

October 2023

Application For Environmental Clearance (Public Hearing)

# Draft Environmental Impact Assessment Report

For

Sekhar Mines, Varavanai Limestone Quarry –  
1.90.5 Ha

at

S.F.Nos. 833/4B, 836 (P), 843/2 of Varavanai Village,  
Kulithalai Taluk (*presently Kadavur Taluk as per  
G.O(Ms)NO; 484 Revenue (RA 1(1))Department  
Dated:18.12.2009*), Karur District, Tamil Nadu State

Sector No. 1(a) (Sector No. 1 as per NABET)

Category of the Project: B1

*Baseline Period: August, September, October 2022*

*Environmental Consultant  
& Laboratory details:*  
Ecotech Labs Pvt Ltd,



No 48, 2nd Main road,  
South extension Ram nagar,  
Pallikaranai,  
Chennai -600100.

*Proponent details:*

Thiru. S. Sekhar,  
Proprietor of Sekhar Mines  
No.73, Raja Colony, Collector  
Office Road, Cantonment,  
Trichy District – 620 001.

**Date: 31.10.2023**

**From**

Thiru. S. Sekhar  
Proprietor of Sekhar Mines  
No.73, Raja Colony, Collector Office Road,  
Cantonment, Trichy District – 620 001

**To**

**The District Environmental Engineer**  
Tamilnadu Pollution Control Board,  
S.F.No.654 part, 655 Part, L.N.S.Village,L.G.B.Nagar,  
Arivuthirukkivil Road, Karur-639002.

**Sir,**

**Sub: Request to Conduct Public Hearing** – Environmental Clearance for “Sekhar Mines, Varavanai Limestone Quarry” over a total extent of 1.90.5 Ha at S.F. Nos. 833/4B, 836 (P), 843/2 of Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District, Tamil Nadu State – Regarding.

**Ref: Letter No. SEIAA- TN/F.No.6557/SEAC/TOR-1168/2018 dated 30.05.2022**

Please find enclosed herewith the application of Draft EIA Report along with necessary enclosures towards seeking environmental clearance for “Sekhar Mines, Varavanai Limestone Quarry” over a total extent of 1.90.5 Ha at S.F. Nos. 833/4B, 836 (P), 843/2 of Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District, Tamil Nadu State. In this regard, we had obtained the Terms of Reference from State Environmental Impact Assessment Authority (SEIAA) Tamil Nadu vide reference mentioned above for conducting EIA studies. We wish to inform that the draft EIA report complying with all the conditions mentioned in the TOR has been prepared and the copies of the same are enclosed with this letter. With reference to the above, we kindly request the TNPCB to make the necessary arrangements for **conducting the public hearing for the Limestone Quarry**. With the above, we request the TNPCB to accept and process our application for conducting the Public Hearing at the earliest.

**Thanking you**

**Yours Sincerely**



Authorized Signatory

Enclosures: Draft EIA report

Thiru. S. Sekhar,  
Proprietor of Sekhar Mines  
No.73, Raja Colony, Collector Office Road,  
Cantonment, Trichy District – 620 001

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## UNDERTAKING

I, S. Sekhar, undertaking that the Draft Environmental Impact Assessment (EIA) Report for 'Sekhar Mines, Varavanai Limestone Quarry' over an extent of 1.90.5 Ha at S.F.Nos. 833/4B, 836 (P), 843/2 of Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District, Tamil Nadu State under project category B1 and Schedule S.No.1 (a).

TOR issued by the State Expert Appraisal Committee, TN vide Lr. No. SEIAA-TN/F.No.6557/SEAC/TOR-1168/2018 dated 30.05.2022.

I, hereby assure that all the information and data provided in the EIA report is accurate, true and correct and owns responsibility for the same.



Place:

Yours faithfully

Date:

S. Sekhar

Plot No.48A, 2nd Main Road,  
Ram Nagar, South Extension,  
Pallikarantal, Chennai - 600 100.  
GST NO. 33AADCE6103A22H  
PAN NO: AADCE6103A



**Eco Tech Labs Pvt Ltd**

Cell No: 98400 87542  
Email : info@ecotechlabs.in  
Website : www.ecotechlabs.in  
CIN : U74900TN2014PTC094895

## UNDERTAKING

I, Dr. A. Dhamodharan, Managing Director confirms that this Draft EIA Report of 'Sekhar Mines, Varavanai Limestone Quarry' over an extent of 1.90.5 Ha at S.F.Nos. 833/4B, 836 (P), 843/2 of Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District, Tamil Nadu State has been prepared at M/s. Eco tech Labs Pvt. Ltd., Chennai.

I also confirm that I shall be fully accountable for any miss-leading information mentioned in this Report.

Signature:

Name: Dr. A. Dhamodharan

Designation: Managing Director

Name of the EIA Consultant Organization: M/s. Eco tech Labs Pvt Ltd.,

Chennai. NABET Certificate No: NABET/EIA/2124/SA 0147

Date: 31.10.2023

Place: Chennai

<b>Project Name</b>	<b>Varavanai Limestone Quarry- 1.90.5 Ha</b>	<b>Draft EIA Report</b>
<b>Project Proponent</b>	<b>Sekhar Mines</b>	
<b>Project Location</b>	<b>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</b>	

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<b>Project Proponent</b>	<b>Sekhar Mines</b>	
<b>Project Location</b>	<b>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</b>	

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<b>Project Location</b>	<b>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</b>	

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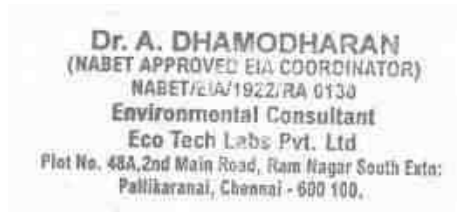
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<b>Project Proponent</b>	<i>Sekhar Mines</i>	
<b>Project Location</b>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

## Declaration of Experts contributing to the EIA




Declaration by experts contributing to the EIA report for Varavanai Limestone (major mineral) Quarry mining project of Thiru. S. Sekhar, Proprietor of Sekhar Mines over a total extent of 1.90.5 Ha at S.F.No. 833/4B, 836 (P), 843/2 in Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District and Tamil Nadu State.

I, hereby certify that I was a part of the EIA team in the following capacity that developed the above EIA.




<b>Project</b>	Varavanai Limestone Quarry -1.90.5 Ha
<b>Type &amp; Category</b>	1 (a) Mining of Minerals
<b>Project Proponent</b>	Thiru. S. Sekhar, owner of Sekhar Mines
<b>Environment Consultant with their Accreditation Status</b>	M/s. Eco Tech Labs Pvt. Ltd., QCI Accredited
<b>NABET Certificate No.</b>	NABET/ EIA/2124/ SA 0147
<b>EIA Coordinator Name</b>	Dr. A. Dhamodharan (Mining of Minerals)
<b>Signature</b>	 
<b>Period of Involvement</b>	August 2022 to till now
<b>Contact Information</b>	<b>M/s. Eco Tech Labs Pvt. Ltd.</b> No. 48, 2nd Main Road, Ram Nagar South Extension Pallikaranai, Chennai - 600 100 Mobile: +91 9789906200 E-mail: dhama@ecotechlabs.in

<b>Project Name</b>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<b>Draft EIA Report</b>
<b>Project Proponent</b>	<i>Sekhar Mines</i>	
<b>Project Location</b>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	





### Functional Area Experts

<b>S. No.</b>	<b>Functional areas</b>	<b>Name of the experts</b>	<b>Involvement (Period and task)</b>	<b>Signature and date</b>
1	AP	Mrs. K. Vijayalakshmi	<ol style="list-style-type: none"> <li>1. Selection of Baseline Monitoring stations based on the wind direction</li> <li>2. Interpretation of Baseline data by comparing it with standards prescribed by CPCB against the type of area</li> <li>3. Identification of sources of air pollution and suggesting mitigation measures to minimize impact</li> </ol> <p><b>Period: August 2022 - Till now</b></p>	
2	WP	Dr. A. Dhamodharan	<ol style="list-style-type: none"> <li>1. Selection of baseline Monitoring Locations for Ground water analysis and also identifying nearest surface water to be studied.</li> <li>2. Interpretation of baseline data collected</li> <li>3. Identification of impacts based on the baseline study conducted and also to the ground water and nearby surface water due to the proposed project</li> <li>4. Preparation of suitable and appropriate mitigation plan.</li> </ol> <p><b>Period: August 2022 - Till now</b></p>	
3	SHW	Dr. A. Dhamodharan	<ol style="list-style-type: none"> <li>1. Identification of nature of solid waste generated</li> <li>2. Categorization of the generated waste and estimating the quantity of waste to be generated based on the per capita basis. Identification of impacts of SHW on Environment</li> <li>3. Suggesting suitable mitigation measures by recommending appropriate disposal method for each category of</li> </ol>	

<b>Project Name</b>	<b>Varavanai Limestone Quarry- 1.90.5 Ha</b>	<b>Draft EIA Report</b>
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<b>Project Location</b>	<b>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</b>	



			waste generated 4. Top soil and refuse management <b>Period: August 2022 - Till now</b>	
4	SE	Mr. S. Pandian	1. Primary data collection through the census questionnaire 2. Obtaining Secondary data from authenticated sources and incorporating the same in EIA report. 3. Impact assessment & proposing suitable mitigation plan 4. CSR budget allocation by discussing with the local body and allotting the same for need based activity. <b>Period: August 2022 - Till now</b> <b>*Involves Public Hearing</b>	
5	EB	Dr. A. Dhamodharan	1. Primary data collection through field survey and sheet observation for ecology and biodiversity 2. Secondary Collection through various authenticated sources 3. Prediction of anticipated impacts and suggesting appropriate mitigation measures. <b>Period: August 2022 - Till now</b>	
6	HG	Dr. T. P. Natesan	1. Study of existing surface drainage arrangements in the core and buffer zone, impact due to mining on these drainage courses and suggestion of mitigative measures 2. Determination of groundwater use pattern, development of rainwater harvesting program. Storm water management through garland drainage system. <b>Period: August 2022 - Till now</b>	
7	GEO	Dr. T. P. Natesan	1. Field survey for assessing regional and local geology, aquifer	

<b>Project Name</b>	<b>Varavanai Limestone Quarry- 1.90.5 Ha</b>	<b>Draft EIA Report</b>
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<b>Project Location</b>	<b>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</b>	

			<p>distribution, Determination of groundwater use pattern, development of rainwater harvesting program.</p> <p><b>Period: August 2022 - Till now</b></p>	
8	SC	Dr. A. Dhamodharan	<p>1. Interpretation of baseline report</p> <p>2. Identification of possible impacts on soil, prediction of soil conservation and suggesting suitable mitigation measures.</p> <p><b>Period: August 2022 - Till now</b></p>	
9	AQ	Mrs. K. Vijayalakshmi	<p>1. Collection of Meteorological data for the baseline study period</p> <p>2. Plotting wind rose plot and thereby selecting the monitoring locations based on the wind pattern</p> <p>3. Estimation of sources of air emissions and air quality modeling is done</p> <p>4. Interpretation of the results obtained</p> <p>5. Identification of the impacts and suggesting suitable mitigation measures.</p> <p><b>Period: August 2022 - Till now</b></p>	
10	NV	Mrs.K.Vijayalakhmi	<p>1. Selection of monitoring locations</p> <p>2. Interpretation of baseline data</p> <p>3. Prediction of impacts due to noise pollution and suggestion of appropriate mitigation measures</p> <p><b>Period: August 2022 - Till now</b></p>	



<b>Project Name</b>	<b>Varavanai Limestone Quarry- 1.90.5 Ha</b>	<b>Draft EIA Report</b>
<b>Project Proponent</b>	<b>Sekhar Mines</b>	
<b>Project Location</b>	<b>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</b>	

11	LU	Dr. T. P. Natesan	<ol style="list-style-type: none"> <li>1. Collection of Remote sensing satellite data to study the land use pattern.</li> <li>2. Primary field survey and limited field verification for land categorization in the study area</li> <li>3. Preparation of Land use map using Satellite data for 10km radius around the project site.</li> </ol> <p><b>Period: August 2022 - Till now</b></p>	
12	RH	Mrs.K.Vijayalaks hmi	<ol style="list-style-type: none"> <li>1. Identification of the risk</li> <li>2. Interpreting consequence contours</li> <li>3. Suggesting risk mitigation measures</li> </ol> <p><b>Period: August 2022 - Till now</b></p>	

**Declaration by the Head of the accredited consultant organization/ authorized person**

I, Dr. A. Dhamodharan, hereby confirm that the above mentioned experts prepared the EIA report for mining of Limestone by Thiru. S. Sekhar, owner of Sekhar Mines at S.F.No. 833/4B, 836 (P), 843/2 of Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk) , Karur District and Tamil Nadu State.

I also confirm that the consultant organization shall be fully accountable for any misleading information mentioned in this statement.

**Signature:**




**Name:** Dr. A. Dhamodharan

**Designation:** Managing Director

**Name of the EIA consultant organization:** M/s. Eco Tech Labs Private Limited

**NABET Certificate No:** NABET/EIA/2124/SA 0147

<i>Project Name</i>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<i>Executive Summary</i>
<i>Project Proponent</i>	<i>Sekhar Mines</i>	
<i>Project Location</i>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

## **EXECUTIVE SUMMARY**

### **1. Project Background**

Varavanai Limestone Quarry is owned by Thiru. S. Sekhar, owner of Sekhar Mines, Trichy, Tamil Nadu. Sekhar Mines has already obtained for grant of Mining lease to Varavanai Limestone Quarry over an area of 1.90.5 Ha at S.F.No. 833/4B, 836 (P), 843/2 of Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District, Tamil Nadu for a period of 20 years.

The Mining Plan for fresh grant of lease was approved by Indian Bureau of Mines in letter No.TN/TCR/MP/LST-546-MDS dated 30.12.1991 before the grant of Mining Lease. The Mining lease was granted for twenty years under G.O. Ms. No. 162 Industries (MMA-2) Department dated 14.06.1994. The lease deed was executed on 10.08.1994 and the mining operation commenced on 20.04.1996. The lease granted for 20 years expired on 09.08.2014.

The 1st scheme of mining lease was granted by Indian Bureau of Mines vide Letter No.TN/KR/LST/MS-93-MDS, dated 18.02.2001. Further, the 2nd scheme of the mining lease was approved by Indian Bureau of Mines vide letter no. TN/KRR/LST/MS-716-MDS dated 31.08.2012. The 3rd Scheme of mining was approved by Indian Bureau of Mines vide letter no. TN/DGL/LST/MS-1372-MDS dated 13.06.2016, valid up to 31.03.2019.

As per the Mines and Mineral (Development and Regulation) (MMDR) Amendment Act 2015, the validity of the Mining Lease is extended upto 09.08.2044 (effective from 10.08.2014 to 09.08.2044).

Later, as per MoEF&CC Notification S.O.804 (E) dated 14.03.2017, the project is considered as violation, mine without obtaining prior EC. The mine was not operational from 11.02.2016. Thiru. S. Sekhar, owner of Sekhar Mines applied for Environmental Clearance. The project has been accorded with Terms of Reference from SEIAA, Tamil Nadu vide Letter. No. SEIAA-TN/F.No.6557/SEAC/TOR-1168/2018 dated 30.05.2022.

The lease area for quarry lease is almost flat terrain which does not sustain any type of vegetation. The quarry operation is proposed to carry out with open cast manual method of mining with help of spades, baskets and jack hammer, drilling. No heavy earth moving machinery is proposed for

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limestone mining. After hand sorting, the mined-out Limestone is directly transported to the Refractory and chemical based industries plant.

The quarry operation is proposed up to depth of 13 m below ground level. The Total Geological reserve is 1,34,605 tonnes and recoverable reserves are estimated as 80,763 tonnes. The Mineable Reserves is 49,041 tonnes and recoverable reserves are estimated as 29,425 tonnes to be mined out for Three Years.

The 3<sup>rd</sup> Scheme of Mining was approved by the Indian Bureau of Mines vide letter No. TN/DGL/LST/MS-1371.MDS dated 13.06.2016. The project area does not fall in Hill Area Conservation Authority region. There is no interstate boundary, CRZ zone, Western Ghats, notified Bird sanctuaries, wild life sanctuaries as per Wild life protection Act 1972, within the radius of 15 km.

## 2. Nature & Size of the Project

The Limestone quarry over an extent of 1.90.5 Hectares land is located Varavanai Village of Kulithalai Taluk (presently Kadavur Taluk), Karur District.

Mineral intends to quarry	: Limestone
District	: Karur
Taluk	: Kulithalai Taluk (presently Kadavur Taluk)
Village	: Varavanai village
S.F.Nos	: 833/4B, 836 (P), 843/2
Extent	: 1.90.5 hectares

**Table 1: Brief Description of the Project**

<b>S. No</b>	<b>Particulars</b>	<b>Details</b>
1	Latitude	N 10° 45' 10.63"
2	Longitude	E 78° 13' 49.84"
3	Site Elevation above MSL	≈ 192 m from above MSL
4	Topography	Flat terrain
5	Land use of the site	Own patta land and non-agricultural land
6	Extent of lease area	1.90.5 Ha

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<b>Project Location</b>	<b>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</b>	

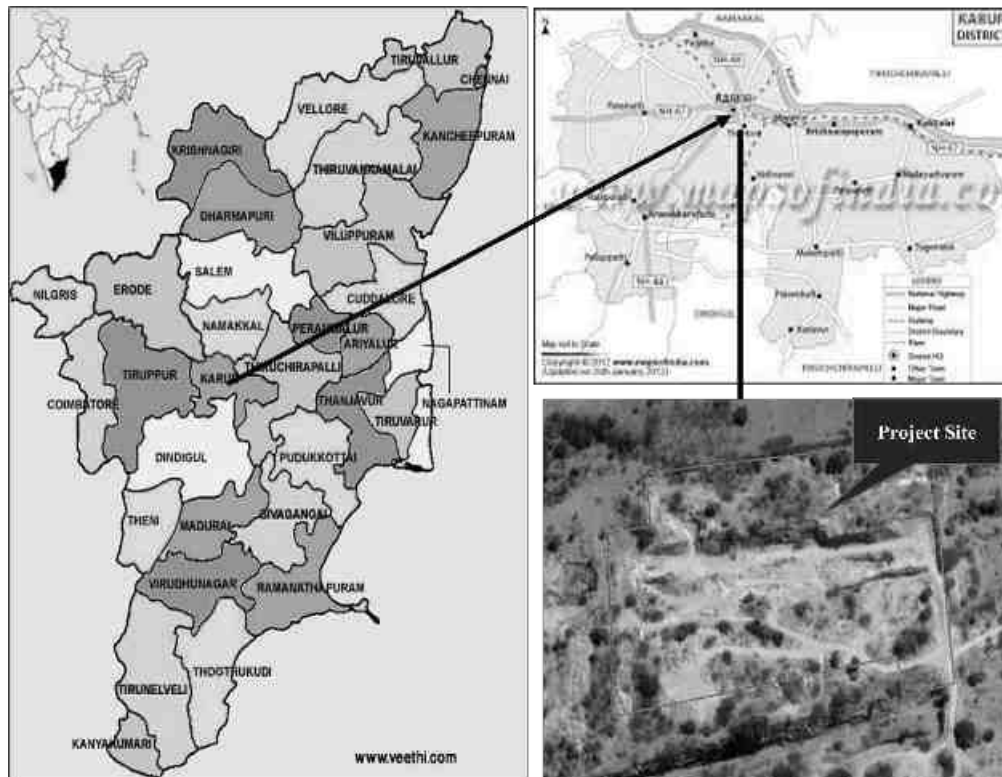
7	Nearest highway	SH 199 (Vaiyampatty- Karur Road) – 0.60 km SW
8	Nearest railway station	Palaiyam Railway Station - 11.52 km, SW
9	Nearest airport	Tiruchirappalli International Airport - 52.26 km, E
10	Nearest town / city	Karur – 28.34 km, NW
11	Rivers / Canal	Nil
12	Lakes/Dams	<ul style="list-style-type: none"> <li>• Mamathupatti Kanmai- 0.43 km SE</li> <li>• Varavanai Kanmai – 0.69 km SW</li> <li>• Mariyamman Kulam – 1.80 km NE</li> <li>• KarunamKulam – 2.71 km NW</li> <li>• P. UdayapattiKulam – 3.34 km NE</li> <li>• TharagampattiKulam – 3.79 km S</li> <li>• OttaKulam – 5.22 km NW</li> <li>• PoovaeKulam – 5.68 km NW</li> <li>• Perumaan Kulam–5.97 km NE</li> <li>• MavathurKulam – 6.39 km SE</li> <li>• Panjapatty Lake – 9.17 km NE</li> <li>• VellianaiKulam – 11.71 km NW</li> <li>• KaraiKulam–13.19 km NE</li> <li>• PothuravuthanpattyKulam – 14.40 km NE</li> </ul>
13	Hills / valleys	Nil within 15 km radius
14	Archaeologically places	Nil within 15 km radius
15	National parks /Wildlife sanctuaries	Kadavur Slender Loris Sanctuary – 12.76 km SW
16	Reserved / Protected Forests	<ul style="list-style-type: none"> <li>• Vaiyamalaippalaiyam RF – 8.36 km SE</li> <li>• MungilKaradu RF – 11.92 km SW</li> <li>• Veeramalai RF – 13.11 km SE</li> </ul>
17	Seismicity	Proposed Lease area come under Seismic zone-II (low risk area)

### 3. Need for the Project

- ❖ India is the second largest producer of cement in the world. India has a lot of potential for development in the infrastructure and construction sector and the cement sector is expected to largely benefit from it. Some of the recent initiatives, such as development of 98 smart cities, is expected to provide a major boost to the sector.

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- ❖ Aided by suitable Government foreign policies, several foreign players such as Lafarge-Holcim, Heidelberg Cement, and Vicat have invested in the country in the recent past. A significant factor which aids the growth of this sector is the ready availability of raw materials for making cement, such as limestone and coal. Higher government spending on infrastructure and housing will be a key growth driver for the industry.
- ❖ The government has placed significant emphasis on infrastructure development with the aim of making 100 smart cities. The said project plays a significant role in the domestic as well as infrastructural market. Limestone is a key raw material in the manufacturing process of Cement.



**Figure 1: Location Map of the Project Site**

<b>Project Name</b>	<b>Varavanai Limestone Quarry- 1.90.5 Ha</b>	<b>Executive Summary</b>
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<b>Project Location</b>	<b>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</b>	



**Figure 2: Google Image of the Project Site**

#### 4. Charnokite

Limestone is a key raw material in the manufacturing process of Cement.

#### 5. Geological Resources

The geological reserves have been calculated based on the cross-section method.

**Table 2. Resources Estimation**

Classification	Section	Bench	L (m)	W (m)	D (m)	Volume CUM	Bulk Den Sity	Total Reserves (t)	Mineral Reject 40%(t)	Recoverable Reserve 60% (t)	Grade	UNFC Code
Mineral Locked up in benches	XY-A1B1	IV	5	1	2.5	13	2.6	10273	4109	6164	CEMENT & REFRACTORY	222
		V	10	1	2.5	25						
	XY-A2B2	VI	14	28	2.0	784						
		IV	6	42	2.5	630						
		V	11	42	2.5	1155						
		VI	16	42	2.0	1344						
						<u>3951</u>						
Mineral locked up in 7.5m boundary barrier			1450sq.m (29x50.0m) 2535.5sq.m (338x7.5m)		12.0	47820	2.6	124332	49733	74599	CEMENT & REFRACTORY	222
<b>TOTAL</b>								<b>134605</b>	<b>53842</b>	<b>80763</b>		

Total Resources : 1,34,605 tonnes

Recoverable Resources : 8,07,63 tonnes

<b>Project Name</b>	<b>Varavanai Limestone Quarry- 1.90.5 Ha</b>	<b>Executive Summary</b>
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<b>Project Location</b>	<b>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</b>	

**Table 3. Reserves Estimation**

Section	Bench	L (m)	W (m)	D (m)	Volume CUM	Bulk Den-Sity	Over Burden (t)	Side Burden (t)	Total Reserve (t)	Mineral Reject 40%(t)	Recoverable Reserve 60% (t)	Total Waste (t)	UNFC Code
<b>OVERBURDEN</b>													
XY-A1B1	I	60	1	1.0	60								
XY-A2B2	I	50	1	1.0	50								
					<u>110</u>	2.0	220	-	-	-	-	220	
<b>SIDEBURDEN</b>													
XY-A1B1	II	30	1	2.5	75								
	III	20	1	2.5	50								
	IV	14	1	2.5	35								
	V	7	1	2.5	18								
	VI	1	1	2.0	2								
XY-A2B2	II	30	1	2.5	75								
	III	34	10	2.5	850								
	IV	23	38	2.5	2185								
	V	12	81	2.5	2430								
	VI	2	86	2.0	<u>344</u>								
					<u>6064</u>	2.5	-	-	-	-	-	15160	
<b>LIMESTONE</b>													
XY-A1B1	II	34	1	2.5	85								
	III	34	1	2.5	85								
	IV	46	1	2.5	115								
	V	41	1	2.5	103								
	VI	37	28	2.0	2072								

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
XY-A2B2	II	1	23	2.5	58								
	III	10	24	2.5	600								
	IV	38	42	2.5	3990								
	V	81	42	2.5	8505								
	VI	86	42	2.0	<u>7224</u>								
					<u>22837</u>	2.0	-	-	59376	23750	35626	39130	111
<b>Total</b>							<b>220</b>	<b>15160</b>	<b>59376</b>	<b>23750</b>	<b>35626</b>	<b>39130</b>	

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**Table 4. Year wise tentative excavation**

Year	Pit No.	Total Tentative Excavation (Tons)	Top soil (Tons)	OB (Tons)	Side burden (Tons)	ROM (tons)		Total Waste (Tons)	ROM/Waste ratio
						Ore (Limestone@60% of ROM) (Tons)	Mineral Reject (@ 40% of ROM) (Tons)		
1	2	3	4	5	6	7	8	9	10
2016-17	I	13793	-	120	4763	8276	5517	5517	1:1.28
2017-18	I	21588	-	-	3545	12953	8635	8635	1:1.28
2018-19	I	13660	-	-	355	8196	5464	5464	1:1.28
<b>TOTAL in Tons</b>		<b>49041</b>	<b>-</b>	<b>120</b>	<b>8663</b>	<b>29425</b>	<b>19616</b>	<b>19616</b>	<b>1:0.97</b>

## 6. Mining

### *Opencast mining*

The mine will be worked with opencast manual method of mining ("B" category of small mine). Mining will be by simple open cast manual methods, with help of spades, baskets and jack hammer, drilling and blasting. There is no secondary blasting in the mine. No heavy earth moving machineries are proposed for limestone mining. After hand sorting, the mined out Limestone is directly transported to the Refractory and chemical based industries plant through 10 MT capacity tippers.

