>4.01.5</b>					
99	Multicolour Granite	Thiru.K.Sakthivel S/o. Karuppannan Porunthalur Village Kulithalai Taluk Karur District.	Kulithalai Taluk Nallur Village	351 <b>2.51.5</b>	Patta	Go No 3(D) No.12 Industries (MMB.2) Department Date: 11.08.2017	05.09.2017 to 04.09.2037	Operation	
100	Multicolour Granite	Thiru.P.Ramachandran S/o.Paramasivam 12 Bharathiyar 5 <sup>th</sup> Steet SS Colony Ward – 18 Madurai District.	Karur Taluk K.Pitchampat ti Village	407/1 1.09.0 407/2 0.45.5 407/3 PART 0.32.5 407/4 0.05.5 408/3 0.44.0 408/4 PART 0.48.0 <b>Total</b> <b>2.84.5</b>	Patta	Go No 3(D) No.37 Industries (MMB2) Department Date: 19.07.2016	05.08.2016 to 04.08.2036	Operation	
101	Multicolour Granite	Thiru.S.Ramachandran Proprietor M/s.Sand Rock Impex Old No D/364, New No. D/11 Ukkirakaliamman Kovil Street, Anna Nagar, Thennur Trichy	Krishnarayap uram Taluk Sengal Village	177/3 1.61.0 178/4 1.57.5 188/1 Part 1.71.5 <b>Total</b> <b>4.90.0</b>	Patta	Go No 3(D) No.49 Industries (MMB2) Department Date: 25.07.2016	09.08.2016 to 08.08.2036	Operation	

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102	Rough Stone and Gravel	Tvl.Ravi Blue Metals, S.F.No.2230, Door No.2E, Apple House, Ramanujam Nagar (South), Anna Nagar (West), Karur District	Aravakurichi Taluk, P.Anaipalayam Village	454/B (Part) 455/A1 455/A2 456/1A 456/1B 456/2A 456/2B1 456/3A 461/1A (Part)	4.94.0	Patta	Rc.No.199/ Mines/2012, Dt:29.04.2013	29.04.2013 to 28.04.2018	Operation
103	Rough Stone and Gravel	Tvl.Christy Blue Metals, 2/175, Rasipuram Main Road, Sappayapuram Post, Trichengode Taluk, Namakkal District.	Aravakurichi Taluk Thennilai (West) Village	522/C	2.34.0	Patta	Rc.No.198/ Mines/2012, Dt:09.05.2013	09.05.2013 to 08.05.2018	Operation
104	Rough Stone and Gravel	Tvl.Bala Blue Metals, Pavithram Village, Aravakurichi Taluk, Karur District.	Aravakurichi Taluk, Pavithiram Village	242/1 242/2 242/3 343/C	2.68.5	Patta	Rc.No.108/ Mines/2012, Dt:14.05.2013	14.05.2013 to 13.05.2018	Operation
105	Rough Stone and Gravel	Thiru.M.Sundarrajan, S/o.Marappa Gounder, 318, Bharathi Nagar, Enam Karur, Karur District.	Aravakurichi Taluk, Punnam Village	971/A2	1.69.0	Patta	Rc.No.114/ Mines/2012, Dt:24.05.2013	24.05.2013 to 23.05.2018	Operation
106	Rough Stone and Gravel	Thiru.P.Ramalingam, S/o.Ponnusamy Gounder, Kattumunnur Post, Aravakurichi Taluk, Karur District.	Aravakurichi Taluk Thennilai (East) Village	884/2 885/4B 889/1A 889/1C 884/1B	2.19.0	Patta	Rc.No.73/ Mines/ 2012, Dt:3.6.2013	03.06.2013 to 02.06.2018	Operation
107	Rough Stone and Gravel	Thiru.P.Kulanthaisamy S/o.Palaniappa Gounder, 3/1, Periyar Nagar, L.N.S. Post,	Karur Taluk Athur Village	676/1 677 678 692/B1	2.45.0	Patta	Rc.No.46/ Mines/2012, Dt:06.06.2013	06.06.2013 to 05.06.2018	Operation

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		Karur District.							
108	Rough Stone	Thiru.R.Alagar, S/o.Rengasamy, Veeriyapatti, Kaniyalampatti Post, Manjanaickenpatti Vge, Kadavur Taluk, Karur District.	Kadavur Taluk, Manjanaickenpatti Village	637/2B (Part)	0.89.0	Patta	Rc.No.302/ Mines/2011, Dt:08.06.2013	08.06.2013 to 07.06.2018	Operation
109	Rough Stone and Gravel	Thiru.V.Rasappan, S/o.Velappa Gounder, 103-B Pari Nagar, Chinna Andan Kovil Salai, Karur District.	Aravakurichi Taluk, Kuppam Village	1099/3 and 1099/4	3.30.5	Patta	Rc.No.199/ Mines/2011, Dt:11.06.2013	11.06.2013 to 10.06.2018	Operation
110	Rough Stone	Thiru.P.Gopal, S/o.Pappu Reddiyar, Pathiripatti Village, Thogamalai (Via), Kulithalai Taluk, Karur District.	Kulithalai Taluk, Pathiripatti Village	286/2B2B (Part) 356/2	2.90.5	Patta	Rc.No.232/ Mines/2012, Dt:13.06.2013	13.06.2013 to 12.06.2018	Operation
111	Rough Stone	Thiru.P.Devaraj, S/o.Pichaimuthu, Puliyampalayam, Punnamchadram Post, Karur District.	Aravakurichi Taluk, Kuppam Village	104/2A 104/1 105/1A and 105/2	2.14.5	Patta	Rc.No.238/ Mines/2011 Dt:19.06.2013	19.06.2013 to 18.06.2018	Operation
112	Rough Stone	Thiru.S.Rajeshkumar, S/o.Subramaniam, 267/2 Sindhu Nagar, Andankovil Keelpagam, Karur District.	Aravakurichi Taluk, Kuppam Village	1160/1A and 1160/2A	2.33.5	Patta	Rc.No.190/ Mines/2012, Dt:20.06.2013	20.06.2013 to 19.06.2018	Operation
113	Rough Stone	Tvl.N.T.C. Blue Metals, Thiru.S.Muthusamy	Aravakurichi Taluk Kuppam Village	494/2	3.85.5	Patta	Rc.No.225/ Mines/2012,	26.06.2013 to	Operation

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		Director, No.97 (Old No.47), Lingichetti Street, Chennai.					Dt:26.06.2013	25.06.2018	
114	Rough Stone	Tmt.M.Jeyamani, w/o.Manokaran, Punnam Nadupalayam, Aravakurichi Taluk, Karur District	Krishnarayapuram Taluk, Sivayam (North) Village	30/4 31/1 31/3 31/4	1.70.5	Patta	Rc.No.249/ Mines/2012, Dt:28.06.2013	28.06.2013 to 27.06.2018	Operation
115	Rough Stone	Thiru.R.Dhanuskodi, S/o.Rengasamy Naicker, H1/12, R.M. Nagar, Dindigul District.	Aravakurichi Taluk Alamarathupatti Village	311/2	1.06.0	Patta	Rc.No.299/ Mines/2011, Dt:28.06.2013	28.06.2013 to 27.06.2018	Operation
116	Rough Stone	Thiru.N.Sakthivel, S/o.Nallappa Gounder, 4/82, Andipatti, Kuppam Post, Aravakurichi Taluk, Karur District.	Aravakurichi Taluk Kuppam Village	105/1B 112/2A	2.52.0	Patta	Rc.No.40/ Mines/2012, Dt:16.07.2013	16.07.2013 to 15.07.2018	Operation
117	Rough Stone	Tvl.I Blue Minerals Private Limited, No.9, Rayapandaram St, Avinasi Road, Trippur District.	Aravakurichi Taluk Nadanthai (North) Village	968/1 967/1A 970 (Part) 971 (Part)	4.07.5	Patta	Rc.No.376/ Mines/2012, Dt:18.07.2013	18.07.2013 to 17.07.2018	Non- Operation
118	Rough Stone	Ganesh Murugan Blue Metals, 268 Karudayampalayam Aravakurichi Taluk Karur District.	Aravakurichi Taluk Karudayampalaya m Village	264/12 264/13 274/1 274/5	3.94.5	Patta	Rc.No.92/ Mines/2012 Dt:8.8.2013	08.08.2013 to 07.08.2018	Operation

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119	Rough Stone	K.Subramanian S/o.Karuppasamy, No.14/29 Lakshmpuram South, Karur Taluk & District	Aravakurichi Taluk Thukkatchi Village	452/1 452/2 452/3	4.12.5	Patta	Rc.No.271/ Mines/2012 Dt.3.9.2013	3.09.2013 to 02.09.2018	Operation
120	Rough Stone	R.Palanisamy, S/o.Ramasamy, 19/201F Kalipalayam Panjamadevi Post Karur District.	Karur Taluk, Panjamadevi Village	760/2A	0.21.5	Patta	Rc.No.244/ Mines/2011 Dt:6.9.2013	06.09.2013 to 05.09.2018	Operation
121	Rough Stone	Tvl.Selvakumar Blue Metals, S.F.No.102, Gudalur Melpagam, Uthukaraipalayam, Gudalur Post, Aravakurichi Taluk, Karur District.	Aravakurichi Taluk Gudalur Melpagam Village	102 (Part)	1.87.0	Patta	Rc.No.301/ Mines/2011, Dt:09.10.2013	09.10.2013 to 08.10.2018	Operation
122	Rough Stone	Thiru.G.Kamaraj S/o.Gopal Kavalkaranpatti, Vadaseri Village, Kulithalai Taluk, Karur District.	Kulithalai Taluk, Vadaseri Village	254/1 255/1A	1.59.0	Patta	Rc.No.43/Mines/201 2 Dt:27.11.2013	27.11.2013 to 26.11.2018	Operation
123	Rough Stone	Thiru.V.Muthaiah S/o.Veeramalai, Therappadi, Pungambadi West Post, Aravakurichi Taluk, Karur District.	Aravakurichi Taluk Pungambadi (West) Village	222/2	3.17.0	Patta	Rc.No.65/Mines/201 2 Dt:29.11.2013	29.11.2013 to 28.11.2018	Operation
124	Rough Stone	S.S.M. Blue Metals, Vathrikaradu Pathai, Pungambadi Melpagam	Aravakurichi Taluk Pungambadi (West) Village	185/1 (Part) 185/2A (Part) 185/2B (Part)	3.83.0	Patta	Rc.No.362/Mines/20 12 Dt:29.11.2013	29.11.2013 to 28.11.2018	Operation

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		Village, Aravakurichi Taluk, Karur District.		192/2 194/2					
125	Rough Stone	Thiru.R.Chidambaram, S/o.Ramasamy Pothiyampallam, Karuppampalayam, Karur Taluk & District	Karur Taluk, Paganatham Village	283/2B 284/1A 284/1B 284/2B	4.67.0	Patta	Rc.No.295/Mines/20 12 Dt:06.12.2013	06.12.2013 to 05.12.2018	Operation
126	Rough Stone	Thiru.S.Muthusamy, S/o.Subramaniam, Viswanathapuri, Pavitham Post, Aravakurichi Taluk, Karur Dt	Aravakurichi Taluk, Kodanthur (South) Village	614 (Part) 615/1 (Part) 629/1 (Part)	4.05.5	Patta	Rc.No.30/Mines/201 2 Dt:24.12.2013	24.12.2013 to 23.12.2018	Operation
127	Rough Stone	Thiru.K.M.Gurusamy, No.2/90 Ayyanur, Punnam Post, Aravakurichi Taluk, Karur District	Aravakurichi Taluk, Punnam Village	1092/2A2 1092/2B 1093/2A2 1093/2B 1094/2A2 1094/2B	1.78.5	Patta	Rc.No.363/Mines/20 12 Dt:30.12.2013	30.12.2013 to 29.12.2018	Operation
128	Rough Stone	K.Thirunavukarasu, S/o.Karuppiah, 450/A College Road, Pothanur, Paramathi Velur Taluk, Namakkal District	Aravakurichi Taluk, Karudayampalaya m Village	527	3.80.5	Patta	Rc.No.285/Mines/20 13 Dt:31.01.2014	31.01.2014 to 30.01.2019	Operation
129	Rough Stone	Thiru.N.Saminathan, S/o.Nachappa Gounder, Mangalapatti Post, Kangeyam Taluk, Thiruppur District	Aravakurichi Taluk, Thennilai (South) Village	175/1	1.92.0	Patta	Rc.No.78/Mines/201 2 Dt:27.02.2014	27.02.2014 to 26.02.2019	Operation
130	Rough	R.Gunasekaran,	Aravakurichi Taluk,	492/A1	3.99.5	Patta	Rc.No.611/Mines/20	02.06.2014	Operation

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	Stone	S/o.Ramasamy, K.V.B.Nagar, Andankovil West Village, Karur Taluk & District.	Kodanthur (South) Village	492/A2 492/A3 492/B1 492/B2			14 Dt:2.06.2014	to 01.06.2019	
131	Rough Stone	M.Palaniyandi, S/o.Mottaiyandi, 2/34, Ambalakkara Street, Somarasampettai, Srirangam Taluk, Trichy District.	Krishnarayapuram Taluk, Sivayam (North) Village	2/2	2.34.5	Patta	Rc.No.99/Mines/201 2 Dt:10.7.2014	10.7.2014 to 09.7.2019	Operation
132	Rough Stone	A.Devaraj, S/o.P.Arunachalam, Rengapalayam, Punnamchathiram, Aravakurichi Taluk, Karur District	Aravakurichi Taluk, Kuppam Village	252 (Part), 253 (Part) 254/2 (Part)	3.64.5	Patta	Rc.No.194/Mines/20 11 Dt:12.8.2014	12.8.2014 to 11.8.2019	Operation
133	Rough Stone	E.Arulmani, W/o.Elangovan, No.160, East Street, Kokkarayan Pettai, Trichengode Taluk, Namakkal District	Aravakurichi Taluk, Kuppam Village	749/2	1.61.5	Patta	Rc.No.479/Mines/20 13 Dt:14.8.2014	14.8.2014 to 13.8.2019	Operation
134	Rough Stone	M.Ramalingam, S/o.Muthusamy Gounder, 7/120 Pavithram Medu, Pavithram Post, Aravakurichi Taluk, Karur District.	Aravakurichi Taluk, Pavithram Village	343/A3 343/A4 343/A5 343/B1 343/B2 343/B3	2.16.0	Patta	Rc.No.60/Mines/201 3 Dt:20.02.2015	20.02.2015 to 19.02.2020	Operation
135	Rough	Tvl.Balavinayaga Blue	Aravakurichi Taluk,	571 (Part)	4.86.0	Patta	Rc.No.565/Mines/20	20.02.2015	Operation

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	Stone	Metals, Saminathapuram, No.571, Munnur Post, Aravakurichi Taluk, Karur District.	Munnur Village	669 670 (Part) 671			13 Dt:20.02.2015	to 19.02.2020	
136	Rough Stone	R.Sirumbayee, W/o.Raman, Thanthiripatti, Kosur Village, Kadavur Taluk, Karur	Kadavur Taluk, Mathagiri Village	114/2A1 114/2B1	0.81.5	Patta	Rc.No.298/Mines/20 11 Dt:09.04.2015	09.4.2015 to 08.4.2020	Operation
137	Rough Stone	Karumana Gounder S/o Kaliyappa Gounder Vallipuram Karudaiyampalayam Post Aravakurichi Taluk Karur District	Aravakurichi Taluk Punnam Village	1298/A1 1298/A2 1298/A8 1298/B	2.70.5	Patta	R.C.No.254/Mines/20 12 Date : 23.04.2015	23.04.2015 to 22.04.2020	Operation
138	Rough Stone	K.Manisekaran S/o Krishnasamy Gandhigramam South Thanthoni Karur Tluk Karur District	Aravakurichi Athipalayam	141/1A Part 141/2A 141/3A 140/2A 140/1	2.47.5	Patta	R.C.No.342/Mines/20 12 Date :23.04.2015	23.04.2015 to 22.04.2020	Operation
139	Rough Stone	B.Mohandass S/o T.Parathan Poorani Post Jegathabi Village, Karur Taluk & District.	Krishnarayapuram Taluk Chithalavai	302/1B6 303/3	0.85.0	Patta	R.C.No.66/Mines/ 2014 Date:30.04.2015	30.04.2015 to 29.04.2020	Operation
140	Rough Stone	Thiru.Natrayan S/o.Kaliappa Gounder Karudaiyampalayam Vge Aravakurichi Taluk Karur District.	Aravakurichi Taluk Gudalur West	215/2A 215/2B	2.29.0	Patta	R.C.No.107/Mines/ 2013 Date:06.05.2015	06.05.2015 to 05.05.2020	Operation

141	Rough Stone	Tvl.Sri Bharani Murugan Blue Metals S.F.No 84/5,6, Nalipalayam Aravakurichi Taluk Karur District	Aravakurichi Taluk Nadanthai North	82/1 Part 82/2 Part 83/1 Part 83/2 Part 83/3 Part 85 Part 87/1 Part 87/2 Part 88/1 Part 88/2 Part	4.89.5	Patta	R.C.No.357/Mines/ 2013 Date:06.05.2015	06.05.2015 to 05.05.2020	Operation
142	Rough Stone	Thiru.M.Manickam S/o Muthal Naicker Kutikkaranputhur Sengal Post Krishnarayapuram Taluk Karur District.	Krishnarayapuram Taluk Sengal Village	21/3	1.01.5	Patta	RC.No.339/Mines/20 14 Date:04.05.2015	04.05.2015 to 03.05.2020	Operation
143	Rough Stone	Thiru.S.Palanisamy S/o Samiyappa Gounder Saliyangkattupallam Udaiyam Village, Kangeyam Taluk Tiruppur District.	Aravkurichi Taluk Anjur Village	761/2 762/2 763/2	2.89.0	Patta	RC.No.174/Mines/ 2012 Date:06.05.2015	06.05.2015 to 05.05.2020	Operation
144	Rough Stone	Tmt.S.Vijaya W/o Sundaram, Thatharakkatu Porasampalayam, Anjur Erode Taluk & District.	Aravkurichi Taluk Anjur Village	759/2 761/3 762/3 763/3	2.75.0	Patta	RC.No.243/Mines/ 2012 Date:06.05.2015	06.05.2015 to 05.05.2020	Operation
145	Rough Stone	TVI.Vinayaga Blue Metals Kurumpatti Pavithiram Post Aravakurichi Taluk Karur District.	Aravakurichi Taluk Kuppam Village	463/1, 463/2 464/2, 464/3 471 Part	0.24.0 1.24.0 0.99.5 0.65.5 1.61.0	Patta	R.C.No.948/Mines/20 15 Dt:15.12.2015	15.12.2015 to 14.12.2020	Operation

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					<b>(4.74.0)</b>				
146	Rough Stone	TVI.Karpaga Vinayaga Blue Managing Partner Thiru.P.K.Ponnusamy Punnam Post Aravakurichi Taluk Karur District.	Aravakurichi Taluk Punnam Post Village	989/1A2 (P) 989/1B 989/2 991/2	0.98.0 2.03.5 0.89.0 0.40.5 <b>(4.31.0)</b>	Patta	R.C.No.823/Mines/20 13 Dt:19.12.2015	19.12.2015 to 18.12.2020	Operation
147	Rough Stone	Thiru.P.Kandasamy S/o.Palaniappa Gounder Kariyampatti Karudaiyampalayam Village Aravakurichi Taluk Karur District.	Aravakurichi Taluk Pavithiram Village	569/2 569/3 576/B2 576/B4 576/B5(P) 576/B5B	0.23.0 0.13.0 1.14.0 1.48.0 1.53.5 0.37.0 <b>4.88.5</b>	Patta	R.C.No.577/Mines/20 14 Dt:19.12.2015	19.12.2015 to 18.12.2020	Operation
148	Rough Stone	Tvl.Balamalai Murugan Blue Metals Thennilai East Village Vadapalani kovil Thennilai Post Aravakurichi Taluk , Karur District.	Aravakurichi Taluk Thennilai East Village	538	<b>(4.18.0)</b>	Patta	R.C.No.121/Mines/20 15 Dt:19.12.2015	19.12.2015 to 18.12.2020	Operation
149	Rough Stone	Pon Vinagayaga Blue Metals S.F.No.435/1,2 Karudaiyampalayam Post K.Paramathi Aravakurichi Taluk, Karur District.	Aravakurichi Taluk Karudaiyampalaya m Village	453/1 (P) 455/A1 (P) 455/A2 (P) 455/A3 (P) 455/B (P) 456/1 (P) 456/2 (P) 456/3, 456/4 456/5 Part 456/6 Part 457/1Part	0.92.0 0.14.0 0.82.0 0.64.0 0.84.0 0.18.5 0.02.0 0.14.5 0.12.5 0.01.5 0.16.0	Patta	R.C.No.182/Mines/20 15 Dt:19.12.2015	19.12.2015 to 18.12.2020	Operation

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				457/2 Part 457/3 Part <b>Total</b>	0.08.0 0.16.0 0.69.0 <b>(4.94.0)</b>				
150	Rough Stone	P.K.Subramani S/o.Kaliyappa Gounder Pavithiram Post Aravakurichi Taluk Karur District.	Aravakurichi Taluk Munnur Village	509/1 Part	2.16.0	Patta	R.C.No.576/Mines/20 15 Dt:19.12.2015	19.12.2015 to 18.12.2020	Operation
151	Rough Stone	Thiru.S.Ragunathan S/o.Sakthivel Pullagoundanpalayam Gudalur West Village Aravakurichi Taluk Karur District.	Aravakurichi Taluk Munnur Village	265	4.10.5	Patta	RC.NO.514/Mines/20 14 Date: 20.01.2016	20.01.2016 to 19.01.2021	Operation
152	Rough Stone	Tvl. Sri Vengatramana Samy Blue Metals 128 Bye Pass Road Karur District.	Aravakurichi Taluk Thennilai East Village	191/3 Part 192 <b>Total</b>	2.00.0 2.90.0 <b>(4.90.0)</b>	Patta	Rc.No1065/Mines/20 14 Date : 20.01.2016	20.01.2016 to 19.01.2021	Operation
153	Rough Stone	Thiru.V.Shanmuganathan S/o.Veerarajee Bhothupatti Village Bhothupatti Post Namakkal Taluk & District.	Aravakurichi Taluk Kuppam Village	1062/1B Part	2.73.0	Patta	RC.No.1384/Mines/2 014 Date: 20.01.2016	20.01.2016 to 19.01.2021	Operation
154	Rough Stone	Tvl.Ram Blue Metals Pavithiram Post Aravakurichi Taluk Karur District.	Aravakurichi Taluk Karudaiyampalaya m Village	289/1 290/1B 290/2 <b>Total</b>	0.42.0 0.40.5 0.40.5 <b>(1.23.0)</b>	Patta	RC.No.1265/Mines/2 014 Date: 20.01.2016	20.01.2016 to 19.01.2021	Operation
155	Rough	Thiru.G.Prabhakar	Aravakurichi Taluk	843/2	1.01.0	Patta	Rc.No.1385/Mines/2	20.01.2016	Operation

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	Stone	S/o.Gunasekaran Andichettipalayam Nadanthai South Village Karur District.	Nadanthai North Village	844/1 844/2 <b>Total</b>	1.60.0 1.90.0 <b>(4.51.0)</b>		014 Date : 20.01.2016	to 19.01.2021	
156	Rough Stone	Thiru.S.Sivakumar S/o.Shanmugam Semmandampalayam Thennilai East Village Aravakurichi Taluk Karur District.	Aravakurichi Tlauk Thennilai East Village	1195/B1 1195/B2 <b>Total</b>	0.98.5 0.83.5 <b>(1.82.0)</b>	Patta	Rc.No.297/Mines/20 15 Date : 20.01.2016	20.01.2016 to 19.01.2021	Operation
157	Rough Stone	Thirumurugan Blue Metals SF.No 506 Kattumunnur Post Aravakurichi Taluk Karur District.	Aravakurichi Tlauk Thennilai East Village	126/2 Part 127/1 Part <b>Total</b>	1.23.0 1.05.0 <b>(2.28.0)</b>	Patta	Rc.No.314/Mines/20 15 Date : 20.01.2016	20.01.2016 to 19.01.2021	Operation
158	Rough Stone	Thiru.K.Periyasamy S/o. Kaliyanna Gounder N.Puthur Nanniyur Post Manmangalam Taluk Karur District.	Kadavur Taluk Manjanaickanpatti Village	624/5B 630/14 <b>Total</b>	1.84.0 1.34.0 <b>(3.18.0)</b>	Patta	Rc.No.225/Mines/20 15 Date: 15.02.2016	22.02.2016 to 21.02.2021	Operation
159	Rough Stone	Tvl.Aravind Blue Metals Komalivalasu Kodanthur North Village Aravakurichi Taluk Karur District.	Aravakurichi Taluk Kodanthur North	409	3.77.0	Patta	Rc.No.847/Mines/20 14 Date: 18.02.2016	26.02.2016 to 25.02.2021	Operation
160	Rough stone	Tvl.Kandan Blue Metals Thennilai South Village Masayampalayam Privu Thennilai Post Aravakurichi Taluk	Aravakurichi Taluk Thennilai South Village	753/B2 753/B3 755/A1 <b>Total</b>	1.21.5 2.52.5 0.69.0 <b>(4.43.0)</b>	Patta	Rc.No.993/Mines/20 14 Date: 19.02.2016	26.02.2016 to 25.02.2021	Operation

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		Karur District.							
161	Rough Stone	Thiru.R.Subramani S/o.Ramasamy Nadupalayam Punnam Post Aravakurichi Taluk Karur District.	Aravakurichi Taluk Punnam Village	1093/1A Part 1093/B Part 1093/2A1 Part 1094/1A 1094/1B 1094/2A1	<b>(3.20.5)</b>	Patta	Rc.No.1445/Mines/2 014 Date : 18.02.2016	26.02.2016 to 25.02.2021	Operation
162	Rough Stone	M/s.Raja Vinayaga Blue Metals S.F.No.1171/1,2,3A & 3B Kuppam Village and Post Aravakurichi Taluk Karur District.	Aravakurichi Taluk Kuppam Village	700/2A	<b>(1.85.0)</b>	Patta	RC.No. 207/Mines/2011 Date : 29.02.2016	02.03.2016 to 01.03.2021	Operation
163	Rough Stone	Thiru.M.Gunasekaran S/o. Muthusamy Nadaiyanur Post Karur Taluk Karur District.	Aravakurichi Taluk Kuppam Village	710/1 710/3 712/2 <b>Total</b>	3.04.0 1.04.5 0.88.0 <b>(4.96.5)</b>	Patta	RC.No. 554/Mines/2014 Date : 05.07.2016	05.07.2016 to 04.07.2021	Operation
164	Rough Stone	Tvl.New Five Star S.Thottampatti Nadanthai Soth Village Aravakurichi Taluk Karur District.	Aravakurichi Taluk Nadanthai South Village	719 720 732 733 Part <b>Total</b>	1.30.5 0.84.0 0.30.0 2.54.0 <b>(4.98.5)</b>	Patta	RC.No. 533/Mines/2014 Date : 06.07.2016	06.07.2016 to 05.07.2021	Operation
165	Rough Stone	Thiru.P.Senthilkumar S/o.Periyasamy (Late) Majara Salipalayam Kuppuchipalayam Village Aravakurichi Taluk Karur District.	Aravakurichi Taluk Munnur Village	478/A Part 478/B1 Part <b>Total</b>	1.84.0 0.70.0 <b>(2.54.0)</b>	Patta	RC.No. 298/Mines/2015 Date : 14.07.2016	14.07.2016 to 13.07.2021	Operation

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166	Rough Stone	Tmt.A.Gangammal W/o.Angamuthu Sokkalapuram Lingmanaickenpatti post Aravakurichi Taluk Karur District.	Aravakurichi Taluk Pallapatti Village	149/A Part	0.44.5	Patta	RC.No. 223/Mines/2015 Date : 05.08.2016	05.08.2016 to 04.08.2021	Operation
167	Rough Stone	Tmt.V.Kavitha W/o.Vadivel Nochi Kattur Kuppam Post Aravkurichi Tluk Karur District.	Aravakurichi Taluk Kuppam Village	75/1A 75/1B 75/2 <b>Total</b>	0.49.5 0.47.5 0.91.0 <b>(1.88.0)</b>	Patta	Rc.No.821/Mines/20 13 Date : 05.08.2016	05.08.2016 to 04.08.2021	operation
168	Rough Stone	Thiru.R.Selvam S/o. Ramasamy No.5/85A, Pathiripatti Post Manapparai (Via) Kulithalai Taluk Karur District.	Kulithalai Taluk Uthupatti Village	9/4A 4B 9/5 10/3 10/4 10/5 <b>Total</b>	0.06.5 0.22.0 1.08.0 0.07.5 0.19.0 0.22.5 <b>1.85.5</b>	Patta	R.C.No.1000/Mines/2 015 Dt:05.08.2016	05.08.2016 to 04.08.2021	Operation
169	Rough Stone	Thiru.S.Kandhasamy S/o.Shri.Samiyappa Gounder Malaikovil Post Semmandampalayam Aravakurichi Taluk Karur District.	Aravakurichi Taluk Thennilai East Village	750/1 Part 751 <b>Total</b>	1.15.5 3.21.5 <b>4.37.0</b>	Patta	RC.No.189/Mines /2015 Dt: 05.08.2016	05.08.2016 to 04.08.2021	Operation
170	Rough Stone	R.P.Kaliyappan S/o. Palaniyappa Gounder Periyarangapalayam Punnam Village Aravakurichi Taluk	Karur Taluk Paganatham Village	95/B1 95/B2 95/B3 95/B4 95/B5	0.41.0 0.21.0 0.20.0 0.22.0 0.41.0	Patta	R.C.No.192/Mines/20 14, Date : 09.08.2016	09.08.2016 to 08.08.2021	operation

		Karur District.		<b>Total</b>	<b>(1.45.0)</b>				
171	Rough Stone	Thiru .K.Palanisamy S/o Sri .Krishnasamy Gounder Uthukkaraipatti Pagantham Village Karur Taluk & District.	Aravakurichi Taluk Anjagoundanpatti Village	2/3 2/4A <b>Total</b>	0.20.0 0.95.0 (1.15.0)	Patta	RC.No.655/Mines /2014 Dt: 09.08.2016	09.08.2016 to 08.08.2021	operation
172	Rough Stone	Thiru.V.Saravanan S/o.R.K.Velu, 55/6, M.R.M.Complex Rayanur , Thorankalpatti Village Aravakurichi Taluk Karur District.	Aravakurichi Taluk Kuppam Village	71/A2	. (0.81.0)	Patta	R.C.No.887/Mines /2015 Dt:09.08.2016	09.08.2016 to 08.08.2021	operation
173	Rough Stone	Thiru. A.Natarajan S/o.Arjunan New No.3/80 Pullyamapalayam Punnam Village Aravakurichi Taluk Karur District	Karur Taluk Paganatham Village	106/2	(0.91.0)	Patta	R.C.No.660/Mines/20 13, Date : 11.08.2016	11.08.2016 to 10.08.2021	operation
174	Rough Stone	Thiru.R.Rengasamy, S/o.Ramasamy Gounder , Periyarengapalayam, Punnam Village Aravakurichi Taluk Karur District.	Aravakurichi Taluk Punnam Village	557/B	(0.57.0)	Patta	R.C.No.886/Mines /2015 Dt:11.08.2016.	11.08.2016 to 10.08.2021	operation
175	Rough Stone	Thiru.K.Manisekaran S/o.Krishanasamy	Krishnarayapuram Taluk	20/1B1 Part	0.80.0	Patta	R.C.No.1233/Mines /2015 Dt:11.08.2016.	11.08.2016 to	operation

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		Ram Nagar Pasupathipalayam Post Karur Taluk & District.	Sengal Village					10.08.2021	
176	Rough Stone	Thiru.R.Loganathan S/o. Ramasamy Gounder Periyaranga Palayam Punnam Village Aravakurichi Taluk Karur District.	Aravakurichi Taluk Punnam Village	1243/A3	(1.41.)	Patta	RC.No.372/Mines /2013 Date :12.08.2016	12.08.2016 to 11.08.2021	operation
177	Rough Stone	Tvl.Diamond Blue Metals S.F.No.9/4-5 Eallaikatturamachandrapur am koonampatti road Thoppampatti Aravakurichi Taluk Karur District.	Aravakurichi Taluk Monjanur East Village	439 Part	(1.02.0)	Patta	Rc.No.24/Mines/201 4 Date : 12.08.2016	12.08.2016 to 11.08.2021	operation
178	Rough Stone	Tmt.S.Shanthimathi W/o.Sekar Punnamchathiram Post Punnam Village Aravakurichi Taluk Karur District.	Aravakurichi Taluk Thennilai Village	193/3B	(1.28.0)	Patta	R.C.No.450/Mines /2015 Dt:12.08.2016	12.08.2016 to 11.08.2021	operation
179	Rough Stone	Thiru.D.Elangovan S/o.Dhandapani Malachiyur Chinnadharapuram Post Aravakurichi Taluk Karur District.	Aravakurichi Taluk T.Vengidapuram	252/3 Part	1.56.5	Patta	Rc.No.367/Mines/20 12 Date : 16.08.2016	16.08.2016 to 15.08.2021	operation
180	Rough	R.Manoharan	Aravakurichi Taluk	1063/2	(1.31.0)	Patta	R.C.No.509/Mines/20	16.08.2016	operation

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	Stone	S/o P.Rengasamy Kuppam Post Aravakurichi Taluk Karur District.	Thennilai East Village				14 Dt:16.08.2016	to 15.08.2021	
181	Rough Stone	Thiru.M.Siva, S/o.Maruthai No.2/179_B Mettuthirukampuliyur Thirukampuliyur Post Krishnarayapuram Taluk Karur District.	Kadavur Taluk Pappayampadi Village	9/3B 9/5A <b>Total</b>	0.44.5 0.49.0 <b>(0.93.5)</b>	Patta	R.C.No.863/Mines /2015 Dt:17.08.2016	17.08.2016 to 16.08.2021	operation
182	Rough Stone	Thiru.K.Nallasamy S/o. Krishnan Punnamchatram Post Aravakurichi Taluk Karur District.	Aravakurichi Taluk Kuppam Village	226/1 Part	(2.95.0)	Patta	RC.No. 899/Mines/2015 Date : 02.09.2016	02.09.2016 to 01.09.2021	operation
183	Rough Stone	Tmt.P.Suganya W/o. Prabhakaran Door No. 201, Old Post Office Street Vengamedu Post Innam Karur District.	Aravakurichi Taluk Punnam Village	1199/2 (P) 1199/3 (P) 1199/4 (P) 1199/5 (P) 1199/6 (P) 1199/7 (P) 1199/8 (P) 1199/9 (P) 1200/3 1200/4 1200/5 1200/6 1200/7 1200/8 1200/9 1200/10 1200/11	0.05.0 0.10.0 0.08.0 0.12.0 0.12.0 0.22.0 0.10.0 0.05.0 0.10.0 0.06.0 0.05.0 0.18.0 0.20.0 0.30.0 0.38.0 0.09.0 0.04.0	Patta	RC.No. 100/Mines/2016 Date :14.10.2016	14.10.2016 to 13.10.2021	operation

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				1200/12 Part 1201	0.03.0 ----- <b>(3.89.0)</b>				
184	Rough Stone	Sri Ganesh Murgan Blue Metals Karudaiyampalayam Post Aravakurichi Taluk Karur District.	Aravakurichi Taluk Pavithiram Village	892	(3.03.5)	Patta	RC.No. 551/Mines/2016 Date :14.10.2016	14.10.2016 to 13.10.2021	operation
185	Rough Stone	Thirumalai Blue Metals No.538/4, Poolan Kadu Kuppam Post Aravakurichi Taluk Karur District.	Manmangalam Taluk Vettamangalam West	1238/2	(4.80.0)	Patta	R.C.No.299/Mines/20 15 Dt:14.10.2016	14.10.2016 to 13.10.2021	operation
186	Rough Stone	Thiru.K.Kulanthavel S/o. Kandasamy Chinnarengapalayam Punnam Village Aravakurichi Taluk Karur District.	Aravakurichi Taluk Punnam Village	1262/1	(0.94.0)	Patta	RC.No. 1025/Mines/2015 Date :14.10.2016	14.10.2016 to 13.10.2021	operation
187	Rough Stone	Thiru.P.Marappan S/o.Palaniyappan Andipatti Kuppam Village Aravakurichi Taluk Karur District.	Aravakurichi Taluk Kuppam Village	74 75/3B <b>Total</b>	0.74.5 1.37.0 <b>(2.11.5)</b>	Patta	R.C.No.1427/Mines/2 014 Dt:14.10.2016	14.10.2016 to 13.10.2021	operation
188	Rough Stone	Thiru.P.Balusamy S/o.Palaniyappan Punnamchathiram Aravakurichi Taluk	Aravakurichi Taluk Kaarvazhi Village	302 Part 305/A 305/B <b>Total</b>	1.26.0 2.87.0 0.68.0 <b>4.81.0</b>	Patta	R.C.No.185/Mines/20 12 Dt:29.11.2016	29.11.2016 to 28.11.2021	operation

		Karur District.							
189	Rough Stone	Thiru. M.Ramasamy S/o. Muthusamy Gounder Andankovil East Village Manmangalam Taluk Karur District.	Aravakurichi Taluk Athipalayam Village	127/3C Part 127/4c Part 127/5 127/6 Part 127/9 Part 130/A Part 130/B part <b>Total</b>	0.32.5 0.01.5 0.40.0 0.47.5 0.56.5 0.48.0 0.55.5 <b>2.81.5</b>	Patta	R.C.No.514/Mines/20 16 Dt:29.11.2016	29.11.2016 to 28.11.2021	operation
190	Rough Stone	Thiru.V.M.Nallasamy S/o. Malayappa gounder Old No. 1/20D New No.1/59 , Ariyur Kaspa Aravakurichi Taluk Karur District.	Aravakurichi Taluk K.Paramathi Village	484 Part 485 Part <b>Total</b>	0.74.5 1.33.0 <b>2.07.5</b>	Patta	R.C.No.1060/Mines/2 015 Dt:29.11.2016	29.11.2016 to 28.11.2021	operation
191	Rough Stone	Amman Arul Crusher No.5/41 -2 Nallipalayam K.Paramathi Village Aravakurichi Taluk Karur District.	Aravakurichi Taluk Thennilai Village	1064 (P) 1065/1A 1065/1B, 1066/2 <b>Total</b>	0.86.0 0.26.5 0.89.0 0.56.5 <b>2.58.0</b>	Patta	R.C.No.810/Mines/20 15 Dt:29.11.2016	29.11.2016 to 28.11.2021	operation
192	Gravel	Thiru.T.Murthy S/o. Dullikoonar Door No .5/92 Melakkadu Thayanur Village Srirangam Taluk Trichy District.	Kulithalai Taluk Aalathur Village	63/3 81/1 <b>Total</b>	0.63.0 0.70.0 <b>1.33.0</b>	Patta	R.C.No.675/Mines/20 16 Dt:29.11.2016	29.11.2016 to 28.11.2019	operation
193	Rough Stone	Tvl. New Star Blue Metals , S.F.No: 550,533,534,535, Poolankaradi,	Aravakurichi Taluk Kuppam Village	533/1 534/1 550/C3 <b>Total</b>	1.25.0 2.44.0 0.92.0	Patta	R.C.No.390/Mines /2015 Dt:02.12.2016.	02.12.2016 to 01.12.2021	Operation

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		Kuppam Post, Aravakurichi Taluk Karur District.			(4.61.0)				
194	Rough Stone	Thiru.K.Subramaniyan S/o.Kandasamy Gounder 303, Aathi Appartment Anna Nagar West Karur Taluk & District.	Manmangalam Taluk Appipalayam Village	393 394 Total	1.46.0 1.46.5 (2.92.5)	Patta	RC.No.756/Mines/20 15 Date :09.12.2016	09.12.2016 to 08.12.2021	operation
195	Rough Stone	Dr.S.K.Palanivelu, S/o.K.S.Kuppusamy, No.7, Co-operative Colony, Mohanur Road, Namakkal District	Aravakurichi Taluk, Nagampalli Village	1341/3 Part	1.82.0	Patta	RC.No.41/Mines/201 6 Date :09.12.2016	09.12.2016 to 08.12.2021	operation
196	Rough Stone	K.Murugesan S/o.Kuppusamy Periyarengapalayam, Punnamchadriram Post Aravakurichi Taluk, Karur District.	Aravakurichi Taluk Kuppam Village	801/1	(1.60.0)	Patta	RC.No239 /Mines/2015 Date :24.12.2016	24.12.2016 to 23.12.2021	operation
197	Rough Stone	Tmt. P.Selvamani W.o.Periyasamy Moolimangalam Post Punjai Pugalur Soth Village Manmangalam Taluk Karur District	Manmangalam Taluk Vettamangalam Village	1062/A2	0.92.0	Patta	RC.No.1024/Mines/2 015 Date :24.12.2016	24.12.2016 to 23.12.2021	operation
198	Rough stone	Thiru.S.Kuppusamy, S/o.Samiyappa Gounder, Saliyankattupallam, Udaiyam Village, Kangeyam Taluk, Trippur District.	Aravakurichi Taluk, Anjur Village	759/5 764/3 765/3 766/1 Part 766/2 767/1	1.40.0 1.14.0 0.48.0 0.65.0 1.14.0 0.11.5	Patta	Rc.No.173/Mines/20 12, Dt:23.6.2017	23.6.2017 to 22.6.2022	operation

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				Total	4.92.5				
199	Rough stone	Tvl.Venkatachalapathi Blue Metals, S.F.No.233/1, Puthurpatti, Kuppam Post, Aravakurichi Taluk, Karur District.	Aravakurichi Taluk, Kuppam Village	213/1 214/2A 214/2B 214/2C 220/3P 221/P Total	0.56.5 1.08.0 1.07.5 0.30.0 0.22.0 0.81.0 4.05.0	Patta	Rc.No.654/Mines/20 14, Dt:23.6.2017	23.6.2017 to 22.6.2022	Operation
200	Rough stone	Thiru.M.Kolandaisamy, S/o.Mottaiyappagounder, Athipalayam Post, Aravakurichi Taluk, Karur District	Aravakurichi Taluk, Munnur Village	266/1A	1.92.0 hecets	Patta	Rc.No.1136/Mines/2 015, Dt:23.6.2017	23.6.2017 to 22.6.2022	Operation
201	Rough stone	Thiru.R.Natarajan, S/o.Ramasamygounder, Vettamangalam Melpagam Village, Ganapathipalayam, Manmangalam Taluk, Karur District.	Aravakurichi Taluk, Munnur Village	481/1 Part 481/2 Part <b>Total</b>	0.28.5 1.32.5 <b>1.61.0</b>	Patta	Rc.No.245/Mines/20 16, Dt:23.6.2017	23.6.2017 to 22.6.2022	operation
202	Rough stone	Thiru.P.Kulandaisamy, S/o.Palaniappagounder, Door No.3/1 Periyar Nagar, L.N.S. Post, Karur Taluk & District.	Manmangalam Taluk, Athur Village	659/1 659/13 659/14 659/15 <b>Total</b>	2.07.0 0.86.0 0.12.0 0.10.0 <b>3.15.0</b>	Patta	Rc.No.211/Mines/20 14, Dt:23.6.2017.	23.6.2017 to 22.6.2022	operation
203	Rough stone	Thiru.N.Sivakumar S/o. Narayasamy 25, 2th Gandhiji Veethi Kasipalayam, Erode Taluk & District.	Aravakurichi Taluk Monjanur Village	1002/B Part 1008 1009/B Part <b>Total</b>	0.81.0 3.54.0 0.61.0 <b>4.96.0</b>	Patta	Rc.No.240/Mines /2015 Date: 05.07.2017	05.07.2017 to 04.07.2022	Operation

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204	Rough stone	Thiru.M.Kaliappan S/o. Marapagounder Periyarengapalaym Punnam Post Aravakurichi Taluk Karur District.	Aravakurichi Taluk Kuppam Village	25/3B	0.94.5	Patta	Rc.No.315/Mines /2015 Date: 05.07.2017	05.07.2017 to 04.07.2022	Operation
205	Rough stone	Thiru.S.Jeevanantham S/o. Samiappan 5/22 Ponniyaggoundanpudhur Punnamchathiram Post Aravakurichi Taluk Karur District.	Aravakurichi Taluk Kuppam Village	524/3A2 524/3B <b>Total</b>	0.70.0 1.11.5 <b>1.81.5</b>	Patta	Rc.No.1431/Mines /2015 Date: 05.07.2017	05.07.2017 to 04.07.2022	Operation
206	Rough stone	Thiru.R.Govindan S/o. Ramasamy P.Kalipalayam Panjamadevi Village Karur Taluk & District.	Manmangalam Taluk Panjamadevi Village	104/A1	0.37.0	Patta	Rc.No.657/Mines/20 15 Date: 05.07.2017	05.07.2017 to 04.07.2022	Operation
207	Rough stone	Thiru.P.Vijayakumar S/o. Perumal Periyamanjuvelli Village Aravakurichi Taluk, Karur District.	Aravakurichi Taluk Periyamanjuvelli Village	579/1A Part	0.98.0	Patta	Rc.No.1096/Mines/2 015 Date: 05.07.2017	05.07.2017 to 04.07.2022	operation
208	Rough stone	Thiru.K.Mahendran S/o.K.R.Kandasamy Kulathupalapalayam pudhur Kodumuti Post & Taluk Erode District.	Aravakurichi Taluk Kodanthur Village	92 Part	1.75.0	Patta	Rc.No.1000/Mines/2 016 Date: 05.07.2017	05.07.2017 to 04.07.2022	operation

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209	Rough stone	Thiru.K.S.Kandasamy S/o. Sankarappa Gounder Kalipalayam , Aravakurichi Taluk, Karur District.	Aravakurichi Taluk Kuppam Village	387/A 388/1 <b>Total</b>	2.86.0 1.04.0 <b>3.90.0</b>	Patta	Rc.No.137/Mines/20 15 Date: 18.07.2017	18.07.2017 to 04.07.2022	Operation
210	Rough stone	Tmt.T.Sathiya W/o. Thangaraj New No. 2 Masagoundanpudhur , Punjai Pugalur South Village Manmangalam Taluk, Karur District.	Aravakurichi Taluk Punnam Village	1287/1 1287/3 <b>Total</b>	1.34.0 0.49.0 <b>1.83.0</b>	Patta	Rc.No.226/Mines/20 14 Date: 31.07.2017	31.07.2017 to 30.07.2022	Operation
211	Rough stone	Thiru.K.Palanisamy S/o. Krishnasamy Gounder Uthukkarappatti, Paganatham Village, Karur Taluk, & District.	Karur Taluk Paganatham Village	287/1 288/16A 290/5 <u>Total</u>	0.40.5 0.27.0 0.55.0 1.22.5	Patta	Rc.No.1131/Mines/2 015 Date: 31.07.2017	31.07.2017 to 30.07.2022	Operation
212		Tmt.S.Tamilselvi w/o.Sapapathi Ganesa Nagar 1 <sup>st</sup> Street Enam Karur Karur Taluk & District.	Aravakurichi Taluk Kuppam Village	706 part	3.36.0	Patta	Rc.No.888/Mines/20 16 Date: 18.08.2017	18.08.2017 to 17.08.2022	Operation
213	Rough stone	Thiru.R.Kandasamy S/o.Rasappa Gounder, Velliyampalayam , Punnam Village Aravakurichi Taluk, Karur District.	Aravakurichi Taluk Kuppam Village	28 Part	<b>0.65.5</b>	Patta	Rc.No.735/Mines/20 16 Date: 16.08.2017	16.08.2017 to 15.08.2022	Operation
214		Thiru.C.Perumal S/o.Chinnasamy Reddiyar Veeriyappatti,	Kadavur Taluk Manjanaickanpatti Village	642/2A 642/3A 642/3B Part	0.44.5 0.34.0 0.07.0	Patta	Rc.No.162/Mines/20 16 Date: 16.08.2017	16.08.2017 to 15.08.2022	Operation

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		Manjanaickanpatti Village, Kulithalai Taluk, Karur District.		642/3C Part 642/4 Part <b>Total</b>	0.11.5 0.39.0 <b>1.36.0</b>				
215		Tvl.NTC Infra Project Private Ltd., Thiru.S.Muthusamy, Director , No.97( Old No 47) Lingiseeti Street) Chennai	Aravakurichi Taluk Kuppam Village	491 Part	1.60.0`	Patta	Rc.No.889/Mines/20 16 Date: 24.08.2017	24.08.2017 to 23.08.2022	Operation
216		Tvl. Karur Blue Metals SF.NO1055/3,4,5, Kalimedu Ammapatti, Thennilai East Village, Aravakurichi Taluk Karur District.	Aravakurichi Taluk Thennilai East Village	1055/4 1055/5 <b>Total</b>	0.99.0 0.76.0 <b>1.75.0</b>	Patta	Rc.No.842/Mines/20 16 Date: 16.08.2017	16.08.2017 to 15.08.2022	Operation
217		Tmt.P.Amaravathi W/o.Palanisamy Ponniyang goundanpudhur Punnam Village, Aravakurichi Taluk Karur District.	Aravakurichi Taluk Kuppam Village	509/2A Part	0.89.5	Patta	Rc.No.135/Mines/20 17 Date: 18.08.2017	18.08.2017 to 17.08.2022	Operation
218		Thiru.V.Periyasamy S/o. Vaiyapuri Gounder Vadukapatti, Vennaiimalai Post Karur Taluk & District.	Manmangalam Taluk Athur Village	654/1	1.40.0	Patta	Rc.No.236/Mines/20 16 Date: 18.08.2017	18.08.2017 to 17.08.2022	Operation
219	<b>Rough stone</b>	Thiru.P.Duraisamy S/o.Periyasamy Gounder	Aravakurichi Taluk Anjur Village	762/4 763/4	0.24.5 1.05.0	Patta	Rc.No.171/Mines/20 12 Date: 07.08.2017	07.08.2017 to	Operation

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		Thatharakadu Thottam, Anjur Village Erode Taluk & District.		764/1 765/1 <u>Total</u>	0.14.0 0.16.0 <u>1.59.5</u>			06.08.2022	
220	<b>Rough stone</b>	Tvl.Kowsick & Co Blue Metals Door No.24A Housing Unite Kollampalayam, Kasipalayam, Erode Taluk & District.	Aravakurichi Taluk Anjur Village	770/2B Part 778/3B2 778/3B1part <u>Total</u>	1.76.0 1.03.0 2.19.0 4.98.0	Patta	Rc.No.172/Mines/20 12 Date: 07.08.2017	07.08.2017 to 06.08.2022	Operation
221	<b>Rough stone</b>	Thiru.P.Ravi S/o.Palanisamy Chinnakangeyam palayam Mankalappatti post Kangeyam Taluk, Tiruppur District.	Aravakurichi Taluk Anjur Village	759/3 759/4 763/5 764/2 765/2 <u>Total</u>	1.24.0 1.27.5 0.18.0 0.98.5 0.50.0 4.18.0	Patta	Rc.No.169/Mines/20 12 Date: 07.08.2017	07.08.2017 to 06.08.2022	Operation
222	<b>Rough Stone</b>	Thiru.M.K.Kungumaraj No.32 M.G.R Nagar Chinnandankovil Road Karur District. (1913/2017 Date:1.9.2017 Sub Registrar Aravakurichi)	Aravakurichi Taluk Anjagoundanpatti	33 Part	1.61.0	Govt Poram boke Land Rule 8	RC.No.305/Mines/20 17 Date: 16.08.2017	16.08.2017 to 15.08.2022	Operation
223	Rough stone	R.Natrayan S/o. Ramasamy Gounder Suriyampalayam Karudaiyampalayam Aravakurichi Taluk Karur District.	Aravakurichi Taluk Kuppam Village	112/1B 112/2B 112/3 <u>Total</u>	0.25.0 0.64.0 0.56.5 <u>1.45.5</u>	Patta	Rc.No.261/Mines/20 13 Date: 06.09.2017	06.09.2017 to 05.09.2022	Operation

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**THANK YOU**



# MINING PLAN FOR SIVAYAM (NORTH) ROUGH STONE AND GRAVEL QUARRY

(PREPARED UNDER RULES 41 & 42 AMENDED UNDER TAMIL NADU MINOR MINERAL CONCESSION RULES, 1959)

*Lease period = Five years*

IN

## LOCATION OF THE QUARRY LEASE APPLIED AREA

EXTENT : 2.80.5ha  
S.F.NO's : 15/1 & 15/2  
VILLAGE : SIVAYAM (NORTH)  
TALUK : KRISHNARAYAPURAM  
DISTRICT : KARUR  
STATE : TAMIL NADU

FOR

APPLICANT

**Tvl. Navamani Mines Private Limited,**

Thiru.P.Mani, Managing Director,  
No.5/898, Alagu Nagar,  
Trichy Road,  
Namakkal – 637 001.

**PREPARED BY**

**Dr.P.Thangaraju, M.Sc., Ph.D.,**

Qualified Person

Regd.off.No.17, Advaita Ashram Road,  
Alagapuram, Salem – 636 004.

Cell: 94433 56539.

E-mail: infogeoexploration@gmail.com

This Mining Plan is approved subject  
to the conditions/stipulations  
Indicated in the Mining Plan approval  
Letter No: 256/Mi/15/2019  
Dated: 24.06.2019

P.M.



**Tvl. Navamani Mines Private Limited,**  
 Thiru.P.Mani, Managing Director,  
 No.5/898, Alagu Nagar,  
 Trichy Road,  
 Namakkal – 637 001.

**CONSENT LETTER FROM THE APPLICANT**

The Mining Plan in respect of Rough stone and Gravel Quarry lease applied area in S.F.No's.15/1 & 15/2 over an extent of 2.80.5ha in Sivayam (North) Village, Krishnarayapuram Taluk, Karur District, Tamil Nadu State has been prepared by

**Dr.P.Thangaraju, M.Sc., Ph.D.,**

Qualified Person

I request the District Collector, Karur to make further correspondence regarding the modification of the Mining Plan with the said qualified person at his following address.

**Dr.P.Thangaraju, M.Sc., Ph.D.,**

Regd.off.No.17,

Advaitha Ashram Road,

Alagapuram, Salem – 636 004.

Cell: 94433 56539.

I hereby undertake that all the modifications, if any made in the mining plan by the qualified person may be deemed to have been made with my knowledge and consent and shall be acceptable to me and binding on me in all respects.

Signature of the Applicant

For Tvl. Navamani Mines Private Limited

P.Mani

(Managing Director)

Place: Namakkal

Date: 20.06.2019

P.Mani

From  
Thiru.A.Perumal, MSc.,M.Phil.,  
Deputy Director,  
Geology and Mining,  
Collectorate,  
Karur.

To  
Tvl.Navamani Mines Private limited,  
Thiru. P.Mani, Managing Director,  
No.5/898, Alagu Nagar,  
Trichy Road,  
Namakkal – 637 001.

**Rc.No.256/Mines/2019, Dated: 24.06.2019**

Sir,

Sub: Mines and Minerals – Minor Mineral – Karur District – Krishnarayapuram Taluk – Sivayam (North) Village – Patta land in S.F.No.15/1 and 15/2 Over an extent of 2.80.5 Hectare. Quarry lease application – Minor Mineral - Rough Stone/Gravel – preferred by Tvl.Navamani Mines Private limited Thiru. P.Mani, Managing Director – Submission of mining plan for approval – Approved – Regarding.

- Ref: 1. Quarry lease application for Rough stone/Gravel preferred by Tvl.Navamani Mines Private Limited, Thiru. P.Mani, Managing Director, No.5/898, Alagu Nagar, Trichy Road, Namakkal – 637 001, Dated:24.06.2019.
2. Order of the Hon'ble Supreme Court of India in I.A.Nos.12-13/2011 in SLP (C) No.19628-19629/2009, dt: 27.02.2012.
3. Government of India, Ministry of Environment and Forest Office Memorandum, Dated:18.05.2012.
4. The Chairman, State Level Environment Impact Assessment Authority, Tamil Nadu D.O.Lr.No.SEIAA-TN/Minor Minerals/2012, Dated: 17.09.2012.
5. The Commissioner of Geology and Mining, Chennai letter Rc.No.3868/LC/2012, dt: 19.11.2012.
6. District Collector, Karur Notice Rc.No.256/Mines/2019, Dated:19.06.2019
7. Mining Plan submitted by Tvl.Navamani Mines Private Limited, Thiru. P.Mani, Managing Director, Dated:24.06.2019

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In the reference 7<sup>th</sup> cited, as directed by the District Collector, Karur the applicant Tvl.Navamani Mines Private Limited, Thiru. P.Mani, Managing Director had

P.Mani

submitted three copies of mining plan for approval for the rough stone quarry lease applied areas over an extent 2.80.5 Hects., of patta lands in S.F.Nos. 15/1 and 15/2 in Sivayam (North) Village Krishnarayapuram Taluk, Karur District.

The above mining plan submitted for the grant of Rough Stone quarry lease in patta lands in S.F.Nos. 15/1 and 15/2 - Over an extent of 2.80.5 Hectare in Sivayam (North) Village Krishnarayapuram Taluk, Karur District has been examined in detail.

As per the guidelines/ instructions issued by the Commissioner of Geology - a/12nd Mining, Chennai vide letter Rc.No.3868/LC/2012, dt: 19.11.2012., the mining plan submitted by the applicant is hereby approved, subject to the following conditions:

- (i) The mining plan is approved without prejudice to any other Law applicable to the quarry lease from time to time whether such laws are made by the Central Government, State Government or any other authority.
- (ii) This approval of the mining plan does not in any way imply the approval of the Government in terms or any other provisions of the Mines and Minerals (Development and Regulation) Act, 1957, or any other connected laws including Forest (Conservation) Act, 1980, Forest Conservation Rules, 1981, Environment Protection Act, 1980, Explosives Act, 1884 (Central Act IV of 1884) Minor Mineral Concession and Development Rules, 2010 and the Rules made there under and the Tamil Nadu Minor Mineral Concession Rules, 1959.
- (iii) The mining plan is approved without prejudice to any other order or direction from any court of competent jurisdiction.
- (iv) As per the District Collector, Karur notice in Rc.No.256/Mines/2019, Dated:19.06.2019 the following conditions incorporated in the Mining Plan plates.

1. அருகிலுள்ள பட்டா புலங்களுக்கு 7.5 மீட்டர் பாதுகாப்பு இடைவெளிவிட்டு குவாரி பணி மேற்கொள்ள வேண்டும்.

P. N. [Signature]

- (v) Quarrying shall be done as per the approved Mining Plan and that the mining plan is approved without prejudice to any other law applicable to the quarry lease from time to time whether such laws are made by the Central Government, State Government or any other authority.
- (vi) If anything is found to be concealed as required by the Mines Act in the contents of the Mining Plan and the proposal for rectification has not been made, the approval shall be deemed to have been withdrawn with immediate effect.

Encl: Two copies of Approved Mining Plan.

*20/11/19*  
Deputy Director,  
Geology and Mining,  
Karur.

*24/11/19*

Copy to:

- 1) Dr.P.Thangaraju, M.Sc., Ph.D, Regd.off.Old No.260-B, New No.17, Advaita Ashram Road, Alagapuram Post, , Salem – 636 004.
- 2) The Director of Geology and Mining, Chennai-32. (with AMP).
- 3) The District Collector, Karur.
- 4) The Chairman, State Level Environmental Impact Assessment Authority, Tamil Nadu, 3<sup>rd</sup> Floor, PanagalMaaligai, Saidapet, Chennai-15.

*P. N. [Signature]*



**Tvl. Navamani Mines Private Limited,**  
 Thiru.P.Mani, Managing Director,  
 No.5/898, Alagu Nagar,  
 Trichy Road,  
 Namakkal – 637 001.

**DECLARATION OF THE APPLICANT**

The Mining Plan in respect of Rough stone and Gravel Quarry lease applied area in S.F.No's.15/1 & 15/2 over an extent of 2.80.5ha in Sivayam (North) Village, Krishnarayapuram Taluk, Karur District, Tamil Nadu State has been prepared in full consultation with me.

I have understood its contents and agree to implement the same in accordance with Laws, Rules and Act applicable to Quarry.

Signature of the Applicant  
 For Tvl. Navamani Mines Private Limited

P.Mani  
 (Managing Director)

Place: Namakkal

Date: 20.06.2019

P.Mani




**CERTIFICATE**

Certified that I, **Dr.P.THANGARAJU, M.Sc., Ph.D.**, having an office at New No.17, Advaita Ashram Road, Alagapuram, Salem – 636 004, am a Post Graduate in Geology (M.Sc.Geology) from Madras University, Chennai and I worked in the field of Geology in a role of Geologist.

Rule 15(I)(a) and (b) of Minerals (Other than Atomic, Hydro Carbons Energy Minerals) Concession Rules 2016 stipulates the eligibility for preparing Mining plans as “(I)(a) a post graduate degree in Geology granted by a university established” and (I)(b) “Professional experience of five years of working in a supervisory capacity in the field of mining after obtaining the degree”. Since my qualification and experience are satisfied the Rule (I)(a) and (I)(b) of 15 of the said Rules, I am eligible to prepare Mining Plans for both Major and Minor Minerals.

Accordingly, I prepare this Mining Plan in respect of Rough stone and Gravel Quarry lease applied area in S.F.No's.15/1 & 15/2 over an extent of 2.80.5ha in Sivayam (North) Village, Krishnarayapuram Taluk, Karur District, Tamil Nadu State for **Tvl.Navamani Mines Private Limited**, Thiru.P.Mani, Managing Director, No.5/898, Alagu Nagar, Trichy Road, Namakkal – 637 001. Since the Mining Plan is prepared as per the provisions contained in Rule 15(I)(a) and (I)(b) of Minerals (Other than Atomic, Hydro Carbons Energy Minerals) Concession Rules, 2016.

Signature of the Qualified Person

  
Dr.P.Thangaraju, M.Sc., Ph.D.,

Place: Salem

Date: 22.06.2019



**Dr.P.Thangaraju, M.Sc., Ph.D.,**

Regd.off. No. 17,

Advaitha Ashram Road,

Alagapuram, Salem – 636 004.

Cell: 94433 56539.



**CERTIFICATE FROM THE QUALIFIED PERSON**

This is to certify that the Provisions of under Rules 41 & 42 Amended under Tamil Nadu Minor Mineral Concession Rules, 1959 have been observed in the preparation of Mining Plan for Rough stone and Gravel Quarry lease applied area in S.F.No's.15/1 & 15/2 over an extent of 2.80.5ha in Sivayam (North) Village, Krishnarayapuram Taluk, Karur District, Tamil Nadu State has been prepared for

**Tvl. Navamani Mines Private Limited,**

Thiru.P.Mani, Managing Director,

No.5/898, Alagu Nagar,

Trichy Road,

Namakkal – 637 001.

Whenever specific permissions / exemptions / relaxations and approvals are required, the Applicant will approach the concerned authorities of the District Collectorate, Karur, Tamil Nadu for such permissions/ exemptions / relaxations and approvals.

It is also certified that information furnished in the above Mining plan are true and correct to the best of my knowledge.

Signature of the Qualified Person

  
Dr.P.Thangaraju, M.Sc., Ph.D.,

Place: Salem

Date: 22.06.2019





**Dr.P.Thangaraju, M.Sc., Ph.D.,**

Regd.off. No. 17,

Advaita Ashram Road,

Alagapuram, Salem – 636 004.

Cell: 94433 56539.

**CERTIFICATE FROM THE QUALIFIED PERSON**

Certified that the Provisions of Mines Act, Rules and Regulations and Orders made there under have been observed in the preparation of Mining Plan for Rough stone and Gravel Quarry lease applied area in S.F.No's.15/1 & 15/2 over an extent of 2.80.5ha in Sivayam (North) Village, Krishnarayapuram Taluk, Karur District, Tamil Nadu State has been prepared for

**Tvl. Navamani Mines Private Limited,**

Thiru.P.Mani, Managing Director,

No.5/898, Alagu Nagar,

Trichy Road,

Namakkal – 637 001.

Whenever specific permissions/ exemptions/ relaxations and approvals are required, the Applicant will approach the concerned authorities of Director General of Mines Safety (DGMS), No. 5, IInd Street, Block – AA, Anna Nagar, Chennai-40, Tamil Nadu for such permissions/exemptions/relaxations and approvals.

It is also certified that information furnished in the mining plan are true and correct to the best of my knowledge.

Signature of the Qualified Person

  
Dr.P.Thangaraju, M.Sc., Ph.D.,

Place: Salem

Date: 22.06.2019





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P. M. [Signature]

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7.	PROGRESSIVE QUARRY CLOSURE PLAN & SECTIONS	IV
8.	CONCEPTUAL [unclear] SECTIONS	V

P. [unclear]

**MINING PLAN FOR SIVAYAM (NORTH) ROUGH STONE AND GRAVEL  
QUARRY OVER AN EXTENT OF 2.80.5ha IN SIVAYAM (NORTH) VILLAGE,  
KRISHNARAYAPURAM TALUK, KARUR DISTRICT, TAMIL NADU**

(PREPARED UNDER RULES 41 & 42 AMENDED UNDER TAMIL NADU MINOR MINERAL CONCESSION  
RULES, 1959)

**1.0 INTRODUCTION AND EXECUTIVE SUMMARY**

The Mining Plan and Environment Management Plan is prepared for Tvl. Navamani Mines Private Limited, Thiru.P.Mani, Managing Director, No.5/898, Alagu Nagar, Trichy Road, Namakkal – 637 001, Tamil Nadu State.

The applicant applied to quarry Rough stone and Gravel quarry in the S.F.No's.15/1 & 15/2 over an extent of 2.80.5ha in Sivayam (North) Village, Krishnarayapuram Taluk, Karur District, as per the Rules 19 (1), 20 & 22 of Tamil Nadu Minor Mineral Concession Rules, 1959.

The application was processed by the District Collector, Karur and passed a letter vide **Rc.No.256/Mines/2019, Dated: 19.06.2019** to submit Mining Plan for the approval in Department of Geology and Mining, Karur, Environment Clearance from the Appropriate Authorities, Tamil Nadu.

In order to ensure compliance of the order of the Honourable Supreme Court Dated: 27.02.2012 in I.A.No.12-13 of 2011 in Special Leave Petition SLP (C) No 19628-19629 of 2009, it has been now decided that all mining projects of minor minerals including their renewal irrespective of sizes of the lease would hence forth require prior Environment clearance mining project within the lease applied area up to less than 100ha including projects or minor mineral with lease applied area less than 5ha would be treated as category B as defined in the EIA notification 2006 and will be considered by the state notified by MoEF as prescribed procedure prescribed under EIA notification 2006.

In the above circumstances the applicant through his consultant is hereby preparing the mining plan for approval and subsequent submission of Form-I, Form-IM and Pre-feasibility report to obtain Environment clearance from the Appropriate Authorities, Tamil Nadu, Rough stone & Gravel quarry. This mining plan is prepared by considering the Rules 41 & 42 as Amended in Tamil Nadu Minor Mineral Concession Rules, 1959 and as per the EIA Notification 2006 and it are subsequent Amended and judgments up till 24.01.2019.

This Mining Plan is approved as  
to the conditions/stipulations  
indicated in the Mining Plan as  
Letter No: 256/Mines/2019  
Dated: 24.6.2019

P. Mani

**Short Notes of Mining plan:**

- a. Village Panchayat - Sivayam (North)
- b. Panchayat Union - Krishnarayapuram
- c. The Geological Resources are **9,80,455m<sup>3</sup>** of Rough stone and **84,039m<sup>3</sup>** of Gravel formation in the entire area.
- d. The Total Mineable Reserves are **3,95,935m<sup>3</sup>** of Rough stone and **49,332m<sup>3</sup>** of Gravel formation in the entire area.
- e. The proposed quantity of reserves/ (level of production) to be mined are **3,95,935m<sup>3</sup>** of Rough stone and **49,332m<sup>3</sup>** of Gravel formation for five years in the entire area.
- f. Total extent of the lease applied area = 2.80.5ha.
- g. Topography of the area = The area exhibits plain terrain
- h. Existing Pit = 3m Gravel
- i. Proposed Depth of mining = upto 38m [3m Gravel + 35m Roughstone]
- j. This Mining Plan period = Five years
- k. It is a fresh application. The lease area has been quarried in earlier.
- l. Method of mining / level of mechanization.  
Opencast mechanized method, the quarry operation involves shallow jack hammer drilling, slurry blasting.
- m. Type of machineries proposed in the quarrying operation.  
Excavators attached with rock breaker (Rental Basis).  
Jackhammer, Compressor (Diesel drive) (4 jack hammer capacity).
- n. No trees will be uprooted due to this quarrying operation.
- o. The existing road from the main road to quarry is in good condition and the same will be maintained and utilized for Transportation of Rough stone & Gravel.
- p. There is No Export of this Rough stone & Gravel.
- q. Topo sketch covering 10Km and 1Km radius around the proposed area with markings of habitations, water bodies including streams, rivers, roads, major structure like bridges, wells, archeological importance, places of worships is marked and enclosed as Plate Nos. IA and IB.
- r. The lease applied area is about 2.80.5ha bounded by nine corners; the corners are designated as 1-9 Clock wise from the Southwestern corner the Co – ordinates for the all the corners are clearly marked in the Quarry Lease and Surface Plan enclosed as (Plate No-II).

P. N. [Signature]



## Mining Plan

Sivayam (North) Rough Stone and Gravel Quarry

- s. The plans of proposed quarrying area showing the dimensions of the pit, their proposed depths and maximum area of proposed quarrying are enclosed as Plate Nos. III & IV.
- t. General conditions will not be applicable for the proposed area. The area applied for lease is 10Km away from the,
- Interstate Boundary.*
  - Protected area under wild life protection ACT, 1972,*
  - Critically polluted areas as identified by CPCB,*
  - Notified Eco sensitive areas.*
- u. There are no wastages anticipated during this quarry operation, hence waste dump is not proposed in the lease applied area.
- v. Around 36 employees are deploying in the quarrying operation.
- w. Total Cost of the project is about **Rs.70,87,505/-**

P. M. S.



Mining Plan

Sivayam (North) Rough Stone and Gravel Quarry

**2.0 GENERAL INFORMATION****2.1 a) Name of the Applicant :** Tvl. Navamani Mines Private Limited,**b) Address of the Applicant (With Phone No and Aadhaar No)**

Address : Tvl. Navamani Mines Private Limited,  
Thiru.P.Mani, Managing Director,  
No.5/898, Alagu Nagar,  
Trichy Road, Namakkal.

Pin Code : 637 001

Mobile No : 94433 44331

Aadhaar No : 8197 3123 2948

Email ID : navamanimines@gmail.com

**c) Status of the Applicant (Individual / Company / Firm):**

The applicant is a Private Limited Company. Thiru.P.Mani is a Managing Director & Authorised Signatory of the company. Refer the Authorized Signatory copy as Annexure No. VIII.

**2.2 a) Mineral which the Applicant intends to mine:**

The Applicant intends to quarry Rough stone and Gravel only.

**b) Precise area communication letter details received from the Competent Authority of the Government:**

The precise area communication letter was received from the District Collector, Karur vide Rc.No.256/Mines/2019, Dated: 19.06.2019 to obtain mining plan and obtain Environment Clearance from the Appropriate Authorities, Tamil Nadu.

**c) Period of permission / lease to be granted:**

The applicant applied permission to quarry Rough Stone and Gravel for the period of five years/ The District Collector considered for the Grant of quarry lease for the period of five years.

**d) Name and address of the Qualified Person preparing the Mining Plan:**

Name : **Dr. P.Thangaraju, M.Sc., Ph.D.,**  
Qualified Person

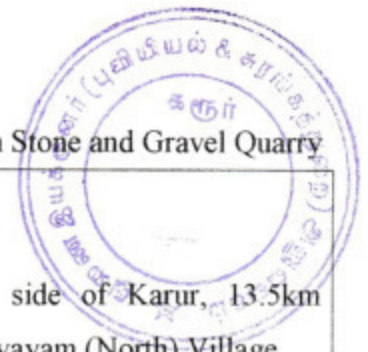
Address : Regd.off.No.17, Advaita Ashram Road,  
Alagapuram, Salem - 636 004.

Tele Fax : 0427- 2431989 (Office)

Mobile : 94422 78601 &amp; 94433 56539

Email : infogeoexploration@gmail.com

P. Mani



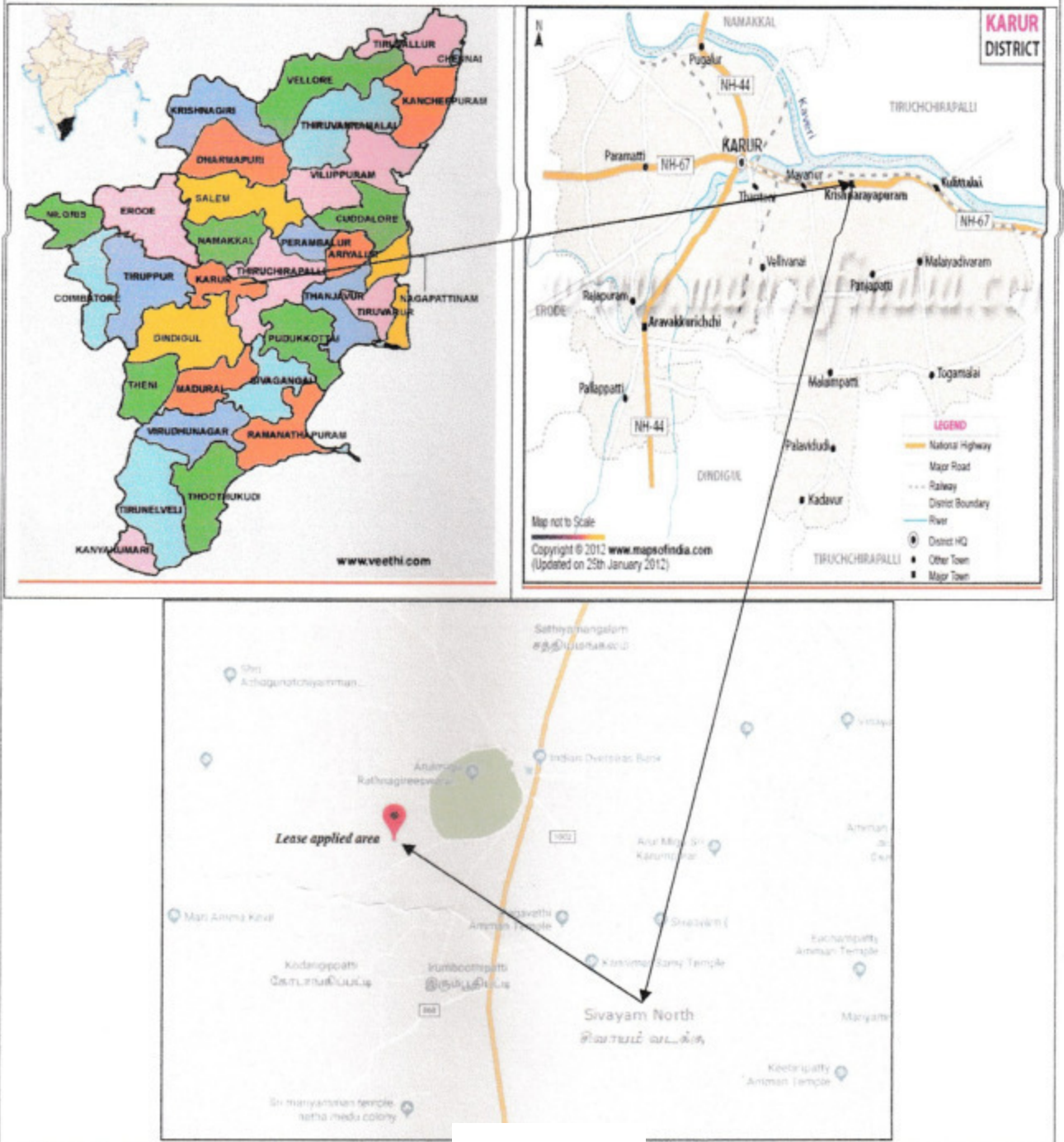
### 3.0 LOCATION

#### a) Details of the area with location map:

The lease applied area is located about 33.5km Southeastern side of Karur, 13.5km Southeastern side of Krishnarayapuram and 3.5km Northwestern side of Sivayam (North) Village.



#### Location Map of the Lease Applied Area



P. [Signature]

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TABLE-1

District	Taluk	Village	S.F. No's.	Lease Applied Area in ha.
Karur	Krishnarayapuram	Sivayam (North)	15/1	1.83.5
			15/2	0.97.0
<b>Total Extent</b>				<b>2.80.5ha</b>

**b) Classification of the area (Ryotwari/ Poramboke / others):**

It is a Patta land (Barren land) which is not fit for vegetation/ Cultivation.

**c) Ownership / Occupancy of the applied area (surface right):**

It is a Patta land. Registered in the name of the applicant (Tvl. Navamani Mines Private Limited), vide Patta No.3701. Refer the Patta copy as Annexure No. IV.

**d) Toposheet No. with latitude and longitude:**

The lease applied area falls in the Toposheet No: 58 - J/05 Latitude between: 10°52'19.57"N to 10°52'25.68"N and Longitude between: 78°22'26.70"E to 78°22'34.23"E on WGS datum-1984. Please refer the Plate Nos. I to II.

**e) Existence of public road / Railway line, if any nearby and approximate distance:**

The approach metal road is situated on the Southeastern side of the applied area which connects the village road at a distance 120m.

Multiple road access is available from the quarry to state highways and National Highway, no villages are enrooted hence the traffic density is not much more due to the transportation of Rough stone.

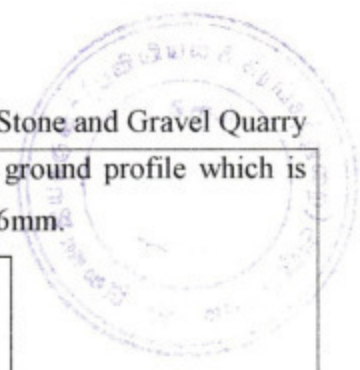
The road from the quarry is already in existence, the same road will be maintained and utilized for haulage, besides trees will be planted on the either side of the road to prevent dust and noise propagation to the nearby areas.

The Nearest Railway line is Karur – Trichy which is about 8.5km on the Northeastern side of the area.

**PART – A****4.0 GEOLOGY AND MINERAL RESERVES****4.1 Brief description of the Topography and general Geology of the area (with plans):**

The lease applied area is exhibits plain terrain. The area has gentle sloping towards Southwestern side. The altitude of the area is 124m (max) above Mean sea level. The area is covered by the Gravel which is about 3m thickness. Massive Charnockite is found after 3m (Gravel) which is clearly inferred from the existing quarry pits.

P. N. [Signature]



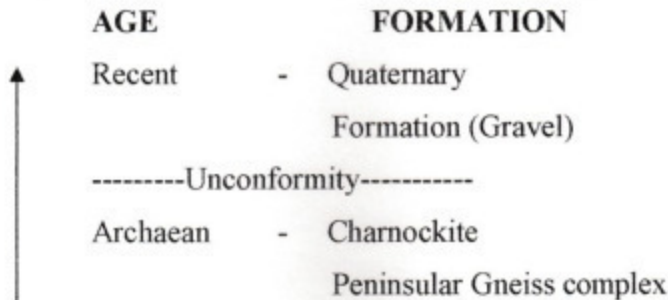
The Water level in the surrounding area is 50-45m below general ground profile which is observed from the nearby bore wells. Average annual rainfall is about 654.76mm.



**Topographical View of lease applied area**

Peninsular gneiss forms the oldest rock formations, in which the massive formation of Charnockite lies over with rich accumulation of recent quaternary formation. On regional scale the Charnockite body N80°W – S80°E with Vertical dip.

The general geological sequences of the rocks in this area are given below:



**4.2 Details of exploration already carried out if any:**

State Geology and Mining Dept, Govt. of Tamil Nadu, has carried out the Regional prospecting and exploration in these areas during 1992 to 1993.

Geological Survey of India has carried out detailed mapping in Karur District. Besides, the Qualified Person and his team members made a detailed geological of the proposal area. The Rough stone formation is clearly inferred from the existing quarry pits.

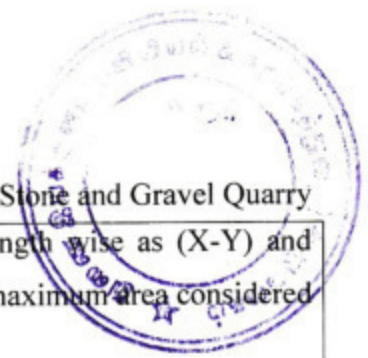
**4.3 Estimation of Reserves:**

**a) Geological reserves with geological sections on a scale of 1:1000 / 1:2000**

As far as Rough stone (Charnockite) is concerned, the only practical method is the systematic geological mapping and delineation of Rough stone within the field and careful evaluation of body luster, physical properties, engineering pro... aspects etc.,

*P. [Signature]*

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Totally three sections have been drawn, one section is drawn Length wise as (X-Y) and another two sections are drawn Width wise as (A-B) & (C-D) to cover the maximum area considered for lease.

The Topographical, Geological plan and sections demarcated the commercial marketable Rough stone (Charnockite) deposit has been prepared in 1:1000 and vertical as 1:1000 scale (please refer the Geological plan and sections Plate No- III). As the sale of Rough stone are in terms of cubic metres (Volume) only and not in terms of tonnage.

**Geological Resources (Plate No. III):**

The Geological Resources of Rough Stone and Gravel are calculated up to a maximum depth of 38m [3m Gravel + 35m Roughstone].

**TABLE-2**

<b>GEOLOGICAL RESOURCES</b>						
<b>Section</b>	<b>Bench</b>	<b>Length in (m)</b>	<b>Width in (m)</b>	<b>Depth in (m)</b>	<b>Geological Resources in Rough stone (m<sup>3</sup>)</b>	<b>Gravel Formation (m<sup>3</sup>)</b>
XY-AB	I	29	144	3	-	12528
	II	29	144	5	20880	-
	III	29	144	5	20880	-
	IV	29	144	5	20880	-
	V	29	144	5	20880	-
	VI	29	144	5	20880	-
	VII	29	144	5	20880	-
	VIII	29	144	5	20880	-
	<b>Total</b>					<b>146160</b>
XY-CD	I	197	121	3	-	71511
	II	197	121	5	119185	-
	III	197	121	5	119185	-
	IV	197	121	5	119185	-
	V	197	121	5	119185	-
	VI	197	121	5	119185	-
	VII	197	121	5	119185	-
	VIII	197	121	5	119185	-
	<b>Total</b>					<b>834295</b>
<b>Grand Total</b>					<b>980455</b>	<b>84039</b>

Total Geological Resources of Rough Stone : **9,80,455m<sup>3</sup>**  
 Total Geological Resources of Gravel Formation : **84,039m<sup>3</sup>**

*P. [Signature]*

**Existing Pit Dimension:**

The lease applied area has been quarried in earlier the existing pit dimensions are follows:

TABLE-3

Pit	Length in m (max)	Width in m (max)	Depth in m (max)
I	25	15	3m Gravel
II	37	18	3m Gravel

**Available Mineable Reserves:**

The available mineable reserves are calculated after leaving 7.5m safety distance from the Patta Land and Bench loss.

TABLE-4

MINEABLE RESERVES						
Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Mineable Reserves in Rough stone (m <sup>3</sup> )	Gravel Formation (m <sup>3</sup> )
XY-AB	I	20	105	3	-	6300
	II	15	117	5	8775	-
	III	10	106	5	5300	-
	IV	5	96	5	2400	-
	<b>Total</b>				<b>16475</b>	<b>6300</b>
XY-CD	I	163	88	3	-	43032
	II	184	94	5	86480	-
	III	179	84	5	75180	-
	IV	174	74	5	64380	-
	V	169	64	5	54080	-
	VI	159	54	5	42930	-
	VII	149	44	5	32780	-
	VIII	139	34	5	23630	-
<b>Total</b>				<b>379460</b>	<b>43032</b>	
<b>Grand Total</b>					<b>395935</b>	<b>49332</b>

The mineable reserves have been computed as **3,95,935m<sup>3</sup>** of Rough stone and **49,332m<sup>3</sup>** of Gravel Formation at the rate of 100% recovery upto a maximum depth of 38m [3m Gravel + 35m Roughstone] for a period of five years.

P. N. [Signature]

**5.0 MINING****5.1 Method of mining (opencast / underground):**

Open cast Mechanized Mining is being carried out with 5.0 meter vertical bench with a bench width is not less than the bench height.

However, as far as the quarrying of Rough stone is concerned, observance of the provisions of Regulation 106 (2) (b) as above is seldom possible due to various inherent petro genetic factors coupled with mining difficulties. Hence it is proposed to obtain relaxation to the provisions of the above regulation from the Director of Mines Safety for which necessary provision is available with the Regulation 106 (2) (b) of MMR-1961, under Mine Act - 1952.

**5.2 Mode of working (mechanized, semi mechanized, manual):**

The Rough Stone is proposed to quarry at 5m bench height & width with conventional Opencast Mechanized Method.

The quarry operation involves shallow jack hammer drilling, slurry explosives in blasting, excavation, Loading and transportation of Rough stone to the needy crusher.

The production of Rough stone in this quarry involves the following method which is typical for Rough Stone quarrying in contrast to other major mineral mining.

Splitting of rock mass of considerable volume from the parent rock mass by jackhammer drilling and slurry explosives blasting, hydraulic excavators are used for loading the Rough Stone from pithead to the needy crushers.

Occasionally hydraulic excavators are attached with rock breakers for fragmentation to avoid secondary blasting. The primary boulders thus splitted are removed from the pits by excavators and further made to smaller sizes by rock breakers attached in excavators. It is a conventional opencast mechanized method of mining.

**5.3 Proposed Bench Height and Width:**

The bench height is proposed 5.0 meter vertical bench the width of the bench is not less than the Height.

**5.4 Indicate the overburden / mineral production expected pit wise as detailed below (composite plan and section showing pit layout, dumps, disposal of waste if any etc.):**

The overburden in the form of Gravel formation, the Gravel will be directly loaded into tippers for the filling and levelling of low lying areas, this will be done only after obtaining permission and paying necessary seigniorage fees to the Government. The excavated rough stone will be directly loaded into tippers to the needy customers. The Composite plan, Development plan and section indicating the Pit lay out, Green belt development are shown in Plate Nos-III & IV.

P. [Signature]

## Year wise development and Production

TABLE-5

YEARWISE PRODUCTION DETAILS							
Year	Section	Bench	Length in (m)	Width in (m)	Depth in (m)	Recoverable Reserves in Rough stone (m <sup>3</sup> )	Gravel Formation (m <sup>3</sup> )
I Year		I	57	88	3	-	15048
		II	73	94	5	34310	-
		III	63	84	5	26460	-
		IV	53	74	5	19610	-
		<b>Total</b>					<b>80380</b>
II Year	XY-CD	I	63	88	3	-	16632
		II	63	94	5	29610	-
		III	63	84	5	26460	-
		IV	63	74	5	23310	-
		<b>Total</b>					<b>79380</b>
III Year		I	43	88	3	-	11352
		II	48	94	5	22560	-
		III	53	84	5	22260	-
		IV	58	74	5	21460	-
	XY-AB	I	20	105	3	-	6300
		II	15	117	5	8775	-
		III	10	106	5	5300	-
		IV	5	96	5	2400	-
		<b>Total</b>					<b>82755</b>
IV Year		V	169	64	5	54080	-
		VI	95	54	5	25650	-
		<b>Total</b>					<b>79730</b>
V Year	XY-CD	VI	64	54	5	17280	-
		VII	149	44	5	32780	-
		VIII	139	34	5	23630	-
		<b>Total</b>					<b>73690</b>
<b>Grand Total</b>						<b>395935</b>	<b>49332</b>

The Recoverable reserves have been computed as 3,95,935m<sup>3</sup> of Rough stone and 49,332m<sup>3</sup> of Gravel formation for five years at the rate of 100% recovery upto depth of 38m [3m Gravel + 35m Roughstone] for a mining period of Five years.

The applicant ensures the total quantity proposed in the benches will not exceed during the quarrying operation. Besides the rough stone locked up in benches will be exploited after obtaining necessary permission from the office of **Director General of Mine Safety, Chennai** region by submitting relevant documents, appropriate safety plans and its Mitigation measures.

P. [Signature]

## Mining Plan

Sivayam (North) Rough Stone and Gravel Quarry

One lorry load	=	6m <sup>3</sup> (approx)
Total No of Working days	=	260 Days per year
Total quantity to be removed in this five years plan period	=	3,95,935m <sup>3</sup>
Hence total Lorry loads per day	=	3,95,935m <sup>3</sup> /6m <sup>3</sup>
	=	65989 Lorry loads
	=	65989/5 years
	=	13198/260
	=	<b>50-51</b> Lorry loads per day

Working hours = 9.00 am to 6.00 pm (with 1-2 pm lunch break)

**5.5 Machineries to be used:****a) For Mining:**

The following machineries are utilized on rental basis for the development and production work at this quarry.

TABLE-6

**I. DRILLING MACHINE**

S.No.	Type	Nos	Dia Hole mm	Size Capacity	Motive power
1	Jack hammer	10	30-35	1.2m to 2.0m	Compressed air
2	Compressor	2	-	400 psi	Diesel Drive

**II. EXCAVATION & LOADING EQUIPMENT:**

S.No.	Type	Nos	Capacity	Motive Power
1	Excavator with Bucket and Rock Breaker	2	300	Diesel Drive

**III. HAULAGE WITHIN THE MINE & TRANSPORT EQUIPMENT:**

S.No.	Type	Nos	Capacity	Motive Power
1	Tippers	5	20 tonnes	Diesel Drive

**5.6 Disposal of Overburden/Waste:**

The overburden in the form of Gravel formation, the Gravel will be directly loaded into tippers for the filling and levelling of low lying areas. There is no disposal of Gravel. The excavated rough stone will be directly loaded into tippers to the needy customers.

P.M.

**5.7 Brief note on conceptual mining plan for the entire lease period base on the geological, mining and Environment considerations:**

Conceptual mining plan is prepared with an object of long term systematic development of benches, layouts, selection of permanent structures, depth of quarrying and ultimate pit dimensions, selection of sites for construction of infrastructure, etc.,

The ultimate pit size is designed based on certain practical parameters such as economical depth of mining, safety zones, permissible area, etc.,

As the applicant has applied quarry lease for Five years, the ultimate pit limit (dimension) at the end of this mining plan period is given below.

**TABLE-7**

Length (Max) (m)	Width (Max) (m)	Depth (Max) (m)
208	103	38m [3m Gravel + 35m Roughstone]

Greenbelt has proposed on the 7.5m safety barrier and Panchayat roads by planting Neem/ Casuarina trees of native species. All the base line information studies like Air quality monitoring, Noise and vibration monitoring, Water analysis studies will be carried out every year as per the MoEF&CC Norms. Please refer Plate Nos. III, IV & V. It is propose to engage any local institution to monitor the EIA and EMP during the course of quarrying operation after the grant of quarry lease.

**6.0 BLASTING**

**6.1 Blasting pattern:**

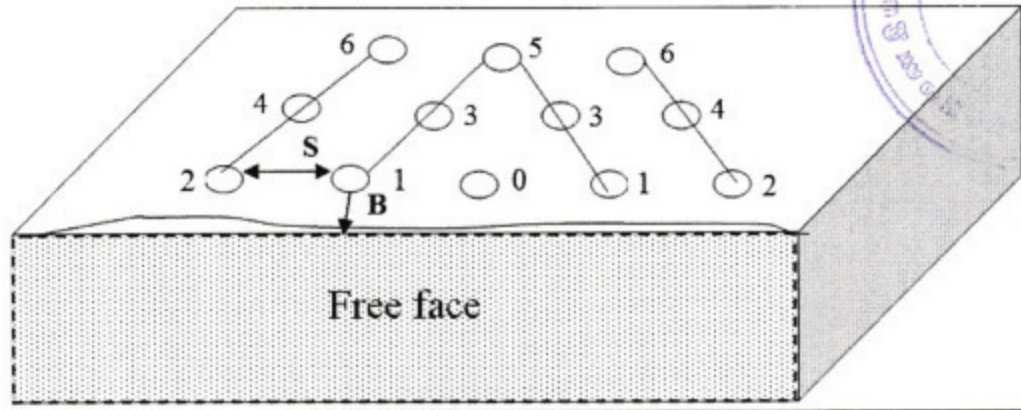
The quarrying operation is proposed to carried out by Mechanized Opencast Method in conjunction with conventional method of mining using jack hammer drilling and slurry blasting for shattering effect and loosen the Rough stone.