## 7. Water Requirement

Total water requirement for the mining project is 1.7 kLD. The 90% water will be required for the suspension of dust and green belt development domestic water will be sourced from nearby Village and other water will be source from nearby road tankers supply.



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**Table 5. Water Balance**

<b>Purpose</b>	<b>Quantity</b>	<b>Sources</b>
Drinking Water	0.7 KLD	Packaged Drinking water vendors available in nearby village
Green belt	0.5KLD	Other domestic activities through road tankers
Dust suppression	0.5KLD	From road tankers supply
<b>Total</b>	<b>1.7 KLD</b>	

### **8. Man Power**

Total manpower required for the project is approximately 15 persons. Workers will be from nearby villages.

**Table 6. Man Power Requirement**

<b>Supervisory :</b>	<b>No. of Employees</b>
Manager (Foreman)	1 no
Part time mining Engineer	1 no
Clerk	1 no
<b>Labours:</b>	
Highly skilled	-
Skilled	2 no.s
Semi -Skilled	-
Unskilled	10 no.s
<b>Total</b>	<b>15 no.s</b>

No child less than 21 years will be entertained during quarrying operations.

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<b>Project Location</b>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

## 9. 500m Radius Cluster Mine

**Table 7. 500m Radius Cluster Mine**

<b>S. No.</b>	<b>Name of the lessee / Permit Holder</b>	<b>Village &amp; Taluk</b>	<b>S. F. No.</b>	<b>Extent</b>	<b>Lease period</b>
1.	Thiru.S.Sekhar No.73, Raja Colony Collector office road, Trichy	Varavanai village Kulithalai Taluk	833/4B, 836(P), 843/2	1.90.5	10.08.1994- 09.08.2014 (Deemed extension)
2	Thiru.S.Sekhar No.73, Raja Colony Collector office road, Trichy	Varavanai village Kulithalai Taluk	835/3, 836(P), 837/1B	2.25.0	18.11.1995- 17.11.2015 (Deemed extension)
3.	Salem Chemicals 14/22, Agraharam, Sevaipettai,Salem	Varavanai village Kulithalai Taluk	833/1B2, 833/4A2	2.34.5	05.02.1998- 04.02.2018
4.	N.Krishnsamoorthi 159/136, Siruvakondanoor, Salem	Varavanai village Kulithalai Taluk	824/1B(PART), 824/2(PART), 824/3(PART), 825/1B(PART), 825/2B,825/3B	4.15.8	21.10.2005- 20.10.2025
5.	Thiru.Ilayaperumal	Varavanai village Kulithalai Taluk	847/3A2,847/3B, 847/3C,847/3D, 847/3E2,850/1	1.29.0	29.10.1997- 28.10.2017
<b>Total</b>				<b>11.94.8</b>	

<b>Project Name</b>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<b>Executive Summary</b>
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<b>Project Location</b>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

## 10. Land Requirement

The total extent area of the Existing project is 1.90.5 Ha, Own patta land in Varavanai Village of Kulithalai Taluk (presently Kadavur Taluk), Karur District.

**Table 8. Land Use Breakup**

S.No.	Description	Present Area (Ha)	Area to be reclaimed & rehabilitated at the end of present MP/MS period(Ha)	Area to be reclaimed & rehabilitated at the end of life of mine (Ha)
1.	Mining (Quarry)	0.79.0	0.19.0	0.93.0
2.	Waste dump	0.40.0	0.14.0	0.14.0
3.	Office-Infrastructure	-	0.01.0	0.01.0
4.	Mineral Stack/ Processing Yard	-	-	-
5.	Sub-grade Mineral stacks	-	-	-
6.	Mine Roads	0.12.0	0.01.0	0.01.0
7.	Area under Plantation	0.01.0	0.13.0	0.20.0
8.	Unutilized Area	0.59.5	0.42.5	0.61.5
	<b>Total</b>	<b>1.90.5</b>	<b>1.90.5</b>	<b>1.90.5</b>

## 11. Human Settlement

There are no habitations within 500m radius. There are villages located in this area within 5km radius of the quarry.

**Table 9. Habitation**

Name of Hamlet	Population	Distance from the area	Distance (km)
Pannapatti	750	North	4.0 km
Varavanai	600	South	3.0 km
Kalaiyappatti	750	West	5.0 km
Vellappatti	500	East	5.5 km

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<i>Project Location</i>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

## **12. Power Requirement**

The Limestone quarry project does not require huge water and electricity for the project.

## **13. Scope of the Baseline Study**

The chapter contains information on existing environmental scenario on the following parameters.

1. Micro – Meteorology
2. Water Environment
3. Air Environment
4. Noise Environment
5. Soil / Land Environment
6. Biological Environment
7. Socio-economic Environment

### **13.1 Micro – Meteorology**

Meteorology plays a vital role in affecting the dispersion of pollutants, once discharged into the atmosphere. Since meteorological factors show wide fluctuations with time, meaningful interpretation can be drawn only from long-term reliable data.

- i) Average Minimum Temperature : 32<sup>0</sup>C
- ii) Average Maximum Temperature. : 36<sup>0</sup>C
- iv) Average Annual Rainfall of the area : 700-800 mm

### **13.2 Air Environment**

Ambient air monitoring was carried out on monthly basis in the surrounding areas of the Mine Lease area to assess the ambient air quality at the source. To know the ambient air quality at a larger distance i.e. in the study area of 5 km. radius, air quality survey has been conducted at 5 locations over a period of Pre Monsoon Season. Major air pollutants like, Particulate Matter (PM10), Sulphur Dioxide (SO<sub>2</sub>), Nitrogen Dioxide (NO<sub>2</sub>) were monitored and the results are summarized below,

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The baseline levels of PM10 (37-64 µg/m<sup>3</sup>), PM2.5 ( 14-33 µg/m<sup>3</sup>), SO2 (5-21 µg/m<sup>3</sup>), NO2 ( 10-38 µg/m<sup>3</sup>), all the parameters are well within the standards prescribed by National Ambient Air Quality during the study period from August 2022 to October 2022.

### **13.3 Noise Environment**

Ambient noise levels were measured at 5 locations around the proposed project site. The maximum Day noise were found to be 57 dB(A) in Indian Overseas Bank, Tharagampatti and the night noise level were found to be 46 dB(A) at Indian Overseas Bank, Tharagampatti. The minimum Day Noise and Night noise were 50 dB(A) and 39 dB(A) respectively in Project Site. The observed values are all well within the Standards prescribed by CPCB.

### **13.4 Water Environment**

- The average pH ranges from 7.11 to 7.61
- TDS value varied from 705 mg/l to 1445 mg/l
- Hardness varied from 376 to 723 mg/l
- Chloride varied from 148 to 436 mg/l

### **13.5 Land Environment**

The analysis results show that soil is neutral in nature as pH value ranges from 6.58 to 7.83 with organic matter 0.63 % to 1.88 %. The concentration of Nitrogen, Phosphorus & Potassium has been found to be in good amount in the soil samples.

### **13.6 Biological Environment**

The Mining lease area is mostly dry barren ground . No specific endangered flora & fauna exist within the mining lease area.

## **14. Rehabilitation/ Resettlement**

- The overall land of the mine is private patta land. There are no displacement of the population within the project area and adjacent nearby area. Social development of nearby villages will be considered in this project.
- The mine area does not cover any habitation. Hence the mining activity does not involve any displacement of human settlement.

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<b>Project Location</b>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

### 15. Greenbelt Development

1. The development of greenbelt in the peripheral buffer zone of the mine area.
2. Green belt has been recommended as one of the major component of environmental Management plan, which will improve ecology, environment and quality of the surrounding area.
3. Local trees like, Neem , Pungam, Naval etc will be planted along the lease boundary and avenues as well as over Non-active dumps.
- 4.The rate of survival expected to be 70% in this area.

**Table 10. Plantation/ Afforestation Program**

<b>Name of the Species proposed</b>	<b>Survival</b>	<b>No. of species</b>
Neem, Vilvam, Vaagai, Eachai, Naval, Mantharai, Magizha Maram, Vila Maram, Poo Marudhu, Panai, Marudha maram, Thandri, Sengondrai, Poovarasu, Thethankottai Maram, Pungam	70%	1000
<b>Total</b>		<b>1000</b>

### 16. Anticipated Environmental Impacts

#### 16.1 Air Environment and Mitigation Measures

1. Water sprinkling will be done on the roads & unpaved roads.
2. Proper mitigation measures like water sprinkling will be adopted to control dust emissions.
3. Plantation will be carried out on approach roads, solid waste site & nearby mine premises.
4. To control the emissions regular preventive maintenance of equipments will be carried out.

#### 16.2 Noise Environment and Mitigation Measures

1. Periodical monitoring of ambient noise will be done as per CPCB guidelines.
2. No other equipment except the transportation vehicles for loading will be allowed.
3. Noise generated by these equipments shall be intermittent and does not cause much adverse impact.

<b>Project Name</b>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<b>Executive Summary</b>
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<b>Project Location</b>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

### 17.Responsibilities for Environmental Management Cell (EMC)

The responsibilities of the EMC include the following:

- i. Environmental Monitoring of the surrounding area .
- ii. Developing the green belt/Plantation.
- iii. Ensuring minimal use of water.
- iv. Proper implementation of pollution control measures.

### 18.Environmental Monitoring Program

A monitoring schedule with respect to Ambient Air Quality, Water & Wastewater Quality, Noise Quality as per Tamil Nadu State Pollution Control Board (TNPCB), shall be maintained.

### 19. Project Cost

The total project cost is **Rs. 10,35,080** for deployment of machinery and creation of infrastructural facilities like approach road, Mine office / Workers Shed, First Aid Room etc., including electrifications and water supply

**Table 11. Project Cost details**

<b>S.No</b>	<b>Description</b>	<b>Cost (Rs)</b>
1.	Land Cost	7,00,000
2.	Operational Cost	3,35,080
<b>Total</b>		<b>10,35,080</b>

### Environmental Management Cost

- Capital Cost : Rs. 12,01,850/-
- Recurring Cost : Rs. 2,72,460/-
- Total EMP Cost : Rs. 14,74,310/-
- Total EMP Cost for Three Years: Rs. 20,60,780/-

### 20. Corporate Environmental Responsibility

The Corporate Environment Responsibility (CER) fund will be provided to the below activity.

**Table 12. CER Cost**

<b>S.No.</b>	<b>CER Activity</b>	<b>CER project cost(Rs in Lakhs)</b>
1.	Provision of Desks, Benches, Computers, Painting of Class rooms in Varavanai Govt. middle School	2,50,000/-
<b>Total</b>		<b>2,50,000/-</b>

<i>Project Name</i>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<i>Executive Summary</i>
<i>Project Proponent</i>	<i>Sekhar Mines</i>	
<i>Project Location</i>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

## **21. Benefits of the Project**

- There is positive impact on socio economics of people living in the villages. Mining operations in the subject area has positive impact by providing direct and indirect jobs opportunities
- The project is environmentally compatible, financially viable and would be in the interest of construction industry thereby indirectly benefiting the masses.
- Quarrying in this area is not going to have any negative impact on the social or cultural life of the villagers in the near vicinity.



<i>Project Name</i>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<i>Chapter 1 Introduction</i>
<i>Project Proponent</i>	<i>Sekhar Mines</i>	
<i>Project Location</i>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

# 1 Introduction

## 1.1 Preamble

Environmental Impact Assessment (EIA) study 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 proposed project. It aims to predict environmental impacts at an early stage of project planning and design, find ways and means to reduce adverse impacts, shape project to suit the local environment and present the predictions and options to decision makers. By using EIA, both environmental and economic benefits can be achieved. EIA systematically examines both beneficial and adverse consequences of the proposed project and ensures that these impacts are taken into account during the project designing.

## 1.2 Purpose Of Project

The Ministry of Environment & Forests, Government of India, made environmental clearance (EC) for certain development project mandatory through its notification of 27th January 1994 under the Environment Protection Act, 1986. Keeping in view of the experience gained in environmental clearance process over a period of one decade, the MoEF & CC came out with Environmental Impact Notification, S.O. 1533 (E), Dated: 14th September 2006. The notification has been amended from time to time. It has been made mandatory to obtain environmental clearance for different kinds of development projects (Schedule-1 of notification).

As on the date of MoEF& CC Notification S.O. 804 (E) Dated: 14.03.2017, the project had no Environmental Clearance, and it was clearly communicated by order to apply for environmental clearance under this notification.

Later, as on the date of MoEF& CC Notification S.O. 1030 (E) Dated: 08.03.2018, Violation projects of Category B - the appraisal and approval thereof shall vest with the State or Union territory level Expert Appraisal Committees and State or Union territory Environment Impact Assessment Authorities in different States and Union territories, constituted under sub- section (3) of section 3 of the Environment (Protection) Act, 1986.

The proponent applied through online for obtaining Environmental Clearance, Online Proposal No: SIA/TN/MIN/22466/2018 for the total lease area 1.90.5 Ha.

<b>Project Name</b>	<b>Varavanai Limestone Quarry- 1.90.5 Ha</b>	<b>Chapter 1 Introduction</b>
<b>Project Proponent</b>	<b>Sekhar Mines</b>	
<b>Project Location</b>	<b>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</b>	

Varavanai Limestone Quarry is owned by Thiru. S. Sekhar, owner of Sekhar Mines, Trichy, Tamil Nadu. He has 55 years of experience in Mining. Sekhar Mines has already obtained for grant of Mining lease to Varavanai Limestone Quarry over an area of 1.90.5 Ha at S.F.No. 833/4B, 836 (P), 843/2 of Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District, Tamil Nadu for a period of 20 years.

The Mining Plan for fresh grant of lease was approved by Indian Bureau of Mines in letter No.TN/TCR/MP/LST-546-MDS dated 30.12.1991 before the grant of Mining Lease. The Mining lease was granted for twenty years under G.O. Ms. No. 162 Industries (MMA-2) Department dated 14.06.1994. The lease deed was executed on 10.08.1994 and the mining operation commenced on 20.04.1996. The lease granted for 20 years expired on 09.08.2014.

The 1<sup>st</sup> scheme of mining lease was granted by Indian Bureau of Mines vide Letter No.TN/KR/LST/MS-93-MDS, dated 18.02.2001. Further, the 2<sup>nd</sup> scheme of the mining lease was approved by Indian Bureau of Mines vide letter no. TN/KRR/LST/MS-716-MDS dated 31.08.2012. The 3<sup>rd</sup> Scheme of mining was approved by Indian Bureau of Mines vide letter no. TN/DGL/LST/MS-1372-MDS dated 13.06.2016, valid up to 31.03.2019.

As per the Mines and Mineral (Development and Regulation) (MMDR) Amendment Act 2015, the validity of the Mining Lease is extended upto 09.08.2044 (effective from 10.08.2014 to 09.08.2044).

Later, as per MoEF&CC Notification S.O.804 (E) dated 14.03.2017, the project is considered as violation, mine without obtaining prior EC. The mine was not operational from 11.02.2016. Thiru. S. Sekhar, owner of Sekhar Mines applied for Environmental Clearance. The project has been accorded with Terms of Reference from SEIAA, Tamil Nadu vide Letter. No. SEIAA-TN/F.No.6557/SEAC/TOR-1168/2018 dated 30.05.2022.

Meanwhile, the Scheme of Mining Plan was lapsed on 31.03.2019 and the project proponent is in process of obtaining Approved Scheme of Mining from Indian Bureau of Mines.

This EIA report is prepared for Varavanai Limestone Quarry over an extent of 1.90.5 ha is proposed to mine out the limestone by open cast manual method of mining.

In order to assess the impacts arising out of the project, the Environmental Impact Assessment (EIA) study is undertaken by M/s. Eco Tech Labs Pvt. Ltd an Accredited Organization under Quality Council of India – National Accreditation Board for Education & Training, New Delhi which will be

<b>Project Name</b>	<b>Varavanai Limestone Quarry- 1.90.5 Ha</b>	<b>Chapter 1 Introduction</b>
<b>Project Proponent</b>	<b>Sekhar Mines</b>	
<b>Project Location</b>	<b>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</b>	

followed by preparation of a detailed Environmental Management Plan (EMP) to minimize those adverse impacts.

The sole purpose of the Environmental Impact Assessment report is to assess the beneficial and adverse impacts of the project on the existing environmental systems and to propose appropriate pollution control measures to ensure a secure, hale and healthy environment.

Thus, the report is a presentation of environmental consequences of the project activity so that all the factors are considered tactfully in eventually claiming a decision. The main objectives are described as follows:

- Evaluation of current level of pollution (air, soil, water & noise) in and around the mine under the existing conditions
- Assessment of existing Environmental Status of Water, Air, Flora, Fauna, Demography and Land use pattern.
- Suggested measures, recommendations for pollution control, monitoring equipment's and organizational set up for maintenance of pollution control.

### **1.3 Environmental Clearance**

As per the EIA Notification S.O. No. 1533 (E) Dated: 14th September 2006, Mining Projects are classified as Category "A" and Category "B".

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**

As per Gazette Notification S.O. 3977 (E) Dated: 14th August 2021, the project is classified as Category "B". The overall area of the project is an extent of 1.90.5 ha and the projects doesn't attract any General Condition & Specific Conditions. Hence, the proposal for Grant of Environmental Clearance is submitted to SEIAA – Tamil Nadu.

<b>Project Name</b>	<b>Varavanai Limestone Quarry- 1.90.5 Ha</b>	<b>Chapter 1 Introduction</b>
<b>Project Proponent</b>	<b>Sekhar Mines</b>	
<b>Project Location</b>	<b>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</b>	

## **Scoping**

Based on the documents furnished by the proponent, SEIAA – TN considered the project under violation and the authority prescribed the Terms of Reference (ToR) for preparation of EIA report and the ToR issued vide Letter. No. SEIAA-TN/F.No.6557/SEAC/TOR-1168/2018 dated 30.05.2022.

## **Public Consultation**

The Public Hearing shall be arranged in a systematic, time bound and transparent manner ensuring widest possible public participation at the project site(s) or in its close proximity District wise, by Pollution Control Board (TNPCB). The procedure for conducting Public Hearing shall be as per Appendix -IV of EIA Notification, 2006.

## **Appraisal**

Appraisal means the detailed scrutiny by the State Expert Appraisal Committee (SEAC) of the application and other documents like the EIA & EMP report. This appraisal shall be made by State Level Expert Appraisal Committee concerned in a transparent manner in a proceeding to which the proponent shall be invited for furnishing necessary clarifications in person or through an authorized representative. On conclusion of this proceeding, the State Level Expert Appraisal Committee concerned shall make categorical recommendations to the regulatory authority concerned either for grant of environmental clearance on stipulated terms and conditions or rejection of the application for environmental clearance, together with reasons for the same.

### **1.4 Terms of Reference (ToR)**

The terms of Reference has been issued by SEIAA-TN vide Letter. No. SEIAA-TN/F.No.6557/SEAC/TOR-1168/2018 dated 30.05.2022. Additional ToR points were recommended by SEAC TN in addition to the Standard ToR Points. The replies for the same were addressed in this report and compliance is attached as Annexure I .

### **1.5 Post Environmental Clearance Monitoring**

#### **1.2.1 Methodology adopted**

Post project monitoring will be carried out as per conditions stipulated in environmental clearance letter issued by SEIAA, consent issued by SPCB as well as according to CPCB guidelines. The lease area is considered as core zone and the area lying within 10 km radius from

<b>Project Name</b>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<b>Chapter 1 Introduction</b>
<b>Project Proponent</b>	<i>Sekhar Mines</i>	
<b>Project Location</b>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

the lease boundary is considered as buffer zone, where some impacts may be observed on physical and biological environment. In the buffer zones light impact may be observed and that too is occasional.

**Table 1-1: Post Environmental Clearance Monitoring**

<b>S. No.</b>	<b>Description</b>	<b>Frequency of Monitoring</b>
1.	Ambient Air Quality Monitoring	Quarterly/ Half Yearly
2.	Water level & Quality Monitoring	Quarterly/ Half Yearly
3.	Noise Level Monitoring	Quarterly/ Half Yearly
4.	Soil Quality Monitoring	Yearly
5.	Medical Check-up	Yearly

## 1.6 Generic Structure of the EIA Document

### **Chapter 1 Introduction:**

This chapter contains the general information on the location of the mines, mining methods, and major sources of environmental impacts in respect of mining projects and details of environmental clearance process.

### **Chapter 2 Project Description:**

In this chapter the type of the project, need for the project, project location, layout, project activities during preparation and operation phases, capacity of the project, project operation i.e., land availability, utilities (power and water supply) and infrastructure facilities such as roads, railways, housing and other requirements are provided. The project implementation schedule, estimated cost of development as well as operation etc. is also included.

### **Chapter 3 Description of the Environment:**

The methodology for assessing various baseline environmental components in the study area prior to the commencement of the project has been identified in this chapter. The various parameters of present environmental status are identified under different aspects, which include location and

<i>Project Name</i>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<i>Chapter 1 Introduction</i>
<i>Project Proponent</i>	<i>Sekhar Mines</i>	
<i>Project Location</i>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

regional setting of the area, physical aspects such as land use, land cover and soil quality. Hydrological aspect consists of area drainage, surface and ground water quality.

Meteorological aspect contains all the climatic factors and ambient air quality of the study area. Ecological environment describes the flora and fauna of the region. Human aspect includes the demographical features, socio-economic environment and infrastructure facilities of the study area.

#### **Chapter 4 Anticipated Environmental Impacts & Mitigation Measures:**

This chapter describes the anticipated impacts on the environment and the mitigation measures. The method of assessment of impacts including studies carried out, modelling techniques adopted to assess the impacts where pertinent should be elaborated in this chapter.

The Environmental Impact Assessment of the project during construction and operation stages is provided. The mathematical modelling exercises pertaining to ground level concentrations of air pollutants have been presented in this chapter with suitable mitigation measures.

#### **Chapter 5 Analysis of Alternatives:**

This chapter gives details of various alternatives both in respect of location of site and technologies to be deployed.

#### **Chapter 6 Environment Monitoring Programme:**

This chapter emphasizes the formation of an Environment Management Cell with trained staff under Senior Environment Engineer equipped with all monitoring facilities for monitoring of all environmental parameters during construction as well as post project monitoring. Organization structure for environmental management and frequency of monitoring has also been provided.

#### **Chapter 7 Additional Studies:**

This chapter covers the details of the additional studies required as per ToR prescribed by MoEF& CC like Risk Assessment, Public Consultation details and Social Impact Assessment and R&R plans.

<i>Project Name</i>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<i>Chapter 1 Introduction</i>
<i>Project Proponent</i>	<i>Sekhar Mines</i>	
<i>Project Location</i>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

### **Chapter 8 Project Benefits:**

The benefits that will be accrued from the project in the locality in particular and society in general as well as development will be identified and described in this chapter.

### **Chapter 9 Environmental Cost Benefit Analysis:**

Environmental Cost Benefit Analysis is not recommended.

### **Chapter 10 Environmental Management Plan:**

In this chapter, an environmental strategy to mitigate the adverse effects likely to occur on environmental parameters during mining phase has been drawn up for the proposed mining project. Post project monitoring and organization structure for environmental management has been given in this chapter.

### **Chapter 11 Summary & Conclusion:**

This chapter gives a brief of the focus areas of the report for a quick glance.

### **Chapter 12 Disclosure of the Consultant:**

The detailed profile of the consultants along with their capabilities, professional expertise and work experience are highlighted in this chapter.

### **Chapter 13 Ecological Damage Assessment, Remediation Plan, Natural Resource Augmentation Plan & Community Resource Augmentation**

Since this project comes under violation category detailed Ecological Damage Assessment, Remediation Plan, Natural Resource Augmentation Plan & Community Resource Augmentation Plan are included in this chapter.

#### **1.7 Details of Project Proponent**

Project Proponent : Sekhar Mines  
Status of the Proponent : Private & Individual

<b>Project Name</b>	<b>Varavanai Limestone Quarry- 1.90.5 Ha</b>	<b>Chapter 1 Introduction</b>
<b>Project Proponent</b>	<b>Sekhar Mines</b>	
<b>Project Location</b>	<b>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</b>	

Proponent's Name & Address : Thiru. S. Sekhar,  
 Owner of Sekhar Mines  
 No.73, Raja Colony,  
 Collector Office Road, Cantonment,  
 Trichy District – 620 001.

## **1.8 Brief Description of the Project**

### **1.8.1 Project Nature, Size & Location**

As per EIA Notification, 2006 and its subsequent amendments this project comes under category B1 (Cluster, Violation) and schedule 1(a) under item 1.

The proponent Thiru. S. Sekhar, owner of Sekhar Mines, private sector has already obtained for grant of Mining lease to Varavanai Limestone Quarry over an extent of 1.90.5 Ha in S.F.No. 833/4B, 836 (P), 843/2 in Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District, Tamil Nadu for a period of 20 years.

The Mining Lease area is approximately at N 10° 45' 10.63" latitude & E 78° 13' 49.84" longitude and is represented by Topo Sheet No.58 J/2 of Survey of India.

The area applied for mining lease is almost a flat terrain with a gentle slope towards 80° South to Vertical. There is no rich vegetation except some bushes along the lease boundary. Outcrops of limestone are visible in some areas.



<b>Project Name</b>	<b>Varavanai Limestone Quarry- 1.90.5 Ha</b>	<b>Chapter 1 Introduction</b>
<b>Project Proponent</b>	<b>Sekhar Mines</b>	
<b>Project Location</b>	<b>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</b>	



**Figure- Site Connectivity**

### **1.8.2 Past Production details**

The mining operation was commenced in the year 1996 after obtaining statutory approvals. Meanwhile, as per MoEF& CC vide letter no. Z-11013/24/2017-IA.II (M) Dated: 03.04.2017 'the mine leases which continue to operate without obtaining EC after 15.01.2016 shall be considered as Violation Cases and the same shall be dealt with in accordance with the violation policy under Environment Impact Assessment Notification, 2006 as amended'.

There is only one existing working pit and the mine working has reached a depth of about 13 m from ground level. The Planned and Actual Production for last four years is given below.

**Table 1-2 Past Production details**

<b>Year</b>	<b>Actual (T) Limestone</b>	<b>Planned (T) Limestone</b>
2011-2012	-	520
2012-2013	1356	1396

<i>Project Name</i>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<i>Chapter 1 Introduction</i>
<i>Project Proponent</i>	<i>Sekhar Mines</i>	
<i>Project Location</i>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

2013-2014	1356	4091
2014-2015	-	4056
2015-2016	150 T as per the Letter received from The District Collector Karur vide Roc. No. 438/Mines/2019 dated 02.08.2019.	5250
<b>TOTAL</b>	<b>2862</b>	<b>15313</b>

The proponent has not submitted the Scheme of Mining Plan during the plan period 2014-2015, due to lack of demand, non-availability of labour, monsoon and uneconomic operations and financial crisis. As per the letter received from The District Collector, Karur vide Roc. No. 438/Mines/2019 dated 02.08.2019, the mine was operational from 15.01.2016 to 10.02.2016 which is considered as the violation period of the project. The letter from The District Collector, Karur is attached as Annexure VIII. Therefore, during the plan period only a quantity of 2862 T of Limestone was achieved from 2012 to 10.02.2016.

<i>Project Name</i>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<i>Chapter 2 Project Description</i>
<i>Project Proponent</i>	<i>Sekhar Mines</i>	
<i>Project Location</i>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

## 2 Project Description

This chapter furnishes detailed description of the proposed project such as the type of the project, need for the project, project location, layout, project activities during mining, capacity of the project, project operation i.e., land availability, utilities (power and water supply) and infrastructure facilities such as roads, railways, housing and other requirements. The project implementation schedule estimated cost for carrying out entire mining activity is included.

### 2.1 General

The applicant, Thiru. S. Sekhar, owner of Sekhar Mines is a private owned company. The organization is having very good knowledge and experience in Limestone mining. The Limestone in Varavanai area is fine grained crystalline limestone and are mainly made up of aggregates of calcite with sub-ordinate amount of quartz and silicate minerals. They occur as long, narrow bands and are conformable in foliation strike and dip, with the gneissic country rock adjacent to them. Where the gneisses or granite bodies are large enough they can be mined separately and removed. But where they occur as thin veins within the limestone, they bring down the purity of the limestone. As such the mining involves recovery of limestone along with granitic material in all the areas, the rejects forming 40% of the mined material. The limestone are generally white, pink and grey in colour. The main impurity in the limestone is silica. There appears to be no correlation between the colour and the chemical quality. In chemical composition, the limestone maybe termed as "Cement Grade". The Calcium carbonate content is about 85%. The rest is mainly made up of silica in the form of free quartz or as silicate minerals such as wollostonite, feldspar etc.

Sekhar Mines is a private company owned by Thiru. S. Sekhar, Trichy, Tamil Nadu. He has 55 years of experience in Mining. Sekhar Mines has already obtained for grant of Mining lease to Varavanai Limestone Quarry over an area of 1.90.5 Ha at S.F.No. 833/4B, 836 (P), 843/2 of Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District, Tamil Nadu for a period of 20 years.

The Mining Plan for fresh grant of lease was approved by Indian Bureau of Mines in letter No.TN/TCR/MP/LST-546-MDS dated 30.12.1991 before the grant of Mining Lease. The Mining lease was granted for twenty years under G.O. Ms. No. 162 dated 14.06.1994. The lease deed was executed

<i>Project Name</i>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<i>Chapter 2 Project Description</i>
<i>Project Proponent</i>	<i>Sekhar Mines</i>	
<i>Project Location</i>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

on 10.08.1994 and the mining operation commenced on 20.04.1996. The lease granted for 20 years expired on 09.08.2014.

The 1<sup>st</sup> scheme of mining lease was granted by Indian Bureau of Mines vide Letter No.TN/KR/LST/MS-93-MDS, dated 18.02.2001. Further, the 2<sup>nd</sup> scheme of the mining lease was approved by Indian Bureau of Mines vide letter no. TN/KRR/LST/MS-716-MDS dated 31.08.2012. The 3<sup>rd</sup> Scheme of mining was approved by Indian Bureau of Mines vide letter no. TN/DGL/LST/MS-1372-MDS dated 13.06.2016, valid up to 31.03.2019.

As per the Mines and Mineral (Development and Regulation) (MMDR) Amendment Act 2015, the validity of the Mining Lease is extended upto 09.08.2044 (effective from 10.08.2014 to 09.08.2044).

Later, as per MoEF&CC Notification S.O.804 (E) dated 14.03.2017, the project is considered as violation, mine without obtaining prior EC. The mine was not operational from 11.02.2016. Thiru. S. Sekhar, owner of Sekhar Mines applied for Environmental Clearance. The project has been accorded with Terms of Reference from SEIAA, Tamil Nadu vide Letter. No. SEIAA-TN/F.No.6557/SEAC/TOR-1168/2018 dated 30.05.2022.

Meanwhile, the Scheme of Mining Plan was lapsed on 31.03.2019 and the project proponent is in process of obtaining Approved Scheme of Mining from Indian Bureau of Mines.

Thiru. S. Sekhar, owner, Sekhar Mines, has Mine under operation will be mined out by open cast manual method of mining. This feasibility report is prepared towards obtaining the Environmental Clearance.

As per MoEF&CC Notification S.O.804 (E) dated 14.3.2017, the project is considered as violation mine without obtaining prior EC. In order to obtain EC the proponent have applying to EAC, MoEF&CC to get EC as per the procedure prescribed in Notification dated 12.03.2017.

In order to obtain EC, the application consisting of Form I and Pre-Feasibility Report has been submitted to SEIAA, Tamil Nadu seeking Terms of Reference (ToR) on 19.03.2018. As per MOEF O.M. No. L- 11011/47/2011 -A.II (M) dated 18<sup>th</sup> May, 2012, for Category B projects appraisal and approval shall vest with State Expert Appraisal Committee (SEAC). The Project has been considered in the 136<sup>th</sup> & 268<sup>th</sup> SEAC meeting held on 20.09.2019 & 29.04.2022 respectively followed by 513<sup>th</sup> SEIAA meeting held on 30.05.2022. Subsequently, ToR was granted on 30.05.2022.

<i>Project Name</i>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<i>Chapter 2 Project Description</i>
<i>Project Proponent</i>	<i>Sekhar Mines</i>	
<i>Project Location</i>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

### **2.1.1 Type of the project:**

As per EIA Notification, 2006 and its subsequent amendments As on the date of MoEF& CC Notification S.O. 804 (E) Dated: 14.03.2017, the project had no Environmental Clearance and it was clearly communicated by order to apply for environmental clearance under this notification.

Later, as on the date of MoEF& CC Notification S.O. 1030 (E) Dated: 08.03.2018, Violation projects of Category B - the appraisal and approval thereof shall vest with the State or Union territory level Expert Appraisal Committees and State or Union territory Environment Impact Assessment Authorities in different States and Union territories, constituted under sub- section (3) of section 3 of the Environment (Protection) Act, 1986. The project required to be appraised at state level by State Environment Impact Assessment Authority, Tamil Nadu. Environment Clearance study will involve preparation of EIA report on the basis of baseline & impact assessment study is carried out. Also, before appraisal, under 7 (III) of EIA Notification 2006, the project involves the Public Consultation and the same will be conducted under SPCB (TN) in Karur District. The proceedings of the same will be incorporated in the Final EIA Report.

### **2.1.2 Need for Project:**

India is the second largest producer of cement in the world. India has a lot of potential for development in the infrastructure and construction sector and the cement sector is expected to largely benefit from it. Some of the recent initiatives, such as development of 98 smart cities, is expected to provide a major boost to the sector.

Aided by suitable Government foreign policies, several foreign players such as Lafarge-Holcim, Heidelberg Cement, and Vicat have invested in the country in the recent past. A significant factor which aids the growth of this sector is the ready availability of raw materials for making cement, such as limestone and coal. Higher government spending on infrastructure and housing will be a key growth driver for the industry. The government has placed significant emphasis on infrastructure development with the aim of making 100 smart cities. The said project plays a significant role in the domestic as well as infrastructural market. Limestone is a key raw material in the manufacturing process of Cement.

<b>Project Name</b>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<b>Chapter 2 Project Description</b>
<b>Project Proponent</b>	<i>Sekhar Mines</i>	
<b>Project Location</b>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

## 2.2 Brief Description of Project

The Karur District is rich in mineral deposits. Minerals of Economic importance found in Karur district of Tamil Nadu are mainly limestone, magnesite, bauxite, and quartz-feldspar occur at various places in the district. The salient feature of the project is listed below Table 2.1

**Table 2-1 Salient Features of the Project**

<b>S. No.</b>	<b>Description</b>	<b>Details</b>
1	Project Name	Varavanai Limestone Quarry of Sekhar Mines
2	Proponent	Thiru. S. Sekhar, owner of Sekhar Mines
3	Mining Lease Area Extent	1.90.5 Ha
4	Location	833/4B, 836 (P), 843/2 of Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District, Tamil Nadu
5	Latitude	N 10° 45' 10.63"
6	Longitude	E 78° 13' 49.84"
7	Topography	Flat terrain
8	Site Elevation above MSL	≈ 192 m from above MSL
9	Topo Sheet No.	58 J/2
10	Minerals of Mine	Limestone
11	Proposed production of Mine	Limestone capacity : ROM : 49,041 Tonnes Limestone @ 60% - 29,425 Tonnes Mineral Rejects @ 40% - 19,616 Tonnes
12	Ultimate depth of Mining	13 m below ground level (1 m Topsoil + 12 m Limestone)
13	Method of Mining	Open cast manual method of mining
14	Water demand	1.7 KLD
15	Source of water	Water will be supplied from nearby villages.
16	Man power	15 Nos.

<b>Project Name</b>	<b>Varavanai Limestone Quarry- 1.90.5 Ha</b>	<b>Chapter 2 Project Description</b>
<b>Project Proponent</b>	<b>Sekhar Mines</b>	
<b>Project Location</b>	<b>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</b>	

17	Mining Lease	G.O.3(D). No. 162 Industries (MMA-2) Department dated 10.08.1994 for a period of twenty years. MMDR Amendment Act 2015, the validity of the Mining Lease is extended upto 09.08.2044 (effective from 10.08.2014). The 1 <sup>st</sup> scheme of mining lease was granted by Indian Bureau of Mines dated 18.02.2001. Further, the 2 <sup>nd</sup> scheme of the mining lease approved by Indian Bureau of Mines dated 31.08.2012. 3 <sup>rd</sup> Scheme of Mining Plan was approved by Indian Bureau of Mines dated 31.03.2019. The Scheme of Mining Plan was lapsed on 31.03.2019 and the project proponent is in process of obtaining Approved Scheme of Mining from Indian Bureau of Mines
18	Boundary Fencing	7.5m safety distance to the boundary, fencing will be provided.
19	Ground water	The quarry operation is proposed up to a depth of 13 m below ground level. The water table is below 50 m from ground level which is observed from the nearby bore wells and wells. Hence the ground water will not be affected in any manner due to the quarrying operation during the entire lease period.
20	Habitations within 300m radius of the Project Site	There is no Habitation within 300m radius of the project site.
21	Drinking water	Water will be supplied from nearby villages.
22	Important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests	<b>Water bodies:</b> <ul style="list-style-type: none"> <li>➤ Mamathupatti Kanmai- 0.43 km SE</li> <li>➤ Varavanai Kanmai – 0.69 km SW</li> <li>➤ Mariyamman Kulam – 1.80 km NE</li> <li>➤ KarunamKulam – 2.71 km NW</li> <li>➤ P. UdayapattiKulam – 3.34 km NE</li> <li>➤ TharagampattiKulam – 3.79 km S</li> <li>➤ OttaKulam – 5.22 km NW</li> <li>➤ Poovaeekulam – 5.68 km NW</li> <li>➤ Perumaan Kulam–5.97 km NE</li> <li>➤ MavathurKulam – 6.39 km SE</li> <li>➤ Panjapatty Lake – 9.17 km NE</li> <li>➤ VellianaiKulam – 11.71 km NW</li> <li>➤ KaraiKulam–13.19 km NE</li> </ul>

<b>Project Name</b>	<b>Varavanai Limestone Quarry- 1.90.5 Ha</b>	<b>Chapter 2 Project Description</b>
<b>Project Proponent</b>	<b>Sekhar Mines</b>	
<b>Project Location</b>	<b>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</b>	

		<ul style="list-style-type: none"> <li>➤ PothuravuthanpattyKulam - 14.40 km NE</li> </ul> <p><b>Reserve Forest:</b></p> <ul style="list-style-type: none"> <li>➤ Vaiyamalaippalaiyam RF - 8.36 km SE</li> <li>➤ MungilKaradu RF - 11.92 km SW</li> <li>➤ Veeramalai RF - 13.11 km SE</li> </ul>
23.	National Parks/Wild life Sanctuaries	➤ Kadavur Slender Loris Sanctuary - 12.76 km SW



**Figure 2-1: Google Earth Image of the Project Site**

### 2.2.1 Details of Quarry within 500m Radius

The mines within 500m radius from the project site is listed below. The 500m radius letter attached as an Annexure IV.

**Table 2-2 500 m radius of from the project site**

S. No.	Name of the lessee / Permit Holder	Village & Taluk	S. F. No.	Extent	Lease period
1.	Thiru.S.Sekhar	Varavanai village	833/4B, 836(P),	1.90.5	10.08.1994-



<b>Project Name</b>	<b>Varavanai Limestone Quarry- 1.90.5 Ha</b>	<b>Chapter 2 Project Description</b>
<b>Project Proponent</b>	<b>Sekhar Mines</b>	
<b>Project Location</b>	<b>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</b>	

	No.73, Raja Colony Collector office road, Trichy	Kulithalai Taluk	843/2		09.08.2014 (Deemed extension)
2	Thiru.S.Sekhar No.73, Raja Colony Collector office road, Trichy	Varavanai village Kulithalai Taluk	835/3, 836(P), 837/1B	2.25.0	18.11.1995- 17.11.2015 (Deemed extension)
3.	Salem Chemicals 14/22, Agraharam, Sevaipettai,Salem	Varavanai village Kulithalai Taluk	833/1B2, 833/4A2	2.34.5	05.02.1998- 04.02.2018
4.	N.Krishnsamoorthi 159/136, Siruvakondanoor, Salem	Varavanai village Kulithalai Taluk	824/1B(PART), 824/2(PART), 824/3(PART), 825/1B(PART), 825/2B,825/3B	4.15.8	21.10.2005- 20.10.2025
5.	Thiru.Ilayaperumal	Varavanai village Kulithalai Taluk	847/3A2,847/3B, 847/3C,847/3D, 847/3E2,850/1	1.29.0	29.10.1997- 28.10.2017
<b>Total</b>				<b>11.94.8</b>	

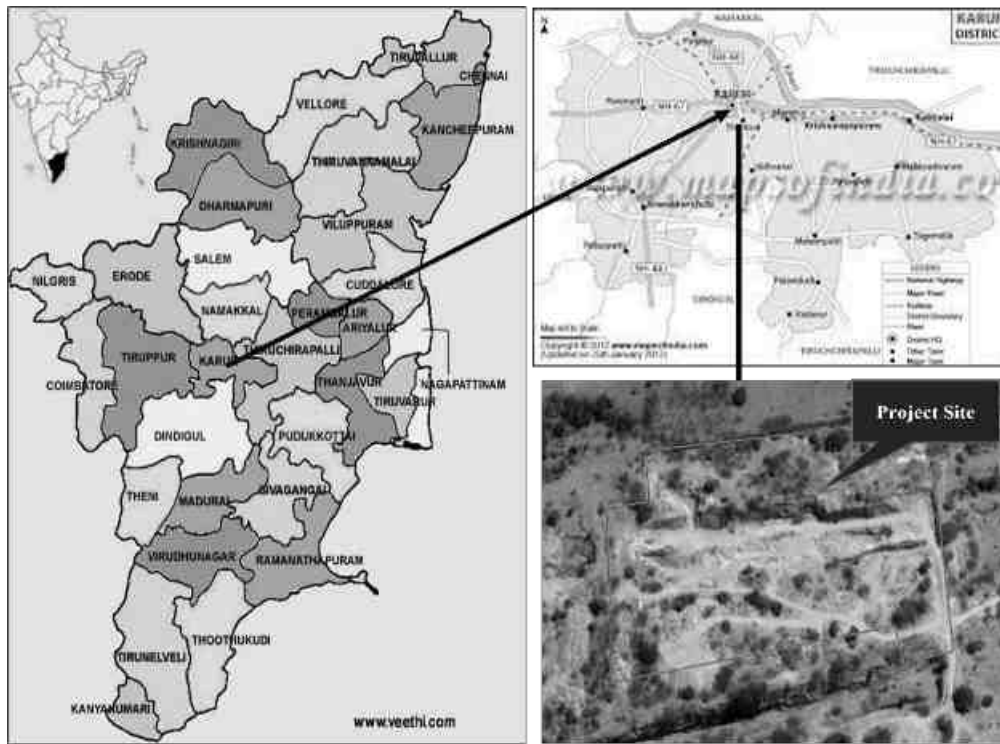
### 2.2.2 Site Connectivity:

The area is approachable by well-developed road network. The site is connected to SH 199 (Vaiyampatty- Karur Road). The road connectivity map for the mine lease area is given below. These products enter into the market in different parts of the country.

<b>Project Name</b>	<b>Varavanai Limestone Quarry- 1.90.5 Ha</b>	<b>Chapter 2 Project Description</b>
<b>Project Proponent</b>	<b>Sekhar Mines</b>	
<b>Project Location</b>	<b>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</b>	



**Figure 2-2 Site Connectivity**



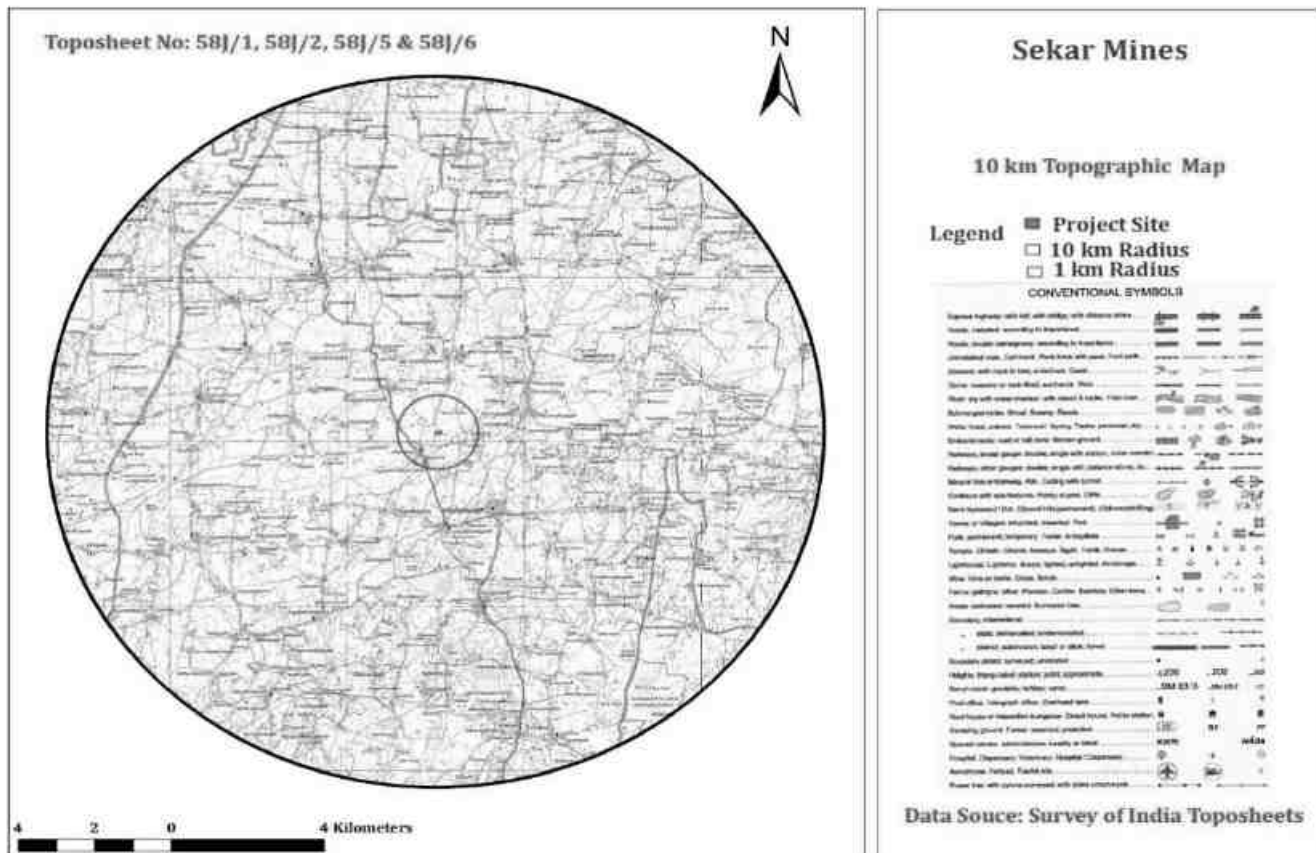
**Figure 2-3: Location Map of the Project Site**

<b>Project Name</b>	<b>Varavanai Limestone Quarry- 1.90.5 Ha</b>	<b>Chapter 2 Project Description</b>
<b>Project Proponent</b>	<b>Sekhar Mines</b>	
<b>Project Location</b>	<b>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</b>	