Drilling and blasting parameters are as follows:

Depth of Each hole	:	1.5m
Diameter of hole	:	30-32mm
Spacing between holes	:	1.2m
Burden for hole	:	1.0m
Pattern of hole	:	Zigzag – Multi-rows
Inclination of holes	:	80° from horizontal
Use of delay detonators	:	25millisecond relays
Detonating fuse	:	“Detonating” Cord

P. M. [Signature]

**BLASTING PATTERN DRAWING**



**Staggered "V" Pattern of Blasting Design**

Spacing	=	1.2m
Burden	=	1.0m
Depth of the hole	=	1.5m
No of holes proposed per day	=	264 Holes

**6.2 Type of explosives to be used:**

Small Dia. 25mm Slurry explosives are proposed to be used for shattering and heaving effect for removal and winning of Rough stone. No deep hole drilling or primary blasting is proposed.

**6.3 Measures proposed to minimize ground vibration due to blasting:**

The quarry is situated more than 300m from the nearby villages, Controlled blasting measures is being adopt for minimizing ground vibration and fly rock.

Shallow depths jackhammer drilling & blasting is proposed to be carried out with minimum use of explosive mainly to give hearing effect in rough stone for easy excavation and to control fly rock.

**Delay detonators:**

Delay blasting (millisecond delays) permits to divide the shot in to smaller charges, which are detonated in a predetermined millisecond sequence at specific time intervals.

The major advantages of delay blasting are:

- Reduction of ground vibration.
- Reduction in air blast.
- Reduction in over break.
- Improved fragmentation.
- Better control of fly-rock.

*P. [Signature]*

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**Blasting program for the production per day:**

No of Holes	= 264 Holes
Yield	= 792 Tons
Powder factor	= 6 Tons/Kg of explosives
Total explosive required	= 132 Kg-Slurry explosives
Charge/ hole	= 0.5 Kg
Blasting at day time only	= 5-6p.m (whenever required)

**6.4 Storage and safety measures to be taken while blasting:**

The applicant will engage authorized explosive agency to carry out the small amount of blasting and it will be supervised by competent and statutory foreman/Permit Mines Manager. The explosives agencies should have the valid Blaster certificate. He will blast holes in the quarry site. After the completion of Blasting the explosives Agencies will take it out back the remaining quantity of Explosives. The magazine is available at the quarry site to temporarily store the explosives.

**7.0 MINE DRAINAGE****7.1 Depth of water table (based on nearby wells and water bodies):**

The water table in the area is 50m in summer season and 45m in Rainy season which is observed from the nearby wells and the data obtained from existing private boreholes. The lease area is fully covered by Massive Charnockite formation. Hence the Ground Water problem will not arise. If water seepage may occur due to the fracture, the same will be used for Greenbelt.

TABLE-8

Type	Distance & Direction	Location
Bore Well	590m Western side	10°52'25.82"N 78°22'07.62"E

**7.2 Arrangements and places where the mine water is finally proposed to be discharged:**

Quarry operations are confined well above the water table during the entire lease period. If water is encountered at due to rain water and seepage, the same will be pumped out by 5HP water pumps to the Greenbelt development areas. Besides, the water will also be used for dust suppression on haul roads during Haulage of machineries.

P. N. [Signature]

**8.0 OTHER PERMANENT STRUCTURES (also shown in the map)****8.1 Habitations/ Villages natham:**

There is no approved habitation/village located within 300m radius of the lease applied area.

**8.2 Power Lines (HT/LT):**

There is no EB (LT/HT) line or Housing area situated within 50m radius of the area.

**8.3 Water bodies (river, ponds, lake, odai, canal, etc.):**

There are no water bodies within 300m radius of the lease applied area.

**8.4 Archaeological / historical monuments:**

There is no Archaeological / historical monuments within 300m radius from the lease applied area.

**8.5 Road (NH, SH others):**

The Nearest National Highway (NH-67) Coimbatore – Trichy is situated about 9km on the Northeastern side of the lease applied area.

The State Highway (SH-71) Musiri - Pudukkottai is situated about 1km on the Southeastern side of the lease applied area.

**8.6 Places of worships:**

There is no place of worships within the radius of 300m from the lease applied area.

**8.7 Reserved forest / forest / social forest / wild life sanctuary etc.,:**

There is no reserved forest / forest / social forest / wild life sanctuary etc., within radius of 300m of the lease applied area.

P. N. [Signature]



Mining Plan

Sivayam (North) Rough Stone and Gravel Quarry

## SALIENT FEATURES

S. No.	Salient Features Present around site	Prescribed safety distance	Actual Distance from the site															
1.	Railways, Highways, Reservoirs or Canal	50m	Railway line – 8.5km (Karur - Trichy) Northeastern side of the lease applied area. National Highway (NH-67) Coimbatore – Trichy 9km on the Northeastern side of the lease applied area. River – Cauvery River is passing about 9km on the Northern side of the lease applied area. Reservoir – No reservoir within 10km radius. Canal – No Canal within 1km radius.															
2.	Village Road	10m	No Village Road within 10m radius of the lease applied area.															
3.	Habitation / Village	300m	There is no approved habitation within 300m radius from the lease applied area.															
4.	Adjacent Patta Land / Govt. Land	7.5m/10m	<table border="1"> <thead> <tr> <th>Direction</th> <th>Classification</th> <th>Safety Distance</th> </tr> </thead> <tbody> <tr> <td>North</td> <td>Patta land</td> <td>7.5m</td> </tr> <tr> <td>East</td> <td>Patta land</td> <td>7.5m</td> </tr> <tr> <td>South</td> <td>Patta land</td> <td>7.5m</td> </tr> <tr> <td>West</td> <td>Patta land</td> <td>7.5m</td> </tr> </tbody> </table> <p>7.5m safety distance has been maintained from the Patta land (Refer Plate No. II).</p>	Direction	Classification	Safety Distance	North	Patta land	7.5m	East	Patta land	7.5m	South	Patta land	7.5m	West	Patta land	7.5m
Direction	Classification	Safety Distance																
North	Patta land	7.5m																
East	Patta land	7.5m																
South	Patta land	7.5m																
West	Patta land	7.5m																
5.	Housing area, EB line (HT & LT Line)	50m	There is no EB (LT/HT) line or Housing area located within 50m radius of the area.															
6.	Boundaries of the permitted area	7.5m/10m	The boundaries of the permitted areas is as follows: North – S.F.Nos.8, 7 & 16 East – S.F.Nos.16 & 17 South – S.F.Nos.15/3B2, 15/3B1 & 15/3A West – S.F.Nos.13 & 14 7.5m safety distance has been maintained from the Patta land.															
7.	Reserve forest	50m	There is no reserved forest within the radius of 50m.															
8.	Protected area / ECO sensitive area/Wild Life Sanctuary	10Km	There is no ECO sensitive Zone/ Wild Life Sanctuary/ Critically Polluted Area/ HACA/ CRZ located within 10km radius of the area.															

P. N. [Signature]

**9.0 EMPLOYMENT POTENTIAL & WELFARE MEASURES****9.1 Employment potential (skilled, semi skilled, un skilled):**

The following manpower's are proposed in the mining plan to carry out the day-to-day quarrying activities, the same employment is maintaining aimed at the proposed production target and also to comply with the statutory provisions of the Metalliferous mines regulations, 1961.

**a. Mine official & Competent Persons**

Mine Foreman : 1

Blaster/mate : 1

**b. Machinery Operators**

Jack hammer operator : 20

Excavator Operator & Driver : 7

**c. Ordinary Employee**

Helper : 3

Cleaner : 3

Watchman : 1

**Total : 36**

The above manpower is adequate to meet out the production schedule and the machinery strength envisaged in the mining plan and to comply with the statutory provisions of the Mines Safety Regulations. It is been ensured that the labour will not be employed less than 18 years, **No child labour** will engaged or entertained for any kind of quarrying operations. All the labours engaged for quarrying operations will be insured during the quarry lease period.

**9.2 Welfare Measures:****a. Drinking Water:**

Packaged drinking water is available from the nearby approved water vendors in Iyermai which is about 1km from the Northeastern side of the lease applied area.

**b. Sanitary Facilities:**

Hygienic modern Sanitary Facilities will be constructed with in the safety area as semi permanent structure and it will be maintained periodically.

**c. First aid facility:**

First aid kits are kept in Mines office room, in case of such eventuality is the victim will be given first aid immediately at the site by the competent and statutory foreman/permit manager/mate will be in charge of first aid and injured person will be taken to the hospital. Hospital is available in Kulithalai located at a distance of 8.5km on the Northeast side by the applicant's vehicle.

P. M. [Signature]

**d. Labour Health:**

Periodically medical check-up related to occupational health safety will be conducted to all the workers in applicant own cost.

**e. Precautionary safety measures to the labourers:**

- Helmets,
- Mine Goggles,
- Ear plugs,
- Ear muffs,
- Dust mask,
- Reflector jackets,
- Safety Shoes

All personal protective device as per the specification approved by Director of Mines Safety. Periodically medical check-up will be conducted for all workers for any mine health related problems. Proper training and vocational education will be given by qualified and experienced safety officer to all the employees about the safety and systematic Rough stone quarrying operations. The drillers and workers will be sent for vocational training periodically, to carry out the quarrying operations scientifically and to safe guard the men and machinery and to create awareness about conventional opencast quarrying operations.

P. N. [Signature]

**PART - B****10.0 ENVIRONMENT MANAGEMENT PLAN****10.1 Existing Land use pattern:**

The quarry lease applied area is exhibits plain terrain. The area is a dry barren land devoid of Agriculture and Habitations. The land is not used for any specific vegetation.

**LAND USE TABLE-9**

Description	Present area in (ha)	Area at the end of this quarrying period (ha)
Area Under Quarrying	0.10.0	2.25.3
Infrastructure	Nil	0.01.0
Roads	Nil	0.02.0
Green Belt	Nil	0.28.6
Unutilized Area	2.70.5	0.23.6
<b>Grand Total</b>	<b>2.80.5</b>	<b>2.80.5</b>

**10.2 Water Regime:**

It is a simple opencast quarry operation. The quality of water will not be affected due to this quarrying operation. However, mitigation measures will be carried out like Garland drains constructed on all sides of quarry pit to avoid rain water entering into the pit.

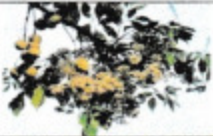




The waste water discharged to water bodies will be met the standard prescribed under the Environment (Protection) Act – 1986 by The Ministry of Environment, Forest and Climatic change.

P. M. [Signature]


## 10.3 Flora and Fauna:

TABLE-10



## List of Flora

S.No	Name of the plant (Scientific)	Family Name	Common Name	Habit	Picture
1.	Meliadubiav	Meliaceae	MalaiVembu	Tree	
2.	Calophyllum	Clusiaceae	Punnai	Tree	
3.	Albiziaodoratissima (L.F) Benth	Fabaceae	Silavagai	Tree	
4.	Cocus nucifera	Arecaceae	Coconut, Thennai	Tree	
5.	GyrocarpusjacquiniGaertn	Hernandiaceae	Tanakkam	Tree	



## AMPHIBIANS

S.No.	Scientific Name	Common Name	Picture
1.	Bufo melanostictus	Common Indian Toad	

## REPTILES

2.	Calotes versicolor	Common Garden lizard	
3.	Hemidactylus flaviviridis	House gecko	

## BIRDS

4.	Bubulcus ibis	Cattle egret	
5.	Acridotheres tristis	Common myna	

P.M.

**10.4 Climatic Conditions:**

The area receives rainfall of about 654.76mm per annum and the rainy season is mainly from Oct - Dec. The summer is hot with maximum temperature of 42°C and winter encounters a minimum temperature of 23°C.

**10.5 Human settlement:**

There are few villages located in this area within 5km radius; the approximate distance and population are given below.

TABLE-11

S. No	Name of the Village	Approximate distance & Direction from lease applied area	Approximate population
1.	Iyermalai	1km – Northeast	2250
2.	Sivayam North	3.5km – Southeast	7370
3.	Kuzanthaipatti	1km – Southwest	1360

Basic human welfare Amenities such as Health Centre, Schools, Communication Facilities, and Commercial Centres etc., are available at Kulithalai located at a distance of 8.5km on the Northeastern side of the area.

**10.6 Plan for air, dust suppression:**

The air quality will be affected by the Suspended Particulate Matter (SPM) generated by the slurry blasting, jack hammer drilling, Loading and unloading during the Rough stone quarry operation.

The following Mitigations measures will be carried out:

- Mist Water spraying will be carried out by means of water sprinklers to suppress the dust emission in the Haul roads.
- Vegetations will be formed on the non quarrying area.
- Avoiding spillages during the transportation.

Air quality will be monitored periodically as per Norms and Mitigative measures carried out to prevent dust and Air propagation in to air. The estimated budget for dust suppression would be around Rs.52,000/year.

P. [Signature]

**10.7 Plan for Noise level control:**

The noise level increased due to the Excavation, Drilling, Blasting and Transportation.

**Engineering Noise control:**

Noise will be created due to the usage of Machineries and Vehicles. The Noise will be controlled in the following manner.

- Selection of new low – noise equipments for the Rough stone quarry operation.
- Modifications of older equipments.
- Implementation of effective preventive maintenance which reduces noise more than 50%.
- Developing Green belts which act as Acoustic barrier, pollution absorbent and noise controller.
- The drivers will be strictly instructed to move the vehicle during the transportation not exceed 40km per hour.
- Sentries with flags & whistle will posted in village road junction and populated area to control and regulate traffic.

Shallow holes of 32mm diameter and maximum depth of 1.5m will be drilled and conventional low power explosives such as Slurry Explosives, ordinary safety fuse will be used for rough stone. Hence, ground vibration and noise pollution i.e., minimal and restricted within the quarry working area.

Noise level monitoring and other Mitigation measures will be carried out to reduce Noise and Vibration. The estimated budget for Noise level monitoring would be around **Rs.2,000/Year**.

**10.8 Environment impact assessment statement describing impact of mining on the next five years:**

In the mining plan proposed for a production of Rough stone does not involve deep hole drilling and blasting. Such limited mining activity is not likely to cause any impact adversely on the environment. As far as pollution of air, water and noise concerned, the Environment impact studies will be conducted as per EIA notification issued by MoEF& CC. It is B2 Category mine. The estimated budget would be around **Rs.3,80,000/-**

**10.9 Proposal for waste management:**

There is no waste anticipated in this Rough stone and Gravel quarrying operation. The entire quarried out materials will be utilized (100%).

**10.10 Proposal for reclamation of land affected during mining activities and at the end of mining (refilling / fencing etc.):**

In the mining plan only to a maximum depth of 38m [3m Gravel + 35m Roughstone] has been envisaged as workable depth for safe & economic mining during entire lease applied area. Hence, after quarry reaches the ultimate pit limit of 38m [3m Gravel + 35m Roughstone] fencing will be constructed around the quarry to prevent inadvertent entry of public and cattle. There is no proposal for backfilling. The barbed wire fencing cost would be around **Rs.2.07.600/-**

P. [Signature]

**10.11 Programme of Greenbelt development (indicate extend, number, name of species to be afforested):**

7.5m safety barrier and Nearest Panchayat Roads has been identified to be utilized for Greenbelt appropriate native species of Neem/ Casuarina trees will be planted in a phased manner as described below.

TABLE-12

Year	No. of trees proposed to be planted	Survival %	Area to be covered sq.m	Name of the species	No. of trees expected to be grown
I	65	80%	572	Neem/ Casuarina	52
II	65	80%	572	Neem/ Casuarina	52
III	65	80%	572	Neem/ Casuarina	52
IV	65	80%	572	Neem/ Casuarina	52
V	65	80%	572	Neem/ Casuarina	52

Nearly 2,860sq.m area is proposed to use under Greenbelt by planting 65 Number of tree sapling every year with an anticipated survival rate of 80% (Please refer Plate No.III). The estimated budget for plantation and maintenance of Green belt development would be around **Rs.1,04,500/-** for the period of five years.

The quarried out benches, Greenbelt Development will be formed in all around the benches of the lease applied area. The cost would be around **Rs.1,40,000/-**.

**10.12 Proposed financial estimate / budget for (EMP) environment management:**

Budget Provision for the entire quarrying period:

TABLE-13

S. No	Monitory and Analysis Description	Rate per location	No. of location	Total Charges/ six months	Total Charges/ year
1	Ambient air quality monitoring	6500	4	26000	52000
2	Noise level monitoring	250	4	1000	2000
3	Ground vibration monitoring	1000	2	2000	4000
4	Water sampling and analysis	9000	1	9000	18000
<b>Total EMP Cost/ year</b>					<b>76,000</b>

The EMP cost would be around **Rs.3,80,000/-** for the period of five years.

P. M. [Signature]

Mining Plan

Sivayam (North) Rough Stone and Gravel Quarry

xi) Greenbelt etc.	Greenbelt program will be carried out in the boundary barriers and Panchayat roads the cost would be around	= Rs.1,04,500/-
	Greenbelt program will be carried out in the quarried out benches	= Rs.1,40,000/-
	<b>Total Project Cost</b>	<b>= Rs.65,68,505/-</b>
<p><b>B. EMP Cost :- (Per year)</b></p> <p>Air Quality monitoring = Rs. 52,000/-</p> <p>Water Quality Sampling = Rs. 18,000/-</p> <p>Noise Monitoring = Rs. 2,000/-</p> <p>Ground vibration test = Rs. 4,000/-</p> <p><b>Total Cost = Rs. 76,000/-</b></p> <p>Total EMP Cost for the five years period is <b>Rs. 3,80,000/-</b></p> <p><b>A+B=</b></p> <p>A. Project cost = Rs.65,68,505/-</p> <p>B. EMP Cost = Rs. 3,80,000/-</p> <p><b>Total Project Cost (A+B) = Rs.69,48,505/-</b></p> <p>The applicant Indents to involve corporate environment responsibilities (CER) activity like providing note books to nearby school, providing drinking water facilities to the nearby villages etc., at 2.0% from the total project cost the cost would be around <b>Rs.1,39,000/-</b></p> <p>Total Project cost = Rs.69,48,505/-</p> <p>CER Cost (2.0%) = Rs. 1,39,000/-</p> <p><b>Total cost = Rs.70,87,505/-</b></p> <p>(The Total cost of the project including EMP Cost is Rupees seventy lakhs eighty seven thousand five hundred and five only).</p>		

P. M. [Signature]

**11.0 PROGRESSIVE QUARRY CLOSURE PLAN****11.1 Introduction:**

The Progressive Quarry Closure Plan for Rough stone and Gravel quarry lease applied area S.F.No's.15/1 & 15/2 over an extent of 2.80.5ha in Sivayam (North) Village, Krishnarayapuram Taluk, Karur District, Tamil Nadu State has been prepared for Tvl. Navamani Mines Private Limited, Thiru.P.Mani, Managing Director, No.5/898, Alagu Nagar, Trichy Road, Namakkal – 637 001, Tamil Nadu State.

**11.2 Present Land use pattern:**LAND USE TABLE-14

Description	Present area in (ha)
Area Under Quarrying	0.10.0
Infrastructure	Nil
Roads	Nil
Green Belt	Nil
Unutilized Area	2.70.5
<b>Grand Total</b>	<b>2.80.5</b>

**11.3 Method of Mining:**

Open cast Mechanized Mining is being carried out with 5.0 meter vertical bench with a bench width is not less than the bench height for Roughstone.

However, as far as the quarrying of Rough stone is concerned, observance of the provisions of Regulation 106 (2) (b) as above is seldom possible due to various inherent petro genetic factors coupled with mining difficulties. Hence it is proposed to obtain relaxation to the provisions of the above regulation from the Director of Mines Safety for which necessary provision is available with the Regulation 106 (2) (b) of MMR-1961, under Mine Act – 1952.

**11.4 Mineral Processing Operations:**

The quarried out Rough stone will be transported by the 20tons capacity Tippers to the needy crushers. Splitting of rock mass of considerable volume from the parent rock mass by jack hammer drilling and slurry blasting, hydraulic excavators are used for loading the Rough Stone from pithead to the needy crushers.

**11.5 Reasons for closure:**

As the mineral is not going to be exhausted during the proposed plan period no immediate closure is planned and sufficient reserves are available to carry on the activities. The reason for closure will be discussed in the ensuing mining plan.

P. Mani

**11.6 Statutory obligations:**

The applicant ensures to comply all the conditions were imposed while granting the precise area communication letter before the execution of lease deed and during the course of quarry operations.

**11.7 Progressive quarry closure plan preparation:**

Name and address of the Qualified Person who prepared the progressive closure plan and name and address of the executing agency who is involved in the Preparation of progressive quarry closure plan.

Name : **Dr.P.Thangaraju, M.Sc., Ph.D.,**  
Qualified Person  
Address : Regd.off.No.17, Advaita Ashram Road,  
Alagapuram, Salem - 636 004.  
Tele Fax : 0427- 2431989 (Office)  
Cell No : 94433 56539, 94422 78601

Applicant will himself implement the closure plan; no outside agency will be involved.

**11.8 Review of Implementation of Mining Plan including Progressive Closure Plan upto the Final Closure Plan:**

Mining Plan and Progressive quarry closure plan are being submitted for the first time. It will be reviewed after five years and review of implementation will be given with next mining plan.

**11.9 Closure Plan:****(i) Mined Out Land:**

At the end of mining plan period, about 2.25.3ha of area will be mined out. Land use at various stages is given in the table below.

LAND USE TABLE-15

Description	Present area in (ha)	Area at the end of this quarrying period (ha)
Area Under Quarrying	0.10.0	2.25.3
Infrastructure	Nil	0.01.0
Roads	Nil	0.02.0
Green Belt	Nil	0.28.6
Unutilized Area	2.70.5	0.23.6
<b>Grand Total</b>	<b>2.80.5</b>	<b>2.80.5</b>

The quarried out benches, Greenbelt Development will be formed in all around the benches of the lease applied area.

P. N. [Signature]

**(ii) Water quality management:**

Following control measures will be adopted for controlling water pollution-

- Construction of check dams / gully plugs at strategic places to arrest silt wash off from broken up area.
- Collection of surface run-off from broken up area in mine pits for settling and only properly settled excess water from mine pit will be discharged to nearby users. The storm water/ mine water will be used for dust suppression, greenbelt development, etc.
- Periodic analysis of mine pit water and ground water quality in nearby villages.
- The quarried out pit will be allowed to collect rain and seepage water which will act as a reservoir for storage. This water storage will enhance the static level and ground water recharge of nearby wells and it will be used for agriculture purpose to the nearby agriculture lands.
- Domestic sewage from site office & urinals/latrines provided in QL is discharged in septic tank followed by soak pits.

**(iii) Air Quality Management:**

The proposed mining method is not likely to produce much of dust and fugitive emissions to cause damage to ambient air quality of the area. Workers will be provided with personnel protective equipment like face-mask, earplug/ muffs.

For air pollution management at the progressive quarry closure plan, greenbelt will be developed to prevent and control air pollution.

**(iv) Top Soil and Waste Management:**

The overburden in the form of Gravel formation, the Gravel will be directly loaded into tippers for the filling and levelling of low lying areas. There is no waste generation, hence waste management does not arise.

**(v) Disposal of mining machinery:**

Machinery is available on hire basis. Hence no decommissioning of mining machinery is proposed.

P. N. [Signature]

**(vi) Safety & Security:**

Safety measures will be implemented to prevent access in the excavation area an unauthorized persons as per Mine Act 1952, MMR 1961.

- Safety measures will be implemented as per Mine Act 1952, MMR 1961, and Mines Rules 1955.
- Provisions of MMR 1961 shall be strictly followed and all roads shall be wider than the height of the bench or equal to the height of the bench and have a gradient of not more than 1 in 16.
- The bench height will be 5.0m.
- Width of working bench will be kept about 5.0m for ease of operations and provide sufficient room for the movement of equipments.
- Protective equipment like dust masks, ear-plugs/ muffs and other equipments shall be provided for use by the work persons.
- Notices giving warning to prevent inadvertent entry of persons shall be displayed at all conspicuous places and in particular near mine entries.
- Danger signs shall be displayed near the excavations.
- Security guards will be posted.
- In the event of temporary closer, approaches will be fenced off and notice displayed.

**(vii) Disaster Management and Risk Assessment:**

This should deal with action plan for high risk accidents like landslides, subsidence, flood, fire, seismic activities, tailing dam failures etc. and emergency plan proposed for quick evacuation, ameliorative measures to be taken etc. The capability of applicant to meet such eventualities and the assistance to be required from the local authorities should be described.

- The mechanized mining activities in the area may involve any high risk accident due to side falls/collapse, flying stones due to blasting etc.
- The complete mining operation will be carried out under the Management and control of experienced and qualified Mines Manager having Certificate of Competency to manage the mines granted by DGMS.
- All the provisions of Mines Act 1952, MMR 1961 and Mines Rules 1955, TNMMCR 1959 and other laws applicable to mine will be strictly complied with.
- During heavy rainfall the mining activities will be suspended.
- All persons in supervisory capacity will be provided with proper communication facilities.
- Competent persons will be provided FIRST AID kits which they will always carry.

P. [Signature]

- The quarried out benches, Greenbelt Development will be formed in all around the benches of the lease applied area.

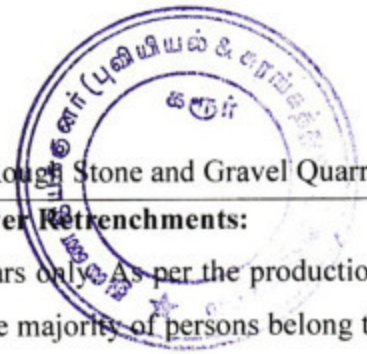
**(viii) Care and Maintenance during Temporary Discontinuance:**

In case of any temporary discontinuance due to court order or due to statutory requirement or any other unforeseen circumstance following measures shall be taken for care, maintenance and monitoring of conditions.

- Notice of temporary discontinuance of work in mine shall be given to the DGMS as per the MMR 1961.
- All the mining machinery shall be shifted to a safe place.
- Entrance to the mine or part of the mine, to be discontinued shall be fenced off. Fencing shall be as per the circular 11/1959 from DGMS.
- Security Guards shall be posted for the safety and to prevent any unauthorized entry to the area.
- Carry out regular maintenance of the facilities/area detailed below in such a way as would have been done as if the mines were operation:
  - Mine roads and approach roads,
  - Fencing on approach roads,
  - Checking and maintenance of machines and equipment,
  - Drinking water arrangements,
  - Mine office, first aid stations etc.
- Competent persons shall inspect the area regularly.
- Air, water and other environmental monitoring shall be carried out as per CPCB and IBM Guideline.
- Care and upkeep of plantation shall be carried out on regular basis.
- Status of the working and status monitoring for re-opening of the mines shall be discussed daily.

In case of discontinuance due to any natural calamities/abnormal conditions, mining operation will be restarted as early as possible after completing rescue work, restoring safety and security, repairs of roads etc.

P. [Signature]



Mining Plan

Sivayam (North) Rough Stone and Gravel Quarry

**(ix) Economic Repercussion of Closure of Quarry and manpower Retrenchments:**

Quarrying Lease is granted for a period of maximum five years only. As per the production Programme envisaged, there will be no effect on the man power as the majority of persons belong to nearby villages and will have an option either to be available for employment for the next contract/ lease or do the agriculture in their fields.

**(x) Time Scheduling For Abandonment:**

The lease applied area has enormous potential for continuance of operations even after the expiry of the awarded period. The details of time schedule of all abandonment will be given at the time of final closure plan.

**(xi) Abandonment Cost:**

As at present mining is not going to be closed so abandonment cost could not be assessed. However based on the progressive quarry closure activities during the plan period, cost is assessed as given below:

LAND USE TABLE-16

ACTIVITY	YEAR					RATE	AMOUNT (INR)
	I	II	III	IV	V		
Plantation (In Nos.)	65	65	65	65	65	@100 Rs Per sapling	Rs.1,04,500/-
Plantation Cost and Maintenance	6500	6500	6500	6500	6500	Including Maintenance	
Wire Fencing (In Mtrs) 692 Mtrs	207600					@300 Rs Per Meter	Rs.2,07,600/-
Cost for Plantation in worked out benches	-	-	-	-	140000	@100 Rs Per sapling Including Maintenance	Rs.1,40,000/-
<b>TOTAL</b>							<b>Rs.4,52,100/-</b>

P. N. S.

Mining Plan

Sivayam (North) Rough Stone and Gravel Quarry

**12.0 ANY OTHER DETAILS INTEND TO FURNISH BY THE APPLICANT**

This Mining plan for Rough stone (Charnockite) and Gravel is under Rules 41 & 42 as per the Amended under Tamil Nadu Minor Mineral Concession Rules, 1959. The provisions of the Mines Act, Rules and Regulations and orders made there under shall be complied within the quarrying operation, so that the safety of the mine, machinery and person will be well protected. Permission, relaxation or exemption wherever required for the safe and scientific quarrying of the deposit will be obtained from the Department of Mines Safety. Any violation pointed out by the inspecting authorities shall be rectified as per the guidelines of the Concerned Department.

Prepared by

*Dr. P. Thangaraju*  
Dr.P.Thangaraju, M.Sc., Ph.D.,

Qualified person

Place: Salem

Date: 22.06.2019

This Mining Plan is approved based on incorporation of the particulars specified in clause 7 (iv) of the Commissioner of Geology and Mining Chennai Lr No 3868 / LC / 2012 dt 19-11-2012 and Draft Minor Mineral Conservation & Development Rules 2010

*Thangaraju*  
24/6/19  
Deputy Director of Geology and Mining  
Karur District.

This Mining Plan is approved subject to the conditions/stipulations indicated in the Mining Plan approval Letter No: 256/MINS/2019 Dated: 24.06.2019

*Thangaraju*  
24/6/19

*P. Thangaraju*

***Pre-Feasibility Report for  
Sivayam (North) Rough stone and Gravel  
Quarry of Tvl. Navamani Mines Private Limited,***

(Under the Guidelines of Ministry of Environment and Forest

in terms of the provisions of EIA notification 2006 and specifically in circular

No J-11013/41/2006-IA.II (I) dated 30<sup>th</sup> December, 2010)

**Location of the Quarry Lease Applied Area**

**S.F.No. 15/1 & 15/2**

**Sivayam (North) Village,**

**Krishnarayapuram Taluk, Karur District,**

**Extent : 2.80.5Ha (>5ha and <25ha)**

**Category: B2 Project**

**Applicant**

**Tvl. Navamani Mines Private Limited,**

**Thiru.P.Mani, Managing Director,**

**No.5/898, Alagu Nagar,**

**Trichy Road,**

**Namakkal District – 637 001**

**1. EXECUTIVE SUMMARY**

Tvl. Navamani Mines Private Limited has applied for quarrying Rough stone and Gravel over an extent of 2.80.5Ha comprising S.F.No: **15/1 & 15/2** at Sivayam (North) Village, Krishnarayapuram Taluk, Karur District.

The application was processed by the District Collector and Department of Geology and Mining, Karur District; the precise area communication letter was received from the District Collector vide **Rc.No. 256/Mines/2019, Dated: 19.06.2019** to obtain Approved Mining plan and Environmental Clearance from the State Level Environmental Impact Assessment Authority (SEIAA).

As per the precise area communication letter the Mining plan was prepared and got approval from the Deputy Director, Department of Geology and Mining, Karur District vide **Rc. No. 256/Mines/2019, Dated: 24.06.2019**.

As per the EIA notification 2006, it is required to get Prior Environmental Clearance from the concerned regulatory authorities.

As per the Notification S.O. 3977 (E) Dated 14<sup>th</sup> August, 2018: The Mining project is falls under Schedule 1 (a), **Categorized as B2**, Form – 1, Form – 1M, Pre- Feasibility Report (PFR) and Approved Mining plan is required to Obtain Environmental Clearance.

For the above said Notification this Pre-Feasibility report is prepared for Rough stone and Gravel quarry project located in S.F.No: 15/1 & 15/2 of Sivayam (North) Village, Krishnarayapuram Taluk and Karur District belongs to Tvl. Navamani Mines Private Limited.

**SALIENT FEATURES OF THE PROJECT**

S.No	PARTICULAR	DETAILS
1.	Name of the Proponent	Tvl. Navamani Mines Private Limited,
2.	Type of Project	Rough stone and Gravel Quarry project
3.	Location	Survey No. 15/1 & 15/2 Sivayam (North) Village, Krishnarayapuram Taluk, Karur District.
4.	Mining lease area	2.80.5Ha
5.	Type of land Patta/forest/ Consent land	It is a Patta land. - Non forest
6.	Life of period	Five years

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7.	Production capacity	<p>The proposed quantity of reserves is <b>3,95,935m<sup>3</sup></b> (or) <b>65,989</b> Lorry Loads of Rough stone up to a depth of <b>38m [3m Gravel + 35m Rough stone]</b> for a mining period of <b>Five years</b>.</p> <table border="1"> <thead> <tr> <th>Description</th> <th>Rough stone in m<sup>3</sup></th> <th>Gravel in m<sup>3</sup></th> </tr> </thead> <tbody> <tr> <td>Geological Resources</td> <td>9,80,455</td> <td>84,039</td> </tr> <tr> <td>Available Mineable reserves</td> <td>3,95,935</td> <td>49,332</td> </tr> <tr> <td>Five years plan period As in the approved mining plan</td> <td>3,95,935</td> <td>49,332</td> </tr> </tbody> </table>	Description	Rough stone in m <sup>3</sup>	Gravel in m <sup>3</sup>	Geological Resources	9,80,455	84,039	Available Mineable reserves	3,95,935	49,332	Five years plan period As in the approved mining plan	3,95,935	49,332
Description	Rough stone in m <sup>3</sup>	Gravel in m <sup>3</sup>												
Geological Resources	9,80,455	84,039												
Available Mineable reserves	3,95,935	49,332												
Five years plan period As in the approved mining plan	3,95,935	49,332												
8.	Method of Mining	The quarrying operation will be carried out by Opencast semi Mechanized Method Mining with 5.0 meter vertical bench with a bench width is not less than the bench height.												
9.	Ultimate depth of Mining	The ultimate depth of the mining is proposed upto <b>38m [3m Gravel + 35m Rough stone]</b> for a mining period of <b>Five years</b> .												
10.	Latitude between	10°52'19.57"N to 10°52'25.68"N												
11.	Longitude between	78°22'26.70"E to 78°22'34.23"E												
12.	Topo sheet No.	58 - J/05												
13.	Topography of MSL area	The lease applied area is exhibits plain terrain. The area has gentle sloping towards South western side. The altitude of the area is 124m (max) above Mean sea level.												
14.	Land use classification	It is a Patta land												
15.	Ground water level	The Ground water occurrence in this area is <b>50-45m</b> depth below the ground level.												
16.	Climatic condition	Rainfall - 654.76mm/annum Temperature - 42°C - 23°C												
17.	Land use pattern	<p><b><u>Land use pattern</u></b></p> <p>Roads /Iyermalai - 15%</p> <p>Habitation /Crusher - 15%</p> <p>Trees - 20%</p> <p>Agricultural Land - 40%</p> <p>Quarry pit - 10%</p>												
18.	Nearest habitation	Iyermalai - 1Km - NE												
19.	Nearest Town	Kulithalai - 8.5Km - NE												
20.	Nearest Railway station	Kulithalai Railway station - 8.5Km - NE												

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PRE-FEASIBILITY REPORT OF  
SIVAYAM (NORTH) ROUGH STONE AND GRAVEL QUARRY

Tvl. Navamani Mines Private Limited,

21.	Nearest Airport	Trichy Airport - 39.0Km - SE
22.	Nearest National Highways & State Highways	NH67 - Coimbatore – Trichy – 9.0Km - NE SH71- Musiri - Pudukkottai – 1.0Km- SE
23.	Nearest Hospital	Kulithalai – 8.5Km – NE
24.	Aerial distance to the nearest Eco sensitive areas, CRZ, Forest, Wild life sanctuary, Interstate boundary, Critically Polluted area if the quarry site is within 500m of these areas.	There is no Eco sensitive areas, CRZ, forest, wild life sanctuary, Interstate boundary, Reserve forest, Western Ghats, critically polluted areas within the radius of 500m from the proposed project site.
25.	Details of other quarries for a radius of 500m around the quarry site	There are four quarries located within the radius of 500m from the proposed project site Details – Abandoned quarries – Nil Lease expired quarries – 1 (2.34.5Ha) (Lease expired on 09.07.2019) Present Proposal – 1 (2.80.5Ha) Existing quarries – 3 (5.99.5Ha) The total extent of the Existing and proposed quarry within the radius of 500m is <b>8.80.0ha.</b>
26.	Man power	Total Employees proposed for the quarry operation is <b>36Nos</b>
27.	Water requirement & source	Total water requirement for 5.0KLD from water vendors & From Existing bore wells.
28.	Overburden /Waste	The overburden is the form of Gravel is about <b>49,332m<sup>3</sup></b> up to depth of 3m for during this period.
29.	Cost of the project	<b><u>The Project cost:</u></b> A. Project cost = Rs.65,68,505/- B. EMP cost = Rs. 3,80,000/- Total project cost = Rs. 69,48,505/- CER cost (2%) = Rs. 1,39,000/- <b>Total cost = Rs. 70,87,505/-</b>

P. Navamani

The Prefeasibility report preparing for following condition of Government of India Ministry of Environment and Forests.**Water bodies:**

- Cauvery River - 9.0Km - N
- Mayanur Barrage right canal – 4.5Km -NE
- There is no Reserve Forest within the radius of 10Km.
- There is no Western Ghats within the radius of 10Km.
- There is no CRZ within the radius of 10Km.
- The village does not fall in the HACA region.
- There is no interstate boundary within 10Km radius.
- There are no Bird sanctuaries, wild life sanctuary or National parks as per Wild life protection Act 1972, within the radius of 10Km
- There are four quarries located within the radius of 500m from the proposed project site  
Details –  
Abandoned quarries – Nil  
Lease expired quarries – 1 (2.34.5Ha) (Lease expired on 09.07.2019)  
Present Proposal – 1 (2.80.5Ha)  
Existing quarries – 3 (5.99.5Ha)  
The total extent of the Existing and proposed quarry within the radius of 500m is **8.80.0ha.**

S.No.	Lessee	Village	S.F.No.	Hectare	Lease expiry
1	A. Sunmugaraj	Sivayam (North)	13/1, 14/2, 14/3	2.49.5	07.02.2018 to 06.02.2023 Existing
2	D.Rathinam	Sivayam (North)	30/1A, 30/1B	2.46.0	07.02.2018 to 06.02.2023 Existing
3	M.Palaniyandi	Sivayam (North)	2/2	2.34.5	10.07.2014 to 09.07.2019 Lease Expired
4	M.Jayamani	Sivayam (North)	30/4, 31/1	0.73.0 0.31.0	06.12.2018 to 05.12.2023 Existing
5	Tvl. Navamani Mines Private Limited,	Sivayam (North)	15/1 15/2	1.83.5 0.97.0	Proposed

**The following information provided by the applicant**

I have applied for getting Environment clearance to SEIAA, Chennai, Tamil Nadu for quarry lease for Rough stone and Gravel in S.F.No: 15/1 & 15/2 at Sivayam (North) Village, Krishnarayapuram Taluk, Karur District

1. I swear to state and confirm that within 10km area of the quarry site, I have applied for environment clearance, none of the following is situated.
  - a. Protected areas notified under the wild life (Protection) Act, 1972,
  - b. Critically polluted areas as notified by the central pollution control board constituted under water (Prevention and Control of Pollution) Act, 1974,
  - c. Eco-Sensitive areas as notified,
  - d. Interstate boundaries within 10km radius from the boundary of the proposed site.
2. I will complete the following Corporate Environment Responsibility (CER) activities before commencement of the quarrying activities.

CER Activity	Project Cost (Rs. In Lakh)	CER Cost 2.0% of project cost(Rs in Lakh)
Developing the Garden Maintenance in Sivayam (North) Govt. School	69.48	1.39
Total Cost Allocation	69.48	1.39

3. The total extent of the Existing and proposed quarry within the radius of 500m is **8.80.0ha.**

S.No.	Lessee	Village	S.F.No.	Hectare	Lease expiry
1	A. Sunmugaraj	Sivayam (North)	13/1, 14/2, 14/3	2.49.5	07.02.2018 to 06.02.2023 Existing
2	D.Rathinam	Sivayam (North)	30/1A, 30/1B	2.46.0	07.02.2018 to 06.02.2023 Existing
3	M.Palaniyandi	Sivayam (North)	2/2	2.34.5	10.07.2014 to 09.07.2019 Lease Expired
4	M.Jayamani	Sivayam (North)	30/4, 31/1	0.73.0 0.31.0	06.12.2018 to 05.12.2023 Existing
5	Tvl. Navamani Mines Private Limited,	Sivayam (North)	15/1 15/2	1.83.5 0.97.0	Proposed

4. There will not be hindrance or disturbance to the people living no enroute / nearby our quarry site while transporting the mineral our material and due to quarrying activities.
5. There is no approved habitation within 300m radius from the periphery of my quarry.
6. I swear that afforestation will be carried out during the course of quarrying operation and maintained.

7. The required insurance will be taken in the name of the laborers working in my quarry site.
8. Approach road belongs to local panchayat only and no other private patta roads encountered.
9. I will not engage any child labor in our quarry site and I aware that engaging child labor is punishable under the law.
10. All types of safety / protective equipment will be provided to all the laborers working in my quarry.
11. No permanent structures, temples etc., are located within 500m radius from the periphery of my quarry.

## **2.0 INTRODUCTION OF THE PROJECT OR BACKGROUND INFORMATION**

**(i) Identification of project and project proponent. In case of Mining project, a copy of mining lease/Letter of intent should be given**

### **Identification of Project**

Name of the Project	Sivayam (North) Rough stone and Gravel Quarry project belongs to Tvl. Navamani Mines Private Limited,
Area applied for lease	2.80.5Ha (Patta land) - Non forest
Location	Survey No. 15/1 & 15/2, Sivayam (North) Village, Krishnarayapuram Taluk, Karur District and Tamil Nadu State. Topo Sheet No. 58 - J/05

### **Project Proponent Name with Address**

Tvl. Navamani Mines Private Limited,  
Thiru.P.Mani, Managing Director,  
No.5/898, Alagu Nagar,  
Trichy Road,  
Namakkal District – 637 001  
Mobile No : 94433 44331  
E mail id: [navamanimines@gmail.com](mailto:navamanimines@gmail.com)

### **In case of mining project, a copy of mining lease/letter of intent should be given**

- I. The precise area communication letter was received from the District Collector, Karur vide Rc.No. 256/Mines/2019, Dated: 19.06.2019
- II. The Mining Plan was got approval by the Deputy Director, Department of Geology and Mining, Karur vide Rc.No. 256/Mines/2019, Dated: 24.06.2019

**(ii) Brief description of nature of the project****Mining:**

The Rough stone and Gravel quarrying operation is proposed to carry out by conventional opencast semi Mechanized Method by formation of benches with height of 5m and width of 5m. Seven benches are proposed with a height of 5mts below the ground level. The width of each bench is proposed not less than the height. The quarry operation involves shallow jack hammer drilling, mild explosives in blasting, excavation, Loading and transportation of Rough stone to the needy crusher. No processing will be involved in this quarrying operation, the quarried out Rough Stone will be directly sent to the needy customers.

**Quantity of Mineable Reserves of Rough Stone and Gravel:**

The total Mineable Reserves is **3,95,935m<sup>3</sup>** of Rough stone, **49,332m<sup>3</sup>** of Gravel formation.

**Proposed quantity of Rough stone for the Mining plan period:**

The Entire Mineable Quantity is proposed for the Mining plan period (Five years). The proposed depth is **38m [3m Gravel + 35m Rough stone] for a mining period of Five years.**

Average production per annum	=	79,187m <sup>3</sup> of Rough stone
Peak production per annum	=	82,755m <sup>3</sup> of Rough stone

**(iii) Need for the project and its importance to the country and region**

The Rough stone is important building material to our country and region; it's a vital material for Infrastructure development and Road widening project. Hence a lot of Rough stone is required for Granular sub base (GSB).

In this proposed Rough stone and Gravel quarry operation **36** persons will be get direct employment about 45 peoples will be get indirect employment through allied opportunities in logistics, trading; Repairing works etc., Good employment potential will arise in this internal rural backward area, which will provide a great fillip for raising income levels and standards of living in the area.

Mineral Industries of the state of Tamil Nadu provides employment opportunities for the people of the state as well as in the specific project area. The Quarrying is one among the major core sector for industries, which plays a vital process of country's economic development.

(iv) Demand and supply gap

There is a huge demand of Rough stone for State and National Road projects is under massive development for its widening and strengthening operation, apart from this many bridges and fly overs are also being under construction. And also huge requirements of Rough stone for Public and Private sector projects to infrastructure development of the state; hence the project is significant to the state.

Railway lines in the country also under progress where huge Rough stone is required as Ballast. Other internal Panchayat Roads are also under progress, besides all these public works projects the Rough stone is widely used for domestic construction project like Hospital, School, Government Building and Housing construction.

(v) Imports vs indigenous production

There is no import of Rough stone at present in India.

(vi) Export Possibility

There are no possibilities for export.

(vii) Domestic/Export Markets

The applicant after obtaining the lease will fetch a domestic market as mentioned earlier. It is propose to sell Rough stone domestic needy crushers for roads project and other infrastructure development projects for public and private sector companies.

(viii) Employment Generation (Direct and Indirect) due to the project

It is proposed to involve about **36** employees directly and **45** persons will be indirectly benefited. The tentative man power required for the proposed Rough stone and Gravel quarry shall be as follows. The above man power is adequate to meet out the production schedule and the machinery strength envisaged in the mining plan and also to comply with the stationary provisions of quarry safety regulation.

***It is been ensured that the labours will not be deployed less than 18 years, No Child labours will engaged or entertained for any kind of quarrying operations. All the labours engaged for quarrying operations will be insured till the end of life of quarry.***

### 3.0 PROJECT DESCRIPTION

#### (i) Type of project including interlinked and interdependent projects, if any

The Sivayam (North) Rough stone and Gravel quarry; it is an opencast mechanized quarry. There is no interlinked & interdependent project.

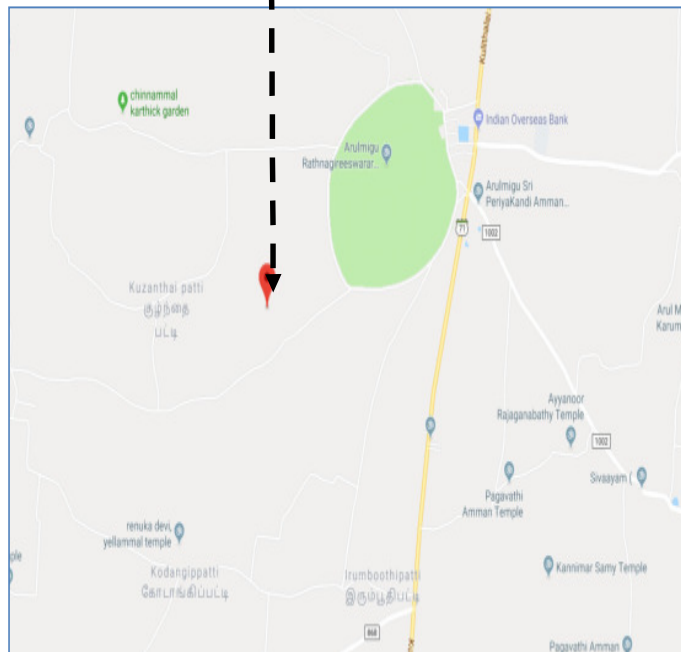
#### (ii) Location (map showing general location, specific location, and project boundary & project site layout) with coordinates

- The area is located in S.F.No. 15/1 & 15/2 at Sivayam (North) Village, Krishnarayapuram Taluk, Karur District.
- The entire quarry lease area falls in the Patta land, the area exhibits Plain terrain.
- The Altitude of the area ranges from **124m** (Maximum) from MSL.
- The area falls in the Survey of India Topo sheet No. **58 - J/05**.
- The Latitude between of **10°52'19.57"N to 10°52'25.68"N**
- The Longitude between of **78°22'26.70"E to 78°22'34.23"E** on WGS 1984 datum.

#### GOOGLE IMAGE SHOWING THE LEASE BOUNDARY AREA

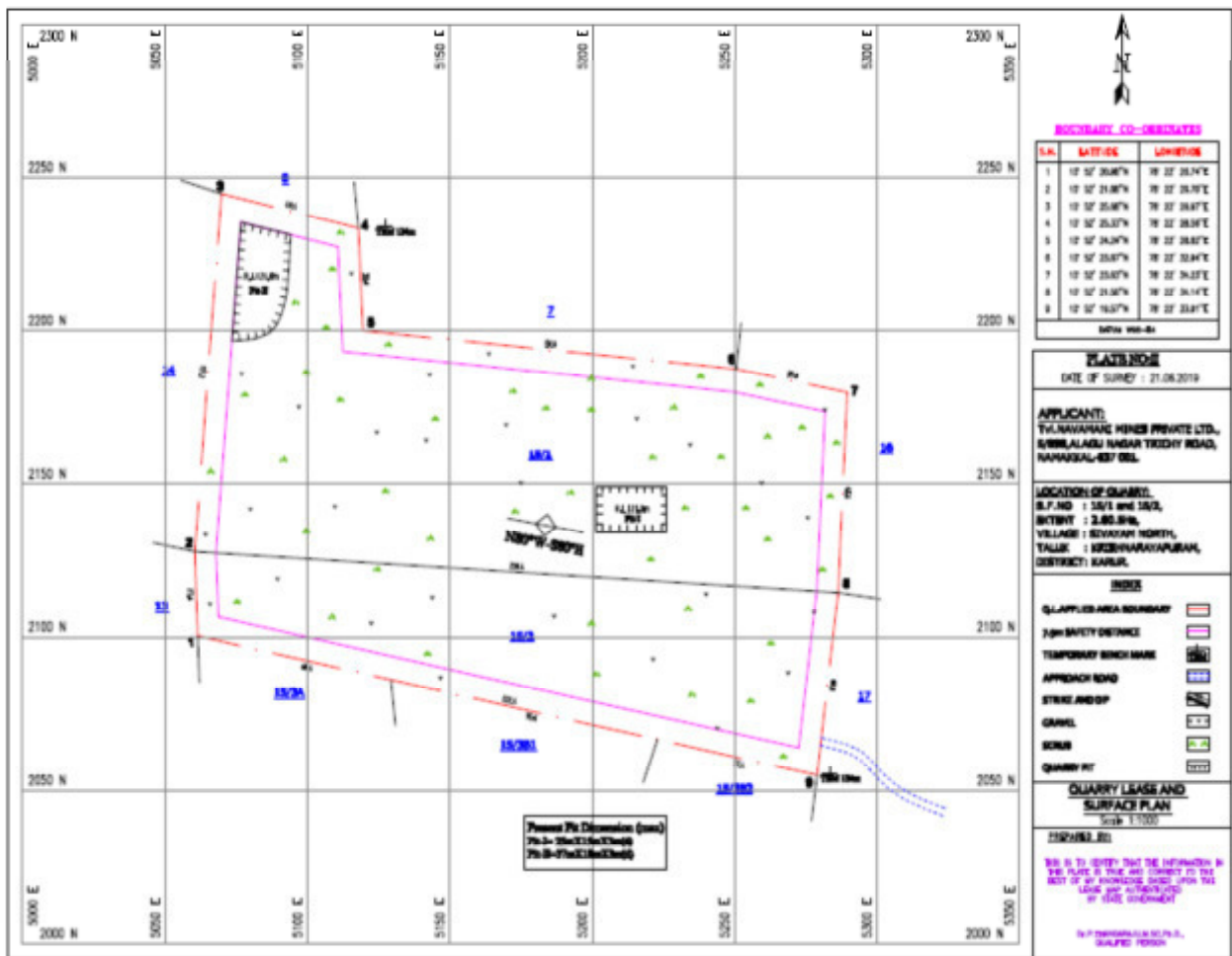


## LOCATION MAP OF THE PROJECT AREA WITH CO ORDINATES



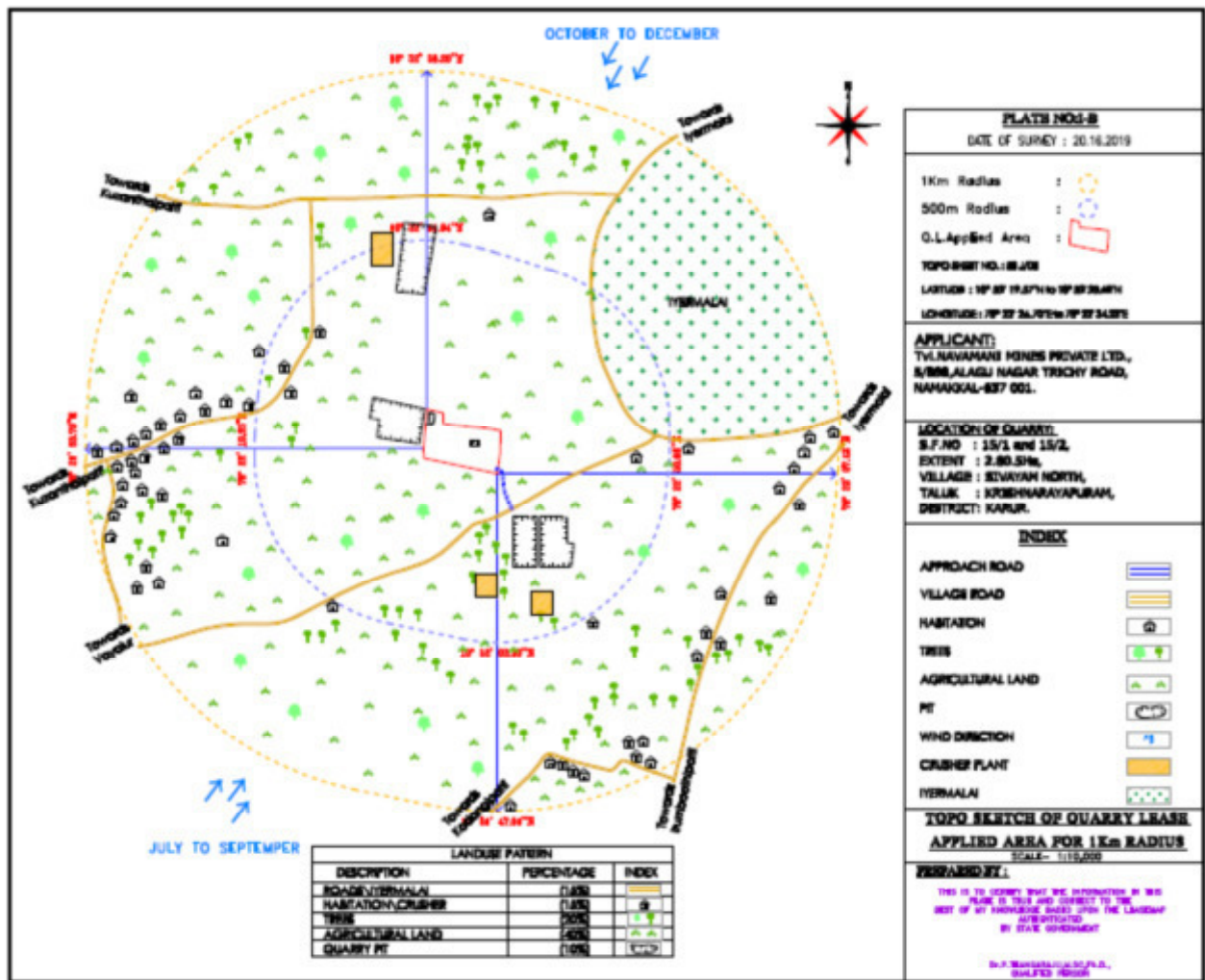
P. Navamani

## QUARRY LEASE AND SURFACE PLAN OF THE AREA WITH BOUNDARY CO ORDINATES



*P. Navamani*

## ENVIRONMENTAL PLAN OF THE PROJECT AREA COVERING 1KM RADIUS



(iii) Details of alternate sites considered and the basis of selecting the proposed site, particularly the environmental considerations gone into should be highlighted

There are no alternative sites examined, This Rough stone and Gravel quarry project is site specific and it will be carried out in conventional opencast semi-Mechanized Method of Mining.

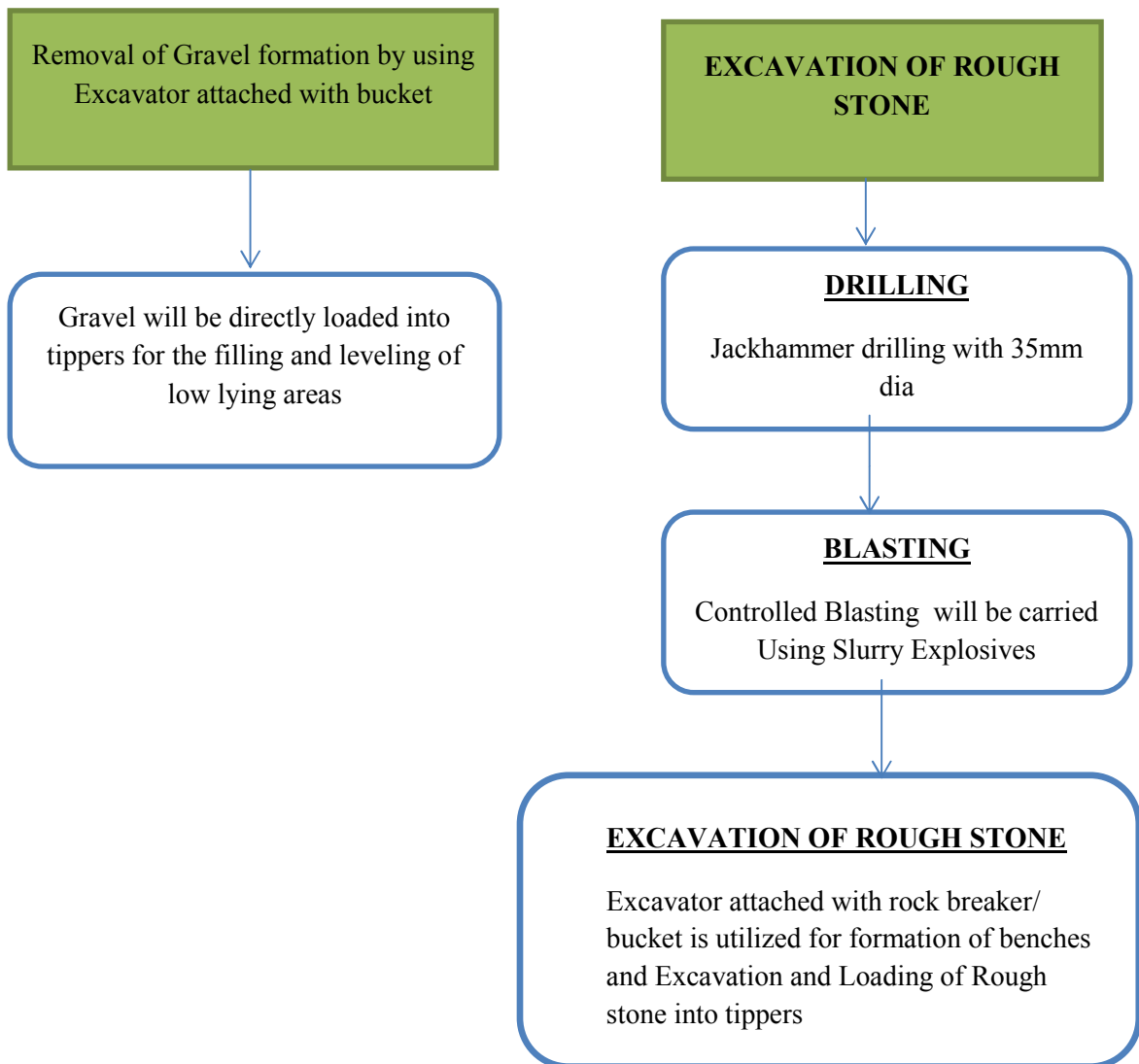
(iv) Size or magnitude of operation

Total area of the project	-	2.80.5Ha
Effective quarry area	-	2.25.3Ha
Average production per annum	=	79,187m <sup>3</sup> of Rough stone
Peak production per annum	=	82,755m <sup>3</sup> of Rough stone

(v) Project description with process details (a schematic diagram/flow chart showing the project layout, components of the project etc. should be given)

Details regarding topography, Geology of the area, Method of mining, Machineries required and production details area given below,

## SCHEMATIC PROCESS FLOW CHART



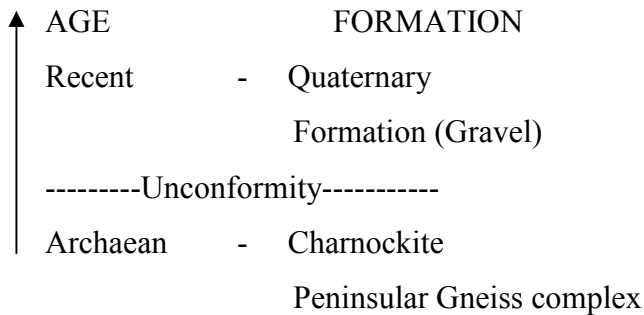
**Topography:**

The lease applied area exhibits plain terrain. The area has gentle sloping towards South western side. The altitude of the area is 124m (max) above Mean sea level. The area is covered by the Gravel which is about 3m thickness. Massive Charnockite is found after 3m (Gravel) which is clearly inferred from the existing quarry pits. The Water level in the surrounding area is 50-45m below general ground profile which is observed from the nearby bore wells. Average annual rainfall is about 654.76mm.

**Regional geology:**

Peninsular gneiss forms the oldest rock formations, in which the massive formation of Charnockite lies over with rich accumulation of recent quaternary formation. On regional scale the Charnockite body N80°W – S80°E with vertical dip°.

**The general geological sequences of the rocks in this area are given below:**



**Summary of Resources and Reserves**

Description	Rough stone in m <sup>3</sup>	Gravel in m <sup>3</sup>
Geological Resources	9,80,455	84,039
Mineable Reserves	3,95,935	49,332
Proposed Production for five years (Mining plan period)	3,95,935	49,332

Estimated life of the quarry = 5 Years

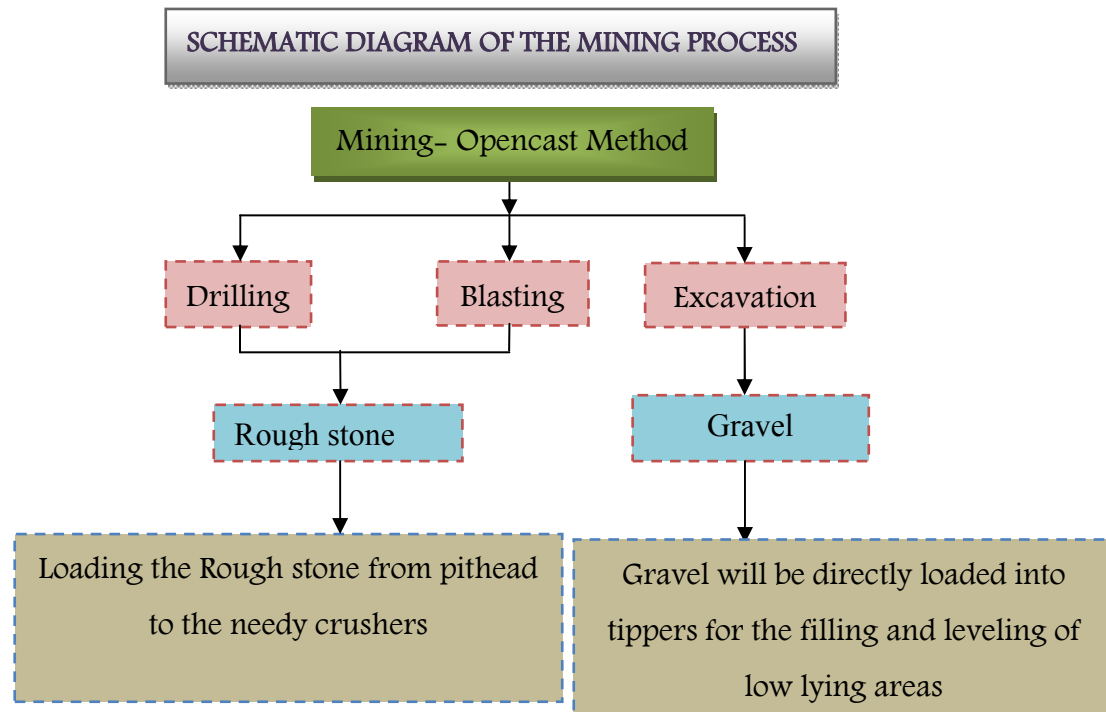
Waste ratio = No wastages anticipated the entire quarried out material will be used in different sizes and different manner.

Average production per annum = 79,187m<sup>3</sup> of Rough stone

P. Navamani

## Method of Mining:

- The Rough Stone is proposed to quarry at 5m bench height & width with conventional Opencast Mechanized Method.
- The quarry operation involves shallow jack hammer drilling, mild explosives in blasting, excavation, Loading and transportation of Rough stone to the needy crusher.
- The production of Rough stone in this quarry involves the following method which is typical for Rough Stone quarrying in contrast to other major mineral mining.
- Splitting of rock mass of considerable volume from the parent rock mass by Hand jackhammer drilling and mild explosives blasting, hydraulic excavators are used for loading the Rough Stone from pithead to the needy crushers.
- Occasionally hydraulic excavators are attached with rock breakers for fragmentation to avoid secondary blasting. The primary boulders thus splitted are removed from the pits by excavators and further made to smaller sizes by rock breakers attached in excavators. It is a conventional opencast mechanized method of mining.



The applicant ensures the total quantity proposed in the benches will not exceed during the quarrying operation.

## Machinery Required:

### I. DRILLING MACHINE

<i>S.No.</i>	<i>Type</i>	<i>Nos</i>	<i>Dia Hole mm</i>	<i>Size Capacity</i>	<i>Motive power</i>
1	Jack hammer	10	30-35	1.2m to 2.0m	Compressed air
2	Compressor	2	-	400 psi	Diesel Drive

### II. EXCAVATION & LOADING EQUIPMENT

<i>S.No.</i>	<i>Type</i>	<i>Nos</i>	<i>Capacity</i>	<i>Motive Power</i>
1	Excavator with Bucket and Rock Breaker	2	300	Diesel Drive

### III. HAULAGE WITHIN THE MINE & TRANSPORT EQUIPMENT:

<i>S.No.</i>	<i>Type</i>	<i>Nos</i>	<i>Capacity</i>	<i>Motive Power</i>
1	Tippers	5	20 tonnes	Diesel Drive

## Overburden/Disposal:

The overburden in the form of Gravel formation, the Gravel will be directly loaded into tippers for the filling and levelling of low lying areas. There is no disposal of Gravel. The excavated rough stone will be directly loaded into tippers to the needy customers.

## Conceptual Mining Plan.

<i>Length (Max) (m)</i>	<i>Width (Max) (m)</i>	<i>Depth (Max) (m)</i>
208	103	38m [3m Gravel + 35m Rough stone]

**Manpower requirement.**

The tentative man power required for the proposed Rough stone and Gravel quarry shall be as follows.

Designation	No's
<b>a. Mine official &amp; Competent Persons</b>	
Mine Foreman	1
Blaster/mate	1
<b>b. Machinery Operators</b>	
Jack hammer operator	20
Excavator Operator & Driver	7
<b>C. Ordinary Employee</b>	
Helper	3
Cleaner	3
Watchman	1
<b>Total</b>	<b>36</b>

**(vi) Raw material required along with estimated quantity, likely source, marketing area of final products, Mode of transport of raw Material and Finished Products**

This is a quarrying project for exploiting of Rough stone and Gravel; hence, there is no requirement for raw material.

**Uses:**

The Rough stone will be used as Building Construction material, Road widening projects, Granular sub base etc.,

**(vii) Resource optimization/recycling and reuse envisaged in the project, if any, should be briefly outlined**

Water will be accumulated in the excavated quarry out pit area during rainy season. The water collected in the sump will be used in various purposes at quarry like plantation and dust suppression etc.

**(viii) Availability of water its source, Energy/power requirement and source should be given**

This Rough stone quarry project does not require huge water and Electricity for the project.

Purpose	Quantity	Sources
Drinking & Domestic Purpose	2.0 KLD	From existing bore wells and drinking water will be sourced from Approved Water vendors available in Iyermai (1.0Km –NE side).
Dust suppression	2.0 KLD	From Existing bore wells from nearby area
Green belt	1.0 KLD	From Existing bore wells from nearby area
	5.0KLD	

P. [Signature]

**Energy**

Electricity for Mines office and Lights only at nights (working is restricted on day time only between 8Am to 6Pm). Diesel (HSD) will be used for quarrying machineries around **3,24,972** Liters of HSD will be used for the entire project life. Diesel will be brought from nearby diesel pumps. No power is required for the project. Lightings on the Night will be taken from nearby electric poles after obtaining permission from concerned authorities.

**1. For Gravel:**

Per hour Excavator will consume	=	10 liters / hour
Per hour Excavator will excavate	=	60m <sup>3</sup> of Gravel
For 49,332m <sup>3</sup>	=	49,332/60
	=	822 hours
Diesel consume 822 working hours	=	822 hours x 10 liters
Total diesel consumption	=	8,220 Liters of HSD will be utilized Gravel

**2. For Rough stone:**

Per hour Excavator will consume	=	16 liters / hour
Per hour Excavator will excavate	=	20m <sup>3</sup> of Rough stone
For 3,95,935m <sup>3</sup>	=	3,95,935/20
	=	19,797 hours
Diesel consume 19,797 working hours	=	19,797 hours x 16 liters
Total diesel consumption	=	3,16,752 Liters of HSD will be utilized for Rough Stone

Total diesel consumption is around = **3,24,972** Liters of HSD for the entire period of life.

**(ix) Quantity of wastes to be generated (liquid and solid) and scheme for their management/disposal****Top soil:**

There is no top soil in the lease period.

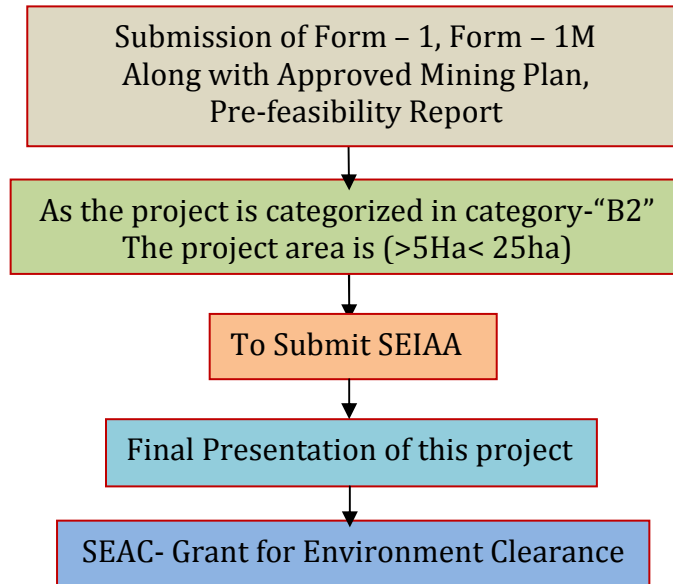
**Overburden/Waste:**

The overburden in the form of Gravel is about **49,332m<sup>3</sup>** up to depth of 3m for during this period. The overburden in the form of Gravel formation, the Gravel will be directly loaded into tippers for the filling and levelling of low lying areas. There is no disposal of Gravel. The excavated rough stone will be directly loaded into tippers to the needy customers.

**Waste water:**

There will not be any process effluent generation from the quarry lease area. Domestic effluent from the mine office is discharged in septic tank and soak pit. There is no toxic effluent expected to generate in the form of solid liquid and gases and the no requirement of treatment of waste.

**(x) Schematic representations of the feasibility drawing which give information of EIA purpose**



## 4.0 SITE ANALYSIS

### (i) Connectivity

S.No	Particulars	Location	Direction	Approximate Distance in km
1.	Nearest Post office	Kulithalai	NE	8.5Km
2.	Nearest Town	Kulithalai	NE	8.5Km
3.	Nearest Police station	Kulithalai	NE	8.5Km
4.	Nearest Govt. Hospital	Kulithalai	NE	8.5Km
5.	Nearest Dispensary	Kulithalai	NE	8.5Km
6.	Nearest school	Iyermai	NE	1.0Km
7.	Nearest DSP office	Karur	NW	30.0Km
8.	Nearest Railway station	Kulithalai	NE	8.5Km
9.	Nearest Airport	Trichy	SE	39.0Km

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(ii) Land Form, Land use and Land ownershipLand form.

The lease applied area exhibits Plain terrain. Lease area is dry land. The area does not fall in forest land.

Land use.

There are no water courses flowing through the applied lease area. There is no vegetation/plantation in this area. Some thorny bushes and shrubs are observed.

The conceptual land use pattern is as follows.

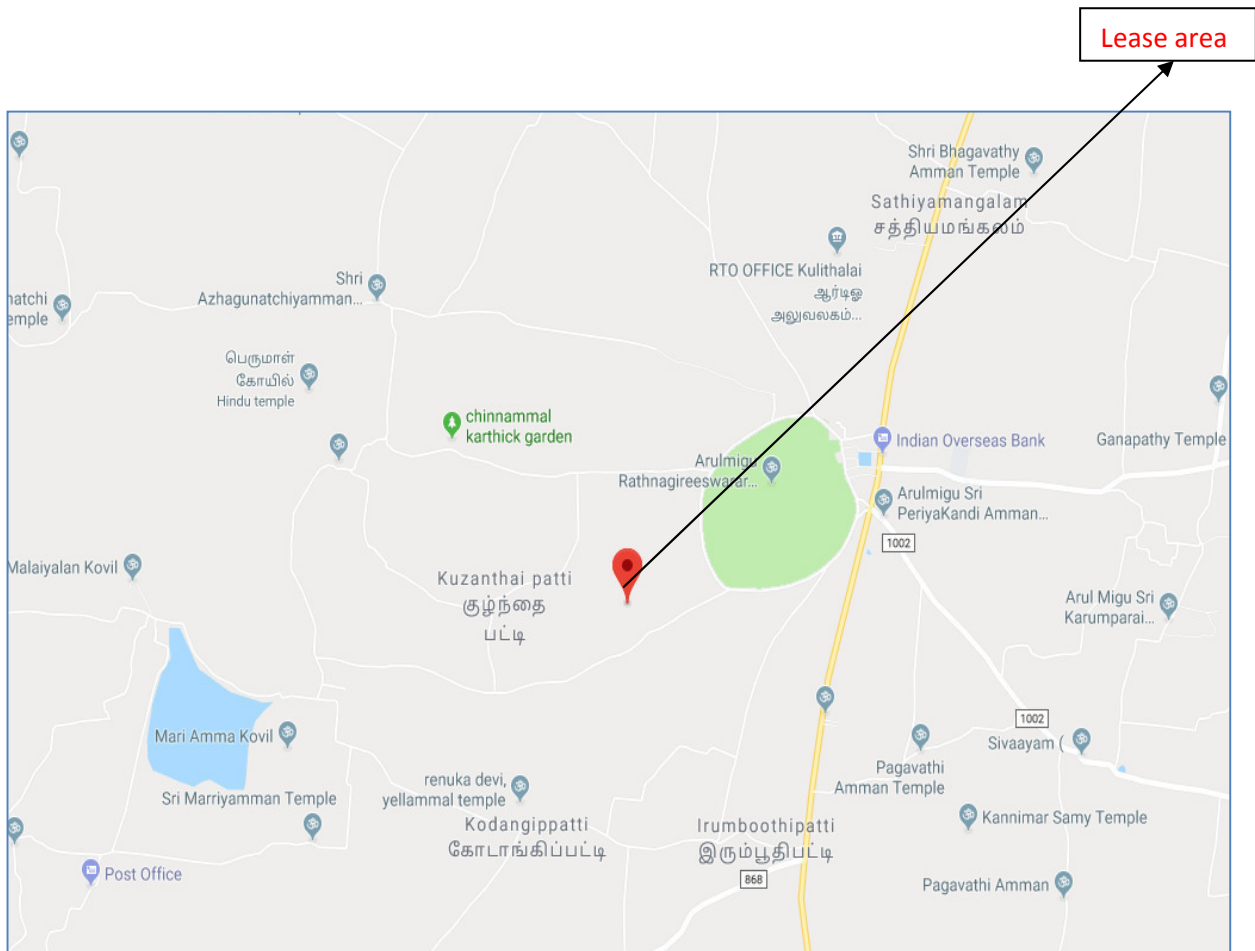
<i>Description</i>	<i>Present area in (Ha)</i>	<i>Area at the end of this quarrying period (Ha)</i>
Area under quarrying	0.10.0	2.25.3
Infrastructure	Nil	0.01.0
Roads	Nil	0.02.0
Green Belt	Nil	0.28.6
Unutilized area	2.70.5	0.23.6
<b>Grand Total</b>	<b>2.80.5</b>	<b>2.80.5</b>

Land Ownership.

It is a Patta land. Registered in the name of the applicant (Tvl. Navamani Mines Private Limited), vide Patta No.3701. Refer the Patta copy as Annexure No. IV.

**(iii) Topography (along with map)**

The lease applied area is exhibits plain terrain. The area has gentle sloping towards South western side. The altitude of the area is 124m (max) above Mean sea level. The area is covered by the Gravel which is about 3m thickness. Massive Charnockite is found after 3m (Gravel) which is clearly inferred from the existing quarry pits. The Water level in the surrounding area is 50-45m below general ground profile which is observed from the nearby bore wells. Average annual rainfall is about 654.76mm.

**Google map view of the Quarry lease applied area**

## GOOGLE EARTH IMAGE OF QUARRY SITE COVERING 1Km RADIUS



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(iv) Existing land use pattern (agriculture, non-agriculture, forest, water bodies (including area under CRZ), shortest distances from the periphery of the project to periphery of the forests, national park, wild life sanctuary, eco sensitive areas, water bodies (distance from the HFL of the river), CRZ.

In case of notified industrial area, a copy of the Gazette notification should be given.

The lease applied area is exhibits plain terrain. The area is a dry barren land devoid of Agriculture and Habitations. The land is not used for any specific vegetation.

**Water bodies:**

- Cauvery River - 9.0Km - N
- Mayanur Barrage right canal – 4.5Km -NE
- There is no Reserve Forest within the radius of 10Km.
- There is no Western Ghats within the radius of 10Km.
- There is no CRZ within the radius of 10Km.
- The village does not fall in the HACA region.
- There is no interstate boundary within 10Km radius.
- There are no Bird sanctuaries, wild life sanctuary or National parks as per Wild life protection Act 1972, within the radius of 10Km
- There are four quarries located within the radius of 500m from the proposed project site  
Details –
 

Abandoned quarries	– Nil
Lease expired quarries	– 1 (2.34.5Ha) (Lease expired on 09.07.2019)
Present Proposal	– 1 (2.80.5Ha)
Existing quarries	– 3 (5.99.5Ha)

 The total extent of the Existing and proposed quarry within the radius of 500m is **8.80.0ha.**

**(v) Existing Infrastructure**

There is no existing infrastructure at present within the project area. A permanent mine office is proposed within the project area. A well-equipped first aid facility will be made available. Permanent rest shelter is proposed. At the quarry site, urinal and latrine are proposed.

Water for drinking purpose be supplied form the approved water vendors. A small water tank is also proposed which will be used for water sprinkling, plantation etc.,

**(vi) Soil Classification**

The area is covered by the Gravel which is about 3m thickness. The Massive Charnockite is found after 3m (Gravel) which is clearly inferred from the existing quarry pits.

(vii) Climatic data form secondary sources

The area receives rainfall of about 654.76mm per annum and the rainy season is mainly from Oct - Dec. The summer is hot with maximum temperature of 42°C and winter encounters a minimum temperature of 23°C.

(viii) Social infrastructure available

There is no social infrastructure within the radius of 1Km like schools, universities, hospitals, prisons and community housing etc.

**5. PLANNING BRIEF**(i) Planning Concept (type of industries, facilities, transportation etc) Town and Country Planning/Development authority Classification

The quarry operation involves jackhammer drilling, slurry blasting, excavator are used for loading of Rough stone through tippers to the needy crusher.

There are no habitations or villages en-route between the quarry sites the loaded vehicles are allowed to move only below 40Kms per hour on the roads. The haul roads are sprinkled periodically to prevent dust. Other facilities such as power, transportation and communication, social infrastructure facilities are locally available near project site. The Nearest town is Kulithalai, facilities like Dispensary, post office are available in 8.5Km on Northeastern side.

(ii) Population projection

There are few villages located in this area within 5km radius; the approximate distance and population are given below.

S.No	Name of the Village	Approximate distance & Direction from lease applied area	Approximate population
1.	Iyermalai	1km – Northeast	2250
2.	Sivayam North	3.5km – Southeast	7370
3.	Kuzanthaipatti	1km – Southwest	1360

Basic human welfare Amenities such as Health Center, Schools, Communication Facilities, and Commercial Centers etc are available at Kulithalai located at a distance of 8.5Km on the North eastern side of the area.

**(iii) Land use planning (breakup along with green belt etc.)**

7.5m safety barrier and Nearest Panchayat Roads has been identified to be utilized for Greenbelt appropriate native species of Neem/ Casuarina trees will be planted in a phased manner as described below.

Year	No. of tress proposed to be planted	Survival %	Area to be covered sq.m	Name of the species	No. of trees expected to be grown
I	65	80%	572	Neem/ Casuarina	52
II	65	80%	572	Neem/ Casuarina	52
III	65	80%	572	Neem/ Casuarina	52
IV	65	80%	572	Neem/ Casuarina	52
V	65	80%	572	Neem/ Casuarina	52

**(iv) Assessment of Infrastructure Demand (Physical & Social)**

The existing road facilities are already available which shall be used and maintained. The labors requirement is drawn from the nearest villages. The labors will be brought by jeeps and vans to the quarry site, Medical facilities are available near the project site, Government and private hospitals and other basic amenities and infrastructure facilities like communication center, school supermarket, bus stand are also available in Kulithalai a distance of 8.5Km (NE). This quarry project will provide employment for about 36 persons directly.

**(v) Amenities/Facilities**

The simple methods adopted and the limited scale of activities involved in and Gravel quarrying does not require High Tension Electric Power supply or huge worship facilities. The quarrying work is restricted to one general shift during daytime 8.00am to 6.00pm with 1.00pm - 2.00pm lunch break. Major Machinery repair works are attended at Karur minor repairs are carried out by the nearby mechanics. All facilities and amenities are available in Karur which is 33.0Km on the North western side of the area.

Packaged drinking water will be brought from approved vendors. Mine office, storeroom, toilet and first-aid room will be provided on permanent structures within the lease area after the grant of lease.

**6. PROPOSED INFRASTRUCTURE**

**(i) Industrial Area (Processing area)**

There is no processing area proposed within the lease applied area.

**(ii) Residential area (Non processing area)**

There is no approved habitation within 300m radius from the lease applied area.

**(iii) Green Belt**

7.5m safety barrier and Nearest Panchayat Roads has been identified to be utilized for Greenbelt appropriate native species of Neem/ Casuarina trees will be planted by planting and maintaining native species. The total area for proposed for Green belt is around **0.28.6Ha** out of **2.80.5Ha**. The estimated budget for plantation and maintenance of Green belt development would be around Rs. 2, 44,500/-

**(iv) Social infrastructure**

About 36 employees will be directly benefited and 45 persons will be indirectly benefited, the lease ensure to share all responsible for special benefits like water, health care, Education benefits, and promotion of socio-cultural activities of the nearby villages.

**(v) Connectivity (traffic and transportation road/ Rail/ Metro/ Water ways etc.)**

Mode	Description
Road connectivity	<ol style="list-style-type: none"> <li>1. The approach metal road is situated on the South eastern side of the applied area which connects the village road at a distance 120m.</li> <li>2. The Nearest National Highway (NH-67) Coimbatore – Trichy – 9.0Km - North eastern side.</li> <li>3. The Nearest State Highway (SH-71) Musiri - Pudukkottai - 1Km - South eastern side.</li> </ol>
Railway station & Railway line	<ol style="list-style-type: none"> <li>1. The Nearest Railway station is Kulithalai – 8.5 Km- North eastern side.</li> <li>2. The Nearest Railway line is Karur – Trichy – 8.5Km- North eastern side.</li> </ol>
Air port	<ol style="list-style-type: none"> <li>1. The Nearest Airport is Trichy - 39.0Km – South eastern side</li> </ol>

**(vi) Drinking Water management (Source & Supply of water)**

This proposed Rough stone and Gravel quarry project does not require huge water either for beneficiation or processing. Water required for drinking and domestic consumption for labors is around 2.0 KLD. The packaged Drinking water for this will be brought from approved water vendors.

**(vii) Sewerage System**

Toilets will be constructed on semi-permanent structure and sewage will be discharged once in three months. The sewage waste will be collected in soak pit and discharged as manure for Green belt development.

**(viii) Industrial Waste Management**

No industrial waste will be generated from the project.

**(ix) Solid Waste Management**

The waste generated during quarrying activity is negligible rock mass during handling and rehandling. Hence, there is no waste in this quarrying operation. There is no solid waste generation during the quarrying operation.

**(x) Power Requirement & Supply / source**

The proposed Rough stone and Gravel quarrying does not required any power supply for the quarrying operation. It is proposed to operate in day shift only from 8Am to 6Pm with 1 Hour lunch interval between 1Pm to 2Pm.

**7. REHABILITATION AND RESETTLEMENT (R & R PLAN)****(i) Policy to be adopted (Central/State) in respect of the project affected persons including home oustees, land oustees and landless laborers (a brief outline to be given)**

There is no Rehabilitation and resettlement is involved. The employed labours will be insured as per the Government norms till the end of the life of the quarry. Periodical medical test will be conducted for the labors to monitor the occupational disease. The salaries and benefits will be paid as specified by the instruction given by the labor enforcement officers.

**8. PROJECT SCHEDULE & COST ESTIMATES****(i) Likely date of start of construction and likely date of completion (Time schedule for the project to be given)**

The Rough stone and Gravel quarrying project is likely to get commenced after the execution of quarrying lease. The proposed quantity of reserves is around **3,95,935m<sup>3</sup>** of Rough stone and **49,332m<sup>3</sup>** of Gravel for a period of Five years.

**(ii) Estimated project cost along with analysis in terms of economic viability of the project****A. Fixed Asset cost:**

Land cost	=	Rs. 14, 61,405/-
Machinery to be used	=	Rs. 40, 00,000/-
Refilling/ Fencing	=	Rs. 2, 07,600/-
Labourers shed	=	Rs. 1, 00,000/-
Sanitary facility	=	Rs. 85,000/-
Others items (First aid room & accessories)=		Rs. 85,000/-
Drinking water facility for the labourers	=	Rs. 1, 00,000/-
Sanitary arrangement	=	Rs. 85,000/-
Safety kit	=	Rs. 1, 00,000/-
Water sprinkling	=	Rs. 1, 00,000/-
Greenbelt etc.	=	Rs. 2, 44,500/-
<b>Total Project cost</b>	=	<b><u>Rs. 65, 68,505/-</u></b>

**B. EMP cost:**

Air Quality monitoring	=	Rs. 2, 60,000/-
Water quality sampling	=	Rs. 90,000/-
Noise monitoring	=	Rs. 10,000/-
Ground vibration test	=	Rs. 20,000/-
Total EMP cost	=	<b><u>Rs. 3, 80,000/-</u></b>

**The total project cost:**

A. Project cost	=	Rs. 65, 68,505/-
B. EMP cost	=	Rs. 3, 80,000/-
Total Project cost	=	Rs. 69, 48,505/-
CER Cost (2%)	=	Rs. 1, 39,000/-
<b>Total cost</b>	=	<b><u>Rs. 70, 87,505/-</u></b>

- The total cost of the project cost is about Rs.70, 87,505/- (Rupees Seventy lakhs eighty seven thousand five hundred and five only).
- The total EMP cost is Rs. 3, 80,000/- (Rupees Three lakhs and eighty thousand only).

**Population Benefit**

The applicant ensures to take social responsibilities like providing School Note books, Uniforms to the Students below poverty level beside if the villages require any borehole for public use the applicant ensure to do so.

The applicant will also take part and contribute the native cultural activities in the nearby villages. During summer seasons packaged drinking water will be kept in the village for public and for tress passers. The applicant will involve and contribute all the socio cultural allocation in and around the area. The budget provisions and allocation for all the above activities will be around Rs.1, 39,000/-for the period of Five years.

**MINE CLOSURE PLAN:****Steps proposed for phased restoration, reclamation of already mined out areas:**

- After the exploitation the Rough stone fencing will be constructed around the pit to prevent inherent entry of public.
- The top benches will be planted with suitable native species
- The pit will be allowed to collect water which will act as a temporary Reservoir which will enhance the Ground water level of the nearby areas.
- There is no proposal for back filling, reclamation and rehabilitation. The quarry pit will be fenced to prevent inherent entry of public.

**Measures to be under taken on mine closure as per Act & Rules:**

Measure will be taken as per Act & Rules.

**Mitigation measure to be undertaken for safety and restoration / reclamation of the already mined out area:**

- Drilling will be carrying out by wet drilling to control the dust into the air.
- Blasting will be carrying out on limited scale.
- Mist spray on haul road will be proposed to prevent the dust propagation into the air.
- The plantation will be carried out on the safety barriers to prevent Noise, besides wet drilling will be practiced to prevent dust.
- All the machineries will be maintained in good conditions as per RTO and TNPCB Norms to prevent Noise, Smoke and vibration.
- Machineries will be periodically maintained by experienced mechanic to minimize noise, Smoke and ground vibration.

**9. ANALYSIS OF PROPOSAL (FINAL RECOMMENDATIONS)****(i) Financial and social benefits with special emphasis on the benefit to the local people including tribal population, if any, in the area**

The lease applied area is Patta land in Sivayam (North) Village, Krishnarayapuram Taluk, Karur District. There are no tribal populations in and around the area about 36 persons directly will be benefited by these projects, besides the government. The proposed quarry will bring economic benefits to the state by the way of royalty for mineral, surface rent, sale tax/VAT, income tax etc.

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. The detail furnished in this mining plan is based on information provided by the State Government and the lessee. By considering the merit of the project the permission may be granted.

Date : 01.07.2019

Place : Karur

**1. Signature of the Applicant**

For Tvl. Navamani Mines Private Limited,

P. Mani  
(Managing Director)

**2. Signature of the Qualified Person**

Dr. P. Thangaraju, M.Sc., Ph.D.,

**Baseline Studies is Prepared for**

**Rough stone and Gravel Quarry Over an extent of 2.80.5Ha,**

**S.F.No. 15/1 & 15/2, Sivayam (North) Village,**

**Krishnarayapuram Taluk, Karur District**

BASELINE STUDIES FOR SIVAYAM (NORTH)  
ROUGH STONE AND GRAVEL QUARRY PROJECT BELONGS TO  
TVL. NAVAMANI MINES PRIVATE LIMITED.

Introduction

The Base line study is prepared for **Sivayam (North) Rough stone and Gravel quarry** project. Base line studies provide a base data for regular Environmental Monitoring and Environmental Impact Assessment (EIA). The baseline study is provides bench mark for carrying out environmental Impact assessment due to the course of quarrying and mining activities. The purpose of these studies is to evaluate the benefited and adverse effect of developing activities on the neighborhood environment and the area where the quarrying is proposed to carry out.

**Tvl. Navamani Mines Private Limited** has applied for Rough stone and Gravel quarry project lease over an extent of **2.80.5Ha in S.F.No. 15/1 & 15/2 at Sivayam (North) Village, Krishnarayapuram Taluk, Karur District**. The comprehensive base line studies and standards constitute of collecting data on Ambient Air quality, Water quality, Ground water table and Flora and Fauna statistics.

General approach to Environment

The Environmental besides data comprise of the features present of the site area its includes Environmental features such as Forest area, Conservation area, Water bodies, Industries, Wild life and fauna place of historic and importance etc.,

The data collected to cover the following.

1. Land Environment
2. Water environment
3. Air environment
4. Noise Environment
5. Ecology and Biodiversity

Land Environment. -

Land use pattern of the area is studied through Survey of India Toposheet No **58 - J/05**, satellite imageries and Bhuvan (ISRO) LISS III data additionally Google earth imageries are used to visual interpretation. The interpretation made visually by identifying the land use cover through the keys given in the map. In the study area 10Km radius map has been taken for the analysis of land use cover.