### 2.3 Location Details:

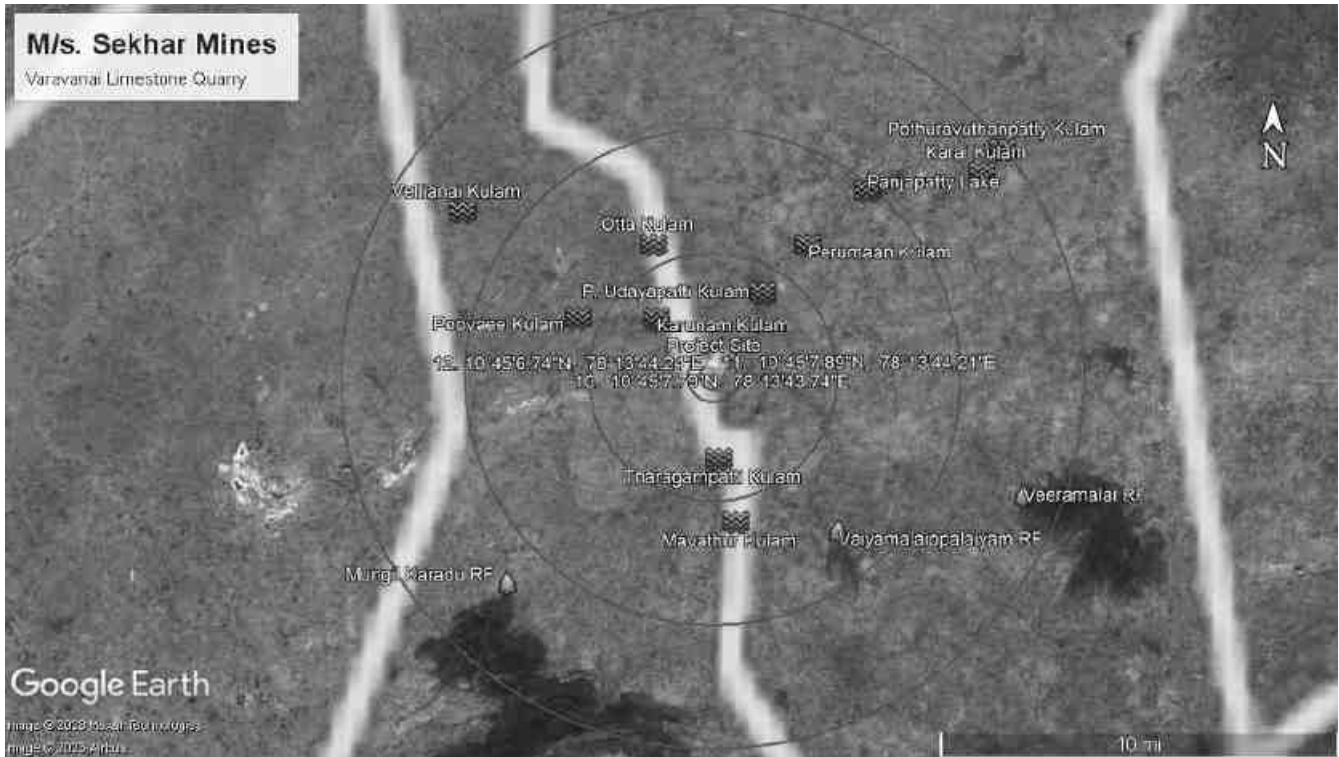
**Table 2-3: Location Details**

S. No	Particulars	Details
1.	Latitude	N 10° 45' 10.63"
2.	Longitude	E 78° 13' 49.84"
3.	Site Elevation above MSL	192 m from MSL
4.	Topography	Flat terrain
5.	Land use of the site	Patta Land
6.	Extent of lease area	1.90.5 Ha



**Figure 2-4: Topo Map of the Project Site**

<b>Project Name</b>	<b>Varavanai Limestone Quarry- 1.90.5 Ha</b>	<b>Chapter 2 Project Description</b>
<b>Project Proponent</b>	<b>Sekhar Mines</b>	
<b>Project Location</b>	<b>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</b>	



**Figure 2-5: Environmental Sensitivity within 15km radius**



**Figure 2-6: Coordinates of the project site**

<b>Project Name</b>	<b>Varavanai Limestone Quarry- 1.90.5 Ha</b>	<b>Chapter 2 Project Description</b>
<b>Project Proponent</b>	<b>Sekhar Mines</b>	
<b>Project Location</b>	<b>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</b>	

### 2.3.1 Site Photographs

The site photographs of the project site are as follows:



**Figure 2-7: Site Photographs**

### 2.3.2 Land Use Breakup of the Mine Lease Area

The lease area is almost a flat ground gently sloping towards North to South and depth of about 1 or 2 meters above the Mean Sea level as per the Topo Sheet contours. The area comprises soil with boulders of Limestone. The land use pattern at the end of the lease period is given below.

**Table 2-4: Land use pattern**

<b>S.No.</b>	<b>Description</b>	<b>Present Area (Ha)</b>	<b>Area to be reclaimed &amp; rehabilitated at the end of present MP/MS period(Ha)</b>	<b>Area to be reclaimed &amp; rehabilitated at the end of life of mine (Ha)</b>
1.	Mining (Quarry)	0.79.0	0.19.0	0.93.0

<b>Project Name</b>	<b>Varavanai Limestone Quarry- 1.90.5 Ha</b>	<b>Chapter 2 Project Description</b>
<b>Project Proponent</b>	<b>Sekhar Mines</b>	
<b>Project Location</b>	<b>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</b>	

2.	Waste dump	0.40.0	0.14.0	0.14.0
3.	Office-Infrastructure	-	0.01.0	0.01.0
4.	Mineral Stack/ Processing Yard	-	-	-
5.	Sub-grade Mineral stacks	-	-	-
6.	Mine Roads	0.12.0	0.01.0	0.01.0
7.	Area under Plantation	0.01.0	0.13.0	0.20.0
8.	Unutilized Area	0.59.5	0.42.5	0.61.5
	<b>Total</b>	<b>1.90.5</b>	<b>1.90.5</b>	<b>1.90.5</b>

### 2.3.3 Human Settlement

There are no habitations within the radius of 500m. The nearby habitations are as follows.

**Table 2-5: Habitation**

<b>Name of Hamlet</b>	<b>Population</b>	<b>Distance from the area</b>	<b>Distance (km)</b>
Pannapatti	750	North	4.0 km
Varavanai	600	South	3.0 km
Kalaiyappatti	750	West	5.0 km
Vellappatti	500	East	5.5 km

### 2.3.4 Leasehold Area

Varavanai Limestone Quarry over an extent of 1.90.5 is a Patta Land. The lease area falls in S.F.No. 833/4B, 836 (P), 843/2 of Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District, Tamil Nadu. There is no reserve forest or protected forest land within the lease area. There is neither human settlement within 300m radius from the lease area.

## 2.4 Geology

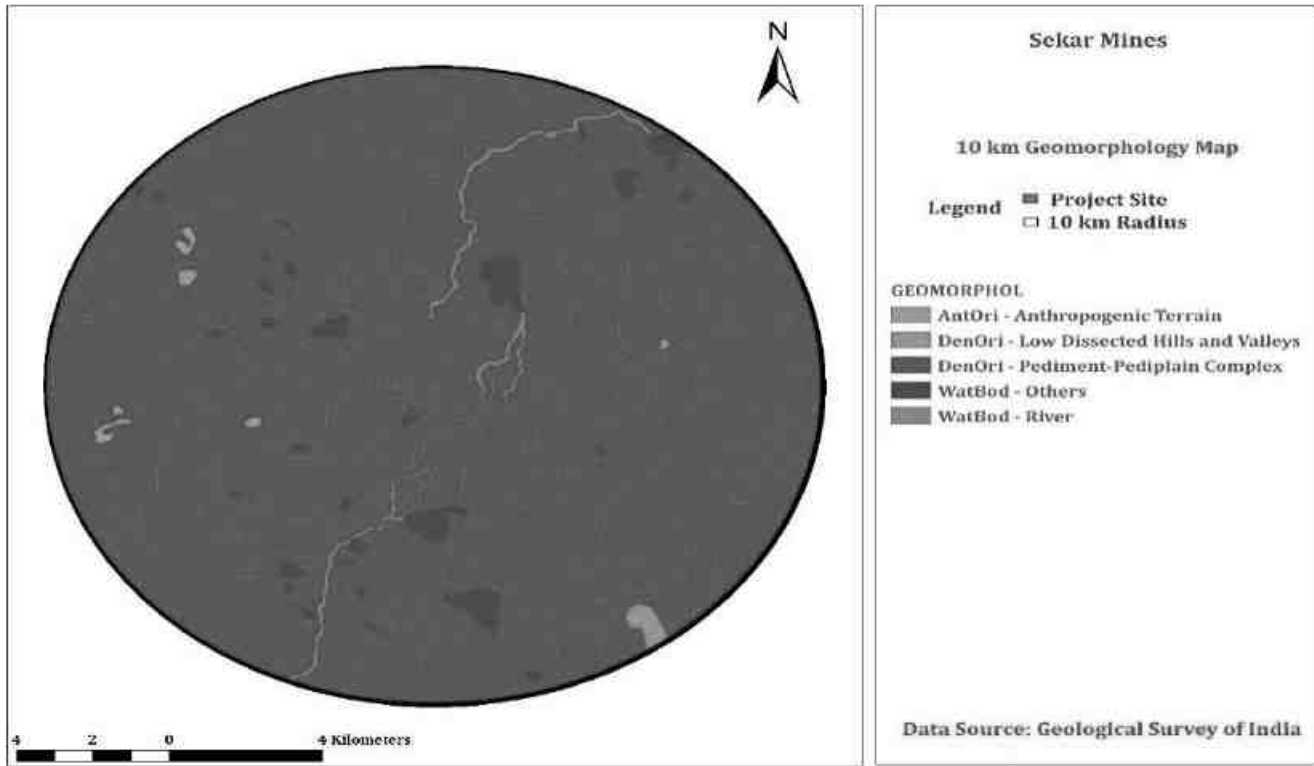
The project site is a part of the Archean complex of Peninsular India. The Geological formations consist of biotite-hornblende-gneisses, calc-gneisses and crystalline limestone,

<i>Project Name</i>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<i>Chapter 2 Project Description</i>
<i>Project Proponent</i>	<i>Sekhar Mines</i>	
<i>Project Location</i>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

intruded by younger granites. The granite-gneisses and crystalline limestone represent ancient calcareous sediments which have suffered repeated metamorphism, intrusions by granites and folding during the Archaean age.

The Limestone in Varavanai area is fine grained crystalline limestone and is mainly made up of aggregates of calcite with sub-ordinate amount of quartz and silicate minerals. They occur as long, narrow bands and are conformable in foliation strike and dip, with the gneissic country rock adjacent to them. Where the gneisses or granite bodies are large enough, they can be mined separately and removed. But where they occur as thin veins within the limestone, they bring down the purity of the limestone. As such the mining involves recovery of limestone along with granitic material in all the areas, the rejects forming 40% of the mined material. The limestone is generally white, pink and grey in colour. The main impurity in the limestone is silica. There appears to be no correlation between the colour and the chemical quality. In chemical composition, the limestone maybe termed as "Cement Grade". The Calcium carbonate content is about 85%. The rest is mainly made up of silica in the form of free quartz oras silicate minerals such as wollostonite, feldspar etc.

<b>Project Name</b>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<b>Chapter 2 Project Description</b>
<b>Project Proponent</b>	<i>Sekhar Mines</i>	
<b>Project Location</b>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	



**Figure 2-8: Geomorphology around 10 km Radius of the Project Site**

The rock formation in the area is of metamorphic crystalline varieties of archaean age. The chief rock types found in the area are limestone and Amphibole-gneisses. Limestone outcrops are noticed in the area. The area is covered by thin layer of top soil to a depth of about 1.0m. In the area under consideration, there is only one limestone band almost in the centre of lease area and this band is divided into two portions by a intervening calc-gneiss intrusions on the Eastern End. The regional trend of the rock in the area is N80° E -S80°W with foliation dip amount of 80° towards South to Vertical. The area is devoid of major geological disturbances.

The order of superposition is,

**AGE**

Recent

Archaen

**ROCK FORMATION**

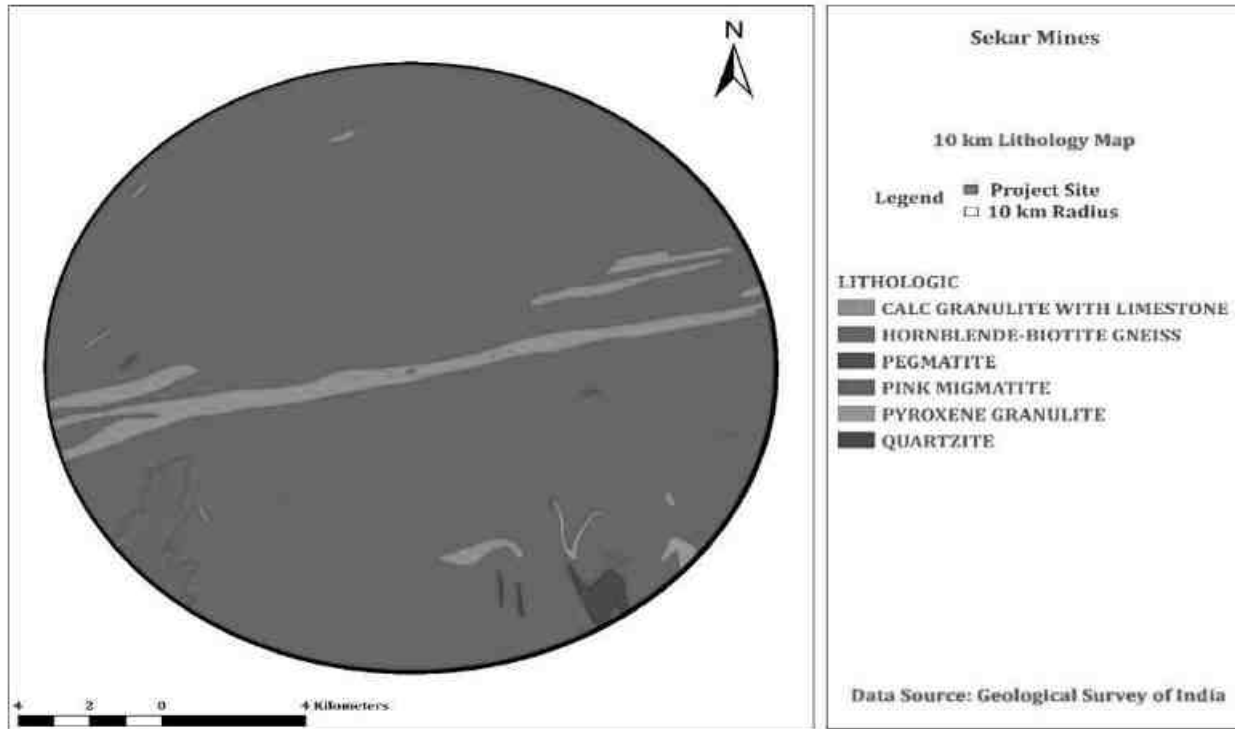
Top soil

Limestone

Amphibole – Gneisses



<b>Project Name</b>	<b>Varavanai Limestone Quarry- 1.90.5 Ha</b>	<b>Chapter 2 Project Description</b>
<b>Project Proponent</b>	<b>Sekhar Mines</b>	
<b>Project Location</b>	<b>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</b>	



**Figure 2-9: Lithology around 10 km Radius of the Project Site**

## 2.5 Exploration of Reserves:

The lease area is an Existing Limestone Mine. In this area, present mine working has reached a depth of about 13.0m. There is only one existing working pit and the dimensions of the pit are given below.

**Table 2-6 Pit Dimensions**

<b>Dimensions</b>	<b>Pit I</b>
Length (m) (avg.)	161.0
Width (m) (avg.)	49.0
Depth (m) (max.)	13.0

## 2.6 Reserves

The lease area is an existing Limestone mine. The geological and mineable reserves are estimated by cross sectional method.

<i>Project Name</i>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<i>Chapter 2 Project Description</i>
<i>Project Proponent</i>	<i>Sekhar Mines</i>	
<i>Project Location</i>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

**Table 2-7 Parameter of Reserves**

<b>Classification</b>	<b>UNFC Code</b>	<b>Quantity in Tonnes</b>	<b>Grade</b>
<b>A. Total Mineral Reserves</b>			
Proved Mineral Reserve on 01.04.2016	111	59,376	Cement &Refractory Grade
Probable Mineral Reserve	121 & 222	-	-
<b>B. Total Remaining Resources</b>			
Feasibility mineral Resource	211	-	-
Prefeasibility mineral resource	221 & 222	1,34,605	Cement &Refractory Grade
Measured mineral resource	331		-
Indicated mineral resource	332		-
Inferred mineral resource	333		-
Reconnaissance mineral resource	334		-
<b>Total Reserves + Resources</b>		<b>1,93,981</b>	-

<i>Project Name</i>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<i>Chapter 2 Project Description</i>
<i>Project Proponent</i>	<i>Sekhar Mines</i>	
<i>Project Location</i>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

### 2.6.1 Geological Reserves and Mineable Reserves

The lease area is an existing Limestone quarry. The geological reserves are estimated by cross sectional method. The total geological resources are estimated as 1,34,605 tonnes and recoverable resources are estimated as 80,763 tonnes.

**Table 2-8 Resources Estimation**

<b>Classification</b>	<b>Section</b>	<b>Bench</b>	<b>L (m)</b>	<b>W (m)</b>	<b>D (m)</b>	<b>Volume CUM</b>	<b>Bulk Den Sity</b>	<b>Total Reserves (t)</b>	<b>Mineral Reject 40%(t)</b>	<b>Recoverable Reserve 60% (t)</b>	<b>Grade</b>	<b>UNFC Code</b>
Mineral Locked up in benches	XY-A1B1	IV	5	1	2.5	13	2.6	10273	4109	6164	CEMENT & REFRACTORY	222
		V	10	1	2.5	25						
	XY-A2B2	VI	14	28	2.0	784						
		IV	6	42	2.5	630						
		V	11	42	2.5	1155						
		VI	16	42	2.0	1344						
						<u>3951</u>						
Mineral locked up in 7.5m boundary barrier		1450sq.m (29x50.0m) 2535.5sq.m (338x7.5m)			12.0	47820	2.6	124332	49733	74599	CEMENT & REFRACTORY	222
<b>TOTAL</b>								<b>134605</b>	<b>53842</b>	<b>80763</b>		

Total Resources : 1,34,605 tonnes

Recoverable Resources : 80,763 tonnes

<b>Project Name</b>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<b>Chapter 2</b> <b>Project Description</b>
<b>Project Proponent</b>	<i>Sekhar Mines</i>	
<b>Project Location</b>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

**Table 2-9 Reserves Estimation**

Section	Bench	L (m)	W (m)	D (m)	Volume CUM	Bulk Den-Sity	Over Burden (t)	Side Burden (t)	Total Reserve (t)	Mineral Reject 40%(t)	Recoverable Reserve 60% (t)	Total Waste (t)	UNFC Code
<b>OVERBURDEN</b>													
XY-A1B1	I	60	1	1.0	60								
XY-A2B2	I	50	1	1.0	50								
					<b>110</b>	2.0	220	-	-	-	-	220	
<b>SIDEBURDEN</b>													
XY-A1B1	II	30	1	2.5	75								
	III	20	1	2.5	50								
	IV	14	1	2.5	35								
	V	7	1	2.5	18								
	VI	1	1	2.0	2								
XY-A2B2	II	30	1	2.5	75								
	III	34	10	2.5	850								
	IV	23	38	2.5	2185								
	V	12	81	2.5	2430								
	VI	2	86	2.0	344								
					<b>6064</b>	2.5	-	-	-	-	-	15160	
<b>LIMESTONE</b>													
XY-A1B1	II	34	1	2.5	85								
	III	34	1	2.5	85								
	IV	46	1	2.5	115								
	V	41	1	2.5	103								
	VI	37	28	2.0	2072								

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
XY-A2B2	II	1	23	2.5	58								
	III	10	24	2.5	600								
	IV	38	42	2.5	3990								
	V	81	42	2.5	8505								
	VI	86	42	2.0	7224								
					<b>22837</b>	2.0	-	-	59376	23750	35626	39130	111
<b>Total</b>							<b>220</b>	<b>15160</b>	<b>59376</b>	<b>23750</b>	<b>35626</b>	<b>39130</b>	

Over burden : 220 tonnes

Side burden : 15,160 tonnes

Mineral Reject : 23,750 tonnes

Total Waste : 39,130 tonnes

Total Reserve : 59,376 tonnes

Recoverable Reserve: 35,626 tonnes

Ore Waste Ratio : 1:0.98

<b>Project Name</b>	<b>Varavanai Limestone Quarry- 1.90.5 Ha</b>	<b>Chapter 2 Project Description</b>
<b>Project Proponent</b>	<b>Sekhar Mines</b>	
<b>Project Location</b>	<b>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</b>	

### 2.6.2 Year wise Production Plan

The life of the mine is computed as three years at a production rate of 49,041 Tonnes of Limestone (ROM). From Total ROM the Limestone deposits are categorized with the following percentage Limestone 60% & Mineral Waste 40%. The lessee has not submitted the Scheme of Mining Plan during the plan period 2014-2015, due to lack of demand, non-availability of labour, monsoon and uneconomic operations and financial crisis.

**Table 2-10 Year wise tentative excavation**

Year	Pit No.	Total Tentative Excavation (Tons)	Top soil (Tons)	OB (Tons)	Side burden (Tons)	ROM (tons)		Total Waste (Tons)	ROM/Waste ratio
						Ore (Limestone@60% of ROM) (Tons)	Mineral Reject (@ 40% of ROM) (Tons)		
1	2	3	4	5	6	7	8	9	10
2016-17	I	13793	-	120	4763	8276	5517	5517	1:1.28
2017-18	I	21588	-	-	3545	12953	8635	8635	1:1.28
2018-19	I	13660	-	-	355	8196	5464	5464	1:1.28
<b>TOTAL in Tons</b>		<b>49041</b>	<b>-</b>	<b>120</b>	<b>8663</b>	<b>29425</b>	<b>19616</b>	<b>19616</b>	<b>1:0.97</b>

<i>Project Name</i>	<i>Varavanai Limestone Quarry-1.90.5 Ha</i>	<i>Chapter 2 Project Description</i>
<i>Project Proponent</i>	<i>Sekhar Mines</i>	
<i>Project Location</i>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

## 2.7 Type of Mining

### 2.7.1 Open Cast Mining:

The mine will be worked with opencast manual method of mining ("B" category of small mine). Mining will be by simple open cast manual methods, with help of spades, baskets and jack hammer, drilling. No heavy earth moving machineries are proposed for limestone mining. After hand sorting, the mined out Limestone is directly transported to the Refractory and chemical based industries plant through 10 MT capacity tippers.

#### 2.7.1.1 Existing Method

The mining operations will be done by opencast method. There is only one existing working pit and the dimensions of the pit is given below.

**Table 2-11 Existing Pit Dimension**

<b>Dimensions</b>	<b>Pit I</b>
Length (m) (avg.)	161.0
Width (m) (avg.)	49.0
Depth (m) (max.)	13.0

#### 2.7.1.2 Proposed Method

The mine is proposed to carry out mining operation with manual opencast method ("B" category of small mine). Mining will be by simple open cast manual methods, with help of spades, baskets and jack hammer, drilling. The development and production of mining operations will confine to this area for the next three years, starting from existing working pit from North to Southern direction towards Eastern side of the Mining lease area. The operation will be confined to general shift only ie. from 8.00 AM to 5.00 PM with one hour lunch interval between 12.00 PM to 1.00 PM. In overburden soil, a bench will be 1.0m height and width with 45° slope. The Limestone, totally five benches will be 2.5m height and 2.5m width with 60° slope for next three years only. A bund will be

<i>Project Name</i>	<i>Varavanai Limestone Quarry-1.90.5 Ha</i>	<i>Chapter 2 Project Description</i>
<i>Project Proponent</i>	<i>Sekhar Mines</i>	
<i>Project Location</i>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

constructed around the pit to prevent accident call and inrush of rain water. Proper foot paths will be provided between benches for easy accessibility for men. Haul roads, to conform to statutory standards will be made according to convenience for smooth transport of ore and waste. Wherever necessary, crossing plat forms will be provided in the haul roads at suitable point for safe crossing as tractors, tippers, trucks etc., The top soil and mineral reject will be dumped separately in the next three years. The top soil will be utilized for the formation of mine roads, construction of bund and afforestation purpose. There is adequate space available for dumping the mineral reject will be dumped in the non-mineral bearing area of the East & Southern side of the lease area. The Average annual production is about 9808 tonnes of Limestone with 250 working days in a Year. Per day production will be about 39 tonnes. Considering the nature of the deposit and the anticipated daily production level, only manual mining is proposed. A boundary barrier of 7.5 m width will be maintained as per statue. Limestone locked up in this barrier will be excavated after obtaining permission from DGMS under Regulation 111 of Mines and Mineral Regulation, 1961.

### **2.7.1.3 Bench design Parameters**

In Limestone, totally five benches. The Five benches will be 2.5 m height and 2.5 m width with 60° slope for next three years only.

### **2.7.1.4 Production rate and Life of Mine**

The mineable reserves is estimated by cross-sectional method having considered the recovery factor, depth of mining, safety barriers etc.,

The life of the mine is computed as three Years at a production rate of 9808 Tonnes of Limestone per annum. The waste generated during the mining period is 28,399 Tonnes (Over burden – 120 Tonnes, Side burden – 8,663 Tonnes & Mineral Reject – 19616 Tonnes). There is adequate space available for dumping the mineral reject will be dumped in the non-mineral bearing area of the East & Southern side of the lease area.

### **2.7.2 Extent of Mechanism**

The mine will be worked with opencast manual method of mining (“B” category of small mine). Mining will be by simple open cast manual methods, with help of spades, baskets and jack hammer, drilling.

<b>Project Name</b>	<i>Varavanai Limestone Quarry-1.90.5 Ha</i>	<b>Chapter 2</b> <i>Project Description</i>
<b>Project Proponent</b>	<i>Sekhar Mines</i>	
<b>Project Location</b>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

No heavy earth moving machinery is proposed for limestone mining. After hand sorting, the mined-out Limestone is directly transported to the Refractory and chemical based industries plant through 10 MT capacity tippers.

### 2.7.2.1 Drilling Machines

Only jack hammer operated by compressor mounted on tractor will be used for drilling.

<b>Type</b>	<b>Nos</b>	<b>Dia of hole</b>	<b>Compressor Capacity</b>	<b>Make</b>	<b>Motive power</b>	<b>H.P</b>
Jack Hammer	Two	32 mm	140 cfm	Atlas	Diesel	45
Tractor Compressor	One	-	-	Khosla	Diesel	75

### 2.7.2.2 Loading Equipment

Loading will be done manually. Proper foot paths and ranges will be maintained between benches.

### 2.7.2.3 Haulage and Transport Equipments

#### Haulage within mining lease hold:

The excavated quantity of Limestone and waste will be transported within the lease area through comet tippers of 10 tonnes capacity. Crossing platforms will be provided and other safety precautions will be observed.

The details of loading equipment are given below.

<b>Type</b>	<b>Nos</b>	<b>Bucket Capacity (MT)</b>	<b>Make</b>	<b>Motive power</b>	<b>H.P.</b>
Comet Tipper	2	10 tonnes	Ashok Leyland	Diesel	90

#### Transport from pit head to destination:

Trucks are used for transporting minerals to the Cement and refractory based industries and Manufacturing unit in Karur. The details of hauling/transport equipment is given below.



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<b>Project Location</b>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

<b>Type</b>	<b>Nos.</b>	<b>Size/Capacity</b>	<b>Make</b>	<b>Motive Power</b>	<b>H.P.</b>
Leyland Trucks	1	10 tonnes	Leyland	Diesel	10

## 2.8 Man Power Requirements

The mine is having a potential of direct employment comprising of managerial, skilled, semiskilled and unskilled staff. Due to proximity of villages near the mine lease area there is not much problem about the labor forces for mining operation such as loading and other associated jobs.

<b>Supervisory :</b>	<b>No. of Employees</b>
Manager (Foreman)	1 no
Part time mining Engineer	1 no
Clerk	1 no
<b>Labours:</b>	
Highly skilled	-
Skilled	2 no.s
Semi -Skilled	-
Unskilled	10 no.s
<b>Total</b>	<b>15 no.s</b>

### 2.8.1 Water Requirement

The quantity of water required for the mine lease area of 1.90.5 ha is estimated to be 1.7 kLD. Drinking water is available from nearby villages near the project site and this fulfills the requirement at site.

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<b>Project Location</b>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

**Table 2-12 Water Requirement**

<b>Purpose</b>	<b>Quantity</b>	<b>Sources</b>
Drinking Water	0.7 KLD	Packaged Drinking water vendors available in nearby village
Green belt	0.5KLD	Other domestic activities through road tankers
Dust suppression	0.5KLD	From road tankers supply
<b>Total</b>	<b>1.7 KLD</b>	

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

### **2.8.2 Solid Waste Generation and its Disposal**

#### **Top soil:**

The overburden soil is red gravelly earth. It occurs to a depth of 1.0m. The generation of Overburden for next three years is about 120 tonnes.

#### **Sideburden:**

The side burden consists of Biotite-schist. The generation of side burden for next three years is about 8663 tonnes.

#### **Sub-grade Mineral:**

Sub-grade Mineral is not produced in the next three years.

#### **Mineral reject:**

Mineral reject forms nearly 40% of ROM which is manually sorted out. Mineral waste includes mining loss which relates to breaking, chipping, etc.

The overburden and the mineral will be dumped in the non-mineral bearing area of the East and Southern side of the lease area, which is having an adequate space for dumping the waste during the entire life of mine.

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The dumping details for the next three years is furnished below table.

	<b>Topsoil/Overburden</b>	<b>Side burden</b>	<b>Mineral Reject</b>
Length (m)	28.0	37.0	48.0
Width (m)	12.0	13.0	12.0
Height (m)	1.0	7.0	34.0
Total Quantity (t)	120	8663	19617

The waste dumping will be done in steps to avoid sliding. One end of the waste dump to be matured for stabilization will be taken up for afforestation. Construction of garland drain in around the pit& dump and also settling tank will be provided to guard against the heavy rain water.

A periodically sprinkling/spraying water on roads leading from working face to waste dump, so that these areas are always kept wet to prevent emission of air borne dust.

## 2.9 Project Cost and CER Details

### Project Cost/Investment Cost

The total project cost is **Rs. 10,35,080** including land cost and deployment of machinery and creation of infrastructural facilities like approach road, Mine office / Workers Shed, First Aid Room etc, electrifications and water supply.

<b>S.No</b>	<b>Description</b>	<b>Cost (Rs)</b>
1.	Land Cost	7,00,000
2.	Operational Cost	3,35,080
<b>Total</b>		<b>10,35,080</b>
3.	EMP Cost	20,60,780 (For 3 Years)

### Corporate Social Responsibility

The following Corporate Environment Responsibility (CER) activities will be done before the commencement of the quarrying activities.

<b>S.No.</b>	<b>CER Activity</b>	<b>CER project cost(Rs in Lakhs)</b>
1.	Provision of Desks, Benches, Computers, Painting of Class rooms in Varavanai Govt. middle School	2,50,000/-
<b>Total</b>		<b>2,50,000/-</b>

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## **3 Description of the Environment**

### **3.1 Introduction**

The method of mining for extracting Limestone is required to be selected in such a manner to ensure sustainable development. Mining activities invariably affect the existing environmental status of the site. It has both adverse and beneficial effects. 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 and sustainable resource extraction.

To understand the existing environmental scenario, Baseline data helps in identification, prediction and evaluation of impacts in Environmental Impact assessment. Through field study, baseline data are collected considering various factors of the project. This includes-

- Physical- the area, the soil properties, the geological characteristics, the topography, etc
- Chemical- water, air, noise and soil pollution levels, etc.
- Biological- the biodiversity of the area, types of flora and fauna, species richness, species distribution, types of ecosystems, presence, or absence of endangered species and/or sensitive ecosystems etc.
- Socioeconomic- demography, social structure, economic conditions, developmental capabilities, displacement of locals, etc.

#### **3.1.1 Study Area**

The study area for the mining projects is as follows:

- Mine lease area as the “core zone”
- A study area of 5km radius from the project boundary is designated as buffer Zone and for the study of Socio-economic status 10 km radius from the boundary limits of the mine lease area has been selected.

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<b>Project Location</b>	<b>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</b>	

We have obtained Terms of Reference from SEIAA vide Letter No. SEIAA-TN/F.No.6557/SEAC/TOR-1168/2018 dated 30.05.2022. The baseline monitoring is carried out in August – October 2022 and the analysis is briefed in the EIA report. The proponent has engaged M/s. Ecotech Labs Pvt. Ltd for carrying out the existing baseline study.

### 3.1.2 Instruments Used

The following instruments were used at the site for baseline data collection.

1. Respirable Dust Sampler with attachment for gaseous Pollutants, EnvirotechPM 460, APM411.
2. Fine Particulate Matter (FPM) Sampler, APM 550
3. Sound Level Meter Model SL-4010
- 4.2000 series watchdog automatic weathering monitoring station

### 3.1.3 Baseline Data Collection Period:

The baseline data is collected in accordance with the CPCB Guidelines. The Baseline study is carried out from August – October 2022.

### 3.1.4 Frequency of Monitoring

**Table 3-1 Frequency of Sampling and Analysis**

<b>Attributes</b>	<b>Sampling</b>	<b>Frequency</b>
Air environment – Meteorological (wind speed, wind direction, rainfall, humidity, temperature)	Project site	1 hourly continuous
Air environment – Pollutants PM 10 PM 2.5 SO <sub>2</sub> NO <sub>x</sub> Lead in PM	5 locations	24 hourly twice a week 4 hourly. Twice a week, One non-monsoon season 8 hourly, twice a week 24 hourly, twice a week
Noise	5 locations	24 hourly Once in 5 locations
Water (Ground water) pH, Temperature, Turbidity,	5 locations	Once in 5 locations

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Magnesium Hardness, Total Alkalinity, Chloride, Sulphate, Fluoride, Nitrate, Sodium, Potassium, Salinity, Total nitrogen, Total Coliforms, Fecal Coliforms		
Water (surface water) pH, Temperature, Turbidity, Magnesium Hardness, Total Alkalinity, Chloride, Sulphate, Fluoride, Nitrate, Sodium, Potassium, Salinity, Total nitrogen, Total Coliforms, Fecal Coliforms	1 location Sample from nearby lakes/river	One-time Sampling
Soil (Organic matter, Texture, pH, Electrical Conductivity, Permeability, Water holding capacity, Porosity)	5 locations	Once in 5 locations
Ecology and biodiversity Study	Study area covering 10 km radius	One-time Sampling
Socio- Economic study (Population, Literacy Level, employment, Infrastructure like school, hospitals & commercial establishments)	Villages around 10 km radius	One-time Sampling

### 3.1.5 Secondary data Collection

Apart from the primary data, Secondary data is also used for the collection; collation; synthesis and interpretation.

- Flora & Faunal Study
- Land use study
- Demography and socio-economic analysis
- Meteorological data, from Indian Meteorological Department (IMD)

### 3.1.6 Study area details

The study area details are given in below

<i>Project Name</i>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<i>Chapter 3 Description of the Environment</i>
<i>Project Proponent</i>	<i>Sekhar Mines</i>	
<i>Project Location</i>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

**Table 3-2 Study area details**

<b>S. No.</b>	<b>Description</b>	<b>Details</b>	<b>Source</b>
1.	Project Location	Survey number: 833/4B, 836 (P), 843/2 of Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District, Tamil Nadu.	Field Study
2.	Latitude & Longitude	N 10° 45' 10.63" E 78° 13' 49.84"	Topo Sheet
3.	Topo Sheet No.	58 J/2	Survey of India Toposheet
4.	Mine Lease Area	1.90.5 Ha	--
<b>Demography in the study area (as per Census 2011)</b>			
5.	Total Population	27910	Census Survey of India
6.	Total Number of Households	7374	
7.	Maximum Temperature (°C)	40°C	IMD
8.	Minimum Temperature (°C)	25°C	
9.	Densely Populated area	Kulithalai	

## 3.2 Land use Analysis

### 3.2.1 Land Use Classification

Land Use / Land Cover - Land Use refers to man's activity and the various uses, which are carried on land. Land Cover refers to natural vegetation, water bodies, rock/soil, artificial cover and others, resulting due to land transformation. The present Land Use/Land Classification map is developed with following objectives. The main objective of the study is to classify the different land use within 10 km from the project boundary.

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<i>Project Location</i>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

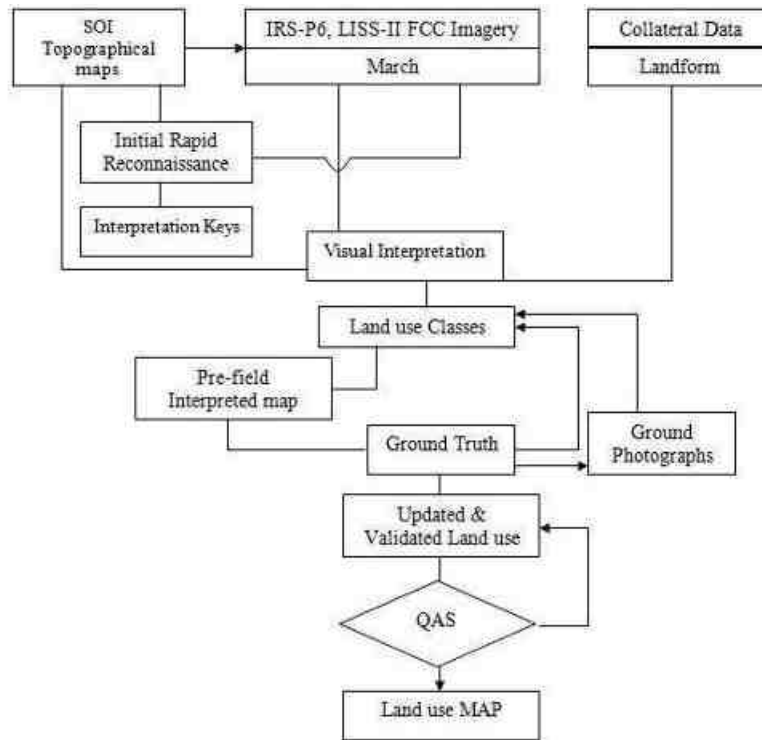
### 3.2.2 Methodology

Information of land use and land cover is important for many planning and management activities concerning the surface of the earth (Agarwal and Garg, 2000). Land use refers to man's activities on land, which are directly related to land (Anderson et al., 1976). The land use and the land cover determine the infiltration capacity. Barren surfaces are poor retainers of water as compared to grasslands and forests, which not only hold water for longer periods on the surface, but at the same time allow it to percolate down.

The terms 'land use' and 'land cover' (LULC) are often used to describe maps that provide information about the types of features found on the earth's surface (land cover) and the human activity that is associated with them (land use). Satellite remote sensing is being used for determining different types of land use classes as it provides a means of assessing a large area with limited time and resources. However, satellite images do not record land cover details directly and they are measured based on the solar energy reflected from each area on the land. The amount of multi spectral energy in multi wavelengths depends on the type of material at the earth's surface and the objective is to associate particular land cover with each of these reflected energies, which is achieved using either visual or digital interpretation. In the present study the task is to study in detail the land use and land cover in and around the project site. The study envisages different LULC around the proposed project area and the procedure adopted is as below.



<b>Project Name</b>	<b>Varavanai Limestone Quarry- 1.90.5 Ha</b>	<b>Chapter 3</b> <b>Description of the</b> <b>Environment</b>
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<b>Project Location</b>	<b>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</b>	



**Figure 3-1: Flow Chart showing Methodology of Land use mapping**

### 3.2.3 Satellite Data

IRS Sentinel-2, ESRI multispectral satellite data was utilized for the present study. Details of satellite data is given below. The rectification of imagery was carried out on to bring the digital data on the earth coordinate system by means of ground control point (GCP) assignments/SOI Topo sheets.

### 3.2.4 Scale of mapping

Considering the user defined scale of mapping, 1:50000 IRS-P6, LISS-III data on 1:50000 Scale was used for Land use / Land cover mapping of 10 km radius for proposed site. The description of the land use categories for 10 km radius and the statistics are given for 10 km radius.

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### 3.2.5 Interpretation Technique

Standard on screen visual interpretation procedure was followed. The various Land use / Land cover classes interpreted along with the SOI topographical maps during the initial rapid reconnaissance of the study area. The physiognomic expressions conceived by image elements of color, tone, texture, size, shape, pattern, shadow, location and associated features are used to interpret the FCC imagery. Image interpretation keys were developed for each of the LU/LC classes in terms of image elements.

February 2016 FCC imagery (Digital data) of the study area was interpreted for the relevant land use classes. On screen visual interpretation coupled with supervised image classification techniques are used to prepare the land use classification.

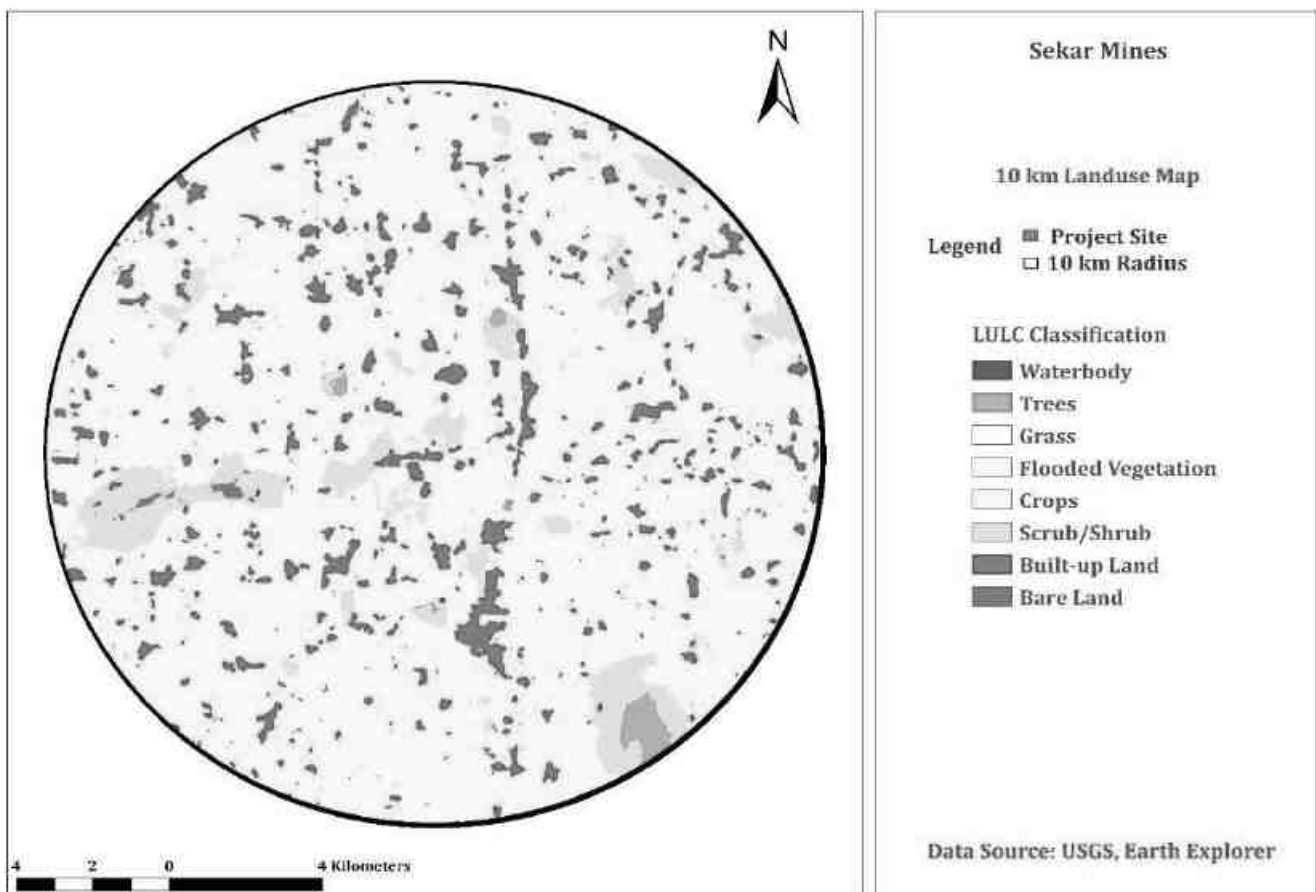
1. Digitization of the study area (10 km radius from the proposed site) from the topo maps.
2. In the present study the IRS-P6 satellite image have been procured and interpreted using the ERDAS imaging and ARC-GIS software adopting the necessary interpretation techniques.
3. Satellite data interpretation and vectorization of the resulting units.
4. Adopting the available guidelines from manual of LULC mapping using Satellite imagery (NRSA, 1989)
5. Field checking and ground truth validation.
6. Composition of final LULC map.

The LULC Classification has been done at three levels where level-1 being the broad classification about the land covers that is Built-up land, agriculture land, waste land, wet lands, and water bodies. These are followed by level-II where built-up land is divided into towns/cities as well villages. The Agriculture land is divided into different classes such as cropland, Fallow, Plantation, while wastelands are broadly divided into, Land with scrub and without Scrub and Mining and Industrial wasteland. The wetlands are classified into inland wetlands, coastal wetlands and islands. The water bodies are classified further into River/stream, Canal, Tanks and bay. In the present study level II classification has been undertaken.

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### 3.2.6 Field Verification

Field verification involved collection, verification and record of the different surface features that create specific spectral signatures/image expressions on FCC. In the study area, doubtful areas identified in course of interpretation of imagery is systematically listed and transferred on to the corresponding SOI topographical maps for ground verification. In addition to these, traverse routes were planned with reference to SOI topographical maps to verify interpreted LU/LC classes in such a manner that all the different classes are covered by at least 5 sampling areas, evenly distributed in the area. Ground truth details involving LU/LC classes and other ancillary information about crop growth stage, exposed soils, landform, nature and type of land degradation are recorded and the different land use classes are taken.



**Figure 3-2 Land use classes around 10 km radius from the project site**

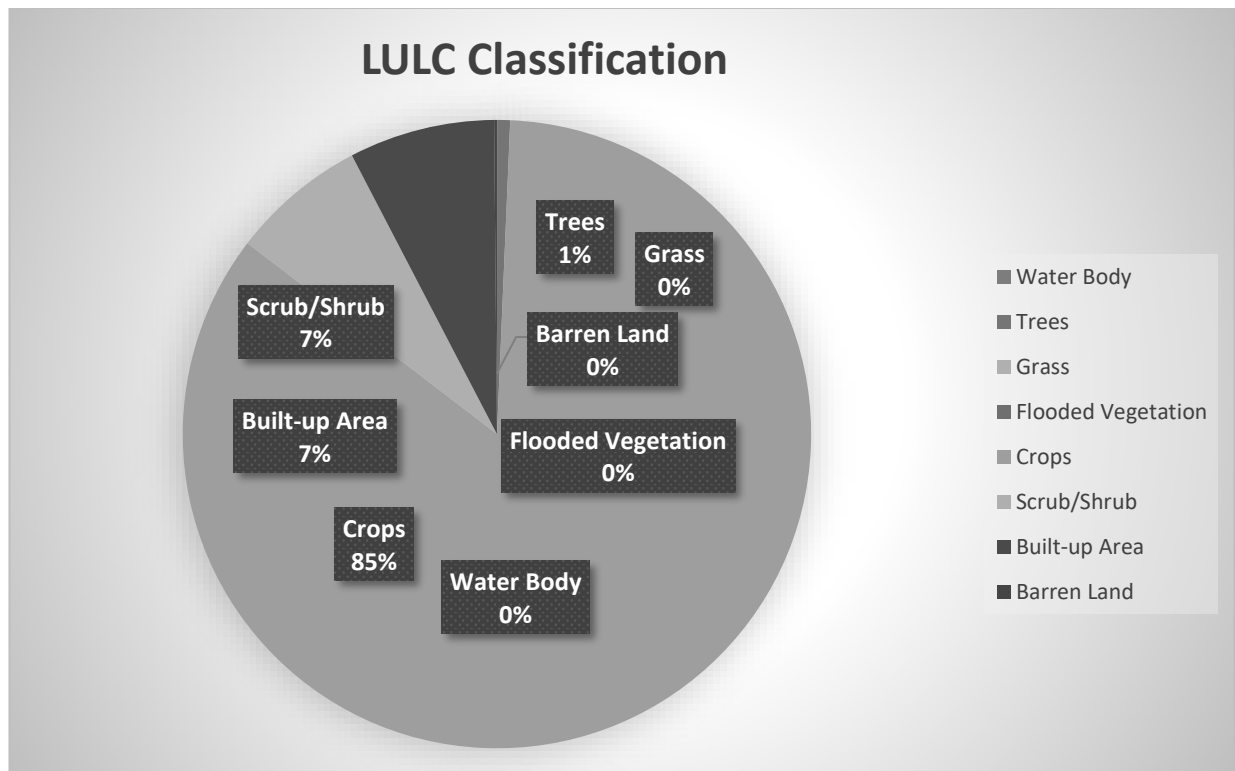
<b>Project Name</b>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<b>Chapter 3</b> <i>Description of the Environment</i>
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### 3.3 Description of the Land Use / land cover classes

The area details surrounding within 10km radius of the project site are as follows.

**Table 3-3 Land use classes around 10 km radius from the project site**

<b>Classification</b>	<b>Area in Sq.km</b>
Water Body	0.03
Trees	2.09
Grass	0.009
Flooded Vegetation	0.0005
Crops	266.78
Scrub/Shrub	21.96
Built-up Area	23.6
Barren Land	0.45



**Figure 3-3 Land Use Classification**

<i>Project Name</i>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<i>Chapter 3 Description of the Environment</i>
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### 3.3.1 Built-up land

It is defined as an area of human settlements composed of houses, commercial complex, transport, communication lines, utilities, services, places of worships, recreational areas, industries etc. Depending upon the nature and type of utilities and size of habitations, residential areas can be aggregated into villages, towns and cities. All the man-made construction covering land belongs to this category.