Since the mining is carried out by opencast category “B2” proposed to operate in Mechanized method, studies on land environment of Eco-system play an imperative role in identifying susceptible issues and taking appropriate action to uphold ecological equilibrium in the region. The main objective of this section is to provide a baseline status of the study area covering 10Km radius around the proposed mine site so that temporal changes due to the mining activities on the surroundings can be assessed in future.

The total lease is **2.80.5Ha** out of which **2.25.3Ha** is proposed for mining activity. The proposed area is Patta land. No forest land is involved in this proposal. The quarry operation proposed up to a depth of **38m [3m Gravel + 35m Rough stone]** for a mining period of Five years, the proposed depth is well above the water table.

The lease applied area exhibits plain terrain. The area has gentle sloping towards south western side. Due to mining of Rough stone and Gravel there is no remarkable impact of mining on local environment, except land degradation within lease area.

As per the Approved mining plan at conceptual stage after complete exploitation of the mineral upto ultimate pit limit, the mined out pit will be allowed to collect the rain water which will act as a temporary reservoir, this temporary storage of water will act as an artificial recharge pond which will enhance the near ground water level and the static level of the nearby wells.

Unutilized land will be converted into green belt, hence impact due to change in land use is positive.

#### **MITIGATION MEASURES**

Due to the quarry activities in the project area the land use pattern will be altered. In order to minimize the adverse effects, the following control measures will be implemented:

- The land use pattern of the area does not belong to forest, agriculture land hence there is no significant impact on the biodiversity due to this mining operation in the core zone.
- There are no habitations within the radius of 300m. The most of the people are living in the habitations are working in these mines, hence no displacement of habitations in core and buffer zone due to this project.
- There is no Forest in core zone, No degradation of forest due to this project. The core zone belongs Patta land. No endemic, threatened and declining species within the project area.

- Construction of Garland drains all around the quarry pit and construction of check dam at strategic location in lower elevations to prevent soil erosion due to surface runoff during rainfall and also to collect the storm water for various uses within the proposed area.
- Green belt development along the boundary within safety zone. The water stored in the mined out pit will be used for greenbelt.
- Thick plantation will be carried out on unutilized area, top benches of mined out pits, on safety barrier, etc.,
- At conceptual stage, the land use of mining area will change into area covered with greenbelt and water reservoir.
- Proper fencing will be carried out at the conceptual stage Security will be posted round the clock, to prevent inherent entry of the public and cattle.

### Water Environment

Geo Physical investigation was carried out by signal stacking resistivity meter 4 profiling was carried out in the area for lease and 10 Vertical electrical sounding was carried out to find out the lateral variation and vertical in homogeneity's it was observed that the water table is found to be more than **50-45m** below ground level.

The water sample was collected from the existing borehole near the village and analyzed as per IS-10500; IS-3025 & IS-2488 (Part 1-5). Sample of water was collected in the bottle. Sample for chemical analysis was collected in polyethylene carboys. Sample for bacteriological analysis was collected in the sterilized bottle. Specified physio-chemical and Bacteriological parameters have been analyzed for projecting the existing water quality status in the study area.

<i>Test</i>	<i>Results</i>	<i>Limits as per IS 10500 : 2012</i>	
		<i>Acceptable Limit</i>	<i>Permissible limit in the absence of alternate source</i>
pH at 25 <sup>0</sup> C	7.14	6.5 – 8.5	No relaxation
Total Dissolved solids	725mg/l	500 mg/l	2000mg/l
Total Hardness	423	200	600
Conductivity @25 <sup>0</sup> C	836 $\mu$ s/cm	-	-
Calcium as Ca	63mg/l	75mg/l	200mg/l
Chloride as Cl	47mg/l	250mg/l	1000mg/l
Magnesium Mg	29 mg/l	30mg/l	100mg/l

*P. [Signature]*

The pH value varies from 7.14 indicates slight alkalinity of water. The TDS of the water is 725 mg/l is well within the permissible limit of 2000mg/l.

Hardness is the important parameter of water quality hardness is defined as the concentration of Calcium and Magnesium in water, the hardness of the water is 423 mg/l this value is within the limit acceptable standard of BIS.

During rainy season the water from the mine will be collected in the mine pit only hence the water regime in the surroundings will not be affected in any manner.

As per the IS: 10500-2012 norms the water in the mine pit is fit for drinking purpose in the absence of alternate sources.

### Air Environment

The prime objective of the Baseline Air Quality Monitoring is to evaluate the Existing air quality of the area in conformity to NAAQS (National Ambient Air Quality Standards) 2009.

Air environment is responsible for the health of human beings, Animals, Wild life and vegetation. Air pollutants emitted by project and non-point source are transported dispersed or concentrated by meteorological and topographical conditions.

#### ANTICIPATED EMISSION SOURCE

Activity	Process Sources	Fugitive Dust Sources
Mining	Drilling	Blasting
		Loading and Hauling
Transportation		Haul Roads

The area in and around is quit fresh and the impact an air environment will always be under controlled and will be monitored. No processing or beneficiation is proposed except quarrying hence the impact an air will be controlled monitored and mitigated.

The ambient air quality within the study area on both core and buffer zone forms the baseline information. The air quality monitoring points selected based on the Meteorological conditions, topography of the study area and likely impact boundary location of the ambient air quality monitoring stations was selected on the basis of wind pattern.

The Ambient Air quality monitoring stations are shown in the map. Four major pollutions were consideration significantly.

- |      |                           |   |                 |
|------|---------------------------|---|-----------------|
| I.   | Particle matter           | - | PM              |
| II.  | Suspended Particle Matter | - | SPM             |
| III. | Sulphur dioxide           | - | SO <sub>2</sub> |
| IV.  | Nitrogen dioxide          | - | NO <sub>2</sub> |

P. [Signature]

Respectively the overall of emission we identified the direction of the wind in the majority observed time was predominantly south west to North East direction.

<i>S. No</i>	<i>Test Parameters</i>	<i>Unit</i>	<i>Protocol</i>	<i>Results</i>	<i>CPCB Standards</i>
1	Particulate matter less than 10 Micron Size (PM <sub>10</sub> )	µg/m <sup>3</sup>	IS 5182 Part 23-2006	42.71	100
2	Particulate matter less than 2.5 micro size (PM <sub>2.5</sub> )	µg/m <sup>3</sup>	IS 5182 part 4-1999 (Reaff 2010)	39.6	60
3	Sulphur dioxide SO <sub>2</sub>	µg/m <sup>3</sup>	IS 5182 part 2-2001 (Reaff 2006)	4.7	80
4	Nitrogen Dioxide NO <sub>2</sub>	µg/m <sup>3</sup>	IS 5182 Part 6-2006	3.9	80

The concentrations of PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>x</sub>, and Pb are observed to be well within the standards prescribed by Central Pollution Control Board (CPCB) for Industrial, Rural, Residential and Other area.

### **Mitigation Measures**

The following additional measures will also be adopted such as,

- Dust generation will be reduced at the source level in drilling by adopting wet drilling and using sharp teeth of shovels in the HEMM.
- Water spraying on haul roads, service roads will help to control the dust pollution.
- Materials will be transported after covering Tarpaulin.
- Comprehensive green belt in the safety barrier and haul roads will be carried out to arrest the dust particles.

### **Noise Environment**

Noise is any sound that is undesirable because it interferes with speech and hearing. The environment impact of noise can have several effects varying from Noise induced hearing loss to annoyance depending on loudness of noise levels. Noise has a significant impact on the quality of life and in that sense it is a health problem in accordance with the (WHO) definition of health.

Impact of noise on environment depends on various factors such as intensity distance from the source type of exposure and nature (Impulse or continuous), the type of activities movement of machineries, traffic density etc., hence it is to measure the levels so as to adjust the Environment Impact and undertake amendment measures if warranted.

Standard precession noise level meter were used for the purpose. The readings in the form of instantaneous sound measures levels were taken in the time brackets of two hours in order to here carry out assessment of noise level in the area.

There are four quarries located within the radius of 500m from the proposed project site (Details – Abandoned quarries – Nil, Lease expired quarries – 1 (2.34.5Ha-Lease expired on 09.07.2019), Present Proposal– 1 (2.80.5Ha) and Existing quarries– 3 (5.99.5Ha). The total extent of the Existing and proposed quarry within the radius of 500m is **8.80.0ha** and there is no a factory or industries, even the traffic density in the area is very little. Noise Monitoring was carried out in Day time 06.00 to 22.00 hrs

<i>S.No</i>	<i>Location</i>	<i>Results in Day time Leq (A)</i>	<i>Ambient Air quality Standard in Respect to Noise</i>
1	Project area	40.20	75
2	Iyermalai Village	38.10	75
3	Kuzanthaipatti Village	38.30	75
4	1 km SH Road	39.60	75

- Limits of Noise level in Industrial area is 75 dB (A)
- Mining is categorized as Industrial Sector

## Biological Environment

Biological environment of any area constitute all living beings of that area, it is an integral part of the Environment. Hence, any change in the surrounding environment could cause loss of species or decrease in biodiversity of the area. Therefore, the present study is proposed to Assess the impact of the proposed projects on biological environment of the project site and the vicinity of the area. In general biological environment is represented by flora and fauna. Flora constitutes the herbs, shrubs and trees and fauna constitutes the mammals, birds, reptiles, arthropods, amphibians, fishes etc.,

## LIST OF FLORA

### Trees

<b>S.No</b>	<b>Scientific Name</b>	<b>Family</b>	<b>Local Name</b>
1.	<i>Casuarinaequisetifolia</i>	Casuarina	Casuarinaceae
2.	<i>Azadirachataindica</i>	Meliaceae	Veppamaram, Neem
3.	<i>Tectonagrandis</i>	Lamiaceae	Teak
4.	<i>Morindatinctoria</i>	Rubiaceae	Nuna

Shrubs

S.No	Scientific Name	Family	Local Name
1.	<i>Passiflora foetida</i>	Passifloraceae	Thazhai
2.	<i>Aerva persica</i>	Amaranthaceae	Perumpulai
3.	<i>Cassia auriculata</i>	Fabaceae	Aavarampoo
4.	<i>Casuarina litorea</i>	Casuarinaceae	Nilavahai
5.	<i>Bougainvillea glabra</i>	Nyctaginaceae	Bougainvillea
6.	<i>Calotropis gigantea</i>	Asclepiadaceae	Erruku
7.	<i>Vitex negundo</i>	Verbenaceae	Nocchi

Herbs

S.No	Scientific Name	Family	Local Name
1.	<i>Achyranthes aspera</i>	Amaranthaceae	Nayuruvi
2.	<i>Parthenium hysterophorus</i>	Asteraceae	Congress grass
3.	<i>Phyllanthus nodifolius</i>	Verbanaceae	Poduthalai
4.	<i>Tephrosia purpurea</i>	Fabaceae	Fish poison, kollukkaivelai
5.	<i>Citrullus colocynthis</i>	Cucurbitaceae	Peykkumatti
6.	<i>Croton bonplandianus</i>	Euphorbiaceae	Mannannaichedi
7.	<i>Ocimum gratissimum</i>	Labiatae	Tulasi

LIST OF FAUNAMammals

S.No	Common name	Scientific name	Family	IUCN /WPA schedule
1.	Rat	<i>Rattus rattus</i>	Muridae	LC/V
2.	Squirrel	<i>Funambulus palmarum</i>	Sciuridae	LC/IV
3.	Bandicoot	<i>Bandicota indica</i>	Murids	LC/IV
4.	Common mouse	<i>Mus musculus</i>	Murids	LC/IV

**Reptiles**

S.No	Common name	Scientific name	Family	IUCN /WPA schedule
1.	Lizard	<i>Calotesversicolor</i>	Agamidae	LC/VII
2.	Krait	<i>Bungaruscoeruleus</i>	Elapidae	LC/IV
3.	Indian cobra	<i>Najanaja</i>	elapid snakes	LC/IV
4.	Common frog	<i>Ranatigrina</i>	True frog	LC/IV

**Birds**

S.No	Common name	Scientific name	Family	IUCN /WPA schedule
1.	House crow	<i>Corvussplendens</i>	Corvidae	LC
2.	Spotted dove	<i>Streptopeliachinensis</i>	Columbidae	LC
3.	Cattle egret	<i>Bubulcus ibis</i>	Ardeidae	LC
4.	Crow-pheasant or coucal	<i>Centropussinensis</i>	Cuckoos	LC/IV
5.	Periduasiatica	<i>Jungle bush quail</i>	Phasianidae	LC/IV
6.	Staone curlew	<i>Burhinusoedicuenus</i>	Stone-curlew	LC/IV

**INTERPRETATION:**

There is no schedule I species of animals observed within study area (500m Radius) as per Wildlife Protection Act 1972 as well as no species is in Vulnerable, Endangered or Threatened category as per IUCN. There is no endangered red list species found in the study area. Hence this small mining operation over short period of time will not have any significant impact on the surrounding flora and fauna.

**Conclusion**

The base line studies relents all the Baseline Monitoring Results are well within the prescribed limits No hazardous levels of dust and Noise and prevailing at the project area. A well implemented environmental Management plan as discussed in the Mining plan will help in mitigation the adverse effects due to quarrying activities.

The movement of vehicles is very minimal. The entire vehicle used will be periodically maintained by well experienced mechanic and kept under TNPCB standards, Emission testing will be carried out periodically and water will be sprinkled periodically to prevent dust into air.

Environmental care and attitude of preventing environment is inducted to the proponent and advice to carry out and mitigate the minor impacts due to quarrying. Appropriate persons are advice to get employed to protect the Environment and Ecology of the area.

Date :01.07.2019

Place : Karur

**1. Signature of the Applicant**

For Tvl. Navamani Mines Private Limited,



P.Mani  
(Managing Director)

**2. Signature of the Qualified Person**

Dr. P.Thangaraju, M.Sc., Ph.D.,



**FINAL ENVIRONMENTAL IMPACT ASSESSMENT &  
ENVIRONMENT MANAGEMENT PLAN**

**FOR OBTAINING**

**Environmental Clearance under EIA Notification – 2006**

**Schedule Sl. No. 1 (a) (i): Mining Project**

**“B1” CATEGORY – MINOR MINERAL – NON-FOREST LAND – PATTA LAND/  
EXISTING QUARRY**

**CLUSTER EXTENT – 8.80.0 ha**

**TVL. NAVAMANI MINES PRIVATE LIMITED ROUGH STONE AND GRAVEL  
QUARRY**

Project Proponent	Project Location
<b>TVL. NAVAMANI MINES PRIVATE LIMITED</b> <b>Thiru.Pazhaniyandi Vimalathithan- Director</b> S/o. Pazhaniyandi, No.5/898, Alagu Nagar, Trichy Main Road, Namakkal District – 637 001	15/1 & 15/2, Sivayam (North) Village, Krishnarayapuram Taluk Karur District. Tamil Nadu State
PROJECT DETAIL	
Extent	- <b>2.80.5 Ha</b>
Total Year-wise Production	- 3,95,935 m <sup>3</sup> of Rough stone & 49,332 m <sup>3</sup> of Gravel
Proposed Depth	- 38m bgl (3m Gravel + 35m Rough stone)

EIA report prepared as per ToR

Lr. No. SEIAA-TN.6993/SEAC/ToR-761/2020 Dated 24.09.2020

Advertisement Date : 19.05.2023

Advertisement Published Newspaper : The Times of India and Dhinakaran

Public Hearing Date : 21.06.2023

**Environmental Consultant**

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Web: [www.gemssalem.com](http://www.gemssalem.com)



ENVIRONMENTAL LAB

**KGS ENVIRO LABORATORY PVT LTD**

No.16, F1, Bharathi Flats, Bharathiyar Street, Cholambedu Main Road,  
Thirumullaivoyal, Chennai – 600 062

Baseline Monitoring Season – March 2021 to May 2021

**JULY 2023**

For the easy representation the proposed quarries and existing quarries are designated as below –

<b>CLUSTER QUARRIES</b>				
<b>PROPOSED QUARRY</b>				
<b>CODE</b>	<b>Name of the Owner</b>	<b>S.F.Nos &amp; Village</b>	<b>Extent (ha)</b>	<b>Remarks</b>
P1	<b>Tvl. Navamani Mines Private Limited</b> Thiru. Palaniyandi Vimalathithan, Director, No.5/898, Alagu Nagar, Trichy Main Road, Namakkal District – 637 001	15/1 & 15/2 Sivayam (North) Village	2.80.5	ToR obtained vide Lr.No. SEIAA- TN.F.No.6993/SEA C/TOR-761/2020 Dated 24.09.2020
<b>TOTAL</b>			<b>2.80.5</b>	
<b>EXISTING QUARRIES</b>				
<b>CODE</b>	<b>Name of the Owner</b>	<b>S.F.Nos &amp; Village</b>	<b>Extent ( ha)</b>	<b>Lease period</b>
E1	<b>Thiru. A.Shanmugaraj</b> S/o. Appavu, No 219, Manapparai Main Road, Iyyar Malai, Sivayam Post, Karur District	13/1, 14/2 and 14/3 Sivayam (North) Village	2.49.5	07.02.2018 to 06.02.2023
E2	<b>Thiru. D. Rathinam</b> S/o. Duraisamy, 153/A, Kampan Street, Kavery Nagar, Kulithalai Taluk, Karur District	30/1A, 30/1B Sivayam (North) Village	2.46.0	07.02.2018 to 06.02.2023
E3	<b>Tmt. M.Jayamani,</b> W/o. Manoharan Ponniyagoundanpudhur, Punnamchathiram, Aravakurichi Taluk, Karur District	30/4, 31/1 Sivayam (North) Village	1.04.0	06.12.2018 to 05.12.2023
E4	<b>Thiru. M.Palaniyandi,</b> S/o, Mottiyandi, 2/34, Ambalakkara street, Somarasampettai, Srisangam Taluk, Trichy District.	2/2 Sivayam (North) Village	2.34.5	10.07.2014 to 09.07.2019
<b>Total Extent</b>			<b>5.99.50</b>	
<b>Total Cluster Extent</b>			<b>8.80.00</b>	

**Note: -**

- **Cluster area is calculated as per MoEF & CC Notification – S.O. 2269 (E) Dated: 01.07.2016**

As per above notification S.O.2269(E) dated : 01.07.2016 in para (b) in Appendix XI,- (ii) (5): The lease not operative for three years or more and leases which have got environmental clearance as on 15th January, 2016 shall not be counted for calculating the area of cluster, but shall be included in the Environment Management Plan and the Regional Environmental Management Plan”

## EXECUTIVE SUMMARY

### 1. INTRODUCTION

Rough Stone & Gravel is the major requirements for construction industry. This EIA report is prepared for Tvl. Navamani Mines Private Limited Rough Stone and Gravel Quarry project considering Cumulative load of proposed & existing quarries Sivayam (North) Village Rough Stone and Gravel Cluster Quarries consisting of Five (5) quarries total Cluster extent of 8.80.0 ha quarry in Sivayam (North) Village, Krishnarayapuram Taluk, Karur District and Tamil Nadu State, cluster area calculated as per MoEF & CC Notification S.O. 2269(E) Dated 1<sup>st</sup> July 2016.

This EIA Report is prepared in compliance with ToR obtained vide –  
Lr. No. SEIAA- TN/F.No. .6933/SEAC/ToR-761/2020, Dated – 24.09.2020

The Baseline Monitoring study has been carried out during the period of March – May 2021(Baseline Data Used is as per MoEF & CC Office Memorandum No. J-11013/41/2006-IA-II (I) (Part) Dated 29<sup>th</sup> August 2017 & MoEF & CC Office Memorandum F. No. IA3-22/10/2022-IA.III [E 177258] Dated: 08.06.2022) and this EIA and EMP report is prepared for considering cumulative impacts arising out of this project, the Cumulative Environmental Impact Assessment study is undertaken, which is followed by preparation of a detailed Environmental Management Plan (EMP) individually to minimize those adverse impacts.

**“Final EIA EMP Report is prepared on the basis of ToR Obtained and Outcome of Public Hearing carried out Dated: 21.06.2023 for the grant of Environmental Clearance from SEIAA, Tamil Nadu”**

#### 1.1 DETAILS OF PROJECT P –

<b>Name of the Project</b>	Tvl. Navamani Mines Pvt Ltd Rough Stone and Gravel Quarry
<b>S.F. No.</b>	15/1 & 15/2
<b>Extent &amp; Classification</b>	2.80.5 ha – Patta Land (Classified as Punjai)
<b>Village &amp; Taluk</b>	Sivayam (North) Village & Krishnarayapuram Taluk
<b>District</b>	Karur District

#### 1.2 CLUSTER QUARRIES DETAILS

<b>CLUSTER QUARRIES</b>				
<b>PROPOSED QUARRY</b>				
<b>CODE</b>	<b>Name of the Owner</b>	<b>S.F.Nos &amp; Village</b>	<b>Extent (ha)</b>	<b>Remarks</b>
P1	Tvl. Navamani Mines Private Limited Thiru. Palaniyandi Vimalathithan, Director, No.5/898, Alagu Nagar, Trichy Main Road, Namakkal District – 637 001	15/1 & 15/2 Sivayam (North) Village	2.80.5	ToR obtained vide Lr.No. SEIAA- TN.F.No.6993/SEA C/TOR-761/2020 Dated 24.09.2020
<b>TOTAL</b>			<b>2.80.5</b>	
<b>EXISTING QUARRIES</b>				
<b>CODE</b>	<b>Name of the Owner</b>	<b>S.F.Nos &amp; Village</b>	<b>Extent ( ha)</b>	<b>Lease period</b>
E1	<b>Thiru. A.Shanmugaraj</b> S/o. Appavu, No 219, Manapparai Main Road, Iyyar Malai, Sivayam Post, Karur District	13/1, 14/2 and 14/3 Sivayam (North) Village	2.49.5	07.02.2018 to 06.02.2023

E2	<b>Thiru. D. Rathinam</b> S/o. Duraisamy, 153/A, Kampan Street, Kavary Nagar, Kulithalai Taluk, Karur District	30/1A, 30/1B Sivayam (North) Village	2.46.0	07.02.2018 to 06.02.2023
E3	<b>Tmt. M.Jayamani,</b> W/o. Manoharan Ponniyagoundanpudhur, Punnamchathiram, Aravakurichi Taluk, Karur District	30/4, 31/1 Sivayam (North) Village	1.04.0	06.12.2018 to 05.12.2023
E4	<b>Thiru. M.Palaniyandi,</b> S/o, Mottiyandi, 2/34, Ambalakkara street, Somarasampettai, Srisangam Taluk, Trichy District.	2/2 Sivayam (North) Village	2.34.5	10.07.2014 to 09.07.2019
<b>Total Extent</b>			<b>5.99.50</b>	
<b>Total Cluster Extent</b>			<b>8.80.00</b>	

Note: -

- **Cluster area is calculated as per MoEF & CC Notification – S.O. 2269 (E) Dated: 01.07.2016**

As per above notification S.O.2269(E) dated : 01.07.2016 in para (b) in Appendix XI, - (ii) (5): The lease not operative for three years or more and leases which have got environmental clearance as on 15th January, 2016 shall not be counted for calculating the area of cluster, but shall be included in the Environment Management Plan and the Regional Environmental Management Plan

### 1.3 SALIENT FEATURES OF THE PROPOSAL

SALIENT FEATURES OF PROJECT				
Name of the Quarry	Tvl. Navamani Mines Private Limited Rough Stone and Gravel Quarry			
Mining Plan Period / Lease Period	5 Years			
	Pit	Length in m	Width in m	Depth in m
Existing Pit dimension	I	25	15	3
	II	37	18	3
Ultimate Pit dimension	I	208	103	38
Toposheet No	58 J/05			
Latitude between	10°52'19.57"N to 10°52'25.68"N			
Longitude between	78°22'26.70"E to 78°22'34.23"E			
Highest Elevation	124 m AMSL			
Geological Resources	Rough Stone in m <sup>3</sup>		Gravel m <sup>3</sup>	
	9,80,455		84,039	
Mineable Reserves	Rough Stone in m <sup>3</sup>		Gravel m <sup>3</sup>	
	3,95,935		49,332	
Water Level in the surrounds area	The Water table is found at a depth of 50m in summer and at 45m in rainy seasons.			
Method of Mining	Opencast Mechanized Mining Method involving drilling and blasting			
Machinery proposed	Jack Hammer	10 Nos		
	Compressor	2 Nos		
	Hydraulic Excavator	2 Nos		
	Tipplers	5 Nos		
Blasting Method	Usage of Slurry Explosive with MSD detonators			
Proposed Manpower Deployment	36 Nos			
Project Cost	Rs 65, 68,505/-			
Cer Cost	Rs.5,00,000/-			

Source: Approved Mining Plan

## 1.4 STATUTORY DETAILS

### PROPOSAL –

- The proponent applied for Rough Stone and Gravel Quarry Lease Dated: 24.04.2019
- Precise Area Communication Letter was issued by the District Collector, Karur, vide letter Rc.No 256/Kanimam/2019 Dated 19.06.2019
- The Mining Plan was prepared by Qualified Person and approved by Assistant Director, Geology and Mining, Karur District, vide Rc.No 256/Kanimam/2019 Dated 19.06.2019
- The proposed project falls under “B1” Category as per Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018
- Proponent applied for ToR for Environmental Clearance vide online Proposal No. SIA/TN/MIN/38701/2019 Dated: 05.07.2019

## 2. PROJECT DESCRIPTION

The proposed project is site specific and there is no additional area required for this project. There is no effluent generation/discharge from the project site.

Rough Stone is proposed to be excavated by opencast mechanized method involving splitting of rock mass of considerable volume from the parent rock mass by jackhammer drilling and blasting, hydraulic excavators are used for loading the Rough Stone from pithead to the needy crushers and rock breakers to avoid secondary blasting.

### 2.1 SITE CONNECTIVITY TO THE PROJECT AREA

Nearest Roadway	Cart Track – 150m – South
	(Connecting – Ayyarmalai – Kuzhanthai patti Village) Village Road – 400m North West (Kuzhanthai patti Village)
	(NH 67) Karur – Trichy – 9.0 km North
	(SH 71) Kulithalai – Manapparai - 1.3 km East side
Nearest Village	Kuzhanthai patti Village – 1.0 km- South West
Nearest Town	Kulithalai – 9.0 km - NW
Nearest Railway	Kulithalai – 9.0 km - NW
Nearest Airport	Tiruchirapalli Airport – 37 km – SE
Seaport	Thoothukudi - 235 km South

### 2.2 LAND USE PATTERN OF THE PROJECT AREA

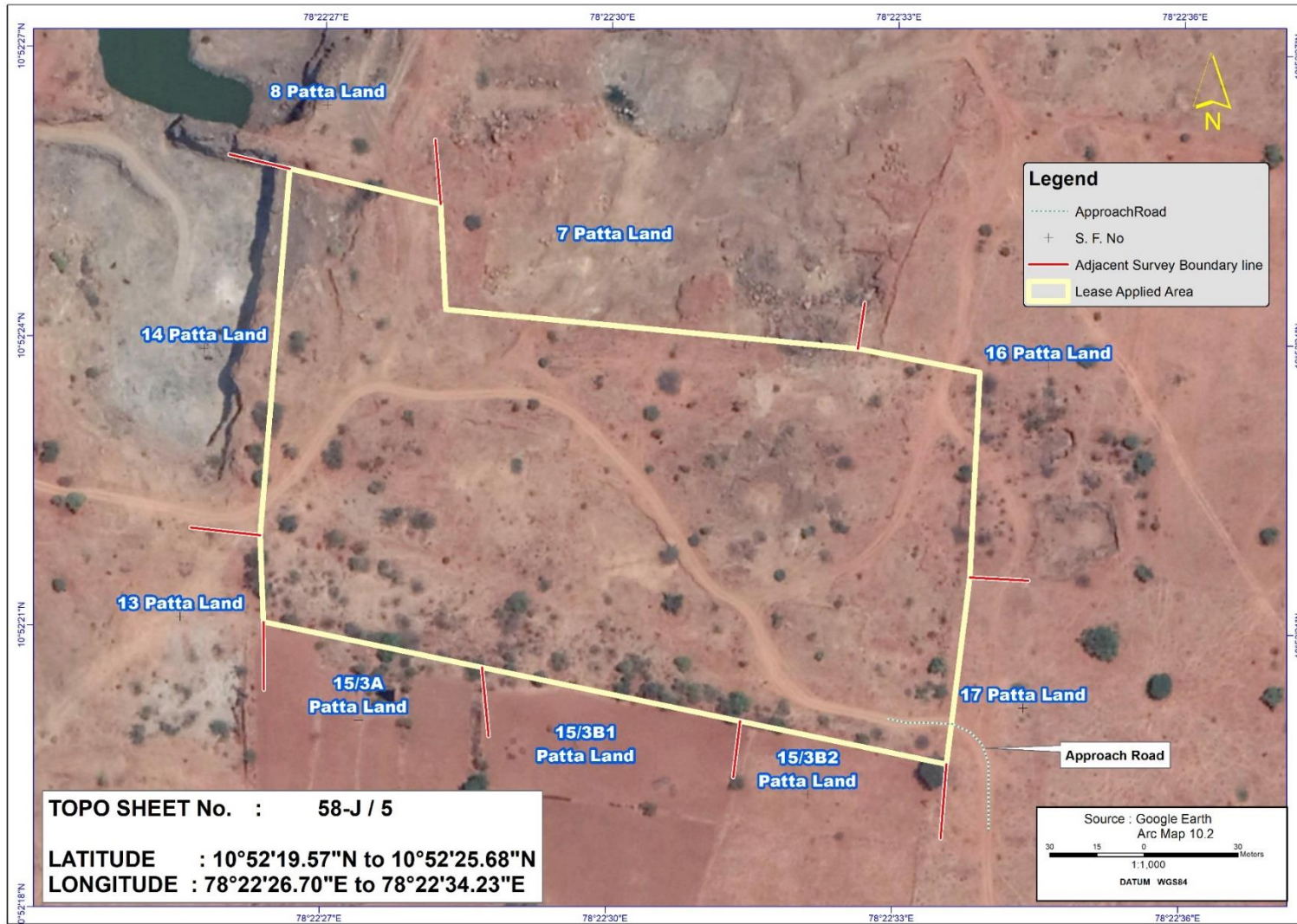
Description	Present area in (ha)	Area at the end of life of quarry (Ha)
Area under quarry	0.10.0	2.25.3
Infrastructure	Nil	0.01.0
Roads	Nil	0.02.0
Green Belt	Nil	0.28.6
Un – utilized area	2.70.5	0.23.6
<b>Grand Total</b>	<b>2.80.5</b>	<b>2.80.5</b>

### 2.3 OPERATIONAL DETAILS OF LEASE APPLIED AREA

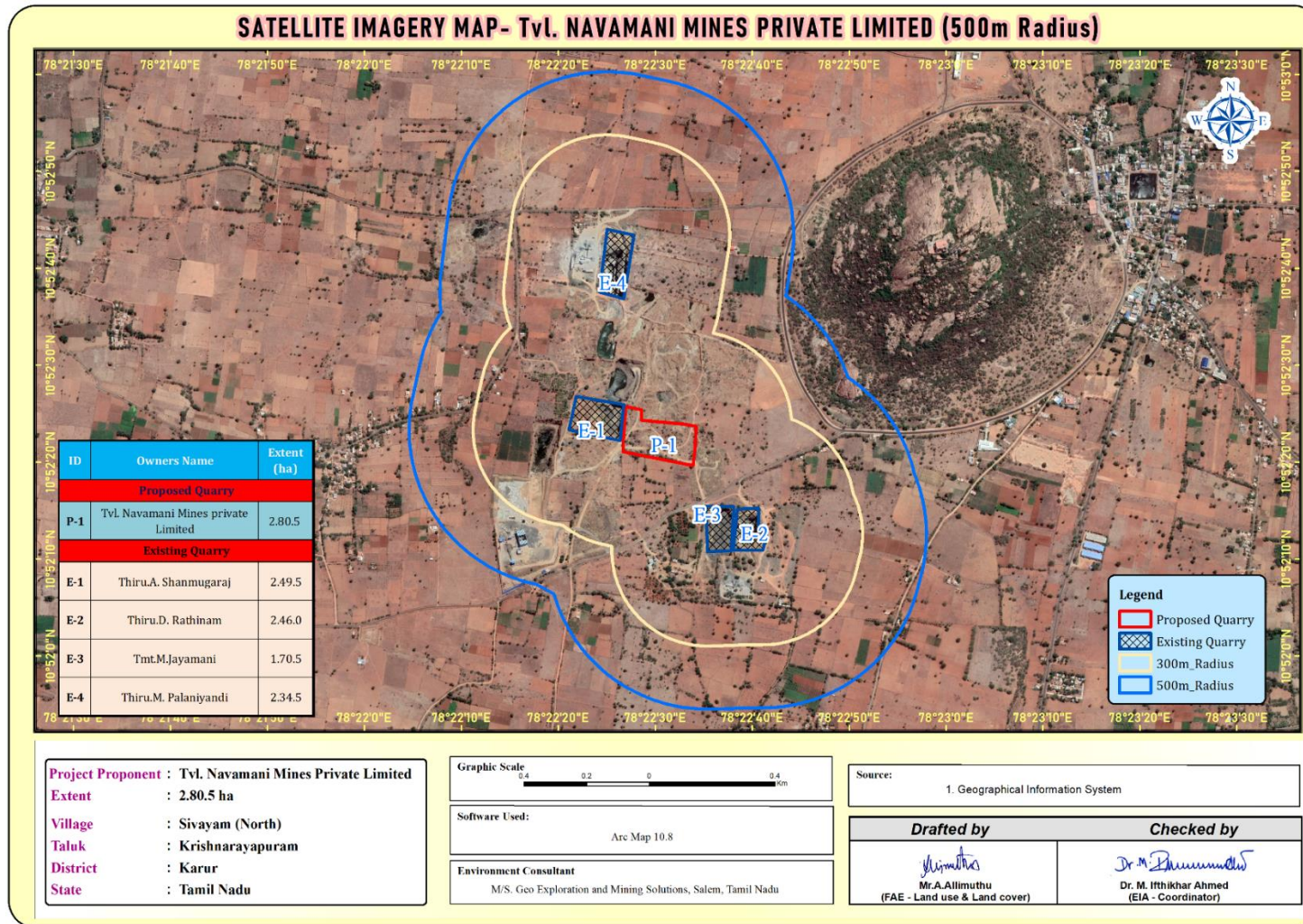
PARTICULARS	DETAILS	
	Rough Stone (5Year Plan period)	Gravel (3Year Plan period)
Geological Resources in m <sup>3</sup>	9,80,455	84,039
Mineable Reserves in m <sup>3</sup>	3,95,935	49,332
Production for five-year plan period in m <sup>3</sup>	3,95,935	49,332
Mining Plan Period / Lease Applied Period	5 Years	
Number of Working Days	300 Days	
Production per day in m <sup>3</sup>	264	55
No of Lorry loads (12m <sup>3</sup> per load)	22	5
Proposed Depth for Mining Plan Period	38m (3m Gravel + 35m Rough stone)	

Source: Approved mining plan & Terms of Reference

**FIGURE – 1: GOOGLE IMAGE SHOWING PROJECT AREA**



**FIGURE – 2: GOOGLE IMAGE SHOWING CLUSTER QUARRIES**



## 2.5 METHOD OF MINING

The method of mining is Opencast Mechanized Mining Method is being proposed by formation of 5.0 meter height bench with a bench width not less than the bench height.

The Rough Stone is a batholith formation and the splitting of rock mass of considerable volume from the parent rock mass will be carried out by deploying jackhammer drilling and Slurry Explosives will be used for blasting. Hydraulic Excavators attached with Rock Breakers unit will be deployed for breaking large boulders to required fragmented sizes to avoid secondary blasting and hydraulic excavators attached with bucket unit will be deployed for loading the Rough Stone into the tippers and then the stone is transported from pithead to the nearby crushers.

## 2.6 PROPOSED MACHINERY DEPLOYMENT

S.NO.	TYPE	NOS	SIZE/CAPACITY	MOTIVE POWER
1	Jack hammers	10	1.2m to 2.0m	Compressed air
2	Compressor	2	50 HP	Diesel Drive
3	Excavator with Bucket / Rock Breaker Unit 4	2	100-200 HP	Diesel Drive
4	Tippers	5	20 Tonnes	Diesel Drive

## 2.7 CONCEPTUAL MINING PLAN/ FINAL MINE CLOSURE PLAN

- ✚ At the end of life of mine, the excavated mine pit / void will act as artificial reservoir for collecting rain water and helps to meet out the demand or crises during drought season.
- ✚ After mine closure the greenbelt developed along the safety barrier and top benches and temporary water reservoir will enhance the ecosystem
- ✚ Mine Closure is a process of returning a disturbed site to its natural state or which prepares it for other productive uses that prevents or minimizes any adverse effects on the environment or threats to human health and safety.
- ✚ The principle closure objectives are for rehabilitated mines to be physically safe to humans and animals, geo-technically stable, geo-chemically non-polluting/ non-contaminating, and capable of sustaining an agreed post-mining land use.

## 2.8 ULTIMATE PIT DIMENSION

Pit	Length (Max) (m)	Width (Max) (m)	Depth (Max)
I	208	103	38m below ground level

## 3. DESCRIPTION OF THE ENVIRONMENT

Field monitoring studies to evaluate the base line status of the project site were carried out during March to May 2021 as per CPCB guidelines. Environmental Monitoring data has been collected with reference to proposed mine KGS Enviro Laboratory Pvt Ltd. – Certified & MoEF Notified Laboratory.

### 3.1 ENVIRONMENT MONITORING ATTRIBUTES

ATTRIBUTE	PARAMETERS	FREQUENCY OF MONITORING	NO. OF LOCATIONS	PROTOCOL
Land-use Land cover	Land-use Pattern within 10 km radius of the study area	Data's from census handbook 2011 and from the satellite imagery	Study Area	Satellite Imagery Primary Survey
Soil	Physio - Chemical Characteristics	Once during the study period	4 (1 core & 3 buffer zone)	IS 2720 Agriculture Handbook - Indian Council of Agriculture Research, New Delhi
Water quality	Physical, Chemical and Bacteriological Parameters	Once during the study period	6 (2 surface water & 4 ground water)	IS 10500& CPCB Standards
Meteorology	Wind Speed Wind Direction Temperature Cloud cover Dry bulb temperature Rainfall	1 Hourly Continuous Mechanical/Automatic Weather Station	1	Site specific primary data& Secondary Data from IMD Station
Ambient Air Quality	PM <sub>10</sub> PM <sub>2.5</sub> SO <sub>2</sub> , NO <sub>x</sub> CO Fugitive Dust	24 hourly twice a week (March 2021 – May 2021)	8 (3 core & 5 buffer)	IS 5182 Part 1-23 National Ambient Air Quality Standards, CPCB
Noise Levels	Ambient Noise	Hourly observation for 24 Hours per location	8 (4 core & 4 buffer zone)	IS 9989 As per CPCB Guidelines
Ecology	Existing Flora and Fauna	Through field visit during the study period	Study Area	Primary Survey by Quadrate & Transect Study & Secondary Data
Socio Economic Aspects	Socio-Economic Characteristics, Population Statistics and Existing Infrastructure in the study area	Site Visit & Census Handbook, 2011	Study Area	Primary Survey, census handbook & need based assessments.

### 3.2 LAND ENVIRONMENT

Sl. No.	Classification	Area In Ha	Area in %
1	Builtup, Rural	322.14	1.0
2	Builtup Mining	60.05	0.2
3	Agricultural, Crop Land	16363.70	51.1
4	Agricultural, Plantation	2480.42	7.7
5	Agriculture, Fallow	8198.36	25.6
6	Forest Plantation	651.15	2.0
7	Barren/Waste./ Scrub land	1455.91	4.5
8	Wetland/Water./River/Stram/Canals	2046.78	6.4
9	Wetland/Water./Reservoir/LakePonds	434.77	1.4
	<b>Total</b>	<b>32013.34</b>	<b>100.00</b>

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**Interpretation:**

From the above table and pie diagram it is inferred that the majority of the land in the study area is Agriculture land (includes crop land) 84.4 % followed by water bodies (Rivers Stream Canals) 7.8 %.

The total mining area within the study area is 60.05 ha i.e., 0.2 %. The cluster area of 11.14.5ha contributes about 14.65 % of the total mining area within the study area. This small percentage of Mining Activities shall not have any significant impact on the environment.

**3.3 SOIL ENVIRONMENT****Physical Characteristics –**

The physical properties of the soil samples were examined for texture, bulk density, porosity and water holding capacity. The soil texture found in the study area is Clay Loam Soil and Bulk Density of Soils in the study area varied between 1.06 – 1.23 g/cc. The Water Holding Capacity and Porosity of the soil samples is found to be medium i.e. ranging from 36.6 – 44.3 %.

**Chemical Characteristics –**

- The nature of soil is slightly alkaline to strongly alkaline in nature with pH range 7.96 to 8.21
- The available Nitrogen content range between 149 to 188.3 kg/ha
- The available Phosphorus content range between 1.09 to 1.56 kg/ha
- The available Potassium range between 28.9 to 51.2 mg/kg

Wilting co efficient in significant level would mean that the soil would support the vegetation. The soil properties in the buffer zone reveal that the soil can sustain vegetation. If amended suitability the core area can also withstand plantation.

**3.4 WATER ENVIRONMENT****Surface Water**

The pH varied from 7.77 to 7.81 while turbidity found within the standards (Optimal pH range for sustainable aquatic life is 6.5 to 8.5 pH).

**Total Dissolved Solids:**

Total Dissolved Solids varied from 488 to 890 mg/l, the TDS mainly composed of carbonates, bicarbonates, Chlorides, phosphates and nitrates of calcium, magnesium, sodium and other organic matter.

**Other parameters:**

Chloride content is 51 to 221 mg/l. Nitrates varied from 17.1 to 28.3 mg/l, while sulphates varied from 37.5 to 79.2 mg/l

**Ground Water**

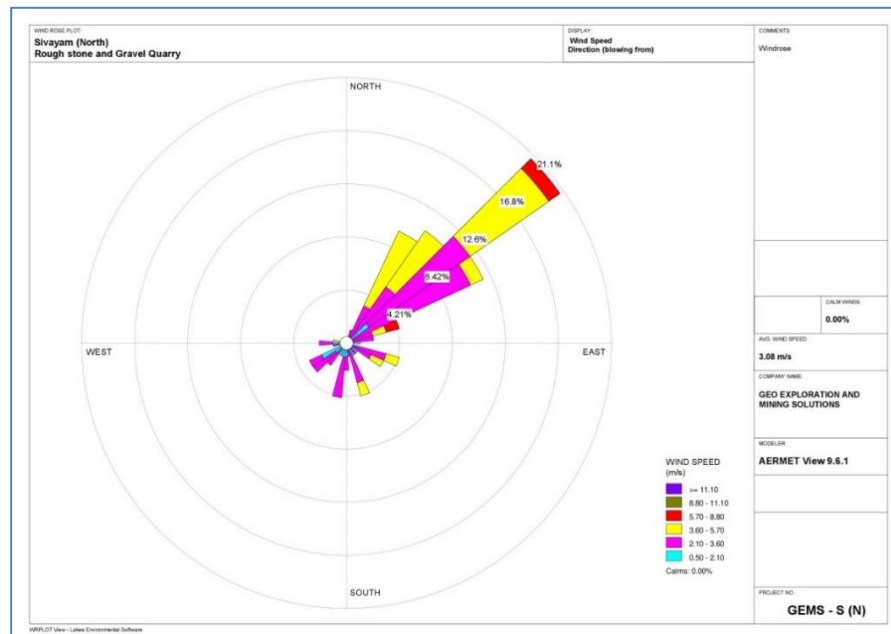
The pH of the water samples collected ranged from 7.10 to 8.05 and within the acceptable limit of 6.5 to 8.5. pH, Sulphates and Chlorides of water samples from all the sources are within the limits as per the Standard. On Turbidity, the water samples meet the requirement. The Total Dissolved Solids were found in the range of 412 - 663 mg/l in all samples. The Total hardness varied between 118.9 – 221.6 mg/l for all samples.

On Microbiological parameters, the water samples from all the locations meet the requirement. The parameters thus analysed were compared with ISO 10500:2012 and are well within the prescribed limits.

### 3.5 AIR ENVIRONMENT

The baseline studies on air environment include identification of specific air pollution parameters and their existing levels in ambient air. The ambient air quality with respect to the study zone of 10 km radius around the proposed quarry forms the baseline information.

**FIGURE – 3: WIND ROSE DIAGRAM**



As per monitoring data, PM<sub>10</sub> ranges from 31.2 µg/m<sup>3</sup> to 60.2 µg/m<sup>3</sup>, PM<sub>2.5</sub> data ranges from 19.1 µg/m<sup>3</sup> to 39.0 µg/m<sup>3</sup>, SO<sub>2</sub> ranges from 5.3 µg/m<sup>3</sup> to 10.1 µg/m<sup>3</sup> and NO<sub>2</sub> data ranges from 10.9 µg/m<sup>3</sup> to 16.8 µg/m<sup>3</sup>. The concentration levels of the above criteria pollutants were observed to be well within the limits of NAAQS prescribed by CPCB.

### 3.6 NOISE ENVIRONMENT

Ambient noise levels were measured at 8 (Eight) locations around the proposed project area.

Noise levels recorded in core zone during day time were from 54.3 – 55.1 dB (A) Leq and during night time were from 45.3 – 45.8 dB (A) Leq. Noise levels recorded in buffer zone during day time were from 43.1 – 53.7 dB (A) Leq and during night time were from 35.6 – 46.2 dB (A) Leq.

### **3.7 ECOLOGICAL ENVIRONMENT**

The study involved in the collection of primary data by conducting a survey in the field, examination of floral and faunal records in previously published reports and records. Analysis of the information is the view of the possible alteration in the environment of the project site. For the survey of fauna, both direct and indirect observation methods were used.

There is no schedule I species of animals observed within study area as per Wildlife Protection Act 1972 as well as no species is in vulnerable, endangered or threatened category as per IUCN. There is no endangered red list species found in the study area. Hence this small operation over short period of time will not have any significant impact on the surrounding flora and fauna.

### **3.8 SOCIO ECONOMIC ENVIRONMENT**

It includes demographic structure of the area, provision of basic amenities viz., housing, education, health and medical services, occupation, water supply, sanitation, communication, transportation, prevailing diseases pattern as well as feature like temples, historical monuments etc., at the baseline level. This will help in visualizing and predicting the possible impact depending upon the nature and magnitude of the project.

The socio economic study of surveyed villages gives a clear picture of its population, average household size, literacy rate and sex ratio etc. It is also found that a part of population is suffering from lack of permanent job to run their day to day life. Their expectation is to earn some income for their sustainability on a long-term basis.

The proposed project will aim to provide preferential employment to the local people there by improving the employment opportunity in the area and in turn the social standards will improve.

## **4. ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES FOR PROPOSED QUARRY**

In order to maintain the environmental commensuration with the mining operation, it is essential to undertake studies on the existing environmental scenario and assess the impact on different environmental components. This would help in formulating suitable management plans sustainable resource extraction.

### **4.1 LAND ENVIRONMENT:**

#### **ANTICIPATED IMPACT**

- Permanent or temporary change on land use and land cover.
- Change in Topography: Topography of the ML area will change at the end of the life of the mine.
- Movement of heavy vehicles sometimes cause problems to agricultural land, human habitations due to dust, noise and it also causes traffic hazards.
- Due to degradation of land by pitting the aesthetic environment of the core zone may be affected.
- Earthworks during the rainy season increase the potential for soil erosion and sediment laden water entering the water ways.
- If no due care is taken wash off from the exposed working area may choke the water course & can also causes the siltation of water course

## MITIGATION MEASURES

- The mining activity will be gradual confined in blocks and excavation will be undertaken progressively along with other mitigative measures like phase wise development of greenbelt etc.
- Construction of garland drains all around the quarry pits and construction of check dam at strategic location in lower elevations to prevent soil erosion due to surface runoff during rainfall and also to collect the storm water for various uses within the proposed area
- Green belt development along the boundary within safety zone. The small quantity of water stored in the mined-out pit will be used for greenbelt
- Thick plantation will be carried out on unutilized area, top benches of mined out pits, on safety barrier, etc.,
- At conceptual stage, the land use pattern of the quarry will be changed into Greenbelt area and temporary reservoir
- In terms of aesthetics, natural vegetation surrounding the quarry will be retained (such as in a buffer area i.e., 7.5 m safety barrier and other safety provided) so as to help minimize dust emissions.
- Proper fencing will be carried out at the conceptual stage, Security will be posted round the clock, to prevent inherent entry of the public and cattle

## 4.2 WATER ENVIRONMENT

### ANTICIPATED IMPACT

- The major sources of water pollution normally associated due to mining and allied operations are:
  - Generation of waste water from vehicle washing.
  - Washouts from surface exposure or working areas
  - Domestic sewage
  - Disturbance to drainage course in the project area
  - Mine Pit water discharge
- Increase in sediment load during monsoon in downstream of lease area
- This being a mining project, there will be no process effluent. Waste from washing of machinery may result in discharge of Oil & grease, suspended solids.
- The sewage from soak pit may percolate to the ground water table and contaminate it.
- Surface drainage may be affected due to Mining
- Abstraction of water may lead to depletion of water table

### MITIGATION MEASURES

- Garland drains, settling tank will be constructed around the lease area. The Garland drain will be connected to settling tank and after settling the water will be discharged out to the natural drainage
- Rainwater will be collected in sump in the mining pits and will be allowed to store and pumped out to surface setting tank of 15 m x 10m x 3m to remove suspended solids if any. This collected water will be used for dust suppression onwards and such sites where dust likely to be generated and for developing green belt. The proponent will collect and judiciously utilize the rainwater as part of rainwater harvesting
- Providing benches with inner slopes and through a system of drains and channels, allowing rain water to descent into surrounding drains, so as to minimize the effects of erosion & water logging arising out of uncontrolled descent of water.
- Reuse the water collected during storm for dust suppression and greenbelt development within the mines

- Installing interceptor traps/oil separators to remove oils and greases. Water from the tipper wash-down facility and machinery maintenance yard will pass through interceptor traps/oil separators prior to its reuse;
- Periodic analysis of quarry pit water and ground water quality in nearby villages
- Domestic sewage from site office & urinals/latrines provided in ML is discharged in septic tank followed by soak pits
- Waste water discharge from mine will be treated in settling tanks before using for dust suppression and tree plantation purposes
- De-silting will be carried out before and immediately after the monsoon season
- Regular monitoring and analyzing the quality of water in open well, bore wells and surface water

### 4.3 AIR ENVIRONMENT

#### ANTICIPATED IMPACT

- During mining, at various stages activities such as excavation, drilling, blasting, and transportation of materials, particular matter (PM), gases such as Sulphur dioxide, oxides of Nitrogen from vehicular exhaust are the main air pollutants.
- Emissions of noxious gases due to incomplete detonation of explosive may sometimes pollute the air.
- The fugitive dust released from the mining operations may cause effect on the mine workers who are directly exposed to the fugitive dust.
- Simultaneously, the air-borne dust may travel to longer distances and settle in the villages located near the project area.

#### MITIGATION MEASURES

**Drilling** – To control dust at source, wet drilling will be practiced. Where there is a scarcity of water, suitably designed dust extractor will be provided for dry drilling along with dust hood at the mouth of the drill-hole collar.

##### **Advantages of Wet Drilling:-**

- In this system dust gets suppressed close to its formation. Dust suppression become very effective and the work environment will be improved from the point of occupational comfort and health.
- Due to dust free atmosphere, the life of engine, compressor etc., will be increased.
- The life of drill bit will be increased.
- The rate of penetration of drill will be increased.
- Due to the dust free atmosphere visibility will be improved resulting in safer working conditions.

##### **Blasting –**

- Establish time of blasting to suit the local conditions and water sprinkling on blasting face
- Avoid blasting i.e., when temperature inversion is likely to occur and strong wind blows towards residential areas
- Controlled blasting included Adoption of suitable explosive charge and short delay detonators, adequate stemming of holes at collar zone and restricting blasting to a particular time of the day i.e. at the time lunch hours, controlled charge per hole as well as charge per round of hole
- Before loading of material water will be sprayed on blasted material
- Dust mask will be provided to the workers and their use will be strictly monitored

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**Haul Road & Transportation –**

- Water will be sprinkled on haul roads twice a day to avoid dust generation during transportation
- Transportation of material will be carried out during day time and material will be covered with tarpaulin
- The speed of tippers plying on the haul road will be limited below 20 km/hr to avoid generation of dust.
- Water sprinkling on haul roads & loading points will be carried out twice a day
- Main source of gaseous pollution will be from vehicle used for transportation of mineral; therefore weekly maintenance of machines improves combustion process & makes reduction in the pollution.
- The un-metalled haul roads will be compacted weekly before being put into use.
- Over loading of tippers will be avoided to prevent spillage.
- It will be ensured that all transportation vehicles carry a valid PUC certificate
- Grading of haul roads and service roads to clear accumulation of loose materials

**Green Belt –**

- Planting of trees all along main mine haul roads and regular grading of haul roads will be practiced to prevent the generation of dust due to movement of dumpers/trucks
- Green belt of adequate width will be developed around the project area

**Occupational Health –**

- Dust mask will be provided to the workers and their use will be strictly monitored
- Annual medical check-ups, trainings and campaigns will be arranged to ensure awareness about importance of wearing dust masks among all mine workers & tipper drivers
- Ambient Air Quality Monitoring will be conducted six months once to assess effectiveness of mitigation measures proposed

**4.4 NOISE ENVIRONMENT****ANTICIPATED IMPACT**

Noise pollution poses a major health risk to the mine workers. Following are the sources of noise in the open cast mine project are being observed such as Drilling, & Blasting, Loading and during movement of vehicles.

**MITIGATION MEASURES**

- Usage of sharp drill bits while drilling which will help in reducing noise;
- Secondary blasting will be totally avoided and hydraulic rock breaker will be used for breaking boulders;
- Controlled blasting with proper spacing, burden, stemming and optimum charge/delay will be maintained;
- The blasting will be carried out during favourable atmospheric condition and less human activity timings by using nonelectrical initiation system;
- Proper maintenance, oiling and greasing of machines will be done every week to reduce generation of noise;
- Provision of sound insulated chambers for the workers working on machines (HEMM) producing higher levels of noise;
- Silencers / mufflers will be installed in all machineries;
- Green Belt/Plantation will be developed around the project area and along the haul roads. The plantation minimizes propagation of noise;

- Personal Protective Equipment (PPE) like ear muffs/ear plugs will be provided to the operators of HEMM and persons working near HEMM and their use will be ensured through training and awareness.
- Regular medical check-up and proper training to personnel to create awareness about adverse noise level effects.

#### 4.5 BIOLOGICAL ENVIRONMENT ANTICIPATED IMPACT

There are no National Park and Archaeological monuments within project area. There are no migratory corridors, migratory avian-fauna, rare endemic and endangered species. There are no wild animals in the area. No breeding and nesting site were identified in project site. No National park and Wildlife Sanctuary found within 10km radius. In the post mining stage, barbed wire fencing is proposed all around the mined-out void to prevent fall of animals in the mine pits.

#### MITIGATION MEASURES

To reduce the adverse effects on natural flora/fauna status of the area due to deposition of dust generated from mining operations, water sprinkling and water spraying systems will be ensured in all dust prone areas to arrest dust generation. Methodical and well-planned plantation scheme will be carried out.

##### 4.5.1 GREENBELT DEVELOPMENT PLAN

Year	No. of trees proposed to be planted	Survival %	Area to be planted	Name of the species
I	It is proposed to plant <b>1700</b> Nos of trees in the 1 <sup>st</sup> year	80%	Safety barrier, Un utilized area's and nearby village roads	Neem, Pungam, Panai, Naval

#### 4.6 SOCIO ECONOMIC ENVIRONMENT

##### ANTICIPATED IMPACT

Employment generation due to the project will provide direct employment for about 36 persons.

##### MITIGATION MEASURES

- Good maintenance practices will be adopted for plant machinery and equipment, which will help to avert potential noise problems.
- Green belt will be developed in and around the project site as per Central Pollution Control Board (CPCB) guidelines.
- Appropriate air pollution control measure will be taken to minimize the environmental impact within the core zone.
- For the safety of workers, personal protective appliances like hand gloves, helmets, safety shoes, goggles, aprons, nose masks and ear protecting devices will be provided as per mines act and rules.
- Benefit to the State and the Central governments through financial revenues by way of royalty, tax, DMF, NMET etc., from this project directly and indirectly.

#### 5. ANALYSIS OF ALTERNATIVES (TECHNOLOGY AND SITE)

The site has been selected based on geological investigation and exploration as below:

- Occurrence of minerals at the specific site.

- Transportation facility for materials & manpower.
- Overall impact on environment and mitigation feasibility
- Socio – economic background.

The mining operation and mineral deposits are site specific in nature; hence question of seeking alternate site does not arise for this project.

## 6. ENVIRONMENT MONITORING PROGRAM

Usually an impact assessment study is carried over short period of time and the data cannot bring out all variations induced by natural or human activities. Hence regular monitoring program of Environmental parameters is essential to take into account the changes in the Environment.

The Objective of Monitoring -

- ✚ To check or assess the efficiency of the controlling measures;
- ✚ To establish a data base for future impact assessment studies.

### 6.2 POST ENVIRONMENTAL CLEARANCE MONITORING SCHEDULE

S. No.	Environment Attributes	Location	Monitoring		Parameters
			Duration	Frequency	
1	Air Quality	2 Locations (1 Core & 1 Buffer)	24 hours	Once in 6 months	Fugitive Dust, PM2.5, PM10, SO2 and NOx.
2	Meteorology	At mine site before start of Air Quality Monitoring & IMD Secondary Data	Hourly / Daily	Continuous online monitoring	Wind speed, Wind direction, Temperature, Relative humidity and Rainfall
3	Water Quality Monitoring	2 Locations (1SW & 1 GW)	-	Once in 6 months	Parameters specified under IS:10500, 1993 & CPCB Norms
4	Hydrology	Water level in open wells in buffer zone around 1 km at specific wells	-	Once in 6 months	Depth in bgl
5	Noise	2 Locations (1 Core & 1 Buffer)	Hourly – 1 Day	Once in 6 months	Leq, Lmax, Lmin, Leq Day & Leq Night
6	Vibration	At the nearest habitation (in case of reporting)	–	During blasting Operation	Peak Particle Velocity
7	Soil	2 Locations (1 Core & 2 Buffer)	–	Once in six months	Physical and Chemical Characteristics
8	Greenbelt	Within the Project Area	Daily	Monthly	Maintenance

## 7. ADDITIONAL STUDIES

### 7.1. PUBLIC CONSULTATION

The date and venue of public hearing was displayed on the notice board of Tamil Nadu Pollution Control Board office, Karur and two widely circulating newspapers (Times of India and Dhinakaran Dated 19.05.2023) and the hard copies and soft copies of the Draft EIA & EMP Report were made available at the office of TNPCB, Karur.

The Public Hearing was conducted on 21.06.2023 at 11.00 AM, Venue – Kannan Mahal, No.53, Vaikainallur Street, Kulithalai Post, Kulithalai Taluk and Karur District.

The Chairman of the public hearing was the M.kannan - District Revenue Officer, Karur District, while the member convener was Er.D.Jayalakshmi, District Environmental Engineer (DEE),. Also present for the public hearing were the Project Proponent – Tvl.Navamani Mines Private Limited – Palaniyandi Vimalathithan and Thiru .M.Shaik Nawas from M/s. Geo Exploration and Mining Solutions (Environment Consultant); the local residents of the proposed project area and residents from neighbouring villages were also present.

## 7.2 RISK ASSESSMENT

The methodology for the risk assessment has been based on the specific risk assessment guidance issued by the Directorate General of Mine Safety (DGMS), Dhanbad, vide Circular No.13 of 2002, dated 31<sup>st</sup> December, 2002. The DGMS risk assessment process is intended to identify existing and probable hazards in the work environment and all operations and assess the risk levels of those hazards in order to prioritize those that need immediate attention. Further, mechanisms responsible for these hazards are identified and their control measures, set to timetable are recorded along with pinpointed responsibilities.

The whole quarry operation will be carried out under the direction of a Qualified Competent Mine Manager holding certificate of competency to manage a metalliferous mine granted by the DGMS, Dhanbad. Risk Assessment is all about prevention of accidents and to take necessary steps to prevent it from happening.

## 7.3 DISASTER MANAGEMENT PLAN

The Disaster Management Plan is aimed to ensure safety of life, protection of environment, protection of installation, restoration of production and salvage operations in this same order of priorities.

The objective of the Disaster Management Plan is to make use of the combined resources of the mine and the outside services to achieve the following:

- ✚ Rescue and medical treatment of casualties;
- ✚ Safeguard other people;
- ✚ Minimize damage to property and the environment;
- ✚ Initially contain and ultimately bring the incident under control;
- ✚ Secure the safe rehabilitation of affected area; and
- ✚ Preserve relevant records and equipment for the subsequent inquiry into the cause and circumstances of the emergency

## 7.3 CUMULATIVE IMPACT STUDY

### CUMULATIVE PRODUCTION LOAD OF ROUGH STONE IN CLUSTER

Quarry	PROPOSED PRODUCTION DETAILS			
	Production for five-year plan period	Per Year in m <sup>3</sup>	Per Day in m <sup>3</sup>	Number of Lorry Load Per Day
P1	3,95,935	79,187	264	22Trips/day
E1	88,100	7,690	26	4 Trips/day

E2	1,40,785	25,275	84	14 Trips/day
E3	1,28,350	17,102	57	10 Trips/day
E4	90,105	10,827	36	6 Trips/day
<b>TOTAL</b>	<b>8,43,275</b>	<b>1,40,081</b>	<b>467</b>	<b>56 Trips/day</b>

### CUMULATIVE PRODUCTION OF GRAVEL IN CLUSTER

Quarry	PROPOSED PRODUCTION DETAILS			
	Production for three-year plan period	Per Year in m <sup>3</sup>	Per Day in m <sup>3</sup>	Number of Lorry Load Per Day
P1	49,332	16,444	55	5 Trips/day
E1	7,128	1,426	5	1 Trips/day
E2	13,536	2,707	9	2 Trips/day
E3	15,042	7,521	25	4 Trips/day
E4	50,652	5,246	17	3 Trips/day
<b>TOTAL</b>	<b>1,35,690</b>	<b>33,344</b>	<b>111</b>	<b>15 Trips/day</b>

## 8.0 PROJECT BENEFITS

The Proposed (Tvl. Navamani Mines Private Limited) for Quarrying Rough Stone and Gravel at Sivayam (North) Village aims to produce **3,95,935 m<sup>3</sup>** Rough Stone (**264 m<sup>3</sup>** Rough stone @ 22 Tipper per day) over a period of 5 Years. This will enhance the socio-economic activities in the adjoining areas and will result in the following benefits

1. Increase in Employment Potential
2. Improvement in Socio-Economic Welfare
3. Improvement in Physical Infrastructure
4. Improvement in Social infrastructure

## 9.0 ENVIRONMENT MANAGEMENT PLAN

The Environment Monitoring Cell discussed formed by the mine management will ensure effective implementation of environment management plan and to ensure compliance of environmental statutory guidelines through Mine Management Level.

The said team will be responsible for:

- ✚ Monitoring of the water/ waste water quality, air quality and solid waste generated
- ✚ Analysis of the water and air samples collected through external laboratory
- ✚ Implementation and monitoring of the pollution control and protective measures/ devices which shall include financial estimation, ordering, installation of air pollution control equipment, waste water treatment plant, etc.,
- ✚ Co-ordination of the environment related activities within the project as well as with outside agencies
- ✚ Collection of health statistics of the workers and population of the surrounding villages
- ✚ Green belt development
- ✚ Monitoring the progress of implementation of the environmental monitoring programme

- ✚ Compliance to statutory provisions, norms of State Pollution Control Board, Ministry of Environment and Forests and the conditions of the environmental clearance as well as the consents to establish and consents to operate.

## 10.0 CONCLUSION

It can be concluded from overall assessment of the impacts, in terms of positive and negative effects on various environmental components, that the mining activities will not have any adverse effect on the surrounding environment.

To mitigate any impacts due to the mining activities, a well-planned EMP and a detailed post project monitoring system is provided for regular monitoring and immediate rectification at site. Due to the cluster quarrying activities, socio economic conditions in and around the project site will be improved substantially. Hence, the Prior Environmental Clearance shall be granted at the earliest.

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## TERMS OF REFERENCE (ToR) COMPLIANCE

### Tvl. Navamani Mines Private Limited

“ToR issued vide Letter No. SEIAA-TN/F.No.6993/SEAC/ToR-761/2020 Dated 24.09.2020”

<b>SPECIFIC CONDITIONS</b>		
1	The proponent shall furnish the contour map of the water table detailing the number of wells located around the site and impacts on the wells due to mining activity.	The contour map of the study area delineating water level in chapter 3.
2	The proponent shall conduct the hydro – geological study to evaluate the impact of proposed mining activity on the ground water table, agriculture activity, and water bodies such as rivers, tanks canals, ponds etc., located nearby the proposed mining area.	Hydrogeological studies of the area is described in the chapter No 2
3	The proponent shall furnish the detail on number of ground water pumping wells, open wells within the radius of 1km along with the water levels in both monsoon and Non-monsoon seasons. The proponent would also collect the data of water table level in this area during both monsoon and non – monsoon seasons from the PWD/TWAD	There are about 13 Nos of open well within 1km radius from the project area (Core zone) depth of the water level in monsoon and non-monsoon is tabulated in the Chapter No 3.
4	The proponent shall conduct the cumulative impact study on the Agriculture area due to Mining, Crushers and other activities around the site area	The details of agriculture activity and livelihood of the people in the study area are studied and discussed under chapter No.3.
5	The details of surrounding well and the cumulative impact on the ground water shall be part of EIA study	Detailed in the Chapter No 3.
6	The socio economic impact assessment due to the project needs to be carried out within 10km of the buffer zone from the mines.	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">Socio-Economic Studies were carried out covering 10 km radius from the periphery of the project area and identified 63 26villages around the project area.</div> The details are discussed in Chapter No. 3.
7	A detailed report on the green belt development already undertaken is to be furnished. They also need to submit the proposal for green belt activities for the proposed mines(s).	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">It is proposed to plant about 1700Nos of trees during the Mining plan period for the proposed projects.</div> The detailed Greenbelt Development Plan is discussed in Chapter No. 4.

8	Proposal for CER activities should be furnished taking into consideration the requirement of the local habitants available within the buffer zone as per Office memorandum of MoEF & CC Dated 01.05.2018.	Rs 5, 00,000 allotted For CER activities detailed in Chapter No 8.
9	A detailed Mine- Closure plan for the proposed project shall be furnished.	Detailed Mine closure plan give in the chapter No 4.9.
10	A detailed report on the safety and health aspects of the workers and for the surrounding habitants during operation of mining for drilling and blasting shall be submitted	Standard Operating Procedures as per DGMS for Safety and Health aspects of the workers and for surrounding habitants during mining operations is to be followed.  The details are discussed under Chapter No. 10.
11	The recommendation for the issue of Terms of Reference is subject to the final outcome of the Hon'ble NGT, Principal bench, New Delhi in O.A.No.186 of 2016 (M.A.No. 350/2016) and O.A.No.200/2016 and O.A.No.580/2016(M.A.No.1182/2016) And O.A.No. 404/2016 (M.A.No758/2016, M.A.No 920/2016, M.A.No. 1122/2016, M.A.No.12/2017 & M.A.No. 843/2017) and O.A.No 405/2016 and O.A.No 520 of 2016 (M.A.No. 981/2016, M.A.No.982/2016 & M.A.No. 384/2017)	Agreed & Noted.
12	Details of the lithology of the mining lease area shall be furnished	Geology of the area and lithology is described in the chapter No 2.
13	A study shall be conducted on the number of trees (Name of the species, age) present in the mining lease applied area and how, it will be managed during mining activity.	No trees within the project area, thorny bushes and karuvelam trees are found within the project area.
14	The proponent shall furnish the following details along with the EIA report from AD/DD mines of concern District to ensure no violation file is appraised under the normal cases  What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/ DD Mines?  a) Quantity of minerals mined out b) Detail of approved depth of mining c) Actual depth of the mining achieved earlier d) Name of the person already mined in the lease area e) If EC and CTO already obtained compliance report from competent authority to be furnished	Existing pit Dimensions Pit I - 25m(L)*15m(W)*3m(D) Pit II - 37m(L)*18m(W)*3m(D)

ADDITIONAL CONDITIONS		
1	Details of study on social impact, including livelihood of local people	Detailed in Chapter No 4.
2	A specific study should include impact on flora & fauna, disturbance to migratory pattern of animals	Impact on the flora and fauna described in the Chapter No 4.
3	Reserve funds should be earmarked for proper closure plan	Detailed in Chapter No 4.
4	A detailed plan on plastic waste management shall be furnished. Further, the proponent should strictly comply with, Tamil Nadu Government Order (Ms) No. 84 Environment and Forest (EC.2) Department Dated 25.06.2018 regarding ban on one time use and throw away plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986. In this connection, the project proponent has to furnish the action plan	The details of the plastic waste management along with Action plan is described in the Chapter No 7.
5	A detailed post – COVID health management plan for workers as per the ICMR and MHA guidelines or the state Govt. guidelines may be followed and report shall be furnished.	Health Management plan for the workers in post COVID – is detailed in Chapter No .7.
STANDARD TERMS OF REFERENCE		
1.	Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.	Not applicable. This is Not a violation category project. This proposal falls under B1 Category (Cluster).
2.	A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.	The applied land for quarrying is patta land owned by Project Proponent. Patta copy, other land documents are enclosed as Annexure.
	All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.	Noted & agreed.
	All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ toposheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly	Map showing – Project area is superimposed on Satellite imagery is enclosed in Figure No. 2.2.

	<p>show the land use and other ecological features of the study area (core and buffer zone).</p>	<p>Project area boundary coordinates superimposed on Toposheet – Figure No. 2.3.</p> <p>Toposheet of the project area covering 10km radius – Figure No. 1.2.</p> <p>Geology map of the project area covering 10km radius - Figure No. 2.5.</p>
	<p>Information should be provided in Survey of India Toposheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.</p>	<p>Geomorphological features are incorporated in the Toposheet map covering 10km radius around the project area Figure No. 2.9.</p>
	<p>Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.</p>	<p>The applied area was inspected by the officers of Department of Geology along with revenue officials and found that the land is fit for quarrying under the policy of State Government.</p>
	<p>It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/ violation of the environmental or forest norms/conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.</p>	<p>It is a fresh project for Environmental Clearance, The company framed Environmental Policy and the same has been approved by the Board of Directors. The details are given in the Chapter No 10.1.</p>
	<p>Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc., should be detailed. The proposed safeguard measures in each case should also be provided.</p>	<p>It is an opencast quarrying operation proposed to operate in Mechanized method. The rough stone formation is a hard, compact and homogeneous body.</p> <p>The height and width of the bench will be maintained as 5m with 90° bench angle.</p>
	<p>The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc., should be for the life of the mine / lease period.</p>	<p>Noted &amp; Agreed.</p>

	<p>Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.</p>	<p>Land use and land cover of the study area is discussed in Chapter No. 3.</p> <p>Land use plan of the project area showing pre-operational, operational and post-operational phases are discussed in Chapter No. 2.</p> <p>There is no Wildlife Sanctuary, National Park, Biosphere Reserves, Reserve Forest/Protected Forest and Migratory Routes for fauna exists within 10 km radius of mining lease area.</p>
	<p>Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&amp;R issues, if any, should be given</p>	<p>Not Applicable.</p> <p>There is no waste anticipated during this quarry operation. The entire quarried out Rough stone and Gravel will be transported to the needy customers.</p>
	<p>A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.</p>	<p>Not Applicable</p> <p>There is no Forest Land involved in the proposed project site The proposed project area is proponent own patta land. The Patta copy is enclosed in Approved Mining Plan as Annexure – IC along with Mining plan</p>
	<p>Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of net present value (NPV) and compensatory afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.</p>	<p>Not Applicable.</p> <p>There is no forest land involved in the Mining lease Area. (Please refer Chapter 3).</p>
	<p>Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.</p>	<p>There is no forest area within the mining lease. So, scheduled tribes and other Traditional forest Dwellers (Recognition of Forest Rights) Act, 2006 is not applicable.</p>
	<p>The vegetation in the RF / PF areas in the study area, with necessary details, should be given.</p>	<p>There is no Reserved Forest/Protected Forest within 10 km radius of the lease area.</p>
	<p>A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other</p>	<p>There is no Wildlife Sanctuary, National Park, Biosphere Reserves, Reserve Forest/Protected Forest and Migratory Routes for fauna exists within 10 km radius of mining lease area. Biological Study has been</p>

	<p>protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.</p>	<p>conducted for the project. There will be a likelihood increase in dust and noise levels, which will be controlled by water spraying and/or development of thick green belt around the mine boundary. Air quality &amp; noise level will be maintained well within the standards prescribed by MoEF&amp;CC and CPCB.</p>
	<p>Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 KM of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished</p>	<p>There is no National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves and Migratory Routes for fauna exists within 10 km radius of mining lease area.</p> <div style="border: 1px solid black; height: 20px; width: 100%; margin-top: 10px;"></div>
	<p>A detailed biological study of the study area [core zone and buffer zone (10 KM radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.</p>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>Biological Study for the study area (core zone &amp; buffer zone) has been conducted within 10 km radius of the periphery of the mine lease.</p> </div> <p>There is no endangered, endemic and RET Species in core and buffer area and there is no schedule-I fauna found in the study area as per Wildlife Protection Act 1972.</p>
	<p>Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravalli Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Department should be secured and furnished to the effect that the proposed mining activities could be considered.</p>	<p>No Critically Polluted areas as notified by the State Pollution Control Board</p> <p>The ML area does not fall under “Aravali range” as it is a project located in Karur district, Tamil Nadu.</p> <div style="border: 1px solid black; height: 20px; width: 100%; margin-top: 10px;"></div>
	<p>Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note:</p>	<p style="text-align: center;">Not Applicable.</p> <p>The project area is 135km away from the coastal area hence the project doesn't attract The C. R. Z. Notification, 2018.</p>

	<p>The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).</p>	
	<p>R&amp;R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&amp;R Plan, the relevant State/National Rehabilitation &amp; Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&amp;R and socio-economic aspects should be discussed in the Report.</p>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p style="text-align: center;">There are no Habitations Villages near the project site.</p> </div> <p>No habitations within a radius of 300 meters</p> <p>The nearest House is 410m North West and Nearest Village is 850m from the West side of the project area.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p style="text-align: center;">The project area core zone is dry barren land, No agriculture activities was carried out.</p> <p style="text-align: center;">Therefore, R&amp;R Plan / Compensation details for the Project Affected People (PAP) is not anticipated and Not Applicable for this project.</p> </div>
	<p>One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season) ; December-February (winter season)]primary baseline data on ambient air quality as per</p> <p>CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.</p>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p style="text-align: center;">Baseline Data were collected for One Season (pre monsoon) March to May 2021</p> <p style="text-align: center;">The data's are collected as per the specification prescribed in the ToR and as per CPCB Notification and MoEF &amp; CC Guidelines.</p> </div>
	<p>Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation.</p>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p style="text-align: center;">Air Quality Modelling for prediction of incremental GLC's of pollutant was carried out using AERMOD view 9.6.1 Model.</p> <p style="text-align: center;">Details in Chapter No. 4.</p> </div>

	<p>The wind roses showing pre-dominant wind direction may also be indicated on the map.</p>	
	<p>The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.</p>	<p>Total Water Requirement: 4.0 KLD, details of water requirement and its sources are described in the Chapter 2, Table No 2.12.</p>
	<p>Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.</p>	<p>Water for dust suppression, greenbelt development and domestic use will be sourced from accumulated rainwater/seepage water in mine pits.</p> <p>Drinking water will be sourced from the approved water vendors, Refer Chapter 2, Table No 2.12.</p>
	<p>Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.</p>	<p>The rain water collected in the pits after spell of rain will be used for greenbelt development and dust suppression.</p>
	<p>Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.</p>	<p>Impact Studies and Mitigation Measures of Water Quality discussed in Chapter 4.</p>
	<p>Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.</p>	<p>The ground water table inferred 55m below ground level.</p> <p>The ultimate depth of quarry is 38m below the ground level the proposed depth will not intersect the ground water table, Chapter No 4.</p>
	<p>Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.</p>	<p>There is no stream, seasonal or other water bodies passing within the project area. Therefore no modification/ diversion of water bodies are anticipated.</p>
	<p>Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and Bgl. A schematic diagram may also be provided for the same.</p>	<p>Highest elevation of the project area is 124m AMSL.</p> <p>Ultimate depth of the mine is 38m BGL.</p> <p>Water level of the area is 45-50m BGL</p>
	<p>A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and</p>	<p>Time bound progressive greenbelt development plan prepared and discussed in the chapter No.4 Page No Table No 4.11.r</p>

	<p>submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.</p>	<p style="text-align: center;">Recommended Species proposed for Greenbelt Development are given in the Chapter 10, Table No 10.8.</p>
	<p>Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.</p>	<p>Traffic density survey was carried out to analyse the impact of Transportation in the study area as per IRC guidelines 1961 and it is inferred that there is no significant impact due to the proposed transportation from the project area. Details in Chapter 2.6.3.</p>
	<p>Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.</p>	<p>Infrastructure &amp; other facilities will be provided to the Mine Workers after the grant of quarry lease and the same has been discussed in the Chapter No. 2</p>
	<p>Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.</p>	<p style="text-align: center;">The details of conceptual plan is discussed in Chapter No 2.6.</p>
	<p>Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.</p>	<p style="text-align: center;">Details in Chapter 4, Page No. 92</p>
	<p>Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.</p>	<p style="text-align: center;">Details in Chapter 4, Page No. 92</p>
	<p>Measures of socio economic significance and influence to the local community proposed to be</p>	<p style="text-align: center;">Details in Chapter 4, Page No. 91</p>

	provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.	
	Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.	Environment Management Plan Chapter 10, Page No. 117-122
	Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.	public hearing is updated in the Chapter-7
	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.	No litigation is pending in any court against this project.
	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.	The project cost and EMP cost are detailed in Chapter 10.
	A Disaster management Plan shall be prepared and included in the EIA/EMP Report.	Details in Chapter 7.3.
	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.	Details in Chapter 8.
	<b>Besides the above, the below mentioned general points are also to be followed:-</b>	
▪	Executive Summary of the EIA/EMP Report	Executive summary is Final EIA /EMP Report.

<ul style="list-style-type: none"> <li>▪</li> </ul>	<p>All documents to be properly referenced with index and continuous page numbering.</p>	<p>All the documents are properly referenced with index and continuous page numbering.</p>
<ul style="list-style-type: none"> <li>▪</li> </ul>	<p>Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.</p>	<p>List of Tables and source of the data collected are given properly.</p>
<ul style="list-style-type: none"> <li>▪</li> </ul>	<p>Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&amp;CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project</p>	<p>Baseline monitoring reports are enclosed with This report in Chapter No – III. Original Baseline monitoring reports is attached as ANNexure.</p>
<ul style="list-style-type: none"> <li>▪</li> </ul>	<p>Where the documents provided are in a language other than English, an English translation should be provided.</p>	<p>Not Applicable.</p>
<ul style="list-style-type: none"> <li>▪</li> </ul>	<p>The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.</p>	
<ul style="list-style-type: none"> <li>▪</li> </ul>	<p>While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF&amp;CC vide O.M. No. J-11013/41/2006-IA.II(I) Dated: 4th August, 2009, which are available on the website of this Ministry, should be followed.</p>	<p>Instructions issued by MoEF &amp; CC O.M. No. J-11013/41/2006-IA.II (I) Dated: 4th August, 2009 are followed.</p>
<ul style="list-style-type: none"> <li>▪</li> </ul>	<p>Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&amp;CC with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation</p>	<p>There is no changes in the proposal in the basic scope and parameters submitted for the Terms of Reference.</p>
<ul style="list-style-type: none"> <li>▪</li> </ul>	<p>As per the circular no. J-11011/618/2010-IA.II(I) Dated: 30.5.2012, certified report of the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.</p>	<p>Not applicable.</p>

	<ul style="list-style-type: none"><li>▪ The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.</li></ul>	<p>Surface Plan – Figure No. 2.3</p> <p>Geological Plan – Figure No 2.8</p> <p>Working Plan – Figure No 2.10</p>
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## CHAPTER – 1: INTRODUCTION

### 1.0 *Preamble*

Environmental Impact Assessment (EIA) is the management tool to ensure the sustainable development and it is a process, used to identify the environmental, social and economic impacts of a project prior to decision-making. It is a decision-making tool, which guides the decision makers in taking appropriate decisions for any project. EIA systematically examines both beneficial and adverse consequences of the project and ensures that these impacts are taken into account during the project designing. It also reduces conflicts by promoting community participation, information, decision makers, and helps in developing the base for environmentally sound project.

Rough Stone and Gravel are the major requirements for construction industry. This EIA report is prepared for Tvl. Navamani Mines Private Limited Rough Stone and Gravel Quarry project Over an Extent of 2.80.5 Ha in S.F. No 15/1 & 15/2, Sivayam (North) Village, Krishnarayapuram Taluk, Karur District considering Cumulative impact from the Cluster Quarries consisting of Five (5) quarries total Cluster extent of 8.80.0 ha, cluster area calculated as per MoEF & CC Notification S.O. 2269 (E) Dated 1<sup>st</sup> July 2016.

Initially the mining plan was prepared over an extent of 2.80.5 Ha in S.F. No 15/1, 15/2 and the same has been approved. Proponent applied for Environmental Clearance in SEIAA, Tamil Nadu vide online proposal No SIA/TN/MIN/38701/2019. The proposal was placed in the 166<sup>th</sup> SEAC Meeting and issued ToR vide Letter No. SEIAA- TN/F.No. 6993/SEAC/ToR-761/2020, Dated – 24.09.2020.

The Baseline Monitoring study has been carried out during Pre monsoon season (March - May 2021) and this EIA /EMP report is prepared for considering cumulative impacts arising out of this project, the Cumulative Environmental Impact Assessment study is undertaken, which is followed by preparation of a detailed Environmental Management Plan (EMP) individually to minimize those adverse impacts.

### 1.1 *Purpose of the report*

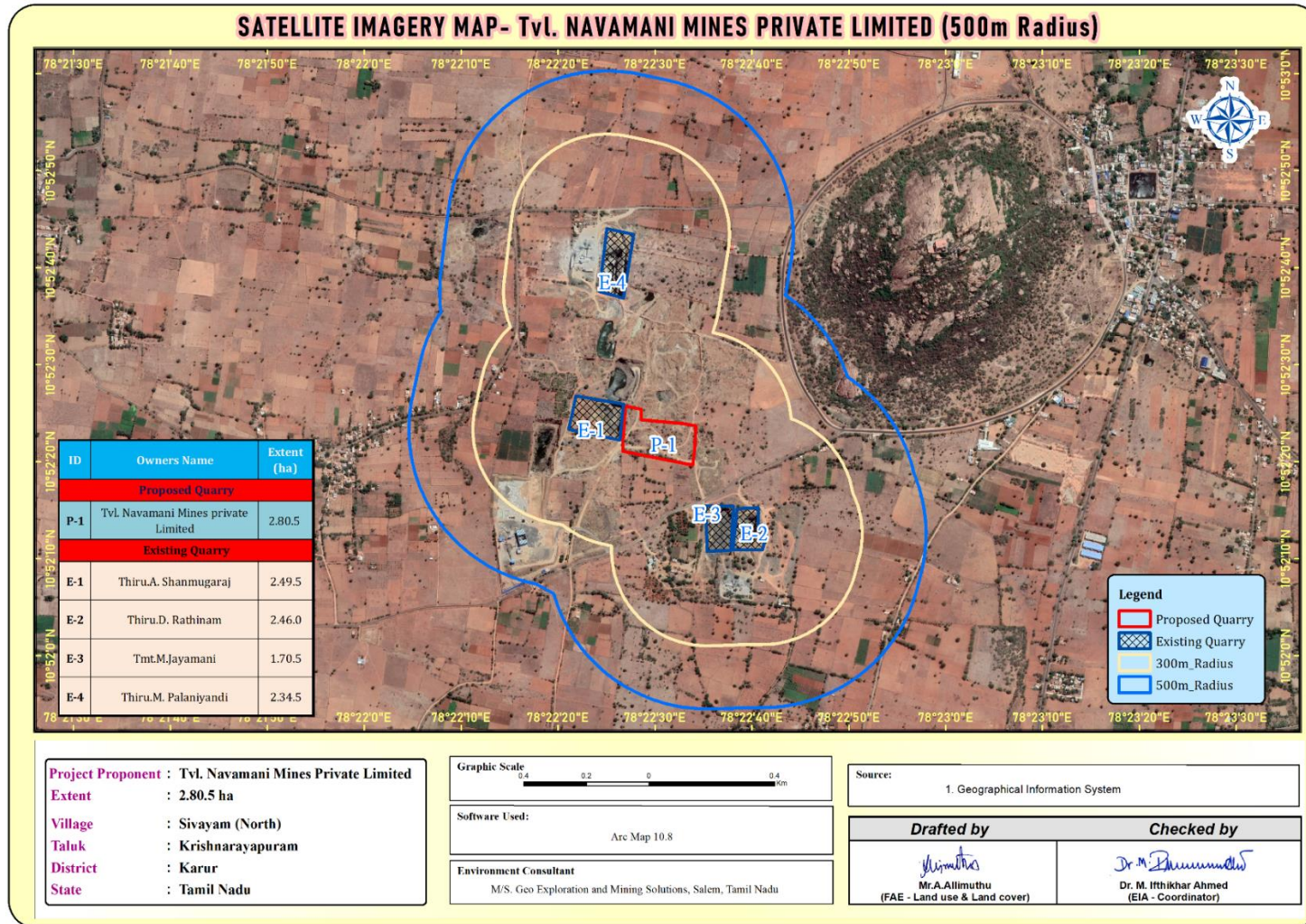
The Ministry of Environment and Forests, Govt. of India, through its EIA notification S.O. 1533(E) of 14<sup>th</sup> September 2006 and its subsequent amendments as per Gazette Notification S.O. 3977 (E) of 14<sup>th</sup> August 2018, Mining Projects are classified under two categories i.e. A (> 100 Ha) and B ( $\leq$  100 Ha), and Schematic Presentation of Requirements on Environmental Clearance of Minor Minerals including cluster situation in Appendix – XI.

Now, as per Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green Tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018 clarified the requirement for EIA, EMP and therefore, Public Consultation for all areas from 5 to 25 ha falling in Category B - 1 and appraised by SEAC/ SEIAA as well as for cluster situation.

The proposed project is categorized under category “B1” Activity 1(a) (mining lease area in cluster situation) and will be considered at SEIAA – TN after conducting Public Hearing and Submission of EIA/EMP Report for Grant of Environmental Clearance.

**“Final EIA/EMP Report is prepared on the basis of ToR Obtained and Outcome of Public Hearing carried out Dated: 21.06.2023 for the grant of Environmental Clearance from SEIAA, Tamil Nadu”**

**FIGURE 1.1 SATELLITE IMAGERY CLUSTER QUARRIES**



**Cluster area is calculated as per MoEF & CC Notification – S.O. 2269 (E) Dated: 01.07.2016**

Note: As per above notification S.O.2269(E) dated: 01.07.2016 in para (b) in Appendix XI, - (i)(6) A cluster shall be formed when the distance between the peripheries of one lease is less than 500 meters from the periphery of other lease in a homogeneous mineral area which shall be applicable to the mine lease or quarry licenses granted on and after 9th September, 2013

## 1.2 Identification of Project and Project Proponent

### 1.2.1 Identification of Project

The project areas in the cluster are Patta Land, no forest land is involved

**TABLE 1.1: PROPOSED PROJECT**

<b>Name of the Project</b>	Tvl. Navamani Mines Pvt Ltd Rough Stone and Gravel Quarry
<b>S.F. No.</b>	15/1 & 15/2
<b>Extent &amp; Classification</b>	2.80.5 ha – Patta Land (Classified as Punjai)
<b>Village &amp; Taluk</b>	Sivayam (North) Village & Krishnarayapuram Taluk
<b>District</b>	Karur District

Source: Approved Mining Plan

### 1.2.2 Identification of Project Proponent

**TABLE 1.2: DETAILS OF PROJECT PROPONENT**

<b>Name of the Proponent</b>	<b>Tvl. Navamani Mines Private Limited</b> Thiru. Palaniyandi Vimalathithan - Director
<b>Address</b>	No.5/898, Alagu Nagar, Trichy Main Road, Namakkal District – 637 001
<b>Mobile</b>	96774 59953
<b>Status</b>	Private Limited Company

Source: Approved Mining Plan of the project

## 1.3 Brief description of the project

### 1.3.1 Nature and size of the Project

The quarrying operation is proposed to be carried out by Opencast Mechanized Mining method with 5.0m bench height and 5.0m bench width by deploying Jack Hammer Drilling & Controlled blasting using slurry explosives and delay detonators. Hydraulic Excavator and tippers are used for Loading and transportation. Rock Breakers are deployed to avoid secondary blasting.

**TABLE 1.3: SALIENT FEATURES OF THE PROPOSED PROJECT**

SALIENT FEATURES OF PROJECT				
Name of the Quarry	Tvl. Navamani Mines and Minerals Rough Stone and Gravel Quarry			
Mining Plan Period / Lease Period	5 Years			
	Pit	Length in m	Width in m	Depth in m
Existing Pit dimension	I	25	15	3
	II	37	18	3
Ultimate Pit dimension	I	208	103	38
Toposheet No	58 J/05			
Latitude between	10°52'19.57"N to 10°52'25.68"N			
Longitude between	78°22'26.70"E to 78°22'34.23"E			
Highest Elevation	124 m AMSL			
Geological Resources	Rough Stone in m <sup>3</sup>		Gravel m <sup>3</sup>	
	9,80,455		84,039	
Mineable Reserves	Rough Stone in m <sup>3</sup>		Gravel m <sup>3</sup>	
	3,95,935		49,332	

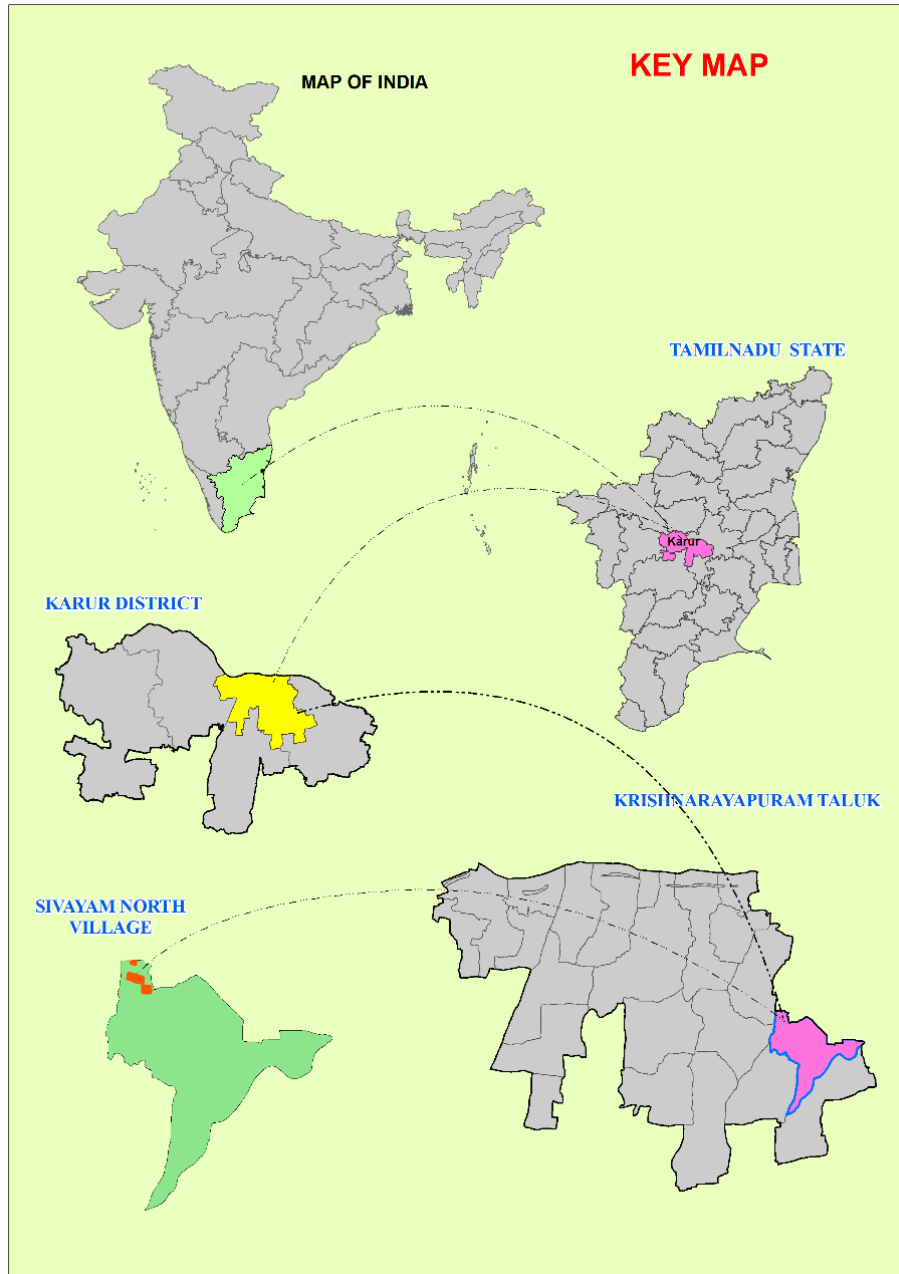
Water Level in the surrounds area	The Water table is found at a depth of 50m in summer and at 45m in rainy seasons.	
Method of Mining	Opencast Mechanized Mining Method involving drilling and blasting	
Machinery proposed	Jack Hammer	10 Nos
	Compressor	2 Nos
	Hydraulic Excavator	2 Nos
	Tippers	5 Nos
Blasting Method	Usage of Slurry Explosive with MSD detonators	
Proposed Manpower Deployment	36 Nos	
Project Cost	Rs 65, 68,505/-	
Cer Cost	Rs.5,00,000/-	

Source: Approved Mining Plan of the proposal

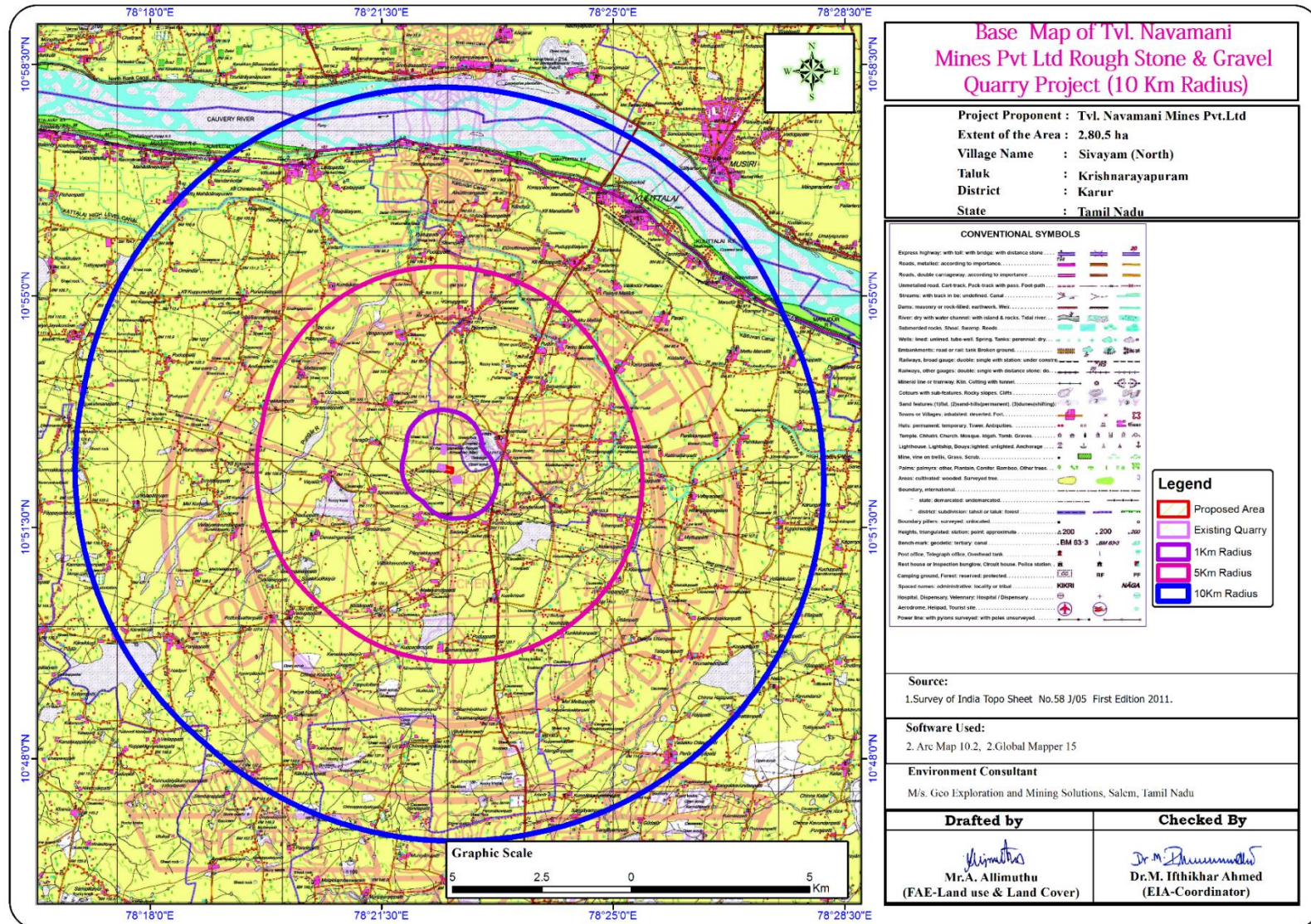
### 1.3.2 Location of the project

- The proposed quarry project falls in Sivayam (North) village, Krishnarayapuram Taluk and Karur District
- Tvl.Navamani Mines Private Limited Rough Stone & Gravel Quarries cluster is located about 3.5 km South East of Sivayam (North) Village which is situated in 15km NorthWest of Krishnarayapuram Taluk. Krishnarayapuram Taluk is situated in 21.5 km west of Karur District.
- The area is marked in the Survey of India, Toposheet No. 58-J/05.

**FIGURE 1.1A KEY MAP SHOWING THE LOCATION OF THE PROJECT SITE**



**FIGURE 1.2: TOPOSHEET SHOWING LOCATION OF THE PROJECT SITE AROUND 10 KM RADIUS**



### **1.4 Environmental Clearance**

The Environmental Clearance process for the project will comprise of four stages. These stages in sequential order are given below: -

1. Screening
2. Scoping
3. Public consultation &
4. Appraisal

#### **SCREENING –**

- The proponent applied for Rough Stone and Gravel Quarry Lease Dated: 24.04.2019
- Precise Area Communication Letter was issued by the District Collector, Karur, vide letter Rc.No 256/Kanimam/2019 Dated 19.06.2019
- The Mining Plan was prepared by Qualified Person and approved by Assistant Director, Geology and Mining, Karur District, vide Rc.No 256/Kanimam/2019 Dated 19.06.2019
- The proposed project falls under “B1” Category as per Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018
- Proponent applied for ToR for Environmental Clearance vide online Proposal No. SIA/TN/MIN/38701/2019 Dated: 05.07.2019

#### **SCOPING –**

- The proposal was placed in 166<sup>th</sup> SEAC meeting held on 30.07.2020 and the committee recommended for issue of ToR.
- The proposal was considered in 397<sup>th</sup> SEIAA meeting held on 21.09.2020 and issued ToR vide Letter No SEIAA-TN/F.No. 6993/SEAC/ToR-761/2020 Dated 24.09.2020.

#### **Public Consultation –**

Application to The Member Secretary of the Tamil Nadu Pollution Control Board (TNPCB) to conduct Public Hearing in a systematic, time bound and transparent manner ensuring widest possible public participation at the project site or in its close proximity in the district was submitted reference Dated - Nil.

#### **Appraisal –**

Appraisal is the detailed scrutiny by the State Expert Appraisal Committee (SEAC) of the application and other documents like the final EIA & EMP Report, outcome of the Public Consultations including Public Hearing Proceedings, submitted by the proponent to the regulatory authority concerned for grant of environmental clearance.

The report has been prepared using the following references:

- Guidance Manual of Environmental Impact Assessment for Mining of Minerals, Ministry of Environment and Forests, 2010
- EIA Notification, 14<sup>th</sup> September, 2006
- ToR Letter No. SEIAA-TN/F.No. 6993/SEAC/ToR-761/2020 Dated 24.09.2020.
- Approved Mining plan

### **1.5 Post Environment Clearance Monitoring**

The Project Proponent in the Cluster will submit a half-yearly compliance report in respect of stipulated Environmental Clearance terms and conditions to MoEF & CC Regional Office & SEIAA after grant of EC on 1<sup>st</sup> June and 1<sup>st</sup> December of every year.

## 1.6 Generic Structure of EIA Document

The overall contents of the EIA report follow the list of contents prescribed in the EIA Notification 2006 and the “Environmental Impact Assessment Guidance Manual for Mining of Minerals” published by MoEF & CC. A brief description of each Chapter is presented in Table No. 1.5.

**TABLE 1.4 – STRUCTURE OF THE EIA REPORT**

S. No	Chapters	Title	Particulars
1	Chapter 1	Introduction	Presents, an Introduction along with Scope and Objective of this EIA/EMP Studies
2	Chapter 2	Project Description	Presents the Technical Details of the Project
3	Chapter 3	Description of Environment	Presents the Baseline Status for various Environmental Parameters in the Study Area for One Season (3 Months)
4	Chapter 4	Anticipated Environmental Impacts and Mitigation Measures	Presents the Identification, Prediction and Evaluation of overall Environmental Impacts due to the Proposed Projects Activities. Also presents Proposed Mitigation Measures.
5	Chapter 5	Analysis of Alternatives (Technology & Site)	Presents Analysis of alternatives with respect to site
6	Chapter 6	Environment Monitoring Programme	Present details of post project environment monitoring
7	Chapter 7	Additional Studies	Presents Public Consultation, Risk Assessment and Disaster Management Plan
8	Chapter 8	Project Benefits	Presents project benefits as: Improvements in the Physical Infrastructure, Social Infrastructure Employment Potential –Skilled; Semi-Skilled and Unskilled etc.,
9	Chapter 9	Cost Benefit Analysis	Environmental Cost Benefit Analysis has not been recommended at Scoping Stage – thus no analysis carried out separately in this EIA/EMP Report
10	Chapter 10	Environmental Management Plan	Description of the administrative aspects to ensure the Mitigation Measures are implemented and their effectiveness monitored, after approval of the project.
11	Chapter 11	Summary & Conclusion	Summary of the EIA Report
11	Chapter 12	Disclosure of Consultants Engaged	Disclosure of the Consultants

## 1.7 Scope of the Study

The main scope of the EIA study is to quantify the cumulative impact in the study area due to cluster quarries and formulate the effective mitigation measures for each individual leases. A detailed account of the emission sources, emissions control equipment, background Air quality levels, Meteorological measurements, Dispersion model and all other aspects of pollution like effluent discharge, Dust generation etc., have been discussed in this report. The baseline monitoring study has been carried out considering all the proposed and existing quarries falls within the cluster during the post monsoon season (March 2021 – May 2021) for various environmental components so as to assess the anticipated impacts of the cluster quarry projects on the environment and suggest suitable mitigation measures for likely adverse impacts due to the proposed project.

**TABLE 1.5 – ENVIRONMENT ATTRIBUTES**

Sl.No.	Attributes	Parameters	Source and Frequency
1	Ambient Air Quality	PM <sub>10</sub> , PM <sub>2.5</sub> , SO <sub>2</sub> , NO <sub>2</sub>	24 hourly samples twice a week for three months at 8 locations
2	Meteorology	Wind speed and direction, temperature, relative humidity and rainfall	Near project site continuous for three months with hourly recording and from secondary sources of IMD station, Karur
3	Water quality	Physical, Chemical and Bacteriological parameters	Grab samples were collected at 4 ground water and 2 surface water locations once during study period.
4	Ecology	Existing terrestrial and aquatic flora and fauna within 10 km radius circle.	Limited primary survey and secondary data was collected from the Forest department.
5	Noise levels	Noise levels in dB(A)	At 8 locations data monitored once for 24 hours during EIA study.
6	Soil Characteristics	Physical and Chemical Parameters	Once at 4 locations during study period
7	Land use	Existing land use for different categories	Based on Survey of India topographical sheet and satellite imagery and primary survey.
8	Socio-Economic Aspects	Socio-economic and demographic characteristics, worker characteristics	Based on primary survey and secondary sources data like census of India 2011.
9	Hydrology	Drainage pattern of the area, nature of streams, aquifer characteristics, recharge and discharge areas	Based on data collected from secondary sources as well as hydro-geology study report prepared.
10	Risk assessment and Disaster Management Plan	Identify areas where disaster can occur by fires and explosions and release of toxic substances	Based on the findings of Risk assessment done for the mining associated activities

Source: Field Monitoring Data

The data has been collected as per the requirement of the ToR issued by SEIAA – TN.

### 1.7.1 Regulatory Compliance & Applicable Laws/Regulations

- Application for Quarrying Lease as per Tamil Nadu Minor Mineral Concession Rules, 1959
- Obtained Precise Area Communication Letter as per Tamil Nadu Minor Mineral Concession Rules, 1959 for Preparation of Mining Plan and obtaining Environmental Clearance
- The Mining Plan of Rough Stone and Gravel quarry has been approved under Rule 41 & 42 as amended of Tamil Nadu Minor Mineral Concession Rules, 1959
- ToR Letter No. SEIAA-TN /F.No. 6993/SEAC/ToR-761/2020 Dated 24.09.2020.

## CHAPTER – 2: PROJECT DESCRIPTION

### 2.0 General

This EIA & EMP report prepared for Tvl. Navamani Mines Private Limited Rough Stone and Gravel Quarry over an extent of 2.80.50 Ha Sivayam (North) Village, Krishnarayapuram Taluk & Karur District. The Proposed Rough Stone and Gravel Quarry requires Environmental Clearance.

There are one proposed, two public hearing completed, and one existing quarry forming a cluster; calculated as per MoEF & CC Notification S.O. 2269(E) Dated 1<sup>st</sup> July 2016 and the total extent of cluster is 8.80.0 ha.

As the extent of cluster are more than 5 ha, the proposal falls under B1 Category as per the Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green Tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018, and requirement for EIA/ EMP and Public Consultation for obtaining Environmental Clearance.

### 2.1 Description of the Project

The proposed project is site specific and there is no additional area required for this project. There is no effluent generation/discharge from the proposed quarry.

Rough Stone and Gravel are proposed to be excavated by opencast mechanized method involving splitting of rock mass of considerable volume from the parent rock mass by jackhammer drilling and blasting, hydraulic excavators are used for loading the Rough Stone from pithead to the needy crushers and rock breakers to avoid secondary blasting.

### 2.2 Location of the Project

- The proposed quarry project falls in Sivayam (North) Village, Krishnarayapuram Taluk & Karur District.
- Tvl. Navamani Mines Private Limited Rough Stone and Gravel Quarries cluster is located about 3.5 km South East of Sivayam (North) Village which is situated in 15km NorthWest of Krishnarayapuram Taluk. Krishnarayapuram Taluk is situated in 21.5 km west of Karur District.
- The area is marked in the Survey of India, Toposheet No. 58-J/05.
- The projects under the cluster are classified as patta land (Non-Forest Land) & does not fall within 10 km radius of any Eco – sensitive zone, Wild life Sanctuary, National Park, Tiger Reserve, Elephant Corridor and Biosphere Reserves.

**TABLE 2.1: SITE CONNECTIVITY TO THE CLUSTER**

Nearest Roadway	Cart Track – 150m – South
	(Connecting – Ayyarmalai – Kuzhanthai patti Village) Village Road – 400m North West (Kuzhanthai patti Village)
	(NH 67) Karur – Trichy – 9.0 km North
	(SH 71) Kulithalai – Manapparai - 1.3 km East side
Nearest Village	Kuzhanthai patti Village – 1.0 km- South West
Nearest Town	Kulithalai – 9.0 km - NW
Nearest Railway	Kulithalai – 9.0 km - NW
Nearest Airport	Tiruchirapalli Airport – 37 km – SE
Seaport	Thoothukudi - 235 km South

The cluster quarry coner coordinates are given below.

**TABLE 2.2 – BOUNDARY CO-ORDINATES OF PROPOSED PROJECT**

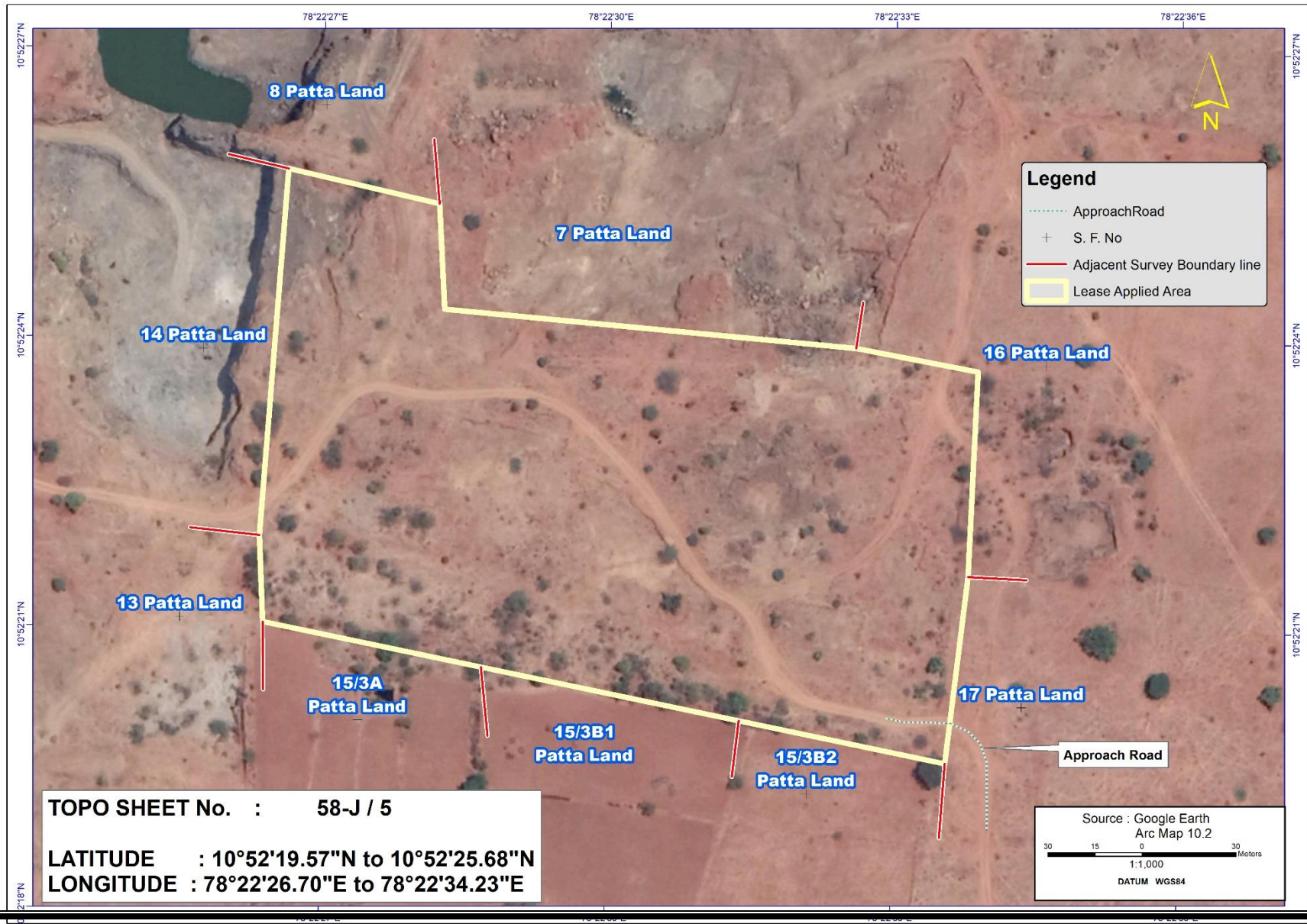
Boundary Pillar No.	Latitude	Longitude
1	10°52' 20.98"N	78° 22' 26.74"E
2	10°52' 21.88"N	78° 22' 26.70"E
3	10°52' 25.68"N	78° 22' 26.97"E
4	10°52' 25.33"N	78° 22' 28.56"E
5	10°52' 24.24"N	78° 22' 28.62"E
6	10°52' 23.57"N	78° 22' 32.94"E
7	10°52' 23.63"N	78° 22' 34.23"E
8	10°52' 21.50"N	78° 22' 34.14"E
9	10°52' 19.57"N	78° 22' 33.91"E

Source: Quarry Lease Plan

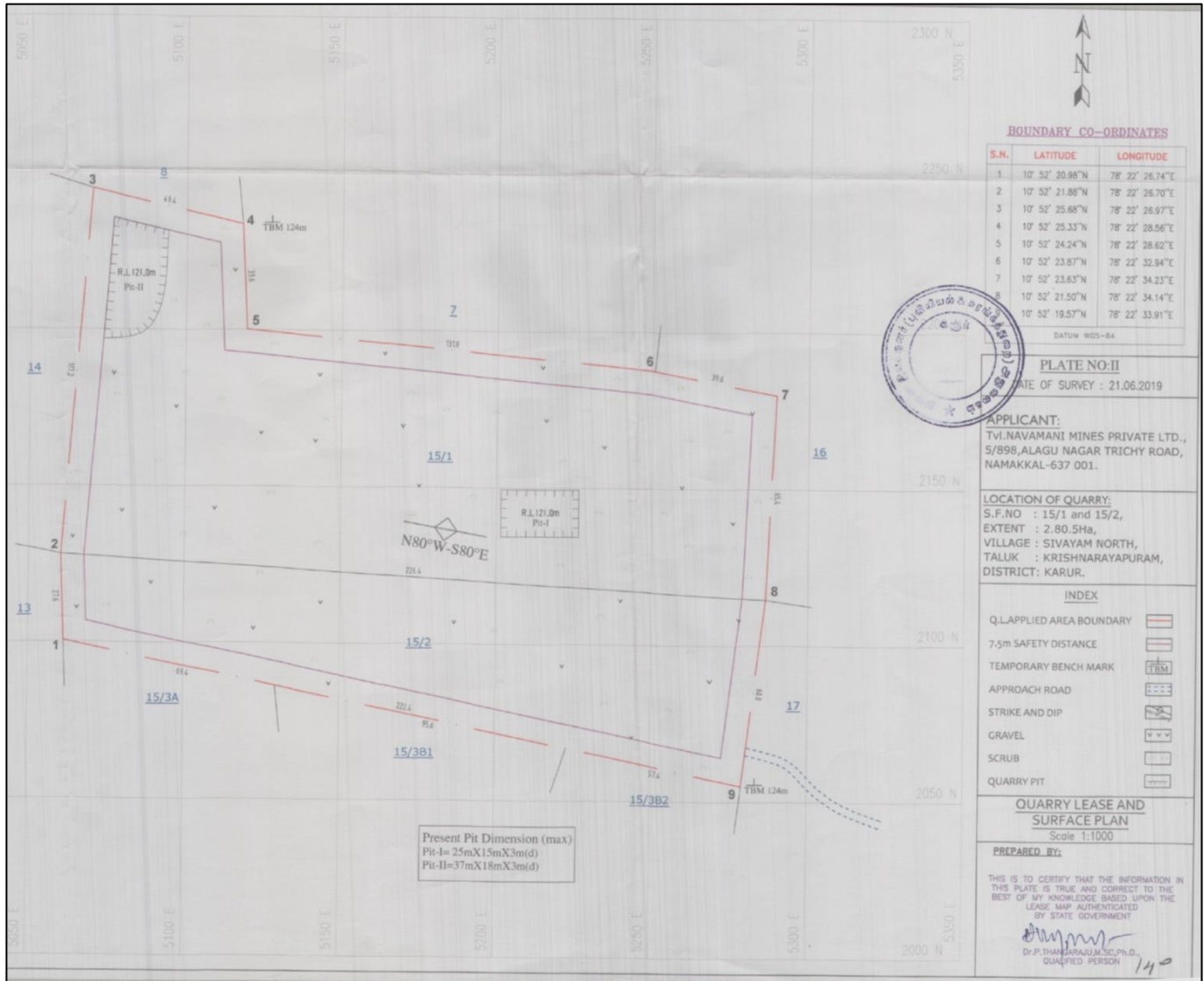
**FIGURE 2.1: TOPOGRAPHICAL VIEW OF THE PROJECT SITE**



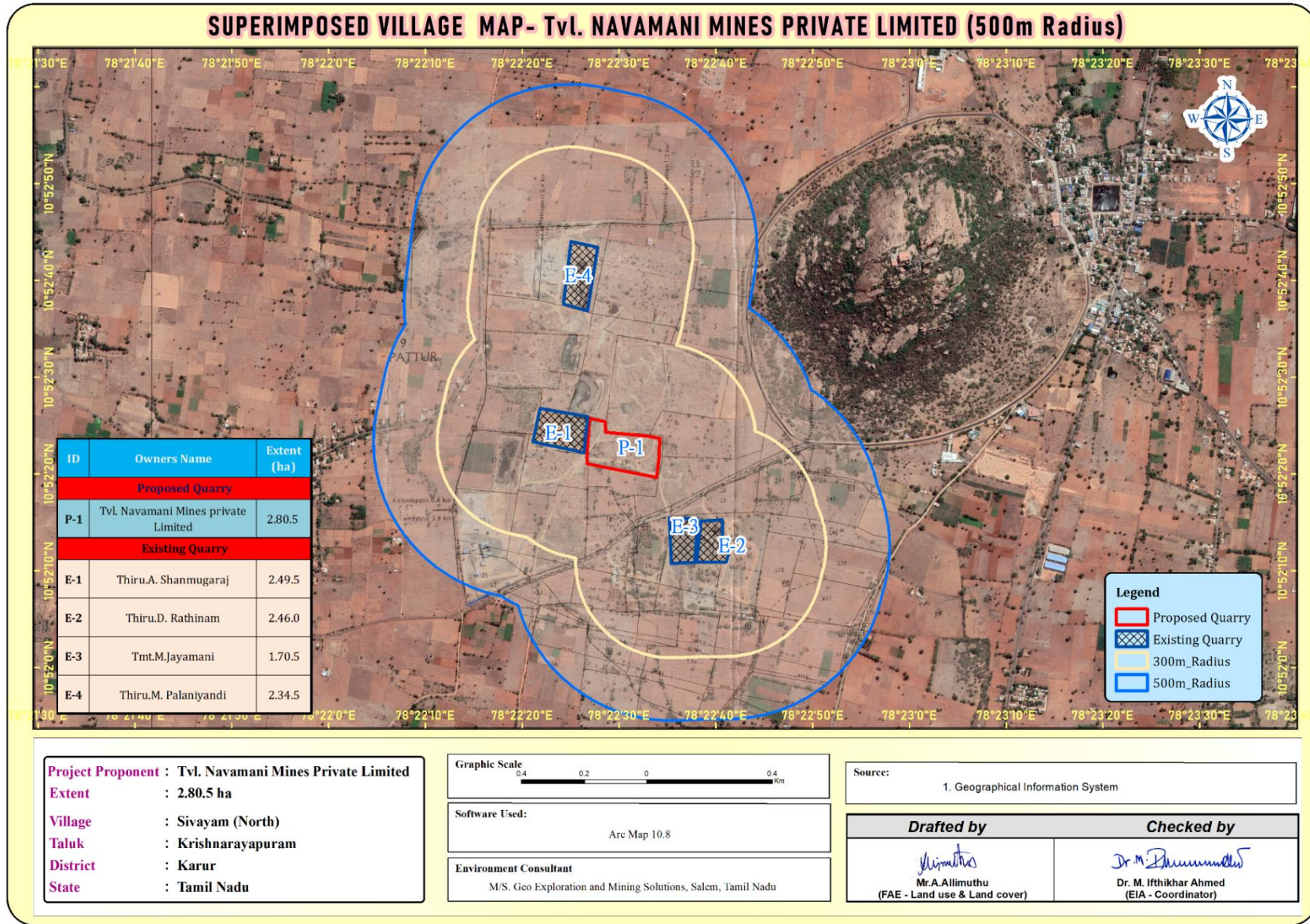
**FIGURE 2.2: GOOGLE IMAGE SHOWING PROJECT AREA**



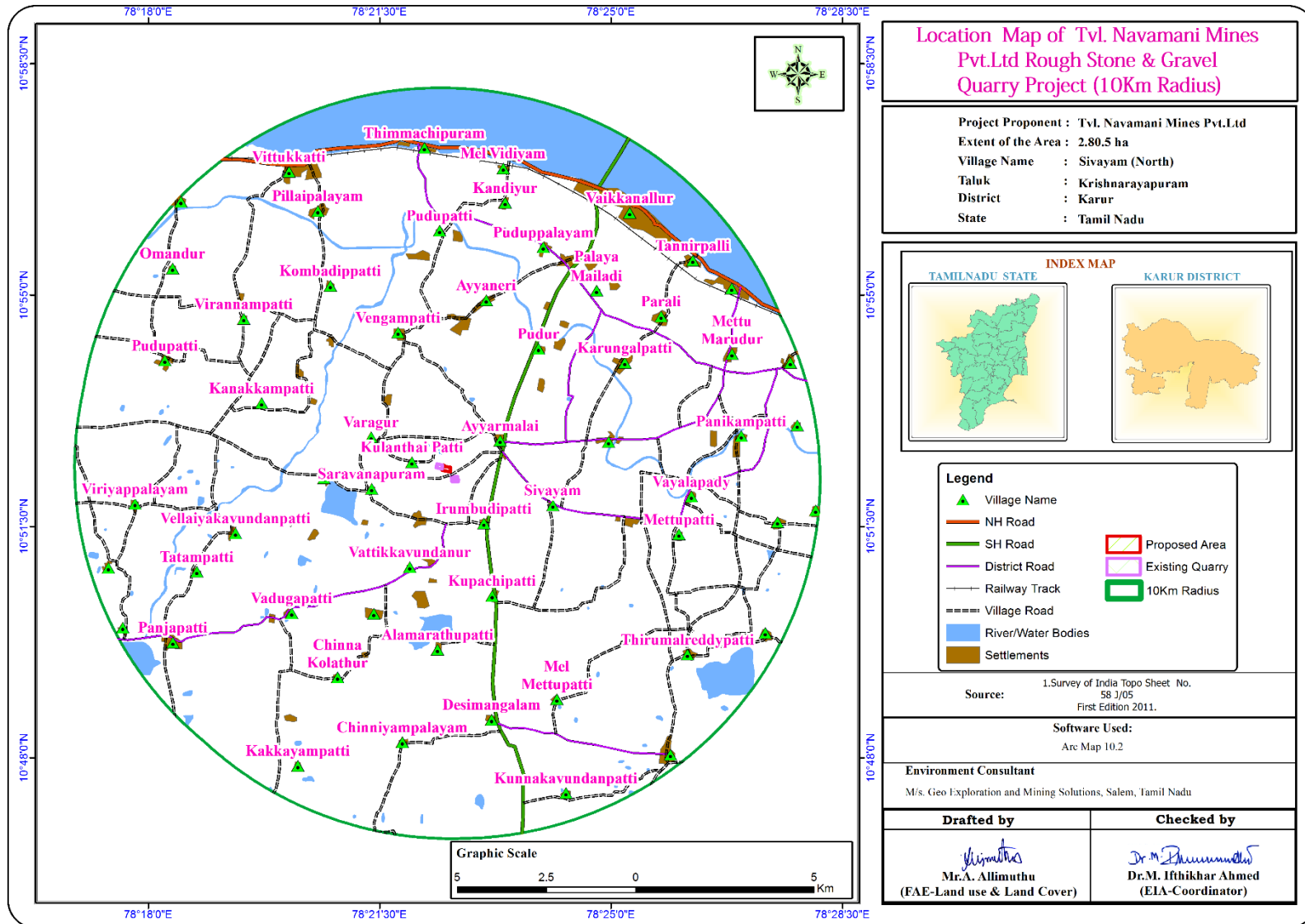
**FIGURE 2.3: QUARRY LEASE PLAN**



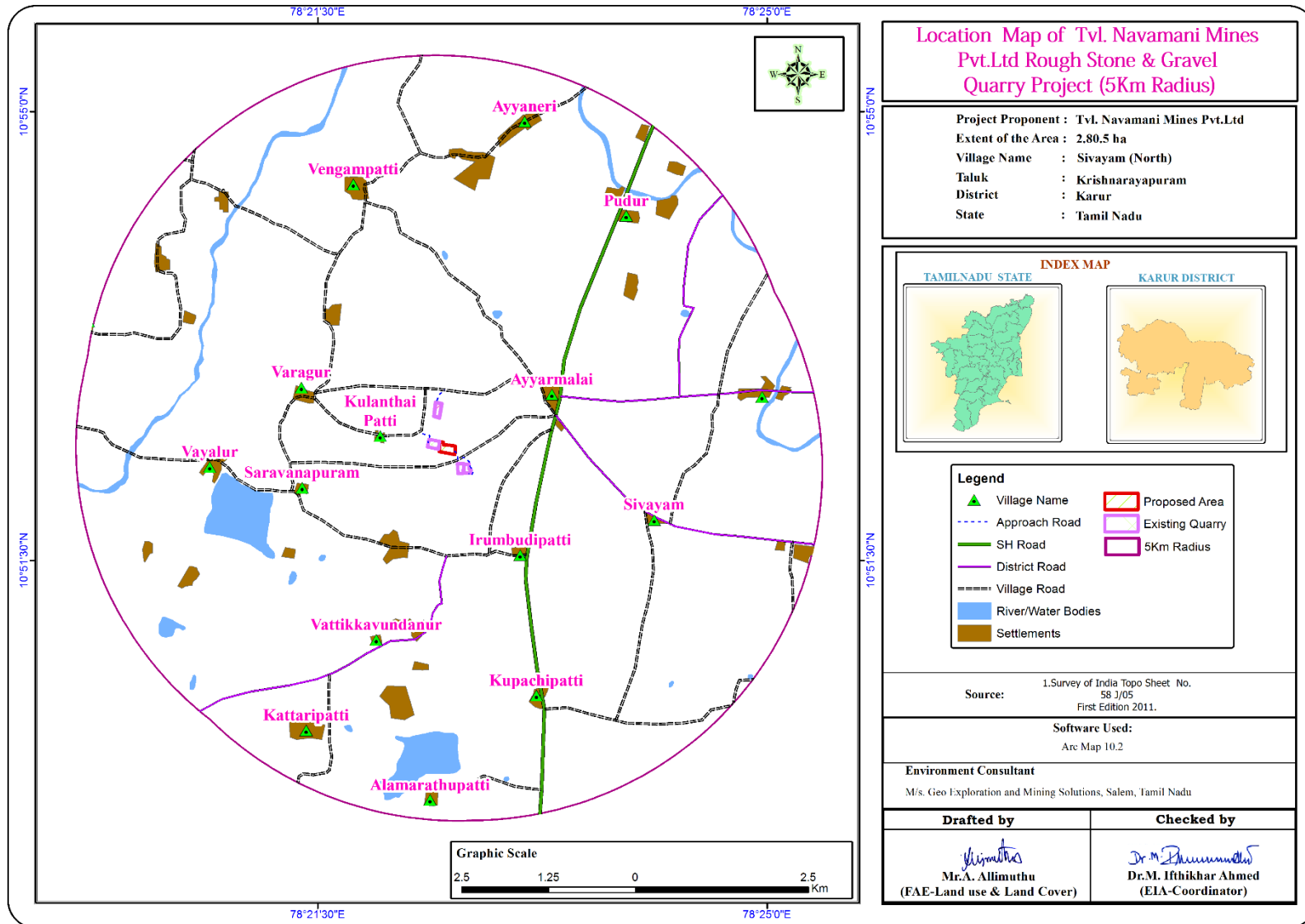
**FIGURE 2.5: SATELLITE IMAGERY OF CLUSTER QUARRIES**



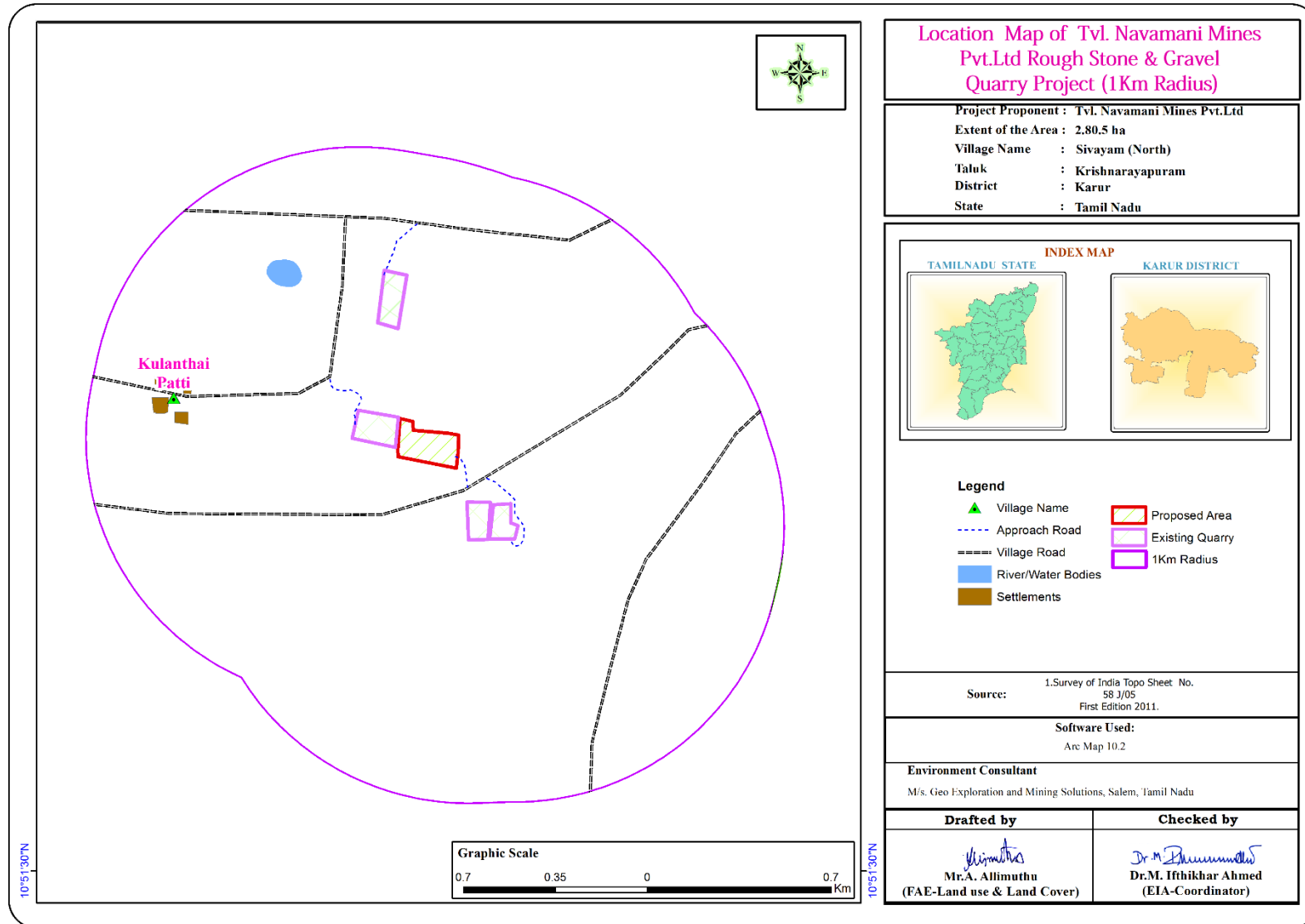
**FIGURE 2.6: DIGITIZED MAP OF THE STUDY AREA (10 KM RADIUS FROM PROJECT SITE)**



**FIGURE 2.7: DIGITIZED MAP OF THE STUDY AREA (5 KM RADIUS FROM PROJECT SITE)**



**FIGURE 2.8: DIGITIZED MAP OF THE STUDY AREA (1 KM RADIUS FROM PROJECT SITE)**



## 2.2.1 Project Area

- (i) The project under cluster is site specific, there is No beneficiation or processing proposed inside the project area.
- (ii) There is no forest land involved in the proposed project area and is devoid of major vegetation and trees.

**TABLE 2.3 – LAND USE PATTERN OF THE PROPOSED PROJECT**

Description	Present area in (ha)	Area at the end of life of quarry (Ha)
Area under quarry	0.10.0	2.25.3
Infrastructure	Nil	0.01.0
Roads	Nil	0.02.0
Green Belt	Nil	0.28.6
Un – utilized area	2.70.5	0.23.6
<b>Grand Total</b>	<b>2.80.5</b>	<b>2.80.5</b>

Source: Approved Mining Plan

## 2.2.2 Size or Magnitude of Operation

**TABLE 2.4: OPERATIONAL DETAILS FOR PROPOSED PROJECT**

PARTICULARS	DETAILS	
	Rough Stone (5Year Plan period)	Gravel (3Year Plan period)
Geological Resources in m <sup>3</sup>	9,80,455	84,039
Mineable Reserves in m <sup>3</sup>	3,95,935	49,332
Production for five-year plan period in m <sup>3</sup>	3,95,935	49,332
Mining Plan Period / Lease Applied Period	5 Years	
Number of Working Days	300 Days	
Production per day in m <sup>3</sup>	264	55
No of Lorry loads (12m <sup>3</sup> per load)	22	5
Proposed Depth for Mining Plan Period	38m (3m Gravel + 35m Rough stone)	

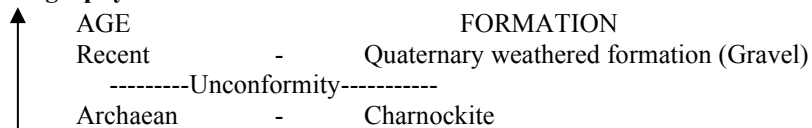
Source: Approved mining plan

## 2.3 Geology

### 2.3.1 Regional Geology

Geologically, the entire district can be classified into hard rock and sedimentary formations. Hard rock Formation: - More than 90 percent of the district is underlain by hard rock of Archaean age. The gneissic type of Formation is the major formation among the various types of hard rocks. Charnockite occurs in this district as pockets in Karur and Aravakurichi taluks. Quartzites which are resistant to weathering are also seen as patches in Charnockite and gneissic varieties (*Source District survey Report – Karur - 2017*)

#### Stratigraphy of the area –



Peninsular Gneiss complex Geologically, the district is covered by rocks belonging to Archean age comprising the khondalite group, Charnockite Group, migmatite group, Sathayamangalam group, Bhavani Group and Alkali complex of Proterozoic age and Recent to Late Plestocene rocks of Cainozoic age.

The Charnockite Group of rocks consisting of Charnockite, pyroxene granulites and associated magnetite quartzite, the Knodalite Group comprising gametiferous – sillimanite gneiss, calc-granulite, crystalline limestone, sillimanite quartzites and associated migmatitic gneisses.

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### 2.3.2 Local Geology: -

The study area follows the regional trend and mainly comprises of Hard Rock Formation as a homogeneous formation / Batholith formation of Charnockite. The topography of the area is almost plain terrain having gentle slope towards South West side, the area is covered by Gravel formation which is about 3m thickness, followed by the Gravel formation massive charnockite is found it is revealed from the existing quarry pits within the area.

Peninsular gneiss forms the oldest rock formation, in which the massive formation of Charnockite lies over with rich accumulation of recent quarternary formation. On regional scale the Charnockite body trending N80<sup>0</sup>W – S80<sup>0</sup>E with vertical dip (*Source Approved Mining plan*)

### Exploration studies

State Geology and Mining Department has carried out the Regional prospecting and exploration in these areas during 1992 to 1993

Geological survey of India has carried out detailed mapping in Karur District, besides the Functional Area Experts (FAE) in Geology and Hydrogeology carried out detailed Geological studies in the area. The Rough stone formation is clearly inferred from the existing pits and outcrops in the surrounding area.

### 2.3.3 Hydrogeology

The occurrence and movement of groundwater in hard rock formations are restricted to the porous zones of weathered formations and the open systems of fractures, fissures and joints. Generally, in hard rock regions, occurrence of weathered thickness is discontinuous both in space and depth. Hence recharge of groundwater in hard rock formations is influenced by the intensity and depth of weathering. The subsurface lithological condition and the aquifer characters can be ascertained by drilling exploratory boreholes and conducting pump tests.

The State Ground and Surface Water Resources Data Centre, during the course of investigation has drilled more than 85 boreholes spread over the entire district to find out the nature and behaviour of the subsurface material and their water holding and water yielding capability. There is considerable diversity in the nature of formalities even within the short distance. The lithology of the boreholes indicate that in Kulithalai and Krishnarayapuram taluks, there is considerable thickness of weathering ranging from 16m to 20 m below ground level. The sedimentary tract of Cauvery alluvium is restricted to either side of the river Cauvery and the thickness of Alluvium is estimated to be around 10-12 m.

### Aquifer Systems:

Occurrence and storage of groundwater depend upon three factors viz., Geology, Topography and rainfall in the form of precipitation. Apart from Geology, wide variation in topographic profile and intensity of rainfall constitutes the prime factors of groundwater recharge. Aquifers are part of the more complex hydro geological system and the behaviour of the entire system cannot be interpreted easily. In hard rock terrain the occurrence of Ground Water is limited to top weathered, fissured and fractured zone which extends to maximum 35 m on an average it is about 15-20 m in Karur District.

In Sedimentary formations, the presence of primary inter granular porosity enhances the transmitting capacity of groundwater where the yield will be appreciable. The sedimentary area which occupies the eastern part of the district along the coastal tract is more favourable for groundwater recharge. Ground Water occurs both in semi confined and confined conditions. A brief description of occurrence of groundwater in each formation is furnished below.

### Alluvial Formations

In the river alluvium groundwater occurs under water table condition. The maximum thickness is 40 m and the average thickness of the aquifer is approximately 12 m. These formations are porous and permeable which have good water bearing zones.

### Charnockite

Groundwater occurs under water table conditions but the intensity of weathering, joint, fracture and its development is much less when compared to gneissic formations. The groundwater potential is low, when compared with the gneissic formations.

### Aquifer Parameters

More or less, 90 percent of Karur district is covered by crystalline formation of Archaean age. The thickness of aquifer in hard rock formation varies from 15 to 35 m. The inter granular porosity is essentially depend upon the intensity and degree of weathering and fracture development in the bed rock. Deep weathering is developed in gneissic formations and moderate weathering in charnockite formation. The alluvial formation stretches mainly along the river course of Cauvery. (Source Central Ground Water Board – Karur).

**TABLE 2.5: RANGE OF AQUIFER PARAMETERS**

Parameters	Range
Well yield in LPM	50-300 lpm
Transmissivity (T) m <sup>2</sup> /day	1.49-164.18 m <sup>2</sup> /day
Permeability (K) m/day	0.25-26.75 m/day

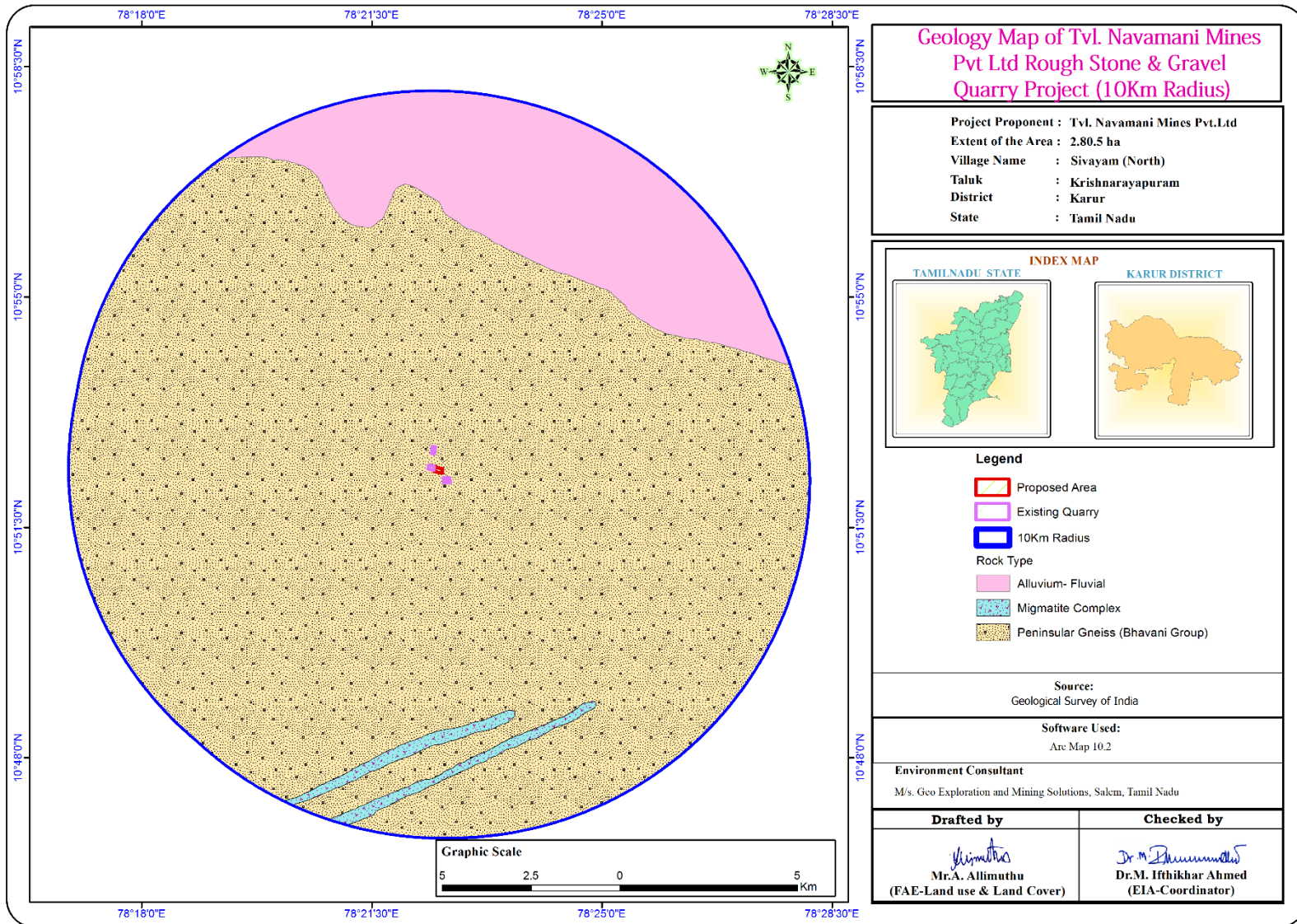
Source: <https://nwm.gov.in/sites/default/files/Notes%20on%20Karur%20District.pdf>

**TABLE 2.6: GROUND WATER LEVEL VARIATIONS OF KARUR DISTRICT**

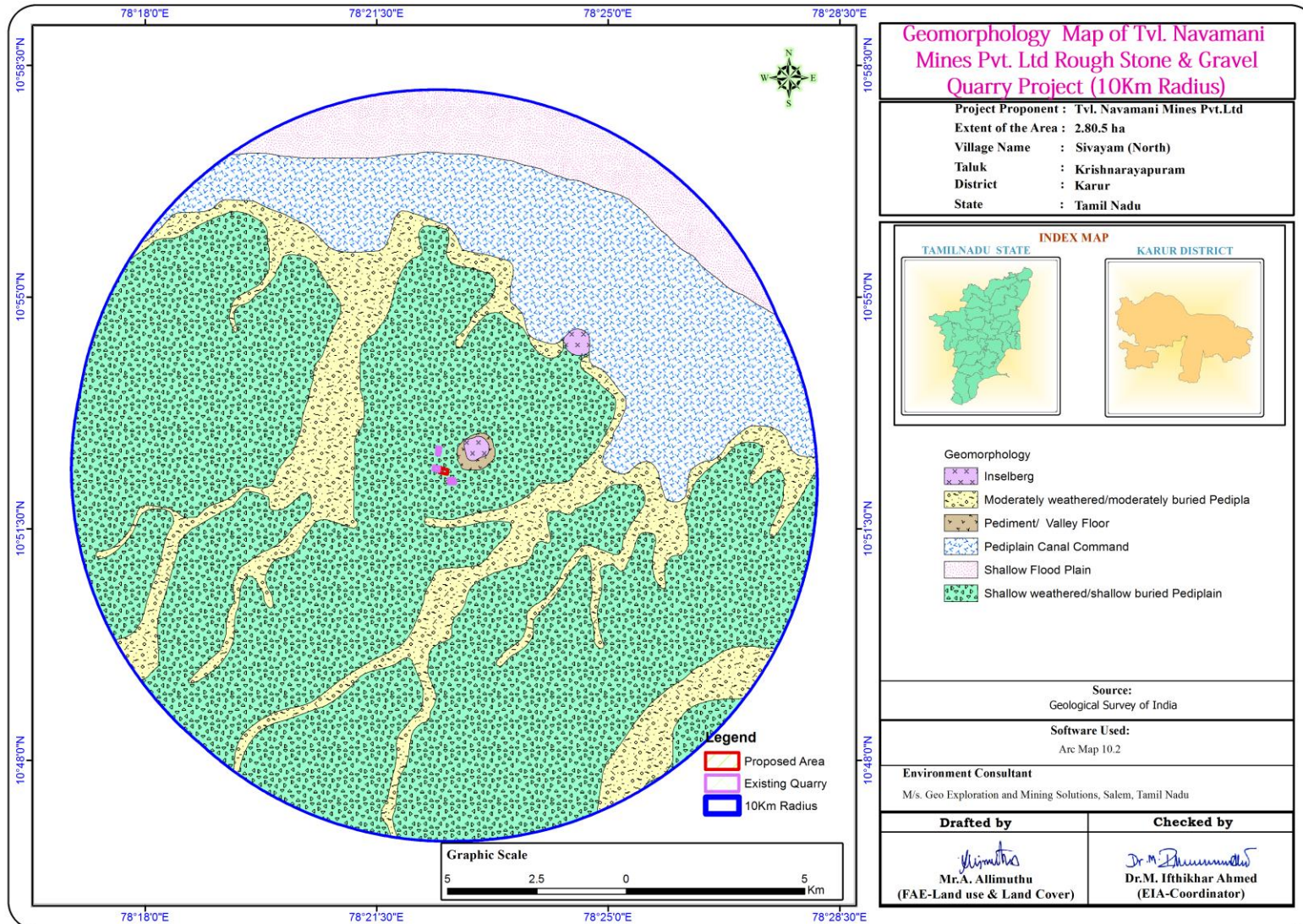
Jan 2017	May 2017	Jan 2018	May 2018	Jan 2019	May 2019	Jan 2020	May 2020	Jan 2021	May 2021	5 Years Pre Monsoon Average	5Years Post Monsoon Average
22.7	31.3	29.8	22.9	13.6	20.8	17.8	21.7	15.3	21.3	19.7	17.0

Source: <https://www.twadboard.tn.gov.in/content/karur>

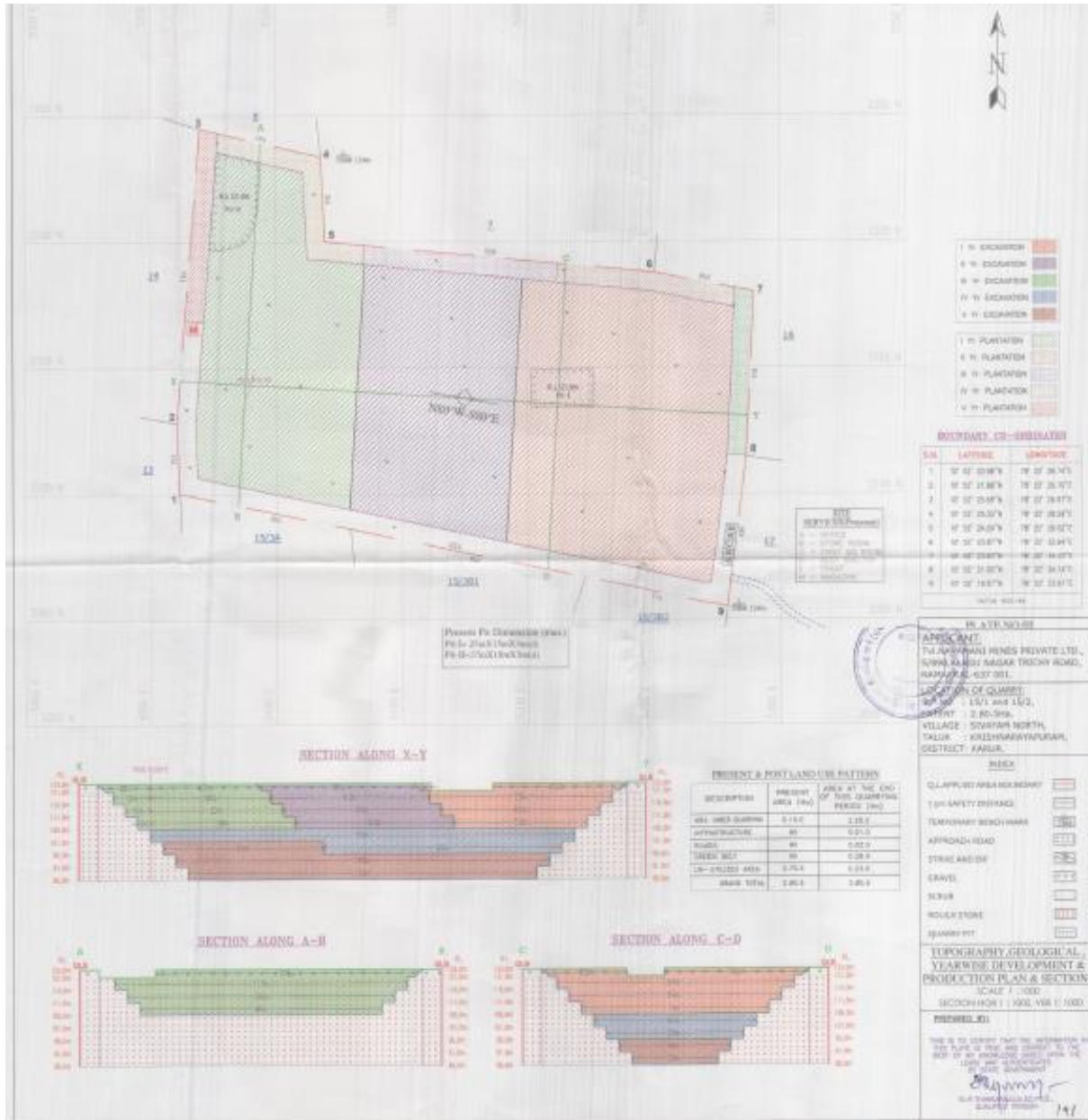
**FIGURE 2.10: REGIONAL GEOLOGY MAP**



**FIGURE 2.11: GEOMORPHOLOGY MAP**



**FIGURE 2.12: TOPOGRAPHY, GEOLOGICAL, YEARWISE DEVELOPMENT PRODUCTION PLAN AND SECTION**



**Safety conditions –**

- 7.5m Safety distance to the adjacent patta lands

## 2.4 Resources and Reserves of the Proposed Quarry

The available mineable reserves are calculated after leaving necessary safety distances, reduced depth considering bench width.

**TABLE 2.7: AVAILABLE GEOLOGICAL RESOURCES OF PROPOSED PROJECT**

Description	Rough Stone	Gravel
Geological Resource in m <sup>3</sup>	9,80,455	84,039
Mineable Resource in m <sup>3</sup>	3,95,935	49,332
Yearwise production in m <sup>3</sup>	3,95,935	49,332

**TABLE 2.8: YEAR-WISE PRODUCTION PLAN**

YEAR	ROUGH STONE (m <sup>3</sup> )	GRAVEL (m <sup>3</sup> )
I	80,380	15,048
II	79,380	16,632
III	82,755	17,652
IV	79,730	-
V	73,690	-
<b>TOTAL</b>	<b>3,95,935</b>	<b>49,332</b>

### Disposal of Waste

In the entire cluster quarries no waste is anticipated, quarried out materials (Rough stone and Gravel) will be utilized (100%).

### Conceptual Mining Plan/ Final Mine Closure Plan

Conceptual mining plan is prepared with an object of long term systematic development of benches, layouts, selection of permanent structures, depth of quarrying and ultimate pit dimensions, selection of sites for construction of infrastructure, etc.,

The ultimate pit size is designed based on certain practical parameters such as economical depth of mining, safety zones, permissible area, etc.

**TABLE 2.7: ULTIMATE PIT DIMENSIONS**

Pit	Length (Max) (m)	Width (Max) (m)	Depth (Max) (m)
I	208	103	38m below ground level

Source: Approved Mining Plan

### 2.5 Method of Mining

The method of mining is Opencast Mechanized Mining Method is being proposed by formation of 5.0-meter height bench with a bench width not less than the bench height. However, as far as the quarrying of Rough Stone is concerned, observance of the provisions of Regulation 106 (2) (b) as above is seldom possible due to various inherent petro genetic factors coupled with mining difficulties. Hence it is proposed to obtain relaxation to the provisions of the above regulation from the Director of Mines Safety for which necessary provision is available with the Regulation 106 (2) (b) of MMR-1961, under Mine Act – 1952.

The top layer of overburden (Gravel) will be Excavate directly by Hydraulic Excavators and loaded into tippers directly and sold to needy customers. The Rough Stone is a batholith formation and the splitting of rock mass of considerable volume from the parent rock mass will be carried out by deploying jackhammer drilling and Slurry Explosives will be used for blasting.

Hydraulic Excavators attached with Rock Breakers unit will be deployed for breaking large boulders to required fragmented sizes to avoid secondary blasting and hydraulic excavators attached with bucket unit will be deployed for loading the Rough Stone into the tippers and then the stone is transported from pithead to the nearby crushers.

### 2.5.1 Drilling

Drilling will be carried out as per parameters given below: -

Spacing – 1.2m, Burden –1.0, Depth of hole - 1.5m

### 2.5.2 Blasting

Blasting will be done as per details below: -

- Controlled blasting parameter: -

Spacing – 1.2m

Burden – 1.0 m

Depth of hole – 1.5 m

Charge per hole – 0.5Kg

Powder factor – 10 tonnes/kg

Dia of hole – 32 mm

Details of blasting design and parameters are discussed in approved mining plan.

No of Holes to be drilled per day:-

Volume of Rough Stone will be excavated from one hole	=	6 Tonnes
Total Volume	=	3, 95,935 m <sup>3</sup>
	=	3, 95,935 /5
	=	79,187/300
	=	264*2.6
	=	686 Tonnes per day
Therefore, Number of Holes per day	=	686/6
	=	114 kg of Explosives
Total quantity of Explosives / Hole	=	0.5 Kg
Hence total No of holes to be drilled	=	228 No of Holes per day

### Type of Explosives to be used –

Slurry explosives (An explosive material containing substantial portions of a liquid, oxidizers, and fuel, plus a thickener), NONEL / Electric Detonator & Detonating Fuse

### 2.5.3 Extent of Mechanization

**TABLE 2.9 PROPOSED MACHINERY DEPLOYMENT**

S.NO.	TYPE	NOS	SIZE/CAPACITY	MOTIVE POWER
1	Jack hammers	10	1.2m to 2.0m	Compressed air
2	Compressor	2	50 HP	Diesel Drive
3	Excavator with Bucket / Rock Breaker Unit 4	2	100-200 HP	Diesel Drive
4	Tippers	5	20 Tonnes	Diesel Drive

Source: Approved Mining Plan of the project.

## 2.6 General Features

### 2.6.1 Existing Infrastructures

Infrastructures like Mine office, Temporary Rest shelters for workers, Latrine and Urinal Facilities are available in the Existing quarries and the same infrastructure as per the Mine Rule will be arranged after the grant of quarry lease in the proposed quarries.

### 2.6.1 Drainage Pattern

The general drainage pattern of the area is dendritic. There are no streams, canals or water bodies crossing within the project area, hence there is no requirement of stream or canals diversion in the near future.

### 2.6.2 Traffic Density

Traffic density measurements were performed as per IRC 1960 Guidelines at two locations based on the transportation route. The monitoring was carried out on 03.03.2021. Traffic density measurement were made continuously for 24 hours by visual observation and counting of vehicles under three categories, viz., heavy motor vehicles, light motor vehicles and two/three wheelers. As traffic densities on the roads are high, two skilled persons were deployed simultaneously at each station during each shift- one person on either direction for counting the traffic. At the end of each hour, fresh counting and recording was undertaken.

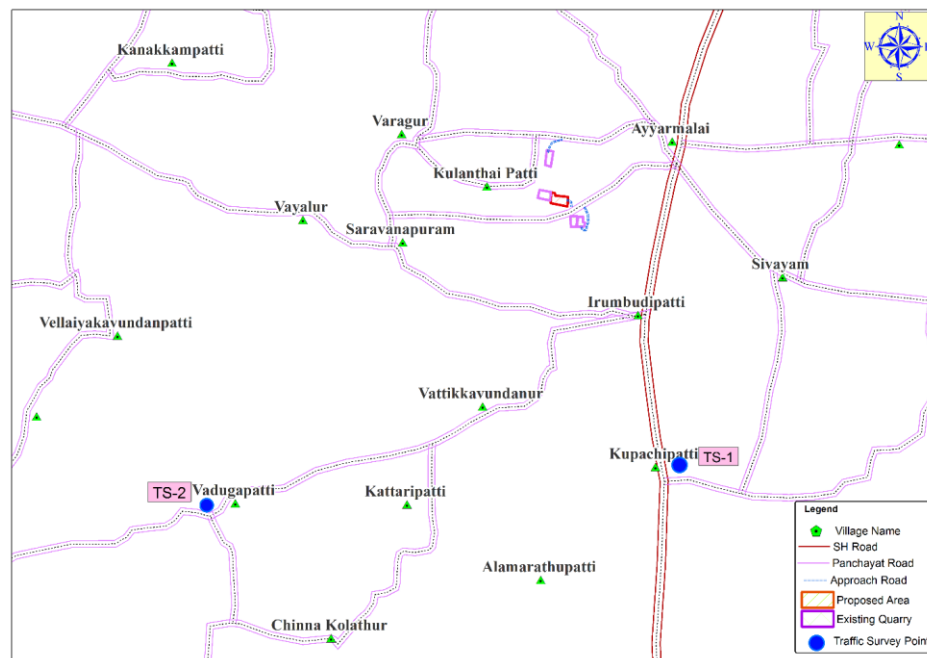
The traffic survey conducted based on the transportation route of material, the Rough Stone and Gravel is proposed to be transported mainly through the SH 71 (Kulithalai - Manapparai) road located 1.3 km East side of the area and Irumboothipatti – Mylampatti Village road 2.5km south side.

**TABLE 2.10 – TRAFFIC SURVEY LOCATION'S**

Station code	Station location	Distance and Direction	Type of Road
TS1	Kulithalai to Manapparai	1.3km East	Major District Road
TS2	Irumboothipatti – Mylampatti	2.5 km South	Village Road

Source: On-site monitoring by GEMS FAE & TM

**FIGURE 2.13: TRAFFIC SURVEY LOCATIONS & TRANSPORTATION ROUTE MAP**



(Source: Survey of India Toposheet)

**TABLE 2.11 – EXISTING TRAFFIC VOLUME**

Station code	HMV (Hourly Average)		LMV hourly average		2/3 Hourly average		Total PCU per hour
	No	PCU	No	PCU	No	PCU	
TS1	155	465	350	350	285	143	958
TS2	41	123	46	46	120	60	229

Source: On-site monitoring by GEMS FAE & TM

- PCU conversion factor for HMV (Trucks and Bus) = 3, LMV (Car, Jeep and Auto) = 1 and 0.5 for Motor Vehicles (2/3 Wheelers)

**TABLE 2.12 – ANTICIPATED TRAFFIC DUE TO THIS PROPOSED PROJECT**

Transportation of Rough stone per day		
Capacity of trucks	Cumulative Trips	Volume in PCU
10/20 tonnes	27 per day (22 Trips of Rough stone and 5 Trips of Gravel)	81

Source: Anticipated based on Approved Mining Plan Production

**TABLE 2.13 – SUMMARY OF TRAFFIC VOLUME**

Route	Existing traffic value in PCU	Incremental traffic from the quarry in PCU	Total traffic volume	Hourly Capacity in PCU as per IRC guidelines
Karumbukadai-Kumarapalayam (Panchayat Road)	958	81	1,039	1500
Okkilipalayam-Valanthavalam (District Road)	229	81	310	1200

Source: On-site monitoring analysis summary by GEMS FAE & TM

Rough stone from the project site mainly will be supplied to the needy crushers located within the radius of 2 km from the project site.

- No villages in the proposed mineral transportation route
- Mineral loaded Vehicles will not allow during school hours (Morning 8AM to 10AM & Evening 4.30PM to 5.30PM)

As per the IRC 1960 this existing road can handle 1,200 PCU in hour and Major district road can handle 1500 PCU in hour hence there will not be any conjunction due to this transportation.

### 2.6.3 Mineral Beneficiation and Processing

There is no mineral beneficiation processing or ore beneficiation in this project within the lease area.

### 2.6.4 Existing Infrastructure

The project area is new and Existing quarries for the existing quarries infrastructures are already available within the project area. The infrastructural facilities to be made after the start of the quarrying operations will be prepared outside limit as per the rules and safe distance to be adopted.

### 2.6.2 Drainage Pattern

The drainage pattern of the area is dendritic – sub dendritic.

## 2.7 Project Requirement

### 2.7.1 Water Source & Requirement

Detail of Total water requirements in KLD as given below:

**TABLE 2.14 – WATER REQUIREMENT FOR THE INDIVIDUAL PROJECT**

*Purpose	Quantity	Source
Dust Suppression	1.5 KLD	Rainwater accumulated in Mine Pit/ Water Tanker
Green Belt development	1.0 KLD	Rainwater accumulated in Mine Pit/ Water Tanker
Drinking and Domestic purpose	1.5 KLD	Approved Water vendors
<b>Total</b>	<b>4.0 KLD</b>	

Source: Prefeasibility Report

For the water conservation point of view about 50% water will be required for the suspension of the dust, Water shall be obtained from accumulated rainwater/seepage water in quarry pits. Packaged Drinking Water is available from the nearby approved water vendors.

### 2.7.2 Power and Other Infrastructure Requirement

The project's does not require power supply for the quarry operation. The quarrying activity is proposed during day time only (General Shift 8 AM – 5 PM, Lunch Break 1 PM – 2 PM). Electricity for use in office and other internal infrastructure will be obtained from TNEB. For the quarrying operation like compressor for drilling Diesel will be utilized.

The temporary infrastructures such as Mine Office, First Aid Room, Rest Shelter etc., will be constructed within the project area before commencing the quarry operation. No workshops are proposed inside the project area hence there will not be any process effluent generation from the project area. Domestic effluent from the mine office will be discharged to septic tank and soak pit. There is no toxic effluent expected to generate in the form of solid, liquid or gaseous form hence there is no requirement of waste treatment.

### 2.7.3 Fuel Requirement

High speed Diesel (HSD) will be used for mining machineries. Diesel will be brought from nearby Fuel Stations.

S. No	Project	Machinery	Average Diesel consumption	Production per day	Total Number of working hours per day based on production capacity	Average Diesel consumption per day	Total Diesel consumption
1	Tvl.Navamani Mines Private Limited	Compressor -2 (10 jackhammer capacity)	15 litre per hour	264 m <sup>3</sup>	5 Hrs	150	420
		Excavator attached with rock breaker/ bucket unit	16 litre per hour		5 Hrs	180	
		Tippers (to transport crushers within 1km radius)	4-5 km / Per Litre Total No of trips per day		6 Trips per day	30	

Total Quantity of diesel consumption for the proposal = **420 Litres per day**

**2.7.4 Employment Requirement:**

The skilled, competent qualified statutory persons will be engaged for quarrying operation, preference will be given to the local community.

**TABLE 2.15: EMPLOYMENT POTENTIAL**

Employment in Nos	36
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**2.7.5 Project Cost**

**TABLE 2.16 – PROJECT COST OF PROPOSED PROJECT**

<b>Project Cost</b>	Rs 65,68,505/-
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Source: Approved Mining Plan & Prefeasibility Report of the project

**2.8 Project Implementation Schedule**

The commercial operation will commence after the grant of Environmental Clearance. CTO will be obtained from the Tamil Nadu State Pollution Control Board. The conditions imposed during the Environmental Clearance will be compiled before the start of mining operation.

**TABLE 2.16 – EXPECTED TIME SCHEDULE FOR THE PROPOSED**

S. No	Particulars lease execution	Time schedule (in month)					Remarks if any
		1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	
1	Environmental Clearance						
2	Consent to operate						Production start period

Source: Anticipated based on Timelines framed in EIA Notification & CPCB Guidelines

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## CHAPTER – 3: DESCRIPTION OF ENVIRONMENT

### 3.0 General

This chapter presents a regional background to the baseline data at the very onset, which will help in better appreciation of micro-level field data, generated on several environmental and ecological attributes of the study area. The baseline status of the project environment is described section wise for better understanding of the broad-spectrum conditions.

The baseline environment quality represents the background environmental scenario of various environmental components such as Land, Water, Air, Noise, Biological and Socio-economic status of the study area. Field monitoring studies to evaluate the base line status of the project site were carried out covering March, April & May 2021 with CPCB guidelines. Environmental data has been collected with reference to cluster quarries KGS Lab Private Limited, Notified Laboratory, for the below attributes-

- Land
- Water
- Air
- Noise
- Biological
- Socio-economic status

#### Study Area

An area of 10 km radius (aerial distance) from the periphery of the cluster is considered for EIA study. The data collection has been used to understand the existing environment scenario around the cluster quarries against which the potential impacts of the project can be assessed. The study area has been divided into two zones viz **core zone** and **buffer zone** where core zone is considered as cluster and buffer zone taken as 10km radius from the periphery of the Cluster. Both Core zone and Buffer zone is taken as the study area.

#### Study Period

The baseline study was conducted during the pre-monsoon season i.e. March 2021 – May 2021.

#### Study Methodology

Baseline data's was generated for various environmental parameters including Land, Soil, Water (surface and groundwater), Air, Noise, Ecology & Biodiversity and Socio-economic status to determine the quality of the prevailing environmental settings. A MoEF accredited Laboratory was used for generating the baseline data.

1. The project area (Core zone) was surveyed in detail with the help of Total Station survey instrument and the boundary pillars were picked up with the help of handheld GPS. The boundary coordinates were superimposed on the satellite imagery to understand the relief of the area, besides Land use pattern of the area was studied through the Bhuvan (ISRO).
2. Soil samples were collected and analysed for relevant physico-chemical characteristics, exchangeable cations, nutrients & micro nutrients etc., in order to assess the impact of mining activities and proposed greenbelt development
3. Ground water samples were collected during the study period from the open wells and bore wells, while surface water was collected from river and lake in the buffer zone. The samples were analysed for parameters necessary to determine water quality (based on IS: 10500:2012 criteria) and those which are relevant from the point of view of environmental impact of the proposed quarries.
4. A meteorological station was setup in pachapalayam village. Wind speed, Wind direction, Dry and wet bulb temperature, Relative humidity, Rainfall with cloud cover and general weather conditions were recorded throughout the study period.

5. In order to assess the Ambient Air Quality (AAQ), samples of Ambient Air were collected by installation of Respiratory Dust Samplers (RDS) for Fugitive dust, PM<sub>10</sub> and SO<sub>2</sub>, NO<sub>x</sub> with gaseous attachments & Fine Dust Samplers (FDS) for PM<sub>2.5</sub> and other parameters as per NAAQ norms and analysed for primary air pollutants to work out the existing status of air quality
6. The noise level measurements were also made at various locations in different intervals of time with the help of sound level meter to establish the baseline noise levels in the impact zone
7. Baseline Ecology and Biodiversity studies were carried out to assess the ecology of the study area to study the existing flora and fauna pattern of the area
8. Socio-Economic survey was conducted at village and household level in the study area to understand the present socio-economic conditions and assess the extent of impact due to the proposed mining project

The sampling methodologies for the various environmental parameters required for the study, frequency of sampling, method of samples analysis, etc., are given below Table 3.1.

**TABLE 3.1 – ENVIRONMENTAL MONITORING ATTRIBUTES AND FREQUENCY OF MONITORING**

ATTRIBUTE	PARAMETERS	FREQUENCY OF MONITORING	NO. OF LOCATIONS	PROTOCOL
Land-use Land cover	Land-use Pattern within 10 km radius of the study area	Data's from census handbook 2011 and from the satellite imagery	Study Area	Satellite Imagery Primary Survey
Soil	Physio - Chemical Characteristics	Once during the study period	4 (1 core & 3 buffer zone)	IS 2720 Agriculture Handbook - Indian Council of Agriculture Research, New Delhi
Water quality	Physical, Chemical and Bacteriological Parameters	Once during the study period	6 (2 surface water & 4 ground water)	IS 10500& CPCB Standards
Meteorology	Wind Speed Wind Direction Temperature Cloud cover Dry bulb temperature Rainfall	1 Hourly Continuous Mechanical/Automatic Weather Station	1	Site specific primary data& Secondary Data from IMD Station
Ambient Air Quality	PM <sub>10</sub> PM <sub>2.5</sub> SO <sub>2</sub> , NO <sub>x</sub> CO Fugitive Dust	24 hourly twice a week (March 2021 – May 2021)	8 (3 core & 5 buffer)	IS 5182 Part 1-23 National Ambient Air Quality Standards, CPCB
Noise Levels	Ambient Noise	Hourly observation for 24 Hours per location	8 (4 core & 4 buffer zone)	IS 9989 As per CPCB Guidelines
Ecology	Existing Flora and Fauna	Through field visit during the study period	Study Area	Primary Survey by Quadrante & Transect Study & Secondary Data
Socio Economic Aspects	Socio-Economic Characteristics, Population Statistics and Existing Infrastructure in the study area	Site Visit & Census Handbook, 2011	Study Area	Primary Survey, census handbook & need based assessments.

Source: On-site monitoring/sampling by KGS Laboratories in association with GEMS

\* All monitoring and testing are been carried out as per the Guidelines of CPCB and MoEF & CC.

### 3.1 Land Environment

The main objective of this section is to provide a baseline status of the study area covering 10km radius around the cluster site so that temporal changes due to the mining activities on the surroundings can be assessed in future.

#### 3.1.1 Study of Land Use/ Land Cover

Indian Remote Sensing satellite IRS-P6, LISS III of Bhuvan (ISRO), multi-spectral digital data has been used for the preparation of land use/ land cover map of present study.

A visual interpretation technique has been adopted for land use classification based on the keys suggested in the chapter – V of the guidelines issued by NNRMS Bangalore & Level III classification with 1:50,000 scale for the preparation of land use mapping.

An image interpretation keys were developed based on such image characteristics, which enable interpretation of satellite images for land use/land cover features. Further, the land use / land cover and other baseline layers was put in GIS database for integration, analysis, statistics generation and final out in the form of land use land cover map.

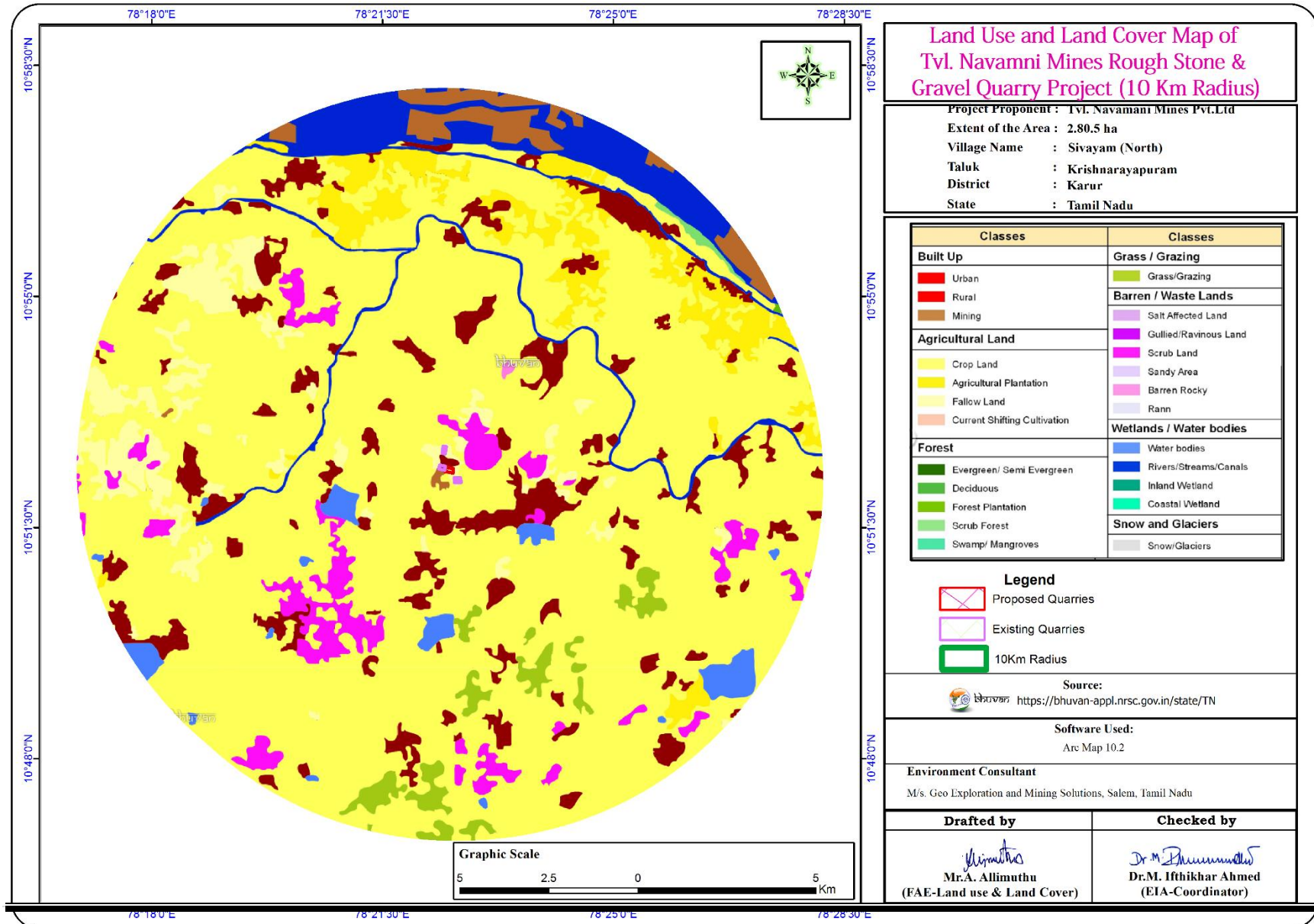
Interpreted thematic details were transferred on the base map. Besides, other supporting data like project reports and statistical data published by various Government departments have also been used.

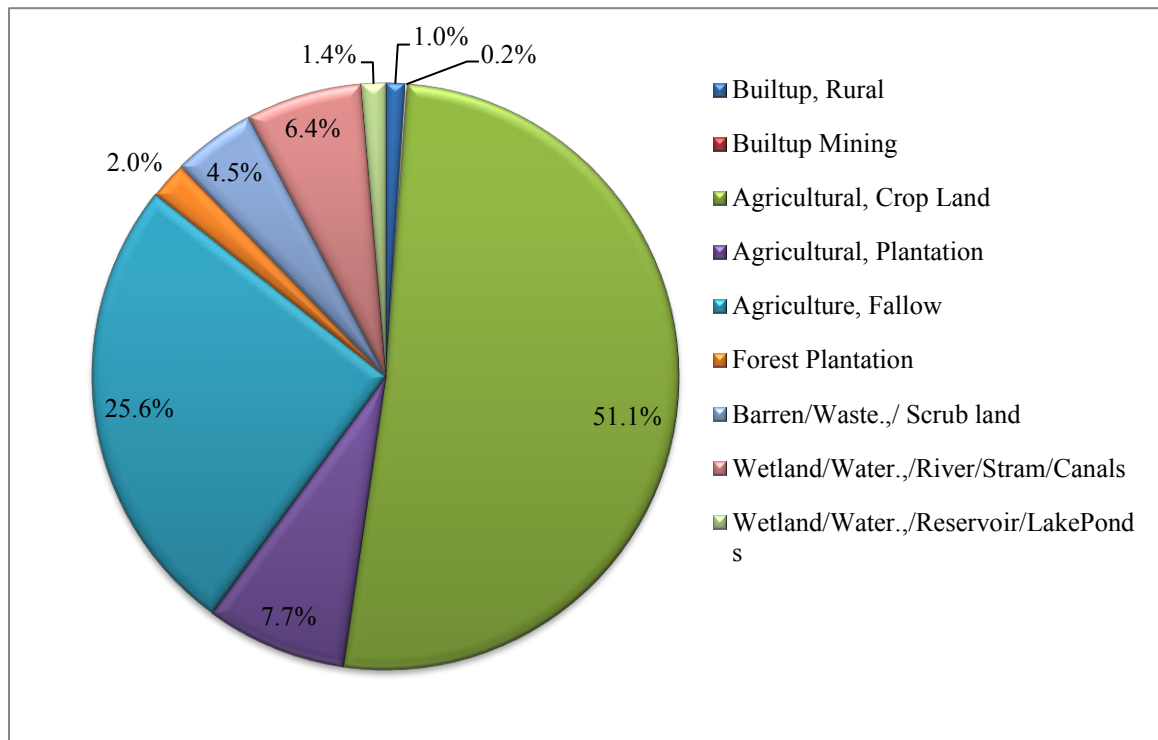
**TABLE 3.2 – LAND USE / LAND COVER TABLE 10 KM RADIUS**

Sl. No.	Classification	Area In Ha	Area in %
1	Builtup, Rural	322.14	1.0
2	Builtup Mining	60.05	0.2
3	Agricultural, Crop Land	16363.70	51.1
4	Agricultural, Plantation	2480.42	7.7
5	Agriculture, Fallow	8198.36	25.6
6	Forest Plantation	651.15	2.0
7	Barren/Waste./ Scrub land	1455.91	4.5
8	Wetland/Water./River/Stram/Canals	2046.78	6.4
9	Wetland/Water./Reservoir/LakePonds	434.77	1.4
	<b>Total</b>	<b>32013.34</b>	<b>100.00</b>

Source: Survey of India Toposheet and Landsat Satellite Imagery

**FIGURE 3.1: LAND USE LAND COVER MAP 10KM RADIUS**



**FIGURE 3.2: LAND USE AND LAND COVER CHART**

Source: Table 3.2

### Interpretation:

From the above table and pie diagram it is inferred that the majority of the land in the study area is Agriculture land (includes crop land) 84.4 % followed by water bodies (Rivers Stream Canals) 7.8 %.

The total mining area within the study area is 60.05 ha i.e., 0.2 %. The cluster area of 11.14.5ha contributes about 14.65 % of the total mining area within the study area. This small percentage of Mining Activities shall not have any significant impact on the environment.

### 3.1.2 Topography

The project area is almost plain terrain with gentle gradient towards South west; maximum elevation of the area is 124m above AMSL. Aiyar malai is located about 400m from the East side of the project area.

### 3.1.3 Drainage Pattern of the Area

There are no developed surface drainage channels in the study area. Cauvery River passing in the study area is about 9km North side. The area is studded with few tanks that serve as the source of drinking water and also their surplus feeds adjoining tanks. The area is mostly dry in all seasons except rainy seasons.

The general drainage pattern of the area is of sub dendritic and dendritic pattern. No prominent water course or nallah is inferred. During rainy season the surface runoff flows in West

to East direction. The drainage pattern of the study area is given in Fig. 3.5. The quarrying activity will not hinder the natural flow of rainwater.

### 3.1.4 Seismic Sensitivity

The proposed project site falls in the seismic Zone II, low damage risk zone as per BMTPC, Vulnerability Atlas of Seismic zone of India IS: 1893 – 2002. The project area falls in the hard rock terrain on the peninsular shield of south India which is highly stable.

### 3.1.5 Environmental Features in the Study Area

There is no Wildlife Sanctuaries, National Park and Archaeological monuments within cluster area. No Protected and Reserved forest area is involved in the cluster area. Therefore, there will be no need to acquisition/diversion of forest land. The details related to the environment sensitivity around the cluster area i.e. 10km radius, are given in the below Table 3.3.

**TABLE 3.3 – DETAILS OF ENVIRONMENT SENSITIVITY AROUND THE PROJECT AREA**

Sl. No	Sensitive Ecological Features	Name	Arial Distance in km from Mine Lease Boundary
1	National Park / Wild life Sanctuaries	None	Nil within 10 km Radius
2	Reserve Forest	Marudur R.F	9.83 km NE
3	Tiger Reserve/ Elephant Reserve/ Biosphere Reserve	None	Nil within 10KM Radius
4	Critically Polluted Areas	None	Nil within 10KM Radius
5	Mangroves	None	Nil within 10KM Radius
6	Mountains/Hills	None	Nil within 10KM Radius
7	Notified Archaeological Sites	None	Nil within 10KM Radius
8	Defence Installation	None	Nil within 10KM Radius

Source: Survey of India Toposheet, Village Cadastral Map& Google Earth/Maps

**TABLE 3.4 – WATER BODIES FROM PROPOSED QUARRY**

S.No	LABEL	DISTANCE & DIRECTION
1	Odai	100m South
2	Odai	390m South West
3	Odai	340m North East
4	Irumbothipatti tank	2.5 km South East
5	Vayalur Kulam	2.5 km South West
6	Pappakkalpatti Tank	4.0 km South
7	Kattakali High level canal	4.5 km North East
8	Nallur Tank	9.0 km South East
9	Cauvery River	9.0 km North

Source: Village Cadastral Map and Field Survey

### 3.1.6 Soil Environment

Soil quality of the study area is one of the important components of the land environment. The composite soil samples were collected from the study area and analysed for different parameters. The locations of the monitoring sites are detailed in Table 3.4 and Figure 3.3.

**TABLE 3.5 – SOIL SAMPLING LOCATIONS**

S. No	Location Code	Monitoring Locations	Distance & Direction	Coordinates
1	S-1	Project Area	North East Corner	10°52'21.40"N 78°22'31.70"E
2	S-2	Kuzanthai Patti	1.50 Km South West	10°51'57.30"N 78°20'55.60"E
3	S-3	Kuzanthai Patti	0.80 Km South West	10°52'14.80"N 78°22'02.20"E
4	S-4	Iyermali	1.50Km North East	10°51'36.90"N 78°22'04.70"E

Source: On-site monitoring/sampling by KGS Laboratories in association with GEMS

**The objective of the soil sampling is -**

1. To determine the baseline soil characteristics of the study area;
2. To determine the impact of proposed activity on soil characteristics and;

To determine the impact on soil more importantly agriculture production point of view.

**Methodology –**

For studying soil quality, sampling locations were selected to assess the existing soil conditions in and around the proposed quarry site representing various land use conditions. The samples were collected by auger boring into the soil up to 90-cm depth. Four (4) locations were selected for soil sampling on the basis of soil types, vegetative cover, industrial & residential activities including infrastructure facilities, which would accord an overall idea of the soil characteristics. The samples were analysed for physical and chemical characteristics. The sealed samples were sent to laboratory for analysis. The samples were filled in Polythene bags, coded and sent to laboratory for analysis and the details of methodology in respect are given in below Table 3.5.