### 3.3.2 Agricultural land

This category includes the land utilized for crops, vegetables, fodder and fruits. Existing cropland and current fallows are included in this category. It is described as an area under agricultural tree crops, planted adopting certain agricultural management techniques.

Of all the agricultural lands, Crop land occupies maximum area within 10 km radius

### 3.3.3 Wastelands

Wastelands are the degraded or under-utilized lands most of which could be brought under productive use with proper soil and water management practices. Wasteland results from various environmental and human factors.

The study reveals that the following major land use in the study area of 10 km radius from the project boundary.

- Crop land (85 %) occupies majority of the area.
- About 7 % is built up area land used for various developmental activities.
- The shrubs and trees occupies 7 % and 1% respectively.

## 3.4 Water Environment

### 3.4.1 Contour & Drainage

Major part of Karur district is drained by Cauvery River. Amaravathi, Kodavanar and Pungar are the important rivers draining the western part of the district and the river Pungar drains in

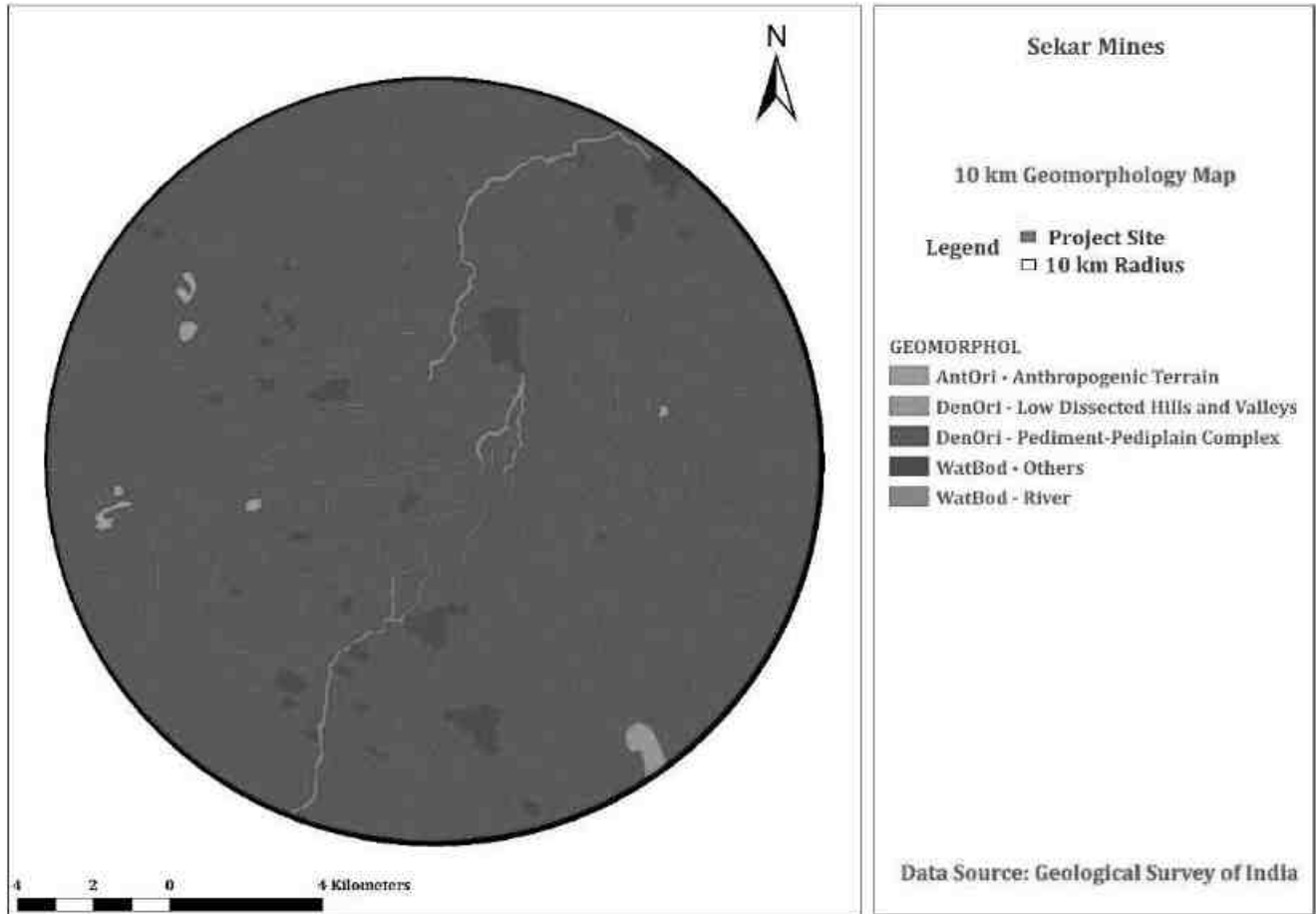
<i>Project Name</i>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<i>Chapter 3 Description of the Environment</i>
<i>Project Proponent</i>	<i>Sekhar Mines</i>	
<i>Project Location</i>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

eastern part of the district. The drainage pattern, in general, is dendritic. All the rivers are seasonal and carry substantial flows during monsoon period.

### 3.4.2 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 1031 m above mean sea level. From these hills the district 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 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.

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**Figure 3-4 Geomorphology within 10km from the project site**

### 3.4.3 Geology

#### **Regional geology of Karur District**

The rock formation in the area is of metamorphic crystalline varieties of archaean age. The chief rock types found in the area are limestone and Amphibole-gneisses. Limestone outcrops are noticed in the area. The area is covered by thin layer of top soil to a depth of about 1.0m. In the area under consideration, there is only one limestone band almost in the centre of lease area and this band is divided into two portions by a intervening calc-gneiss intrusions on the Eastern End. The regional trend of the rock in the area is N80° E -S80°W with foliation dip amount of 80° towards South to Vertical. The area is devoid of major geological disturbances.

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The order of superposition is,

**AGE**

Recent

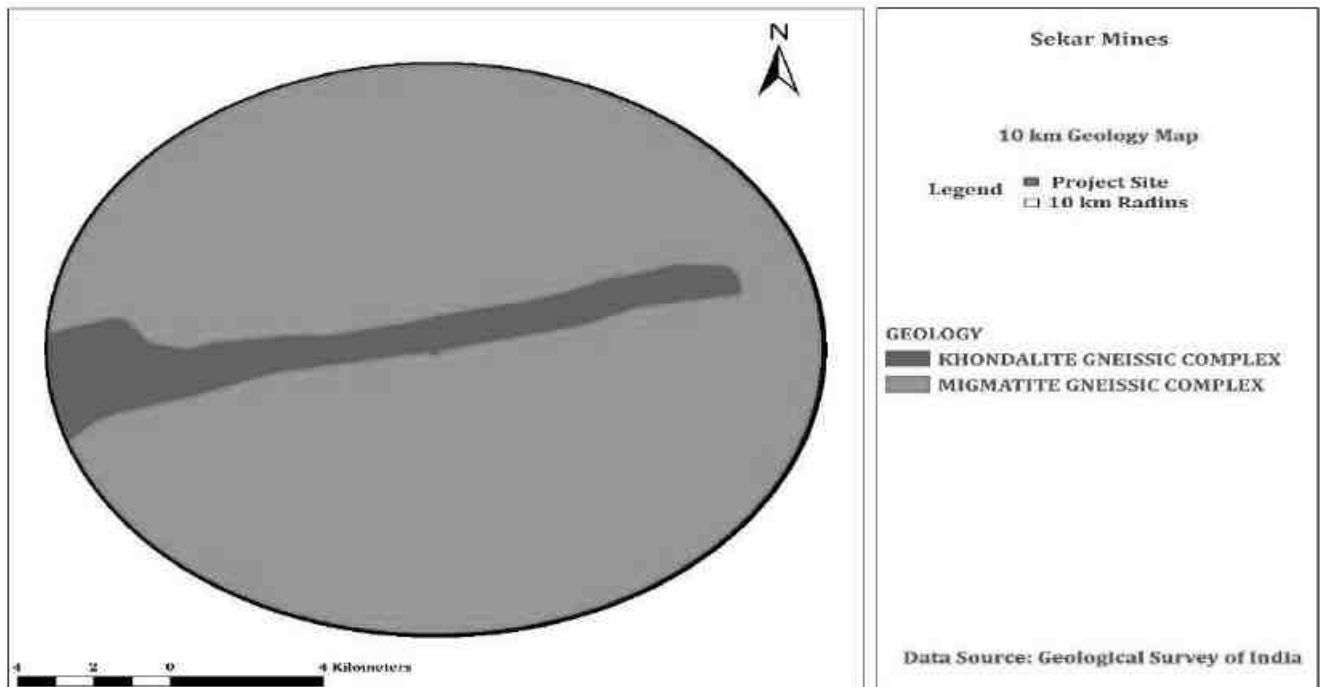
Archaen

**ROCK FORMATION**

Top soil

Limestone

Amphibole – Gneisses



**Figure 3-5 Geology Map within 10 km of the Project Site**

**3.4.4 Hydrogeology**

Karur district is underlain entirely by Archaean Crystalline formations with Recent alluvial deposits occurring along the river and streams courses. Weathered, fissured and fractured crystalline rocks and the recent alluvial deposits constitute the important aquifer systems in the district.

The porous formations in the district are represented by river alluvium. These alluvial deposits are confined to the Major River and stream courses only. Ground water occurs under phreatic conditions. The maximum saturated thickness of these aquifers is upto 10 m depending upon the topographic conditions.



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<i>Project Location</i>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

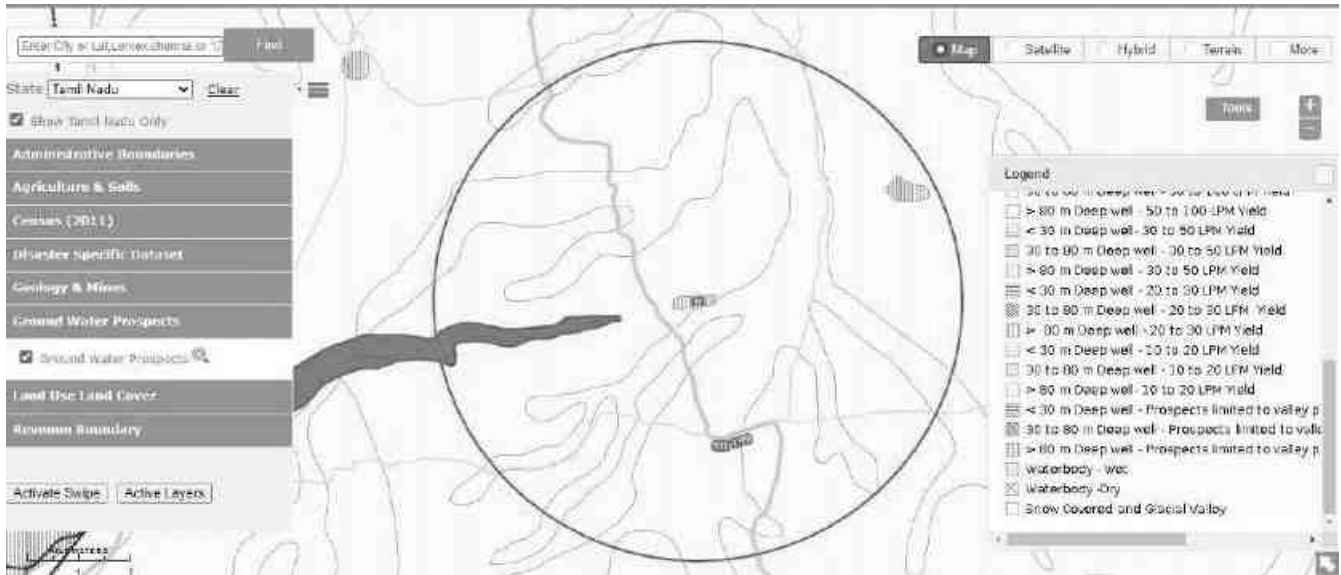
The hard consolidated crystalline rocks of Archaean age represent weathered, fissured and fractured formations of gneisses, granites, charnockites and other associated rocks. Ground water occurs under phreatic conditions in the weathered mantle and under semi-confined conditions in the fractured zones. The thickness of the weathered mantle of the hard rocks is varying from less than a meter to as much as 20.10 m. It is within the depth of 15m in major part of the district.

The Specific capacity of large diameter wells tested in crystalline rocks from 31 to 200 lpm / m. of drawdown. The yield characteristics of wells vary considerably depending on the topographic set-up, lithology and the degree of weathering. The yield of bore wells drilled down to a depth of 70 to 100 m, by various state agencies mainly for domestic purposes ranged from 100 to 600 lpm.

The yield of successful bore wells drilled down to a depth of 200 m bgl during the ground water exploration programme of Central Ground Water Board ranged from 0.50 to 14.00 lps. The aquifer and well parameters of the wells show wide variation.

The depth to water level in the district varied between 1.97 – 7.80 m bgl during pre monsoon period (May 2006) and varied between 1.35 – 6.83 m bgl during post monsoon depth to water level (Jan 2007). The seasonal fluctuation shows a rise in water level, which ranges from 0.46 to 1.98 m. The piezometric head varied between 3.53 to 5.34 m bgl (May 2006) during pre monsoon and 2.04 to 7.59 m bgl during post monsoon.

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**Figure 3-6 Ground water prospects within 5 km radius of the project site**

### 3.4.5 Ground water quality monitoring

Ground water quality monitoring is done in the following locations and analysis will be done for physical, chemical & Biological parameters.

**Table 3-4 Ground water Quality Analysis**

<b>Environmental Parameters: Ground water Quality Analysis</b>	
Monitoring Period	August – October 2022
Design Criteria	Based on the Environmental settings in the study area
Monitoring Locations	Project Site – GW 1 Sri Murugan Temple Pappanampatty – GW 2 Government Middle School, Marmathupatty – GW3 Indian Overseas Bank, Tharagampatti – GW 4 Sri Kathir Narasinga Perumal Temple, Karungal - GW 5
Methodology	Water Samples were collected in 5 Litre fresh cans as per IS 3025 Part I and transported to the laboratory in Iceboxes
Frequency of Monitoring	Once in a season

### Sampling Procedure

Quality of ground water was compared with IS: 10500: 1991 (Reaffirmed 1993 With Amendment NO -3 March 2010) for drinking purposes. Water samples were collected as Grab sample from five

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sampling locations in a 5-liter plastic jerry can and 250 ml sterilized clean glass/pet bottle for complete physico-chemical and bacteriological tests respectively. The samples were analyzed as per standard procedure / method given in IS: 3025 (Revised Part) and standard method for examination of water and wastewater Ed. 21st, published jointly by APHA.

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<i>Project Location</i>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

**Table 3-5 Ground water Quality Results**

<b>Parameter</b>	<b>Unit</b>	<b>Test Method</b>	<b>GW1</b>	<b>GW2</b>	<b>GW3</b>	<b>GW4</b>	<b>Parameter</b>
pH (at 25°C)	IS:3025(P - 11)1983 RA: 2012	-	7.11	7.61	7.25	7.31	7.2
Electrical Conductivity	IS:3025(P -14) 2013	µS/cm	1276	2300	1840	2510	1076
Colour	IS:3025 (P - 4)1983 RA: 2012	Hazen Unit	2	3	4	3	3
Turbidity	IS:3025(P - 10)1984 RA: 2012	NTU	BQL (LOQ:1)	BQL (LOQ:1)	BQL (LOQ:1)	BQL (LOQ:1)	BQL (LOQ:1)
Total Dissolved Solids	APHA 23 <sup>rd</sup> Edn.2017-2540-C	mg/L	842	1420	1045	1445	705
Total Suspended Solids	IS:3025(P-17)-1984 RA:2012	mg/L	BQL (LOQ:2)	BQL (LOQ:2)	BQL (LOQ:2)	BQL (LOQ:2)	BQL (LOQ:2)
Total Hardness as CaCO <sub>3</sub>	APHA 23 <sup>rd</sup> Edn.2017-2340-C	mg/L	457	455	554	723	376
Calcium Hardness as CaCO <sub>3</sub>	APHA 23 <sup>rd</sup> Edn2017.3500 Ca-B	mg/L	283	208	338	368	183
Magnesium Hardness as CaCO <sub>3</sub>	APHA 23 <sup>rd</sup> Edn.2017-3500 Mg-B	mg/L	174	247	216	355	193
Calcium as Ca	APHA 23 <sup>rd</sup> Edn2017.3500 Ca-B	mg/L	113	83.3	135	147	73
Magnesium as Mg	APHA 23 <sup>rd</sup> Edn.2017-3500 Mg-B	mg/L	39.4	60.2	53.1	86.7	47.2

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Chloride as Cl	IS:3025(P -32)- 1988 RA: 2014	mg/L	205	436	204	186	148
Sulphate as SO <sub>4</sub>	APHA 23 <sup>rd</sup> Edn.2017-4500 SO <sub>4</sub> -E	mg/L	123	232	308	622	16.9
Total Alkalinity as CaCO <sub>3</sub>	APHA 23 <sup>nd</sup> Edn.2017-2320-B	mg/L	129	182	154	260	321
Iron as Fe	IS:3025(P - 53):2003 RA: 2014	mg/L	BQL (LOQ:0.1)	BQL (LOQ:0.1)	BQL (LOQ:0.1)	BQL (LOQ:0.1)	BQL (LOQ:0.1)
Silica as SiO <sub>2</sub>	IS:3025(P - 35)1988 RA: 2014	mg/L	27.4	58.6	11.2	53.8	38.7
Fluoride as F	APHA 23 <sup>rd</sup> Edn.2012-4500-F- D	mg/L	BQL (LOQ:0.2)	BQL (LOQ:0.2)	BQL (LOQ:0.2)	BQL (LOQ:0.2)	BQL (LOQ:0.2)
Nitrate as NO <sub>3</sub>	IS:3025(P - 34):1988 RA: 2014	mg/L	45.8	47.7	43.1	48.9	49.1
Potassium as K	IS:3025(P - 45):1993 RA: 2014	mg/L	14.5	93.5	14.7	11.5	9.7
Sodium as Na	IS:3025(P - 45):1993 RA: 2014	mg/L	198	301	186	136	132

<i>Project Name</i>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<i>Chapter 3 Description of the Environment</i>
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### Interpretation of results:

The water Quality of the area has been studied taking 5 locations in the core and buffer zone. The ground water analysis results were compared with the standards for drinking water as per IS: 10500: 2012. The results indicate that the PH ranges between 7.11 and 7.61 and TDS ranges from 705 to 1445 mg/l. The total hardness ranges from 376 to 723 mg/l.

#### 3.4.6 Surface Water Analysis

Surface water samples were taken from Karunam Kulam (Lake Water). The results are summarized below.

**Table 3-6 Surface water Quality Results**

<b>S.No.</b>	<b>Parameter</b>	<b>Unit</b>	<b>Karunam Kulam (Lake Water)</b>
1.	Colour	Hazen	12
2.	Turbidity	NTU	18.5
3.	pH at 25 °C	-	8.11
4.	Electrical Conductivity @25°C	µS/cm	2310
5.	Total dissolved solids	mg/l	1555
6.	Total Suspended solids	mg/l	22.5
7.	Total Alkalinity as CaCO <sub>3</sub>	mg/l	332
8.	Total Hardness as CaCO <sub>3</sub>	mg/l	407
9.	Calcium as Ca	mg/l	59.4
10.	Magnesium as Mg	mg/l	62.8
11.	Chloride as Cl-	mg/l	432
12.	Sulphate as SO <sub>4</sub>	mg/l	286
13.	Nitrate as NO <sub>3</sub>	mg/l	6.82
14.	Iron as Fe	mg/l	BQL[LOQ:0.1]
15.	Fluoride as F	mg/l	0.55
16.	Sodium as Na	mg/l	312
17.	Potassium as K	mg/l	108
18.	Silica as SiO <sub>2</sub>	mg/L	82.1
19.	Nitrate as NO <sub>3</sub>	mg/L	6.82
20.	Sulphate as SO <sub>4</sub>	mg/L	286

### 3.5 Climatology & Meteorology:

Climate and meteorology of a place can play an important role in the implementation of any developmental project. Meteorology is also the key to understand local air quality as there is an

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essential relationship between meteorology and atmospheric dispersion involving wind in the broadest sense of the term.

The year may broadly be divided into four seasons:

Winter season	:	December to February
Summer season	:	March to May
Monsoon season	:	June to September
Post-monsoon season	:	October to November

### **i) Climate**

The Karur district enjoys a tropical climate. The period from March to May is generally hot and dry. The weather is pleasant during the period from November to January.

### **ii) Temperature and Rainfall**

#### **Temperature**

The mean maximum temperature ranges from 26.7 to 38.56 °C and the mean minimum temperature ranges from 18.7°C to 29.3°C. The day time heat is oppressive, and the temperature is as high as 43.9°C. The lowest temperature recorded is of the order of 13.9°C.

#### **Rainfall:**

The historical rainfall data of past years is collected. The normal rainfall of the district varies from about 620 mm to 745 mm. It is the minimum around Aravakurichi (622.7mm) in the western part of the district. It gradually increases towards eastwards and attains a maximum around Kulithalai (744.6mm). The maximum rainfall is observed in October 2021 with a rainfall of 219.1 mm.

<b>Year</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>
	<b>R/F</b>	<b>R/F</b>	<b>R/F</b>	<b>R/F</b>	<b>R/F</b>	<b>R/F</b>	<b>R/F</b>	<b>R/F</b>	<b>R/F</b>	<b>R/F</b>	<b>R/F</b>	<b>R/F</b>
<b>2017</b>	17.2	0	49	10.2	68.6	9.8	18.6	132.4	175.3	87.2	54	93.1
<b>2018</b>	1.2	14.5	12.3	3.3	125.6	11.4	24.2	20.9	107.9	63.9	82.1	1.4
<b>2019</b>	0	0	0.5	7.9	30.3	33.4	11.7	20.7	144	122	69	85.1

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<b>2020</b>	0.1	0	1.4	27.7	7.6	78.4	77.9	87.1	144	58.1	124.1	78.1
<b>2021</b>	109.1	0	0	20.1	23.6	28.3	67.6	68.6	105.9	219.1	231	46.6

**Source:** Customized Rainfall Information System (CRIS), Hydromet Division, GOI

### iii) Relative humidity

Usually mornings are more humid than afternoons. The relative humidities are generally between 40 and 80%. But in the period from February to July the air is comparatively drier in the afternoon.

### iv) Wind Speed:

The average wind speed in Karur is 2.5 m/s with the maximum wind speed of around 9m/s.

### Metrological Data

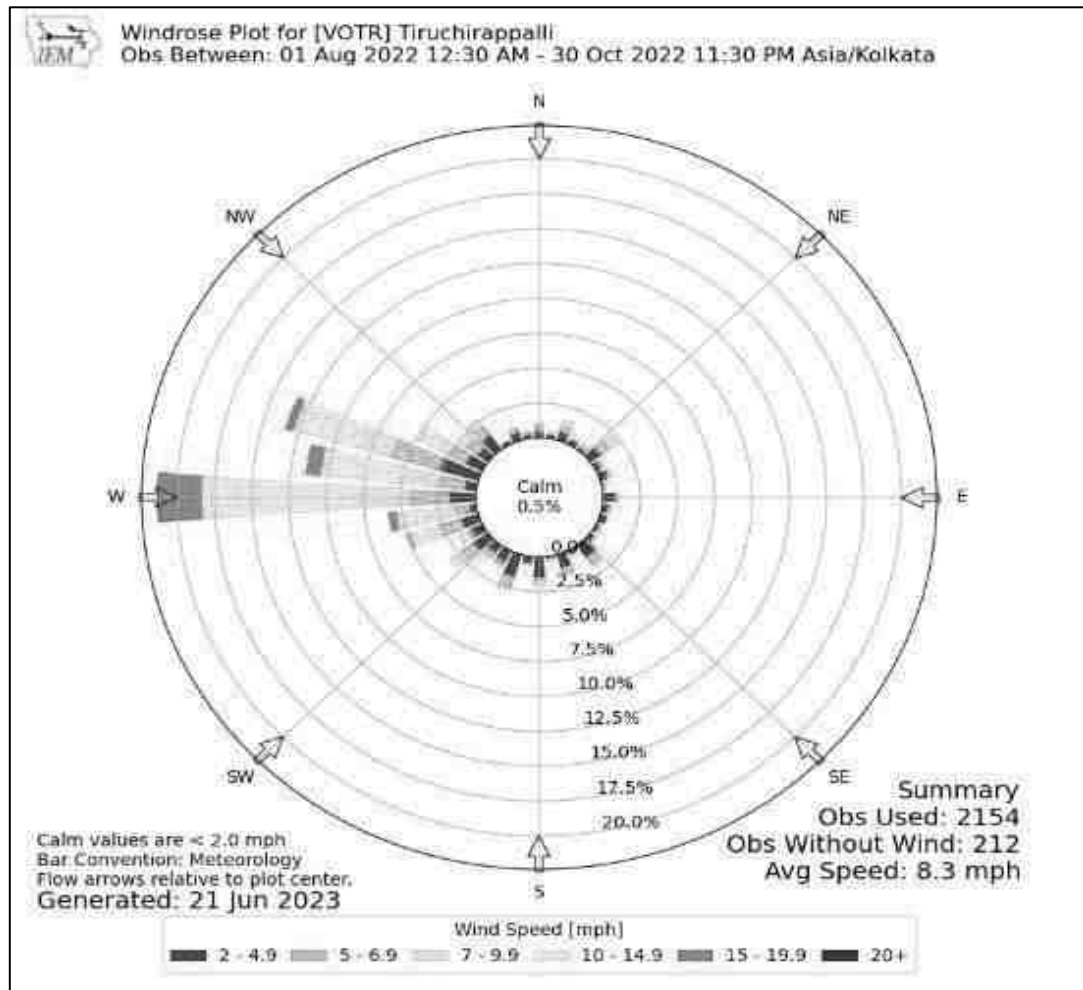
The meteorological data – Temperature, rainfall, Wind Speed, Wind direction are recorded through AWS by setting it up in the site.