**TABLE 3.6 – METHODOLOGY OF SAMPLING COLLECTION**

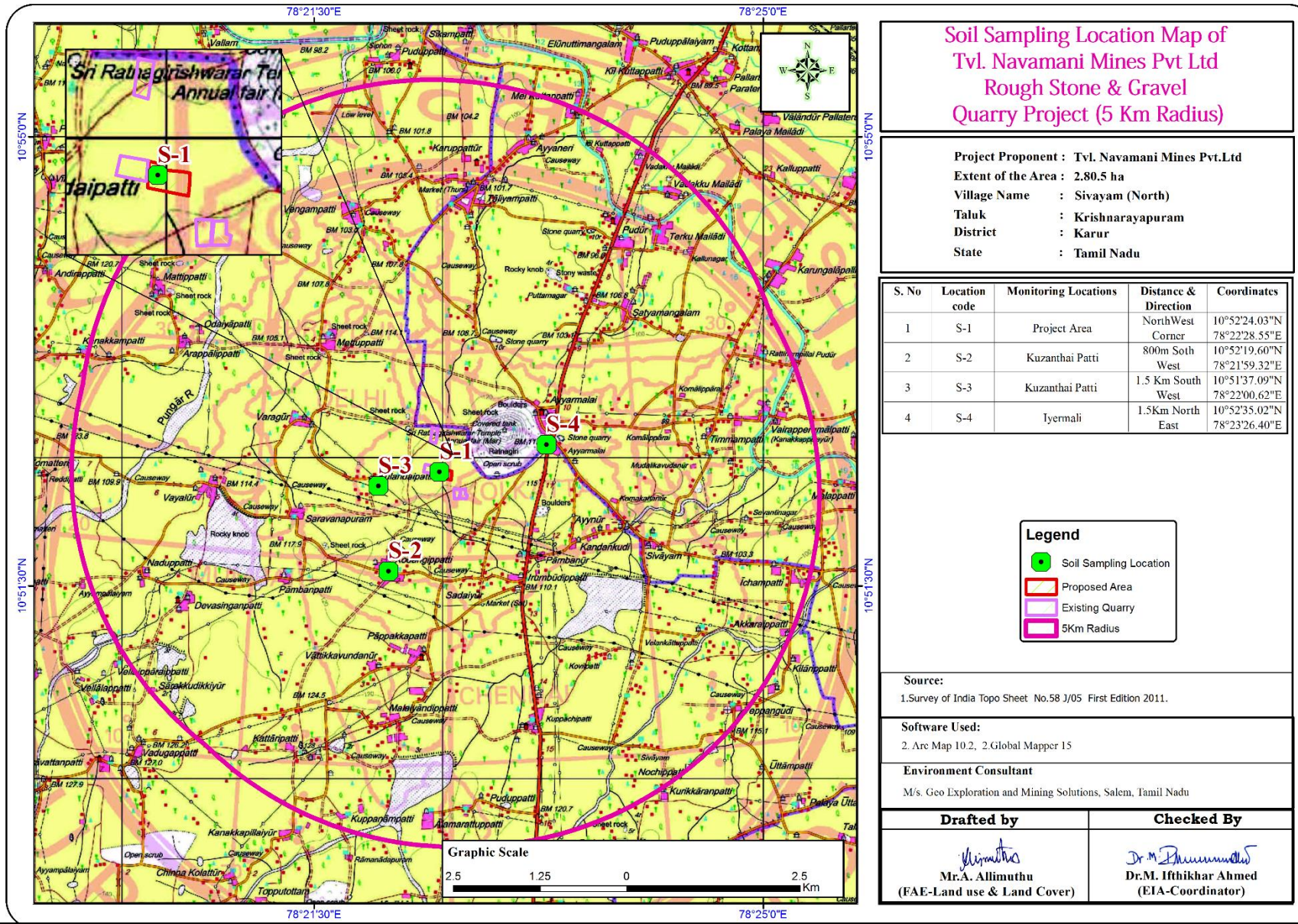
Particulars	Details
Frequency	One grab sample from each station-once during the study period
Methodology	Composite grab samples of the topsoil were collected from 3 depths, and mixed to provide a representative sample for analysis. They were stored in airtight Polythene bags and analysed at the laboratory.

Source: On-site monitoring/sampling by KGS Laboratories in association with GEMS

**Soil Testing Result –**

The samples were analysed as per the standard methods prescribed in “Soil Chemical Analysis (M.L. Jackson, 1967) & Department of Agriculture, Cooperation & Farmers Welfare, Ministry of Agriculture & Farmers Welfare, Government of India”. The important properties analysed for soil are bulk density, porosity, infiltration rate, pH and Organic matter, kjeldahi Nitrogen, Phosphorous and Potassium. The standard classification of soil and physico-chemical characteristics of the soils are presented below in Table 3.6 & Test Results in Table 3.7.

**FIGURE 3.3: SOIL SAMPLING LOCATIONS AROUND 10 KM RADIUS**



**FIGURE 3.4: SOIL MAP**

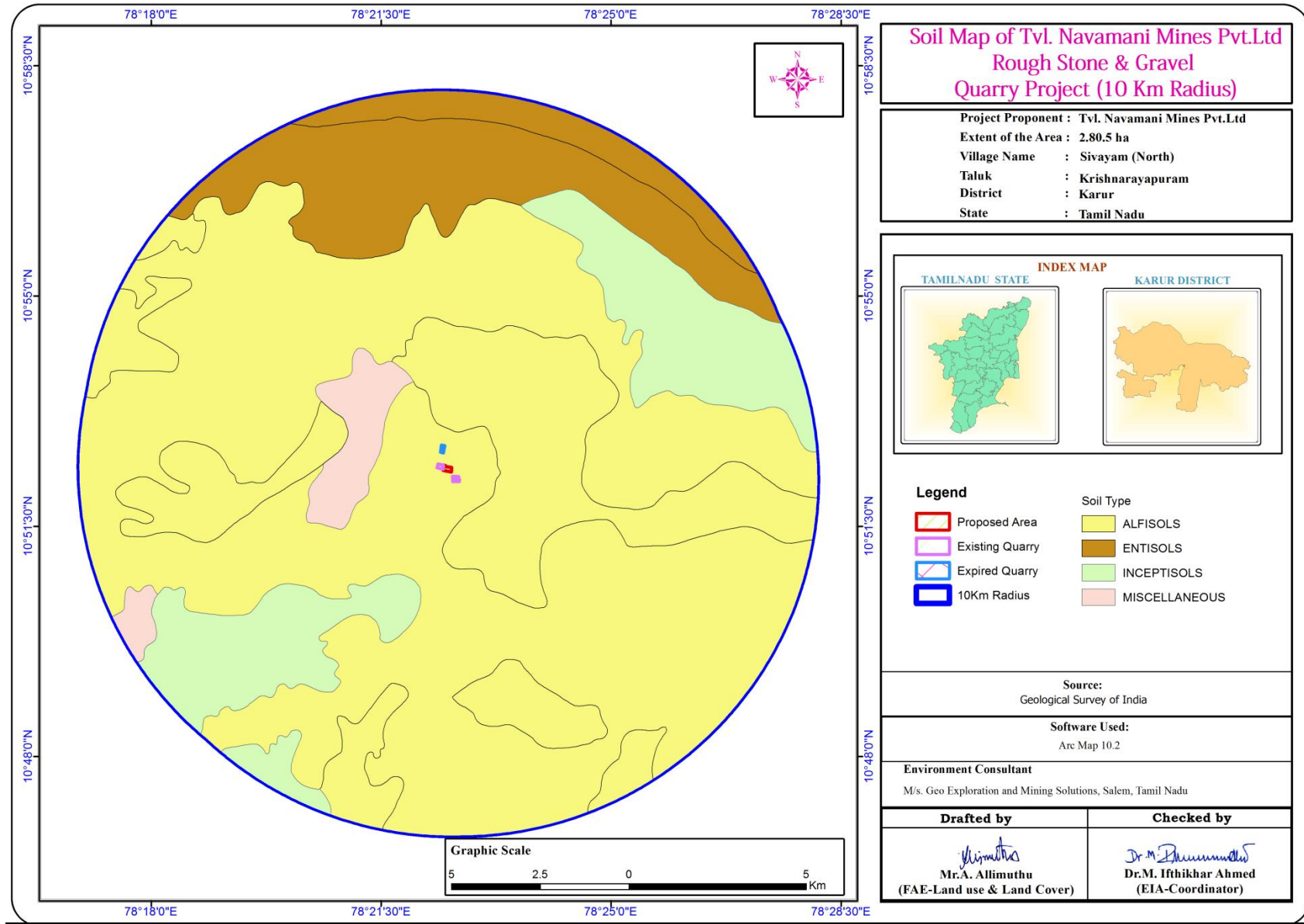


TABLE 3.7 – SOIL QUALITY MONITORING DATA

S.No	Parameters	Units	S1	S2	S3	S4
1	pH at 27°C	-	8.21	8.02	7.96	8.09
2	Electrical Conductivity@25°C	µs/cm	344.2	356.8	310.5	255.6
3	Texture	-	Clay Loam	Clay Loam	Clay Loam	Clay Loam
4	Clay	%	34.9	32.9	31.6	28.3
5	Sand	%	39.8	35.5	33.7	35.9
6	Silt	%	25.3	31.6	34.7	35.8
7	Water Holding Capacity	%	44.3	40.5	42.5	36.6
8	Bulk Density	g/cc	1.09	1.12	1.23	1.06
9	Porosity	%	21.8	20.1	18.3	19.5
10	Exchangeable Calcium(as Ca)	mg/Kg	157	112	151	199
11	Exchangeable Magnesium(asMg)	mg/Kg	17.3	14.5	11.2	21.3
12	Exchangeable Manganese(asMn)	mg/Kg	37.9	34.3	37.5	34.2
13	Exchangeable Zinc as Zn	mg/Kg	0.51	0.37	20.2	20.5
14	Available Boron (as B)	mg/Kg	0.49	0.67	0.27	0.39
15	Soluble Chloride(as Cl)	mg/Kg	188	169	151	159
16	Soluble Sulphate(as S0 <sub>4</sub> )	%	145	137	107	98.6
17	Available Potassium(as K)	mg/Kg	41	28.9	46.3	51.2
18	Available Phosphorous(as P)	mg/Kg	1.09	1.54	1.56	1.13
19	Available Nitrogen(as N)	mg/Kg	149	162.4	173	188.3
20	Cadmium (as Cd)	mg/Kg	ND	ND	ND	ND
21	Chromium (asCr)	mg/Kg	ND	ND	ND	ND
22	Copper(asCu)	mg/Kg	ND	ND	ND	ND
23	Lead (asPb)	mg/Kg	0.17	0.29	0.24	0.27
24	Total Iron	mg/Kg	2.06	2.63	3.02	2.53
25	Organic Matter	%	2.01	1.74	1.99	1.63
26	Organic Carbon	%	1.17	1.01	1.16	0.95
27	CEC	meq/100g	39	37.2	36.1	34.5

Source: Sampling Results by KGS Laboratories

- This proposed mining activity is for Rough stone and Gravel Quarry by opencast mechanized mining method involving occasional drilling & blasting activities on the weathered formation and removal of topsoil and preserving in safety barrier of the lease area to facilitate greenbelt development and winning of Rough stone by eco-friendly wire-saw cutting method.
- Dust generation due to this quarrying activity becomes air borne and gets carried away to surrounding areas which may retard the photosynthesis activities of plants and heavy metals naturally occur in soil, but additional pollution come from anthropogenic activities such as agriculture, urbanisation, industrialisation, and mining.
- The proposed rough stone project is a Charnockite formation which does not source to heavy metal contamination.
- This proposed mining is a small-scale activity and in order to mitigate the impact of mining around the proposed mine lease area on Soil Health and Biodiversity its proposed by ways of daily three times water sprinkling by own water tanker and water sprinkling arrangements and greenbelt development all along the mine lease boundary
- Therefore, the implementation of proposed mitigation measures for winning of mineral may not have much of impact on the surrounding Soil Health and Biodiversity.

### **Interpretation & Conclusion**

#### **Physical Characteristics –**

The physical properties of the soil samples were examined for texture, bulk density, porosity and water holding capacity. The soil texture found in the study area is Clay Loam Soil and Bulk Density of Soils in the study area varied between 1.06 – 1.23 g/cc. The Water Holding Capacity and Porosity of the soil samples is found to be medium i.e. ranging from 36.6 – 44.3 %.

#### **Chemical Characteristics –**

- The nature of soil is slightly alkaline to strongly alkaline in nature with pH range 7.96 to 8.21
- The available Nitrogen content range between 149 to 188.3 kg/ha
- The available Phosphorus content range between 1.09 to 1.56 kg/ha
- The available Potassium range between 28.9 to 51.2 mg/kg

Wilting co efficient in significant level would mean that the soil would support the vegetation. The soil properties in the buffer zone reveal that the soil can sustain vegetation. If amended suitability the core area can also withstand plantation.

## **3.2 Water Environment**

The water resources, both surface and groundwater play a significant role in the development of the area. The purpose of this study is to assess the water quality characteristics for critical parameters and evaluate the impacts on agricultural productivity, domestic community usage, recreational resources and aesthetics in the vicinity. The water samples were collected and transported as per the norms in pre-treated sampling cans to laboratory for analysis.

### **3.2.1 Surface Water Resources:**

Major water bodies in the study area are Cauvery River is about 9.0 km North. The study area is studded with few tanks that serve as the source of drinking water and also their surplus feeds adjoining tanks. The rainfall over the area is moderate, the rainwater storage in open wells and trenches are in practice over the area and the stored water acts as source of freshwater for couple of months after rainy season.

### **3.2.2 Ground Water Resources:**

The terrain is underlain by hard rock formation. Fissured and fractured crystalline rocks constitute the important aquifer systems in the Karur region.

More or less, 90 percent of Karur district is covered by crystalline formation of Archaean age. The thickness of aquifer in hard rock formation varies from 15 to 35 m. The inter granular porosity is essentially depend upon the intensity and degree of weathering and fracture development in the bed rock. Deep weathering is developed in gneissic formations and moderate weathering in charnockite formation. The alluvial formation stretches mainly along the river course of Cauvery.

### 3.2.3 Methodology

Reconnaissance survey was undertaken to collect the sampling and locations were finalized based on;

1. Drainage pattern;
2. Location of residential areas representing different activities/likely impact areas; and
3. Likely areas, which can represent baseline conditions

Two (2) surface water and Four (4) ground water samples were collected in the study area and physico-chemical, heavy metals and bacteriological parameters were analysed. The samples were analysed as per the procedures specified by CPCB, IS-10500:2012 and 'Standard methods for the Examination of Water and Waste water' published by American Public Health Association (APHA). The water sampling locations are given in Table 3.8 and shown as Figure 3.5.

**TABLE 3.8 – WATER SAMPLING LOCATIONS**

S.NO	CODE	LOCATIONS	DISTANCE & DIRECTION	COORDINATES
<b>SURFACE WATER</b>				
1	SW1	Vayalur Kulam	2.5 km, South West	10°51'57.36"N 78°21'00.04"E
2	SW2	Cauvery River	9.5 km North East	10°57'07.95"N 78°24'34.86"E
<b>GROUND WATER</b>				
3	BW1	Nearest Crusher	300m South	10°52'09.11"N 78°22'31.47"E
4	WW1	Kuzanthaipatti village	0.7 km, SW	10°52'15.00"N 78°22'02.42"E
5	BW3	Kodangipatti village	1.5 km, SW	10°51'41.74"N 78°22'03.29"E
6	BW4	Iyermai village	1.5 km, NE	10°52'34.31"N 78°23'18.94"E

Source: On-site monitoring/sampling by KGS Laboratories in association with GEMS

Note: SW- Surface water, WW – Well Water, BW – Bore well

**FIGURE 3.5: SITE PHOTOGRAPHS OF WATER SAMPLING LOCATIONS**



Sample: Sample collection in Sivayam(North) Borewell





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### 3.2.4 Interpretation & Conclusion

#### Surface Water

The pH varied from 7.77 to 7.81 while turbidity found within the standards (Optimal pH range for sustainable aquatic life is 6.5 to 8.5 pH).

#### Total Dissolved Solids:

Total Dissolved Solids varied from 488 to 890 mg/l, the TDS mainly composed of carbonates, bicarbonates, Chlorides, phosphates and nitrates of calcium, magnesium, sodium and other organic matter.

#### Other parameters:

Chloride content is 51 to 221 mg/l. Nitrates varied from 17.1 to 28.3 mg/l, while sulphates varied from 37.5 to 79.2 mg/l

#### Ground Water

The pH of the water samples collected ranged from 7.10 to 8.05 and within the acceptable limit of 6.5 to 8.5. pH, Sulphates and Chlorides of water samples from all the sources are within the limits as per the Standard. On Turbidity, the water samples meet the requirement. The Total Dissolved Solids were found in the range of 412 - 663 mg/l in all samples. The Total hardness varied between 118.9 – 221.6 mg/l for all samples.

On Microbiological parameters, the water samples from all the locations meet the requirement. The parameters thus analysed were compared with IS 10500:2012 and are well within the prescribed limits.

### 3.2.5 Hydrology and Hydrogeological studies

The district is underlain by hard rock formation fissured and fractured crystalline rocks constitute the important aquifer systems in the district. Geophysical prospecting was carried out in that area by SSRMP-80 Instrument by qualified Geo physicist with the help of IGIS software and it was inferred that the low resistance encountered at the depth between 45-50m. The maximum depth proposed out of proposed projects is 38m. Hence there is no possibilities of water table intersection during the entire mine life period besides it is also inferred topographically that there are no major water bodies intersecting the project area. There is no necessity of stream, channel diversion due to these proposed projects.

During the rainy season there is a possibility of collection of seepage water from the subsurface levels which will be collected and stored in the mine sump pits and will be used for dust suppression and greenbelt development and during the end of the life of the mine this collected water will act as a temporary reservoir.

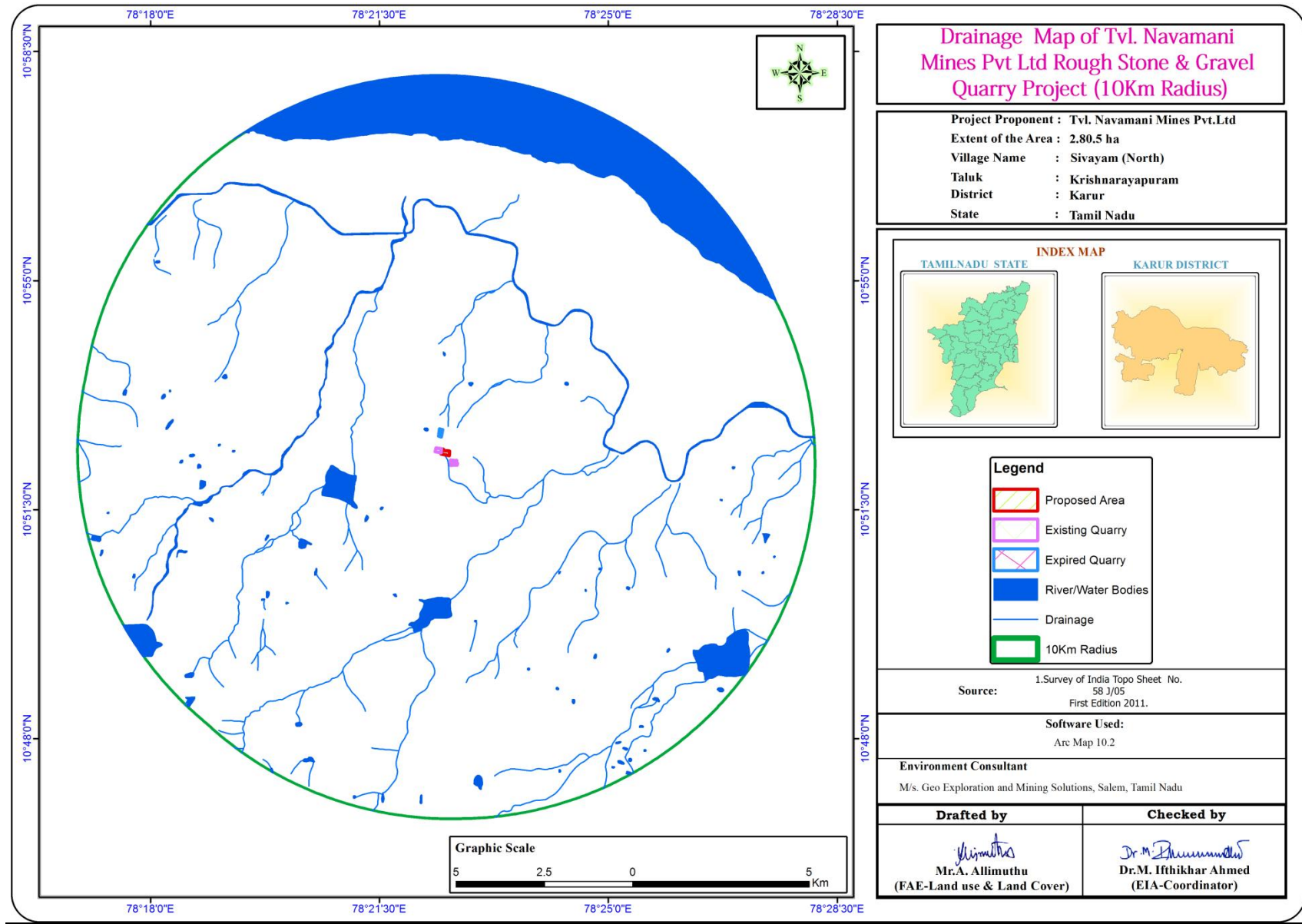
**TABLE 3.11: PRE- MONSOON WATER LEVEL OF OPEN WELLS 1 KM RADIUS**

S.No	Name	LATITUDE	LONGITUDE	MARCH	APRIL	MAY
1	OW-1	78° 22' 21.60"E	10° 52' 15.72"E	13.4	13.9	14.4
2	OW-2	78° 22' 48.88"E	10° 52' 19.53"E	12.8	13.3	13.8
3	OW-3	78° 22' 59.52"E	10° 52' 10.18"E	12.6	13.1	13.6
4	OW-4	78° 22' 55.49"E	10° 52' 02.43"E	13	13.5	14
5	OW-5	78° 22' 50.05"E	10° 51' 52.86"E	13.2	13.7	14.2
6	OW-6	78° 22' 19.23"E	10° 52' 05.88"E	12.5	13	13.5
7	OW-7	78° 22' 10.87"E	10° 52' 01.11"E	12	12.5	13
8	OW-8	78° 21' 59.94"E	10° 52' 12.04"E	13.3	13.8	14.3
9	OW-9	78° 22' 04.21"E	10° 52' 15.96"E	13	13.5	14
10	OW-10	78° 22' 07.98"E	10° 52' 37.90"E	12.8	13.3	13.8
11	OW-11	78° 22' 16.58"E	10° 52' 36.03"E	12.7	13.2	13.7
12	OW-12	78° 22' 23.77"E	10° 52' 57.87"E	13.1	13.6	14.1
13	OW-13	78° 22' 35.18"E	10° 52' 47.10"E	12.9	13.4	13.9

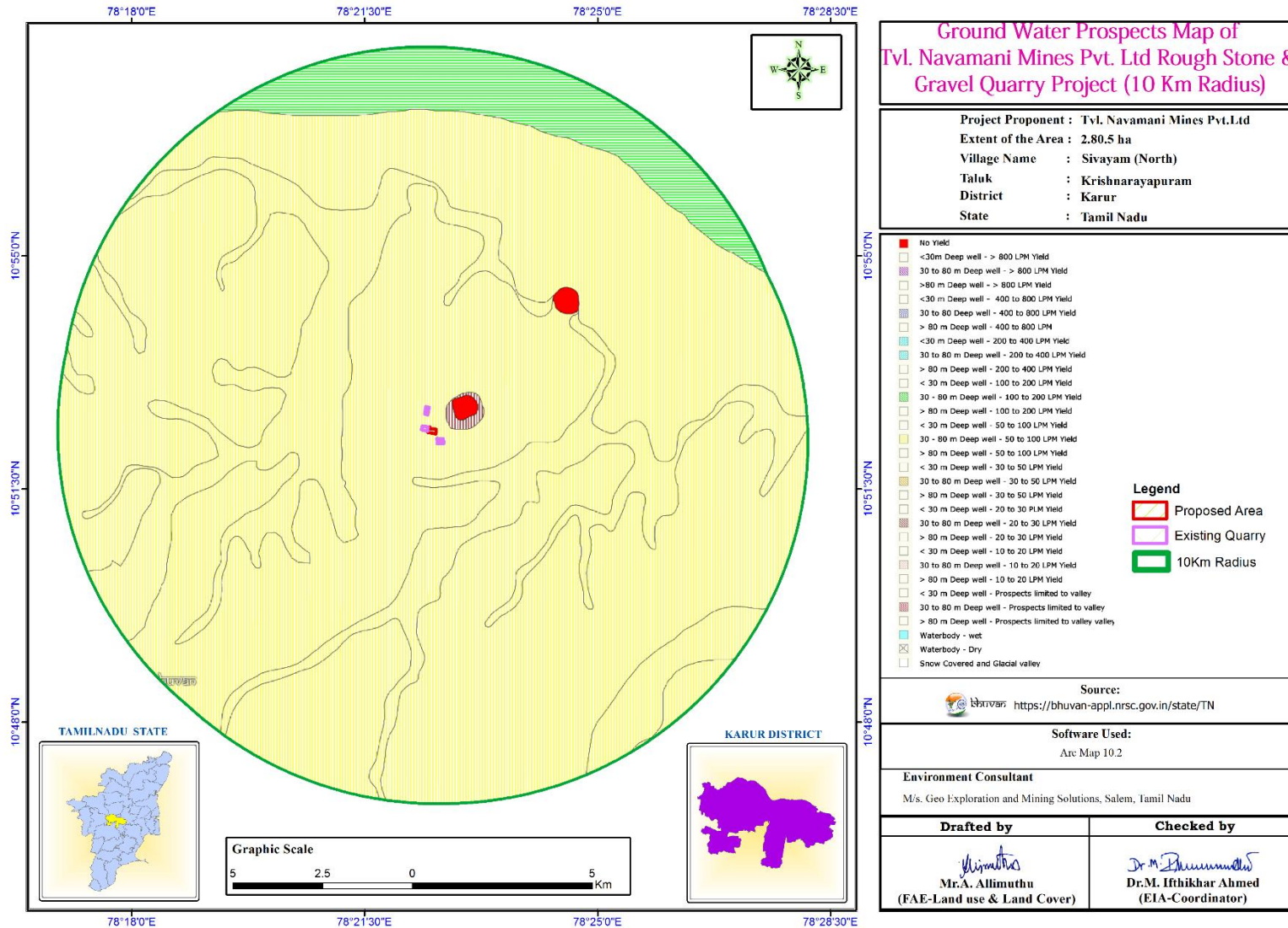
**TABLE 3.12: PRE- MONSOON WATER LEVEL OF BOREWELLS 1 KM RADIUS**

S.No	Name	LATITUDE	LONGITUDE	MARCH	APRIL	MAY
1	BW1	78° 22' 13.34"E	10° 52' 29.33"N	55.5	56.1	56.7
2	BW2	78° 22' 22.31"E	10° 52' 44.37"N	54.3	54.9	55.5
3	BW3	78° 22' 22.00"E	10° 52' 57.32"N	54	54.6	55.2
4	BW4	78° 22' 37.73"E	10° 52' 42.05"N	54.6	55.2	55.8
5	BW5	78° 22' 47.85"E	10° 52' 21.57"N	55	55.6	56.2
6	BW6	78° 23' 03.72"E	10° 52' 20.01"N	55.4	56	56.6
7	BW7	78° 22' 42.94"E	10° 52' 05.31"N	55.2	55.8	56.4
8	BW8	78° 22' 21.33"E	10° 52' 11.81"N	54.2	54.8	55.4
9	BW9	78° 22' 35.22"E	10° 51' 48.01"N	54.8	55.4	56
10	BW10	78° 21' 56.05"E	10° 52' 13.45"N	55.3	55.9	56.5

**FIGURE 3.6: DRAINAGE MAP AROUND 10 KM RADIUS FROM PROJECT SITE**



**FIGURE 3.7: GROUND WATER LEVEL MAP**



### 3.2.5.1 Methodology and Data Acquisition

Electric Resistivity Method is well established for delineating lateral as well vertical discontinuities in the resistive structure of the Earth's subsurface. The present study makes use of vertical electric sounding (VES) to delineate the Vertical Resistivity structure at depth. Schlumberger electrode set up was employed for making sounding measurements. Since it is least influenced by lateral in homogeneities and is capable of providing higher depth of investigation. This is four electrodes collinear set up where in the outer electrodes send current into the ground and the inner electrodes measure the potential difference.

The present study utilizes maximum current electrode separation  $AB/2$ . The data from this survey are commonly arranged and contoured in the form of Pseudo-section that gives an approximate of the subsurface resistivity. This technique is used for the inversion of Schlumberger VES data to predict the layer parameter namely layer resistivity and Geo electric layer thickness. The main goal of the present study is to search the vertical in homogeneities that is consistent with the measured data.

For a Schlumberger among the Apparent resistivity can be calculated as follows

$$\rho_a = \frac{G \Delta V}{I}$$

$\Delta V$  = potential difference between receiving electrodes

$G$  = Geometric Factor.

Rocks show wide variation in resistivity ranging from 10-8 more than 10+14 ohmmeter. On a broad classification, one can group the rocks falling in the range of 10-8 to 1 ohmmeter as good conductors. 1 to 106 ohmmeter as intermediate conductors and 106 to 1012 ohmmeter as more as poor conductor. The resistivity of rocks and subsurface lithology, which is mostly dependent on its porosity and the pore fluid resistivity is defined by Archie's Law,

$$\rho_r = F \rho_w = a \emptyset^m \rho_w$$

$\rho_r$  = Resistivity of Rocks

$\rho_w$  = Resistivity of water in pores of rock

$F$  = Formation Factor

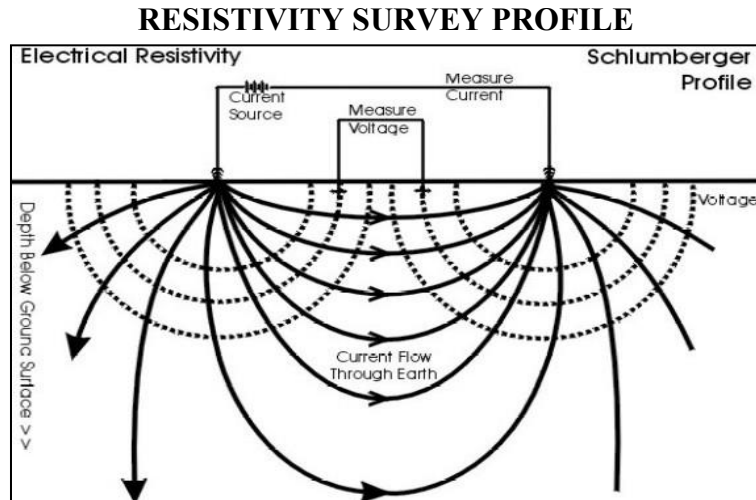
$\emptyset$  = Fractional pore volume

$A$  = Constants with values ranging from 0.5 to 2.5

### 3.2.5.2 Survey Layout

The layout for a resistivity survey depends on the choice of the current and potential electrode arrangement, which is called electrode array. Here the present study is considered with Schlumberger array. In which the distance may be used for current electrode separation while potential electrode separation is kept on third to one fifth of the same. One interesting aspect in VES is the principle of reciprocity, which permits interchange of the potential and current electrode without any effect on the measured apparent resistivity.

The field equipment deployed for the study is in a deep resistivity meter with a model of SSR – MP – AT. This Signal stacking Resistivity meter is a high-quality data acquisition system incorporating several innovation features for Earth resistivity. In the presence of random earth Noises the signal to noise ratio can be enhanced by  $\sqrt{N}$  where  $N$  is the number of stacked readings. This SSR meter in which running averages of measurements  $[1, (1+2)/2, (1+2+3)/3 \dots (1+2+\dots+16/16)]$  up to the chosen stacks are displayed and the final average is stored automatically, in memory utilizing the principles of stacking to achieve the benefit of high signals to noise ratio. Based on these above significations the signal stacking resistivity meter was used for (VES) Vertical Electric Resistivity Sounding.



Measurements of ground Resistivity is essentially done by sending a current through two electrodes called current electrodes ( $C_1$  &  $C_2$ ) and measuring the resulting potential by two other electrodes called potential electrode ( $P_1$  &  $P_2$ ). The amount of current required to be sent into the ground depends on the contact resistance at the current electrode, the ground resistivity and the depth of interest.

### 3.2.5.3 Data Presentation

It was inferred that the low resistance encountered at the depth between 45-50m. The maximum depth proposed in this cluster quarries 38 m BGL. Hence there is no possibilities of water table intersection during the entire mine life period besides it is also inferred topographically that there are no major water bodies intersecting the project area.

### 3.2.5.4 Geophysical Data Interpretation and Conclusion

The geophysical data's was obtained to study the lateral variations, vertical in homogeneities in the sub – surface with respect to the availability of groundwater. From the interpreted data, it has inferred that the area has moderate groundwater potential in the investigated area. This small quarrying operation will not have any significant impact on the natural water bodies.

## 3.3 Air Environment

The ambient air quality with respect to the study area of 10 km radius including the cluster quarries forms the baseline information. The prime objective of baseline air quality monitoring is to assess existing air quality of the area. This will also be useful in assessing the conformity to standards of the ambient air quality during the operations

The existing ambient air quality of the area is important for evaluating the impact of mining activities on the ambient air quality. These will also be useful for assessing the conformity to standards of the ambient air quality during the operation of Existing and proposed quarries within the radius of 500m.

The sources of air pollution in the region are mostly due to vehicular traffic, dust arising from unpaved village road and domestic & agricultural activities. This section describes the identification of sampling locations, methodology adopted during the monitoring period and sampling frequency.

The baseline status of the ambient air quality has been assessed through scientifically designed ambient air quality network. The design of monitoring network in the air quality surveillance program has been based on the following considerations:

- Meteorological conditions.
- Topography of the study area.

- Likely impact area.

### 3.3.1 Meteorology & Climate

Meteorology is the key to understand the air quality. The essential relationship between meteorological condition and atmospheric dispersion involves the wind in the broadest sense. Wind fluctuations over a very wide range of time, accomplish dispersion and strongly influence other processes associated with them.

A temporary meteorological station was installed at project site. The station was installed at a height of 4 m above the ground level in such a way that there are no obstructions facilitating flow of wind, wind speed, wind direction, humidity and temperature are recorded on hourly basis.

#### Climate –

- The district lies on 127m above sea level and The Karur lies on 127m above sea level The prevailing climate in Karur is known as a local steppe climate. During the year, there is little rainfall in Karur. According to Köppen and Geiger, this climate is classified as BSh.
- The average annual temperature is 28.7 °C | 83.7 °F.
- The annual rainfall here is around 595 mm | 23.4 inch per year.
- The driest month is March, with 8 mm | the greatest amount of precipitation occurs in October, with an average of 166 mm | 6.5 inch.
- The warmest month of the year is May, with an average temperature of 31.5°C | 88.7 °F. The lowest average temperatures in the year occur in December, when it is around 25.6°C | 78.1 °F.
- The difference in precipitation between the driest month and the wettest month is 158 mm | 6 inch. The variation in temperatures throughout the year is 5.9 °C | 42.6 °F.

Source: <https://en.climate-data.org/asia/india/tamil-nadu/karur-24030>

#### Rainfall –

The average annual rainfall and the 5 years rainfall is as follows:

**TABLE 3.13 – RAINFALL DATA**

Actual Rainfall in mm					Normal Rainfall in mm
2017	2018	2019	2020	2021	
715.3	468.4	524.5	684.2	919.8	628.9

Source: <https://www.twadboard.tn.gov.in/content/karur>

**TABLE 3.14 – METEOROLOGICAL DATA RECORDED AT SITE**

S.No	Parameters		Mar – 2021	Apr – 2021	May – 2021
1	Temperature (°C)	Max	30.5	29.1	28.1
		Min	24.3	24.5	24.1
		Avg	27.4	26.8	26.1
2	Relative Humidity (%)	Avg	78.45	80.1	64.29
3	Wind Speed (m/s)	Max	4.584	4.931	6.111
		Min	1.086	1.389	2.57
		Avg	2.835	3.16	4.34
4	Cloud Cover (OKTAS)		0-8	0-8	0-8
5	Wind Direction		ENE,SSW	W,SE	WSW,W

Source: On-site monitoring/sampling by KGS Laboratories in association with GEMS

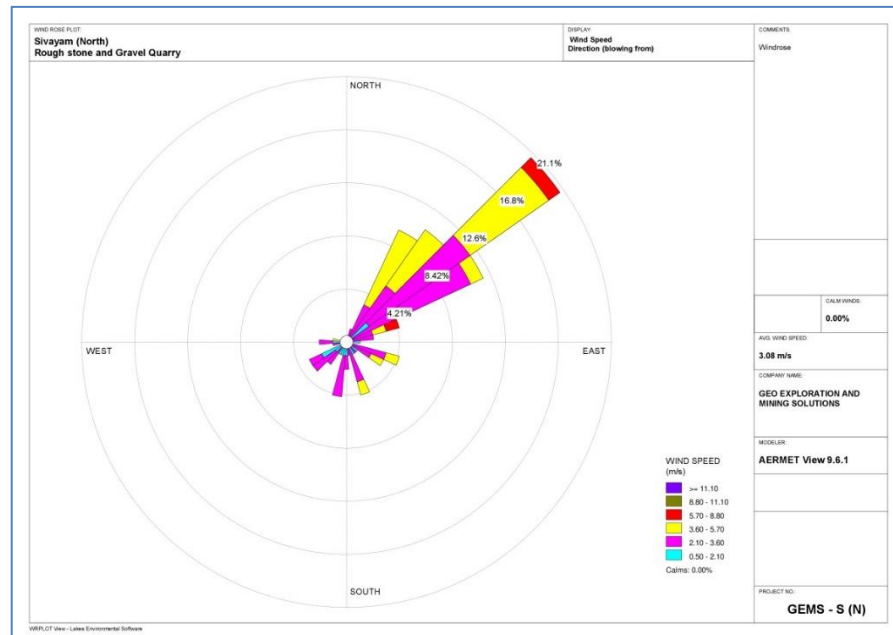
### Correlation between Secondary and Primary Data

The meteorological data collected at the site is almost similar to that of secondary data collected from IMD Karur. A comparison of site data generated during the three months with that of IMD, Karur Agro reveals the following:

- The average maximum and minimum temperatures of IMD, Karur agro showed a higher in respect of on-site data .
- The relative humidity levels were lesser at site as compared to IMD, Karur agro.
- The wind speed and direction at site shows similar trend that of IMD, Karur agro.

Windrose diagram of the study site is depicted in Figure. 3.8. Predominant downwind direction of the area during study season is North East to South West.

**FIGURE 3.10: WINDROSE DIAGRAM**



Source: Wind Rose plot view, Lake Environmental Software

In the abstract of collected data wind rose were drawn on presented in figure No.3.15 during the monitoring period in the study area

1. Predominant winds were from NE- SW
2. Wind velocity readings were recorded between 0.50 to 11.10 m/s
  - Calm conditions prevail of about 3.33% of the monitoring period
3. Temperature readings ranging from 24.3to 30.5 °C
4. Relative humidity ranging from 64.29 to 80.1 %
5. The monitoring was carried out continuously for three months

### 3.3.2 Methodology and Objective

The prime objective of the ambient air quality study is to assess the existing air quality of study area and its conformity to NAAQS. The observed sources of air pollution in the study area are industrial, traffic and domestic activities. The baseline status of the ambient air quality has been established through a scientifically designed ambient air quality monitoring network considering the followings:

- Meteorological condition on synoptic scale;
- Topography of the study area;
- Representatives of regional background air quality for obtaining baseline status;
- Location of residential areas representing different activities;
- Accessibility and power availability; etc.,

### 3.3.3 Sampling and Analytical Techniques

**TABLE 3.15 – METHODOLOGY AND INSTRUMENT USED FOR AIR QUALITY ANALYSIS**

Parameter	Method	Instrument
PM <sub>2.5</sub>	Gravimetric Method Beta attenuation Method	Fine Particulate Sampler Make – Thermo Environmental Instruments – TEI 121
PM <sub>10</sub>	Gravimetric Method Beta attenuation Method	Respirable Dust Sampler Make –Thermo Environmental Instruments – TEI 108
SO <sub>2</sub>	IS-5182 Part II (Improved West & Gaeke method)	Respirable Dust Sampler with gaseous attachment
NO <sub>x</sub>	IS-5182 Part II (Jacob & Hochheiser modified method)	Respirable Dust Sampler with gaseous attachment
Free Silica	NIOSH – 7601	Visible Spectrophotometry

Source: Sampling Methodology followed by KGS Laboratories & CPCB Notification

**TABLE 3.16 – NATIONAL AMBIENT AIR QUALITY STANDARDS**

Sl. No.	Pollutant	Time Weighted Average	Concentration in ambient air	
			Industrial, Residential, Rural & other areas	Ecologically Sensitive area (Notified by Central Govt.)
1	Sulphur Dioxide (µg/m <sup>3</sup> )	Annual Avg.* 24 hours**	50.0 80.0	20.0 80.0
2	Nitrogen Dioxide (µg/m <sup>3</sup> )	Annual Avg. 24 hours	40.0 80.0	30.0 80.0
3	Particulate matter (size less than 10µm) PM <sub>10</sub> (µg/m <sup>3</sup> )	Annual Avg. 24 hours	60.0 100.0	60.0 100.0
4	Particulate matter (size less than 2.5 µm PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Annual Avg. 24 hours	40.0 60.0	40.0 60.0

Source: NAAQS CPCB Notification No. B-29016/20/90/PCI-I Dated: 18<sup>th</sup> Nov 2009

\*Annual Arithmetic mean of minimum 104 measurements in a year taken twice a Week 24 hourly at uniform interval.

\*\* 24 hourly / 8 hourly or 1 hourly monitored value as applicable shall be complied with 98 % of the time in a year. However, 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

### 3.3.4 Frequency & Parameters for Sampling

Ambient air quality monitoring has been carried out with a frequency of two samples per week at Nine (9) locations, adopting a continuous 24 hourly (3 shift of 8-hour) schedule for the period March - May 2021. The baseline data of ambient air has been generated for PM<sub>10</sub>, PM<sub>2.5</sub>, Sulphur Dioxide (SO<sub>2</sub>) & Nitrogen Dioxide (NO<sub>2</sub>).

### 3.3.5 Ambient Air Quality Monitoring Stations

Eight (8) monitoring stations were set up in the study area as depicted in Figure 3.6.1 for assessment of the existing ambient air quality. Details of the sampling locations are as per given below.

**TABLE 3.17 – AMBIENT AIR QUALITY (AAQ) MONITORING LOCATIONS**

S. No	Location Code	Monitoring Locations	Distance & Direction	Coordinates
1	AAQ-1	Project Area	West Corner	10°52'23.66"N 78°22'27.41"E
2	AAQ-2	Project Area	North East Corner	10°52'23.51"N 78°22'33.95"E
3	AAQ-3	Near Crusher	600m North	10°52'43.36"N 78°22'21.60"E
4	AAQ-4	Kuzanthai Patti	850m South West	10°52'17.63"N 78°21'57.95"E
5	AAQ-5	Kuzanthai Patti	1.0 Km South West	10°52'3.34"N 78°21'52.73"E
6	AAQ-6	Kodangipatti	1.5 Km South	10°51'36.80"N 78°22'04.92"E
7	AAQ-7	Iyermali	1.5 Km North East	10°52'36.04"N 78°23'18.11"E
8	AAQ-8	Irumboothipatti	1.5Km South East	10°51'33.69"N 78°23'02.38"E

Source: On-site monitoring/sampling by KGS Laboratories in association with GEMS

**FIGURE 3.11: SITE PHOTOGRAPHS OF AMBIENT AIR MONITORING**



Source: Monitoring photographs

**FIGURE 3.12 AMBIENT AIR QUALITY LOCATIONS AROUND 5 KM RADIUS**

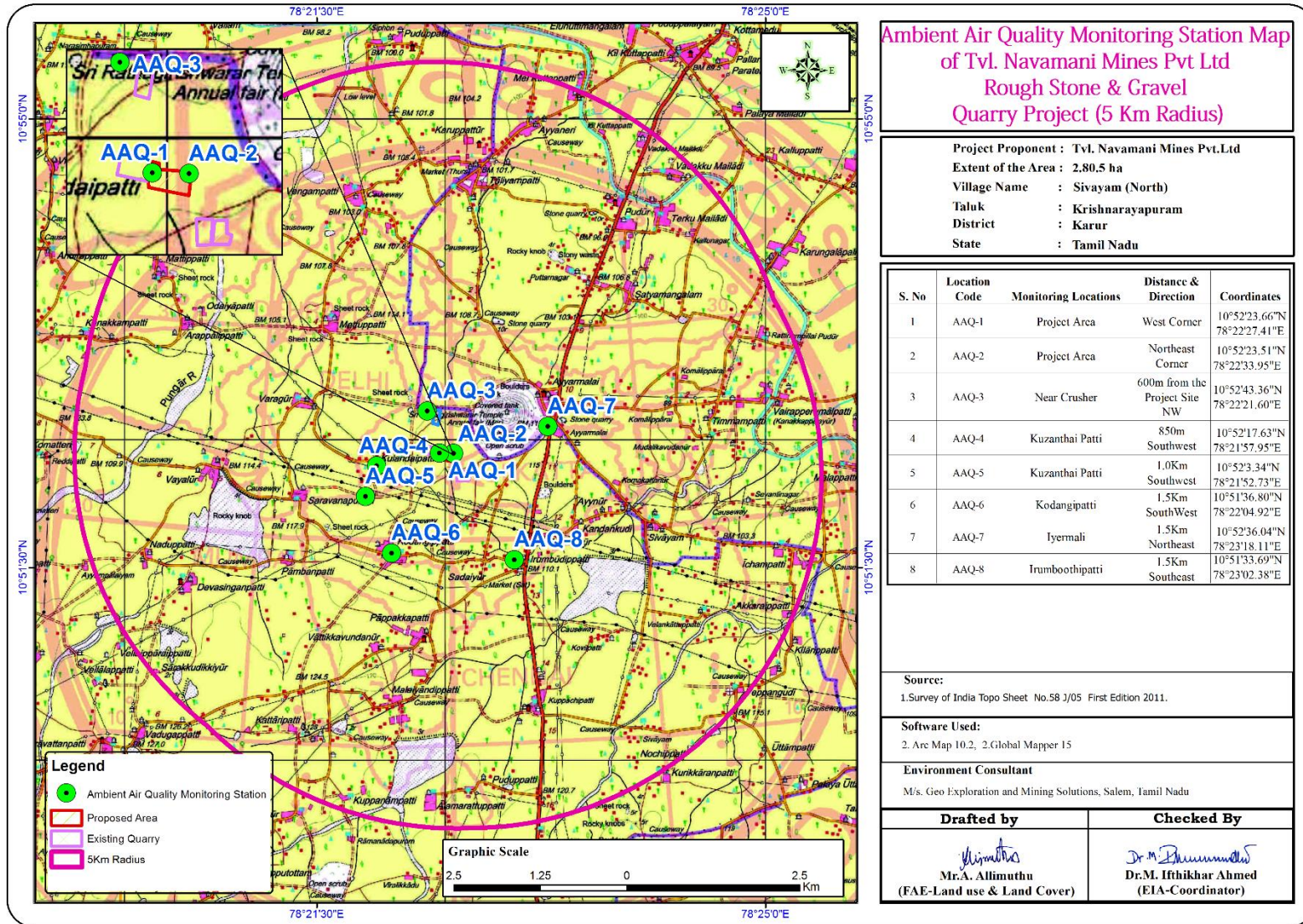














TABLE 3.24 – AAQ7 - BUFFER ZONE

Period: March – May-2021

Location: AAQ7– IYERMALAI

Sampling Time: 24-hourly

Monitoring Date/ Parameters	Particulates, $\mu\text{g}/\text{m}^3$		Gaseous Pollutants, $\mu\text{g}/\text{m}^3$					Other Pollutants (Particulate Phase), $\mu\text{g}/\text{m}^3$				
	PM <sub>10</sub> , $\mu\text{g}/\text{m}^3$	PM <sub>2.5</sub> , $\mu\text{g}/\text{m}^3$	SO <sub>2</sub> , $\mu\text{g}/\text{m}^3$	NO <sub>2</sub> , $\mu\text{g}/\text{m}^3$	NH <sub>3</sub> , $\mu\text{g}/\text{m}^3$	O <sub>3</sub> (8-hly Avg.) $\mu\text{g}/\text{m}^3$	CO (8-hly Avg.) $\text{mg}/\text{m}^3$	Pb, $\mu\text{g}/\text{m}^3$	As, $\text{ng}/\text{m}^3$	Ni, $\text{ng}/\text{m}^3$	C <sub>6</sub> H <sub>6</sub> , $\mu\text{g}/\text{m}^3$	BaP, $\text{ng}/\text{m}^3$
NAAQ Norms*	100 (24 hrs.)	60 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	400 (24 hrs.)	100 (8 hrs.)	2.0 (8hrs.)	1.0 (24 hrs.)	6.0 (annual)	20 (annual)	5.0 (annual)	1.0 (annual)
02.10.2019	41.5	21.5	6.4	26.1	11.3	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
03.10.2019	42.8	22.8	7.1	24.6	11.2	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
09.10.2019	39.1	20.7	5.9	25.7	11.6	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
10.10.2019	40.7	23.4	6.8	24.5	11.2	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
16.10.2019	43.5	24.0	7.1	20.9	10.2	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
17.10.2019	41.7	21.9	7.5	21.7	10.5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
23.10.2019	42.6	20.7	5.1	22.2	10.6	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
24.10.2019	38.7	21.8	6.3	23.8	10.3	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
30.10.2019	39.4	22.8	7.8	21.8	9.3	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
01.11.2019	41.5	22.9	7.4	21.4	9.6	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
06.11.2019	42.8	23.7	6.9	20.7	9.2	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
07.11.2019	38.7	20.7	5.1	20.9	9.4	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
13.11.2019	40.1	24.8	5.2	22.5	9.5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
14.11.2019	42.5	23.8	6.7	24.7	9.7	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
20.11.2019	41.9	21.7	7.6	23.5	9.3	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
21.11.2019	39.4	20.1	8.0	25.8	9.2	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
27.11.2019	38.7	21.8	4.9	20.7	8.3	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
28.11.2019	38.4	22.4	5.7	24.8	7.2	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
04.12.2019	40.2	21.7	6.1	26.4	9.3	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
05.12.2019	41.5	20.1	7.8	22.8	9.4	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
11.12.2019	42.5	22.8	6.4	21.4	9.5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
12.12.2019	41.8	23.1	7.9	23.5	9.3	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
18.12.2019	38.4	24.8	8.2	24.9	9.7	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
19.12.2019	39.7	21.7	7.1	22.1	9.5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
25.12.2019	40.5	22.8	6.8	25.8	9.1	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
26.12.2019	42.7	23.4	7.9	20.9	8.3	<5	<1.0	<0.01	<5	<3	<1.0	<3.0

**TABLE 3.25 – AAQ8 - BUFFER ZONE**

Period: March – May-2021

Location: AAQ8– Irumboothipatti

Sampling Time: 24-hourly

Monitoring	Particulates, µg/m <sup>3</sup>		Gaseous Pollutants, µg/m <sup>3</sup>					Other Pollutants (Particulate Phase) , µg/m <sup>3</sup>				
Date/ Parameters	PM <sub>10</sub> , µg/m <sup>3</sup>	PM <sub>2.5</sub> , µg/m <sup>3</sup>	SO <sub>2</sub> , µg/m <sup>3</sup>	NO <sub>2</sub> , µg/m <sup>3</sup>	NH <sub>3</sub> µg/m <sup>3</sup>	O <sub>3</sub> (8-hly Avg.) µg/m <sup>3</sup>	CO (8-hly Avg.) mg/m <sup>3</sup>	Pb, µg/m <sup>3</sup>	As, ng/m <sup>3</sup>	Ni, ng/m <sup>3</sup>	C <sub>6</sub> H <sub>6</sub> , µg/m <sup>3</sup>	BaP, ng/m <sup>3</sup>
NAAQ Norms*	100 (24 hrs.)	60 (24 hrs.)	80 (24 hrs.)	80 (24 hrs.)	400 (24 hrs.)	100 (8 hrs.)	2.0 (8hrs.)	1.0 (24 hrs.)	6.0 (annual)	20 (annual)	5.0 (annual)	1.0 (annual)
02.10.2019	42.9	23.5	6.9	24.9	9.6	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
03.10.2019	41.5	22.7	7.1	25.7	9.3	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
09.10.2019	40.3	20.6	5.8	21.5	9.1	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
10.10.2019	42.2	24.8	8.2	22.4	9.2	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
16.10.2019	40.9	23.7	7.6	23.6	9.2	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
17.10.2019	43.5	22.9	5.1	24.7	8.3	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
23.10.2019	41.1	24.6	6.4	22.1	8.6	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
24.10.2019	40.9	25.1	7.9	23.7	7.5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
30.10.2019	42.8	23.7	6.3	24.8	8.2	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
01.11.2019	38.9	24.9	5.2	22.7	7.5	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
06.11.2019	38.1	25.6	6.4	21.8	7.9	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
07.11.2019	39.5	20.7	7.8	25.0	7.3	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
13.11.2019	38.4	21.6	8.0	23.8	7.9	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
14.11.2019	42.1	23.8	7.5	24.9	8.3	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
20.11.2019	40.1	21.9	5.9	22.7	8.6	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
21.11.2019	42.5	22.2	6.1	21.6	8.4	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
27.11.2019	40.6	20.7	7.2	20.8	8.3	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
28.11.2019	41.7	21.8	5.6	21.5	8.9	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
04.12.2019	38.9	24.8	7.8	22.7	8.6	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
05.12.2019	39.1	25.1	6.4	23.9	8.4	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
11.12.2019	40.7	20.7	5.3	24.8	8.9	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
12.12.2019	41.8	21.8	5.1	22.2	9.2	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
18.12.2019	40.9	20.4	6.8	22.7	9.2	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
19.12.2019	42.8	20.2	7.4	24.9	9.7	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
25.12.2019	41.2	21.3	6.7	20.4	9.9	<5	<1.0	<0.01	<5	<3	<1.0	<3.0
26.12.2019	38.3	25.1	5.2	21.6	9.7	<5	<1.0	<0.01	<5	<3	<1.0	<3.0

**TABLE 3.28: ABSTRACT OF AMBIENT AIR QUALITY DATA**

Sl. No.	Parameter	Pollutant Concentration, $\mu\text{g}/\text{m}^3$			
		PM <sub>10</sub>	PM <sub>2.5</sub>	SO <sub>2</sub>	NO <sub>2</sub>
1	No. of Observations	208	208	208	208
2	10 <sup>th</sup> Percentile Value	38.76	18.60	5.50	20.30
3	20 <sup>th</sup> Percentile Value	39.74	20.46	5.90	21.20
4	30 <sup>th</sup> Percentile Value	40.90	20.99	6.30	21.60
5	40 <sup>th</sup> Percentile Value	41.50	21.60	6.40	21.80
6	50 <sup>th</sup> Percentile Value	42.15	21.80	6.80	22.50
7	60 <sup>th</sup> Percentile Value	42.60	21.94	7.10	23.38
8	70 <sup>th</sup> Percentile Value	43.20	22.80	7.30	23.89
9	80 <sup>th</sup> Percentile Value	45.12	23.50	7.60	24.70
10	90 <sup>th</sup> Percentile Value	46.05	24.10	7.90	25.15
11	95 <sup>th</sup> Percentile Value	46.89	24.59	8.13	25.70
12	98 <sup>th</sup> Percentile Value	47.41	24.97	8.35	26.05
13	Arithmetic Mean	<b>43.12</b>	<b>22.30</b>	<b>7.03</b>	<b>23.30</b>
14	Geometric Mean	43.03	22.23	6.97	23.22
15	Standard Deviation	2.90	1.92	0.93	1.96
16	Minimum	37.4	17.2	4.9	8.9
17	Maximum	48.8	25.6	8.6	26.7
18	<b>NAAQ Norms*</b>	<b>100</b>	<b>60</b>	<b>80</b>	<b>80</b>
19	% Values exceeding Norms*	0	0	0	0

**Legend:** PM<sub>2.5</sub>-Particulate Matter size less than 2.5  $\mu\text{m}$ ; PM<sub>10</sub>-Respirable Particulate Matter size less than 10  $\mu\text{m}$ ; SO<sub>2</sub>-Sulphur dioxide; NO<sub>2</sub>-Nitrogen Dioxide; CO-Carbon monoxide; O<sub>3</sub>-Ozone; NH<sub>3</sub>-Ammonia; Pb-Particulate Lead; As-Particulate Arsenic; Ni-Particulate Nickel; C<sub>6</sub>H<sub>6</sub>-Benzene & BaP- Benzo (a) pyrene in particulate phase levels were monitored below their respective detectable limits.

\* NAAQ Norms-National Ambient Air Quality Norms-Revised as per GSR 826(E) dated 16.11.2009 for Industrial, Residential, Rural and other Area.

### 3.3.6 Interpretations & Conclusion

As per monitoring data, PM<sub>10</sub> ranges from 31.2  $\mu\text{g}/\text{m}^3$  to 60.2  $\mu\text{g}/\text{m}^3$ , PM<sub>2.5</sub> data ranges from 19.1  $\mu\text{g}/\text{m}^3$  to 39.0  $\mu\text{g}/\text{m}^3$ , SO<sub>2</sub> ranges from 5.3  $\mu\text{g}/\text{m}^3$  to 10.1  $\mu\text{g}/\text{m}^3$  and NO<sub>2</sub> data ranges from 10.9  $\mu\text{g}/\text{m}^3$  to 16.8  $\mu\text{g}/\text{m}^3$ . The concentration levels of the above criteria pollutants were observed to be well within the limits of NAAQS prescribed by CPCB.

### 3.3.7 FUGITIVE DUST EMISSION –

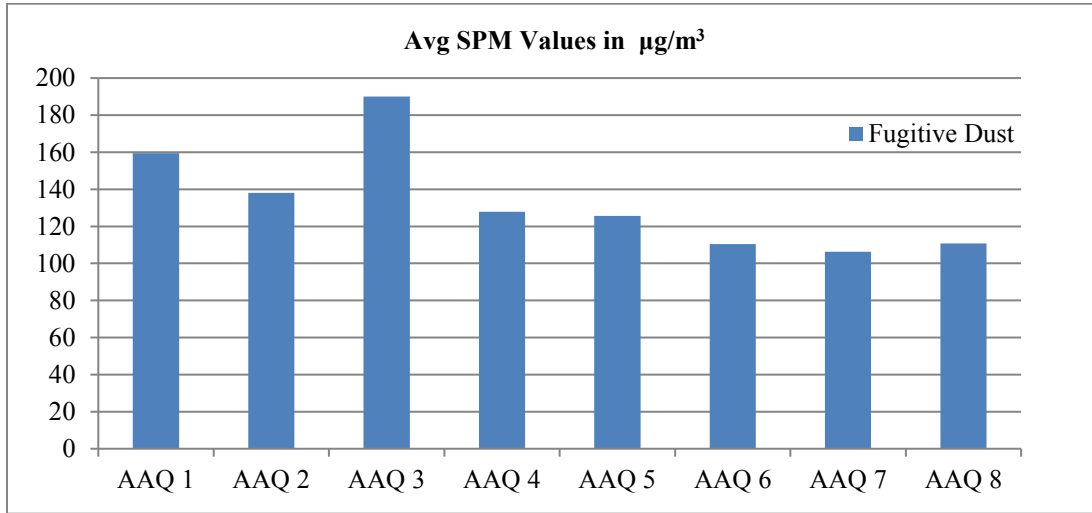
Fugitive dust was recorded at 8 AAQ monitoring stations for 30 days average during the study period.

**TABLE 3.18 AVERAGE FUGITIVE DUST SAMPLE VALUES IN  $\mu\text{g}/\text{m}^3$** 

AAQ Locations	Avg SPM ( $\mu\text{g}/\text{m}^3$ )
AAQ 1	159.5
AAQ 2	138.0
AAQ 3	190.1
AAQ 4	127.8
AAQ 5	125.7
AAQ 6	110.4
AAQ 7	106.3
AAQ 8	110.8

Source: Onsite monitoring/ sampling by KGS Laboratories

FIGURE 3.11: BAR DIAGRAM OF FUGITIVE DUST VALUES



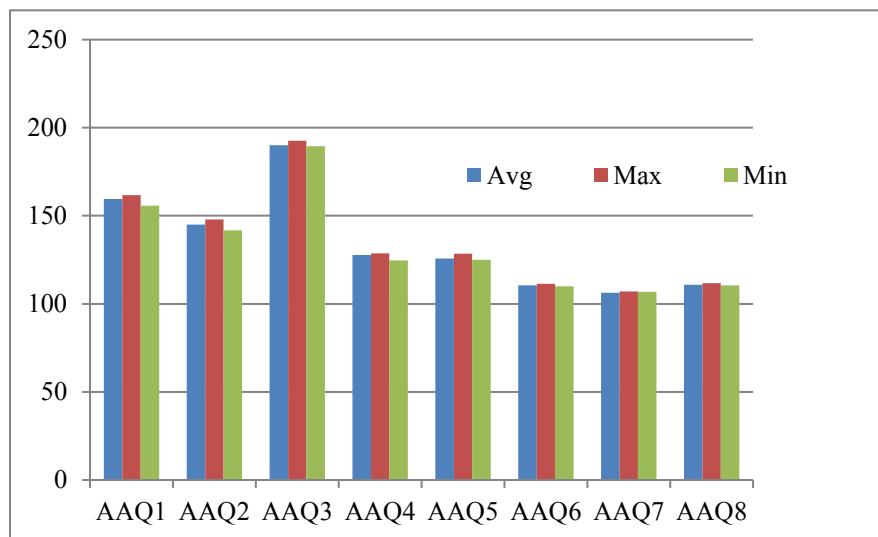
Source: Line Diagram of Table 3.16 I

TABLE 3.19: FUGITIVE DUST SAMPLE VALUES IN  $\mu\text{g}/\text{m}^3$  –

SPM ( $\mu\text{g}/\text{m}^3$ )	AAQ1	AAQ2	AAQ3	AAQ4	AAQ5	AAQ6	AAQ7	AAQ8
<b>Average</b>	159.5	145	190.1	127.8	125.7	110.4	106.3	110.8
<b>Max</b>	161.7	147.9	192.6	128.6	128.4	111.3	107.1	111.8
<b>Min</b>	155.8	141.8	189.5	124.7	125.1	110	106.9	110.4

Source: Calculations from Lab Analysis Reports

FIGURE 3.12: BAR DIAGRAM OF AMBIENT AIR QUALITY VALUES



Source: Bar Diagram of table 3.16 J



### 3.3.7 FUGITIVE DUST EMISSION –

Fugitive dust was recorded at 8 AAQ monitoring stations for 30 days average during the study period.

- Instruments used for air monitoring –
  - Fugitive dust samples was collected by using APM 860 (Respirable Dust Sampler)
  - Fugitive dust was recorded at 9AAQ monitoring stations during the study period.
- Fugitive dust emission is predicted by the standard equations given in The Indian Mining & Engineering Journal and by US-EPA (Emission Factors as referred in AP - 42), powered by AERMOD ver. 9.6.1 of lakes Environment.

#### Emission Estimation –

The emission estimation is dependent of parameters such as meteorological, topographic conditions and the material characteristics. The amount of emission rate for the source on site into the atmosphere needs to be calculated.

#### Different Dust Sources –

- **Drilling Source –**

The drilling source is most representative for a point source; this is an emission with a very small opening such as a stack or vent.

- **Haul roads and waste dump Source –**

For haul roads the most representative dust source is assumed to be a volume source just above the ground surface and waste dump is assumed to be an area source.

- **Open pit Source –**

It considers a dust source all over the quarry area.

### 3.4 Noise Environment

The vehicular movement on road and mining activities is the major sources of noise in study area, the environmental assessment of noise from the mining activity and vehicular traffic can be undertaken by taking into consideration various factors like potential damage to hearing, physiological responses, and annoyance and general community responses.

The main objective of noise monitoring in the study area is to establish the baseline noise level and assess the impact of the total noise expected to be generated during the project operations around the project site.

#### 3.4.1 Identification of Sampling Locations

In order to assess the ambient noise levels within the study area, noise monitoring was carried out at Eight (8) locations. The noise level monitoring locations were carried out by covering commercial, residential, rural areas within the radius of 10km. A noise monitoring methodology was chosen such that it best suited the purpose and objectives of the study.

**TABLE 3.31 – DETAILS OF SURFACE NOISE MONITORING LOCATIONS**

S. No	Location code	Monitoring Locations	Distance & Direction	Coordinates
1	N1	Project Area	North West Corner	10°52'24.72"N 78°22'28.21"E
2	N2	Project Area	South Side	10°52'21.91"N 78°22'30.94"E
3	N3	Project Area	South East Corner	10°52'20.19"N 78°22'32.97"E
4	N4	Project Area	North East Corner	10°52'23.52"N 78°22'33.85"E
5	N5	Kuzanthai Patti	1.0Km Southwest	10°52'3.21"N 78°21'56.90"E
6	N6	Kodangipatti	1.5Km Southwest	10°51'36.55"N 78°22'02.91"E
7	N7	Iyermali	1.5Km Northeast	10°52'38.36"N 78°23'19.57"E
8	N8	Irumboothipatti	1.5Km Southeast	10°51'34.74"N 78°23'06.65"E

Source: On-site monitoring/sampling by KGS Laboratories in association with GEMS

### 3.4.2 Method of Monitoring

Digital Sound Level Meter was used for the study. All reading was taken on the 'A-Weighting' frequency network, at a height of 1.5 meters from ground level. The sound level meter does not give a steady and consistent reading and it is quite difficult to assess the actual sound level over the entire monitoring period. To mitigate this shortcoming, the Continuous Equivalent Sound level, indicated by  $L_{eq}$ , is used. Equivalent sound level, 'Leq', can be obtained from variable sound pressure level, 'L', over a time period by using following equation.

$$L_{eq} = 10 \log L / T \sum (10L_n/10)$$

Where L = Sound pressure level at function of time dB (A)

T = Time interval of observation

### 3.4.3 Analysis of Ambient Noise Level in the Study Area

An analysis of the different  $L_{eq}$  data obtained during the study period has been made. Variation was noted during the day-time as well as night-time. The results are presented in below Table 3.6

Day time : 6:00 hours to 22.00 hours.

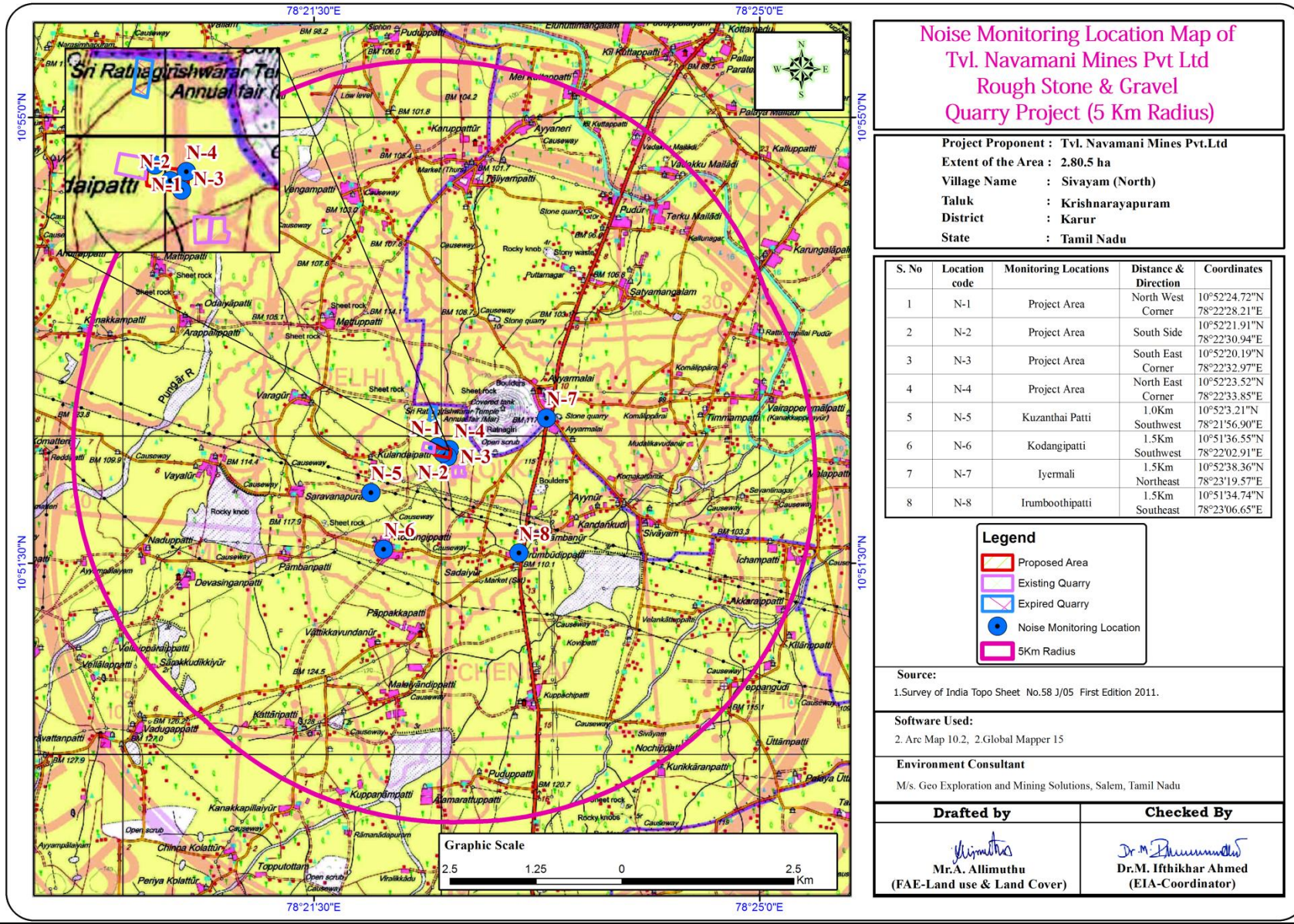
Night time : 22:00 hours to 6.00 hours

**TABLE 3.32 – NOISE MONITORING RESULTS IN CORE AND BUFFER ZONE**

S. No	Locations	Noise level (dB (A) Leq)		Ambient Noise Standards
		Day Time	Night Time	
1	Core zone - North West Corner	54.7	45.8	<b>Industrial</b>
2	Core zone - South Side	55.1	45.6	
3	Core zone - South East Corner	54.8	45.3	
4	Core zone - North East Corner	54.3	45.6	
5	Kulanthaipatti Village	53.7	46.2	<b>Residential</b>
6	Kodangipatti Village	43.1	35.6	
7	Iyermalai village	55.0	45.9	
8	Irumboothipatti village	47.2	44.8	

Source: On-site monitoring/sampling by KGS Laboratories in association with GEMS

**FIGURE 3.15: NOISE MONITORING STATIONS AROUND 10 KM RADIUS**



### 3.4.4 Interpretation & Conclusion:

Ambient noise levels were measured at 8 (Eight) locations around the proposed project area.

Noise levels recorded in core zone during day time were from 54.3 – 55.1 dB (A) Leq and during night time were from 45.3 – 45.8dB (A) Leq. Noise levels recorded in buffer zone during day time were from 43.1 – 53.7 dB (A) Leq and during night time were from 35.6 – 46.2 dB (A) Leq.

The values of noise observed in some of the areas are primarily owing to quarrying activities due to cluster of quarries within 500m radius, movement of vehicles and other anthropogenic activities. Noise monitoring results reveal that the maximum & minimum noise levels at day time were recorded in the range of 59.7 dB(A) in core zone and 35.1 dB(A) in Kulanthaipatti village and 50.5 dB(A) in Kulanthaipatti Village & 36.1 dB(A) in Core zone at night time. Thus, the noise level for Industrial and Residential area meets the requirements of CPCB.

### 3.5 Ecological Environment

Ecology is a branch of science which dealing the relations and interactions between organisms and their environment. An ecological survey of the study area was conducted, particularly with reference to listing of species and assessment of the existing baseline ecological conditions in the study area. The main objective of biological study is to collect the baseline data regarding flora and fauna in the study area. Data has been collected through extensive survey of the area with reference to flora and fauna. Information is also collected from different sources i.e. government departments such as District Forest Office, Government of Tamil Nadu. On the basis of onsite observations as well as forest department records the checklist of flora and fauna was prepared

#### 3.5.1 Scope of Work

Scope of work for this study includes identification of ecologically sensitive receptors, based on literature survey, field investigations and their mitigation with conservation action plan. The study was carried out in the core as well as buffer zone of the Proposed Rough stone and gravel quarry. The study was carried out systematically and scientifically using primary and secondary data in order to bring out factual information on the ecological conditions of the mine site and 10 km radius study area.

The study involved assessment of general habitat type, vegetation pattern, preparation of inventory of flora and fauna of terrestrial ecosystem within 10 km radius from the boundary of Proposed Mine site. Biological assessment of the site was done to identify ecologically sensitive areas and whether there are any rare, endangered, endemic or threatened (REET) species of flora & fauna in the core area as well its buffer zone to be impacted. The study also designed to suggest suitable mitigation measures if necessary for protection of wildlife habitats and conservation of REET species if any.

#### 3.5.2 Objectives of Biological Studies

The present study was undertaken with the following objectives:

1. To study the likely impact of the proposed mining project on the local biodiversity and to suggest mitigation measure, if required, for vulnerable biota.
2. To assess the nature and distribution of vegetation (Terrestrial and Aquatic) in and around the mining activity.
3. Detail of flora and fauna, Endemic, Rare, Endangered and Threatened (RET Species) separately for core and buffer area based on such primary field survey and clearly indicating the Schedule of fauna present. In case of any schedule- I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished.
4. Devise management & conservation measures for biodiversity.

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### 3.5.3 Methodology of Sampling

The present study was carried out in given steps

1. Field survey was conducted by visual encounter survey for flora present within the 10 km radius study area of all the proposed mine site.
2. After surveying the core and buffer areas, a detailed floral inventory has been compiled. List of all plants of the study area was prepared and their habitats were recorded.
3. Verification of Rare, Endangered and Threatened Flora species from IUCN Red Data Book.
4. Plants and Animals communities were noted.

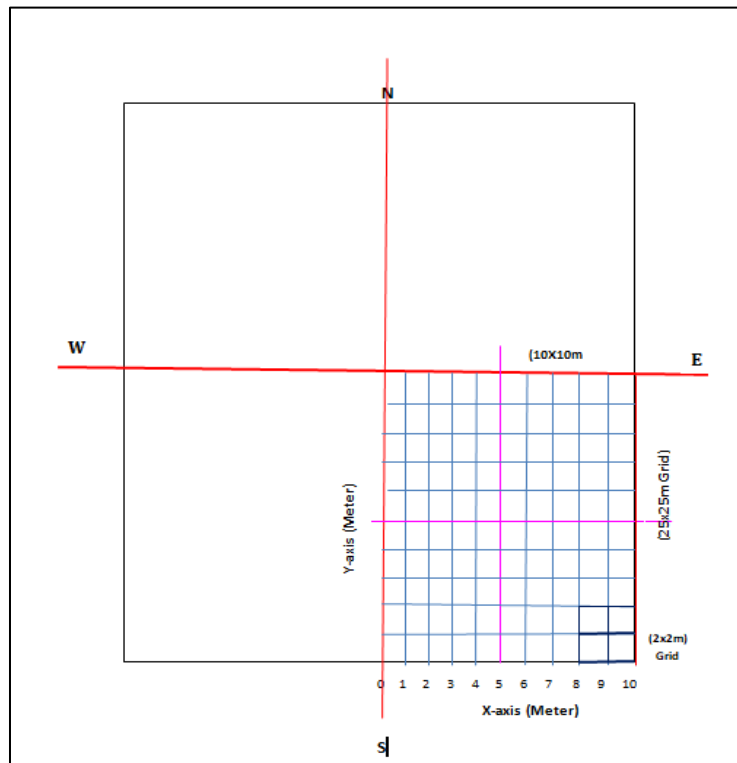
**Site selection criteria:** The core study area is located at Village: Sivayam (North), Taluk: Krishnarayapuram, District: Karur, Tamil Nadu. The buffer study area comprises of 10 km radius from the proposed rough stone and Gravel quarry area.

Selection of sampling locations was made with reference to topography, land use, vegetation pattern, etc. The observations were taken on natural vegetation, roadside plantation and non-forest area (agricultural field, in plain areas, village wasteland, etc.) for quantitative representation of different species.

A methodology of Sampling Flora and fauna studies were carried out to assess the list of terrestrial plant and animal species that occur in the core area and the buffer area up to 10 km radius from the project site. No damage is created to flora and fauna during the sampling.

In order to provide representative ecological status for the study area, the 10-km buffer zone has been divided into four quartiles for biodiversity sampling, i.e., NE (Quartile-1), NW (Quartile-2) SW (Quartile-3) and SE (Quartile-4) is given in Fig. 3.20. Each of the quartiles have been examined for representative flora on randomly sampled quadrats for trees (25x25-m), shrubs (10x10-m) and herbs (2x2-m) depending upon prevailing geographical conditions and bio-diversity aspects of study area.

### A SCHEMATIC DIAGRAM FOR FLORAL RANDOM SAMPLING



#### Phyto-sociological Survey method

Phyto-sociological parameters, viz., Abundance, Density, Frequency (%) were measured. A total of 10 quadrats were laid down randomly within core area and 40 quadrats were laid down within four quartiles randomly (10/quartile) in buffer area. In core area 10 quadrats were laid randomly to enumerated trees, shrubs, and herbs as per the Following formulae used for calculating the frequency (%), abundance and density of the floral species encountered in the 10 quadrats studied.

#### Quadrats method

Quadrats of  $25 \times 25$ -m were laid down randomly within core and 5-km buffer area; each quadrat was laid to assess the trees (>5 cm GBH) and one,  $10 \times 10$ -m sub-quadrat nested within the quadrat for shrubs. The quadrats were laid randomly to cover the area to maximize the sampling efforts and minimize the species homogeneity, such as small stream area, trees in agricultural bunds, tank bunds, farm forestry plantations, wildlife areas, natural forest area, avenue plantations, house backyards, etc. In each quadrat individuals belonging to tree ( $25 \times 25$ -m) and shrub ( $10 \times 10$ -m) were recorded separately and have been identified on the field. Quadrates sampling methods is given in Fig no.3.20.

#### FLORA IN CORE ZONE

Taxonomically a total of 16 species belonging to 13 families have been recorded from the core mining lease area. Based on habitat classification of the enumerated plants the majority of species were shrubs 6 (37.5%), herbs 6 (37.5%) followed by tree 4 (25%). Baseline study of cluster area showed that very low species richness because it's fully dry area. Details of flora with the scientific name were mentioned in Table No. 4.1 and the diversity of flora families is given in Fig No.4.8.

TABLE NO: 3.22. FLORA IN CORE ZONE

SI.No	English Name	Vernacular Name	Scientific Name	Family Name
<b>TREES</b>				
1	Acacia Nilotica	Karuvelam maram	<i>Vachellia nilotica</i>	Fabaceae
2	Noni	Nuna maram	<i>Morinda citrifolia</i>	Rubiaceae
3	Neem	Vembu	<i>Azadirachta indica</i>	Meliaceae
4	Millettia pinnata	Pongam oiltree	<i>Pongamia pinnata</i>	Fabaceae
<b>SHRUBS</b>				
5	Touch-me-not	Thottalchinungi	<i>Mimosa pudica</i>	Mimosaceae
6	Sarphonka	Katu-kolingi	<i>Tephrosia purpurea</i>	Fabaceae
7	Avaram	Avarai	<i>Senna auriculata</i>	Fabaceae
8	Milk Weed	Erukku or Crown flower	<i>Calotropis gigantea</i>	Apocynaceae
9	Wild sage	Unichedi	<i>Lantana camara</i>	Verbenaceae
10	Indian mallow	Thuththi	<i>Abutilon indicum</i>	Malvaceae
<b>HERBS</b>				
11	Common leucas	Thumbai	<i>Leucas aspera</i>	Lamiaceae
12	Devil's thorn	Nerunji	<i>Tribulus terrestris</i>	Zygophyllales
13	Indian doab	Arugampul	<i>Cynodon dactylon</i>	Poaceae
14	Mountain knotgrass	Poolai poondu	<i>Aerva lanata</i>	Amaranthaceae
15	Yellow-fruit Nightshade	Kantang kathrikai	<i>Solanum virginianum</i>	Solanaceae
16	Basil	Karunthulasi	<i>Ocimum basilicum</i>	Lamiaceae

**FLORA IN BUFFER ZONE**

Taxonomically a total of 44 species belonging to 29 families have been recorded from the Buffer mining lease area. Based on habitat classification of the enumerated plants the majority of species were tree 23 (50%) followed by shrubs 7 (15.21%), herbs 8 (17.39%) and Climber 8 (17.39%) is a creeper. Details of flora with the scientific name were mentioned in Table No.4.1. The diversity of flora families is given in Fig No.4.9.

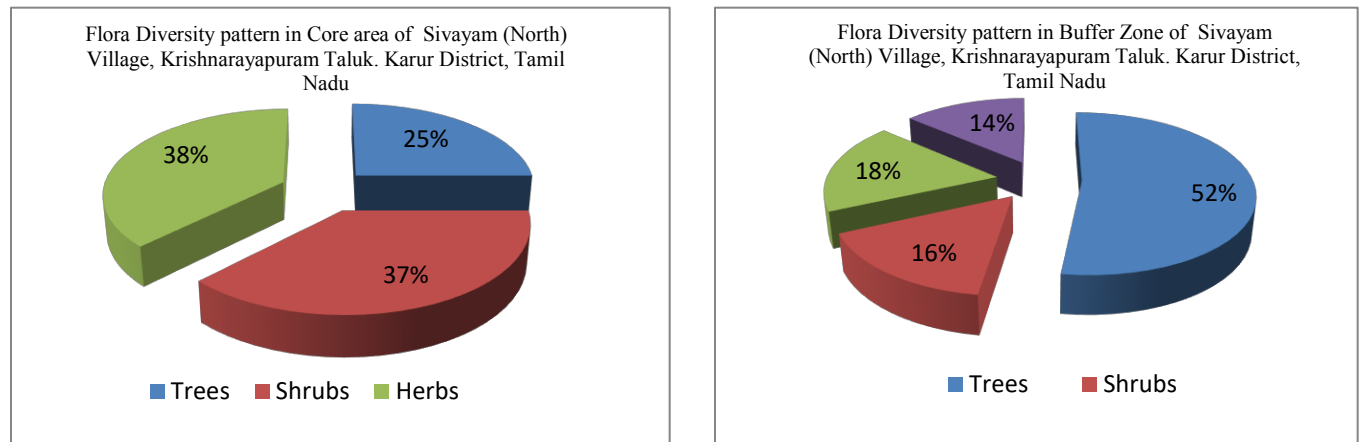
TABLE 3.33 A – FLORA IN BUFFER ZONE

SI.No	English Name	Vernacular Name	Scientific Name	Family Name	Resource use type *(E,M,EM)
<b>TREES</b>					
1	Neem or Indian lilac	Vembu	<i>Azadirachta indica</i>	Meliaceae	M
2	Millettia pinnata	Pongam oiltree	<i>Pongamia pinnata</i>	Fabaceae	
3	Mango	Manga	<i>Mangifera indica</i>	Anacardiaceae	E
4	Indian fig tree	Athi	<i>Ficus recemosa</i>	Moraceae.	EM
5	Gum arabic tree	Karuvelam	<i>Acacia nilotica</i>	Mimosaceae	NE
6	Coconut	Thennai maram	<i>Cocos nucifera</i>	Arecaceae	EM
7	Asian Palmyra plam	Panai maram	<i>Borassus flabellifer</i>	Arecaceae	E
8	black plum	Navalmaram	<i>Sygygium cumini</i>	Myrtaceae	EM
9	Tamarind	Puliyamaram	<i>Tamarindus indica</i>	Legumes	EM
10	banyan tree	Alamaram	<i>Ficus benghalensis</i>	Moraceae	E
11	Guava	Koyya	<i>Psidium guajava</i>	Myrtaceae	EM
12	Teak	Thekku	<i>Tectona grandis</i>	Verbenaceae	E
13	Jack fruit	Palamaram	<i>Artocarpus heterophyllus</i>	Moraceae	E
14	Henna	Marudaani	<i>Lawsonia inermis</i>	Lythraceae	EM

15	Lemon	Ezhumuchaipalam	<i>Citrus lemon</i>	Rutaceae	EM
16	Papaya	Pappali maram	<i>Carica papaya L</i>	Caricaceae	EM
17	Indian fir tree	Nettilinkam	<i>Polylathia longifolia</i>	Annonaceae	E
18	Chinese chaste tree	Nochi	<i>Vitex negundo</i>	Verbenaceae	E
19	Noni	Nuna maram	<i>Morinda citrifolia</i>	Rubiaceae	M
20	Manilkara zapota	Sapota	<i>Manilkara zapota</i>	Sapotaceae	E
21	custard apple	seethapazham	<i>Annona reticulata</i>	Annonaceae	E
22	Curry tree	Velipparuthi	<i>Murraya koenigii</i>	Asclepiadaceae	EM
23	banana tree	Vazhaimaram	<i>Musa</i>	Musaceae	EM
<b>SHRUBS</b>					
24	Avaram	Avarai	<i>Senna auriculata</i>	Fabaceae	M
25	Indian mallow	Thuthi	<i>Abutilon indicum</i>	Meliaceae	M
26	Shoe flower.	Chemparuthi	<i>Hibiscu rosa-sinensis</i>	Malvaceae	EM
27	Rosary pea	Kundumani	<i>Abrus precatorius</i>	Fabaceae	M
28	Milk Weed	Erukku or Crown flower	<i>Calotropis gigantea</i>	Apocynaceae	M
29	Indian Oleander	Arali	<i>Nerium indicum</i>	Apocynaceae	M
30	Touch-me-not	Thottalchinungi	<i>Mimosa pudica</i>	Mimosaceae	M
<b>HERBS</b>					
31	Carrot grass	Partiniyam	<i>Parthenium hysterophorus</i>	Asteraceae	NE
32	Holy basil	Thulasi	<i>Ocimum tenuiflorum</i>	Lamiaceae	M
33	Common leucas	Thumbai	<i>Leucas aspera</i>	Lamiaceae	M
34	Indian Copperleaf	Kuppaimeni	<i>Acalypha indica</i>	Euphorbiaceae	M
35	Red Hogweed	Mukurattai	<i>Boerhavia diffusa</i>	Nyctaginaceae	M
36	Tridax daisy	Veetukaayapoondur	<i>Tridax procumbens</i>	Asteraceae	M
37	Indian doab	Arugampul	<i>Cynodon dactylon</i>	Poaceae	E
38	European black nightshade	Manathakkali	<i>Solanum nigrum</i>	Solanaceae	EM
<b>CLIMBER</b>					
39	Ivy gourd	Kovai	<i>Coccinia grandis</i>	Cucurbitaceae	M
40	Balloon vine	Mudakkotan	<i>Cardiospermum helicacabum</i>	Sapindaceae	M
41	Pointed gourd	Kovakkai	<i>Trichosanthes dioica</i>	Cucurbitaceae	EM
42	butterfly pea	Karkakartum	<i>Clitoria ternatea</i>	Fabaceae	M
43	Bottle Guard	Sorakkai	<i>Lagenaria siceraria</i>	Cucurbitaceae	EM
44	stemmed vine	Perandai	<i>Cissus quadrangularis</i>	Vitaceae	M

\*E- Economical, M- Medicinal, EM- Both Economical and Medicinal, NE- Not evaluated.

FIGURE 3.16: PIE DIAGRAM – FLORA DIVERSITY PATTERN



The faunal survey has been carried out as per the methodology cited and listed out Mammals, birds, Reptiles, Amphibians and Butterflies. All the listed species were compared with Red Data Book and Indian Wildlife Protection Act, 1972. There are no rare, endangered, threatened (RET) and endemic species present in core area.

### FAUNA METHODOLOGY

The study of fauna takes substantial amount of time to understand the specific faunal characteristics of the area. The assessment of fauna has been done on the bases of primary data collected from the lease sites. The presence was also confirmed from the local inhabitants depending on the animal sightings and the frequency of their visits in the project area. In addition, officials, local peoples were another source of information for studying the fauna of the area. Field activities are physical/active search, covering rocks, burrows, hollow inspection and location of nesting sites and habitat assessment etc. Taxonomical identification was done by the field guide book and wildlife envis data base ([wiienvis.nic.in/Database/Schedule Species Database](http://wiienvis.nic.in/Database/Schedule%20Species%20Database)) and Zoological Survey of India (ZSI). Detailed faunas methodology is mentioned in the Table No. 3.5.

### Survey and Monitoring of Mammals

Intensive survey has been done by line transect methods (Walking and in vehicle) for all major habitats for surveying of mammals by direct and indirect evidence. Indirect methods such as faecal matter (i.e., scat) and pug mark by establishing 10 × 100-m linear transects depending on the habitat (i.e., existing wildlife game routes/forest trails used).

Direct observation technique has been used for surveying large and medium sized mammals. But this technique is perfectly suitable for surveying of diurnal mammals; however, good photographs were also taken for species identification.

### Survey and Monitoring of Birds

Birds are sampled by using point count methods, and opportunistic bird sightings. By this bird vocal sounds and photographs, the species were identified in consultation with village local people.

Point count: in this method, the observer will stand in a randomly chosen point and birds seen or heard in 50m radius are recorded for 5-min. this observation is repeated in another point at least 30m from the first point. We have enumerated 20 point – counts in each quartile, which constitute a total of 80 points-count (20 x 4) within 10 km radius area.

Opportunistic bird sightings: while traveling in study area, many bird species will be detected in survey time. Such species are recoded by their appearance or by their call.

### Survey and Monitoring of reptiles

Several survey techniques such as standard walk transect visual encounter survey methods were used to sampling reptiles in each and every habitat of the study area. While doing this survey, photographs were taken for identification of species. Species identification was done by using standard field guides in consultation with village people expert.

The butterfly was enumerated by 2 linear transects of 10 × 100 m were laid within each quartile at minimum interval of 1 km. Further, amphibians and fishes documented in existing literature and secondary information in consultation with local people and wildlife experts.

### FAUNA IN CORE ZONE

Taxonomically a total of 17 species belonging to 15 families have been recorded from the core mining lease area. Based on habitat classification the majority of species were birds 5 (29.41%) followed by insects 8 (47%), mammals 1 (6%) and reptiles 3 (18%). Dominant species are mostly birds and insects no amphibians were observed during the extensive field visit. There are no critically endangered, endangered, vulnerable and endemic species were observed. Details of fauna in core zone with the scientific name were mentioned in Table No. 4.7.

**TABLE 3.33 B – FAUNA CORE**

<i>Sl. No</i>	<i>Common name/English Name</i>	<i>Family Name</i>	<i>Scientific Name</i>	<i>Schedule list wildlife Protection act 1972</i>	<i>IUCN Red list data</i>
<b>INSECTS</b>					
1	Acraea violae	Nymphalidae	<i>Acraea violae</i>	NL	LC
2	Mottled emigrant	Peridae	<i>Catopsilia pyranthe</i>	NL	LC
3	Striped tiger	Nymphalidae	<i>Danaus plexippus</i>	Schedule IV	LC
4	Praying mantis	Mantidae	<i>mantis religiosa</i>	NL	NL
5	Grasshopper	Acrididae	<i>Hieroglyphus sp</i>	NL	LC
6	Red-veined darter	Libellulidae	<i>Sympetrum fonscolombii</i>	NL	LC
7	Termite	Blattodea	<i>Hamitermes silvestri</i>	NL	LC
8	Stick insect	Lonchodidae	<i>Carausius morosus</i>	NL	LC
<b>REPTILES</b>					
9	Garden lizard	Agamidae	<i>Calotes versicolor</i>	NL	LC
10	Common house gecko	Gekkonidae	<i>Hemidactylus frenatus</i>	NL	LC
11	Fan-Throated Lizard	Agamidae	<i>Sitanaponticeriana</i>	NL	LC
<b>MAMMALS</b>					
12	Indian Field Mouse	Muridae	<i>Mus booduga</i>	Schedule IV	NL
<b>AVES</b>					
13	Asian green bee-eater	Meropidae	<i>Meropsorientalis</i>	NL	LC
14	Common myna	Sturnidae	<i>Acridotheres tristis</i>	NL	LC
15	House crow	Corvidae	<i>Corvus splendens</i>	NL	LC
16	Cattle egret	Ardeidae	<i>Bubulcus ibis</i>	NL	LC
17	Koel	Cucalidae	<i>Eudynamys</i>	Schedule IV	LC

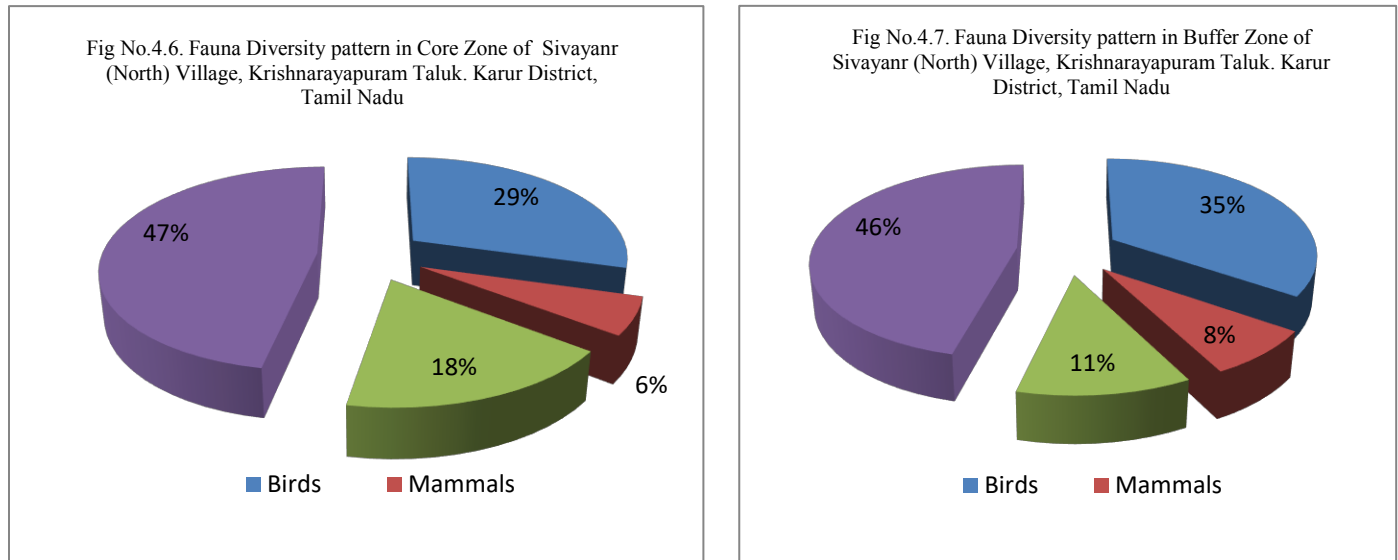
### 4.7.3. Fauna in Buffer Zone

Taxonomically a total of 26 species belonging to 19 families have been recorded from the buffer mining lease area. Based on habitat classification the majority of species were insects 12 (46%) followed by birds 9 (35%), mammals 2 (8%) and reptiles 3 (11%). There are no critically endangered, endangered, vulnerable and endemic species were observed. The Diversity of Faunal family patterns is given in fig no 4.10.

**TABLE NO: 3.26. FAUNAL DIVERSITY IN BUFFER ZONE**

<i>Sl. No</i>	<i>Common name/English Name</i>	<i>Family Name</i>	<i>Scientific Name</i>	<i>Schedule list wildlife Protection act 1972</i>	<i>IUCN Red List data</i>
<b>INSECTS</b>					
1	Tawny coster	Nymphalidae	<i>Danaus chrysippus</i>	Schedule IV	LC
2	Common Indian crow	Nymphalidae	<i>Euploea core</i>	Schedule IV	LC
3	Common Tiger	Nymphalidae	<i>Danaus genutia</i>	Schedule IV	LC
4	Grasshopper	Acrididae	<i>Hieroglyphus sp</i>	NL	LC
5	Striped tiger	Nymphalidae	<i>Danaus plexippus</i>	Schedule IV	LC
6	Ant	Formicidae	<i>Camponotus Vicinus</i>	NL	NL
7	Lesser grass blue	Lycaenidae	<i>Zizina Otis indica</i>	Schedule IV	LC
8	Praying mantis	Mantidae	<i>mantis religiosa</i>	NL	NL
9	Green marsh hawk	Libellulidae	<i>Orthetrum sabina</i>	NL	LC
10	Red-veined darter	Libellulidae	<i>Sympetrum fonscolombii</i>	NL	LC
11	Milkweed butterfly	Nymphalidae	<i>Danainae</i>	NL	LC
12	Blue tiger	Nymphalidae	<i>Tirumala limniace</i>	Schedule IV	LC
<b>REPTILES</b>					
13	Garden lizard	Agamidae	<i>Calotes versicolor</i>	NL	LC
14	Common house gecko	Gekkonidae	<i>Hemidactylus frenatus</i>	NL	LC
15	Fan-Throated Lizard	Agamidae	<i>Sitanaponticeriana</i>	NL	LC
<b>MAMMALS</b>					
16	Indian palm squirrel	Sciuridae	<i>Funambulus palmarum</i>	Schedule IV	LC
17	Indian Field Mouse	Muridae	<i>Mus booduga</i>	Schedule IV	LC
<b>AVES</b>					
18	Koel	Cucalidae	<i>Eudynamys</i>	Schedule IV	LC
19	Cattle egret	Ardeidae	<i>Bubulcus ibis</i>	NL	LC
20	Black drongo	Dicruridae	<i>Dicrurus macrocercus</i>	Schedule IV	LC
21	Asian green bee-eater	Meropidae	<i>Meropsorientalis</i>	NL	LC
22	House crow	Corvidae	<i>Corvussplendens</i>	NL	LC
23	Common myna	Sturnidae	<i>Acridotheres tristis</i>	NL	LC
24	Shikra	Accipitridae	<i>Accipiter badius</i>	NL	LC
25	Red-vented Bulbul	Pycnonotidae	<i>Pycnonotuscafer</i>	Schedule IV	LC
26	Rose-ringed parakeet	Psittaculidae	<i>Psittacula krameri</i>	NL	LC

FIGURE 3.17: PIE DIAGRAM FAUNA DIVERSITY PATTERN



### 3.5.2 Interpretation & Conclusion:

There is no schedule I species of animals observed within study area as per Wildlife Protection Act 1972 as well as no species is in vulnerable, endangered or threatened category as per IUCN. There is no endangered red list species found in the study area. Hence this small mining operation over short period of time will not have any significant impact on the surrounding flora and fauna.

## 3.6 Socio Economic Environment

Socio-economic study is an essential part of environmental study. It includes demographic structure of the area, provision of basic amenities viz., housing, education, health and medical services, occupation, water supply, sanitation, communication, transportation, prevailing diseases pattern as well as feature like temples, historical monuments etc., at the baseline level. This will help in visualizing and predicting the possible impact depending upon the nature and magnitude of the project.

It is expected that the Socio-Economic Status of the area will substantially improve because of this proposed project. As the proposed project will provide direct and indirect employment and improve the infrastructural facilities in that area and, thus, improve their standard of living

### 3.6.1 Objectives of the Study

The objectives of the socio-economic study are as follows:

- To study the socio-economic status of the people living in the study area of the proposed mining project
- To assess the impact of the project on Quality of life of the people in the study area
- To recommend Community Development measures needs to be taken up in the study Area.

### 3.6.2 Scope of Work

- To study the Socio-economic Environment of the area from the secondary sources;
- Data Collection & Analysis
- Prediction of project impact
- Mitigation Measures

### 3.6.3 District Profile

Karur district includes 2 Revenue Divisions, 5 Taluks, 8 Community Development Blocks, 4 Municipalities, 11 Town Panchayats and 4 Census Towns. There are 170 Revenue Villages in this district, of these 169 villages are inhabited.

In 2011, Karur district had population of 10,64,493 of which male and female were 5,28,184 and 5,36,309 respectively.

### 3.6.4 Study area

#### SIVAYAM (NORTH) VILLAGE

- As per the Population Census 2011, there are total 491 families residing in the village Sivayam (North). The **total population of Sivayam (North) is 7340 out of which 7340 are males and 3662 are females thus the Average Sex Ratio of Sivayam (North) is 200**. Literacy rate is 57% Male literacy stands at 57.59 % while female literacy rate was 42.4 %. **Schedule Caste (SC) constitutes 19.6%**. No ST population in the Sivayam (North) Village.
- In Sivayam (North) village out of total population, 7340 were engaged in work activities. 52.7 % of workers describe their work as Main Work (Employment or Earning more than 6 Months)

TABLE 3.27: POPULATION CHARACTERISTICS AROUND 10KM RADIUS

Total No of Villages	No. of Households	Total Population	Population Male	Population female	SC Population Male	SC Population female	Total Literate	Total Literates Male	Total Literates Female	Total Illiterates Male	Total Illiterates Female
26	31,593	1,25,067	62,236	62,831	13,810	14,478	77,961	43,901	34,060	18,335	28,771

TABLE 3.28: OCCUPATIONAL CHARACTERISTICS AROUND 10KM RADIUS

Total Worker Population Male	Total Worker Population Female	Main Working Population Male	Main Working Population Female	Main Cultivator Population Male	Main Cultivator Population Female	Main Agricultural Labourers Population Male	Main Agricultural Labourers Population Female	Non Working Population Male	Non Working Population Female
38,152	28,662	36,264	25,984	7,369	3,736	17,982	18,419	24,084	34,169

### 3.7.5 Basic Amenities

**A better network of physical infrastructure facilities (well-built roads, rail links, irrigation, power and telecommunication, information technology, market-network and social infrastructure support, viz. health and education, water and sanitation, veterinary services and co-operative) is essential for development of the rural economy.**

**A review of infrastructure facilities available in the area has been given on the basis of field survey. In this study the villages which fall within 10 km radius around the site has been covered. Infrastructure facilities available in the area are presented below.**

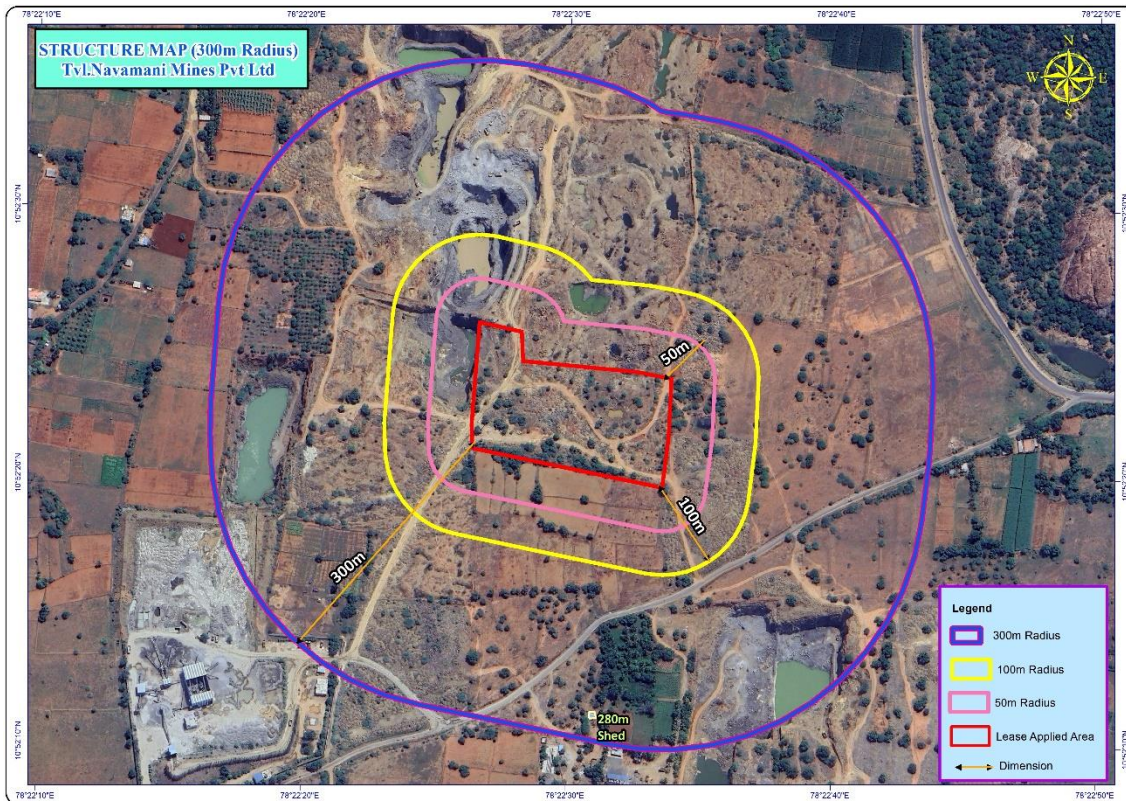
- All basic amenities Education (higher education, colleges, universities, Medical college, Transport facilities, Railway station, Bus station area available in the district headquarters Karur at a distance of 33 km – North West)

### 3.6.5 Basic Amenities

A better network of physical infrastructure facilities (well-built roads, rail links, irrigation, power and telecommunication, information technology, market-network and social infrastructure support, viz., health and education, water and sanitation, veterinary services and co-operative) is essential for development of the rural economy.

A review of infrastructure facilities available in the area has been given on the basis of field survey. In this study the villages which fall within 10 km radius around the site has been covered. Infrastructure facilities available in the area are presented below. All basic amenities Education (higher education, colleges, universities, Medical college, Transport facilities, Railway station, Bus station area available in the district headquarters.).

### STRUCTURE WITHIN 300M RADIUS



### 0-50m RADIUS

No of Structure	Type of Structure	Structure belongs to owner	Structure Not belongs to owner	No of occupancies	Remarks
Nil	-	-	-	-	-

50-100 m RADIUS					
No of Structure	Type of Structure	Structure belongs to owner	Structure Not belongs to owner	No of occupancies	Remarks
Nil	-	-	-	-	-
100 - 200 m RADIUS					
No of Structure	Type of Structure	Structure belongs to owner	Structure Not belongs to owner	No of occupancies	Remarks
Nil	-	-	-	-	-
200 - 300 m RADIUS					
No of Structure	Type of Structure	Structure belongs to owner	Structure Not belongs to owner	No of occupancies	Remarks
1	Structure - 1 - 280m SE Shed	-	Yes	-	No Stay

### 3.6.6 Recommendation and Suggestion

- Awareness program should be conducted to make the population aware to get education and a better livelihood
- Health care centre and ambulance facility can be provided to the population to get easy and accessible medical facilities
- Vocational training programme can be organized to make the people self - employed, particularly for women and unemployed youth
- On the basis of qualification and skills local youths may be employed.
- Long term and short-term employments can be generated
- Maternity facility should be made available at the place to avoid going too far off places for treatment which involves risks. Apart from that as these areas are prone to various diseases a hospital with modern facilities should be opened on a priority basis in a central place to provide better health facilities to the villagers around the project
- While developing an Action Plan, it is very important to identify the population who falls under the marginalized and vulnerable groups. So that special attention can be given to these groups with special provisions while making action plans.

### 3.6.7 Conclusion

The socio-economic study of surveyed villages gives a clear picture of its population, average household size, literacy rate and sex ratio etc. It is also found that a part of population is suffering from lack of permanent job to run their day-to-day life. Their expectation is to earn some income for their sustainability on a long-term basis. The proposed project will aim to provide preferential employment to the local people there by improving the employment opportunity in the area and in turn the social standards will improve.

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The nearby villages within 5kms radius have PHC, Anganwadi school, Post office, Telegram, Government and Private school, bus connectivity besides.

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## CHAPTER – 4: ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

### 4.0 General

The environmental impact can be categorized as either primary or secondary, primary impacts which are attributed directly by the project; secondary impacts are those which are indirectly induced. The open cast mining operations involve development of benches, Approach Road, Haul Road, Excavation and handling of material. If adequate control measures are not taken to prevent/mitigate the adverse environmental impacts/lead to damage of the eco-system.

In order to maintain the environmental commensuration with the mining operation, it is essential to undertake studies on the existing environmental scenario and assess the impact on different environmental components. This would help in formulating suitable management plans for sustainable resource extraction. Based on the baseline environmental status at the existing mine site, the environmental factors that are likely to be affected (Impacts) are identified, quantified and assessed. The various anticipated impacts will be on

- Land environment
- Water Environment
- Air Environment
- Noise Environment
- Socio economic environment
- Solid waste
- Soil environment

In general, the main findings regarding the potential impacts of climate change are Land Use Type, Energy Use, Water use & Dust emission and Biodiversity & rehabilitation.

Whereas, this mining activity is restricted to a small-scale mining and the proposal falls in “B1” Category, the surrounding environment is already subjected to mining activities and based on the past weather data its inferred that there is no much of change in the climate data of the region and the district profile has no records or past history of climate change leading to Droughts and floods.

- The mine pit shall act as a rain water harvesting structure and formation of garland drains along the mine lease boundary to divert the surface runoff and collecting the runoff water for greenbelt development and dust suppression activities shall prove beneficial.
- The greenbelt development plan, all along the mine lease boundary, along with the budget allocation for the proposed mitigation measures shall prove beneficial to surrounding environment.
- Therefore, the implementation of proposed mitigation measures for winning of mineral may not have much of impact on the surrounding Climate Change

### 4.1 Land Environment

#### 4.1.2 Anticipated Impact from Proposed Project

- Permanent or temporary change on land use and land cover.
  - Change in Topography: Topography of the ML area will change at the end of the life of the mine.
  - Movement of heavy vehicles sometimes cause problems to agricultural land, human habitations due to dust, noise and it also causes traffic hazards.
  - Due to degradation of land by pitting the aesthetic environment of the core zone may be affected.
  - Earthworks during the rainy season increase the potential for soil erosion and sediment laden water entering the water ways.
  - If no due care is taken wash off from the exposed working area may choke the water course & can also causes the siltation of water course
  - Impact due to heritage site, Archaeological sites
-

#### 4.1.2.1 Mitigation Measures

- The mining activity will be gradual confined in blocks and excavation will be undertaken progressively along with other mitigative measures like phase wise development of greenbelt etc.,
- Construction of garland drains all around the quarry pits and construction of check dam at strategic location in lower elevations to prevent erosion due to surface runoff during rainfall and also to collect the storm water for various uses within the proposed area
- Green belt development along the boundary within safety zone. The small quantity of water stored in the mined-out pit will be used for greenbelt
- Thick plantation will be carried out on unutilized area, top benches of mined out pits, on safety barrier, etc.,
- At conceptual stage, the land use pattern of the quarry will be changed into Greenbelt area and temporary reservoir
- In terms of aesthetics, natural vegetation surrounding the quarry will be retained (such as in a buffer area i.e., 7.5 m safety barrier and other safety provided) so as to help minimise dust emissions.
- Proper fencing will be carried out at the conceptual stage, Security will be posted round the clock, to prevent inherent entry of the public and cattle
- There are no Archaeological sites, heritage site in the vicinity of the project area, the topography will be changed due to excavation of rough stone and Gravel.

#### 4.1.3 Soil Environment

##### 4.1.4 Impact on Soil Environment

The top layer of the project site in the form of Gravel formation, the Gravel will be directly loaded into tippers for the filling and levelling of low-lying areas. There is no disposal of Gravel. The excavated rough stone will be directly loaded into dumpers to the needy customers.

There will be no disposal of waste water from the quarry operation, No discharge of toxic effluent from the proposed project. The dust emission at working face and haul roads will be controlled by water sprinkling and plantation.

**Erosion and Sedimentation** (Removal of protective vegetation cover; Exposure of underlying soil horizons that may be less pervious, or more erodible than the surface layers; Reduced capacity of soils to absorb rainfall; Increased energy in storm-water runoff due to concentration and velocity; and Exposure of subsurface materials which are unsuitable for vegetation establishment).

##### 4.1.5 Mitigation Measures

- Run-off diversion – Garland drains will be constructed all around the project boundary to prevent surface flows from entering the quarry works areas. And will be discharged into vegetated natural drainage lines, or as distributed flow across an area stabilised against erosion.
- Sedimentation ponds - Run-off from working areas will be routed towards sedimentation ponds. These trap sediment and reduce suspended sediment loads before runoff is discharged from the quarry site. Sedimentation ponds should be designed based on runoff, retention times, and soil characteristics. There may be a need to provide a series of sedimentation ponds to achieve the desired outcome.
- Retain vegetation – Retain existing or re-plant the vegetation at the site wherever possible.
- Monitoring and maintenance – Weekly monitoring and daily maintenance of erosion control systems so that they perform as specified specially during rainy season

#### 4.1.6 Waste Dump Management

There are no wastages anticipated in this rough stone and Gravel quarrying operation. The entire quarried out materials will be utilized (100%). The overburden in the form of Gravel formation the gravel will be also sold to needy customers for the filling and levelling of low-lying areas.

## 4.2 Water Environment

### 4.2.1 Anticipated Impact on Surface and ground water

The impact due to quarrying on the water quality is expected to be insignificant because of no use of chemicals or hazardous substances during quarrying process. The quarrying activity will not intersect ground water table as the maximum depth of the quarry in the cluster is 38m and water table is found at a depth of 45-50m BGL.

The quarrying operation will be carried out well above the water table. There is no intersection of surface water bodies (Streams, Canal, Odai etc.,) in the project area. During rainy season rain water will be collected in the quarry pit and later used for greenbelt development and for the water sprinkling in the haul roads. There is no proposal for discharging of quarry pit water outside the project area.

**TABLE 4.1: WATER REQUIREMENT**

*Purpose	Quantity	Source
Dust Suppression	1.5 KLD	Rainwater accumulated in Mine Pit/ Water Tanker
Green Belt development	1.0 KLD	Rainwater accumulated in Mine Pit/ Water Tanker
Drinking and Domestic purpose	1.5 KLD	Water Tankers
<b>Total</b>	<b>4.0 KLD</b>	

\* Water for drinking purpose will be brought from approved water vendors  
Source: Approved Mining Plan Pre-Feasibility Report

Total water requirement in the proposed project is about 4.0 KLD, the water for dust suppression and greenbelt development will be sourced from the mine pit water collected during rainy seasons, the water for domestic purpose and drinking will be sourced from the approved water vendors.

### 4.2.2 Mitigation measures:

- Garland drain, settling tank will be constructed along the mining lease area. The Garland drain will be connected to settling tank and sediments will be trapped in the settling traps and only clear water will be discharged out to the natural drainage
- Rainwater will be collected in sump in the mining pits and will be allowed to store and pumped out to surface setting tank of 15 m x 10m x 3m to remove suspended solids if any. This collected water will be judiciously used for dust suppression and such sites where dust likely to be generated and for developing green belt. The proponent will collect and judiciously utilize the rainwater as part of rainwater harvesting system.
- Providing benches with inner slopes and through a system of drains and channels, allowing rain water to descent into surrounding drains, so as to minimize the effects of erosion & water logging arising out of uncontrolled descent of water.
- Reuse the water collected during storm for dust suppression and greenbelt development within the mines
- Installing interceptor traps/oil separators to remove oils and greases. Water from the tipper wash-down facility and machinery maintenance yard will pass through interceptor traps/oil separators prior to its reuse;
- Using flocculating or coagulating agents to assist in the settling of suspended solids during monsoon seasons;
- Periodic (every 6 month once) analysis of quarry pit water and ground water quality in nearby villages.
- Domestic sewage from site office & urinals/latrines provided in ML is discharged in septic tank followed by soak pits.
- Waste water discharge from mine will be treated in settling tanks before using for dust suppression and tree plantation purposes.
- De-silting will be carried out before and immediately after the monsoon season.
- Regular monitoring (every 6 month once) and analysing the quality of water in open well, bore wells and surface water

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## Possibilities of water contamination and impact on an aquatic ecosystem health

- Anticipated impact from this proposed mining activity is surface runoff from cleared surfaces, or discharges from the quarry pit or floor, is likely to have elevated levels of sediment (both suspended and dissolved). The quality of the water discharged from the site can have impacts on downstream ecological communities and water users.
- Therefore, Run-off diversion is proposed – Garland drains will be constructed all around the project boundary to prevent surface flows from entering the quarry works areas. And will be discharged into vegetated natural drainage lines, or as distributed flow across an area stabilised against erosion with only clear water after the garland drains are enrooted through settlement traps.
- And, the depth of the mining is maximum 38m bgl and the ground water level in the surrounding areas is about 45-50 m bgl and there are no possibilities of encountering any ground water aquifers system and hence no ground water table intersection is anticipated.
- After the completion of quarry operation, the quarried out open pit mine may utilized for pici-culture or temporary reservoir pit for use of water for domestic purpose during dry seasons.
- Therefore, its inferred that the implementation of proposed mitigation measures for winning of mineral may not have much of impact on the possibilities of water contamination and impact on an aquatic ecosystem health

### 4.3 Air Environment

The air borne particulate matter is the main air pollutant in this opencast mining. The mining operation will be carried out by jackhammer drilling (35mm dia) and Hydraulic Excavators will be utilized for excavation of Rough Stone waste.

#### 4.3.1. Anticipated

##### Impact

- During mining, at various stages activities such as excavation, drilling, blasting, and transportation of materials, particular matter (PM), gases such as Sulphur dioxide, oxides of Nitrogen from vehicular exhaust are the main air pollutants.
- Emissions of noxious gases due to incomplete detonation of explosive may sometimes pollute the air.
- The fugitive dust released from the mining operations may cause effect on the mine workers who are directly exposed to the fugitive dust.
- Simultaneously, the air-borne dust may travel to longer distances and settle in the villages located near the mine lease area.

#### 4.3.1.1. Modelling of Incremental Concentration from Proposed Project

Wind erosion of the exposed areas and the air borne particulate matter generated by quarrying operation, and transportation are mainly PM<sub>10</sub> & PM<sub>2.5</sub> and emissions of Sulphur dioxide (SO<sub>2</sub>) & Oxides of Nitrogen (NO<sub>x</sub>) due to excavation/loading equipment and vehicles plying on haul roads are the cause of air pollution in the project area.

Similarly, loading - unloading and transportation of Rough Stone, wind erosion of the exposed area and movement of light vehicles causes of pollution. This leads to an impact on the ambient air environment around the project area.

Anticipated incremental concentration due to this quarrying activity and net increase in emissions due to quarrying activities within 500 meters around the project area is predicted by Open Pit Source modelling using AERMOD Software.

The impact on Air Environment is due to the mining and allied activities during Land Development phase, Mining process and Transportation. The emissions of Sulphur dioxide (SO<sub>2</sub>), Oxides of Nitrogen (NO<sub>x</sub>) due to excavation/loading equipment and vehicles plying on haul roads are marginal. Loading - unloading and transportation

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of Rough Stone, wind erosion of the exposed area and movement of light vehicles will be the main polluting source in the mining activities releasing Particulate Matter (PM<sub>10</sub>) affecting Ambient Air of the area. Prediction of impacts on air environment has been carried out taking into consideration cumulative production three proposed quarries. Air environment and net increase in emissions by Open pit source modelling in AERMOD Software.

#### 4.3.1.2 Emission Estimation

An emissions factor is a representative value that attempts to relate the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant.

The general equation for emissions estimation is:

$$E = A \times EF \times (1-ER/100)$$

Where:

E = emissions;

A = activity rate;

EF = emission factor, and

ER =overall emission reduction efficiency, %

The proposed mining activity includes various activities like ground preparation, excavation, handling and transport of ore. These activities have been analysed systematically basing on USEPA-Emission Estimation Technique Manual, for Mining AP-42, to arrive at possible emissions to the atmosphere and estimated emissions are given in Table 4-2.

**TABLE 4.2: ESTIMATED EMISSION RATE FOR PROPOSED PROJECT**

	Activity	Source type	Value	Unit
Estimated Emission Rate for PM <sub>10</sub>	Drilling	Point Source	0.123080351	g/s
	Blasting	Point Source	0.001037626	g/s
	Mineral Loading	Point Source	0.046813500	g/s
	Haul Road	Line Source	0.002580263	g/s/m
	Overall Mine	Area Source	1.255619403	g/s
Estimated Emission Rate for SO <sub>2</sub>	Overall Mine	Area Source	0.02554754	g/s
Estimated Emission Rate for NO <sub>x</sub>	Overall Mine	Area Source	0.086958405	g/s

#### 4.3.2 Frame work of Computation & Model details

The prediction included the impact of Excavation, Drilling, Blasting, loading and movement of vehicles during transportation and meteorological parameters such as wind speed, wind direction, temperature, rainfall, humidity and Cloud cover.

Impact was predicted over the distance of 10 km around the source to assess the impact at each receptor separately at the various locations and maximum incremental GLC value at the project site. Maximum impact of PM<sub>10</sub> was observed close to the source due to low to moderate wind speeds. Incremental value of PM<sub>10</sub> was superimposed on the base line data monitored at the proposed site to predict total GLC of PM<sub>10</sub> due to combined impacts

#### Air Pollution Dispersion Modelling.

##### Baseline Air Quality –

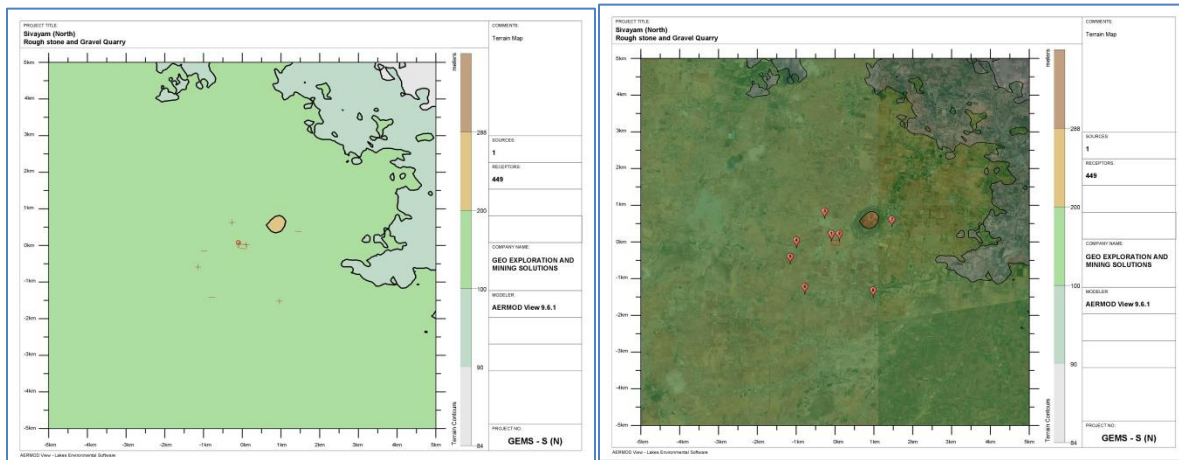
Baseline air quality has been measured at 3 locations in the cluster and 5 locations within the buffer zone of the study area. The 24 - hourly average samples of particulate matters (PM<sub>10</sub> and PM<sub>2.5</sub>), SO<sub>2</sub> and NO<sub>x</sub> were measured following the National Ambient Air Quality Standards (NAAQS), 2009. Monitoring data of 9 sampling stations are given below –

## Meteorological Data –

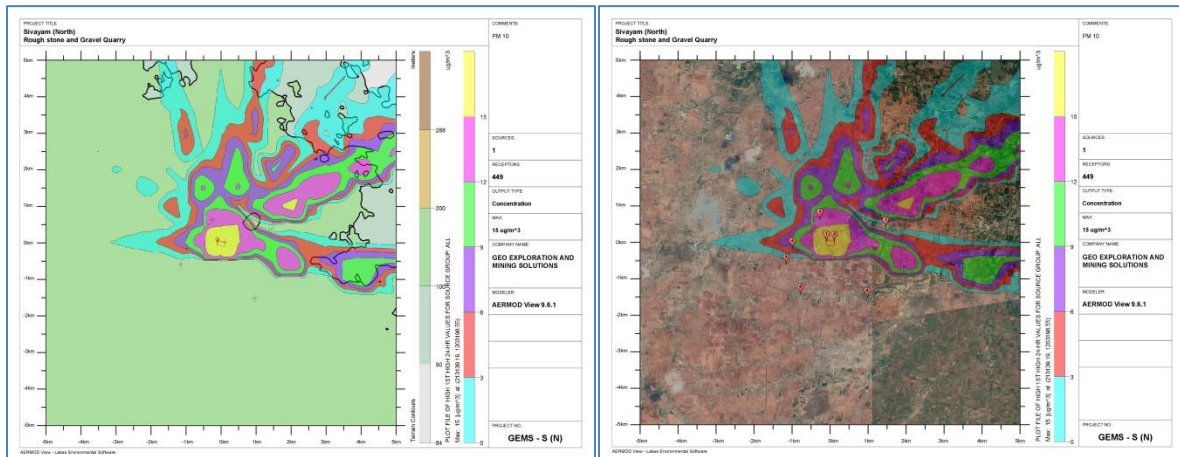
Meteorology is the key to understand the air quality. The essential relationship between meteorological condition and atmospheric dispersion involves the wind in the broadest sense. Wind fluctuations over a very wide range of time, accomplish dispersion and strongly influence other processes associated with them.

A temporary meteorological station was installed at project site and monitored continually for study period without break. The station was installed at a height of 4 m above the ground level in such a way that there are no obstructions facilitating flow of wind, wind speed, wind direction, humidity and temperature are recorded on hourly basis. A weather data was collected from IMD, Karur agro for the month of March 2021 – May 2021 to correlate with site data and found not much of change in the parameters.

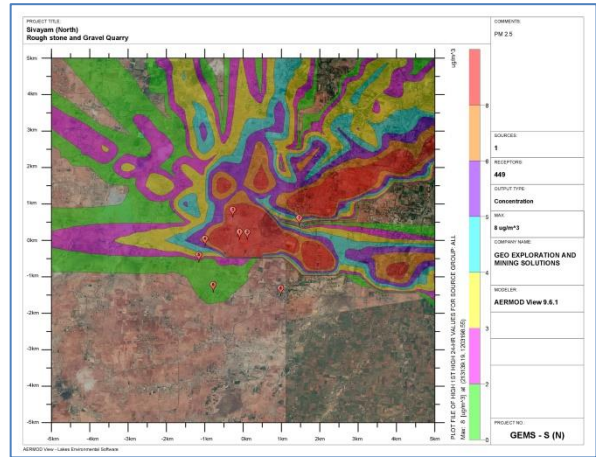
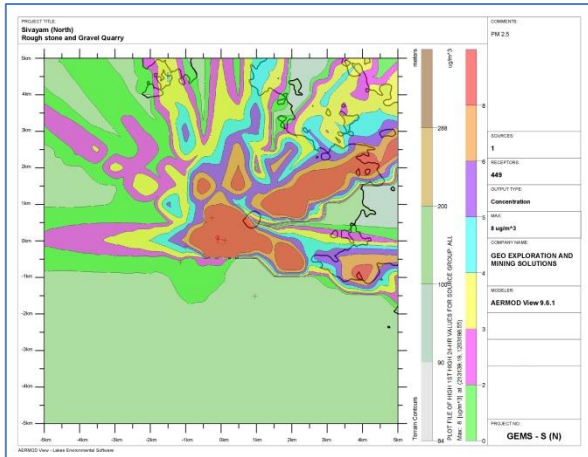
**FIGURE 4.1: AERMOD TERRAIN MAP**



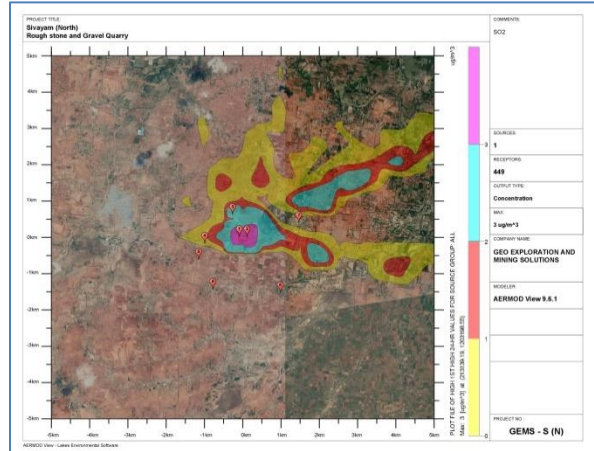
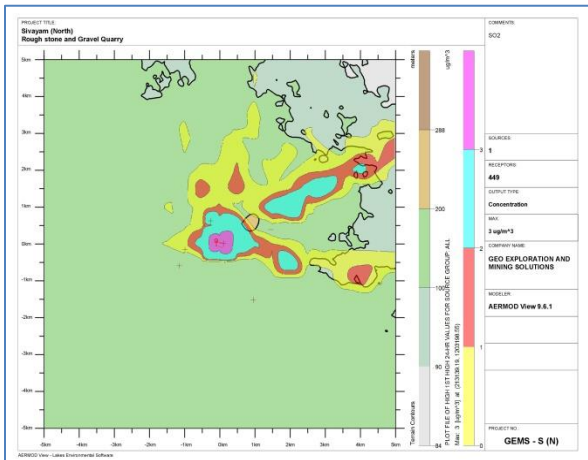
**FIGURE 4.2: PREDICTED INCREMENTAL CONCENTRATION OF PM<sub>10</sub>**



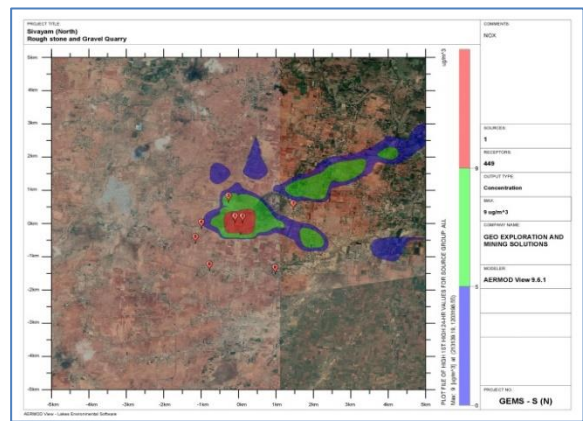
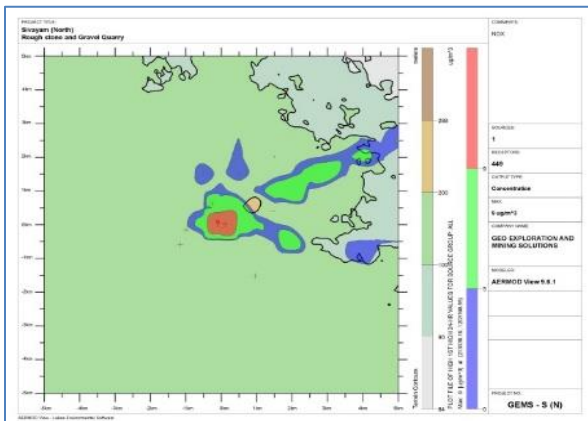
**FIGURE 4.2: PREDICTED INCREMENTAL CONCENTRATION OF PM<sub>2.5</sub>**



**FIGURE 4.3: PREDICTED INCREMENTAL CONCENTRATION OF SO<sub>2</sub>**



**FIGURE 4.4: PREDICTED INCREMENTAL CONCENTRATION OF NO<sub>x</sub>**



### 4.3.2.1 Model Results

The post project Resultant Concentrations of PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>& NO<sub>x</sub> (GLC) is given in Table below:

**TABLE 4.3: INCREMENTAL & RESULTANT GLC OF PM<sub>10</sub>**

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline PM <sub>10</sub> (µg/m <sup>3</sup> )	Incremental value of PM <sub>10</sub> due to mining (µg/m <sup>3</sup> )	Total PM <sub>10</sub> (µg/m <sup>3</sup> ) (5+6)
AAQ1	10°52'23.66"N 8°22'27.41"E	-92	20	47	15.90	62.9
AAQ2	10°52'23.51"N 8°22'33.95"E	109	16	45	15.02	60.02
AAQ3	10°52'43.36"N 8°22'21.60"E	-272	629	44	13.95	57.95
AAQ4	10°52'17.63"N 8°21'57.95"E	-991	-169	43	8.50	51.50
AAQ5	10°52'3.34"N 78°21'52.73"E	-1153	-610	40	0	40
AAQ6	10°51'36.80"N 8°22'04.92"E	-780	-1432	41	0	41
AAQ7	10°52'36.04"N 8°23'18.11"E	1464	405	41	0	41
AAQ8	10°51'33.69"N 8°23'02.38"E	981	-1526	41	0	41

**TABLE 4.4: INCREMENTAL & RESULTANT GLC OF PM<sub>2.5</sub>**

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline PM <sub>2.5</sub> (µg/m <sup>3</sup> )	Incremental value of PM <sub>2.5</sub> due to mining (µg/m <sup>3</sup> )	Total PM <sub>2.5</sub> (µg/m <sup>3</sup> ) (5+6)
AAQ1	10°52'23.66"N 8°22'27.41"E	-92	20	22.95	8.92	31.87
AAQ2	10°52'23.51"N 8°22'33.95"E	109	16	21.64	8.50	30.14
AAQ3	10°52'43.36"N 8°22'21.60"E	-272	629	22.18	8.00	30.18
AAQ4	10°52'17.63"N 8°21'57.95"E	-991	-169	18.5	5.65	24.15
AAQ5	10°52'3.34"N 78°21'52.73"E	-1153	-610	22.5	1.93	24.43
AAQ6	10°51'36.80"N 8°22'04.92"E	-780	-1432	22.4	1.12	23.52
AAQ7	10°52'36.04"N 8°23'18.11"E	1464	405	22.3	0.89	23.19
AAQ8	10°51'33.69"N 8°23'02.38"E	981	-1526	22.8	0	22.8

**TABLE 4.5: INCREMENTAL & RESULTANT GLC OF SO<sub>2</sub>**

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline So <sub>2</sub> (µg/m <sup>3</sup> )	Incremental value of So <sub>2</sub> due to mining (µg/m <sup>3</sup> )	Total So <sub>2</sub> (µg/m <sup>3</sup> ) (5+6)
AAQ1	10°52'23.66"N 8°22'27.41"E	-92	20	6.89	3.89	10.78
AAQ2	10°52'23.51"N 8°22'33.95"E	109	16	6.94	3.00	9.94
AAQ3	10°52'43.36"N 8°22'21.60"E	-272	629	6.61	2.45	9.06
AAQ4	10°52'17.63"N 8°21'57.95"E	-991	-169	6.98	0.69	7.67
AAQ5	10°52'3.34"N 78°21'52.73"E	-1153	-610	6.52	0	6.52
AAQ6	10°51'36.80"N 8°22'04.92"E	-780	-1432	6.84	0	6.84
AAQ7	10°52'36.04"N 8°23'18.11"E	1464	405	6.75	0	6.75
AAQ8	10°51'33.69"N 8°23'02.38"E	981	-1526	6.60	0	6.60

**TABLE 4.6: INCREMENTAL & RESULTANT GLC OF NO<sub>x</sub>**

Station Code	Location	X Coordinate (m)	Y Coordinate (m)	Average Baseline No <sub>x</sub> (µg/m <sup>3</sup> )	Incremental value of No <sub>x</sub> due to mining (µg/m <sup>3</sup> )	Total No <sub>x</sub> (µg/m <sup>3</sup> ) (5+6)
AAQ1	10°52'23.66"N 8°22'27.41"E	-52	128	24.62	9.65	34.27

AAQ2	10°52'23.51"N 8°22'33.95"E	449	72	24.10	9.12	33.22
AAQ3	10°52'43.36"N 8°22'21.60"E	4519	565	21.62	7.87	29.49
AAQ4	10°52'17.63"N 8°21'57.95"E	5142	3220	20.41	0	20.41
AAQ5	10°52'3.34"N 78°21'52.73"E	-4323	2721	23.57	0	23.57
AAQ6	10°51'36.80"N 8°22'04.92"E	3411	-3702	22.80	0	22.80
AAQ7	10°52'36.04"N 8°23'18.11"E	-2230	-3026	23.23	0	23.23
AAQ8	10°51'33.69"N 8°23'02.38"E	-4482	-1039	23.13	0	23.13

From the resultant of cumulative concentration i.e., Background + Incremental Concentration of pollutant in all the receptor locations without effective mitigation measures are still within the prescribed NAAQ limits of 100, 80 & 80 µg/m<sup>3</sup> for PM<sub>10</sub>, SO<sub>2</sub> & NO<sub>x</sub> respectively. By adopting suitable mitigation measures, the pollutant levels in the atmosphere can be further being controlled.

#### 4.3.4. Mitigation Measure

**Drilling** – To control dust at source, wet drilling will be practiced. Where there is a scarcity of water, suitably designed dust extractor will be provided for dry drilling along with dust hood at the mouth of the drill-hole collar.

In this system dust gets suppressed close to its formation. Dust suppression become very effective and the work environment will be improved from the point of occupational comfort and health.

#### Advantages of Wet Drilling: -

- Due to dust free atmosphere, the life of engine, compressor etc., will be increased.
- The life of drill bit will be increased.
- The rate of penetration of drill will be increased.
- Due to the dust free atmosphere visibility will be improved resulting in safer working conditions.

#### Blasting –

- Establish time of blasting to suit the local conditions and water sprinkling on blasting face
- Avoid blasting i.e., when temperature inversion is likely to occur and strong wind blows towards residential areas
- Controlled blasting includes Adoption of suitable explosive charge and short delay detonators, adequate stemming of holes at collar zone and restricting blasting to a particular time of the day i.e. at the time lunch hours, controlled charge per hole as well as charge per round of hole
- Before loading of material water will be sprayed on blasted material
- Dust mask will be provided to the workers and their use will be strictly monitored

#### Haul Road & Transportation –

- Water will be sprinkled on haul roads twice a day to avoid dust generation during transportation
- Transportation of material will be carried out during day time and material will be covered with tarpaulin
- The speed of tippers plying on the haul road will be limited below 20 km/hr to avoid generation of dust.
- Water sprinkling on haul roads & loading points will be carried out twice a day
- Main source of gaseous pollution will be from vehicle used for transportation of mineral; therefore, weekly maintenance of machines improves combustion process & makes reduction in the pollution.
- The un-metalled haul roads will be compacted weekly before being put into use.
- Over loading of tippers will be avoided to prevent spillage.
- It will be ensured that all transportation vehicles carry a valid PUC certificate
- Grading of haul roads and service roads to clear accumulation of loose materials

#### Green Belt –

- Planting of trees all along main mine haul roads and regular grading of haul roads will be practiced to prevent the generation of dust due to movement of dumpers/trucks
- Green belt of adequate width will be developed around the project areas

**Occupational Health –**

- Dust mask will be provided to the workers and their use will be strictly monitored
- Annual medical checkups, trainings and campaigns will be arranged to ensure awareness about importance of wearing dust masks among all mine workers & tipper drivers
- Ambient Air Quality Monitoring will be conducted six months once to assess effectiveness of mitigation measures proposed

**Climatic Changes:**

- In general, the main findings regarding the potential impacts of climate change are Land Use Type, Energy Use, Water use & Dust emission and Biodiversity & rehabilitation.
- Whereas, this proposed mining activity is restricted to a small scale mining the proposals falls in a cluster situation where the surrounding environment is already subjected to mining activities and based on the past weather data its inferred that there is no much of change in the climate data of the region and the district profile has no records or past history of climate change leading to Droughts and floods.
- The project area's proposed with land use type of patta land for mining with 5 m height bench with 5 m width bench and Pollution Under Control Certified Machineries is proposed for wining of mineral by opencast mechanized mining method and water consumption are proposed with water tankers from nearby areas and the mine pit itself shall act as a rain water harvesting structure and formation of garland drains along the mine lease boundary to divert the surface runoff and collecting the runoff water for greenbelt development and dust suppression activities shall prove beneficial.
- The greenbelt development plan, all along the mine lease boundary @ 1700 Nos of trees, along with the budget allocation for the proposed mitigation measures shall prove beneficial to surrounding environment.
- Therefore, the implementation of proposed mitigation measures for winning of mineral may not have much of impact on the surrounding Climate Change leading Droughts and Floods etc.,

**4.4 Noise Environment (Impact & Mitigation Measures)**

Noise pollution is mainly due to operation like drilling & blasting and plying of trucks & HEMM. These activities will not cause any problem to the inhabitants of this area because there is no human settlement in close proximity to the project area. Noise modelling has been carried out considering blasting and compressor operation (Drilling) and transportation activities.

Predictions have been carried out to compute the noise level at various distances around the working pit due to these major noise-generating sources. Noise modelling has been carried out to assess the impact on surrounding ambient noise levels. Basic phenomenon of the model is the geometric attenuation of sound. Noise at a point generates spherical waves, which are propagated outwards from the source through the air at a speed of 1,100 ft/sec, with the first wave making an ever-increasing sphere with time. As the wave spreads the intensity of noise diminishes as the fixed amount of energy is spread over an increasing surface area of the sphere. The assumption of the model is based on point source relationship i.e., for every doubling of the distance the noise levels are decreased by 6 dB (A).

For hemispherical sound wave propagation through homogeneous loss free medium, one can estimate noise levels at various locations at different sources using model based on first principle.

$$Lp_2 = Lp_1 - 20 \log (r_2/r_1) - Ae_{1,2}$$

Where:

$Lp_1$  &  $Lp_2$  are sound levels at points located at distances  $r_1$  &  $r_2$  from the source.

$Ae_{1,2}$  is the excess attenuation due to environmental conditions. Combined effect of all sources can be determined at various locations by logarithmic addition.

$$Lp_{total} = 10 \log \{10^{(Lp_1/10)} + 10^{(Lp_2/10)} + 10^{(Lp_3/10)} + \dots\}$$

**4.4.1 Anticipated Impact**

Attenuation due to Green Belt has been taken to be 4.9 dB (A). The inputs required for the model are:

- Source data
- Receptor data
- Attenuation factor

Source data has been computed taking into account of all the machinery and activities used in the mining process. Same has been listed in Table 4-8.

**TABLE 4.7: ACTIVITY AND NOISE LEVEL PRODUCED BY MACHINERY**

Sl.No.	Machinery / Activity	Impact on Environment?	Noise Produced in dB(A) at 50 ft from source*
1	Blasting	Yes	94
2	Jack Hammer	Yes	88
3	Compressor	No	81
4	Excavator	No	85
5	Tipper	No	84
Total Noise Produced			95.8

\*50 feet from source = 15.24 meters

Source: U.S. Department of Transportation (Federal Highway Administration) – Construction Noise Handbook

The total noise to be produced by mining activity is calculated to be 95.8 dB (A). Generally, most mining operations produce noise between 100-109 dB (A). We have considered equipment and operation noise levels (max) to be approx. 109 dB (A) for noise prediction modelling.

**TABLE 4.8: PREDICTED NOISE INCREMENTAL VALUES**

Location ID	N1	N2	N3	N4	N5	N6	N7	N8
Maximum Monitored Value (Day) dB(A)	54.7	55.1	54.8	54.3	53.7	43.1	55.0	47.2
Incremental Value dB(A)	66.1	64.5	63.2	62.0	50.6	66.1	64.5	63.2
Total Predicted Noise level dB(A)	66.4	65.0	63.8	62.7	55.4	66.1	65.0	63.3
NAAQ Standards	<b>Industrial</b>		<b>Day Time- 75 dB (A)</b>			<b>Night Time- 70 dB (A)</b>		
	<b>Residential</b>		<b>Day Time- 55 dB (A)</b>			<b>Night Time- 45 dB (A)</b>		

The incremental noise level is found within the range of 62.0 – 66.1 dB (A) in Core Zone and 50.6- 66.1 dB (A) in Buffer zone. The noise level at different receptors in buffer zone is lower due to the distance involved and other topographical features adding to the noise attenuation. The resultant Noise level due to monitored values and calculated values at the receptors are based on the mathematical formula considering attenuation due to Green Belt as 4.9 dB (A) the barrier effect. From the above table, it can be seen that the ambient noise levels at all the locations are within permissible limits of Industrial area (core zone) & Residential area (buffer zone) as per THE NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 (The Principal Rules were published in the Gazette of India, vide S.O. 123(E), dated 14.2.2000 and subsequently amended vide S.O. 1046(E), dated 22.11.2000, S.O. 1088(E), dated 11.10.2002, S.O. 1569 (E), dated 19.09.2006 and S.O. 50 (E) dated 11.01.2010 under the Environment (Protection) Act, 1986.).

#### 4.4.2 Mitigation Measures

The following noise mitigation measures are proposed for control of Noise.

- Time intervals for each quarries during blasting.
- Use of personal protective devices i.e., earmuffs and earplugs by workers, who are working in high noise generating areas.
- Limiting time exposure of workers to excessive noise.
- Proper and regular maintenance of vehicles, machinery and other equipment's.
- The noise generated by the machinery will be reduced by proper lubrication of the machinery and other equipment's.
- Speed of trucks entering or leaving the quarry will be limited to moderate speed to prevent undue noise from empty vehicles.
- Noise levels will be controlled by using optimum explosive charge, proper delay detonators and proper stemming to prevent blow out of holes (occasionally).
- Providing proper noise proof enclosure for the workers separated from the noise source and noise prone equipment.

- Provision of Quiet areas, where employees can get relief from workplace noise.
- The development of green belts around the periphery of the quarry site to attenuate noise.
- Regular medical check-up and proper training to personnel to create awareness about adverse noise level effects.

### 4.4.3 Ground Vibrations

Ground vibrations due to the proposed mining activities are anticipated due to operation of Mining Machines like Excavators, drilling and blasting, transportation vehicles, etc., However, the major source of ground vibration from the quarry is blasting. The major impact of the ground vibrations is observed on the domestic houses located in the villages nearby the mine lease area. The kuchha houses are more prone to cracks and damage due to the vibrations induced by blasting whereas RCC framed structures can withstand more ground vibrations. Apart from this, the ground vibrations may develop a fear factor in the nearby settlements.

Another impact due to blasting activities is fly rocks. These may fall on the houses or agricultural fields nearby the mining lease area and may cause injury to persons or damage to the structures. Nearest habitation from the project area is located 1km Southeast in Karacheri village. The ground vibrations due to the blasting in proposed mine are calculated using the empirical equation.

The empirical equation for assessment of peak particle velocity (PPV) is:

$$V = K [R/Q^{0.5}]^{-B}$$

Where –

V = peak particle velocity (mm/s)

K = site and rock factor constant

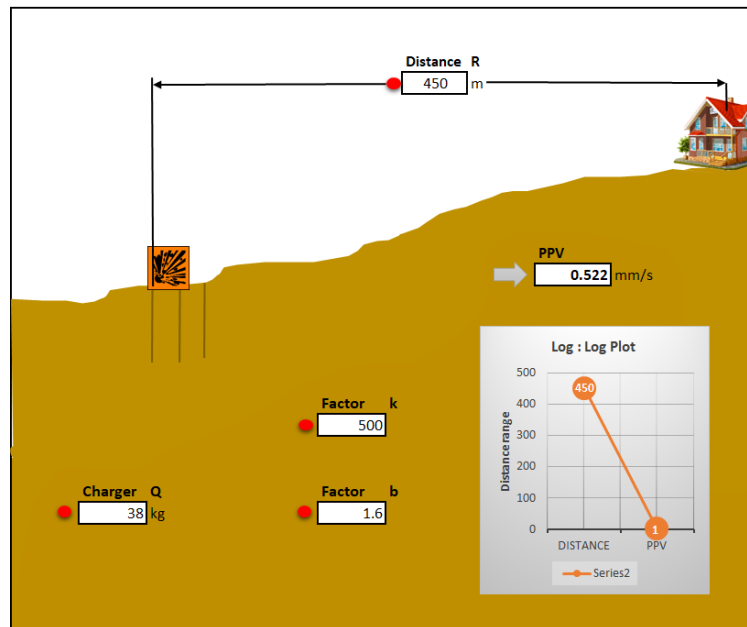
Q = maximum instantaneous charge (kg)

B = constant related to the rock and site (usually 1.6)

R = distance from charge (m)

**TABLE 4.9: PREDICTED PPV VALUES DUE TO BLASTING**

Maximum Charge in kgs	Nearest Habitation in m	PPV in m/ms
38	450	0.522



From the above graph, the Maximum charge per blast of 38Kg is well below the Peak Particle Velocity of 8 mm/s as per Directorate General of Mines Safety for safe level criteria through Circular No. 7 dated 29/8/1997. It is proposed to carry out blasting not exceeding 2kg of Explosives per one blasting round. However, as per statutory

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requirement control measures will be adopted to avoid the impacts due to ground vibrations and fly rocks due to blasting.

#### 4.4.3.1 Mitigation Measures for Proposed Project

- The blasting operations in the cluster quarries are carried out without deep hole drilling and blasting using delay detonators, which reduces the ground vibrations;
- Proper quantity of explosive, suitable stemming materials and appropriate delay system will be adopted to avoid overcharging and for safe blasting;
- Adequate safe distance from blasting will be maintained as per DGMS guidelines;
- Blasting shelter will be provided as per DGMS guidelines;
- Blasting operations will be carried out only during day time;
- The charge per delay will be minimized and preferably more number of delays will be used per blasts;
- During blasting, other activities in the immediate vicinity will be temporarily stopped;
- Drilling parameters like depth, diameter and spacing will be properly designed to give proper blast;
- A fully trained explosives blast man (Mining Mate, Mines Foreman, 2<sup>nd</sup> Class Mines Manager/ 1<sup>st</sup> Class Mines Manager) will be appointed.
- A set of shot firing rules will be drawn up and blasting shall commence outlining the detailed operating procedures that will be followed to ensure that shot firing operations on site take place without endangering the workforce or public.
- Sufficient angular stemming material will be used to confine the explosive force and minimise environmental disturbance caused by venting / misfire.
- The detonators will be connected in a predetermined sequence to ensure that only one charge is detonated at any one time and a NONEL or similar type initiation system will be used.
- The detonation delay sequence shall be designed so as to ensure that firing of the holes is in the direction of free faces so as to minimise vibration effects.
- Appropriate blasting techniques shall be adopted such that the predicted peak particle velocity shall not exceed 8 Hz.
- Vibration monitoring will be carried out every 6 months to check the efficacy of blasting practices

## 4.5 Ecology and Biodiversity

### 4.5.1 Impact on Ecology and Biodiversity

There are no migratory corridors, migratory Avian-Fauna, Rare endemic, endangered species and wild animals in the area. No breeding and nesting site were identified in project site. No National Park and Wildlife Sanctuary found within 10km radius.

The cluster quarry area is dry barren land and devoid of plantation, the area is surround by seasonal agriculture lands, Existing Rough stone quarries and crushers hence no requirement for the uprooting of trees due to this quarry project.

Barbed wire fencing will be constructed around the project area to prevent the entry of cattles. In the post mining stage, fencing is proposed constructed all around the mined-out void to prevent fall of animals in the mine pits. No medicinal plant identified in core and buffer area.

The fauna in the vicinity of the project site is restricted to few common small species. There will be no impact on fauna due to this quarry project. Even though there are no impact on bio diversity and flora/fauna status due to project operations, positive impacts will arise due to well-planned reclamation measures for restoration of land status in the area ultimately to productive land category with elaborately planned green belt development activities and along with creation of water resources in the working pits.

### 4.5.2 Mitigation Measures for Proposed Project

Keeping all this in mind the mitigations have been suggested under environmental management plan. With the understanding of the role of plant species as bio-filter to control air pollution, appropriate plant species (mainly tree species)

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have been suggested conceding the area/site requirements and needed performance of specific species. The details of year wise proposed plantation program are given in Table 4.13.

The main objective of the green belt is to provide a barrier between the source of pollution and the surrounding areas. In order to compensate the loss of vegetation cover, it is suggested to carry out afforestation program mainly in proposed areas falls in the cluster earmarked for plantation program as per Approved Mining Plan in different phases. This habitat improvement program would ensure the faunal species to re-colonize and improve the abundance status in the core zone.

The objectives of the green belt cover will cover the following:

- Noise abatement
- Ecological restoration
- Aesthetic, biological and visual improvement of area due to improved vegetative and plantations cover.

#### 4.5.2.2.1. Species Recommendation for Plantation granted in the district

Following points have been considered while recommending the species for plantation:

- Natural growth of existing species and survival rate of various species.
- Suitability of a particular plant species for a particular type of area.
- Creating of biodiversity.
- Fast growing, thick canopy copy, perennial and evergreen large leaf area.
- Efficient in absorbing pollutants without major effects of natural growth.
- The following species may be considering primary for plantation best suited for the prevailing climate condition in the area.

**TABLE 4.10: RECOMMENDED TREES FOR GREENBELT DEVELOPMENT PLAN**

Sl.No	Name of the plant (Botanical)	Family Name	Common Name	Habit
1	<i>Aegle marmelos</i>	Rutaceae	Neem, Vembu	Tree
2	<i>Buchananiaaillaris</i>	Annonaceae	Kattumaram	Tree
3	<i>Borassus Flabellifer</i>	Arecaceae	Palmyra Palm	Tree
4	<i>Cassi roxburghii</i>	Fabaceae	Sengondrai	Tree
5	<i>Terminalia bellerica</i>	Combretaceae	Thandri	Tree
6	<i>Syzygium cumini</i>	Myrtaceae	Naval	Tree

The 7.5m Safety distance along the boundary has been identified to be utilized for subsequent Afforestation. However, the afforestation should always be carried out in a systematic and scientific manner. Regional trees like Neem, Pongamia, Pinnata will be planted along the Lease boundary. The rate of survival expected to be 85% in this area. Greenbelt development Plan is given in Table No.4.13 and budget of green belt development plan are given in Table No.4.14.

**TABLE 4.11: GREENBELT DEVELOPMENT PLAN**

Year	No. of trees proposed to be planted	Survial %	Area to be planted	Name of the species
I	It is proposed to plant <b>1700 Nos</b> of trees in the 1 <sup>st</sup> year	85%	Safety barrier, Un utilized areas and nearby village roads	Neem, Pungam, Sengondrai, Panai, Naval

**TABLE 4.12: BUDGET FOR GREEBELT DEVELOPMENT PLAN**

Activity	Year & No of Trees	Cost	Total Cost
Greenbelt development within the project area and nearby village roads	1 <sup>st</sup> year <b>1700</b> Nos of trees	Site clearance, preparation of land, digging of pits / trenches, soil amendments, transplantation of saplings @ 200 per plant and maintenance	Rs 3,40,000/-
<b>Total no. of Trees</b>	<b>1700 Trees</b>	<b>Total Budget</b>	<b>Rs 2,98,000/-</b>

After complete extraction of mineral, the excavated pits will be allowed to collect rainwater and seepage water to serve as a reservoir to charge the nearby wells. Fish culture will also be attempted. A bund will be constructed around the pits. In order to minimize the impact of mining on the vegetation outside the mine lease area, it is recommended that adequate protection measures must be implemented. As mining involves movement of vehicles and increased anthropogenic activities, some of the areas can be fenced by involving local people and educating them about increased benefits of such activities.

#### 4.5.3. Anticipated Impact on Fauna

- There is no Wildlife Sanctuary and Biosphere Reserve within 10 km radius of the project site.
- No rare, endemic & endangered species are reported in the buffer zone. However, during the course of mining, the management will practice scientific method of mining with proper Environmental Management Plan including pollution control measures especially for air and noise, to avoid any adverse impact on the surrounding wildlife.
- Fencing around all the proposed mine lease areas will be constructed to restrict the entry of stray animals
- Green belt development will be carried out which will help in minimizing adverse impact on the flora found in the area.

##### 4.5.3.1. Measures for protection and conservation of wildlife species

- Undertaking mitigative measures for conducive environment to the flora and fauna in consultation with Forest Department.
- Dust suppression system will be installed within mine and periphery of mine for proposed project
- Plantation around mine area will help in creating habitats for small faunal species and to create better environment for various fauna. Creating and developing awareness for nature and wildlife in the adjoining villages.

##### 4.5.3.2. Mitigation Measures

- All the preventive measures will be taken for growth & development of fauna.
- Creating and development awareness for nature and wildlife in the adjoin villages.
- The workers shall be trained to not harm any wildlife, should it come near the project site. No work shall be carried out after 6.00 pm.

#### 4.5.4. Impact on Aquatic Biodiversity

Mining activities will not disturb the existing aquatic ecology as there is no effluent discharge proposed from the Rough stone quarry. There is no natural perennial surface water body within the mine lease area. Hence, aquatic biodiversity is not observed in the mine lease area.

#### 4.5.5. Impact Assessment on Biological Environment

A detail of impact and assessments was mentioned in Table No 4.15.

**TABLE 4.13: ECOLOGICAL IMPACT ASSESSMENTS**

SI.No	Attributes	Assessment
1	Proximity to national park/wildlife sanctuary/reserve forest /mangroves/coastline/estuary/sea	NO Reserve Forest within 10 km Radius.
2	Proposed mining project impact surface water quality that also provide water to wildlife	'NO' 'scheduled or threatened wildlife animal sighted regularly core in core area.
3	Located near an area populated by rare or endangered species	NO endangered, critically endangered, vulnerable species sighted in core mining lease area.
4	Proposed project restricts access to waterholes for wildlife	'NO'
5	Project likely to affect migration routes	'NO' 'migration route observed during monitoring period.
6	Proposed mining project increase siltation that would affect nearby biodiversity area.	Surface runoff management such as garland drains is proposed to be constructed, so there will be no siltation nearby mining area.
7	Risk of fall/slip or cause death to wild animals due to project activities	'NO'
8	Activities of the project affects the breeding/nesting sites of birds and animals	No breeding and nesting site was identified in mining lease site. The fauna sighted mostly migrated from buffer area.
9	Mining project effect the forest-based livelihood/ any specific forest product on which local livelihood depended	'NO'
10	The project release effluents into a water body that also supplies water to a wildlife	No water body near to core zone so chances of water become polluted is low.
11	The project likely to affect wetlands, Fish breeding grounds, marine ecology	'NO'. Wetland was not present in near core Mining lease area. No breeding and nesting ground present in core mining area.
12	Project likely to affect flora of an area, which have medicinal value	'NO'
13	Forestland is to be diverted, has carbon high sequestration	'NO' There was no forest land diverted.

**TABLE 4.14: ANTICIPATED IMPACT OF ECOLOGY AND BIODIVERSITY**

Sl. No	Aspect Description	Likely Impacts on Ecology and Biodiversity (EB)	Impact Consequence - Probability Description / Justification	Significance	Mitigation Measures
<b>Pre-Mining Phase</b>					
1	Uprooting of vegetation of lease area	Site specific loss of common floral diversity (Direct impact)	Site possesses common floral (not trees) species. Clearance of these species will not result in loss of flora	Less severe	No immediate action required. However, Greenbelt /plantation will be developed in project site and in periphery of the project boundary, which will improve flora and fauna diversity of the project area.
		Site specific loss of associated faunal diversity (Partial impact)	Site supports only common species, which use wide variety of habitats of the buffer zone reserve forest area. So, there is no threat of faunal diversity.		
		-Loss of Habitat (Direct impact)	Site does not form Unique / critical habitat structure for unique flora or fauna.		
<b>Mining phase</b>					
2	Excavation of mineral using machine and labours, Transportation activities will generate noise.	Site-specific disturbance to normal faunal movements at the site due to noise. (Partial impact)	Site does not form unique / critical habitat structure for unique flora or fauna.	Less severe	Mining activity should not be operated after 5PM.  Excavation of dump and transportation work should stop before 7PM.
3	Vehicular Movement for transportation of materials will result in generation of dust (SPM) due to haul roads and emission of SO <sub>2</sub> ,NO <sub>2</sub> ,CO etc.	Impact on surrounding agriculture and associated fauna due to deposition of dust and Emission of CO. (Indirect impact)	Impact is less as the agricultural land far from core area.	Less severe	All vehicles will be certified for appropriate Emission levels.  More plantation has been suggested  Upgrade the vehicles with alternative fuel such as biodiesel, methanol and biofuel around the mining area.

## 4.6 Socio Economic

### 4.6.1 Anticipated Impact from Proposed Project

- Dust generation from mining activity can have negative impact on the health of the workers and people in the nearby area.
- Approach roads can be damaged by the movement of tippers
- Increase in Employment opportunities both direct and indirect thereby increasing economic status of people of the region
- Due to the increase in the number of vehicles, traffic jams may occur
- Due to the vehicles passing through the villages, there is a disturbance to the people

### 4.6.2 Mitigation Measures for Proposed Project

- Good maintenance practices will be adopted for all machinery and equipment, which will help to avert potential noise problems.
- Green belt will be developed in and around the project site as per Central Pollution Control Board (CPCB) guidelines.
- Air pollution control measure will be taken to minimize the environmental impact within the core zone.
- For the safety of workers, personal protective appliances like hand gloves, helmets, safety shoes, goggles, aprons, nose masks and ear protecting devices will be provided as per mines act and rules.
- Benefit to the State and the Central governments through financial revenues by way of royalty, tax, duties, etc., from this project directly and indirectly.
- From above details, the quarry operations will have highly beneficial positive impact in the area
- No villages in the proposed mineral transportation route
- Mineral loaded Vehicles will not allowed during school hours (Morning 8AM to 10AM & Evening 4.30PM to 5.30PM)

## 4.7 Occupational Health and Safety

Occupational health and safety hazards occur during the operational phase of mining and primarily include the following:

- Respiratory hazards
- Noise
- Physical hazards
- Explosive storage and handling

### 4.7.1 Respiratory Hazards

Long-term exposure to silica dust may cause silicosis the following measures are proposed:

- Cabins of excavators and tippers will be enclosed with AC and sound proof
- Use of personal dust masks will be made compulsory

### 4.7.2 Noise

Workers are likely to get exposed to excessive noise levels during mining activities. The following measures are proposed for implementation

- No employee will be exposed to a noise level greater than 85 dB(A) for a duration of more than 8 hours per day without hearing protection
- The use of hearing protection will be enforced actively when the equivalent sound level over 8 hours reaches 85 dB(A), the peak sound levels reach 140 dB(C), or the average maximum sound level reaches 110 dB(A)
- Ear muffs provided will be capable of reducing sound levels at the ear to at least 85 dB(A)
- Periodic medical hearing checks will be performed on workers exposed to high noise levels.

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### 4.7.3 Physical Hazards

The following measures are proposed for control of physical hazards

- Specific personnel training on work-site safety management will be taken up;
- Work site assessment will be done by rock scaling of each surface exposed to workers to prevent accidental rock falling and / or landslide, especially after blasting activities;
- Natural barriers, temporary railing, or specific danger signals will be provided along rock benches or other pit areas where work is performed at heights more than 2m from ground level;
- Maintenance of yards, roads and footpaths, providing sufficient water drainage and preventing slippery surfaces with an all-weather surface, such as coarse gravel will be taken up

### 4.7.4 Occupational Health Survey

All the persons will undergo pre-employment and periodic medical examination. Employees will be monitored for occupational diseases by conducting the following tests

- General physical tests
- Audiometric tests
- Full chest, X-ray, Lung function tests, Spirometric tests
- Periodic medical examination – yearly
- Lung function test – yearly, those who are exposed to dust
- Eye test

Essential medicines will be provided at the site. The medicines and other test facilities will be provided at free of cost. The first aid box will be made available at the mine for immediate treatment.

First aid training will be imparted to the selected employees regularly. The lists of first aid trained members shall be displayed at strategic places.

## 4.8 Mine Waste Management

No waste is anticipated from any of the proposed quarries.

## 4.9 Mine Closure

Mine closure plan is the most important environmental requirement in mining project. The mine closure plan should cover technical, environmental, social, legal and financial aspects dealing with progressive and post closure activities. The closure operation is a continuous series of activities starting from the decommissioning of the project. Therefore, progressive mine closure plan should be specifically dealt with in the mining plan and is to be reviewed along with mining plan. As progressive mine closure is a continuous series of activities, it is obvious that the proposals of scientific mining have included most of the activities to be included in the closure plan. While formulating the closure objectives for the site, it is important to consider the existing or the pre-mining land use of the site; and how the operation will affect this activity.

The primary aim is to ensure that the following broad objectives along with the abandonment of the mine can be successfully achieved:

- To create a productive and sustainable after-use for the site, acceptable to mine owners and the public
- To protect public health and safety of the surrounding habitation
- To minimize environmental damage
- To conserve valuable attributes and aesthetics
- To overcome adverse socio-economic impacts.

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#### 4.9.1 Mine Closure Criteria

The criteria involved in mine closure are discussed below:

##### 4.9.1.1 Physical Stability

All anthropogenic structures, which include mine workings, buildings, rest shelters etc., remaining after mine decommissioning should be physically stable. They should present no hazard to public health and safety as a result of failure or physical deterioration and they should continue to perform the functions for which they were designed. The design periods and factors of safety proposed should take full account of extreme events such as floods, hurricane, winds or earthquakes, etc. and other natural perpetual forces like erosion, etc.,

##### 4.9.1.2 Chemical Stability

The solid wastes on the mine site should be chemically stable. This means that the consequences of chemical changes or conditions leading to leaching of metals, salts or organic compounds should not endanger public health and safety nor result in the deterioration of environmental attributes. If the pollutant discharge likely to cause adverse impacts is predicted in advance, appropriate mitigation measures like settling of suspended solids or passive treatment to improve water quality as well as quantity, etc., could be planned. Monitoring should demonstrate that there is no adverse effect of pollutant concentrations exceeding the statutory limits for the water, soil and air qualities in the area around the closed mine.

##### 4.9.1.3 Biological Stability

The stability of the surrounding environment is primarily dependent upon the physical and chemical characteristics of the site, whereas the biological stability of the mine site itself is closely related to rehabilitation and final land use. Nevertheless, biological stability can significantly influence physical or chemical stability by stabilizing soil cover, prevention of erosion/wash off, leaching, etc.,

A vegetation cover over the disturbed site is usually one of the main objectives of the rehabilitation programme, as vegetation cover is the best long-term method of stabilizing the site. When the major earthwork components of the rehabilitation programme have been completed, the process of establishing a stable vegetation community begins. For re-vegetation, management of soil nutrient levels is an important consideration. Additions of nutrients are useful under three situations.

- Where the nutrient level of spread topsoil is lower than material in-situ e.g. for development of social forestry
- Where it is intended to grow plants with a higher nutrient requirement than those occurring naturally e.g. planning for agriculture
- Where it is desirable to get a quick growth response from the native flora during those times when moisture is not a limiting factor e.g. development of green barriers

The Mine closure plan should be as per the approved mining plan. The mine closure is a part of approved mine plan and activities of closure shall be carried out as per the process described in mine closure plan.

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## CHAPTER – 5: ANALYSIS OF ALTERNATIVES (TECHNOLOGY AND SITE)

### 5.0 Introduction:

Consideration of alternatives to a project proposal is a requirement of EIA process. This quarry is site specific. The site has been selected based on geological investigation and exploration and from the Existing quarry pits around the project site. Drilling, Blasting, Excavation, Loading & Transportation will be carried out in this quarrying operation.

- This area denotes the indicative of flow pattern of the rock mass in N80°W to S80°E with Vertical dipping.
- Transportation facility for materials & manpower.
- Overall impact on environment and mitigation feasibility.
- Socio – economic background.

Enough infrastructure exists and lesser resources are required to be deployed. Since, any major construction for infrastructure is not required and hence does not affect the environment considerably.

### 5.1 Factors behind the Selection of Project Site

Rough Stone and Gravel Quarry Project at Sivayam (North) Villages are a site specific. The proposed mining lease area has following advantages: -

- The mineral deposit occurs in a non-forest area.
- There is no habitation within the project area; hence no R & R issues exist.
- There is no river, stream, nallah and water bodies within the project areas.
- Availability of skilled, semi-skilled and unskilled workers in this region.
- All the basic amenities such as medical, fire-fighting, education, transportation, communication and infrastructural facilities are well connected and accessible.
- The mining operations will not intersect the ground water level. Hence, no impact on ground water environment.
- Study area falls in seismic zone – II, there is no major history of landslides, earthquake, subsidence etc., recorded in the past history

### 5.2 Analysis of Alternative Site

The mineral deposits are site specific in nature; hence, question of seeking alternate site does not arise for this project.

### 5.3 Factors Behind Selection of Proposed Technology

Mechanized open cast mining operation with drilling and blasting method will be used to extract Rough Stone and Gravel in the area. The quarry areas fall in the clusters has following advantages –

- As the mineral deposition is homogeneous and batholith formation, therefore opencast method of working out deposit is preferred over underground method
  - The material will be loaded after sprinkling with water with the help of excavators into dumpers / trippers and transported to the needy customers.
  - Blasting and availability of drills along with controlled blasting technology gives desired fragmentation so that the mineral is handled safely and used without secondary blasting.
- Semi skilled labours fit for quarrying operations are easily available around the nearby villages.

### 5.4 Analysis of Alternative Technology

Open cast mechanized method has been selected for this project. This technology is having least gestation period, economically viable, safest and less labour intensive. The method has inbuilt flexibility for increasing or decreasing the production as per market condition.

## CHAPTER – 6: ENVIRONMENTAL MONITORING PROGRAMME

### 6.0 General

Environmental Monitoring will be taken up for various environmental components as per conditions stipulated in Environmental Clearance Letter issued by MoEF & Consent to Operate issued by the State Pollution Control Board. Monitoring reports will be submitted to regulator as per statutory requirements. The entire monitoring work will be carried out by MoEF & CC / NABL recognized laboratories.

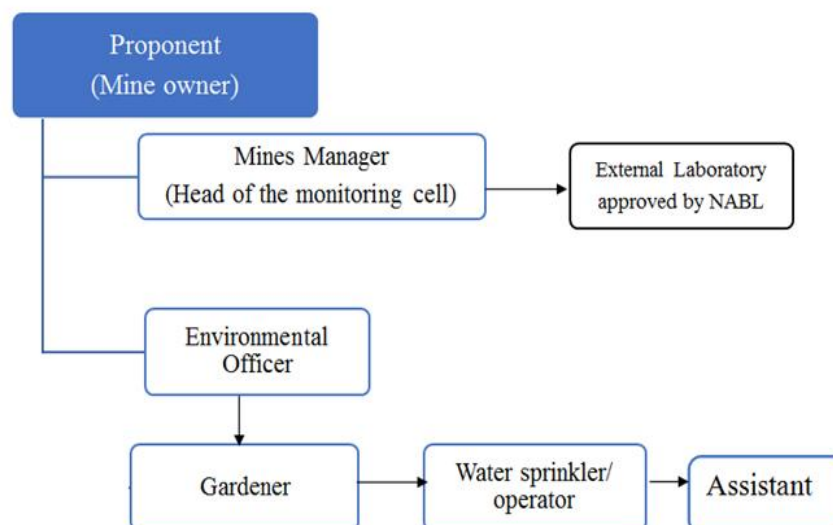
The monitoring and evaluation of environmental parameters indicates potential changes occurring in the environment, which paves way for implementation of rectifying measures wherever required to maintain the status of the natural environment. Evaluation is also a very effective tool to judge the effectiveness or deficiency of the measures adopted and provides insight for future corrections.

### 6.1 Methodology of Monitoring Mechanism

Implementation of EMP and periodic monitoring will be carried out by the proponent and quarry owners in the cluster quarries. A comprehensive monitoring mechanism has been devised for monitoring of impacts due to proposed project; Mine Management Level environmental protection measures like dust suppression, treatment and recycling of waste water, control of noise due to blasting and Ground vibration, maintenance of machinery and vehicles, housekeeping in the mine premises, plantation, implementation of other hand, implementation of area level protection measures like plantation and green Environmental Management Plan and environmental clearance conditions will be monitored by the proponent. On the belt development, environmental quality monitoring etc.,

An environment monitoring cell (EMC) will be constituted at the quarry consisting of following members to monitor the implementation of EMP and other environmental protection measures.

**FIGURE 6.1 HIERARCHY OF ENVIRONMENTAL MONITORING CELL**



The responsibilities of this cell will be:

- Implementation of pollution control measures
- Monitoring programme implementation
- Post-plantation care
- To check the efficiency of pollution control measures taken
- Any other activity as may be related to environment
- Seeking expert's advice when needed

The environmental monitoring cell will co-ordinate all monitoring programs at site and data thus generated will be regularly furnished to the State regulatory agencies. The sampling and analysis report of the monitored environmental attributes will be submitted to the Tamil Nadu Pollution Control Board (TNPCB) at a frequency of monthly, half-yearly and yearly. The half-yearly reports will be submitted to Ministry of Environment and Forest, Regional Office and SEIAA as well.

The sampling and analysis of the environmental attributes will be as per the guidelines of Central Pollution Control Board (CPCB)/Ministry of Environment, Forest and Climate Change (MoEF & CC).

### **6.2 Implementation Schedule of Mitigation Measures**

The mitigation measures proposed in Chapter-4 will be implemented so as to reduce the impact on the environment due to the operations of the proposed project. Implementation schedule of mitigation measures is given in Table 6.1.

**TABLE 6.1 IMPLEMENTATION SCHEDULE**

Sl No.	Recommendations	Time Period	Schedule
1	Land Environment Control Measures	Before commissioning of the project	Immediately after the commencement of the project
2	Soil Quality Control Measures	Before commissioning of the project	Immediately after the commencement of the project
3	Water Pollution Control Measures	Before commissioning of the project and along with mining operation	Immediately and as project progress
4	Air Pollution Control Measures	Before commissioning of the project and along with mining operation	Immediately and as project progress
5	Noise Pollution Control Measures	Before commissioning of the project and along with mining operation	Immediately and as project progress
6	Ecological Environment	Phase wise implementation every year along with mine operations	Immediately and as project progress

### **6.3 Monitoring Schedule and Frequency**

The environmental monitoring will be conducted in the mine operations as follows:

- Air quality;
- Water and wastewater quality;
- Noise levels;
- Soil Quality; and
- Greenbelt Development

The details of monitoring is detailed in Table 6.2

**TABLE 6.2: PROPOSED MONITORING SCHEDULE POST EC**

S. No.	Environment Attributes	Location	Monitoring		Parameters
			Duration	Frequency	
1	Air Quality	2 Locations (1 Core & 1 Buffer)	24 hours	Once in 6 months	Fugitive Dust, PM <sub>2.5</sub> , PM <sub>10</sub> , SO <sub>2</sub> and NO <sub>x</sub> .
2	Meteorology	At mine site before start of Air Quality Monitoring & IMD Secondary Data	Hourly / Daily	Continuous online monitoring	Wind speed, Wind direction, Temperature, Relative humidity and Rainfall
3	Water Quality Monitoring	2 Locations (1SW & 1 GW)	-	Once in 6 months	Parameters specified under IS:10500, 1993 & CPCB Norms
4	Hydrology	Water level in open wells in buffer zone around 1 km at specific wells	-	Once in 6 months	Depth in bgl
5	Noise	2 Locations (1 Core & 1 Buffer)	Hourly – 1 Day	Once in 6 months	Leq, Lmax, Lmin, Leq Day & Leq Night
6	Vibration	At the nearest habitation (in case of reporting)	-	During blasting Operation	Peak Particle Velocity
7	Soil	2 Locations (1 Core & 1 Buffer)	-	Once in six months	Physical and Chemical Characteristics
8	Greenbelt	Within the Project Area	Daily	Monthly	Maintenance

Source: Guidance of manual for mining of minerals, February 2010

#### 6.4 Environmental Policy of the Proponent

The project proponents in the proposed quarries are committed to ensure that:

- Protect the environment by control and prevention of pollution and promote green environment.
- To operate the quarry with an objective of no injuries and accidents at the work place and provide a safe work place for our employees, contractors and others who perform their duties.
- Adequate health care will be taken to all the employees and create process to reduce the adverse effect of the operations on Health of the employees.
- Provide safety appliance and continuous training in safety to employees to ensure safe production and achieve the target of zero accidents.
- Develop safe working methods and practices, remove unsafe work conditions and consider all the aspects at the early stages of process development to provide safe working atmosphere.
- Communicate Safety, Health and Environmental Policy to all employees for better understanding and practice.

#### 6.5 Budgetary Provision for Environmental Monitoring Programme

The cost in respect of monitoring of environmental attributes, parameter to be monitored, sampling/monitoring locations with frequency and cost provision against each proposal is shown in Table 6.3. Monitoring work will be outsourced to external laboratory approved by NABL / MoEF.

The proposed total cost for Environmental Monitoring Programme for Eight proposed quarries in cluster for the mining plan period is Rs 3,80,000/-.

**TABLE 6.3 ENVIRONMENT MONITORING BUDGET**

<b>Parameter</b>	<b>Capital Cost</b>
Air Quality	Rs.3,80,000/-
Meteorology	
Water Quality	
Hydrology	
Soil Quality	
Noise Quality	
Vibration Study	
Greenbelt	
<b>TOTAL</b>	<b>Rs. 3,80,000/-</b>

Source: Approved Mining Plans

### **6.6 Reporting Schedules of Monitored Data**

The monitored data on Air quality, Water quality, Noise levels and other environmental attributes will be periodically examined by the proponent with Environmental Monitoring cell and necessary corrective measures will be carried out. The monitoring data will be submitted to Tamil Nadu State Pollution Control Board in the Compliance to CTO Conditions & environmental audit statements every year to MoEF & CC and Half-Yearly Compliance Monitoring Reports to MoEF & CC Regional Office and SEIAA.

Periodical reports to be submitted to: -

- MoEF & CC – Half yearly status report
- TNPCB - Half yearly status report
- Department of Geology and Mining: quarterly, half yearly annual reports
- SEIAA, Chennai, Tamil Nadu

Besides the Mines Manager/Agent will submit the periodical reports to –

- Director of mines safety,
- Labour enforcement officer,
- Controller of explosives as per the norms stipulated by the department.

## CHAPTER – 7: ADDITIONAL STUDIES

### 7.0 General

The following Additional Studies were done as per items identified by project proponent and items identified by regulatory authority. And items identified by public and other stakeholders will be incorporated after Public Hearing.

- Public Consultation
- Risk Assessment
- Disaster Management Plan
- Cumulative Impact Study
- Plastic Waste Management

### 7.1. **Public Consultation:**

Application to The Member Secretary of the Tamil Nadu Pollution Control Board (TNPCB) to conduct Public Hearing in a systematic, time bound and transparent manner ensuring widest possible public participation at the project site or in its close proximity in the district was submitted vide Ref: Nil.

The date and venue of public hearing was displayed on the notice board of Tamil Nadu Pollution Control Board office, Karur and two widely circulating newspapers (Times of India and Dhinakaran Dated 19.05.2023) and the hard copies and soft copies of the Draft EIA & EMP Report were made available at the office of TNPCB, Karur.

The Public Hearing was conducted on 21.06.2023 at 11.00 AM, Venue – Kannan Mahal, No.53, Vaikainallur Street, Kulithalai Post, Kulithalai Taluk & Karur District.

The Chairman of the public hearing was the **M.kannan District Revenue Officer, Karur District**, while the member convener was **Er.D.Jayalakshmi, District Environmental Engineer (DEE)**. Also present for the public hearing were the Project Proponent – **Tvl.Navamani Mines Private Limited – Palaniyandi Vimalathithan and Thiru .M.Shaik Nawas from M/s. Geo Exploration and Mining Solutions (Environment Consultant)**; the local residents of the proposed project area and residents from neighbouring villages were also present.

The DEE welcomed the public present and briefly described the objective of the public hearing and requested the Environmental Consultant of the Project **M.SHAIK NAWAS**, from M/s. Geo Exploration and Mining Solutions to make a detailed presentation about the Proposed Project, the Consultant explained the project in detail to the villagers in local language followed by open forum question session, to register their views and opinion about the project proposal.