### v) Wind Rose Diagram

The wind rose denotes a class of diagrams designed to display the distribution of wind direction at a given location over a period of time. Wind roses are also useful as they project a large quantity of data in a simple graphical plot. The wind speed & wind direction data are taken and wind rose is plotted for August to October 2021. The wind rose is plotted using WR Plot.



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**Figure 3-7 Windrose Diagram (August – October 2022)**

### **Selection of Sampling Locations:**

Six Monitoring locations along with the project site is selected based on Wind Direction & Wind Speed. All the monitoring locations are chosen in the downwind, Upwind And Crosswind Direction.

### **3.6 Ambient Air Quality**

<b>Environmental Parameters: <i>Ambient Air</i></b>	
Monitoring Period	August – October 2022
Design Criteria	The monitoring stations are selected based on factors like Topography/terrain, prevailing meteorological conditions

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	like predominant wind direction (August – October 2022), etc, play a vital role in selection of air sampling stations. Based on these criteria, 5 air sampling stations were selected in the area as shown below.		
Monitoring Locations	<b>Location &amp; Code</b>	<b>Distance (km)</b>	<b>Direction</b>
	Project Site -AAQ 1	-	-
	Sri Murugan Temple Pappanampatty- AAQ 2	2.87	N
	Government Middle School, Marmathupatty - AAQ 3	2.25	NE
	Indian Overseas Bank, Tharagampatti - AAQ 4	5.03	SE
	Sri Kathir Narasinga Perumal Temple, Karungal - AAQ 5	6.46	SW
Methodology	Respirable Particulate Matter (PM10) - Gravimetric (IS 5182: Part 23:2006) Particulate Matter PM2.5 - Gravimetric (Fine particulate matter) Sulphur Dioxide - Calorimetric (West & Gaeke Method) (IS 5182: Part 02: 2001) Nitrogen Dioxide - Calorimetric (Modified Jacob & Hocheiser Method) (IS 5182: Part 06:2006)		
Frequency of Monitoring	2 days in a week, 4 weeks in a month for 3 months in a season.		

### 3.6.1 Ambient Air Quality: Results & Discussion

The test results of the ambient air quality monitored in project site and other five locations is summarized below.

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**Table 3-7 Ambient Air Quality**

Code	Location	PM 10 ( $\mu\text{g}/\text{m}^3$ )			PM 2.5 ( $\mu\text{g}/\text{m}^3$ )			SO2 ( $\mu\text{g}/\text{m}^3$ )			NOx ( $\mu\text{g}/\text{m}^3$ )		
		Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
AAQ 1	Project Site	37	51	44	14	22	18	5	9	7	10	22	16
AAQ 2	Sri Murugan Temple Pappanampatty	47	57	52	21	28	24.5	9	16	12.5	15	28	21.5
AAQ 3	Government Middle School, Marmathupatty	53	61	57	21	31	26	12	21	16.5	22	35	28.5
AAQ 4	Indian Overseas Bank, Tharagampatti	54	64	59	25	33	29	15	21	18	23	38	30.5
AAQ 5	Sri Kathir Narasinga Perumal Temple, Karungal	43	55	49	18	26	22	7	15	11	15	28	21.5
<b>NAAQ Standards - Residential Area</b>		<b>100 (<math>\mu\text{g}/\text{m}^3</math>)</b>			<b>60(<math>\mu\text{g}/\text{m}^3</math>)</b>			<b>80 (<math>\mu\text{g}/\text{m}^3</math>)</b>			<b>80 (<math>\mu\text{g}/\text{m}^3</math>)</b>		

<b>Project Name</b>	<b>Varavanai Limestone Quarry- 1.90.5 Ha</b>	<b>Chapter 3 Description of the Environment</b>
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### Observations of Results

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

### 3.7 Noise Environment:

**Table 3-8 Noise Analysis**

<b>Environmental Parameters: Noise Analysis</b>	
Monitoring Period	August – October 2022
Design Criteria	Based on the Sensitivity of the area
Monitoring Locations	Project Site – N 1 Sri Murugan Temple Pappanampatty -N2 Government Middle School, Marmathupatty – N3 Indian Overseas Bank, Tharagampatti – N4 Sri Kathir Narasinga Perumal Temple, Karungal – N5
Methodology	Noise level measurements were taken at the selected locations using noise level meter both during day and night time. Noise level measurements were taken continuously for 24 hours at hourly intervals
Frequency of Monitoring	Noise samples were collected from 5 locations - Once in a season

Ambient Noise Levels are monitored in the chosen 5 Locations including the project Site and the monitoring results are summarized below.

**Table 3-9 Ambient Noise Level in the Study Area (dB (A))**

<b>Code</b>	<b>Locations</b>	<b>Day (db(A))</b>	<b>Night (db(A))</b>
N1	Project site	50	39
N2	Sri Murugan Temple Pappanampatty	54	43

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N3	Government Middle School, Marmathupatty	54	44
N4	Indian Overseas Bank, Tharagampatti	57	46
N5	Sri Kathir Narasinga Perumal Temple, Karungal	53	40

**Observation:**

The maximum Day noise were found to be 57 dB(A) in Indian Overseas Bank, Tharagampatti and the night noise level were found to be 46 dB(A) at Indian Overseas Bank, Tharagampatti. The minimum Day Noise and Night noise were 50 dB(A) and 39 dB(A) respectively in Project Site

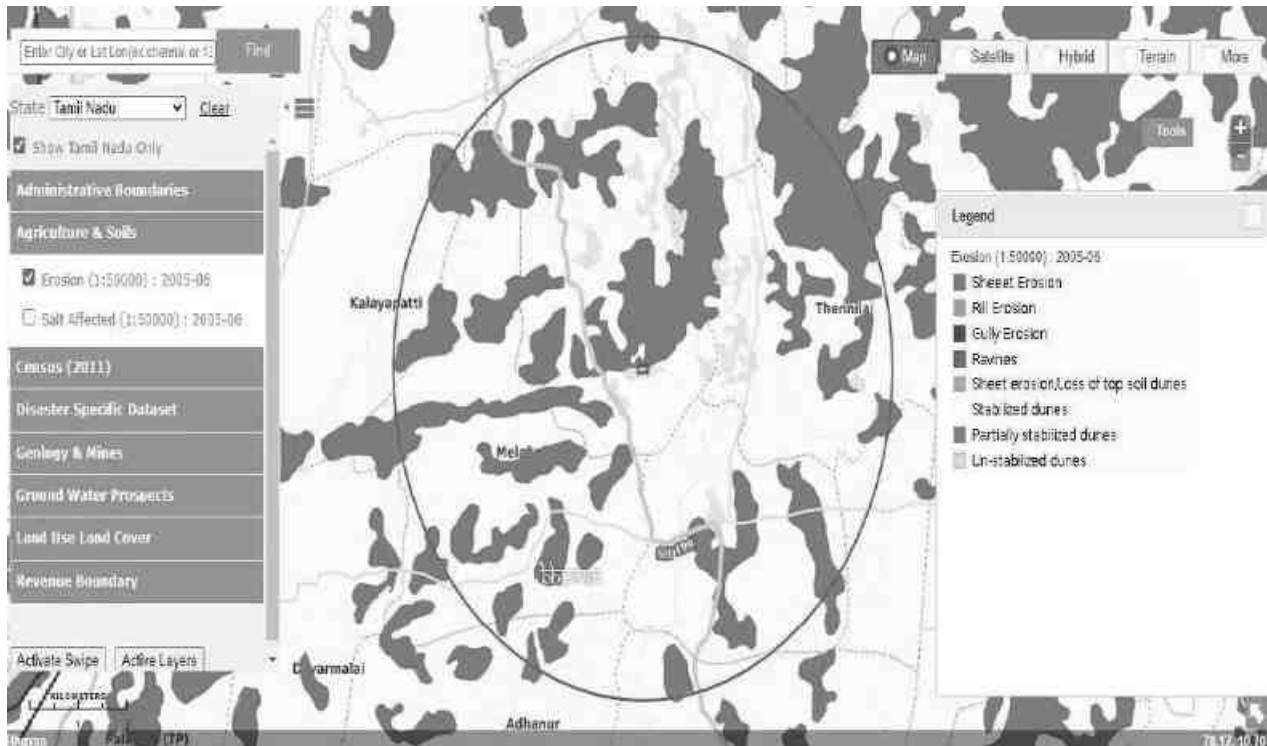
**Inference:**

The observed values are all well within the Standards prescribed by CPCB.

### 3.8 Soil Environment

Soil environment is studied for 5km radius from the project site. The soil within 5 km radius of the project site figure shows below.

<b>Project Name</b>	<b>Varavanai Limestone Quarry- 1.90.5 Ha</b>	<b>Chapter 3</b> <b>Description of the</b> <b>Environment</b>
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<b>Project Location</b>	<b>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</b>	



**Figure 3-8 Soil within 5 km radius of the project site**

### 3.8.1 Baseline Data

The present study of the soil quality establishes the baseline characteristics which will help in future in identifying the incremental concentrations if any, due to the Operation Phase of the proposed project. The sampling locations have been identified with the following objectives:

- To determine the impact of proposed project on soil characteristics and
- To determine the impact on soils more importantly from agricultural productivity point of view.

<b>Environmental Parameters: Soil Quality Analysis</b>	
Monitoring Period	August – October 2022
Design Criteria	Based on the environmental settings of the study area
Monitoring Locations	Project Site – SQ 1 Sri Murugan Temple Pappanampatty –

<b>Project Name</b>	<b>Varavanai Limestone Quarry- 1.90.5 Ha</b>	<b>Chapter 3</b> <b>Description of the</b> <b>Environment</b>
<b>Project Proponent</b>	<b>Sekhar Mines</b>	
<b>Project Location</b>	<b>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</b>	

	SQ 2 Government Middle School, Marmathupatty – SQ 3 Indian Overseas Bank, Tharagampatti – SQ 4 Sri Kathir Narasinga Perumal Temple, Karungal - SQ 5
Methodology	Composite soil samples using sampling augers and field capacity apparatus
Frequency of Monitoring	Soil samples were collected from 5 locations Once in a season

To assess the soil quality of the study area, 5 monitoring stations were selected and the results are summarized below.

**Table 3-10 Soil Quality Analysis**

S.No	Parameters	Units	Test Method	S1	S2	S3	S4	S5
1	pH (at 25°C)	-	IS:2720(P - 26)1987	7.56	7.72	6.58	7.83	6.69
2	Specific Electrical Conductivity	mS/cm	IS:14767: 2016	1.71	2.34	0.24	0.34	0.16
3	Water Holding Capacity	ml/l	ICARDA Page No:28	9.9	12.7	10.7	14.3	10.6
4	Bulk Density	g/cm <sup>3</sup>	FAO 2007 Page No:35	1.44	1.31	1.26	1.17	1.35
5	Calcium as Ca	mg/kg	FAO 2007 Page No:44	345	314	183	85	225
6	Sodium as Na	mg/kg	FAO 2007 Page No:44	1235	1827	1034	469	976
7	Potassium as K	mg/kg	FAO 2007 Page No:44	1578	1938	1105	490	1003
8	Organic	%	IS:2720 (P-22)	1.72	1.33	1.23	0.63	1.88

<b>Project Name</b>	<b>Varavanai Limestone Quarry- 1.90.5 Ha</b>	<b>Chapter 3</b> <b>Description of the</b> <b>Environment</b>
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	matter		1972, RA:2010					
9	Magnesium as Mg	mg/kg	FAO 2007 - 44	104	198	106	61.1	95.5
10	Total Nitrogen	%	IS 14864-1999;RA:2008	0.038	0.027	0.031	0.032	0.027
11	Available Phosphorous	mg/kg	FAO 2007 Page No:73	595	785	486	528	452
12	Sand	%	FAO 2007 Page No:25	54	47	43	46	47
13	Clay	%	FAO 2007 Page No:25	12	2	7	5	6
14	Silt	%	FAO 2007 Page No:25	34	51	50	49	47
15	Cation Exchange Capacity	meq/100g	IS:2720(P - 24):1976 RA: 2010	11.5	12.8	11.2	9.2	10.8
16	SAR	meq/kg	ETL/CHL/SOP/004	15.0	19.9	15.0	9.5	13.7
17	Silicon	%	ICARDA Page No:160	0.092	0.093	0.096	0.098	0.094
18	Chloride	mg/kg	FAO 2007 Page No:48	998	1606	968	425	865
19	Total Soluble Sulphates	mg/kg	IS:2720(P - 27):1977 RA: 2010	1014	800	198	160	182

### Physical Properties:

Regular cultivation practices increase the bulk density of soils thus inducing compaction. This results in reduction in water percolation rate and penetration of roots through soils. The soils with low bulk density have favorable physical conditions whereas those with high bulk density exhibit poor physical conditions for agriculture crops. The bulk density of the soil in the study area ranged between 1.17 to 1.44 meq/100g which indicates favorable physical condition for plant growth. The water holding capacity was found in the range of 9.9 ml/l to 14.3 ml/l.

### Chemical Properties:

Chemical characteristics of soils include pH, exchangeable cations and fertility status in the form of NPK values and organic matter. The value of the pH is slightly alkaline and it ranges from 6.58 to 7.83. The soil in the project site is sodic in nature, which challenges because they tend to have very poor structure



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which limits or prevents water infiltration and drainage. The organic matter varies from 0.63 to 1.88 %, which indicates the soil is slightly unfertile.

### 3.9 Ecology and Biodiversity

Ecology and Biodiversity is studied for 10 km radius around the project site. Project site and 2 km around the project site is considered as core zone and from 2 km to 10 km radius, it is considered as buffer zone.

- Primary field survey is carried out for the assessment of flora and fauna in the core zone
- Secondary data from Journals/Literature were studied and compiled to understand the species present in the buffer zone.

#### 3.9.1 Methods available for floral analysis:

##### Plot Sampling Methods

- Quadrat – 2D shape (e.g. square or rectangle, or other shape) used as a sampling unit
- Transect
  - **Line transects** feature only a length dimension, usually defined by a tape stretched across the area to be sampled.
  - **Belt transects** have a width as well as length.
  - **Pace-transects** are established when the observer strides along an imaginary line across the sample site, and uses their foot placement to determine specific sampling points.

##### Plot less Sampling Methods

- Closest individual method - Distance is measured from each random point to the nearest individual.
- Nearest neighbour method - Distance is measured from an individual to its nearest neighbour.
- Random pairs method - Distance is measured from one individual to another on the opposite side of the sample point.
- Point-centered quarter (PCQ) method - Distance is measured from the sampling point to the nearest individual in each quadrat.

#### 3.9.2 Tools Used

1. Nails,

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2. String/Ropes,
3. Paper,
4. Pen,
5. Tape,
6. Hammer
7. GPS
8. Camera
9. Binocular

### 3.9.3 Field study& Methodology adopted:

To assess the suitability of the methodology, random field survey was done. Field survey was conducted around 5 km radius from the project site and six locations were chosen including project site based on the species density. Quadrat method along with the recording of seasonality and timing is chosen for the proposed study as compared to other sampling methods, because they are relatively simple to use. Quadrat plots are uniform in size and shape and distributed randomly throughout the sample area, which makes the study design straightforward. They are also one of the most affordable techniques because they require very few materials.

**Table 3-11 Field study**

<b>S. No.</b>	<b>Location</b>	<b>No of Quadrates</b>		
		<b>Trees (10m x 10m)</b>	<b>Shrubs (5m x 5m)</b>	<b>Herbs &amp; grasses (1m x 1m)</b>
1.	Project Site	1	4	5
2.	Melappaguthi	1	4	5
3.	Thennilai	1	4	5
4.	Keelappaguthi	1	4	5
5.	Pannapatti	1	4	5
6.	Manjanaickenpatti	1	4	5

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#### 3.9.4 Study outcome:

Phytosociological parameters, such as **Density, Frequency, Basal Area, Abundance and Importance Value Index** of individual species (Trees) were determined in randomly placed quadrats of different sizes in the study area. Relative frequency, relative basal area and relative density were calculated and the sum of these three represented Importance Value Index (IVI) for various species. For shrubs, herbs and grasses, **Density, Frequency, Relative Density & Relative Frequency were found.**

Sample plots were selected in such a way to get maximum representation of different types of vegetation and plots were laid out in different parts of the study area of 2 km radius. Analysis of the vegetation will help in determining the relative importance of each species in the study area and to reveal if any economically valuable species is threatened in the process.

**Table 3-12 Calculation of Density, Frequency (%), Dominance, Relative Density, Relative Frequency, Relative Dominance & Important Value Index**

<b>Parameters</b>	<b>Formula</b>
Density	Total No. of individuals of species/ Total No. of Quadrats used in sampling
Frequency (%)	(Total No. of Quadrats in which species occur/ Total No. of Quadrats studied) * 100
Dominance	Total Basal Area /Total area sampled
Abundance	Total No. of individuals of species/ No. of Quadrats in which they occur
Relative Density	(Total No. of individuals of species/Sum of all individuals of all species) * 100
Relative Frequency	(Total No. of Quadrats in which species occur/ Total No. of Quadrats occupied by all species) * 100
Relative Dominance	Dominance of a given species/Total Dominance of all species
Important Value Index	Relative Density + Relative Frequency + Relative Dominance

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**Table 3-13 Tree Species in the core Zone**

S. No.	Scientific Name	Local Name	Total No. of species	Total of Quadrants with species	Total No. of Quadrants	Density	Frequency (%)	Abundance	Dominance	Relative Density	Relative Frequency	Relative Dominance	IVI	IUCN Conservation Status
1	Ficus Carica	Athi Maram	2	2	6	0.33	33.33	1	0.28	1.68	2.17	4.45	8.31	Least Concern
2	Cassia siamea	ManjalKonrai	3	2	6	0.50	33.33	1.5	0.07	2.52	2.17	1.11	5.81	Least Concern
3	Acacia nilotica	Karuvelai	4	4	6	0.67	66.67	1	0.28	3.36	4.35	4.45	12.16	Least Concern
4	Bambusa vulgaris	Moongil	4	4	6	0.67	66.67	1	0.50	3.36	4.35	7.92	15.63	Not assessed
5	Anacardium occidentale	Cashew	1	1	6	0.17	16.67	1	0.44	0.84	1.09	6.96	8.88	Not assessed
6	Alstoniascholaris	Elilaipalai	2	2	6	0.33	33.33	1	0.27	1.68	2.17	4.31	8.16	Least Concern
7	Psidium guajava	Guava	3	3	6	0.50	50.00	1	0.23	2.52	3.26	3.61	9.39	Not assessed
8	Aegle marmelos	Vilvam	1	1	6	0.17	16.67	1	0.16	0.84	1.09	2.50	4.43	Not assessed
9	Causuarinaequisetifolia	Savukku	2	2	6	0.33	33.33	1	0.21	1.68	2.17	3.34	7.20	Not assessed
10	Albizia amara	Wunja	1	1	6	0.17	16.67	1	0.20	0.84	1.09	3.22	5.14	Not assessed
11	Cocos nucifera	Thennai	10	6	6	1.67	100.00	1.67	0.15	8.40	6.52	2.39	17.32	Not assessed
12	Artocarpus	Palaa	2	2	6	0.33	33.33	1	0.18	1.68	2.17	2.85	6.70	Not

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	heterophyllus													assessed
13	Bombax ceiba	Sittan	4	4	6	0.67	66.67	1	0.08	3.36	4.35	1.27	8.98	Not assessed
14	Azadirachta indica	Veppam	17	6	6	2.83	100.00	2.83	0.13	14.29	6.52	1.98	22.79	Not assessed
15	Delonix regia	Cemmayir-Konrai	1	1	6	0.17	16.67	1	0.21	0.84	1.09	3.34	5.27	Least Concern
16	Delonix elata	Perungondrai	1	1	6	0.17	16.67	1	0.17	0.84	1.09	2.62	4.54	Least Concern
17	Dalbergia sissoo	Shisham	1	1	6	0.17	16.67	1	0.15	0.84	1.09	2.29	4.21	Not assessed
18	Ficus benghalensis	Alai	2	2	6	0.33	33.33	1	0.08	1.68	2.17	1.19	5.04	Not assessed
19	Annona squamosa	Sitapalam	1	1	6	0.17	16.67	1	0.23	0.84	1.09	3.61	5.53	Not assessed
20	Pithecellobium dulce	Kodukapuli	1	1	6	0.17	16.67	1	0.14	0.84	1.09	2.18	4.11	Not assessed
21	Ficus religiosa	Arasamaram	3	3	6	0.50	50.00	1	0.09	2.52	3.26	1.35	7.13	Not assessed
22	Couroupitaguianensis	Nagalingam	5	3	6	0.83	50.00	1.67	0.14	4.20	3.26	2.18	9.64	Not assessed
23	Musa paradise	Vaazhai	3	3	6	0.50	50.00	1	0.08	2.52	3.26	1.19	6.97	Not assessed
24	Prosopis juliflora	Vaelikaruvai	3	3	6	0.50	50.00	1	0.21	2.52	3.26	3.34	9.13	Not assessed
25	Mangifera indica	Mamaram	7	6	6	1.17	100.00	1.16	0.07	5.88	6.52	1.11	13.52	Data insufficient
26	Mimusops elengi	Magizham	2	2	6	0.33	33.33	1	0.18	1.68	2.17	2.85	6.70	Not assessed
27	Morinda pubescens	Nuna	6	6	6	1.00	100.00	1	0.24	5.04	6.52	3.74	15.31	Not assessed
28	Thespesia	Poovarasam	3	3	6	0.50	50.00	1	0.15	2.52	3.26	2.39	8.18	Not

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	populnea													assessed
29	Tectona grandis	Thekku	3	3	6	0.50	50.00	1	0.12	2.52	3.26	1.88	7.66	Not assessed
30	Tamarindus indica	Puli	10	6	6	1.67	100.00	1.66	0.20	8.40	6.52	3.09	18.02	Not assessed
31	Syzygiumcumini	naval	5	1	6	0.83	16.67	5	0.11	4.20	1.09	1.79	7.07	Not assessed
32	Carica papaya	Papaya	3	3	6	0.50	50.00	1	0.09	2.52	3.26	1.43	7.21	Not assessed
33	Ziziphus mauritiana	Elandai	1	1	6	0.17	16.67	1	0.28	0.84	1.09	4.45	6.38	Not assessed
34	Citrus medica	Elumichai	2	2	6	0.33	33.33	1	0.23	1.68	2.17	3.61	7.46	Not assessed
Total			119	92					6.35					

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**Table 3-14 Shrubs in the Core Zone**

<b>S. No.</b>	<b>Scientific Name</b>	<b>Local Name</b>	<b>Total No. of species</b>	<b>Total of Quadrants with</b>	<b>Total No. of Quadrants</b>	<b>Density</b>	<b>Frequency (%)</b>	<b>Abundance</b>	<b>Relative Density</b>	<b>Relative Frequency</b>	<b>IUCN Conservati on Status</b>
1	Jatropagossypifolia	Kaatamanaku	28	17	24	1.17	0.71	1.65	14.43	17.17	Not Assessed
2	Lantana trifolia	Shrub verbana	10	3	24	0.42	0.13	3.33	5.15	3.03	Not Assessed
3	Robiniapseudoacacia	Black locust	17	5	24	0.71	0.21	3.4	8.76	5.05	Least Concern
4	Lantana camara	Unnichedi	9	6	24	0.38	0.25	1.5	4.64	6.06	Not Assessed
5	Calotropis gigantea	Erukam	14	12	24	0.58	0.50	1.17	7.22	12.12	Not Assessed
6	Stachytarpheurticifolia	Rat tail	15	9	24	0.63	0.38	1.67	7.73	9.09	Not Assessed
7	Datura metal	Ummattangani	5	4	24	0.21	0.17	1.25	2.58	4.04	Not Assessed
8	Hibiscus rosa sinensis	Sembaruthi	3	2	24	0.13	0.08	1.5	1.55	2.02	Not Assessed
9	Tabernaemontanadivaricata	Crepe Jasmine	3	3	24	0.13	0.13	1	1.55	3.03	Not

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											Assessed
10	Chloromolaena odorata	Venapacha	9	6	24	0.38	0.25	1.5	4.64	6.06	Least Concern
11	Euphorbia geniculata	Amman Pacharisi	3	3	24	0.13	0.13	1	1.55	3.03	Not Assessed
12	Catharanthus roseus	Nithyakalyani	3	3	24	0.13	0.13	1	1.55	3.03	Not Assessed
13	Woodfordia fruticosa	Velakkai	3	3	24	0.13	0.13	1	1.55	3.03	Least Concern
14	Morinda pubescens	Mannanunai	2	2	24	0.08	0.08	1	1.03	2.02	Not Assessed
15	Acalypha indica	Kuppaimeni	20	8	24	0.83	0.33	2.5	10.31	8.08	Not Assessed
16	Parthenium hysterophorous	Vishapoonda	50	13	24	2.08	0.54	3.85	25.77	13.13	Not Assessed

**Table 3-15 Herbs & Grasses in the core zone**

S. No.	Scientific Name	Local Name	Total No. of species	Total of Quadrants with species	Total No. of Quadrants	Density	Frequency (%)	Abundance	Relative Density	Relative Frequency	IUCN Conservation status
1	Plumbago zeylanica	Chittiramoolam	3	3	30	0.10	0.10	1	1.19	3.23	Not assessed
2	Mimosa pudica	Thottacherungi	6	5	30	0.20	0.17	1.2	2.38	5.38	Least concern



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3	Sida acuta	Malaidangi	10	3	30	0.33	0.10	3.33	3.97	3.23	Not assessed
4	Scrophularia nodosa	Sarakkothini	15	7	30	0.50	0.23	2.14	5.95	7.53	Not assessed
5	Helicteresisora	Valampuri	2	2	30	0.07	0.07	1	0.79	2.15	Not assessed
6	Cynodondactylon	Arugu	12	6	30	0.40	0.20	2	4.76	6.45	Not assessed
7	Sporobolus fertilis	Giant Parramatta Grass	9	4	30	0.30	0.13	2.25	3.57	4.30	Not assessed
8	Viburnum dentatum	Viburnum	5	5	30	0.17	0.17	1	1.98	5.38	Least concern
9	Heraculem spondylium	Hog Weed	20	10	30	0.67	0.33	2	7.94	10.75	Not assessed
10	Laportea canadensis	Peruganchori	30	20	30	1.00	0.67	1.5	11.90	21.51	Not assessed
11	Euphorbia hirta	Amman Pacharisi	5	4	30	0.17	0.13	1.25	1.98	4.30	Not assessed
12	Tridax procumbens	Vettukaayathalai	5	4	30	0.17	0.13	1.25	1.98	4.30	Not assessed
13	Tephrosia purpurea	Kavali	20	4	30	0.67	0.13	5	7.94	4.30	Not assessed
14	Sida cordifolia	Maanikham	45	4	30	1.50	0.13	11.25	17.86	4.30	Not assessed
15	Tridax procumbens	Cuminipachai	15	4	30	0.50	0.13	3.75	5.95	4.30	Not assessed
16	Ruellia strepens	Grandinayagam	25	4	30	0.83	0.13	6.25	9.92	4.30	Not assessed
17	Senna occidentalis	Nattamsakarai	25	4	30	0.83	0.13	6.25	9.92	4.30	Not assessed

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### 3.9.5 Calculation of species diversity by Shannon – wiener Index, Evenness and richness by Margalef :

Biodiversity index is a quantitative measure that reflects how many different type of species, there are in a dataset, and simultaneously takes into account how evenly the basic entities (such as individuals) are distributed among those types of species. The value of biodiversity index increases both when the number of types increases and when evenness increases. For a given number of type of species, the value of a biodiversity index is maximized when all type of species are equally abundant. Interpretation of Vegetation results in the study area is given below.