**TABLE 7.1 PUBLIC HEARING DETAILS**

Date of Advertisement	19.05.2023
Newspapers in which the advertisement appeared	Times of India an English Newspaper and Dhinakaran a Tamil Newspaper
Date of public hearing (DD/MM/YYYY)	21.06.2023

## FIGURE 7.1 PUBLIC HEARING PHOTOS



**TABLE 7.2: PUBLIC CONCERNS AND PP RESPONSE AND COMMITMENTS**

S.No	Name and address	Issue raised by the public	Response/ Commitment of Project Proponent
1	Mr. Parthiban, Sivayam	He said his name is Parthiban, hailed from Sivayam North Village, and also, he is an M.A graduate. He said that there is no problem with the setting up of the quarry. Directly and indirectly, they are providing more employment, and they have built schools, hospitals, and related public services. He concluded his speech by saying that if the quarry is established, more aid will be available	<ul style="list-style-type: none"> <li>• Thanks for supporting the project</li> </ul>
2	Mr. R. Prakash, Ayyarmalai	Greetings to everyone. If the quarry was formed here, we will get a lot of employment. Otherwise, He said -that if he had to go to work, he would have to go too far like Karur & Tricky. And the M-sand can be purchased at a lower price. He concluded his speech by saying that the quarry has many benefits for the people	<ul style="list-style-type: none"> <li>• Thanks for supporting the project</li> <li>• Preference will be given to the local people in employment</li> </ul>
3	Mrs. Backiyam, Ayyarmalai	She said that she has no objection to quarrying as she gets employment, get all the goods at a low price, and they do a lot of good things to the people.	<ul style="list-style-type: none"> <li>• Thanks for supporting the project</li> </ul>
4	Mrs. Eswari, Sivayam	She said that everyone in his family is a lorry driver, and they are living in local because of this quarry.	<ul style="list-style-type: none"> <li>• Thanks for supporting the quarry project.</li> </ul>
5	Mr.Jyoti, Ayyarmalai	He said that they are giving us every opportunity and help	<ul style="list-style-type: none"> <li>• Thanks for supporting the quarry project.</li> </ul>
6	Mr. Velmurugan, Shivayam	He said that the quarrying was welcomed one, and he had no objection. he requested to apply the insurance for workers who are employed there	<ul style="list-style-type: none"> <li>• Thanks for supporting the project.</li> <li>• Insurance will be provided to the workers</li> </ul>
7	Mr. Mahendran, Ayyarmalai	He extended his greeting to all the participating government officials, including the District Revenue Officer and the District Environmental Engineer. He said that he had no objection and then said that the quarry was following all the laws and that the quarry would provide employment to 50 people nearby. And through this quarry, they are able to get sand at a low cost. He said that they are planting trees on the roadsides around the quarry, and they have installed CCTV camera in the schools. And he concluded his speech by saying that the quarry owner is encouraging the educated people. So, no objection for granting permission to quarrying.	<ul style="list-style-type: none"> <li>• Thanks for supporting the project.</li> </ul>
8	Mr. Sathish, Irumboothipatty	He greeted everyone and he said there is no problem with this quarrying work. Sand has to be brought from Trichy to build a house. But he said that due to this quarry, it is available at a lower price, and there is no harm to the people. He also asked them to cover the sand with a tarpaulin while transporting the M sand in the trucks.	<ul style="list-style-type: none"> <li>• Thanks for supporting the project</li> <li>• The material will be covered by tarpaulin.</li> </ul>

9	Mr. Bhupathi, Ayyarmalai	He greeted everyone. They are providing a lot of welfare assistance to our Village, Annadanam and necessary assistance to schools. So, he said there is no objection.	<ul style="list-style-type: none"> <li>• Thanks for supporting the project</li> </ul>
10	Mr. Panneerselvam, Saravanapuram	He said that he had no problem with the quarry and that it was providing employment both directly and indirectly. He said that they provided sand for temple construction. He therefore said that he had no objection to granting permission for the quarry.	<ul style="list-style-type: none"> <li>• Thanks for supporting the project.</li> </ul>
11	Mr. Sivakumar, Kotamedu	He extended his greetings to the government officials and all. They have planted more trees around this quarry. He said that there was no impact on the environment. Then he requested to provide employment to the students studying at the nearby college.	<ul style="list-style-type: none"> <li>• Thanks for supporting the project</li> <li>• Preference will be given to local village people in employment</li> </ul>
12	Mr. Praveen - Sivayam	He thanked all the government officials. He expressed his view by saying that if this quarry is established, construction materials will be available at very low cost to the poor, and they will benefit, and he has no objection	<ul style="list-style-type: none"> <li>• Thanks for supporting the project.</li> </ul>
13	Mr. Vijayan, Cauvery River Conservation Mission, Karur	The District Revenue Officer, Officials from Tamil Nadu Pollution Control Board Engineer, Police, Public, and Social Activists who are visiting the meeting, he expressed his greetings. Adjacent to the quarry, there is the famous Ratnagiriswarar temple. There is an old Shiva temple in Sivayam Village. A joint drinking water scheme is along the road. He said that the school and government colleges are nearby. These will be affected by quarrying. He also said that the environment would be polluted. So, he concluded his speech by saying that quarrying should not be allowed.	<ul style="list-style-type: none"> <li>• Foot hills of Ayyarmalai is 350m, Temple is located on the top of the hillock. Distance to the temple from the project site is 900m</li> <li>• Shiva Temple is in 3km SE</li> <li>• The mining operation will be carried out as per the Mining plan and Environmental Management plan</li> <li>• It is ensured that the mining operation without hindrance to temple</li> </ul>
14.	Mr. Shanmugam, Karur	<ul style="list-style-type: none"> <li>• The District Revenue Officer, District Environmental Engineer, Police, and Public and social activists who are participating the meeting, he expressed his greetings. How much environmental impact does a quarry site have? He said that a hearing is being held on how to rectify the environmental impact. Quarries can be operated only as per the Minor Minerals Act 1959, and the Navamani Mines quarry is located in an area of only 2 hectares. There should be no approved dwellings within a 300-meter radius of the quarry. But within a radius of 200 meters, nearly 4 to 5 houses are available. These are shown in the FMB and Environmental Impact Assessment report. There are also many houses within a radius of 300 meters and green houses on the west side. These</li> </ul>	<ul style="list-style-type: none"> <li>• There is no houses/habitation within the radius of 300m, the same has been verified by the Government officials and village records. However the mining operation will be carried out without hindrance to the houses/habitation nearby.</li> <li>• The entire area is own patta land, classified as punjai, it is verified from the village records, FMB,</li> </ul>

		<p>are also shown on the field map. This is a violation. So, he said that permission should not be given to this quarry.</p> <ul style="list-style-type: none"> <li>• There is a carriageway in the middle of this quarry. It was shown in the project report of SE1AA. Quarry work should be done 10 meters away if there is a carriageway. But here it is nearby therefore the quarry not eligible for approval, he said.</li> <li>• Around 84 percent of this quarry is agricultural land. This will affect agriculture. At a radius of 300 meters, there is the Rathinagiriswarar Temple. Also, around the temple, there are water bodies, ponds, and reservoirs. He also said that the Rathinagiriswarar Temple Rope car project is coming up, and all these will be affected when the quarry is blasted.</li> <li>• No green belt has been developed around this quarry. There is no wire fence. He said that not only this quarry but all the quarries are like this. These mistakes will cause more damage to the environment. There is a possibility of children accidentally falling into the quarry and dying, and a barrier should be erected before quarrying. But it is not set up here. Only one quarry is allowed here. But he said that during the inspection, the lease expired quarries also were in operation. He concluded his speech by emphasizing that permission should not be given to this stone quarry for such violations.</li> </ul>	<p>Village map and A register no records for the Cart track, village road etc., the impress of pathway is used by the existing quarries to the easy approach of village road, no public utilized this way.</p> <ul style="list-style-type: none"> <li>• Foot hills of Ayyarmalai is 350m, Temple is located on the top of the hillock. Distance to the temple from the project site is 900m</li> <li>• The area has been fenced and plantation activities has been carried out around the project site, security will be appointed and danger sign board board will be displayed in all side of the quarry site.</li> </ul>
15	Mr. Mukilan, Coordinator Tamil Nadu Environment Protection Committee, Karur	<ul style="list-style-type: none"> <li>• He said he would like to say his greetings to the District Revenue Officer, the District Environmental Engineer, and the officers of various departments, the quarry owners, the people brought by the quarry owners, the social activists who have come to give petition, the social activists, and the friends of the press.</li> <li>• I joined the investigation team related to Granite corruption in Madurai District for 13 months and also worked in the investigation team that calculated the corruption worth one lakh eleven thousand crores. He said that he will continue to strive to protect the land and the people. He said that the posters of the hearing meeting were only seen in Sivayam North Panchayat Union. He said that no posters could be found in Ayyarmalai or its surrounding area and only kept in the Village Administration Office. Therefore, he requested that more than 100 posters be pasted not only, but in a radius of 10 kilometers around areas affected by the mine.</li> <li>• Therefore, he insisted that the people should be given a chance to know and express their views in a democratic way. You spend two lakhs and advertise in newspapers all over Tamil Nadu. But the local people do not know that the hearing is being held here. Therefore, he insisted on making arrangements for the same, for example the District Collector of Madurai.</li> <li>• He said there were no attachments in the report and 40 types of documents were to be attached. But said that only 15 types of documents are attached. Then he said that there was no village map. When I ask the Village Administration</li> </ul>	<ul style="list-style-type: none"> <li>• Navamani Mines private Limited is a company with the two directors namely Thiru. Thiru. Palanisamy Mani and S.Mohankumar.</li> <li>• Thiru. Vimalan joined in the company and nominated as the Directory based on the resolution passed by the Board members Dated 01.11.2022</li> <li>• It is a New quarry, No quarry leases in the name of Navamani Mines previously, Navamani mines operating Crusher units only.</li> <li>• There is no houses within the radius of 300m, Shanmuga plots is about 200m from the North East side of the area, No houses built in past 2 years, as well as no</li> </ul>

		<p>Officer for the village map, he says that there is no village map-for Sivayam North village. Then how can we know the details about the village? He raised the question. This is a public hearing. Water will be polluted if it comes like Soil pollution, Noise pollution. The project officer himself said that the socio-economics will be affected. Then how can we know if there is no village map in this project report. So he raised the question where to know the real details about the quarry.</p> <ul style="list-style-type: none"> <li>• He also said that in this report, no evidence of Village Administrative Officer, Tasildhar, Revenue Officer, AD Mines has been enclosed. The process report of the neighbouring field is not enclosed. Quarries are located in SF No.13,14, 30, 31 and 212 near this quarry. The process order for those quarries is not attached. He said that it is not known on the basis of which rule this quarry will be operated. He asked the District Administration and the District Environmental Engineer to attach all such documents in future.</li> <li>• Also, M/s Navamani Mines Blue Metals is in trouble. One person died last month. He asked the District Administrative Officer to say that he did not know how it was and that the legislator was sitting inside the quarry and there was compound wall around the quarry and no one was allowed inside.</li> <li>• First, Mr. Mani asked for permission for quarry, and today Mr. Palaniyandi's son, Vimalathithan (son of the legislator) has asked for permission. So, it is legislator's quarry. Earlier, the Assembly member said that the permission for quarrying in field no. 2/2 had expired on September 2019. But it is still running. He also said that under the Green Tribunal order, SEIAA and TNPCB have investigated it and imposed a fine of several crores of rupees. So, when people in power come into the mining industry, they should know all kinds of documents, right? He questioned. He then raised the question of whether a public hearing meeting was being held in favor of the legislator and whether these documents had been hidden for that purpose. However, he directly alleged that all these documents were hidden for the sake of the ruling party legislator and his family.</li> <li>• Those who spoke about this quarry said that there would be no air pollution, no water pollution, and no noise pollution. So that permission could be given for this quarry, then it doesn't matter. It is true that 50 people will get employment. But there are only 10 local workers. Because last month the North State man died so that that no one will come to work he said. Then, if blasting is to be done, only trained people from Ranchi and do the blasting. Therefore, he said, only trained workers can be there. He said that 10 people can work as truck drivers without getting any training.</li> <li>• Rule 36(1) of the Minerals Rules (1959) clearly states among these are the basic rules for establish a quarry. According-to that rule; -there should be no</li> </ul>	<p>dwelling units within the radius of 300m from the project site</p> <ul style="list-style-type: none"> <li>• It is ensured that the mining operation will be carried out without hindrance to the public</li> <li>• The project proponent ensures to implement the Environmental management Plan by water sprinkling on working face, haul roads and approach. The mining operation will be carried out as per the Mining plan and Environmental Management plan.</li> <li>• The precise area communication has been issued after verifying all the relevant documents such as FMB, A Register, Village map, Patta, Land Document etc.,</li> <li>• A1 Notice issued in the villages, mining plan prepared and approved as per the Tamil Nadu Minor Mineral Concession Rules 1959.</li> <li>• Necessary permission will be obtained from DGMS after execution of lease deed.</li> <li>• The mining operation will be carried out as per the EIA /EMP report.</li> <li>• Proponent erected fencing around the project site and plantastion activities has been completed in the site, the same will be maintained through out the lease period</li> <li>• It is ensured that the mining operation will be carried out as per the EMP mentioned in this report and the budget will be</li> </ul>
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		<p>approved houses., or dwellings within 300 meters of the quarry field. He said that the law is no quarry should be established even if there are any of the house noted within 300m in field maps, A-registers, Village maps, and tax-paid houses of the Panchayat and DTCP-approved areas.</p> <ul style="list-style-type: none"> <li>• One quarry permit was completed in 2014 in Tirunelveli District. After that, they asked permission for quarrying. People were protested. After that. no permission was given. The owner of the quarry filed a lawsuit after planning to build a government art college at a distance of 300 meters from the quarry at a cost of 11 crore rupees and after the construction work was completed at a cost of 6 crore rupees. Now the construction work on that college has been stopped. The quarry owner gave 9 acres to another person and said that there is a problem in Tirunelveli and people are fighting there. That means you should not build a house where there is a quarry. Patta land may be situated. Anything can be. But don't build a house. Against the law. Therefore, the same is true for the construction of the Government College of Arts, whose construction has been stopped at a cost of Rs. 6 crores. The quarry located at SF No. 15 has been mined twice. Again, the ask permission for quarrying at a depth of 38 meters.</li> <li>• Also, their documentation states that there is no house or dwelling within these 300 meters. In the said registration document, the Approved land of Shanmugapuram of DTCP Approval No. 347/2019 is located at a distance of 2 meters in plot no. 6. These housing units were approved by DTCP during 2018. VAO, Tahsildar, and AD Mines have given permission to establish a quarry in such a place, contrary to the law and against their responsibilities. Today they have brought you here. He expressed his apprehension at how had the scandal was. Is it for fooling people? Cheating the government? Cheating society'? he asked. How bad of a scam is this? He expressed concern that this should be seen in practice.</li> <li>• Also, he said, if the government officials are working for a legislator and his family, then where can this country go? They did whatever they wanted for that day and conducted a public hearing meeting. Because there is no study for that day. There is no resistance. Because they excavate stones from quarries to build buildings and use them to make roads. But in 2017, the protest against sand robbery and the Supreme Court case regarding the protection of the Cauvery River Ordered sand mining in the river is to stop. It can be seen that the operation of the quarry is highly illegal due to the production of M-Sand. Doesn't know the local Tasidhar that the quarry would cause problems? VAO doesn't know? Don't you know AD Mines? That is why we are asking them to issue a statement. All their report is nothing. It contains only the statements given by the companies. There are no approved houses within 300 meters. There are no houses. B-ut really, it's all there. Since we had it then, it was</li> </ul>	<p>allotted for the Management plan activities as mentioned.</p>
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		<p>decree remained in place until the 6th month of 2022. Another request is to import 15,00,000 metric tons of natural river sand per month from abroad. Sand in the river should be disposed of in tsunami- and earthquake-prone areas. There, they build houses using trees. Also, hundreds of companies are ready to import sand daily for 1000 rupees at Kamaraj Port, Chennai Ennur Port and Tuticorin Port. This is not only the Tamil Nadu Environment protection committee, not only the Cauvery River Protection committee, but Ashok, who was a retired Superintendent, Chief Engineer in the Tamil Nadu Public Works Department, has put forward this demand. The problem is that if I buy this sand from abroad, it costs 4000 rupees per ton. Even the transport charge does not come up to this amount. Can anyone testify that it is difficult to buy sand today? In Tarmil Nadu, we have been screaming like a bear for 2 years. When Corona came into town, you set up a lab to check the blood sample. We are building a house for 1 crore rupees for those who deceive middle-class families. He said that this sand is of good quality to build a house, and we will pay 40000 rupees to buy it. If you ask them to buy a thousand rupees for a test and bring such a lab, they will not do it. A building built in Chennai falls apart if touched by hand before finishing the construction. Today, they pulled it and closed it. I heard 50 percent M-sand is mixed with waste sand. We have a record from the owners of M sand. He said that a building that can be built today with 30 percent or 50 percent waste sand and cement will have a life of almost 80 years. Also, they are demolishing the Karur bus stand this year in the age of 40 years. But all the buildings that are built with M-Sand will not last even for 20 years, and that is the condition in which the mix, all commission, and houses that people can build will remain. We say we will protect the future. What excuses are we making? It is the responsibility of the government to fix it. IIT, Chennai has investigated and reported that there is a lot of medical waste in the Cauvery River, and no sand has been added to the river for 1 year. The Chief Secretary is petitioning them, saying, don't open this waste to us. From Karnataka, we think of water is coming from -Karnataka. 'But Bangalore's total sewage comes from Karnataka. We think that the Madras region is polluted by sewage. But Bangalore Sewerage from Mettur to Jaderpalayam does not have a single handful of sand; it is full of rock, and the water comes without any treatment. Sand treatments in the Cauvery River, Noyal River, Bhavani River, and Amaravati River have all been destroyed. If the river wants water, the sand will not come. This is dangerous. We are stockpiling for the future. But today in Erode district, one member of the family has cancer, and one member of the family have infertility. Karur District has also changed. If you continue to use this water, you will also get cancer, thyroid disease, skin disease, and kidney damage, according to a report by IIT. Who is responsible for this? It is the</p>	
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		<p>government and its officials who are responsible. We say alternative, do it; don't act only during election time. A responsible politician should always work for the people.</p> <ul style="list-style-type: none"> <li>• He further said that today's protests may be about the Kudankulam Nuclear Reactor, Sterlite, hydrocarbon, and sand robbery. We have solution for everything. Please change the pessimistic power the people had under the previous regime, and you must be honest. Be honest. He said that we are also registering a request to import artificial river sand here. And, next to that, a friend said that they paid Rs 5,00,000 to build a temple in our village. Trucks of more than 20 tons should not be allowed on rural panchayat union roads. I didn't say this; if you go to Mines office, the board would have been placed before. Similarly, on National Highways, State Highways, District Roads and other Roads has permit 6-ton vehicles, 16-ton trucks, 10-ton trucks, 26-ton trucks, 18-ton trucks, 36-ton trucks, and 48-ton trucks. But on rural roads, a 10-wheel tipper is carrying 50 or 60 tons. If one Km Road is damaged, the government spends 1 crore rupees. He said that they are giving 5 lakh rupees. How much will they donate to run this quarry? He questioned. Drinking water, sanitation, and medicines are being built at the quarries at a cost of Thousands of crores of rupees through people's Tax money. If it is said that there are 9000 quarries and the amount spent on roads for these quarries is 15 thousand crore rupees in a year, then what is the justification? What virtue is there? He posed the question.</li> <li>• Also, if the poor people take the tax money and give it a lot for quarries, even if we buy 1 match box, we pay 18 paise as a tax. We pay 35 percent in tax. In the restaurants we have eat, pay 2 percent as Tax. There is so much that can be said and shown. How is everyone's money going? Your money, my money, all the money that can be here is going to the individual quarry owners. So, what do they do to people? Kalquari blasts 1 and 2 in the afternoon without any sound, like firecrackers, and if one blast goes off, another blast takes 28 seconds. Have you ever heard this sound at home? If it explodes, all the children will run away. How many goats and cows have this problem? That is the truth. In how many quarries do we have accidents and take people to the hospital? So, is the law just a piece of paper? Visit those quarries today at 2 p.m. He said that they are firing 1 stick and 2 blasts, and that is not a reed blast. What to do with respect to the law. They say that if an ordinary farmer makes a mistake, he will be hanged. What action is taken against those who have committed so many crimes? asked the question. It must be said that they are using illegal blasting. But the explosives bought illegally. Then which explosive should be tested? That's right. What would happen if the same explosives went beyond the quarry? He raised the question. So, you have to take all such things into</li> </ul>	
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		<p>account. Next, there is a plan to set up a rope car in Ayyarmalai for several years. When we inquired, they said that there is no plan to establish this rope car because of the pressure from quarry owners to government officials who came there. But he said that if the rope car is installed, M-Sand crusher dust and blasting dust will come here, and this is the reason why the project is not coming due to their pressure, which will also affect the rope car. In Ayyarmalai, the quarry owners, especially the Srirangam legislator and his family members, directly denied. Then the government should take appropriate action on this. He also requested to implement the rope car project in Ayyarmalai.</p> <ul style="list-style-type: none"> <li>• Similarly, the Project Proponent has told that there is no mountain for 10 kilometers around this quarry. He questioned when there is Ayyarmalai at a distance of 400 meters and 350 meters from the quarry; whether Ayyarmalai mountain is not there. He asked, "I don't know what you have marked as a mountain." You have said it often. He said there are two things to say: that there is no mountain for the circumference of 10 and 15 km could be there. May be there! May not be! He also said that we will ask only if it is in the mountain documents. He said that even if four of them were blown up and taken away, they would go away. So, what is the purpose of saying that there is no mountain around 10 kilometers when there is a visible mountain in front of your eyes? asked the question. We appreciate it if it's right. He said that we are in a position to point out if it is wrong. There are responsibilities and obligations. They said that there is no archeological sign within a radius of 10 kilometers. But in the Power Point presentation shown now, they have said that the Jain sculpture is 3.7 Kilometers away. Gundar is said to be running there. He said that today there is a Jain basin in the Kudumiyan hill of Puthukottai district, and there is a cave in the Kudavarai temple. That's why no quarries are built in the surrounding 3-4 kilometers. Because the Department of Archeology visited there and refused permission. Therefore, with this one reason, they are saying only 300 m in for the government, and he -said that we request that permission not be given for at least 5 km in the places where the archeological symbol Samanapadukai is such a basin, Gudavaraikoil. No matter how many crores are given, they cannot be created. So, we are making a request that cancel this quarry as there is a pond here. Similarly, if we say here, we can say innumerable problems. But even here, the approved housing is within 200 meters, Similarly, approved houses are SF No. 6 and 29,241, and within a 300 meter and 500-meter radius, there is a water intake station at SF No. 17 on the east side of SF No. 6. Ifs not a gap. Similarly, they have hidden the stream through the quarry. Therefore, if there is a stream within 50 meters (125 feet). no quarry should be established. Such are the rules. He said that this is what they will take up in the discussion. Even if 1,000 people say they want a quarry, the government takes</li> </ul>	
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		<p>it on the basis of priority. Not only is there no merit, if it becomes illegal, it will have a huge impact on society, I humbly present another message saying that all the archeological symbols that may be present here will be affected, 16.11.2020, the Tamil Nadu Chief Minister says in a press release. I am not saying that a government salary earner and his family members should not hold government contracts or government mines for any reason. On November 16, 2020. Tamil Nadu Chief Minister M.K. Stalin said Minister of Mineral Resources C. Shainnugam should resign as he granted permission to the son of M.LA Chakrapani of Veerapandi Constituency for quarrying. He was not completely unaware of his mistake. Today, similarly, the graining of quarry rights by Member of Legislative Assembly of Srirangam to his son Vimalathithan is illegal, antisocial. and unconstitutional, and there is no justice for M.L.A Chakrapani. Law is the same for all. So, on this basis, permission should not be given to this quarry in any way. Please, the tamil nadu Chief minister should not give permission to this illegal gnarly. Tamil Nadu Minister Durai Murugan should be asked to resign, and action should be taken on the basis of the Chief Minister ship. He ended his speech by saying, Thank you for the opportunity.</p>	
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## 7.2 Risk Assessment

The methodology for the risk assessment has been based on the specific risk assessment guidance issued by the Directorate General of Mine Safety (DGMS), Dhanbad, vide Circular No.13 of 2002, dated 31<sup>st</sup> December, 2002. The DGMS risk assessment process is intended to identify existing and probable hazards in the work environment and all operations and assess the risk levels of those hazards in order to prioritize those that need immediate attention. Further, mechanisms responsible for these hazards are identified and their control measures, set to timetable are recorded along with pinpointed responsibilities.

The cluster quarry operation will be carried out under the direction of a Qualified Competent Mine manager holding certificate of competency to manage a metalliferous mine granted by the DGMS, Dhanbad. Risk Assessment is all about prevention of accidents and to take necessary steps to prevent it from happening.

Factors of risks involved due to human induced activities in connection with mining & allied activities with detailed analysis of causes and control measures for the mine is given in below Table 7.1.

**TABLE 7.3 RISK ASSESSMENT & CONTROL MEASURES**

S. No	Risk factors	Causes of risk	Control measures
1	Accidents due to explosives and heavy mining machineries	Improper handling and unsafe working practice	<ul style="list-style-type: none"> <li>▪ All safety precautions and provisions of Mine Act, 1952, Metalliferous Mines Regulation, 1961 and Mines Rules, 1955 will be strictly followed during all mining operations;</li> <li>▪ Entry of unauthorized persons will be prohibited;</li> <li>▪ Fire fighting and first-aid provisions in the mine office complex and mining area;</li> <li>▪ Provisions of all the safety appliances such as safety boot, helmets, goggles etc. will be made available to the employees and regular check for their use.</li> <li>▪ Working of quarry, as per approved plans and regularly updating the mine plans;</li> <li>▪ Cleaning of mine faces shall be daily done in order to avoid any overhang or undercut;</li> <li>▪ Handling of explosives, charging and firing shall be carried out by competent persons only under the supervision of a Mine Manager;</li> <li>▪ Maintenance and testing of all mining equipment as per manufacturer's guidelines.</li> </ul>
2	Drilling & Blasting	<p>Due to improper and unsafe practices</p> <p>Due to high pressure of compressed air, hoses may burst</p> <p>Drill Rod may break</p>	<ul style="list-style-type: none"> <li>▪ Safe operating procedure established for drilling (SOP) will be strictly followed.</li> <li>▪ Only trained operators will be deployed.</li> <li>▪ No drilling shall be commenced in an area where shots have been fired until the blaster/blasting foreman has made a thorough Examination of all places,</li> </ul>

			<ul style="list-style-type: none"> <li>▪ Drilling shall not be carried on simultaneously on the benches at places directly one above the other.</li> <li>▪ Periodical preventive maintenance and replacement of worn-out accessories in the compressor and drill equipment as per operator manual.</li> <li>▪ All drills unit shall be provided with wet drilling shall be maintained in efficient working in condition.</li> <li>▪ Operator shall regularly use all the personal protective equipment.</li> </ul>
3	Blasting	<p>Fly rock, ground vibration, Noise and dust.</p> <p>Improper charging, stemming &amp; Blasting/fining of blast holes</p> <p>Vibration due to movement of vehicles</p>	<ul style="list-style-type: none"> <li>▪ The maximum charge per delay and by optimum blast hole pattern, vibrations will be controlled within the permissible limit and blast can be conducted safely.</li> <li>▪ SOP for Charging, Stemming &amp; Blasting/Firing of Blast Holes will be followed by blasting crew during initial stage of operation</li> <li>▪ Shots are fired during daytime only.</li> <li>▪ All holes charged on any one day shall be fired on the same day.</li> <li>▪ The danger zone is and will be distinctly demarcated (by means of red flags)</li> </ul>
4	Transportation	<p>Potential hazards and unsafe workings contributing to accident and injuries</p> <p>Overloading of material</p> <p>While reversal &amp; overtaking of vehicle</p> <p>Operator of truck leaving his cabin when it is loaded.</p>	<ul style="list-style-type: none"> <li>▪ Before commencing work, drivers personally check the dumper/truck/tipper for oil(s), fuel and water levels, tyre inflation, general cleanliness and inspect the brakes, steering system, warning devices including automatically operated audio-visual reversing alarm, rear view mirrors, side indicator lights etc., are in good condition.</li> <li>▪ Not allow any unauthorized person to ride on the vehicle nor allow any unauthorized person to operate the vehicle.</li> <li>▪ Concave mirrors should be kept at all corners</li> <li>▪ All vehicles should be fitted with reverse horn with one spotter at every tipping point</li> <li>▪ Loading according to the vehicle capacity</li> <li>▪ Periodical maintenance of vehicles as per operator manual</li> </ul>
5	Natural calamities	Unexpected happenings	<ul style="list-style-type: none"> <li>▪ Escape Routes will be provided to prevent inundation of storm water</li> <li>▪ Fire Extinguishers &amp; Sand Buckets</li> </ul>
6	Failure of Mine Benches and Pit Slope	Slope geometry, Geological structure	<ul style="list-style-type: none"> <li>▪ Ultimate or over all pit slope shall be below 60° and each bench height shall be 5m height.</li> </ul>

### 7.3 Disaster Management Plan

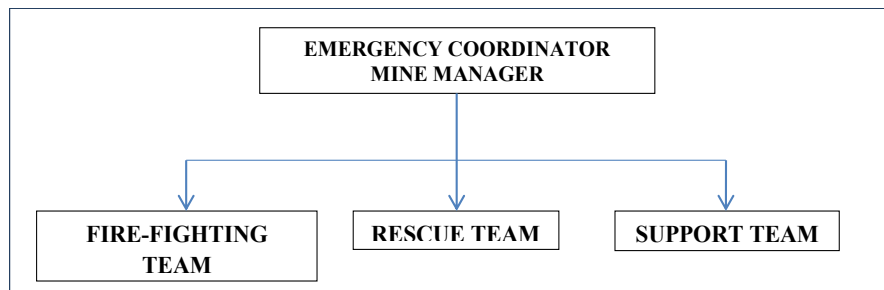
Natural disasters like Earthquake, Land slides has not been recorded in the past history as the terrain is categorized under seismic zone III. The area is far away from the sea hence the disaster due to heavy floods and tsunamis are not anticipated. The Disaster Management Plan is aimed to ensure safety of life, protection of environment, protection of installation, restoration of production and salvage operations in this same order of priorities.

The objective of the Disaster Management Plan is to make use of the combined resources of the mine and the outside services to achieve the following:

- Rescue and medical treatment of casualties;
- Safeguard other people;
- Minimize damage to property and the environment;
- Initially contain and ultimately bring the incident under control;
- Secure the safe rehabilitation of affected area; and
- Preserve relevant records and equipment for the subsequent inquiry into the cause and circumstances of the emergency.

In case a disaster takes place, despite preventive actions, disaster management will have to be done in line with the descriptions below. There is an organization proposed for dealing with the emergency situations and the coordination among key personnel and their team has been shown in Fig 7.1.

**FIGURE 7.2: DISASTER MANAGEMENT TEAM LAYOUT**



The emergency organization shall be headed by emergency coordinator who will be qualified competent mine manager. There would be three teams for taking care of emergency situations – Fire-Fighting Team, Rescue Team and Support Team. The proposed composition of the teams is given in Table 7.2.

**TABLE 7.4: PROPOSED TEAMS TO DEAL WITH EMERGENCY SITUATION**

DESIGNATION	QUALIFICATION
<b>FIRE-FIGHTING TEAM</b>	
Team Leader/ Emergency Coordinator (EC)	Mines Manager
Team Member	Mines Foreman
Team Member	Mining Mate
<b>RESCUE TEAM</b>	
Team Leader/ Emergency Coordinator (EC)	Mines Manager
Team Member/ Incident Controller (IC)	Environment Officer
Team Member	Mining Foreman
<b>SUPPORT TEAM</b>	
Team Leader/ Emergency Coordinator (EC)	Mines Manager
Assistant Team Leader	Environment Officer
Team Member	Mining Mate
Security Team Leader/ Emergency Security Controller	Mines Foreman

Once the mine becomes operational, the above table along with names of personnel will be prepared and made easily available to workers. A mobile communication network and wireless shall connect Mine Emergency Control Room (MECR) to control various departments of the mine, fire station and neighbouring industrial units/mines.

### **Roles and responsibilities of emergency team –**

(a) Emergency coordinator (EC)

The emergency coordinator shall assume absolute control of site

(b) Incident controller (IC)

Incident controller shall be a person who shall go to the scene of emergency and supervise the action plan to overcome or contain the emergency. Shift supervisor or Environmental Officer shall assume the charge of IC.

(c) Communication and advisory team

The advisory and communication team shall consist of heads of Mining Departments i.e., Mines Manager

(d) Roll call coordinator

The Mine Foreman shall be Roll Call Coordinator. The roll call coordinator will conduct the roll call and will evacuate the mine personnel to assembly point. His prime function shall be to account for all personnel on duty.

(e) Search and rescue team

There shall be a group of people trained and equipped to carryout rescue operation of trapped personnel. The people trained in first aid and fire-fighting shall be included in search and rescue team

(f) Emergency security controller

Emergency Security Controller shall be senior most security person located at main gate office and directing the outside agencies e.g. fire brigade, police, doctor and media men etc.,

### **Emergency control procedure –**

The onset of emergency, will in all probability, commence with a major fire or explosion or collapse of wall along excavation and shall be detected by various safety devices and also by members of operational staff on duty. If located by a staff member on duty, he (as per site emergency procedure of which he is adequately briefed) will go to nearest alarm call point, break glass and trigger off the alarms. He will also try his best to inform about location and nature of accident to the emergency control room. In accordance with work emergency procedure the following key activities will immediately take place to interpret and take control of emergency.

- On site fire crew led by a fireman will arrive at the site of incident with fire foam tenders and necessary equipment.
- Emergency security controller will commence his role from main gate office
- Incident controller shall rush to the site of emergency and with the help of rescue team and will start handling the emergency.
- Site main controller will arrive at MECR with members of his advisory and communication team and will assume absolute control of the site.
  - He will receive information continuously from incident controller and give decisions and directions to:
    - Incident controller
    - Mine control rooms
    - Emergency security controller

**Proposed fire extinguishers at different locations –**

The following type of fire extinguishers is proposed at strategic locations within the quarry.

Location	Type of Fire Extinguishers
Electrical Equipment's	CO <sub>2</sub> type, foam type, dry chemical powder type
Fuel Storage Area	CO <sub>2</sub> type, foam type, dry chemical powder type, Sand bucket
Office Area	Dry chemical type, foam type

**Alarm system to be followed during disaster –**

On receiving the message of disaster from Site Controller, fire-fighting team, the mine control room attendant will sound siren wailing for 5 minutes. Incident controller will arrange to broadcast disaster message through public address system.

On receiving the message of "Emergency Over" from Incident Controller the emergency control room attendant will give "All Clear Signal", by sounding alarm straight for 2 minutes.

The features of alarm system will be explained to one and all to avoid panic or misunderstanding during disaster.

**In order to prevent or take care of hazard / disasters if any the following control measures have been adopted.**

- All safety precautions and provisions of Metalliferous Mines Regulations (MMR), 1961 is strictly followed during all mining operations
- Fire fighting and first-aid provisions in the mines office complex and mining area will be provided.
- Provisions of all the safety appliances such as safety boot, helmets, goggles, dust masks, ear plugs and ear muffs etc. are made available to the employees and the use of same is strictly adhered to through regular monitoring
- Training and refresher courses for all the employees working in the quarry in phase manner
- Cleaning of mine faces will be carried out regularly
- Provision of high-capacity standby pumps with generator sets with enough quantity of diesel for emergency pumping especially during monsoon.
- A blasting SIREN will be used at the time of blasting for audio signal.
- Checking of blasting area for any un-blasted hole or material.
- Warning notice boards indicating the time of blasting and NOT TO TRESPASS will be displayed at prominent places

**7.4 CUMULATIVE IMPACT STUDY**

Totally 5 quarries within the cluster, there are 1 No of Proposed quarry & 4 No of existing quarry falls in the cluster. The list of quarries is as below –

**TABLE 7.5: LIST OF QUARRIES IN THE CLUSTER**

<b>CLUSTER QUARRIES</b>				
<b>PROPOSED QUARRY</b>				
<b>CODE</b>	<b>Name of the Owner</b>	<b>S.F.Nos &amp; Village</b>	<b>Extent (ha)</b>	<b>Remarks</b>
P1	<b>Tvl. Navamani Mines Private Limited</b> Thiru. Palaniyandi Vimalathithan, Director, No.5/898, Alagu Nagar, Trichy Main Road, Namakkal District – 637 001	15/1 & 15/2 Sivayam (North) Village	2.80.5 ha	ToR obtained vide Lr.No. SEIAA- TN.F.No.6993/SEA C/TOR-761/2020 Dated 24.09.2020

TOTAL			2.80.5 ha	
EXISTING QUARRIES				
CODE	Name of the Owner	S.F.Nos & Village	Extent ( ha)	Lease period
E1	<b>Thiru. A.Shanmugaraj</b> S/o. Appavu, No 219, Manapparai Main Road, Iyyar Malai, Sivayam Post, Karur District	13/1, 14/2 and 14/3 Sivayam (North) Village	2.49.5 ha	07.02.2018 to 06.02.2023
E2	<b>Thiru. D. Rathinam</b> S/o. Duraisamy, 153/A, Kampan Street, Kavery Nagar, Kulithalai Taluk, Karur District	30/1A, 30/1B Sivayam (North) Village	2.46.0 ha	07.02.2018 to 06.02.2023
E3	<b>Tmt. M.Jayamani,</b> W/o. Manoharan Ponniyagoundanpudhur, Punnamchathiram, Aravakurichi Taluk, Karur District	30/4, 31/1 Sivayam (North) Village	1.04.0 ha	06.12.2018 to 05.12.2023
E4	<b>Thiru. M.Palaniyandi,</b> S/o, Mottiyandi, 2/34, Ambalakkara street, Somarasampettai, Srisangam Taluk, Trichy District.	2/2 Sivayam (North) Village	2.34.5 ha	10.07.2014 to 09.07.2019
<b>Total Extent</b>			<b>5.99.50</b>	
<b>Total Cluster Extent</b>			<b>8.80</b>	

Note:-

- Cluster area is calculated as per MoEF & CC Notification – S.O. 2269 (E) Dated: 01.07.2016

**TABLE 7.6: SALIENT FEATURES OF THE PROPOSED PROJECTS IN CLUSTER**

SALIENT FEATURES OF PROJECT				
Name of the Quarry	Tvl. Navamani Mines and Minerals Rough Stone and Gravel Quarry			
Mining Plan Period / Lease Period	5 Years			
	Pit	Length in m	Width in m	Depth in m
Existing Pit dimension	I	25	15	3
	II	37	18	3
Ultimate Pit dimension	I	208	103	38
Toposheet No	58 J/05			
Latitude between	10°52'19.57"N to 10°52'25.68"N			
Longitude between	78°22'26.70"E to 78°22'34.23"E			
Highest Elevation	124 m AMSL			
Geological Resources	Rough Stone in m <sup>3</sup>		Gravel m <sup>3</sup>	
	9,80,455		84,039	
Mineable Reserves	Rough Stone in m <sup>3</sup>		Gravel m <sup>3</sup>	
	3,95,935		49,332	
Water Level in the surrounds area	The Water table is found at a depth of 50m in summer and at 45m in rainy seasons.			
Method of Mining	Opencast Mechanized Mining Method involving drilling and blasting			
Machinery proposed	Jack Hammer		10 Nos	
	Compressor		2 Nos	
	Hydraulic Excavator		2 Nos	

	Tippers	5 Nos
Blasting Method	Usage of Slurry Explosive with MSD detonators	
Proposed Manpower Deployment	36 Nos	
Project Cost	Project Cost	Rs 65, 68,505/-
	EMP Cost	Rs 3, 80,000/-
	Total	Rs 69, 48,505/-
Cer Cost	Rs.5,00,000/-	

**TABLE 7.4 B: SALIENT FEATURES OF PROPOSAL “E1”**

Name of the Mine	Rough Stone and Gravel Quarry belongs to Thiru A. Shanmugaraj	
Land Type	Patta Land	
S.F. No.	13/1,14/2, 14/3	
Village	Sivayam (North)	
Extent	2.49.5 ha	
Geological Reserves	Rough Stone	Gravel
	3,74,250m <sup>3</sup>	49,900m <sup>3</sup>
Mineable Reserves	Rough Stone	Gravel
	88,100m <sup>3</sup>	7,128m <sup>3</sup>
Mining Plan Period / Lease Period	5 Years	
Ultimate Pit Dimension	Pit – I 148 m (L) * 110 m (W) * 17 m (D) Pit – II 46 m (L) * 83 m (W) * 7 m (D)	
Toposheet No	58-J/05	
Latitude	10°52'20.66''N to 10°52'26.91''N	
Longitude	78°22'.20.17''E to 78°22'.26.94''E	
Highest Elevation	128 m AMSL	
Water Level	50-55 m bgl	
Machinery	Tractor mounted compressor attached with Jack Hammer Drills	2 Nos
	Hydraulic Excavator	1 No
	Tippers	2 Nos
Blasting	Usage of Slurry Explosive with MSD detonators	
Manpower Deployment	11 Nos	
Project Cost	Fixed asset Cost	Rs 6,49,000/-
	Machinery Cost & Others	Rs 22, 00,000/-
	EMP Cost	Rs 7, 10,000/-
	Total	Rs 35, 59,000/-
Depth of Mining	38 meters	

**TABLE 7.4C: SALIENT FEATURES OF PROPOSAL “E2”**

Name of the Mine	Rough Stone and Gravel Quarry belongs to Thiru. D. Rathinam	
Land Type	Patta Land	
S.F. No.	30/1A & 30/1B	
Village	Sivayam (North)	
Extent	2.46.0 ha	
Geological Reserves	Rough Stone	Gravel
	3,74,250m <sup>3</sup>	49,900m <sup>3</sup>
Mineable Reserves	Rough Stone	Gravel
	88,100 m <sup>3</sup>	7,128 m <sup>3</sup>
Mining Plan Period / Lease Period	5 Years	
Ultimate Pit Dimension	282 m (L) * 65 m (W) * 17 m (D)	
Toposheet No	58-J/05	
Latitude between	10°52'05.21''E to 10°52'15.34''E	
Longitude between	78°22'33.69''E to 78°22'38.12''E	
Highest Elevation	125 m AMSL	
Water Level	50m 55m bgl	
Machinery	Tractor mounted compressor attached with jack hammer	2
	Hydraulic Excavator	1

	Tipplers	1
Blasting	Usage of Slurry Explosive with MSD detonators	
Manpower Deployment	11 Nos	
Project Cost	Fixed asset Cost	Rs. 6,42,000/-
	Machinery Cost & Others	Rs. 42, 00,000/-
	EMP Cost	Rs. 7, 10,000/-
	Total	Rs. 55, 52,000/-
Depth of Mining	178 m bgl	

**TABLE 7.4D : SALIENT FEATURES OF PROPOSAL “E3”**

Name of the Mine	Rough Stone and Gravel Quarry belongs to Thiru. M. Palaniyandi		
Land Type	Patta Land		
S.F. No.	2/2		
Village	Sivayam (North)		
Extent	2.34.5 ha		
Geological Reserves	Rough Stone	Gravel	
	3, 69,000 m <sup>3</sup>	49,200 m <sup>3</sup>	
Mineable Reserves	Rough Stone	Gravel	
	1,40,785 m <sup>3</sup>	13,536 m <sup>3</sup>	
Mining Plan Period / Lease Period	5 Years		
Ultimate Pit Dimension	218 m (L) * 69 m (W) * 12 m (D)		
Toposheet No	58-J/05		
Latitude between	N10°52'46'' to N10°52'36''		
Longitude between	E78°22'24'' to E78°22'28''E		
Highest Elevation	123 m AMSL		
Water Level	50 – 55 m		
Machinery	Jack Hammer Tractor mounted Compressor	1 Nos	
	Hydraulic Excavator	1 No	
	Tipplers	2 Nos	
Blasting	Usage of Slurry Explosive with MSD detonators		
Nearest Water Body	Cheyyar River – 3 kms SE Palar River – 7 kms N		
Manpower Deployment	12 Nos		
Project Cost	Fixed Cost	Rs 10,03,500/-	
	Operational Cost	Rs 46, 00,000/-	
	EMP Cost	Rs 4, 05,000/-	
	Total	Rs 60, 08,500/-	
Depth of Mining	12 meters		

**TABLE 7.4E : SALIENT FEATURES OF PROPOSAL “E4”**

Name of the Mine	Rough Stone & Gravel Quarry of Tmt . M. Jayamani			
Land Type	Patta Land			
S.F. No.	30/4, 31/1			
Village	Sivayam (North)			
Extent	1.04.0 ha			
Geological Reserves	Rough Stone	Gravel		
	1,70,840 m <sup>3</sup>	68,336 m <sup>3</sup>		
Mineable Reserves	Rough Stone	Gravel		
	90,105 m <sup>3</sup>	50,652 m <sup>3</sup>		
Mining Plan Period / Lease Period	5 Years			
Ultimate Pit Dimension	Pit I	71 m (L)	85 m (W)	14 m (D)
Toposheet No	58-J/05			
Latitude	N 10°52'12''			
Longitude	E 78°22'37''			
Highest Elevation	124 m AMSL			
Water Level	50 – 55 m			
Machinery	Tractor mounted compressor	1 Nos		

	Hydraulic Excavator	1 No
	Tipplers	2 Nos
Blasting	Usage of Slurry Explosive with MSD detonators	
Manpower Deployment	11 Nos	
Project Cost	Land Cost	Rs 67, 61,500/-
	Machinery Cost & Others	Rs 7, 15,000/-
	EMP Cost	Rs 8, 55,000/-
	Total	Rs 76,16,500/-
Depth of Mining	12 meters	

The Cumulative Impact is mainly anticipated due to drilling & blasting and excavation and transportation activities in all the quarries (proposed and existing) within the cluster and major impact anticipated is on Air & Noise Environment and Ground Vibrations due to blasting.

### Impact on Air Environment –

Calculating the Cumulative Load of Mining within the cluster is as shown in table 7.5 & 7.6

**TABLE 7.7 CUMULATIVE PRODUCTION LOAD OF ROUGH STONE IN CLUSTER**

Quarry	PROPOSED PRODUCTION DETAILS			
	Production for five-year plan period	Per Year in m <sup>3</sup>	Per Day in m <sup>3</sup>	Number of Lorry Load Per Day
P1	3,95,935	79,187	264	22Trips/day
E1	88,100	7,690	26	4 Trips/day
E2	1,40,785	25,275	84	14 Trips/day
E3	1,28,350	17,102	57	10 Trips/day
E4	90,105	10,827	36	6 Trips/day
<b>TOTAL</b>	<b>8,43,275</b>	<b>1,40,081</b>	<b>467</b>	<b>56 Trips/day</b>

\* Tentative Peak production based on the Extent of lease

**TABLE 7.8: CUMULATIVE PRODUCTION OF GRAVEL IN CLUSTER**

Quarry	PROPOSED PRODUCTION DETAILS			
	Production for three-year plan period	Per Year in m <sup>3</sup>	Per Day in m <sup>3</sup>	Number of Lorry Load Per Day
P1	49,332	16,444	55	5 Trips/day
E1	7,128	1,426	5	1 Trips/day
E2	13,536	2,707	9	2 Trips/day
E3	15,042	7,521	25	4 Trips/day
E4	50,652	5,246	17	3 Trips/day
<b>TOTAL</b>	<b>1,35,690</b>	<b>33,344</b>	<b>111</b>	<b>15 Trips/day</b>

Based on the above production quantities the emissions due to various activities in all the 5 mines includes various activities like ground preparation, excavation, handling and transport of mineral. These activities have been analysed systematically basing on USEPA-Emission Estimation Technique Manual, for Mining AP-42, to arrive at possible emissions to the atmosphere and estimated emissions are given in Table 7.7.

**TABLE 7.7: EMISSION ESTIMATION FROM QUARRIES WITHIN 500 METER RADIUS**

EMISSION ESTIMATION FOR QUARRY "P1"				
	Activity	Source type	Value	Unit
Estimated Emission Rate for PM <sub>10</sub>	Drilling	Point Source	0.123080351	g/s
	Blasting	Point Source	0.001037626	g/s
	Mineral Loading	Point Source	0.046813500	g/s
	Haul Road	Line Source	0.002580263	g/s/m
	Overall Mine	Area Source	1.255619403	g/s
Estimated Emission Rate for SO <sub>2</sub>	Overall Mine	Area Source	0.02554754	g/s
Estimated Emission Rate for NO <sub>x</sub>	Overall Mine	Area Source	0.086958405	g/s

EMISSION ESTIMATION FOR QUARRY "E1"				
	Activity	Source type	Value	Unit
Estimated Emission Rate for PM <sub>10</sub>	Drilling	Point Source	0.064165307	g/s
	Blasting	Point Source	0.000615374	g/s
	Mineral Loading	Point Source	0.046097400	g/s
	Haul Road	Line Source	0.002575675	g/s/m
	Overall Mine	Area Source	1.129585285	g/s
Estimated Emission Rate for SO <sub>2</sub>	Overall Mine	Area Source	0.00023799	g/s
Estimated Emission Rate for NOx	Overall Mine	Area Source	0.006951763	g/s
EMISSION ESTIMATION FOR QUARRY "E2"				
	Activity	Source type	Value	Unit
Estimated Emission Rate for PM <sub>10</sub>	Drilling	Point Source	0.091220418	g/s
	Blasting	Point Source	0.000860011	g/s
	Mineral Loading	Point Source	0.038535527	g/s
	Haul Road	Line Source	0.002552732	g/s/m
	Overall Mine	Area Source	1.142651517	g/s
Estimated Emission Rate for SO <sub>2</sub>	Overall Mine	Area Source	0.000734024	g/s
Estimated Emission Rate for NOx	Overall Mine	Area Source	0.021601729	g/s
EMISSION ESTIMATION FOR QUARRY "E3"				
	Activity	Source type	Value	Unit
Estimated Emission Rate for PM <sub>10</sub>	Drilling	Point Source	0.078072714	g/s
	Blasting	Point Source	0.000468131	g/s
	Mineral Loading	Point Source	0.041301355	g/s
	Haul Road	Line Source	0.002557321	g/s/m
	Overall Mine	Area Source	1.118000656	g/s
Estimated Emission Rate for SO <sub>2</sub>	Overall Mine	Area Source	0.000616529	g/s
Estimated Emission Rate for NOx	Overall Mine	Area Source	0.017348740	g/s
EMISSION ESTIMATION FOR QUARRY "E4"				
	Activity	Source type	Value	Unit
Estimated Emission Rate for PM <sub>10</sub>	Drilling	Point Source	0.050881821	g/s
	Blasting	Point Source	0.000217568	g/s
	Mineral Loading	Point Source	0.041301355	g/s
	Haul Road	Line Source	0.002550438	g/s/m
	Overall Mine	Area Source	0.979271897	g/s
Estimated Emission Rate for SO <sub>2</sub>	Overall Mine	Area Source	0.000389346	g/s
Estimated Emission Rate for NOx	Overall Mine	Area Source	0.008197171	g/s

TABLE 7.9: INCREMENTAL &amp; RESULTANT GLC WITHIN CLUSTER

PM <sub>10</sub> in µg/m <sup>3</sup>	
Location	AAQ1 – CORE
Background (average)	47.1
Anticipated Incremental due to the proposals	16
Resultant	63.1
NAAQ Norms	100 µg/m <sup>3</sup>
PM <sub>2.5</sub> in µg/m <sup>3</sup>	
Background (average)	22.95
Highest Incremental	9
Resultant	31.95
NAAQ Norms	80 µg/m <sup>3</sup>
SO <sub>2</sub> in µg/m <sup>3</sup>	
Location	AAQ1 – CORE
Background (average)	6.9
Anticipated Incremental due to the proposals	3.89
Resultant	10.79

NAAQ Norms	80 µg/m <sup>3</sup>
NO <sub>x</sub> in µg/m <sup>3</sup>	
Location	AAQ1 – CORE
Background (average)	24.1
Anticipated Incremental due to the proposals	9.65
Resultant	33.75
NAAQ Norms	80 µg/m <sup>3</sup>

### Noise Environment –

Noise pollution is mainly due to operation like drilling & blasting and plying of trucks & HEMM. Cumulative Noise modelling has been carried out considering blasting and compressor operation (drilling) and transportation activities. Predictions have been carried out to compute the noise level at various distances around the different quarries within the 500 m radius.

For hemispherical sound wave propagation through homogeneous loss free medium, one can estimate noise levels at various locations at different sources using model based on first principle.

$$Lp_2 = Lp_1 - 20 \log (r_2/r_1) - Ae_{1,2}$$

Where:

$Lp_1$  &  $Lp_2$  are sound levels at points located at distances  $r_1$  &  $r_2$  from the source.

$Ae_{1,2}$  is the excess attenuation due to environmental conditions. Combined effect of all sources can be determined at various locations by logarithmic addition.

$$Lp_{total} = 10 \log \{10^{(Lp1/10)} + 10^{(Lp2/10)} + 10^{(Lp3/10)} + \dots\}$$

Attenuation due to Green Belt has been taken to be 4.9 dB (A). The inputs required for the model are:

Source data has been computed taking into account of all the machinery and activities used in the mining process.

**TABLE 7.10: PREDICTED NOISE INCREMENTAL VALUES FROM CLUSTER**

Location ID	Background Value (Day) dB(A)	Incremental Value dB(A)	Total Predicted dB(A)	Residential Area Standards dB(A)
Habitation Near P1	44.2	47.0	48.9	55
Habitation Near E1	48.0	51.5	53.1	
Habitation Near E2	42.3	45.3	47.1	
Habitation Near E3	42.8	43.0	45.9	
Habitation Near E4	43.1	45.8	47.7	

Source: Lab Monitoring Data

The incremental noise level is found within the range of 43.0 – 51.5dB (A) in Buffer zone. The noise level at different receptors in buffer zone is lower due to the distance involved and other topographical features adding to the noise attenuation. The resultant Noise level due to monitored values and calculated values at the receptors are based on the mathematical formula considering attenuation due to Green Belt as 4.9 dB (A) the barrier effect. From the above table, it can be seen that the ambient noise levels at all the locations near habitations are within permissible limits of Residential Area (buffer zone) as per THE NOISE POLLUTION (REGULATION AND CONTROL) RULES, 2000 (The Principal Rules were published in the Gazette of India, vide S.O. 123(E), dated 14.2.2000 and subsequently amended vide S.O. 1046(E), dated 22.11.2000, S.O. 1088(E), dated 11.10.2002, S.O. 1569 (E), dated 19.09.2006 and S.O. 50 (E) dated 11.01.2010 under the Environment (Protection) Act, 1986.).

### Ground Vibrations

Ground vibrations due to mining activities in the all the 5 Mines within cluster are anticipated due to operation of Mining Machines like Excavators, drilling and blasting, transportation vehicles, etc., However, the major source of ground vibration from the all the 5 mines is blasting. The major impact of the ground vibrations is observed on the domestic houses located in the villages nearby the mine lease areas. The kuchha houses are more prone to cracks and damage due to the vibrations induced by blasting whereas RCC framed structures can withstand more ground vibrations. Apart from this, the ground vibrations may develop a fear factor in the nearby settlements.

Another impact due to blasting activities is fly rocks. These may fall on the houses or agricultural fields nearby the mining areas and may cause injury to persons or damage to the structures. Nearest Habitations from Cluster is tabulated in Table 7.9

The ground vibrations due to the blasting in all the mines are calculated using the empirical equation for assessment of peak particle velocity (PPV) is:

$$V = K [R/Q^{0.5}]^{-B}$$

Where –

V = peak particle velocity (mm/s)

K = site and rock factor constant

Q = maximum instantaneous charge (kg)

B = constant related to the rock and site (usually 1.6)

R = distance from charge (m)

**TABLE 7.11: GROUND VIBRATIONS AT 5 MINES**

Location ID	Maximum Charge in kgs	Nearest Habitation in m	PPV in m/ms
P1	100	450	1.0
E1	56	320	1.95
E2	64	550	0.821
E3	58	550	0.821
E4	49	500	0.956

Source: PPV Calculation

From the above table, the charge per blast is considered as maximum in each mine and the resultant PPV is well below the Peak Particle Velocity of 8 mm/s as per Directorate General of Mines Safety for safe level criteria through Circular No. 7 dated 29/8/1997.

#### **Socio Economic Environment –**

The 4 mines shall provide employment and revenue will be created to government

**TABLE 7.12: SOCIO ECONOMIC BENEFITS FROM CLUSTER MINES**

Location ID	Project Cost	Project Cost	CER Cost
P1	36	Rs 64,48,505/-	Rs 5,00,000/-
E1	11	Rs 35,59,000/-	Rs 72,000/-
E2	11	Rs 55,52,000/-	Rs 1, 11,000/-
E3	12	Rs 60, 08,500/-	Rs 1, 20,000/-
E4	11	Rs 76, 16,500/-	Rs 1, 52,330/-
<b>Total</b>	<b>81</b>	<b>Rs 2,91,84,505/-</b>	<b>Rs 9,55,330/-</b>

A total of 81 people will get employment due to this cluster, in this already 45 people employed in the existing quarries. For the Existing quarries Corporate Environment Responsibility (CER) allocated as per Government of India, MoEF & CC Office Memorandum F.No.22-65/2017-IA.III, Dated: 01.05.2018.

For the proposed projects it is recommended to spent Rs 5,00,000/- towards CER Activities in the nearby Government School for Renovation or reconstruction of Existing Toilet and maintenance, Providing Note books to the school library and Plantation in the school ground any other recommendations by the School Head masters.

- In this cluster from the 5 Proposal, it is proposed to spent Rs 9,55,330/- for CER activities

Considering 500 Nos of trees per hectare it is proposed to plant About 1700 nos. of saplings in the proposed projects for the Mining plan period in safety barrier, Un utilized area and village roads with survival rate 85% (Anticipated). The greenbelt development plan has been prepared keeping in view the land use changes that will occur due to mining operation in the area.

**TABLE 7.13: GREENBELT DEVELOPMENT BENEFITS FROM CLUSTER**

Proposed projects to conduct public hearing				
CODE	No of Trees proposed to be planted	Survival %	Area to be covered	Name of the Species
P1	1700	85	Safety barrier, Un utilized area and Village roads	Neem, Pungan, Sengondrai, Panai, Naval
<b>Total</b>	<b>1700</b>			

It is anticipated that there shall growth of native species of Neem, Pungan, etc in the Cluster at a rate due to these proposals 1700 Trees Planted over a period of 5 Years with Survival Rate of 85%. Besides every individual lease holder will plant Saplings in the School ground as part of CER activities.

## 7.5 PLASTIC WASTE MANAGEMENT PLAN FOR

All the Project Proponent shall comply with Tamil Nadu Government Order (Ms) No. 84 Environment and Forest (EC.2) Department Dated: 25.06.2018 regarding ban on one time use and throw away plastics irrespective of thickness with effect from 01.01.2019 under Environment (Protection) Act, 1986.

### Objective –

- To investigate the actual supply chain network of plastic waste.
- To identify and propose a sustainable plastic waste management by installing bins for collection of recyclables with all the plastic waste
- Preparation of a system design layout, and necessary modalities for implementation and monitoring.

**TABLE 7.14: ACTION PLAN TO MANAGE PLASTIC WASTE**

Sl.No.	Activity	Responsibility
1	Framing of Layout Design by incorporating provision of the Rules, user fee to be charged from waste generators for plastic waste management, penalties/fines for littering, burning plastic waste or committing any other acts of public nuisance	Mines Manager
2	Enforcing waste generators to practice segregation of bio-degradable, recyclable and domestic hazardous waste	Mines Manager
3	Collection of plastic waste	Mines Foreman
4	Setting up of Material Recovery Facilities	Mines Manager
5	Segregation of Recyclable and Non-Recyclable plastic waste at Material Recovery Facilities	Mines Foreman
6	Channelization of Recyclable Plastic Waste to registered recyclers	Mines Foreman
7	Channelization of Non-Recyclable Plastic Waste for use either in Cement kilns, in Road Construction	Mines Foreman
8	Creating awareness among all the stakeholders about their responsibility	Mines Manager
9	Surprise checking's of littering, open burning of plastic waste or committing any other acts of public nuisance	Mine Owner

Source: Proposed by FAE's and EC

### Carbon Emission.

Carbon dioxide (CO<sub>2</sub>): Carbon dioxide enters the atmosphere through burning fossil fuels (coal, natural gas, and oil), solid waste, trees and other biological materials. Carbon dioxide is removed from the atmosphere (or “sequestered”) when it is absorbed by plants as part of the biological carbon cycle.

Methane (CH<sub>4</sub>): Methane is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices, land use and by the decay of organic waste in municipal solid waste landfills.

Nitrous oxide (N<sub>2</sub>O): Nitrous oxide is emitted during agricultural, land use, and industrial activities; combustion of fossil fuels and solid waste; as well as during treatment of wastewater.

In this quarrying activities, anticipated GHG is mainly CO<sub>2</sub> as its proposed for usage of HSD (High Speed Diesel) for proposed machinery totally deployed are 2 Nos. Compressor, 1 Nos Excavator and 3 Nos. of Tippers for which an approximate usage of HSD is around 226 Liters per day. Which contributes to 60.56 kg of CO<sub>2</sub> for the stretch of daily activity of 20 kms @ 1 Liter Diesel produces 2.68 kg of CO<sub>2</sub> on the contrast 1 tree absorbs approximately 20-40 kgs of CO<sub>2</sub> per year.

- It is proposed to plant 1700 Nos of trees in this proposal shall absorb 44,700 kgs of CO<sub>2</sub> per year on average basis.
- Apart from which, its proposed for deployment of New Modern Machineries (BSVI) and PUC certified Vehicles.

Therefore, the implementation of proposed mitigation measures for winning of mineral may not have much of impact on the surrounding environment leading to release of Greenhouse gases (GHC), rise in temperature & livelihood of local people.

### **Hydrothermal/Geothermal effect due to destruction in the Environment.**

- Hydrothermal – relating to hot water —used especially of the formation of minerals by hot solutions rising from a cooling magma.
- Geothermal – relating to or produced by the internal heat of the earth.
- The proposed activity is for quarrying of Rough stone by opencast mechanized mining method for an ultimate depth of 38 m bgl.
- The proposed mining area and the surrounding falls under hard rock formation i.e., Charnockite Formation and the district has not recorded any Hydrothermal / Geothermal effect and as per the Seismic Zonation Map of India, the district falls under the Zone II of seismic zones classification.
- The resultant of this open cast mining shall not have any Hydrothermal/Geothermal effect on the surrounding environment.

### **Bio-geochemical processes and its foot prints including environmental stress.**

- Bio-geochemical cycle – any of the natural pathways by which essential elements of living matter are circulated. The term biogeochemical is a contraction that refers to the consideration of the biological, geological, and chemical aspects of each cycle.
- This proposed activity is for quarrying of rough stone quarry and maximum depth of mining is 38 m bgl and the applied area for quarrying is a patta land with no major vegetation and it is proposed for greenbelt development all along the safety barrier and construction of garland drainage and implement the proposed EMP strictly to mitigate the impacts on surrounding environment.
- No Bio-geochemical processes and its foot prints including environmental stress are anticipated and at the end of life of mine the proposed quarry shall be left as an artificial reservoir structure and allowed to collect rain water and shall enrich the ecosystem.

### **Sediments geochemistry in the surface streams.**

- Sedimentary Geochemistry has been in use to understand the conditions of deposition, climatic variations, tectonic setting, provenance, reservoir characteristics, etc.,
- The elemental composition of sediments in surface streams is the product of physical and chemical erosion of rocks, which is then transported across drainage networks.
- The project area when broken up lead to create void and land use pattern of the proposed area is alerted by ways of formation of open pit and as mitigation measure its proposed for garland drain all along the boundary barrier to ensure that no natural drainage pattern is disturbed and the garland drains are in turn connected to settlement traps were its ensured that no debris are carried away and hence the proposed activity shall not lead to any deposition of sediments in the nearby surface streams.

## 7.6 POST COVID HEALTH MANAGEMENT PLAN

COVID – 19 diseases caused by SARS-CoV-2 Coronavirus is relatively a new disease, with fresh information being known on a dynamic basis about the natural history of the disease, especially in terms of post-recovery events.

After acute COVID-19 illness, recovered patients may continue to report wide variety of signs and symptoms including fatigue, body ache, cough, sore throat, difficulty in breathing, etc. As of now there is limited evidence of post-COVID sequelae and further research is required and is being actively pursued. A holistic approach is required for follow up care and well-being of all post COVID recovering patients.

### Post-COVID Follow Up Protocol –

- Continue COVID appropriate behaviour (use of mask, hand & respiratory hygiene, physical distancing).
- Drink adequate amount of warm water (if not contra-indicated).
- Make sure your workplaces are clean and hygienic
- Surfaces (e.g. desks and tables) and objects (e.g. telephones, helmet) need to be wiped with disinfectant regularly
- Put sanitizing hand rub dispensers in prominent places around the workplace. Make sure these dispensers are regularly refilled
- Display posters promoting hand-washing
- Make sure that staff, contractors and customers have access to places where they can wash their hands with soap and water
- Display posters promoting respiratory hygiene.
- Brief your employees, contractors and customers that if COVID-19 starts spreading in your community anyone with even a mild cough or low-grade fever (37.3°C or more) need to stay at home. They should also stay home (or work from home) if they have had to take simple medications, such as paracetamol/acetaminophen, ibuprofen or aspirin, which may mask symptoms of infection
- Keep communicating and promoting the message that people need to stay at home even if they have just mild symptoms of COVID-19.
- Consider whether a face-to-face meeting or event is needed. Could it be replaced by a teleconference or online event?
- Could the meeting or event be scaled down so that fewer people attend?
- Pre-order sufficient supplies and materials, including tissues and hand sanitizer for all employees. Have surgical masks available to offer anyone who develops respiratory symptoms.
- It is also suggested by the Ministry of AYUSH that the use of Chyawanprash in the morning (1 teaspoonful) with luke warm water/milk is highly recommended (under the direction of Registered Ayurveda physician) as in the clinical practice Chyawanprash is believed to be effective in post-recovery period.
- If there is persistent dry cough / sore throat, do saline gargles and take steam inhalation. The addition of herbs/spices for gargling/steam inhalation. Cough medications, should be taken on advice of medical doctor or qualified practitioner of Ayush.
- Look for early warning signs like high grade fever, breathlessness, SpO<sub>2</sub> < 95%, unexplained chest pain, new onset of confusion, focal weakness.
- Avoid smoking and consumption of alcohol.
- Communicate to your employees and contractors about the plan and make sure they are aware of what they need to do – or not do – under the plan. Emphasize key points such as the importance of staying away from work even if they have only mild symptoms or have had to take simple medications (e.g. paracetamol, ibuprofen) which may mask the symptoms
- The plan should address how to keep your business running even if a significant number of employees, contractors and suppliers cannot come to your place of business - either due to local restrictions on travel or because they are ill.
-

## CHAPTER – 8: PROJECT BENEFITS

### 8.1 General

The Proposed Project (Tvl.Navamani Mines Private Limited) Rough Stone and Gravel at Sivayam (North) Village aims to produce **3,95,935** m<sup>3</sup> Rough Stone (**264** m<sup>3</sup> Rough stone @ 22 Tipper per day) over a period of 5 Years.

This will enhance the socio-economic activities in the adjoining areas and will result in the following benefits

- Increase in Employment Potential
- Improvement in Socio-Economic Welfare
- Improvement in Physical Infrastructure
- Improvement in Social infrastructure



### 8.2 Employment Potential

This proposed project falls in the cluster will provide employment opportunities to about 36 persons directly. In addition, there will be opportunity for indirect employment to many people in the form of contractual jobs, business opportunities, service facilities etc. the economic status of the local people will be enhanced due to mining project.

### 8.3 Socio-Economic Welfare Measures Proposed

The impact of mining activity in the area will be more positive than negative on the socio-economic environment in the immediate project impact area. The employment opportunities both direct and indirect will contribute to enhanced money incomes to job seekers with minimal skill sets especially among the local communities.

#### 8.4 Improvement in Physical Infrastructure

The proposed project site is located in Sivayam (North) Village, Krishnarayapuram Taluk, Karur District of Tamil Nadu and the area have communications, roads and other facilities already well established. The following physical infrastructure facilities will further improve due to the cluster quarry projects.

- Road Transport facilities
- Communications
- Medical, Educational and social benefits will be made available to the nearby civilian population in addition to the workmen employed in the mine.

#### 8.5 Improvement in Social Infrastructure

The quarry projects in the region will have positive impact on the social economic condition of the area by way of providing employment to the local peoples; thereby increasing the per capita income, housing, education, medical and transportation facilities, economic status, health and agriculture.

- Social welfare program like medical camps, educational facilities to the poverty level students, providing water supply from the quarries during drought seasons will be taken from the project proponent's
- Supplementing Govt. efforts in health monitoring camps, social welfare and various Awareness programs among the rural population.

#### 8.6 Other Tangible Benefits

The proposed quarry project is likely to have other tangible benefits as given below.

- Indirect employment opportunities to local people in contractual works like construction of infrastructural facilities, transportation, sanitation, for supply of goods and services to the quarry site and other community services.
- Additional housing demand for rental accommodation will increase.
- Cultural, recreation and aesthetic facilities will also improve.
- Improvement in communication, transport, education, community development and medical facilities and overall change in employment and income opportunity.
- The State Government will also benefit directly from the proposed mine, through increased revenue from royalties, cess, DMF, GST etc.,

### CORPORATE SOCIAL RESPONSIBILITY

Individual Project Proponents will take responsibility to develop awareness among all levels of their staff about CSR activities and the integration of social processes with business processes. Those involved with the undertaking of CSR activities will be provided with adequate training and re-orientation.

Under this programme, the project proponents will take-up following programmes for social and economic development of villages within 10 km of the project site. For this purpose, separate budget will be provided every year. For finalization of these schemes, proponent will interact with LSG. The schemes will be selected from the following broad areas –

- Health Services
- Social Development
- Infrastructure Development
- Education & Sports
- Self-Employment

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**CORPORATE ENVIRONMENT RESPONSIBILITY–**

For the existing quarries Allocation for Corporate Environment Responsibility (CER) shall be made as per Government of India, MoEF & CC Office Memorandum F.No.22-65/2017-IA.III, Dated: 01.05.2018.

As per para 6 (II) of the office memorandum, all the mines being a green field project & Capital Investment is  $\leq$  100 crores, they shall contribute 2% of Capital Investment towards CER.

For the proposed projects it is recommended to spent Rs 5,00,000/- towards CER Activities in the nearby Government School for Renovation or reconstruction of Existing Toilet, Providing Note books to the school library and Plantation in the school ground any other recommendations by the School Head masters.

**TABLE 8.1 CER – ACTION PLAN**

Activity	Beneficiaries	Total In Rs
Providing Toilet facility to the Government school	Government School Students	Rs 5,00,000/-
Plantation along the village roads		
Providing Environmental Related books to the School Library		

Source: Field survey conducted by FAE, consultation with project proponent

## **CHAPTER – 9: ENVIRONMENTAL COST BENEFIT ANALYSIS**

Not Applicable, Since Environmental Cost Benefit Analysis not recommended at the Scoping stage.

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## **CHAPTER - 10: ENVIRONMENTAL MANAGEMENT PLAN**

### **10.0 General**

Environment Management Plan (EMP) aims at the preservation of ecological system by considering in-built pollution abatement facilities at the proposed site. Good practices of Environmental Management plan will ensure to keep all the environmental parameters of the project in respect of Ambient Air quality, Water quality, Socio – economic improvement standards.

Mitigation measures at the source level and an overall environment management plan at the study area are elicited so as to improve the supportive capacity of the receiving bodies. The EMP presented in this chapter discusses the administrative aspects of ensuring that mitigative measures are implemented and their effectiveness monitored after approval of the EIA.

### **10.1 Environmental Policy**

The Project Proponent is committed to conduct all its operations and activities in an environmentally responsible manner and to continually improve environmental performance.

The Proponent Tvl.Navamani Mines Private Limited will –

- Meet the requirements of all laws, acts, regulations, and standards relevant to its operations and activities
- Allocate necessary resources to ensure the implementation of the environmental policy
- Ensure that an effective closure strategy is in place at all stages of project development and that progressive reclamation is undertaken as early as possible to reduce potential long-term environmental and community impacts
- Implement a program to train employees in general environmental issues and individual workplace environmental responsibilities
- Implement monitoring programmes to provide early warning of any deficiency or unanticipated performance in environmental safeguards
- Conduct periodic reviews to verify environmental performance and to continuously strive towards improvement

### **Description of the Administration and Technical Setup –**

The Environment Monitoring Cell discussed under Chapter 6 will ensure effective implementation of environment management plan and to ensure compliance of environmental statutory guidelines through Mine Management Level of each Proposed Quarry.

The said team will be responsible for:

- Monitoring of the water/ waste water quality, air quality and solid waste generated
- Analysis of the water and air samples collected through external laboratory
- Implementation and monitoring of the pollution control and protective measures/ devices which shall include financial estimation, ordering, installation of air pollution control equipment, waste water treatment plant, etc.
- Co-ordination of the environment related activities within the project as well as with outside agencies
- Collection of health statistics of the workers and population of the surrounding villages
- Green belt development
- Monitoring the progress of implementation of the environmental monitoring programme
- Compliance to statutory provisions, norms of State Pollution Control Board, Ministry of Environment and Forests and the conditions of the environmental clearance as well as the consents to establish and consents to operate.

## 10.2 Land Environment Management –

Land degradation is one of the major adverse impacts of opencast mining in the form of excavated voids and contamination of soil affects the viability of the soil resource.

Soil contamination then has a number of flow-on effects like, Inhibition of plant growth, and death of existing plants in contaminated areas and contamination of soil also has potential to impact on a surface water quality and groundwater resources.

**TABLE 10.1: PROPOSED CONTROLS FOR LAND ENVIRONMENT**

CONTROL	RESPONSIBILITY
Designing vehicle wash-down system so that all washed water is captured and passed through grease and oil separators.	Mines Manager
Re fueling will be carried out in a safe location, away from vehicle movement pathways	Mine Foreman & Mining Mate
Greenbelt development and its maintenance	Environment Officer
Garland drains with catch pits to be provided all around the project area to prevent run off affecting the surrounding lands.	Environment Officer
The periphery of Project area will be planted with thick plantation to arrest the fugitive dust, which will also act as acoustic barrier.	Mines Manager
Thick plantation using native flora species will be carried out on the top benches.	Mines Manager
There will be formation of a small surface water body in the mined-out area, which can be used for watering the greenbelt at the conceptual stages.	Environment Officer

Source: Proposed by FAE's & EIA Coordinator

## 10.3 Soil Management

### Top Soil Management –

- There is no top soil within the project area thin layer of soil will be utilized for Greenbelt purpose.

### Overburden / Waste and Side Burden Management –

- The overburden in the form of Gravel formation, the Gravel will be directly loaded into tippers for the filling and levelling of low-lying areas, this will be done only after obtaining permission and paying necessary seigniorage fees to the Government.

**TABLE 10.2: PROPOSED CONTROLS FOR SOIL MANAGEMENT**

CONTROL	RESPONSIBILITY
Garland drains are to be paved around the quarry pit area to arrest possible wash off in the rainy seasons	Mines Manager
Surface run-off from the surface water via garland drains will be diverted to the mine pits	Mine Foreman & Mining Mate
Design haul roads and other access roads with drainage systems to minimize concentration of flow and erosion risk	Environment Officer
keeping records of mitigation of erosion events, to improve on management techniques	Environment Officer
A monitoring map with information including their GPS coordinates, erosion type, intensity, and the extent of the affected area, as well as existing control measures and assessment of their performance	Environment Officer
Empty sediment from sediment traps Maintain, repair or upgrade garland drain system	Environment Officer
Test soils for pH, EC, chloride, exchangeable cations, particle size and water holding capacity	Mines Manager

Source: Proposed by FAE's & EIA Coordinator

### 10.4 Water Management

In the proposed quarrying project, no process is involved for the effluent generation, only oil & grease from the machinery wash is anticipated and domestic sewage from mines office.

The quarrying operation is proposed upto a depth of 38m BGL, the water table in the area is 45m – 50m below ground level, hence the proposed projects will not intersect the Ground water table during entire quarry period.

**TABLE 10.3: PROPOSED CONTROLS FOR WATER ENVIRONMENT**

CONTROL	RESPONSIBILITY
To maximize the reuse of pit water for water supply	Mines Foreman
Temporary and permanent garland drain will be constructed to contain the catchments of the mining area and to divert runoff from undisturbed areas through the mining areas	Mines Manager
Natural drains/nallahs/brooklets outside the project area should not be disturbed at any point of mining operations	Mines Manager
Ensure there is no process effluent generation or discharge from the project area into water bodies	Mines Foreman
Domestic sewage generated from the project area will be disposed in septic tank and soak pit system	Mines Foreman
Monthly or after rainfall, inspection for performance of water management structures and systems	Mines Manager
Conduct ground water and surface water monitoring for parameters specified by CPCB	Manager Mines

Source: Proposed by FAE's & EIA Coordinator

### 10.5 Air Quality Management

The existing and proposed mining activities would result in the increase of particulate matter concentrations due to fugitive dust. Water sprinkling twice per day on the haul roads, approach roads in the vicinity would be undertaken and will be continued as there is possibility for dust generation due to truck mobility. It will be ensured that vehicles are properly maintained to comply with exhaust emission requirements.

Carbon dioxide (CO<sub>2</sub>): Carbon dioxide enters the atmosphere through burning fossil fuels (Coal, natural gas, and oil), solid waste, trees and other biological materials. Carbon dioxide is removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.

In this quarrying activities, anticipated GHG is mainly CO<sub>2</sub> as its proposed for usage of HSD (High Speed Diesel) for proposed machinery totally deployed are 2 Nos. Compressor, 1 Nos Excavator and 5 Nos. of Tippers for which an approximate usage of HSD is around 410 Liters per day. Which contributes to 60.56 kg of CO<sub>2</sub> for the stretch of daily activity of 20 kms @ 1 Liter Diesel produces 2.68 kg of CO<sub>2</sub> on the contrast 1 tree absorbs approximately 20-40 kgs of CO<sub>2</sub> per year.

It is proposed to plant 1,700 Nos of trees in this proposal shall absorb 51,000 kgs of CO<sub>2</sub> per year on average basis.

**TABLE 10.4: PROPOSED CONTROLS FOR AIR ENVIRONMENT**

CONTROL	RESPONSIBILITY
Generation of dust during excavation is minimized by daily (twice) water sprinkling on working face and daily (twice) water sprinkling on haul road	Mines Manager
Wet drilling procedure /drills with dust extractor system to control dust generation during drilling at source itself is implemented	Mines Manager
Maintenance as per operator manual of the equipment and machinery in the mines to minimizing air pollution	Mines Manager
Ambient Air Quality Monitoring carried out in the project area and in surrounding villages to access the impact due to the mining activities and the efficacy of the adopted air pollution control measures	Mines Manager
Provision of Dust Mask to all workers	Mines Manager
Greenbelt development all along the periphery of the project area	Mines Manager

Source: Proposed by FAE's & EIA Coordinator

### 10.6 Noise Management

There will be intermittent noise levels due to vehicular movement, trucks loading, drilling and blasting and other allied activities. No mining activities are planned during night time.

**TABLE 10.5: PROPOSED CONTROLS FOR NOISE ENVIRONMENT**

CONTROL	RESPONSIBILITY
Development of thick greenbelt all along the Buffer Zone (7.5 Meters and 50m safety barrier) of the project area to attenuate the noise and the same will be maintained	Mines Manager
Preventive maintenance of mining machinery and replacement of worn-out accessories to control noise generation	Mines Foreman
Deployment of mining equipment with an inbuilt mechanism to reduce noise	Mines Manager
Provision of earmuff / ear plugs to workers working in noise prone zones in the mines	Mining Mate
Provision of effective silencers for mining machinery and transport vehicles	Mines Manager
Provision of sound proof AC operator cabins to HEMM	Mines Manager
Sharp drill bits are used to minimize noise from drilling	Mines Foreman
Controlled blasting technologies are adopted by using delay detonators to minimize noise from blasting	Mines Manager
Annual ambient noise level monitoring shall be carried out in the project area and in surrounding villages to access the impact due to the mining activities and the efficacy of the adopted noise control measures. Additional noise control measures will be adopted if required as per the observations during monitoring	Mines Manager
Reduce maximum instantaneous charge using delays while blasting	Mining Mate
Change the burden and spacing by altering the drilling pattern and/or delay layout, or altering the hole inclination	Mines Manager
Undertake noise or vibration monitoring	Mines Manager

Source: Proposed by FAE's & EIA Coordinator

### 10.7 Ground Vibration and Fly Rock Control

**TABLE 10.6: PROPOSED CONTROLS FOR GROUND VIBRATIONS & FLY ROCK**

CONTROL	RESPONSIBILITY
Controlled blasting using delay detonators will be carried out to maintain the PPV value (below 8Hz) well within the prescribed standards of DGMS	Mines Manager
Drilling and blasting will be carried under the supervision of qualified persons	Mines Manager

Proper stemming of holes should be carried out with statutory competent qualified blaster under the supervision of statutory mines manager to avoid any anomalies during blasting	Mines Manager
Suitable spacing and burden will be maintained to avoid misfire / fly rocks	Manager Mines
Number of blast holes will be restricted to control ground vibrations	Manager Mines
Blasting will be carried out only during noon time	Mining Mate
Undertake noise or vibration monitoring	Mines Manager
ensure blast holes are adequately stemmed for the depth of the hole and stemmed with suitable angular material	Mines Foreman

Source: Proposed by FAE's & EIA Coordinator

### 10.8 Biological Environment Management

The proponent will take all necessary steps to avoid the impact on the ecology of the area by adopting suitable management measures in the planning and implementation stage. During mining, thick plantation will be carried out around the project periphery, on safety barrier zone, on top benches of quarried out area etc.,

Following control measures are proposed for its management and will be the responsibility of the Mines Manager.

- Greenbelt development all along the safety barrier of the project area
- It is also proposed to implement the greenbelt development programme and post plantation status will be regularly checked for every season.
- The main attributes that retard the survival of sapling is fugitive dust, this fugitive dust can be controlled by water sprinkling on the haul roads and installing a sprinkler unit near the newly planted area.
- Year wise greenbelt development will be recorded and monitored
  - Based on the area of plantation.
  - Period of plantation
  - Type of plantation
  - Spacing between the plants
  - Type of manuring and fertilizers and its periods
  - Lopping period, interval of watering
  - Survival rate
  - Density of plantation
- The ultimate reclamation planned leaves a congenial environment for development of flora & immigration of small fauna through green belt and water reservoir. The green belt and water reservoir developed within the Project at the end of mine life will attract the birds and animals towards the project area in the post mining period.

#### 10.8.1 Green Belt Development Plan

About 1700 nos. of saplings is proposed to be planted for the Mining plan period in safety barrier and nearby village roads with survival rate 80%. The greenbelt development plan has been prepared keeping in view the land use changes that will occur due to mining operation in the area.

**TABLE 10.7 PROPOSED GREENBELT ACTIVITIES FOR 5 YEAR PLAN PERIOD**

Year	No. of trees proposed to be planted	Area to be covered	Name of the species	Survival rate expected in %
I	1700	Safety zone, Un utilized area & Village roads	Neem, Pungam, Sengondrai, Panai, Naval	80

Source: Conceptual Plan of Approved Mining plan & proposed by FAE's & EIA Coordinator

The objectives of the greenbelt development plan are –

- Provide a green belt around the periphery of the quarry area to combat the dispersal of dust in the adjoining areas,
- Protect the erosion of the soil, Conserve moisture for increasing ground water recharging,
- Restore the ecology of the area, restore aesthetic beauty of the locality and meet the requirement of fodder, fuel and timber of the local community.

A well-planned Green Belt with multi rows (three tiers) preferably with long canopy leaves shall be developed with dense plantations around the boundary and haul roads to prevent air, dust noise propagation to undesired places and efforts will be taken for the enhancement of survival rate.

### 10.8.2 Species Recommended for Plantation

Following points have been considered while recommending the species for plantation:

- Creating of bio-diversity.
- Fast growing, thick canopy cover, perennial and evergreen large leaf area,
- Efficient in absorbing pollutants without major effects on natural growth

**TABLE 10.8: RECOMMENDED SPECIES TO PLANT IN THE GREENBELT**

Sl.No	Name of the plant (Botanical)	Family Name	Common Name	Habit
1	<i>Aegle marmelos</i>	Rutaceae	Neem, Vembu	Tree
2	<i>Buchananiaaillaris</i>	Annonaceae	Kattumaram	Tree
3	<i>Borassus Flabellifer</i>	Arecaceae	Palmyra Palm	Tree
4	<i>Cassi roxburghii</i>	Fabaceae	Sengondrai	Tree
5	<i>Terminalia bellerica</i>	Combretaceae	Thandri	Tree
6	<i>Syzygium cumini</i>	Myrtaceae	Naval	Tree

Source: Proposed by FAE's & EIA Coordinator

## 10.9 OCCUPATIONAL SAFETY & HEALTH MANAGEMENT

Occupational safety and health are very closely related to productivity and good employer-employee relationship. The main factors of occupational health impact in quarries are fugitive dust and noise. Safety of employees during quarrying operation and maintenance of mining equipment will be taken care as per Mines Act 1952 and Rule 29 of Mines Rules 1955. To avoid any adverse effect on the health of workers due to dust, noise and vibration sufficient measures have been provided.

### 10.9.1 Medical Surveillance and Examinations –

- Identifying workers with conditions that may be aggravated by exposure to dust & noise and establishing baseline measures for determining changes in health.
- Evaluating the effect of noise on workers
- Enabling corrective actions to be taken when necessary
- Providing health education

The health status of workers in the mine shall be regularly monitored under an occupational surveillance program. Under this program, all the employees are subjected to a detail medical examination at the time of employment. The medical examination covers the following tests under mines act 1952.

- General Physical Examination and Blood Pressure

- X-ray Chest and ECG
- Sputum test
- Detailed Routine Blood and Urine examination

The medical histories of all employees will be maintained in a standard format annually. Thereafter, the employees will be subject to medical examination annually. The below tests keep upgrading the database of medical history of the employees.

**TABLE 10.9: MEDICAL EXAMINATION SCHEDULE**

Sl.No	Activities	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>th</sup> Year	5 <sup>th</sup> Year
1	Initial Medical Examination (Mine Workers)					
A	Physical Check-up					
B	Psychological Test					
C	Audiometric Test					
D	Respiratory Test					
2	Periodical Medical Examination (Mine Workers)					
A	Physical Check – up					
B	Audiometric Test					
C	Eye Check – up					
D	Respiratory Test					
3	Medical Camp (Mine Workers & Nearby Villagers)					
4	Training (Mine Workers)					
Medical Follow ups:- Work force will be divided into three targeted groups age wise as follows:-						
<b>Age Group</b>		<b>PME as per Mines Rules 1955</b>		<b>Special Examination</b>		
Less than 25 years		Once in a Three Years		In case of emergencies		
Between 25 to 40 Years		Once in a Three Years		In case of emergencies		
Above 40 Years		Once in a Three Years		In case of emergencies		
Medical help on top priority immediately after diagnosis/ accident is the essence of preventive aspects.						

### 10.9.2 Proposed Occupational Health and Safety Measures –

- The mine site will have adequate drinking water supply so that workers do not get dehydrated.
- Lightweight and loose-fitting clothes having light colours will be preferred to wear.
- Noise exposure measurements will be taken to determine the need for noise control strategies.
- The personal protective equipment will be provided for mine workers.
- Supervisor will be instructed for reporting any problems with hearing protectors or noise control equipment.
- At noisy working activity, exposure time will be minimized.
- Dust generating sources will be identified and proper control measure will be adopted.
- Periodic medical examinations will be provided for all workers.

- Strict observance of the provisions of DGMS Acts, Rules and Regulations in respect of safety both by management and the workers.
- The width of road will be maintained more than thrice the width of the vehicle. A code of traffic rules will be implemented.
- In respect of contract work, safety code for contractors and workers will be implemented. They will be allowed to work under strict supervision of statutory person/officials only after they will impart training at vocational training centres. All personal protective equipment's will be provided to them.
- A safety committee meeting every month will be organized to discuss the safety of the mines and the persons employed.
- Celebration of annual mines safety week and environmental week in order to develop safety awareness and harmony amongst employees and co quarry owners.

**FIGURE 10.1: PERSONAL PROTECTIVE EQUIPMENT TO THE MINE WORKERS**



### 10.9.3 Health and Safety Training Programme

The Proponents will provide special induction program along with machinery manufacturers for the operators and co-operators to run and maintain the machinery effectively and efficiently. The training program for the supervisors and office staffs will be arranged in the Group Vocational Training Centres in the State and engage Environmental Consultants to provide periodical training to all the employees to carry out the mining operation in and eco-friendly manner.

**TABLE 10.10: LIST OF PERIODICAL TRAININGS PROPOSED FOR EMPLOYEES**

Course	Personnel	Frequency	Duration	Instruction
New-Employee Training	All new employees exposed to mine hazards	Once	One week	Employee rights Supervisor responsibilities Self-rescue Respiratory devices Transportation controls Communication systems Escape and emergency evacuation Ground control hazards Occupational health hazards Electrical hazards First aid Explosives

Task Training Like Drilling, Blasting, Stemming, safety, Slope stability, Dewatering, Haul road maintenance,	Employees assigned to new work tasks	Before new Assignments	Variable	Task-specific health & safety procedures and SOP for various mining activity. Supervised practice in assigned work tasks.
Refresher Training	All employees who received new-hire training	Yearly	One week	Required health and safety standards Transportation controls Communication systems Escape ways, emergency evacuations Fire warning Ground control hazards First aid Electrical hazards Accident prevention Explosives Respirator devices
Hazard Training	All employees exposed to mine hazards	Once	Variable	Hazard recognition and avoidance Emergency evacuation procedures Health standards Safety rules Respiratory devices

Source: Proposed by FAE's & EIA Coordinator as per DGMS Norms

#### 10.9.4 Budgetary Provision for Environmental Management –

Adequate budgetary provision has been made by the Company for execution of Environmental Management Plan. The Table 10.11 gives overall investment on the environmental safeguards and recurring expenditure for successful monitoring and implementation of control measures.

TABLE 10.11: EMP BUDGET FOR PROPOSED PROJECT

	Mitigation Measure	Provision for Implementation	Capital	Recurring
<b>Air Environment</b>	Compaction, gradation and drainage on both sides for Haulage Road	Rental Dozer & drainage construction on haul road @ Rs. 10,000/- per hectare; and yearly maintenance @ Rs. 10,000/- per hectare	28050	28050
	Fixed Water Sprinkling Arrangements + Water sprinkling by own water tankers	Fixed Sprinkler Installation and New Water Tanker Cost for Capital; and Water Sprinkling (thrice a day) Cost for recurring	800000	50000
	Muffle blasting – To control fly rocks during blasting	Blasting face will be covered with sand bags / steel mesh / old tyres / used conveyor belts	0	5000
	Wet drilling procedure / latest eco-friendly drill machine with separate dust extractor unit	Dust extractor @ Rs. 25,000/- per unit deployed as capital & @ Rs. 2500 per unit recurring cost for maintenance - 10 Units	250000	25000
	No overloading of trucks/tippers/tractors	Manual Monitoring through Security guard	0	5000
	Stone carrying trucks will be covered by tarpaulin	Monitoring if trucks will be covered by tarpaulin	0	10000
	Enforcing speed limits of 20 km/hr within ML area	Installation of Speed Governors @ Rs. 5000/- per Tipper/Dumper deployed - 5 Units	25000	1250
	Regular monitoring of exhaust fumes as per RTO norms	Monitoring of Exhaust Fumes by Manual Labour	0	5000
	Regular sweeping and maintenance of approach roads for at least about 200 m from ML Area	Provision for 2 labours @ Rs.10,000/labour (Contractual) per Hectare	0	56100
	Installing wheel wash system near gate of quarry	Installation + Maintenance + Supervision	50000	20000

<b>Noise Environment</b>	Source of noise will be during operation of transportation vehicles, HEMM for this proper maintenance will be done at regular intervals.	Provision made in Operating Cost	0	0
	Oiling & greasing of Transport vehicles and HEMM at regular interval will be done	Provision made in Operating Cost	0	0
	Adequate silencers will be provided in all the diesel engines of vehicles.	Provision made in Operating Cost	0	0
	It will be ensured that all transportation vehicles carry a fitness certificate.	Provision made in Operating Cost	0	0
	Safety tools and implements that are required will be kept adequately near blasting site at the time of charging.	Provision made in OHS part	0	0
	Line Drilling all along the boundary to reduce the PPV from blasting activity and implementing controlled blasting.	Provision made in Operating Cost	0	0
	Proper warning system before blasting will be adopted and clearance of the area before blasting will be ensured.	Blowing Whistle by Mining Mate / Blaster / Compentent Person	0	0
	Provision for Portable blaster shed	Installation of Portable blasting shelter	50000	2000
	NONEL Blasting will be practiced to control Ground vibration and fly rocks	Rs. 30/- per 6 Tonnes of Blasted Material	0	1029431
<b>Waste Management</b>	Waste management (Spent Oil, Grease etc.,)	Provision for domestic waste collection and disposal through authorized agency	5000	20000
		Installation of dust bins	5000	2000
	Bio toilets will be made available outside mine lease on the land of owner itself	Provision made in Operating Cost	0	0

<b>Mine Closure</b>	1. Progressive Closure Activity - Surface Runoff managent	Provision for garland drain @ Rs. 10,000/- per Hectare with maintenance of Rs. 5,000/- per annum	28050	5000
	2. Progressive Closure Activity Barbed Wire Fencing to quarry area will be provisioned.	Per Hectare fencing Cost @ Rs. 2,00,000/- with Maintenance of Rs 10,000/- per annum	561000	10000
	3. Progressive Closure Activity Green belt development - 500 trees per one hectare - Proposal for 1620 Trees - (510 Inside Lease Area & 1110 Outside Lease Area)	Site clearance, preparation of land, digging of pits / trenches, soil amendmets, transplantation of saplings @ 200 per plant (capital) for plantation inside the lease area and @ 30 per plant maintenance (recurring)	96000	14400
		Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	360000	36000
	4. Implementation of Final Mine Closure Acty as per Approved Mining Plan on Last Year	Few activities already covered as progressive closure activities as greenbelt development, wire fencing, garland drain. *For Final Closure Activities 15% of the proposed closure cost will be spent during the final mine closure stage - Last Year	67815	0
	5. Contribution towards Green Fund. As per TNMMCR 1959, Rule 35 A	The Contribution towards Green Funds @ 10% of Seigniorage fee are indicated as part of EMP Budge and not necessarily implemented in the Project Site	2336017	0

<b>Implementation of EC, Mining Plan &amp; DGMS Condition</b>	Scientific Study Report for the blast induced ground vibration	Scientific Study report has been conducted for the Proposed blasting parameters to the project area, quarry, Separate Blasting Study will be conducted after starting the quarry	400000	0
	Size 6' X 5' with blue background and white letters as mentioned in MoM Appendix II by the SEAC TN	Fixed Display Board at the Quarry Entrance as permanent structure mentioning Environmental Conditions	10000	1000
	Air, Water, Noise and Soil Quality Sampling every 6 Months for Compliance Report of EC Conditions	Submission of 2 Half Yearly Compliance - Lab Monitoring Report as per CPCB norms	0	50000
	Workers will be provided with Personal Protective Equipment's	Provision of PPE @ Rs. 4000/- per employee with recurring based on wear and tear (say, @ Rs. 1000/- per employee) - 56 Employees	144000	36000
	Health check up for workers will be provisioned	IME & PME Health check up @ Rs. 1000/- per employee	0	36000
	First aid facility will be provided	Provision of 2 Kits per Hectare @ Rs. 2000/-	0	5610
	Mine will have safety precaution signages, boards.	Provision for signages and boards made	10000	2000
	No parking will be provided on the transport routes. Separate provision on the south side of the hill will be made for vehicles /HEMMs. Flaggers will be deployed for traffic management	Parking area with shelter and flags @ Rs. 50,000/- per hectare project and Rs. 10,000/- as maintenance cost	140250	10000

	Installation of CCTV cameras in the mines and mine entrance	Camera 4 Nos, DVR, Monitor with internet facility	30000	5000
	Implementation as per Mining Plan and ensure safe quarry working	Mines Manager (1 <sup>st</sup> Class / 2 <sup>nd</sup> Class / Mine Foreman) under regulation 34 / 34 (6) of MMR, 1961 and Mining Mate under regulation 116 of MMR,1961 @ 40,000/- for Manager & @ 25,000/- for Foreman / Mate	0	780000
<b>CER</b>	As per MoEF &CC OM 22-65/2017-IA.III Dated 25.02.2021	Detailed Description in following slides and Budget allocation is included as per MoeEF & CC OM	500000	0
<b>TOTAL</b>			<b>3492350</b>	<b>2249841</b>

\* marked cost is already discussed in the mining plan hence that is not included in the total Environmental Management plan cost

### Total Cost for the Five Years

Year	Total Cost
1 <sup>st</sup>	₹ 57,42,191
2 <sup>nd</sup>	₹ 23,62,333
3 <sup>rd</sup>	₹ 24,80,450
4 <sup>th</sup>	₹ 26,04,472
5 <sup>th</sup>	₹ 27,34,696

### Cost inflation 5% per annum

**Note:** In order to implement the environmental protection measures, an amount of Rs. 34.92 lakhs as capital cost and recurring cost as Rs. 22.49 lakhs as recurring cost is proposed considering present market price considering present market scenario for four proposed projects in the cluster.

**10.10 CONCLUSION –**

Various aspects of mining activities were considered and related impacts were evaluated. Considering all the possible ways to mitigate the environmental concerns Environmental Management Plan was prepared and fund has been allocated for the same. The EMP is dynamic, flexible and subjected to periodic review. For project where the major environmental impacts are associated, EMP will be under regular review. Senior Management responsible for the project will conduct a review of EMP and its implementation to ensure that the EMP remains effective and appropriate. Thus, the proper steps will be taken to accomplish all the goals mentioned in the EMP and the project will bring the positive impact in the study area.

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**CHAPTER – 11: SUMMARY AND CONCLUSIONS**

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The Rough stone and Gravel quarry project belongs to Tvl.Navamani Mines Pvt Ltd. over an extent of 2.80.5 Ha falls under “B” category as per MoEF & CC Notification S.O. 3977 (E).

Now, as per Order Dated: 04.09.2018 & 13.09.2018 passed by Hon'ble National Green Tribunal, New Delhi in O.A. No. 173 of 2018 & O.A. No, 186 of 2016 and MoEF & CC Office Memorandum F. No. L-11011/175/2018-IA-II (M) Dated: 12.12.2018 clarified the requirement for EIA, EMP and therefore, Public Consultation for all areas from 5 to 25 ha falling in Category B- 1 and appraised by SEAC/ SEIAA as well as for cluster situation.

A detailed Draft EIA /EMP Report is prepared for public and other stakeholders’ suggestions and the Final EIA /EMP Report will be prepared based on the outcome of Public Consultation and the outcome will be incorporated in the EMP Report.

Environmental monitoring and audit mechanism have been recommended before and after commencement of the project, where necessary, to verify the accuracy of the EIA predictions and the effectiveness of recommended mitigation measures.

The main scope of the EIA study is to quantify the cumulative impact in the study area due to cluster quarries and formulate the effective mitigation measures for each individual leases. A detailed account of the emission sources, emissions control equipment, background Air quality levels, Meteorological measurements, Dispersion model and all other aspects of pollution like effluent discharge, Dust generation etc., have been discussed in this report. The baseline monitoring study has been carried out during the months March to May 2021(Baseline Data Used is as per MoEF & CC Office Memorandum No. J-11013/41/2006-IA-II (I) (Part) Dated 29<sup>th</sup> August 2017 & MoEF & CC Office Memorandum F. No. IA3-22/10/2022-IA.III [E 177258] Dated: 08.06.2022) for various environmental components so as to assess the anticipated impacts of the cluster quarry projects on the environment and suitable mitigation measures for likely adverse impacts due to the proposed project is suggested individually for the proposed project under Chapter 10.

The project proponent ensures to obtain necessary clearances and quarrying will be carried out as per rules and regulations. The Mining Activity will be carried out in a phased manner as per the approved mining plan after obtaining EC, CTO from TNPCB, execution of lease deed and obtaining DGMS Permission and working will be carried out under the supervision of Competent Persons employed.

Overall, the Draft EIA report has predicted that the project will comply with all environment standards and legislation after commencement of the project and operational stage mitigation measures are implemented.

Mining operations has positive impact on environment and socio economy such as landscape improvement, water as by-product, economy development and better public services, providing and supply of Rough Stone as per market demand.

Sustainable and modern mining leads us to see positive impact of mining operation and providing consistent employment for nearly 36 people directly in the proposed project and indirectly around 15-20 people.

As discussed, it is safe to say that the proposed quarry is not likely to cause any significant impact to the ecology of the area, as adequate preventive measures will be adopted to keep the various pollutants within the permissible limits. Green belt development around the area will also be taken up as an effective pollution mitigate technique, as well as to serve as biological indicators for the pollutants released from the Tvl.Navamani Mines Pvt Ltd. Rough Stone and Gravel Quarry.

## CHAPTER 12.0: DISCLOSURE OF CONSULTANTS

Tvl.Navamani Mines Private Limited have engaged M/s Geo Exploration and Mining Solutions, an Accredited Organization under Quality Council of India – National Accreditation Board for Education & Training, New Delhi, for carrying out the EIA Study as per the ToR Issued.

Name and address of the consultancy:

### GEO EXPLORATION AND MINING SOLUTIONS

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Tamil Nadu, India

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Web: [www.gemssalem.com](http://www.gemssalem.com)

Phone: 0427 2431989.

The Accredited Experts and associated members who were engaged for this EIA study as given below –

Sl.No.	Name of the expert	In house/ Empanelled	EIA Coordinator		FAE	
			Sector	Category	Sector	Category
1	<b>Dr. M. Ifthikhar Ahmed</b>	<b>In-house</b>	<b>1</b>	<b>A</b>	WP GEO SC	B A A
2	Dr. P. Thangaraju	In-house	-	-	HG GEO	A A
3	Mr. A. Jagannathan	In-house	-	-	AP NV SHW	B A B
4	Mr. N. Senthilkumar	Empanelled	38 28	B B	AQ WP RH	B B A
5	Mrs. Jisha parameswaran	In-house	-	-	SW	B
6	Mr. Govindasamy	In-house	-	-	WP	B
7	Mrs. K. Anitha	In-house	-	-	SE	A
8	Mrs. Amirtham	In-house	-	-	EB	B
9	Mr. Alagappa Moses	Empanelled	-	-	EB	A
10	Mr. A. Allimuthu	In-house	-	-	LU	B
11	Mr. S. Pavel	Empanelled	-	-	RH	B
12	Mr. J. R. Vikram Krishna	Empanelled	-	-	SHW RH	A A

Abbreviations	
EC	EIA Coordinator
AEC	Associate EIA Coordinator
FAE	Functional Area Expert
FAA	Functional Area Associates
TM	Team Member
GEO	Geology
WP	Water pollution monitoring, prevention and control
AP	Air pollution monitoring, prevention and control
LU	Land Use
AQ	Meteorology, air quality modeling, and prediction
EB	Ecology and bio-diversity
NV	Noise and vibration
SE	Socio economics
HG	Hydrology, ground water and water conservation
SC	Soil conservation
RH	Risk assessment and hazard management
SHW	Solid and hazardous wastes
MSW	Municipal Solid Wastes
ISW	Industrial Solid Wastes
HW	Hazardous Wastes

### DECLARATION BY EXPERTS CONTRIBUTING TO THE EIA/EMP

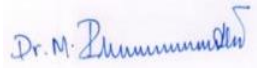
Declaration by experts contributing to the EIA/EMP for Rough Stone & Gravel Cluster Quarries over an Extent of 8.80.0 ha in Sivayam (North) Village of Krishnarayapuram Taluk, Karur District of Tamil Nadu. It is also certified that information furnished in the above EIA study are true and correct to the best of our knowledge.

I, hereby, certify that I was a part of the EIA team in the following capacity that developed the EIA/EMP Report.

Name: **Dr. M. Ifthikhar Ahmed**

Designation: **EIA Coordinator**

Date & Signature:










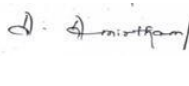


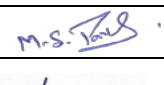

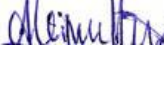
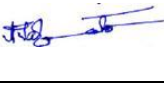


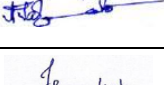

Period of Involvement: **January 2019 to till date**

**Associated Team Member with EIA Coordinator:**

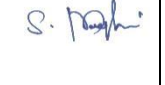
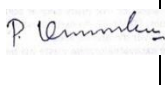

1. **Mr. S. Nagamani**
2. **Mr. Viswanathan**
3. **Mr. Santhoshkumar**
4. **Mr. S. Ilavarasan**

#### FUNCTIONAL AREA EXPERTS ENGAGED IN THE PROJECT

Sl. No.	Functional Area	Involvement	Name of the Expert/s	Signature
1	AP	<ul style="list-style-type: none"> <li>▪ Identification of different sources of air pollution due to the proposed mine activity</li> <li>▪ Prediction of air pollution and propose mitigation measures / control measures</li> </ul>	Mr. A. Jagannathan	
2	WP	<ul style="list-style-type: none"> <li>▪ Suggesting water treatment systems, drainage facilities</li> <li>▪ Evaluating probable impacts of effluent/waste water discharges into the receiving environment/water bodies and suggesting control measures.</li> </ul>	Dr. M. Ifthikhar Ahmed	
			Mr. N. Senthilkumar	
3	HG	<ul style="list-style-type: none"> <li>▪ Interpretation of ground water table and predict impact and propose mitigation measures.</li> <li>▪ Analysis and description of aquifer Characteristics</li> </ul>	Dr. P. Thangaraju	
4	GEO	<ul style="list-style-type: none"> <li>▪ Field Survey for assessing the regional and local geology of the area.</li> <li>▪ Preparation of mineral and geological maps.</li> <li>▪ Geology and Geo morphological analysis/description and Stratigraphy/Lithology.</li> </ul>	Dr. M. Ifthikhar Ahmed	
			Dr. P. Thangaraju	
5	SE	<ul style="list-style-type: none"> <li>▪ Revision in secondary data as per Census of India, 2011.</li> <li>▪ Impact Assessment &amp; Preventive Management Plan</li> <li>▪ Corporate Environment Responsibility.</li> </ul>	Mrs. K. Anitha	

6	EB	<ul style="list-style-type: none"> <li>▪ Collection of Baseline data of Flora and Fauna.</li> <li>▪ Identification of species labelled as Rare, Endangered and threatened as per IUCN list.</li> <li>▪ Impact of the project on flora and fauna.</li> <li>▪ Suggesting species for greenbelt development.</li> </ul>	Mrs. Amirtham	
			Mr. Alagappa Moses	
7	RH	<ul style="list-style-type: none"> <li>▪ Identification of hazards and hazardous substances</li> <li>▪ Risks and consequences analysis</li> <li>▪ Vulnerability assessment</li> <li>▪ Preparation of Emergency Preparedness Plan</li> <li>▪ Management plan for safety.</li> </ul>	Mr. N. Senthilkumar	
			Mr. S. Pavel	
			Mr. J. R. Vikram Krishna	
8	LU	<ul style="list-style-type: none"> <li>▪ Construction of Land use Map</li> <li>▪ Impact of project on surrounding land use</li> <li>▪ Suggesting post closure sustainable land use and mitigative measures.</li> </ul>	Mr. A. Allimuthu	
9	NV	<ul style="list-style-type: none"> <li>▪ Identify impacts due to noise and vibrations</li> <li>▪ Suggesting appropriate mitigation measures for EMP.</li> </ul>	Mr. A. Jagannathan	
10	AQ	<ul style="list-style-type: none"> <li>▪ Identifying different source of emissions and propose predictions of incremental GLC using AERMOD.</li> <li>▪ Recommending mitigations measures for EMP</li> </ul>	Mr. N. Senthilkumar	
11	SC	<ul style="list-style-type: none"> <li>▪ Assessing the impact on soil environment and proposed mitigation measures for soil conservation</li> </ul>	Dr. M. Ifthikhar Ahmed	
12	SHW	<ul style="list-style-type: none"> <li>▪ Identify source of generation of non-hazardous solid waste and hazardous waste.</li> <li>▪ Suggesting measures for minimization of generation of waste and how it can be reused or recycled.</li> </ul>	Mr. A. Jagannathan	
			Mr. J. R. Vikram Krishna	

### LIST OF TEAM MEMBERS ENGAGED IN THIS PROJECT

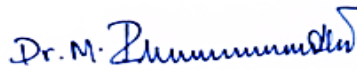
Sl.No.	Name	Functional Area	Involvement	Signature
1	Mr. S. Nagamani	AP; GEO; AQ	<ul style="list-style-type: none"> <li>▪ Site Visit with FAE</li> <li>▪ Provide inputs &amp; Assisting FAE with sources of Air Pollution, its impact and suggest control measures</li> <li>▪ Provide inputs on Geological Aspects</li> <li>▪ Analyse &amp; provide inputs and assist FAE with meteorological data, emission estimation, AERMOD modelling and suggesting control measures</li> </ul>	
2	Mr. Viswanathan	AP; WP; LU	<ul style="list-style-type: none"> <li>▪ Site Visit with FAE</li> <li>▪ Provide inputs &amp; Assisting FAE with sources of Air Pollution, its impact and suggest control measures</li> <li>▪ Assisting FAE on sources of water pollution, its impacts and suggest control measures</li> <li>▪ Assisting FAE in preparation of land use maps</li> </ul>	
3	Mr. Santhoshkumar	GEO; SC	<ul style="list-style-type: none"> <li>▪ Site Visit with FAE</li> <li>▪ Provide inputs on Geological Aspects</li> <li>▪ Assist in Resources &amp; Reserve Calculation and preparation of Production Plan &amp; Conceptual Plan</li> </ul>	

			<ul style="list-style-type: none"> <li>▪ Provide inputs &amp; Assisting FAE with soil conservation methods and identifying impacts</li> </ul>	
4	Mr. Umamahesvaran	GEO	<ul style="list-style-type: none"> <li>▪ Site Visit with FAE</li> <li>▪ Provide inputs on Geological Aspects</li> <li>▪ Assist in Resources &amp; Reserve Calculation and preparation of Production Plan &amp; Conceptual Plan</li> </ul>	<i>S. Umamahesvaran</i>
5	Mr. A. Allimuthu	SE	<ul style="list-style-type: none"> <li>▪ Site Visit with FAE</li> <li>▪ Assist FAE with collection of data's</li> <li>▪ Provide inputs by analysing primary and secondary data</li> </ul>	<i>A. Allimuthu</i>
6	Mr. S. Ilavarasan	LU; SC	<ul style="list-style-type: none"> <li>▪ Site Visit with FAE</li> <li>▪ Assisting FAE in preparation of land use maps</li> <li>▪ Provide inputs &amp; Assisting FAE with soil conservation methods and identifying impacts</li> </ul>	<i>S. Ilavarasan</i>
7	Mr. E. Vadivel	HG	<ul style="list-style-type: none"> <li>▪ Site Visit with FAE</li> <li>▪ Assist FAE &amp; provide inputs on aquifer characteristics, ground water level/table</li> <li>▪ Assist with methods of ground water recharge and conduct pump test, flow rate</li> </ul>	<i>E. Vadivel</i>
8	Mr. D. Dinesh	NV	<ul style="list-style-type: none"> <li>▪ Site Visit with FAE</li> <li>▪ Assist FAE and provide inputs on impacts due to proposed mine activity and suggest mitigation measures</li> <li>▪ Assist FAE with prediction modelling</li> </ul>	<i>D. Dinesh</i>
9	Mr. Panneer Selvam	EB	<ul style="list-style-type: none"> <li>▪ Site Visit with FAE</li> <li>▪ Assist FAE with collection of baseline data</li> <li>▪ Provide inputs and assist with labelling of Flora and Fauna</li> </ul>	<i>P. Panneer Selvam</i>
10	Mrs. Nathiya	EB	<ul style="list-style-type: none"> <li>▪ Site Visit with FAE</li> <li>▪ Assist FAE with collection of baseline data</li> <li>▪ Provide inputs and assist with labelling of Flora and Fauna</li> </ul>	<i>T. Nathiya</i>

**DECLARATION BY THE HEAD OF THE ACCREDITED CONSULTANT ORGANIZATION**

I, Dr. M. Ifthikhar Ahmed, Managing Partner, Geo Exploration and Mining Solutions, hereby, confirm that the above-mentioned Functional Area Experts and Team Members prepared the EIA/EMP for Rough Stone & Gravel Cluster Quarries over an Extent of 8.80.0ha in Sivayam (North) Village of Krishnayarapuram Taluk, Karur District of Tamil Nadu. It is also certified that information furnished in the EIA study are true and correct to the best of our knowledge.

Signature&amp; Date:



Name:

**Dr. M. Ifthikhar Ahmed**

Designation:

**Managing Partner**

Name of the EIA Consultant Organization:

**M/s. Geo Exploration and Mining Solutions**

NABET Certificate No &amp; Issue Date:

**NABET/EIA/2225/RA 0276 Dated: 20.02.2023**

Validity:

**August 06, 2025.**

Category of the Industry :

**RED**



**CONSENT ORDER NO. 2405257583503 DATED: 22/02/2024.**

**PROCEEDINGS NO.F.1762KAR/RS/DEE/TNPCB/KAR/A/2024 DATED: 22/02/2024**

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**SUB:** Tamil Nadu Pollution Control Board –CONSENT TO OPERATE –DIRECT –M/s. NAVAMANI MINES PVT LTD ROUGH STONE AND GRAVEL QUARRY , S.F.No. 15/1 & 15/2, SIVAYAM village Krishnarayapuram Taluk and Karur District - Consent for operation of the plant and discharge of emissions under Section 21 of the Air (Prevention and Control of Pollution) Act, 1981 as amended in 1987 (Central Act 14 of 1981) –Issued- Reg.

**Ref:** 1. The unit's application No. 57583503 for CTO – Direct dated 17-02-2024.  
2. IR.No : F.1762KAR/RS/AE/KAR/2024 dated 21/02/2024.  
3. Minutes of the 209th DLCCC meeting held on 22.02.2024 vide Item No 209-01.

CONSENT TO OPERATE is hereby granted under Section 21 of the Air (Prevention and Control of Pollution) Act, 1981 as amended in 1987 (Central Act 14 of 1981) (hereinafter referred to as "The Act") and the rules and orders made there under to

The Director  
M/s . NAVAMANI MINES PVT LTD ROUGH STONE AND GRAVEL QUARRY  
S.F No. 15/1 & 15/2  
SIVAYAM Village  
Krishnarayapuram Taluk  
Karur District.

Authorizing the occupier to operate the industrial plant in the Air Pollution Control Area as notified by the Government and to make discharge of emission from the stacks/chimneys.

This is subject to the provisions of the Act, the rules and the orders made there under and the terms and conditions incorporated under the Special and General conditions stipulated in the Consent Order issued earlier and subject to the special conditions annexed.

This CONSENT is valid for the period ending **February 05, 2029**

**District Environmental Engineer,  
Tamil Nadu Pollution Control Board,  
KARUR**

To  
The Director,  
M/s.NAVAMANI MINES PVT LTD ROUGH STONE AND GRAVEL QUARRY,  
SF No. 15/1 & 15/2, Sivayam North Village, Krushnarayapuram Taluk, Karur District.  
Pin: 639120

**Copy to:**

- 1.The Commissioner, KRISHNARAYAPURAM-Panchayat Union, Krishnarayapuram Taluk, Karur District .
2. Copy submitted to the Member Secretary, Tamil Nadu Pollution Control Board, Chennai for favour of kind information.
3. The District Environmental Engineer, Tamil Nadu Pollution Control Board, KARUR for favour of kind information.
4. File

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## SPECIAL CONDITIONS

1. This consent to operate is valid for operating the facility for the manufacture of products (Col. 2) at the rate (Col. 3) mentioned below. Any change in the products and its quantity has to be brought to the notice of the Board and fresh consent has to be obtained.

Sl. No.	Description	Quantity	Unit
<b>Product Details</b>			
1.	Mining of Rough Stone over an Extent of 2.80.5 hectares lying in Latitude 10°52'19.57" N to 10°52'25.68" N and Longitude 78°22'26.70" E to 78°22'34.23" E located at SF No. 15/1 & 15/2, Sivayam North Village, Krushnarayapuram Taluk, Karur District.	372305	Cu.m of Rough Stone up to depth of 33 m BGL as per the approved mining plan period
2.	Quarrying of Gravel over an Extent of 2.80.5 hectares lying in Latitude 10°52'19.57" N to 10°52'25.68" N and Longitude 78°22'26.70" E to 78°22'34.23" E located at SF No. 15/1 & 15/2, Sivayam North Village, Krushnarayapuram Taluk, Karur District.	49332	Cu.m of Gravel up to depth of 30 m BGL as per the approved mining plan period

2. This consent to operate is valid for operating the facility with the below mentioned emission/noise sources along with the control measures and/or stack. Any change in the emission source/control measures/change in stack height has to be brought to the notice of the Board and fresh consent/Amendment has to be obtained.

<b>I Point source emission with stack :</b>				
Stack No.	Point Emission Source	Air pollution Control measures	Stack height from Ground Level in m	Gaseous Discharge in Nm <sup>3</sup> /hr
<b>II Fugitive/Noise emission :</b>				
Sl. No.	Fugitive or Noise Emission sources	Type of emission	Control measures	
1.	Top Soil Removal	Fugitive	Water Sprinklers	
2.	Drilling Operations	Fugitive	Water Injection	
3.	Blasting	Fugitive	Good blasting practices & Water Sprinklers	
4.	Loading,unloading and hauling	Fugitive	Water Sprinklers	
5.	Blasting	Noise	Good blasting practices	

- 3(a). The emission shall not contain constituents in excess of the tolerance limits as laid down hereunder :

Sl.	Parameter	Unit	Tolerance limits	Stacks
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**Annexure enclosed if applicable. :-**

- 3.(b) The Ambient Air in the industrial plant area shall not contain constituents in excess of the tolerance limits prescribed below.

Sl. No.	Pollutant	Time Weighted Average	Unit	Tolerance Limits	
				Industrial, Residential, Rural and other area	Ecologically Sensitive Area (notified by Central Govt.)
1.	Sulphur Dioxide (SO <sub>2</sub> )	Annual 24 hours	microgram/m <sup>3</sup> microgram/m <sup>3</sup>	50 80	20 80
2.	Nitrogen Dioxide (NO <sub>2</sub> )	Annual 24 hours	microgram/m <sup>3</sup> microgram/m <sup>3</sup>	40 80	30 80
3.	Particulate Matter (Size Less than 10 micro M) or PM <sub>10</sub>	Annual 24 hours	microgram/m <sup>3</sup> microgram/m <sup>3</sup>	60 100	60 100
4.	Particulate Matter (Size Less than 2.5 micro M) or PM <sub>2.5</sub>	Annual 24 hours	microgram/m <sup>3</sup> microgram/m <sup>3</sup>	40 60	40 60
5.	Ozone (O <sub>3</sub> )	8 Hours 1 Hour	microgram/m <sup>3</sup> microgram/m <sup>3</sup>	100 180	100 180
Sl. No.	Pollutant	Time Weighted Average	Unit	Tolerance Limits	
				Industrial, Residential, Rural and other area	Ecologically Sensitive Area (notified by Central Govt.)
6.	Lead (Pb)	Annual 24 hours	microgram/m <sup>3</sup> microgram/m <sup>3</sup>	0.5 1.0	0.5 1.0
7.	Carbon Monoxide (CO)	8 Hours 1 Hour	miligram/m <sup>3</sup> miligram/m <sup>3</sup>	02 04	02 04
8.	Ammonia (NH <sub>3</sub> )	Annual 24 hours	microgram/m <sup>3</sup> microgram/m <sup>3</sup>	100 400	100 400
9.	Benzene (C <sub>6</sub> H <sub>6</sub> )	Annual	microgram/m <sup>3</sup>	5	5
10.	Benzo(O) Pyrene (BaP) –particulate phase only	Annual	nanogram/m <sup>3</sup>	01	01
11.	Arsenic (As)	Annual	nanogram/m <sup>3</sup>	06	06
12.	Nickel (Ni)	Annual	nanogram/m <sup>3</sup>	20	20

3(c) The Ambient Noise Level in the industrial plant area shall not exceed the limits prescribed below:

Limits in L.eq.-dB(A)	Day Time	Night Time
Residential Area	55	45

4. All units of the Air pollution control measures shall be operated efficiently and continuously so as to achieve the standards prescribed in Sl. No.3 above.
5. The occupier shall not change or alter quality or quantity or the rate of emission or replace or alter the air pollution control equipment or change the raw material or manufacturing process resulting in change in quality and/or quantity of emissions without the previous written permission of the Board.
6. The occupier shall maintain log book regarding the stack monitoring system or operation of the plant or any other particulars for each of the unit operations of air pollution control systems to reflect the working condition which shall be furnished for verification of the Board officials during inspection.
7. The occupier shall at his own cost get the samples of emission/air/noise levels collected and analyzed by the TNPC Board Laboratory once in every 6 months/once in a year/periodically for the parameters as prescribed.

8. Any upset condition in any of the plants of the factory which is likely to result in increased emissions and result in violation of the standards mentioned in Sl.No.3 shall be reported to the Member Secretary / Joint Chief Environmental Engineer-Monitoring and the concerned District/Assistant Environmental Engineer of the Board by e-mail immediately and subsequently by Post with full details of such upset condition.
9. The occupier shall always comply and carryout the order/directions issued by the Board in this Consent Order and from time to time without any negligence. The occupier shall be liable for action as per provisions of the Act in case of non compliance of any order/directions issued.

**Special Additional Conditions:**

The unit shall obtain No Objection Certificate (NOC) from the Tamil Nadu Bio Diversity Board /National Bio Diversity Authority if the unit is using any Biological resources or knowledge associated thereto as per the provisions of Biological Diversity Act 2002.

The industries shall take all efforts to use and popularize “Mission LiFE” logo and mascot which is available in TNPCB & MoEFCC website. They shall also request their employees to adopt “Mission LiFE” action points and document the same and furnish half yearly report to Board.

**Additional Conditions:**

1. The unit shall adhere to the AAQ/emission/ANL standards prescribed by the Board.
2. The unit shall operate and maintain water sprinklers for the suppression of dust while movement of vehicle and during loading and unloading of materials etc., efficiently and continuously so as to satisfy the NAAQ/Emission standards as prescribed by the Board.
3. The proponent shall ensure that Vehicular emissions shall be kept under control and be regularly monitored to adhere the prescribed standards.
4. The approach road used for the vehicular movements’ access to the quarry shall be maintained in good condition and without hindrance to the nearby habitants.
5. The proponent shall comply with the conditions stipulated in the Environmental Clearance issued to the quarry vide Letter No. SEIAA-TN/F.No.6993/1(a)/EC.No.6205/2023 Dated 12.12.2023 from the State Level Environment Impact Authority, Chennai.
6. The proponent shall comply with the conditions stipulated in lease agreement made with District Collector, Karur on 06.02.2024.
7. The proponent shall comply with the conditions stipulated in the approved mining vide Rc.No:256/Mines/2019 dated 24.06.2019 from the Deputy Director, Department of Geology and Mining, Karur District.
8. The consent do not absolve from obtaining permission / Clearance from other authorities or other statues as applicable.
9. The unit shall not use “use and throw away plastics” such as plastic sheets used for food wrapping, spreading on dining table etc., plastic plates, plastic coated tea cups, plastic tumbler, water pouches and packets, plastic straw, plastic carry bag and plastic flags irrespective of thickness, within the industry premises. Instead, the unit shall encourage use of eco-friendly alternative such banana leaf, areca nut palm plate, stainless steel, glass, porcelain plates / cups, cloth bag, jute bag etc.,
10. In case of revision of consent fee by the Government, the unit shall remit the difference in amount within one month from the date of notification. Failing to remit the consent fee, this order will be withdrawn without any notice and further action will be initiated against the unit as per law.

**District Environmental Engineer,  
Tamil Nadu Pollution Control Board,  
KARUR**

**GENERAL CONDITIONS**

1. The occupier shall make an application along with the prescribed consent fee for grant of renewal of consent at least 60 days before the date of expiry of this Consent Order along with all the required particulars ensuring that there is no change in production quantity and emission.
2. This Consent is given by the Board in consideration of the particulars given in the application. Any change or alteration or deviation made in actual practice from the particulars furnished, in the application will also be ground for review/variation/revocation of the Consent Order under Section 21 of the Act.
3. The conditions imposed shall continue in force until revoked under Section 21 of the Act.
4. After the issue of this order, all the 'Consent to Operate' orders issued previously under Air (Prevention and Control of Pollution) Act, 1981 as amended stands defunct.
5. The occupier shall maintain an Inspection Register in the factory so that the inspecting officer shall record the details of the observations and instructions issued to the unit at the time of inspection for adherence.
6. The occupier shall provide and maintain an alternate power supply along with separate energy meter for the Air Pollution Control measures sufficient to ensure continuous operation of all pollution control equipments to ensure compliance.
7. The occupier shall provide all facilities to the Board officials for collection of samples in and around the factory at any time.
8. The applicant shall display the flow diagram of the sources of emission and pollution control systems provided at the site.
9. The liquid effluent arising out of the operation of the air pollution control equipment shall also be treated in a manner and to the satisfaction of standards prescribed by the Board in accordance with the provisions of Water (Prevention and Control of Pollution) Act, 1974 as amended.
10. The air pollution control equipments, location of inspection chambers and sampling port holes shall be made easily accessible at all time.
11. In case of any episodal discharge of emission, the industry shall take immediate action to bring down the emission within the limits prescribed by the Board.
12. If applicable, the occupier has to comply with the provisions of Public Liability Insurance Act, 1991 to provide immediate relief in the event of any hazard to human beings, other living creatures/plants and properties while handling and storage of hazardous substances.
13. The issuance of this consent does not authorize or approve the construction of any physical structures or facilities or the undertaking of any work in any natural watercourse or in Government Poromboke lands.
14. The issuance of this Consent does not convey any property right in either real personal property or any exclusive privileges, nor does it authorize any injury to private property or Government property or any invasion of personal rights nor any infringement of Central, State laws or regulation.
15. The occupier shall forth with keep the Board informed of any accident of unforeseen act or event of any poisonous, noxious or polluting matter or emissions are being discharged into stream or well or air as a result of such discharge, water or air is being polluted.
16. If due to any technological improvements or otherwise the Board is of opinion that all or any of the conditions referred to above requires variation (including the change of any treatment system, either in whole or in part) the Board shall, after giving the applicant an opportunity of being heard, vary all or any of such conditions and thereupon the applicant shall be bound to comply with the conditions as so varied.
17. In case there is any change in the constitution of the management, the occupier of the new management shall file fresh application under Air (Prevention and Control of Pollution) Act, 1981, as amended in Form-I alongwith relevant documents of change of management immediately and get the necessary amendment with renewal of consent order.
18. In case there is any change in the name of the company alone, the occupier shall inform the same with relevant documents immediately and get the necessary amendments for the change of name from the Board.

19. The occupier shall display this consent order granted to him in a prominent place for perusal of the inspecting Officers of this Board.

**District Environmental Engineer,  
Tamil Nadu Pollution Control Board,  
KARUR**

Category of the Industry :

**RED**



**CONSENT ORDER NO. 2405157583503 DATED: 22/02/2024.**

**PROCEEDINGS NO.F.1762KAR/RS/DEE/TNPCB/KAR/W/2024 DATED: 22/02/2024**

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**SUB:** Tamil Nadu Pollution Control Board –CONSENT TO OPERATE – DIRECT -M/s. NAVAMANI MINES PVT LTD ROUGH STONE AND GRAVEL QUARRY , S.F.No. 15/1 & 15/2, SIVAYAM village Krishnarayapuram Taluk and Karur District - Consent for the operation of the plant and discharge of sewage and/or trade effluent under Section 25 of the Water (Prevention and Control of Pollution) Act, 1974 as amended in 1988 (Central Act 6 of 1974) – Issued- Reg.

**Ref:** 1. The unit's application No. 57583503 for CTO – Direct dated 17-02-2024.  
2. IR.No : F.1762KAR/RS/AE/KAR/2024 dated 21/02/2024.  
3. Minutes of the 209th DLCCC meeting held on 22.02.2024 vide Item No 209-01.

CONSENT TO OPERATE is hereby granted under Section 25 of the Water (Prevention and Control of Pollution) Act, 1974 as amended in 1988 (Central Act, 6 of 1974) (hereinafter referred to as "The Act") and the rules and orders made there under to

The Director  
M/s . NAVAMANI MINES PVT LTD ROUGH STONE AND GRAVEL QUARRY  
S.F No. 15/1 & 15/2  
SIVAYAM Village  
Krishnarayapuram Taluk  
Karur District.

Authorising the occupier to make discharge of sewage and /or trade effluent.

This is subject to the provisions of the Act, the rules and the orders made there under and the terms and conditions incorporated under the Special and General conditions stipulated in the Consent Order issued earlier and subject to the special conditions annexed.

This CONSENT is valid for the period ending **February 05, 2029**

**District Environmental Engineer,  
Tamil Nadu Pollution Control Board,  
KARUR**

To  
The Director,  
M/s.NAVAMANI MINES PVT LTD ROUGH STONE AND GRAVEL QUARRY,  
SF No. 15/1 & 15/2, Sivayam North Village, Krushnarayapuram Taluk, Karur District.  
Pin: 639120

**Copy to:**

- 1.The Commissioner, KRISHNARAYAPURAM-Panchayat Union, Krishnarayapuram Taluk, Karur District .
2. Copy submitted to the Member Secretary, Tamil Nadu Pollution Control Board, Chennai for favour of kind information.
3. The District Environmental Engineer, Tamil Nadu Pollution Control Board, KARUR for favour of kind information.
4. File

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## SPECIAL CONDITIONS

1. This consent to operate is valid for operating the facility for the manufacture of products (Col. 2) at the rate (Col. 3) mentioned below. Any change in the products and its quantity has to be brought to the notice of the Board and fresh consent has to be obtained.

Sl. No.	Description	Quantity	Unit
<b>Product Details</b>			
1.	Mining of Rough Stone over an Extent of 2.80.5 hectares lying in Latitude 10°52'19.57" N to 10°52'25.68" N and Longitude 78°22'26.70" E to 78°22'34.23" E located at SF No. 15/1 & 15/2, Sivayam North Village, Krushnarayapuram Taluk, Karur District.	372305	Cu.m of Rough Stone up to depth of 33 m BGL as per the approved mining plan period
2.	Quarrying of Gravel over an Extent of 2.80.5 hectares lying in Latitude 10°52'19.57" N to 10°52'25.68" N and Longitude 78°22'26.70" E to 78°22'34.23" E located at SF No. 15/1 & 15/2, Sivayam North Village, Krushnarayapuram Taluk, Karur District.	49332	Cu.m of Gravel up to depth of 30 m BGL as per the approved mining plan period

2. This consent to operate is valid for operating the facility with the below mentioned permitted outlets for the discharge of sewage/trade effluent. Any change in the outlets and the quantity has to be brought to the notice of the Board and fresh consent has to be obtained.

Outlet No.	Description of Outlet	Maximum daily discharge in KLD	Point of disposal
<b>Effluent Type : Sewage</b>			
1.	Sewage	1.2	On Industries Own land in its sister concern of M/s Navamani Mines Pvt Ltd (Crusher)
<b>Effluent Type : Trade Effluent - NIL</b>			
1.	No Trade Effluent	0.0	Nil

3. The effluent discharge shall not contain constituents in excess of the tolerance Limits as laid down hereunder.

Sl. No.	Parameters	Unit	TOLERANCE LIMITS - OUTLETS -Nos			
			Sewage		Trade Effluent	
			1		0	
1.	pH		5.5 to 9			
2.	Temperature	oC	-			
3.	Particle size of Suspended solids	-	-			
4.	Total Suspended Solids	mg/l	30			
5.	Total Dissolved solids (inorganic)	mg/l	-			
6.	Oil & Grease	mg/l	-			
7.	Biochemical Oxygen Demand (3 days at 27oC)	mg/l	20			
8.	Chemical Oxygen Demand	mg/l	-			
9.	Chloride (as Cl)	mg/l	-			
10.	Sulphates (as SO4)	mg/l	-			
11.	Total Residual Chlorine	mg/l	-			
12.	Ammonical Nitrogen (as N)	mg/l	-			
13.	Total Kjeldahl Nitrogen (as N)	mg/l	-			
14.	Free Ammonia (as NH3)	mg/l	-			
15.	Arsenic (as As)	mg/l	-			
16.	Mercury (as Hg)	mg/l	-			
17.	Lead (as Pb)	mg/l	-			
18.	Cadmium(as Cd)	mg/l	-			
19.	Hexavalent Chromium (as Cr+6)	mg/l	-			
20.	Total Chromium (as Cr)	mg/l	-			
21.	Copper (as Cu)	mg/l	-			
22.	Zinc (as Zn)	mg/l	-			
23.	Selenium (as Se)	mg/l	-			
24.	Nickel (as Ni)	mg/l	-			
25.	Boron (as B)	mg/l	-			
26.	Percent Sodium	%	-			
27.	Residual Sodium Carbonate	mg/l	-			
28.	Cyanide (as CN)	mg/l	-			
29.	Fluoride (as F)	mg/l	-			
30.	Dissolved Phosphates(as P)	mg/l	-			
31.	Sulphide (as S)	mg/l	-			
32.	Pesticides	mg/l	-			
33.	Phenolic Compounds (as C6H5OH)	mg/l	-			
34.	Radioactive materials a) Alpha emitters	micro curie/ml	-			
35.	Radioactive materials b). Beta emitters	micro curie/ml	-			
36.	Fecal Coliform	MPN/100ml	-			

4. All units of the sewage and Trade effluent treatment plants shall be operated efficiently and continuously so as to achieve the standards prescribed in Sl No.3 above or to achieve the zero liquid discharge of effluent as applicable.

5. The occupier shall maintain the Electro Magnetic Flow Meters/water Meters installed at the inlet of the water supply connection for each of the purposes mentioned below for assessing the quantity of water used and ensuring that such meters are easily accessible for inspection and maintenance and for other purposes of the Act.
  - a. Industrial Cooling, Spraying in mine pits or boiler feed.
  - b. Domestic purpose.
  - c. Process.
6. The occupier shall maintain the Electro Magnetic Flow Meters with computer recording arrangement for measuring the quantity of effluent generated and treated for the monitoring purposes of the Act.
7. Log book for each of the unit operations of ETP have to be maintained to reflect the working condition of ETP along with the readings of the Electro Magnetic Flow Meters installed to assess effluent quantity and the same shall be furnished for verification of the Board officials during inspection.
8. The occupier shall at his own cost get the samples of effluent/surface water/ground water collected in and around the unit by Board officials and analyzed by the TNPC Board Laboratory periodically.
9. Any upset condition in any of the plants of the factory which is, likely to result in increased effluent discharge and result in violation of the standards mentioned in Sl. No.3 above shall be reported to the Member Secretary / Joint Chief Environmental Engineer-Monitoring and the concerned District/Assistant Environmental Engineer of the Board by e-mail immediately and subsequently by Post with full details of such upset condition.
10. The occupier shall always comply and carryout the order/directions issued by the Board in this Consent Order and from time to time without any negligence. The occupier shall be liable for action as per provisions of the Act in case of non compliance of any order/directions issued.
11. The occupier shall develop adequate width of green belt at the rate of 400 numbers of trees per Hectare.
12. The occupier shall provide and maintain rain water harvesting facilities.
13. The occupier shall ensure that there shall not be any discharge of effluent either treated or untreated into storm water drain at any point of time.
14. In the case of zero liquid discharge of effluent units, the occupier shall adhere the following conditions as laid under.
  - i). The occupier shall ensure zero liquid discharge of effluent, thereby no discharge of untreated / treated effluent on land or into any water bodies either inside or outside the premises at any point of time.
  - ii) The occupier shall operate and maintain the Zero liquid discharge treatment components comprising of Primary, Secondary and tertiary treatment systems at all times and ensure that the RO permeate/Evaporator condensate shall be recycled in the process and the final RO reject shall be disposed off with the reject management system ensuring zero liquid discharge of effluents in the premises.
  - iii) The occupier shall operate and maintain the reject management system effectively and recover the salt from the system which shall be reused in the process if reusable or shall be disposed off as ETP sludge.
  - iv) In case of failure to achieve zero discharge of effluents for any reason, the occupier shall stop its production and operations forthwith and shall be reported to the Member Secretary/Joint Chief Environmental Engineer-Monitoring and the concerned District/Assistant Environmental Engineer of the Board by e-mail immediately and subsequently by Post with full details of such upset condition.
  - v) The occupier shall restart the production only after ascertaining that the Zero discharge treatment system can perform effectively for achieving zero discharge of effluents.

**Special Additional Conditions:**

The unit shall obtain No Objection Certificate (NOC) from the Tamil Nadu Bio Diversity Board /National Bio Diversity Authority if the unit is using any Biological resources or knowledge associated thereto as per the provisions of Biological Diversity Act 2002.

The industries shall take all efforts to use and popularize “Mission LiFE” logo and mascot which is available in TNPCB & MoEFCC website. They shall also request their employees to adopt “Mission LiFE” action points and document the same and furnish half yearly report to Board.

**Additional Conditions:**

1. The unit shall treat and dispose the sewage through Septic tank arrangement for the treatment and disposal of sewage.
2. The unit shall ensure that no trade effluent is generated at any stage of the quarrying activity.
3. The proponent shall comply with the conditions stipulated in the Environmental Clearance issued to the quarry vide Letter No. SEIAA-TN/F.No.6993/1(a)/EC.No.6205/2023 Dated 12.12.2023 from the State Level Environment Impact Authority, Chennai.
4. The proponent shall comply with the conditions stipulated in lease agreement made with District Collector, Karur on 06.02.2024.
5. The proponent shall comply with the conditions stipulated in the approved mining vide Rc.No:256/Mines/2019 dated 24.06.2019 from the Deputy Director, Department of Geology and Mining, Karur District.
6. The unit shall inform the 'Notice of Opening' of the quarry to the Director of Mines Safety, Chennai Region.
7. The approach road used for the vehicular movements' access to the quarry shall be maintained in good condition and without hindrance to the nearby habitants.
8. The operation of the Quarry shall not lead to complaint from nearby public.
9. The unit shall take necessary measures to ensure that there shall not be any adverse impacts due to quarrying operation on the nearby human habitations, by way of pollution to the environment.
10. The consent do not absolve from obtaining permission / Clearance from other authorities or other statues as applicable.
11. The unit shall comply with the provisions of the MoEF&CC notification from time to time.
12. The unit shall not use "use and throw away plastics" such as plastic sheets used for food wrapping, spreading on dining table etc., plastic plates, plastic coated tea cups, plastic tumbler, water pouches and packets, plastic straw, plastic carry bag and plastic flags irrespective of thickness, within the industry premises. Instead, the unit shall encourage use of eco friendly alternative such banana leaf, areca nut palm plate, stainless steel, glass, porcelain plates / cups, cloth bag, jute bag etc.,
13. In case of revision of consent fee by the Government, the unit shall remit the difference in amount within one month from the date of notification. Failing to remit the consent fee, this order will be withdrawn without any notice and further action will be initiated against the unit as per law.

**District Environmental Engineer,  
Tamil Nadu Pollution Control Board,  
KARUR**

### GENERAL CONDITIONS

1. The occupier shall make an application along with the prescribed consent fee for grant of renewal of consent at least 60 days before the date of expiry of this Consent Order along with all the required particulars ensuring that there is no change in Production quantity and change in sewage/Trade effluent.
2. This Consent is issued by the Board in consideration of the particulars given in the application. Any change or alteration or deviation made in actual practice from the particulars furnished in the application will also be ground for review/variation/revocation of the Consent Order under Section 27 of the Act and to make such variation as deemed fit for the purpose of the Act.
3. The consent conditions imposed in this order shall continue in force until revoked under Section 27(2) of the Act.
4. After the issue of this order, all the 'Consent to Operate' orders issued previously under Water (Prevention and Control of Pollution) Act, 1974 as amended stands defunct.
5. The occupier shall maintain an Inspection Register in the factory so that the inspecting officer shall record the details of the observations and instructions issued to the unit at the time of inspection for adherence.
6. The occupier shall provide and maintain an alternate power supply along with separate energy meter for the Effluent Treatment Plant sufficient to ensure continuous operation of all pollution control equipments to maintain compliance.
7. The occupier shall provide all facilities to the Board officials for inspection and collection of samples in and around the factory at any time.
8. The occupier shall display the flow diagram of the sources of effluent generation and pollution control systems provided at the ETP site.
9. The solid waste such as sweepings, wastage, package, empty containers, residues, sludge including that from air pollution control equipments collected within the premises of the industrial plant shall be collected in an earmarked area and shall be disposed off properly.
10. The occupier shall collect, treat the solid wastes like food waste, green waste generated from the canteen and convert into organic compost.
11. The occupier shall segregate the Hazardous waste from other solid wastes and comply in accordance with Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008.
12. The occupier shall maintain good house-keeping within the factory premises.
13. All pipes, valves, sewers and drains shall be leak proof. Floor washings shall be admitted into the trade effluent collection system only and shall not be allowed to find their way in storm drains or open areas.
14. The occupier shall ensure that there shall not be any diversion or by-pass of trade effluent on land or into any water sources.
15. The occupier shall ensure that solar Evaporation pans shall be constructed in such a way that the bottom of the solar pan is at least 1 m above the Ground level (if applicable).
16. The occupier shall furnish the following returns in the prescribed formats to the concerned District office regularly.
  - a) Monthly water consumption returns of each of the purposes with water meter readings in Form-I on or before 5th of every month.
  - b) Yearly return on Hazardous wastes generated and accumulated for the period from 1st April to 31st March in Form-4 before the end of the subsequent 30th June of every year (if applicable).
  - c) Yearly Environmental Statement for the period from 1st April to 31st March in Form -V before the end of the subsequent 30th September of every year(if applicable).
17. If applicable, the occupier has to comply with the provisions of Public Liability Insurance Act, 1991 to provide immediate relief in the event of any hazard to human beings, other living creatures/plants and properties while handling and storage of hazardous substances.
18. The issuance of this consent does not authorize or approve the construction of any physical structures or facilities or the undertaking of any work in any natural watercourse or in Government Poromboke lands.
19. The issuance of this Consent does not convey any property right in either real personal property or any exclusive privileges, nor does it authorize any injury to private property or Government property or any invasion of personal rights nor any infringement of Central, State laws or regulation.

20. The occupier shall forth with keep the Board informed of any accident of unforeseen act or event of any poisonous, noxious or polluting matter or emissions are being discharged into stream or well or air as a result of such discharge, water or air is being polluted.
21. If due to any technological improvements or otherwise the Board is of opinion that all or any of the conditions referred to above requires variation (including the change of any treatment system, either in whole or in part) the Board shall, after giving the applicant an opportunity of being heard, vary all or any of such conditions and thereupon the applicant shall be bound to comply with the conditions as so varied.
22. In case there is any change in the constitution of the management, the occupier of the new management shall file fresh application under Water (Prevention and Control of Pollution) Act, 1974, as amended in Form-II alongwith relevant documents of change of management immediately and get the necessary amendment with renewal of consent order.
23. In case there is any change in the name of the company alone, the occupier shall inform the same with relevant documents immediately and get the necessary amendments for the change of name from the Board.
24. The occupier shall display this consent order granted to him in a prominent place for perusal of the inspecting Officers of this Board.

**District Environmental Engineer,  
Tamil Nadu Pollution Control Board,  
KARUR**

# 700



R/குளித்தலை/புத்தகம் 1/500/2024 ஆவணம் சம்பந்தப்பட்ட சான்றளிக்கப்பட்ட நகல்

இந்தச் சான்றிட்ட நகல் இணையம் மூலம் வழங்கப்பட்டுள்ளது. இதற்குத் தேவையான முத்திரைத்தீர்வை ₹ 100 (ரூபாய். நூறு மட்டும்) மின்னணு செலுத்துகை மூலம் CCA/Online/111471816/2024 விண்ணப்ப எண்ணுக்கு 24-Oct-2024 அன்று செலுத்தப்பட்டுவிட்டது எனச் சான்றளிக்கப்படுகிறது.

குளித்தலை/புத்தகம் 1/500/2024 ஆவணம் சம்பந்தப்பட்ட சான்றளிக்கப்பட்ட நகல்-----

500/2024



தமிழ்நாடு தமில்நாடு TAMILNADU 19.01.2024 ரூ 5000

Tvl-Navamani Mines Private Limited  
Sivayam North

AB 491378

M.ELANGOVA  
STAMP VENDOR  
L.No: 09/2011  
KARUR - 639 004.



APPENDIX - IV

(See Rules 19(1) and 22 of the TamilNadu Minor Mineral  
Concession Rules, 1959)  
(Collr. Ref. No.256/ Mines / 2019)

SEIAA TN/F/No.6993/1(a)/EC.No.6205/2023, Dated: 12.12.2023

FORM OF AGREEMENT FOR QUARRYING AND CARRYING AWAY MINOR  
MINERALS FROM RYOTWARI LANDS IN WHICH THE MINERALS  
BELONGS TO THE GOVERNMENT.

AGREEMENT made this 06<sup>th</sup> day of February, - 2024 between  
Tvl.Navamani Mines Private Limited, No.5/898, Alagu Nagar, Trichy Main  
Road, Namakkal District - 637 001 represented by its Director  
Thiru.P.Vimalathithan, S/o.Palaniyandi who is the authorized signatory to  
sign in the quarry lease agreement (herein after referred to as "the  
Registered Holder/Lessee" which term shall include in these presents where

For NAVAMANI MINES P LTD.

*[Signature]*  
Directors

REGISTER HOLDER / LESSEE

Document No. 500 of 2024 of Book  
1 Contains 20 Sheets 1 Sheet

*[Signature]*  
Registering Officer

*[Signature]*  
LESSOR  
DISTRICT COLLECTOR  
KARUR



தமிழ்நாடு தமில்நாடு TAMILNADU 19.01.2024 ரூ 5000

TVI- Navamani Mines Private Limited  
Sivayam North

AB 491377

M.ELANGOVA  
STAMP VENDOR  
L.No: 09/2011  
KARUR - 639 004.



the context so admits include also administrators, legal representatives and assigns) of the **one part** and the Governor of TamilNadu (hereinafter called "the Government" which term shall where the context so admits, include also his successors in office and assigns) of the **other part**.

WHEREAS the Registered Holder holds the lands described in the schedule hereunder written (hereinafter referred to as the said lands) and demarcated in the map enclosed and colour washed.

AND WHEREAS, the Registered Holder/ Lessee has made application to the District Collector seeking grant of quarrying lease for quarrying Rough Stone and Gravel in of SF.Nos.15/1(1.83.5 hect) and 15/2(0.97.0 hect) over an extent of 2.80.5 hecets of patta land in Sivayam (North) Village, Krishnarayapuram Taluk, Karur District and to deposit mining waste in the

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Registering Officer

For NAVAMANI MINES P LTD.

Directors  
REGISTERED HOLDER / LESSEE

LESSOR  
DISTRICT COLLECTOR  
KARUR



தமிழ்நாடு தமில்நாடு TAMILNADU 19.01.2024 ரூ5000

7VI, Navamani Mines Private Limited  
Sivayam North

AB 491379

*M. Elango*  
**M.ELANGO VAN**  
STAMP VENDOR  
L.No: 09/2011  
KARUR - 639 004.



said lands and has lodged with the District Collector an accurate map or sketch of the said lands.

AND, WHEREAS, the District Collector acting for and on behalf of the Government, has granted a quarrying lease to the registered holder and allowed him to commence quarrying operations for Rough Stone and Gravel in the said lands and to deposit mining waste thereon by the Registered Holder/Lessee.

AND WHEREAS, the Registered Holder/ Lessee has deposited with the District Collector the sum of Rs.10,000/- (Rupees Ten thousand only) vide E.Challan No.20240112003150, Dated: 12.01.2024 as security against any loss or damage which may be incurred by the Government by reason of any of the said lands being rendered unfit for cultivation by any mining

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Registering Officer

For NAYAMANI MINES P LTD.

*[Signature]*  
REGISTERED HOLDER / LESSEE



*[Signature]*  
LESSOR  
DISTRICT COLLECTOR  
KARUR



தமிழ்நாடு தமில்நாடு TAMILNADU 19.01.2024 ரூ 5000

TVI. Navamani Mines Private Limited  
Sivayam north

AB 491376

M. ELANGOVA  
STAMP VENDOR  
L.No: 09/2011  
KARUR - 639 004.



operations therein of the registered holder or by the deposit of mining waste thereon by the Registered Holder/ Lessee.

NOW THESE PRESENTS WITNESS and the Registered Holder/ Lessee doth hereby agree with the Government in the manner following, that is to say:-

1. The Registered Holder / Lessee shall be at liberty at all times during the period of the lease to carry on mining operations for rough stone and gravel in the said lands for a period of years from 06.02.2024 to 05.01.2029 in a proper and workman like manner and to deposit mining waste on the said lands and shall at all times be answerable and accountable to the Government for all acts and defaults by any of his nominees, servants or agents in carrying on such operations or in making such deposit.

For NAVAMANI MINES P LTD.

*[Signature]*  
Directors

REGISTER HOLDER / LESSEE

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*[Signature]*  
Registering Officer



*[Signature]*  
LESSOR  
DISTRICT COLLECTOR  
KARUR



2. The Registered Holder / Lessee shall and will on the .....06<sup>th</sup>...day of February next and on the .....05<sup>th</sup>.... day of February... every succeeding year during so long as he shall have carried on any such mining operations as aforesaid pay to the Collector for and on behalf of the Government in addition to the land assessment for the time being payable in respect of the said lands, seigniorage on the minor minerals at the rate specified in Appendix II to the Tamil Nadu Minor Mineral Concession Rules, 1959.


3. The Registered Holder / Lessee shall and will keep correct accounts in such form as the District Collector shall from time to time required and direct showing the quantities and other particulars of all minerals obtained by the registered holder from the said lands and also the number of persons employed in carrying on the said mining operations therein and shall. From time to time when so directed by the District Collector prepare and maintain complete and correct plans of all mines and working in the said lands and shall allow any officer hereunto authorized by the Director of Geology and Mining, Tamil Nadu from time to time and at any time to examine such accounts and any plans and shall when so required supply and furnish all such information and returns regarding all or any of the matter aforesaid as the government shall, from time to time, required and direct.

4. The Registered Holder / Lessee shall and will at all times allow any officer authorized by the Commissioner/Director of Geology and Mining, Tamil Nadu in that behalf to enter upon any part of the said lands where any mining operations may be carried on for the purpose of inspecting the same.

5. The Registered Holder / Lessee shall forthwith send to the District Collector a report of any accident, which may occur at or in the said lands and also of the discovery of any mineral other than Rough stone and Gravel.


6. It shall be lawful for the Registered Holder / Lessee at any time to cease mining operations under these present provided he shall pay to the District Collector for and on behalf of the Government land assessment, cess and seigniorage due to the Government and shall restore the said lands or fence

For NAVAMANI MINES P LTD.

 Directors

REGISTER HOLDER / LESSEE

  
LESSOR  
DISTRICT COLLECTOR  
KARUR

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 Registering Officer





or fill in abandoned pits and excavations therein if required by the District Collector and upon his so doing these presents shall cease and determine.

7. In case the Registered Holder/Lessee shall relinquish the whole or any part of the said lands or in case of the expiry or sooner determination of this agreement then and in any such case, he shall restore the lands so relinquished or so much thereof as the District Collector shall require to be restored to a state fit for cultivation or shall securely and permanently fence or fill in all such abandoned pits and excavations there in as the District Collector shall require to be so fenced or filled in, and in case the registered holder shall fail or neglect to restore any such land which he shall be require to be so fenced or filled in, and in case the Registered Holder/Lessee shall fail or neglect to restore any such land which he shall be required to restore to a state fit for cultivation or to so fence or fill in any such abandoned pit, or excavation which he shall be require to so fence or fill in them and in any such case, it shall be lawful for the District Collector to so restore any such lands, or as the case may be, to so fence or fill any such pits or excavation at the expense of the Registered Holder/Lessee and to apply the said sum of Rs.10,000/- so deposited in or towards the cost of so doing and to deduct from the amount of the said deposit and retain on behalf of the Government a sum equal to thirty times the assessment of the said lands which shall have been rendered unfit for cultivation. If however, the amount of deposit is not sufficient to cover the cost of such restoration of fencing or filling in or to meet thirty times the assessment on the area rendered uncultivable, it shall be lawful for the Government to recover the balance by resort to civil court.

8. The Registered Holder/Lessee shall not be entitled to any remission of assessment in respect of any of the said lands which shall be rendered unfit for surface cultivation by the carrying on of any mining operations or by the deposit of mining waste, unless thirty times the assessment thereon has already been deducted under the preceding clause.

9. The Registered Holder/Lessee shall not assign, lease or part with the possession of the said lands or any part thereof for the whole or any part of the said term without previous intimation / permission in writing to the District Collector.

For NAVAMANI MINES P LTD.

*[Signature]*  
Directors  
REGISTER HOLDER / LESSEE

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Registering Officer





10. If the Registered Holder/Lessee does not intend to carry on mining operations himself, but intends to lease out the right to do so to another person the Registered Holder and his lessee shall enter into an agreement with Government binding themselves jointly and severally to accept the conditions and stipulations herein contained which agreement shall be in the form set out in Appendix V to the Tamil Nadu Minor Mineral Concession Rules, 1959.

11. All land assessments, cess and seigniorage payable under these presents shall be recoverable under the provisions of the Tamil Nadu Revenue Recovery Act, 1864, as if they were arrears of land revenue.

12. In the event of any breach by the Registered Holder/Lessee by any of the conditions of this agreement, it shall be lawful for the Government to levy enhanced seigniorage or for the District Collector to give notice in writing to the registered holder of his intention to cancel these presents whereupon the same shall stand cancelled but without prejudice to any rights which the Government may have against the pattadar in respect of any antecedent claim or breach of covenant or condition.

13. Any notice to be given to the Registered Holder/Lessee may be addressed to this last known place of abode and where a notice has been so addressed it shall be deemed to have been duly served for the purpose of these presents.

14. Should any question or dispute arise regarding the agreement executed in pursuance of these rules or any matter or thing connected therewith or the powers of the Registered Holder/Lessee there under, the amount or payment of the seigniorage fee or area assessment made payable thereby the matter in issue shall be decided by the Commissioner / Director of Geology and Mining. In case the Registered Holder/Lessee is not satisfied with the decision of the Commissioner / Director of Geology and Mining, the matter shall be referred to the State Government, for decision.

15. The Registered Holder/ Lessee shall abide by the conditions laid down in the condition imposed by the SEIAA - TN, Chennai-15, Environment Clearance Letter No. SEIAA - TN/F/No.6993/1(a)/EC.No.6205/2023, Dated: 12.12.2023, Payment of Wages Act, 1936 (Central Act IV of 1936), the Mines

For NAVAMANI MINES P LTD.

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Directors  
REGISTER HOLDER / LESSEE

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Act, 1952 (Central Act XXXV of 1952) and the Indian Explosives Act, (Central Act IV of 1884), Tamil Nadu Minor Mineral Concession Rules, 1959 and the rules made there under.

16. As per the Government letter No.1666/MMD.1/2020-1, dt:03.03.2020 additional condition incorporated that "the mining lease holders shall after ceasing mining operations undertake re-grassing the mining area and any other area which may have been disturbed due to the mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc".,

17. Total production/ Mineral Reserves of Rough Stone - 3,72,305 cubic meter for Five years and Gravel - 49,332 cubic meter for First Three years of lease period as per approved mining plan and issuance of Environmental Clearance. Hence, the purpose of calculating stamp duty the anticipated Seigniorage Fee is Rs.3,62,70,042/- = (Rough Stone - 3,35,07,450 + Gravel - 27,62,592) (Rupees Three Crore Sixty Two Lakhs Seventy Thousand and Forty Two Only), Rs. 7,013/- (Seven Thousand Thirteen only) as Area Assessment and Rs.10,000/- (Rupees Ten Thousand only) as Security Deposit.

பொது நிபந்தனைகள்:-

1. விண்ணப்ப புலத்திற்கு அருகில் உள்ள பட்டா நிலங்களுக்கு 7.5 மீட்டர் மற்றும் புறம்போக்கு நிலத்திற்கு 10 மீட்டர் பாதுகாப்பு இடைவெளி விட்டு யாதொரு சேதமுமின்றி முறையாக குவாரிப்பணி செய்ய வேண்டும்.
2. குத்தகைக்காலத்தில் கைத்துளைப்பான் கருவி கொண்டு பாறைகளை துளையிட்டும், மிதமான வெடிபொருள் பயன்படுத்தியும், பொதுமக்களுக்கோ, பொது சொத்துக்களுக்கோ யாதொரு சேதமுமின்றி விதிமுறைகளின்படி குவாரிப்பணி செய்ய வேண்டும்.
3. குவாரித் தொழிலாளர்களின் பாதுகாப்பினை உறுதி செய்ய Mettalliferous Mines, விதிகளின்படி அகலமானதும், பாதுகாப்பானதுமான Benches அமைத்து பாதுகாப்பான முறையில் குவாரிக்குள் வாகனங்கள் சென்றுவரவும் மற்றும் குவாரி தொழிலாளர்களின் பாதுகாப்பினை உறுதி செய்தும் குவாரிப்பணி செய்ய வேண்டும்.
4. குவாரியிலிருந்து கொண்டு செல்லப்படும் மேற்கண்ட வகை கற்களுக்கு 1959-ஆம் ஆண்டு தமிழ்நாடு சிறுகனிம சலுகை விதிகள் பின் இணைப்பு-II-இல் கண்டுள்ளவாறு உரிமவரி (சீனியரேஜ் தொகை) செலுத்த வேண்டும். அரசு அவ்வப்போது அறிவிக்கும் உரிமவரி மாற்றங்களுக்கு ஏற்ப எவ்வித ஆட்சேபணை இன்றி செலுத்துதல் வேண்டும்.

For NAVAMANI MINES P LTD.

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Directors  
REGISTER HOLDER / LESSEE



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LEASOR  
DISTRICT COLLECTOR  
KARUR

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Registering Officer



5. குவாரி பணி செய்யும் நேரம் காலை 7.00 முதல் மாலை 5.00 மணி வரை மட்டும் ஆகும். எனவே, எக்காரணம் கொண்டும் இரவு நேரங்களில் குவாரிப்பணி செய்வது, குவாரி தொழிலாளர்கள் மற்றும் வாகனங்கள் குவாரிக்குள் இரவு நேரங்களில் செல்வது தடை செய்யப்பட்டுள்ளது.
6. கரூர் மாவட்ட கனிம கட்டமைப்பு அறக்கட்டளை (District Mineral Foundation Trust) நிதிக்காக சாதாரண கற்கள் எடுத்துச் செல்ல செலுத்தப்படும் சீனியரேஜ் தொகைக்கு 10% சதவீத தொகை மற்றும் அரசு அவ்வப்போது அறிவிக்கும் மாற்றங்களுக்கு ஏற்ப அறக்கட்டளை நிதி செலுத்தப்பட வேண்டும்.
7. குத்தகை ஒப்பந்த பத்திரம் நிறைவேற்றப்படும் நாள் குவாரி பணி தொடங்கப்படும் முதல் நாளாக கருதப்பட்டு அன்றைய தினத்திலிருந்து 5 ஆண்டுகளுக்கு மட்டுமே மாநில அளவிலான சுற்றுச் சூழல் தாக்க மதிப்பீட்டு ஆணையம் (SEIAA) வழங்கிய சுற்றுச்சூழல் ஒப்புதல் சான்று செல்லத்தக்கது.
8. மாநில சுற்றுச்சூழல் செயல் விளைவு மதிப்பீட்டு ஆணையத்தின் சுற்றுச்சூழல் ஒப்புதல் SEIAA - TN/F/No.6993/1(a)/EC.No.6205/2023, Dated: 12.12.2023 நாளிட்ட கடிதத்தில் தெரிவித்துள்ள சிறப்பு நிபந்தனைகளை முறையாக கடைபிடித்து குவாரிப்பணி செய்யப்பட வேண்டும்.
9. குத்தகைதாரர் தனக்கு அளிக்கப்பட்ட குத்தகை பகுதியின் எல்லைகளை தெளிவாக காட்டும் வகையில் DGPS - சர்வே செய்து கல் நட்டு வண்ணம் இட்டு குத்தகை காலம் முழுமைக்கும் பராமரிக்க வேண்டும்.
10. பொதுமக்களுக்கோ, பொது சொத்துக்களுக்கோ யாதொரு சேதமும் இன்றி பாதுகாப்பான முறையில் குவாரிப்பணி செய்ய வேண்டும்.
11. பொதுமக்களின் நலன் கருதி பாதுகாப்பான முறையில் குறைந்த அழுத்தமுள்ள வெடிபொருட்கள் பயன்படுத்தியும், கைத்துளைப்பான் கருவி கொண்டு துளையிட்டும், தொழிலாளர்களின் பாதுகாப்பினை உறுதி செய்ய பாதுகாப்பானதும், அகலமான Benches அமைத்து குவாரிப்பணி செய்ய வேண்டும்.
12. குத்தகைதாரர் தனக்கு அளிக்கப்பட்ட குத்தகை பகுதியின் எல்லைகளை தெளிவாக காட்டும் வகையில் கல் நட்டு வண்ணம் இட்டு குத்தகை காலம் முழுமைக்கும் பராமரிக்க வேண்டும்.
13. குத்தகைதாரர் குவாரியின் அருகே குத்தகைதாரர் பெயர், கிராமத்தின் பெயர், வட்டத்தின் பெயர், புல எண்., பரப்பு, குத்தகை ஆணை எண். குத்தகை காலம், கனிமத்தின் பெயர், போன்ற விபரங்கள் குறிக்கப்பட்ட தகவல் பலகையை தமது சொந்த செலவில் வைத்து நன்கு பராமரிக்க வேண்டும்.

For NAVAMANI MINES P LTD.

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Directors

REGISTER HOLDER / LESSEE

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Registering Officer



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LESSOR  
DISTRICT COLLECTOR  
KARUR



14. குவாரிக்கு சென்றுவரும் பாதை வசதிகள் குத்தகைதாரர்கள் அவர் தம் சொந்த பொறுப்பிலேயே அமைத்துக் கொள்ள வேண்டும்.
15. குத்தகை வழங்கப்பட்ட பாறையில் குண்டுக்கல், ஜல்லி, அரளை கல், வேலிக்கற்கள், போன்ற சிறுகனிமங்கள் உடைத்தெடுக்க மட்டுமே அனுமதியுண்டு. வெளிநாடுகளுக்கு ஏற்றுமதியாகும் மெருகூட்டும் கனவடிவ கற்கள் வெட்டி எடுக்கக் கூடாது.
16. குத்தகை அனுமதி வழங்கப்பட்ட நிலத்திலிருந்து கொண்டு செல்லப்பட்ட கற்களுக்கு முறையான கணக்குகளும், குழிவாயில் பதிவேடும் முறையாக பராமரித்தல் வேண்டும். அவற்றை சம்பந்தப்பட்ட அலுவலர்கள் தணிக்கைக்கு ஆஜர்படுத்த கோரினால் தவறாது சமர்ப்பிக்க வேண்டும்.
17. உதவி இயக்குநர்/ துணை இயக்குநர் (புவியியல் மற்றும் சுரங்கத்துறை)-இன் அலுவலக முத்திரை, கையொப்ப முத்திரையுடன் கூடிய உரிய அனுப்புரைச் சீட்டை வாகனங்களுக்கு கொடுக்கப்படும் போது அனுப்புரைச் சீட்டில் வாகன எண், தேதி, புறப்படும் நேரம், செலுத்துமிடம் ஆகியவற்றை முறையாகக் குறிப்பிட்டு கையொப்பம் இட்ட பின்னரே, குத்தகைதாரரோ அல்லது அவரது அனுமதி பெற்ற நபரோ கொடுக்க வேண்டும். மேற்கண்டவாறு குறிப்பிடுவதில் ஏதேனும் தவறுகள் இருந்தாலோ, கணங்கள் பூர்த்தி செய்யப்படாமல் இருந்தாலோ முறையற்ற வகையில் கனிமம் எடுத்துச் செல்வதாகக் கருதப்பட்டு வாகனத்தை கைப்பற்றி அபராதம் விதிப்பதோடு, அதற்கு குத்தகைதாரரை பொறுப்பாக்கி கனிம விதிகளின் படி மேல் நடவடிக்கை எடுக்கப்படும்.
18. இந்த ஆணையில் குத்தகை அனுமதி வழங்கப்பட்ட புலத்ததை முழுமையாகவோ, பகுதியாகவோ எவருக்கும் உள் குத்தகைக்கு விடுவதோ அல்லது கிரையம் செய்வதோ கூடாது.
19. குத்தகைதாரர் ஒவ்வொரு நாளும் குவாரியில் இருந்து எவ்வளவு சிறுகனிமங்கள் எடுக்கப்பட்டது என்பதையும் எந்த அளவு கனிமங்கள் வாரி/ வண்டி மூலம் வெளியே அனுப்பப்பட்டது என்ற விபரத்தையும் காட்டும் பதிவேட்டினைப் பராமரித்து வரவேண்டும்.
20. குத்தகைதாரர், தமக்கு குத்தகை வழங்கப்பட்ட பகுதிக்கு அருகில் உள்ள பட்டா நிலத்திற்கு எவ்வித இடையூறும் இல்லாமல் குவாரிப் பணி செய்யப்பட வேண்டும்.
21. வண்டிப்பாதை மற்றும் நடைபாதைகளில் இருந்து 10 மீட்டர் தூரம் பாதுகாப்பு இடைவெளிவிட்டு குவாரி செய்ய வேண்டும். ரோடுகள், புகைவண்டிப்பாதை, பொதுப்பணித்துறை, வாய்க்கால், பொதுமக்கள் உபயோகத்திற்கான பகுதிகள், மின்சாரம் மற்றும் தொலைபேசி கம்பி செல்லும் பகுதிகள், வழிபாட்டு இடங்கள் மற்றும் பழங்கால சின்னங்கள் உள்ள பகுதிகள் ஆகியவற்றில் இருந்து 50 மீட்டர் பாதுகாப்பு தூரம் விட்டு குவாரி செய்ய வேண்டும்.
22. குத்தகைக்கு விடப்பட்டுள்ள விஸ்தீரணத்தில் மட்டுமே குத்தகைதாரர் குவாரி செய்ய வேண்டும். கூடுதலான விஸ்தீரணத்தில் குவாரி செய்வது தெரியவந்தால்

For NAVAMANI MINES P LTD.

Directors  
REGISTER HOLDER / LESSEE

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DISTRICT COLLECTOR  
KARUR



அபராத நடவடிக்கை மேற்கொள்வதுடன் குத்தகை இரத்து செய்ய நடவடிக்கை எடுக்கப்படும்.

23. குத்தகை நிபந்தனை மீறப்பட்டால் குத்தகை இரத்து செய்யவோ, செய்யப்பட்ட தவறுதலுக்கு அபராத நடவடிக்கை எடுத்து தண்டம் விதிக்கவோ அல்லது கிரிமினல் வழக்குத் தொடுக்க மாவட்ட ஆட்சியர்/உதவி இயக்குநர் ஆகியோருக்கு அதிகாரம் உண்டு. குத்தகை ரத்து செய்யப்பட்டால் காப்புத் தொகை உட்பட அனைத்து தொகைகளும் அரசுக்கு ஆதாயமாக்கப்படும்.
24. குத்தகைதாரர் தமிழ்நாடு சிறுவகைக்கனிம சலுகை விதிகள் 1959-ல் கண்டுள்ள விதிகளுக்கும் மற்றும் அரசு அவ்வப்போது அறிவிக்கும் சட்டதிட்டங்களுக்கும் உட்பட்டு குவாரிப்பணிகள் செய்ய வேண்டும்.
25. குவாரி குத்தகை உரிமம் காலாவதியான பின்பு எக்காரணத்தை முன்னிட்டும் மீண்டும் புதுப்பிக்கவோ அல்லது கால நீட்டிப்போ செய்து தரப்பட மாட்டாது.
26. தன் சொந்த செலவிலேயே குவாரியில் குத்தகை வழங்கப்பட்ட விஸ்தீரணத்தை வட்ட அளவர் மூலம் அளந்து நான்கு எல்லைக்கும் கல்தூண்கள் நட்டு அமைத்துப் பராமரித்து வர வேண்டும்.
27. குவாரிக்குரிய நடைச்சீட்டுகளை கண்டிப்பாக குவாரியில் இருந்துதான் வழங்க வேண்டும். நடைச்சீட்டுக்களின் அடிக்கட்டைகளை குவாரியில் வைத்திருக்க வேண்டும்.
28. குவாரி செய்யப்படும் கனிமங்களை சராசரத்திட்டத்தில் குறிப்பிடப்பட்டுள்ளவாறு உரிமம் வழங்கப்பட்ட பரப்பில் மட்டும் இருப்பு வைக்க வேண்டும்.
29. குவாரியில் வேலை செய்யும் தொழிலாளர்களின் நலன் பேணப்பட வேண்டும். குழந்தைத் தொழிலாளர்களை குவாரிப் பணியில் ஈடுபடுத்தக்கூடாது.
30. குவாரியில் வேலை செய்யும் தொழிலாளர்களுக்கு காப்பீட்டுத் திட்டம் ஏற்படுத்தித் தர வேண்டும்.
31. அனுமதிதாரர் புராதனச் சின்னங்களுக்கோ, அரசாங்க சொத்துக்களுக்கோ எவ்வித சேதமும் இன்றி குவாரி செய்ய வேண்டும். அருகாமையில் உள்ள பட்டா நிலங்களுக்கு எவ்வித சேதமும் இன்றி குவாரி செய்ய வேண்டும்.
32. அருகில் அமைந்துள்ள விவசாய நிலங்களுக்கு எவ்வித பாதிப்பும் இல்லாத வகையில் குவாரிப்பணி மேற்கொள்ள வேண்டும்.
33. வெடிபொருள் சட்டம் 1884-ல் தெரிவிக்கப்பட்ட சரத்துக்கள்படி குறைந்த அளவு வெடிபொருளை உபயோகித்து கற்கள் வெளியே சிதறாமலும், சத்தம் அதிகம் ஏற்படாமலும், பொதுமக்களுக்கும், கால்நடைகளுக்கும், எவ்வித பாதிப்பும் இன்றியும் கல்குவாரி பணி செய்யப்பட வேண்டும்.

For NAVAMANI MINES P LTD.

  
Directors  
REGISTER HOLDER / LESSEE



  
LESSOR  
DISTRICT COLLECTOR  
KARUR

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Registering Officer



34. வெடிபொருள்கள் அரசு உரிமம் பெற்ற விற்பனைதாரரிடம் மட்டுமே பெறும் வெடிப்பதற்கு உரிமம்/அங்கீகாரம் பெற்ற வெடிப்பாளர்களை (Blaster/Mines mate) கொண்டு கல் குவாரியில் வெடி வைக்க வேண்டும்.
35. மாநில சுற்றுச்சூழல் தாக்க மதிப்பீட்டு ஆணையம் அறிவுறுத்தியுள்ளவாறு, தமிழ்நாடு மாசுக்கட்டுப்பாட்டு வாரிய முன் அனுமதி சான்று பெற்ற பின்னர் தான் குவாரிப்பணி தொடங்கவேண்டும்.
36. (TCS) அல்லது அரசால் அவ்வப்போது அறிவிக்கும் வருமான வரி தொகை தவறாமல் செலுத்தப்பட வேண்டும்.
37. குத்தகைதாரரால் கனிமத்திற்கு செலுத்தப்படும் சீனியரேஜ் தொகைக்கு மாநிலத்திற்குள் 10%-ம் மற்றும் வெளி மாநிலங்களுக்கு எடுத்துச்செல்லப்படும் கனிமத்திற்கு 50%-ம் பசுமை நிதி (Green Fund) அரசிற்கு தவறாமல் செலுத்தப்பட வேண்டும்.

### THE SCHEDULE

1. Name of the District : Karur
2. Name of the Taluk : Krishnarayapuram
3. Name of the Village : Sivayam(North)
4. Name of the Sub Registration Office : Kulithalai
5. Lease Period : 05 years

From 06.02.2024 to 05.02.2029

Survey Numbers	Extent (in Hects.)	Boundaries			
		North S.F.Nos.	South S.F.Nos.	East S.F.Nos.	West S.F.Nos.
15/1	1.83.5	7 and 8-Patta land	15/2, 3A, 3B1, 3B2-Patta land	16 - Patta land	14 - Patta land
15/2	0.97.0	15/1	15/3A, 3B1, 3B2-Patta land	17- Patta land	13 - Patta land
<b>Total</b>	<b>2.80.5</b>				

For NAVAMANI MINES P LTD.

Directors  
REGISTER HOLDER / LESSEE

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Registering Officer



LESSOR  
DISTRICT COLLECTOR  
KARUR



IN WITNESS WHERE OF Tvl.Navamani Mines Private Limited, No.5 Alagu Nagar, Trichy Main Road, Namakkal District - 637 001 represented by its Director Thiru.P.Vimalathithan, S/o.Palaniyandi who is the authorized signatory to sign in the lease deed "the Registered Holder/Lessee" and Thiru.M.Thangavel I.A.S., District Collector, Karur acting for and on behalf of and by the order and direction of the Governor of Tamil Nadu have here unto set their hands.



For NAVAMANI MINES P LTD.

*[Signature]*  
Directors  
REGISTER HOLDER / LESSEE

Signed by the above named  
In the presence of

1. S. Balasubramanian  
S/o. Balaji  
3/165, Thiruvalluvar Street, Alagunagar  
Namakkal District, Tamil Nadu (P.O.)  
Karur (D.T)

2. R. Thangavel  
(R.K. THANGAVEL)  
S/o. R. Kathirvel.  
C. B.K. Road Karur

*[Signature]*  
LESSOR  
DISTRICT COLLECTOR  
KARUR

Signed by the above named  
In the presence of

1. *[Signature]*  
ASSISTANT DIRECTOR  
GEOLOGY AND MINING  
KARUR.

2. *[Signature]*  
Special Revenue Inspector  
(Mines)  
Karur



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1 Contains 20 sheets 13 Sheet  
jm  
Registering Officer



## R/குளித்தலை/புத்தகம்-1/500/2024

1899ம் ஆண்டு இந்திய முத்திரைச் சட்டம் 42வது பிரிவின் கீழான சான்று

2024ம் ஆண்டு வரிசை எண் 367

5898. அழகு நகர், திருச்சி மெயின் ரோடு, நாமக்கல், நாமக்கல், தமிழ்நாடு, இந்தியா, 637001-ல் வசிக்கும் திரு விமலாதித்தன் என்பவரிடமிருந்து ₹ 343,000/- ரூபாய் மூன்று இலட்சத்து நூற்றத்து மூன்றாயிரம் மட்டும், இந்த ஆவணத்திற்காக இந்திய முத்திரைச் சட்டம் 41வது பிரிவின் படி குறைவாயிருந்த முத்திரைக் கட்டணம் வசூலிக்கப்பட்டது என நான் இதன் மூலம் சான்றளிக்கிறேன்.

சார்பதிவாளர் குளித்தலை  
நாள்: 08/02/2024



*[Signature]*  
சார்பதிவாளர் மற்றும் இந்திய முத்திரைச் சட்டம் பிரிவு  
42-ன் படி ஆட்சியர்

2024 ஆம் ஆண்டு பிப்ரவரி மாதம் 08ம் தேதி பி.பி. 02-15 மணியளவில் குளித்தலை சார்பதிவாளர் அலுவலகத்தில் தாக்கல் செய்து கட்டணம் ₹ 41,110/- செலுத்தியவர்.

இடது பெருவிரல்



*[Signature]*

கருதல் விவரங்கள் ஆவண வாசகத்தில்  
உள்ளபடி

பதிவுச் சட்டம் பிரிவு 88-ன் கீழ் நேரில் வருவதளிலிருந்து விலக்களிக்கப்பட்ட திரு மாவட்ட ஆட்சி தலைவர், கருர் மாவட்ட ஆட்சியர் அலுவலகம் கருர் கருர் தமிழ்நாடு, இந்தியா, 63500 (மாவட்ட ஆட்சியர், கருர் அவர்களால், இந்த ஆவணம் எழுதிக் கொடுத்தமை குறித்து நான் மன்றிறைவடை நதுள்ளேன்.

*[Signature]*

சார்பதிவாளர் குளித்தலை

எழுதி வாங்கியதாக ஒப்புக் கொண்டவர்  
இடது பெருவிரல்



*[Signature]*

'சம்மதத்துடன் கூடிய ஆதார அங்கீகாரம்' என்ற  
வழி இந்த நபரின் அடையாளம் விரல் ரேகை  
மூலம் ஆதார ஆணையத்துடன்  
சரிபார்க்கப்பட்டது ஒப்பீட்டு எண்  
UKC-402975-404f87b5ce7758a76ed



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Registering Officer





R/குளித்தலை/புத்தகம்-1/500/2024

2024 ஆம் ஆண்டு பிப்ரவரி மாதம் 3ம் நாள்

*[Handwritten Signature]*

கிருஷ்ணன் மாரப்பன்  
சார்பதிவாளர்  
குளித்தலை

R/குளித்தலை/புத்தகம்-1/500/2024 எண்ணாகப் பதிவு செய்யப்படுகிறது

நாள்: 08/02/2024  
குளித்தலை




*[Handwritten Signature]*

கிருஷ்ணன் மாரப்பன்  
சார்பதிவாளர்


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1 Contains 20 Sheets 15 Sheet  
*[Handwritten Signature]*  
Registering Officer





  
 Government of India  
 விமலாநித்தல் பூரணியன்  
 Vimalanathan Pachanyan  
 பிதர் பூரணியன்  
 Father Pachanyan  
 பிறந்தநாள் : 1994  
 ஆயுசம் : Male

ஆதார் - சாதாரண மனிதனின் அதிகாரம்

  
 Unique Identification Authority of India  
 முகவரி:  
 202, அம்பலகாரத்தேடு,  
 சோரரசம்பேட்டை,  
 சோரரசம்பேட்டை,  
 திருச்சிராப்பள்ளி, தமிழ்நாடு.  
 620102

Address:  
 2/52, AMBALAKARASTREET,  
 SOMARASAMPETTAI,  
 Somarasampettai, Tiruchirappalli,  
 Tamil Nadu, 620102

1947  
 1800 300 1947  
 help@uidai.gov.in  
 www.uidai.gov.in

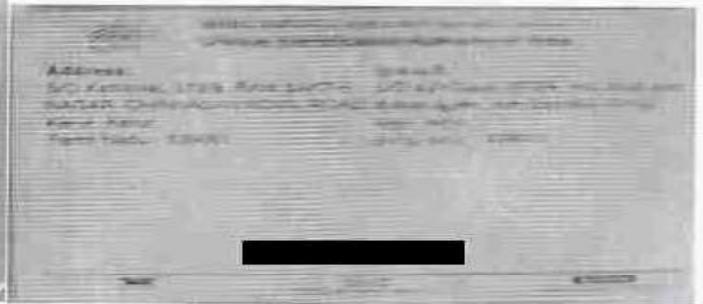
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 Registering Officer





S. Sathya Prakash  
B118 9802 2399



Ruchanagar  
3584 7141 8276

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1 Contains 20 Sheets 17 Shee.  
jm  
Registering Officer





சுவிட்சேஸ்  
460 570887 **15**

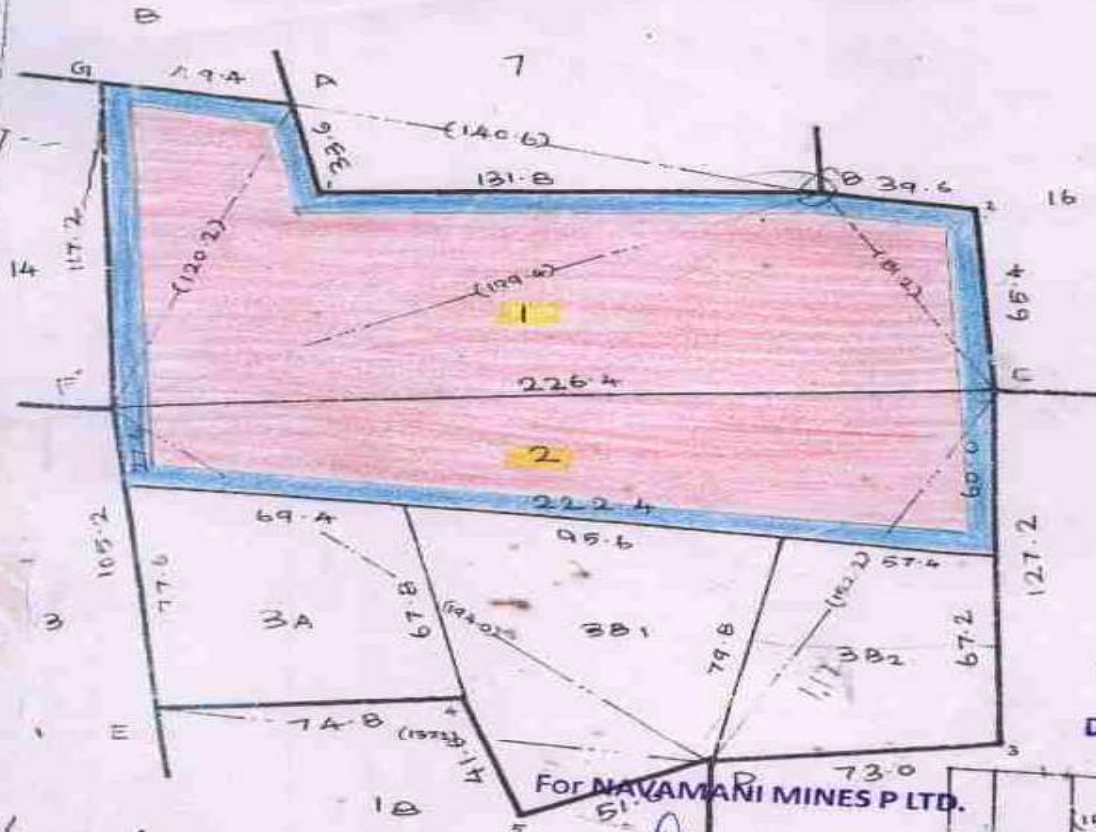
சுயம்மல

செய்த **சுயம்மல**

பெரிய கெட்டகெட்ட

4 ஏ. 44 5

- பராமேயம் கெட்டகெட்ட
- (சுயம்மல) கெட்டகெட்ட



17 *[Signature]* 42  
LESSOR  
DISTRICT COLLECTOR  
KARUR

For NAVAMANI MINES P LTD.

*[Signature]* Directors  
REGISTER HOLDER / LESSEE

*[Signature]*  
சுயம்மல கெட்டகெட்ட  
15. சுயம்மல கெட்டகெட்ட,  
சுயம்மல கெட்டகெட்ட,  
சுயம்மல கெட்டகெட்ட.

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Contains **20** Sheets **18** Sheet

D	(137 2)	91.2	236.5	73.5	E
C	(152 2)	40.8	61.2	3	
D					
C	(81 2)	24.0			
B	(140 6)	12.4	31.4	1	
A					

Registering Officer: **2000**



அனுப்பவர்:

பெறுவர்:

மாவட்ட ஆட்சித்தலைவர்,  
கரூர் மாவட்டம்,  
கரூர்-639 007.

சார் பதிவுகள்,  
குளித்தலை,  
கரூர்.

ந.க.எண். 256/கனிமம்/2019, நாள்: 02.02.2024.

அய்யம்,

**பொருள்:** கனிமங்களும் கரங்கங்களும் - கரூர் மாவட்டம் - திருஷ்ணாராயபுரம் வட்டம் - சிவாயம் (வடக்கு) கிராமம் புல எண்கள்.15/1(1.83.5 ஹெக்டேர்) மற்றும் 15/2(0.97.0 ஹெக்டேர்) ஆகியவற்றின் மொத்தம் 2.80.5 ஹெக்டேர் பரப்பில் சாதாரண கரும்பும் கிராவல் சூலரி பணி செய்ய - தி/ள்.நவமணி ஷைன்ஸ் பிரைவேட் லிமிடெட் என்ற நிறுவனத்திற்கு குத்தகை உரிமம் வழங்கி ஆணையிடப்பட்டது - குத்தகை ஒப்பந்த பத்திரம் நிறைவேற்றப்பட்டது - பதிவுகளுமீது பதிவு செய்ய அனுப்பியமைக்கல் - தொடர்பாக.

**பார்வை:** கரூர் மாவட்ட ஆட்சித்தலைவர் அவர்களின் செயல்முறை ஆணைகள் செ.மு.ஆ.எண்.256/கனிமம்/2019, நாள்: 06.02.2024

கரூர் மாவட்டம், திருஷ்ணாராயபுரம் வட்டம், சிவாயம் (வடக்கு) கிராமம், புல எண்கள்.15/1(1.83.5 ஹெக்டேர்) மற்றும் 15/2(0.97.0 ஹெக்டேர்) ஆகியவற்றின் மொத்தம் 2.80.5 ஹெக்டேர் பரப்பில் சாதாரண கரும்பு ஆண்டுகளுக்கும் மற்றும் கிராவல் முதலாம் ஆண்டிற்கு மட்டும் வெட்டியெடுக்க தி/ள்.நவமணி ஷைன்ஸ் பிரைவேட் லிமிடெட் என்ற நிறுவனத்திற்கு பார்வையில் கண்டுள்ள கரூர் மாவட்ட ஆட்சித்தலைவர் அவர்களின் செயல்முறை ஆணையின்படி குத்தகை உரிமம் வழங்கப்பட்டு, குத்தகை ஒப்பந்த பத்திரம் 06.02.2024-இல் நிறைவேற்றப்பட்டது. நிறைவேற்றப்பட்ட குத்தகை ஒப்பந்த பத்திரத்தின் அசல் இத்துடன் இணைத்து அனுப்பி வைக்கப்படுகிறது.

2) மேற்படி, குத்தகை ஒப்பந்த பத்திரம் பதிவு செய்வதற்கு இந்திய பதிவு சட்டம் பிரிவு 88(1)-இன்படி அரசு அதிகாரிகள் நேரில் ஆஜராவதற்கு (Personal Appearance) விலக்களிக்கப்பட்டுள்ளது. முத்திரைத்தாள் மதிப்பானது பின்வருமாறு கணக்கிடப்பட்டுள்ளது.

ஏற்பாடுகளைச் செய்த கரங்கக்கட்டம் மற்றும் கரும்பு மூலம் நலக்க மதிப்பீட்டு ஆணையர் அனுமதித்துள்ள சாதாரண கரும்பு	-	372305 ச.மீ X ரூ.90 (சீனியரேஜ் தொகை/ச.மீ)
	-	ரூ.3,35,07,450/-
கிராயம்	-	49,332 ச.மீ X ரூ.56 (சீனியரேஜ் தொகை/ச.மீ)
	-	ரூ.27,62,502/-
பரப்பு வரி	-	ரூ.7,013/-
சுரப்பு தொகை	-	ரூ.10,000/-
	-	ரூ.3,62,87,055/-
		மொத்தம்
1% முத்திரைத் தாள் மதிப்பு	-	ரூ.362870.55 (அல்லது) 3,63,000/-

இந்நேரத்தில் ரூ.3,63,000/- (அல்லது) ரூ.20,000/- கட்டணமாக செலுத்த வேண்டும். இதில் ரூ.20,000/- ஆகிய முத்திரைத்தாளில் குறிப்பிட்ட அளவிற்கான சலுகை விதிகள் 1959-ஆம் ஆண்டு பிப். நவம்பர் 14-இல் குறிப்பிடப்பட்டுள்ள படிவத்தில் குத்தகை ஒப்பந்தப் பத்திரம் தயார் செய்து சமர்ப்பித்துள்ளனர். மேலும், மீதமுள்ள ரூ.3,43,000/- இலக்கான சார்பதிவுகள் அலுவலகத்திற்கு இணைய வழியில்

**Registering Officer**



சலான் எண். 20241209396265. நாள்: 20.01.2024-இன்படி செலுத்தி அதன் அசல் சலான் இவ்வலுவலகத்தில் சமர்ப்பித்துள்ளனர்.

எனவே, தி/ஸ்.நவமணி ஸமன்ஸ் பிரைவேட் லிமிடெட் என்ற நிறுவனத்தினர் குத்தகை ஒப்பந்த பத்திரத்தினை தங்கள் அலுவலகத்தில் தாக்கல் செய்யும் போது இதர கட்டணம் ஏதேனும் இருப்பின் அதனை முத்திரைத்தாள் கணக்கு தலைப்பில் வருவித்து கொண்டு அதன் அசல் சலான் மற்றும் பதிவு செய்த அசல் குத்தகை ஒப்பந்தப் பத்திரம் ஆகியவற்றை இவ்வலுவலகத்திற்கு அனுப்பிவைக்குமாறு கேட்டுக் கொள்கிறேன்.

இணைப்பு: அசல் குத்தகை ஒப்பந்தப் பத்திரம்.

மா.வா. தி.சு.நவமணி  
குத்தகைக்காக,  
நகர்.

20/01/24

நகல்:  
தி/ஸ்.நவமணி ஸமன்ஸ் பிரைவேட்  
லிமிடெட்,  
5/898 அழகு நகர், திருச்சி ரோடு,  
நாமக்கல் - 637 001

(குவாரி குத்தகை ஒப்பந்தப்பத்திரத்தை சார்பதிவாளர், குளித்தலை அலுவலகத்தில் பதிவு செய்து அசல் பத்திரத்தை இவ்வலுவலகத்தில் ஆஜர்படுத்துமாறு அறிவுறுத்தப்படுகிறது)

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1 Contains 20 Sheets 20 Sheet  
Jm  
Registering Officer



**BEFORE THE HON'BLE NATIONAL GREEN  
TRIBUNAL,  
SOUTHERN ZONE, CHENNAI**

**APPEAL NO. 27 OF 2024 (SZ)**

Dr. Sushmitha

... Appellant

**Versus**

State Level Environment Impact Assessment  
Authority and Ors.

... Respondents

**ADDITIONAL TYPED SET OF PAPERS - II**

**M/s. S SARAVANAN  
COUNSEL FOR APPELLANT**