**Table 3-16 Calculation of species diversity**

<b>Description</b>	<b>Formula</b>
Species diversity – Shannon – Wiener Index	$H = \sum [(p_i) * \ln(p_i)]$ Where $p_i$ : Proportion of total sample represented by species $i$ : number of individuals of species $i$ / total number of samples
Evenness	$H/H_{max}$ $H_{max} = \ln(s) =$ maximum diversity possible $S =$ No. of species
Species Richness by Margalef	$RI = S - 1 / \ln N$ Where $S =$ Total Number of species in the community $N =$ Total Number of individuals of all species in the community

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### 3.9.6 Calculation of species diversity by Shannon – wiener Index, Evenness and richness by Margalef for trees

#### i. Species Diversity

<b>Scientific Name</b>	<b>Common Name</b>	<b>No. of Species</b>	<b>Pi</b>	<b>ln (Pi)</b>	<b>Pi x ln (Pi)</b>
Ficus Carica	Athi Maram	2	0.017857	-4.02535	-0.07188
Cassia siamea	ManjalKonrai	2	0.017857	-4.02535	-0.07188
Acacia nilotica	Karuvelai	4	0.035714	-3.3322	-0.11901
Bambusa vulgaris	Moongil	4	0.035714	-3.3322	-0.11901
Anacardium occidentale	Cashew	2	0.017857	-4.02535	-0.07188
Alstoniascholaris	Elilaipalai	2	0.017857	-4.02535	-0.07188
Psidium guajava	Guava	3	0.026786	-3.61989	-0.09696
Aegle marmelos	Vilvam	1	0.008929	-4.7185	-0.04213
Causuarinaequisetifolia	Savukku	2	0.017857	-4.02535	-0.07188
Albizia amara	Wunja	1	0.008929	-4.7185	-0.04213
Cocos nucifera	Thennai	15	0.133929	-2.01045	-0.26926
Artocarpus heterophyllus	Palaa	2	0.017857	-4.02535	-0.07188
Bombax ceiba	Sittan	4	0.035714	-3.3322	-0.11901
Azadirachta indica	Veppam	10	0.089286	-2.41591	-0.21571
Delonix regia	Cemmayir-Konrai	1	0.008929	-4.7185	-0.04213
Delonixelata	Perungondrai	1	0.008929	-4.7185	-0.04213
Dalbergia sissoo	Shisham	1	0.008929	-4.7185	-0.04213
Ficus benghalensis	Alai	2	0.017857	-4.02535	-0.07188
Annona squamosa	Sitapalam	1	0.008929	-4.7185	-0.04213
Pithecellobium dulce	Kodukapuli	1	0.008929	-4.7185	-0.04213
Ficus religiosa	Arasamaram	3	0.026786	-3.61989	-0.09696
Courouputaguianensis	Nagalingam	5	0.044643	-3.10906	-0.1388
Musa paradise	Vaazhai	3	0.026786	-3.61989	-0.09696

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Prosopis juliflora	Vaelikaruvai	3	0.026786	-3.61989	-0.09696
Mangifera indica	Mamaram	8	0.071429	-2.63906	-0.1885
Mimusopselengi	Magizham	2	0.017857	-4.02535	-0.07188
Morindapubescens	Nuna	6	0.053571	-2.92674	-0.15679
Thespesia populnea	Poovarasam	3	0.026786	-3.61989	-0.09696
Tectona grandis	Thekku	3	0.026786	-3.61989	-0.09696
Tamarindus indica	Puli	8	0.071429	-2.63906	-0.1885
Syzygiumcumini	naval	1	0.008929	-4.7185	-0.04213
Carica papaya	Papaya	3	0.026786	-3.61989	-0.09696
Ziziphus mauritiana	Elandai	1	0.008929	-4.7185	-0.04213
Citrus medica	Elumichai	2	0.017857	-4.02535	-0.07188
Total		112			-3.22

**H (Shannon Diversity Index) =1.76**

**ii. Shrubs**

<b>Scientific Name</b>	<b>Common Name</b>	<b>No. of Species</b>	<b>Pi</b>	<b>ln (Pi)</b>	<b>Pi x ln (Pi)</b>
Jatropagossypifolia	Kaatamanaku	28	0.14433	-1.93565	-0.27937
Lantana trifolia	Shrub verbana	10	0.051546	-2.96527	-0.15285
Robiniapseudoacacia	Black locust	17	0.087629	-2.43464	-0.21335
Lantana camara	Unnichi	9	0.046392	-3.07063	-0.14245
Calotropis gigantea	Erukam	14	0.072165	-2.6288	-0.18971
Stachytarphaurticifolia	Rat tail	15	0.07732	-2.55981	-0.19792
Datura metal	Ummattangani	5	0.025773	-3.65842	-0.09429
Hibiscus rosa sinensis	Sembaruthi	3	0.015464	-4.16925	-0.06447
Tabernaemontanadivaricata	Crepe Jasmine	3	0.015464	-4.16925	-0.06447
Chloromolaena odorata	Venapacha	9	0.046392	-3.07063	-0.14245
Euphorbia geniculata	Amman Pacharisi	3	0.015464	-4.16925	-0.06447
Catharanthus roseus	Nithyakalyani	3	0.015464	-4.16925	-0.06447

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<b>Project Location</b>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

Woodfordiafruticosa	Velakkai	3	0.015464	-4.16925	-0.06447
Morindapubescens	Mannanunai	2	0.010309	-4.57471	-0.04716
Acalypha indica	Kuppaimeni	20	0.103093	-2.27213	-0.23424
Parthenium hysterophorous	Vishapoonda	50	0.257732	-1.35584	-0.34944
		194			-2.3656

**H (Shannon Diversity Index) =1.97**

**iii. Herbs**

Scientific Name	Common Name	No. of Species	Pi	ln (Pi)	Pi x ln (Pi)
Plumbago zeylanica	Chittiramoolam	3	0.011905	-4.43082	-0.05275
Mimosa pudica	Thottacherungi	6	0.02381	-3.73767	-0.08899
Sida acuta	Malaidangi	10	0.039683	-3.22684	-0.12805
Scrophularia nodosa	Sarakkothini	15	0.059524	-2.82138	-0.16794
Helicteresisora	Valampuri	2	0.007937	-4.83628	-0.03838
Cynodondactylon	Arugu	12	0.047619	-3.04452	-0.14498
Sporobolus fertilis	Giant Parramatta Grass	9	0.035714	-3.3322	-0.11901
Viburnum dentatum	Viburnum	5	0.019841	-3.91999	-0.07778
Heraculem spondylium	Hog Weed	20	0.079365	-2.5337	-0.20109
Laportea canadensis	Peruganchori	30	0.119048	-2.12823	-0.25336
Euphorbia hirta	Amman Pacharisi	5	0.019841	-3.91999	-0.07778
Tridax procumbens	Vettukaayathalai	5	0.019841	-3.91999	-0.07778
Tephrosia purpurea	Kavali	20	0.079365	-2.5337	-0.20109
Sida cordifolia	Maanikham	45	0.178571	-1.72277	-0.30764
Tridax procumbens	Cuminipachai	15	0.059524	-2.82138	-0.16794
Ruellia strepens	Grandinayagam	25	0.099206	-2.31055	-0.22922
Senna occidentalis	Nattamsakarai	25	0.099206	-2.31055	-0.22922
		252			-2.56298

**H (Shannon Diversity Index) =2.39**

**i. Evenness**

Details	H	H <sub>max</sub>	Evenness	Species Richness (Margalef)
Trees	3.22	3.5	0.9	7
Shrubs	2.36	2.77	0.85	2.84
Herbs	2.56	2.83	0.9	2.89

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From the above, it can be interpreted that herb community has higher diversity. While the tree community shows less diversity. It is also observed that most of the quadrates have controlled generation of plant species with older strands. Higher herb species diversity can be interpreted as a greater number of successful species and a more stable ecosystem where more ecological niches are available, environmental change is less likely to be damaging to the ecosystem as a whole. Species richness is high for herb community when compared with tree and shrubs.

### 3.9.7 Frequency Pattern

To understand the frequency pattern, the observed frequency is compared with the Raunkiaer's frequency. Any deviation from Raunkiaer's frequency implies disturbed community.

Classes of species in a community and normal value of class according to Raunkiaer's Class

**Table 3-17 Frequency Pattern**

<b>Class</b>	<b>Frequency (%)</b>	<b>Normal Value in the class</b>
A	1-20	53
B	21-40	14
C	41-60	9
D	61-80	8
E	81-100	16

Where  $A > B > C > = < D < E$

Raunkiaer's class for the observed species

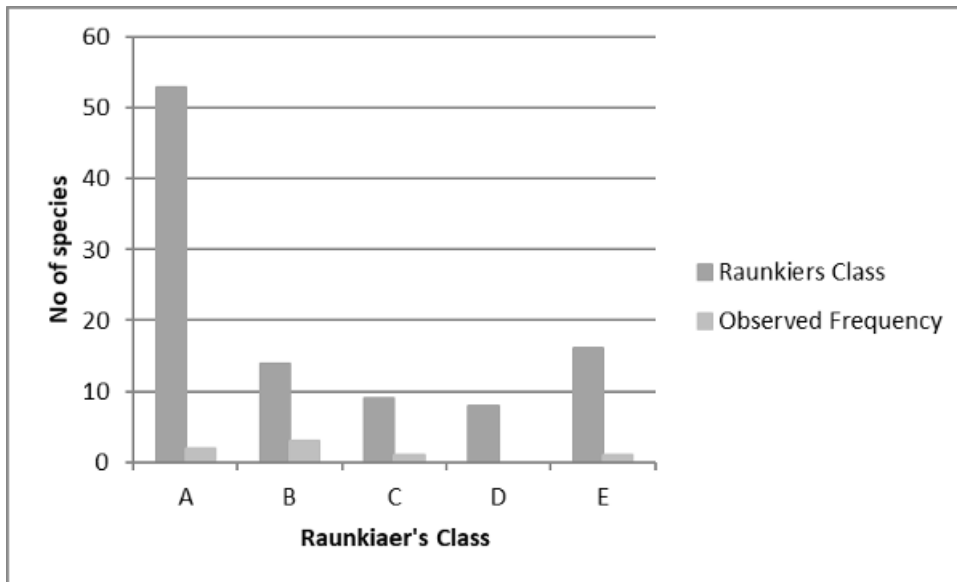
<b>S. No.</b>	<b>Scientific Name</b>	<b>Local Name</b>	<b>Frequency (%)</b>	<b>Class as per Raunkiaer's Law</b>
1.	Ficus Carica	Athi Maram	33.33	B
2.	Cassia siamea	ManjalKonrai	33.33	B
3.	Acacia nilotica	Karuvelai	66.67	D
4.	Bambusa vulgaris	Moongil	66.67	D

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5.	Anacardium occidentale	Cashew	33.33	B
6.	Alstoniascholaris	Elilaipalai	33.33	B
7.	Psidium guajava	Guava	50.00	C
8.	Aegle marmelos	Vilvam	16.67	A
9.	Causuarinaequisetifolia	Savukku	33.33	B
10.	Albizia amara	Wunja	16.67	A
11.	Cocos nucifera	Thennai	100	E
12.	Artocarpus heterophyllus	Palaa	33.33	B
13.	Bombax ceiba	Sittan	66.67	D
14.	Azadirachta indica	Veppam	100	E
15.	Delonix regia	Cemmayir- Konrai	16.67	A
16.	Delonixelata	Perungondrai	16.67	A
17.	Dalbergia sissoo	Shisham	16.67	A
18.	Ficus benghalensis	Alai	33.33	B
19.	Annona squamosa	Sitapalam	16.67	A
20.	Pithecellobium dulce	Kodukapuli	16.67	A
21.	Ficus religiosa	Arasamaram	50.00	C
22.	Couroupitaguianensis	Nagalingam	50.00	C
23.	Musa paradise	Vaazhai	50.00	C
24.	Prosopis juliflora	Vaelikaruvai	50.00	C
25.	Mangifera indica	Mamaram	100	E
26.	Mimusopselengi	Magizham	33.33	B
27.	Morindapubescens	Nuna	100	E
28.	Thespesia populnea	Poovarasam	50.00	C
29.	Tectona grandis	Thekku	50.00	C

<b>Project Name</b>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<b>Chapter 3</b> <i>Description of the Environment</i>
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30.	Tamarindus indica	Puli	100	E
31.	Syzygiumcumini	Naval	16.67	A
32.	Carica papaya	Papaya	50.00	C
33.	Ziziphus mauritiana	Elandai	16.67	A
34.	Citrus medica	Elumichai	33.33	B



**Figure 3-9 Raunkiaer's class for the observed species**

**Interpretation:** The observed frequency is  $A < B > C > D < E$ , which does not follow Raunkiaer's Distribution Frequency and hence the ecology is disturbed.

### 3.9.8 Floral study in the Buffer Zone:

#### **Economically important Flora of the study area**

**Agricultural crops:** Paddy, Maize are the main crop grown. Different fruits like Mango, Banana, Tapioca, Brinjal, guava and vegetables like brinjal, drumsticks, onion, Coriander also grown by the local people.



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<i>Project Location</i>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

**Medicinal species:** The nearby area is also endowed with the several medicinal species which are commonly available in the shrub forest and waste lands. The common medicinal species of the region are *Asparagus racemosus* (satamulli), *Aegle marmelos* (golden apple), *Azadirachta indica* (Neem) etc.

**Rare and endangered floral species:** There are no rare or endangered or threatened (RET) species of in the study area. During the vegetation survey, there are no any species which are endangered or threatened under IUCN (International Union for Conservation of Nature and Natural resources) guidelines.

### 3.9.9 Faunal Communities

Both direct and indirect observation methods were used to survey the fauna.

- Point Survey Method: Observations were made in each site for 15 minutes duration.
- Road Side Counts: The observer traveled by motor vehicles from site to site, all sightings were recorded (this was done both in the day and night time). An index of abundance of each species was also established.
- Pellet and Track Counts: All possible animal tracks and pellets were identified and recorded (South Wood, 1978).
- Visual Encounter Method: A visual encounter survey (VES) is one in which field personnel walk through an area or habitat for a prescribed time period systematically searching for animals.

Additionally, survey of relevant literature was also done to consolidate the list of fauna distributed in the buffer zone.

Based on the Wildlife Protection Act, 1972 (WPA 1972, Anonymous. 1991, Upadhyay 1995, Chaturvedi and Chaturvedi 1996) species were short-listed as Schedule II or I and considered herein as endangered species. Species listed in Ghosh (1994) are considered as Indian Red List species.

#### **Methodology Adopted:**

Visual encounter methodology is adopted without any time constraint

#### **Tools Used:**

Torch for carrying out survey during night time, Binoculars, Camera, GPS, Notebook, Pen

#### **Study in the core zone:**

<i>Project Name</i>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<i>Chapter 3 Description of the Environment</i>
<i>Project Proponent</i>	<i>Sekhar Mines</i>	
<i>Project Location</i>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

Visual Encounter Methodology was adopted for the study within 2 km radius and the following species were observed

**Mammals:** No wild mammalian species was directly sighted during the field survey. Discussion with local villagers located around the study area also could not confirm presence of any wild animal in that area. Three striped Palm Squirrel, Common Indian Hare, Common mongoose, Common Mouse etc were observed during primary survey.

**Avifauna:** Since birds are considered to be the indicators for monitoring and understanding human impacts on ecological systems (Lawton, 1996) attempt was made to gather quantitative data on the avifauna by walk through survey within the entire study area and surrounding areas and the frequency of the monitoring is once in a month during the study period of August – October 2022. From the primary survey, a total of 26 species of avifauna were identified and recorded in the study area. The diversity of avifauna from this region was found to be quite high and encouraging.

The list of fauna species found in the study area is mentioned in Table below.

**Table 3-18 List of fauna species**

<b>Scientific Name</b>	<b>Common Name</b>	<b>Schedule of wild life protection act</b>	<b>IUCN conservation status</b>
<b>Mammals</b>			
Funambulus pennanti	Palm Squirrel	IV	Least Concern
Mus rattus	Indian rat	IV	Not listed
Bandicota bengalensis	Indian mole rat	IV	Least Concern
Funambulus palmarum	Three striped palm squirrel	IV	Least Concern
Herestesedwardsii	Common Man	IV	Not listed
Mus musculus	Common Mouse	IV	Least Concern
Bandicota indica	Rat	IV	Least Concern
Lepus nigricollis	Indian Hare	IV	Least Concern
Felis catus	Cat	Not listed	Not listed

<b>Project Name</b>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<b>Chapter 3</b> <i>Description of the Environment</i>
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Canis lupus familiaris	Indian dog	Not listed	Not listed
Bos Indicus	Indian Cow	Not listed	Not listed
Bubalus bubalis	Buffalo	I	Not listed
Sus scrofa domesticus	Domestic pig	Not listed	Not listed
<b>Reptiles &amp; Amphibians</b>			
Chameleon zeylanicum	Chameleon	IV	Not listed
Calotes versicolor	Common garden lizard	II	Not listed
Bungarus caeruleus	Common krait	IV	Not listed
Ophisops leschenaultia	Snake eyed lizard	--	Not listed
Bufo melanostictus	Toad	IV	Least concern
Ptyas mucosa	Rat snakes	IV	Least concern
Hemidactylus sp.	House lizard	--	Not listed
<b>Butterflies</b>			
Danaus chrysippus	Plain Tiger	--	Not listed
Papiliodemoleus	Common lime	--	Not listed
Euploea core	Common crow	--	Least concern
Danaus genutia	Common tiger	--	Not listed
Euremabrigitta	Small grass yellow	--	Least concern

#### List of Bird Species observed during the survey

<b>Scientific Name</b>	<b>Common Name</b>	<b>Schedule of wild life protection act</b>	<b>IUCN conservation status</b>	<b>Timing</b>	<b>Observed Month</b>
Bubulcus ibis	Cattle Egret	IV	Least Concern	Morning	April
Vanellus indicus	Red-Wattled Lapwing	IV	Least Concern	Morning	May
Columba livia	Blue Rock Pigeon	-		Morning	March

<i>Project Name</i>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<i>Chapter 3 Description of the Environment</i>
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<i>Project Location</i>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

Microfusaffinis	House swift	-	Common	Morning	May
Coracias benghalensis	Indian Roller	IV	Least Concern	Evening	March
Meropsorinetali	Common bee eater	IV	Least Concern	Evening	March
Psittaculakrame ri	Rose Ringed Parakeet	IV	Least Concern	Seen in morning & evening multiple times	3 months
Eudynamisscolopaceus	Koel	IV	Common, Resident	Seen in morning & evening multiple times	3 months
Aredeolagrayii	Indian Pond Heron	IV	Least Concern	Evening	April
Acridotheresgin ginianus	Bank Myna	IV	Least Concern	Seen in morning & evening multiple times	3 months
Astur badius	Shikra	IV	Resident	Morning	April
Sturnus pagodarum	Brahminy Starling	IV	Least Concern	Evening	April
Pavocristatus	Peafowl	I	Least Concern	Observed during evening time	3 months
Corvus splendens	Common Crow	V	Least Concern	Seen in morning & evening multiple times	3 months
Passer domesticus	House Sparrow	IV	Common, Resident	Seen in morning & evening multiple times	3 months
Pycnonotuscafer	Red- Vented Bulbul	IV	Common	Evening	April
Egretta garzetta	Little Egret	IV	Common	Evening	May
Corvus corax	Common Raven	V	Least Concern	Seen in morning & evening multiple times	3 months
Acridotherestrictus	Common myna	IV	Common	Seen in the noon and evening	3 months
Alcedo atthis	Common kingfisher	IV	Common	Morning	May
Athene brama	Spotted Owlet	IV	Common, Resident	Spotted during night	May
Bubo bubo	Indian great horned owl	IV	Common	Spotted during night	May
Caprimulgus	Common	IV	Common	Evening	May

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<i>Project Location</i>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

asiaticus	Indian jar				
Cinnyris asiatica	Purple sunbird	IV	Least Concern	Morning	March
Columbus livibus	Pigeon	IV	Common	Seen in morning & evening multiple times	3 months
Copsychussaularis	Magpie robin	IV	Common	Evening	March
Cuculusvarius	Common-Hawk Cuckoo	IV	Common, Resident	Evening	March
Cypsiurusparvus	Palm Swift	IV	Common, Resident	Evening	March
Dendrocittavagabunda	Indian Tree pie	IV	Common, Resident	Morning	March
Dicruruslongicaudatus	Grey drongo	IV	Resident	Morning	March
Dicrurusmacrocerus	Black Drongo	IV	Common, Resident	Morning	March
Dissemurusparadisus	Rackete tailed drongo	IV	Resident	Morning	March
Francolinusponcicerianus	Grey Partridge	IV	Common, Resident	Evening	May
Galeridamalabarica	Malabar crested lark	IV	Resident	Evening	May
Gallus gallus	Red jungle fowl	IV	Resident	Evening	March
Haliastur Indus	Brahmny kite	IV	Common	Evening	May
Hierococysvarius	Common hawk cuckoo	IV	Common	Evening	March
Lobvanella indicus	Redwattled lapwing	IV	Resident	Morning	March, April
Lonchuramalacca	Blackheaded Munia	IV	Common, Resident	Morning	March
Megalaimamerulinus	Indian cuckoo	IV	Common	Evening	March, April
Milyusmigrans	Common kite	IV	Common	Evening	March
Mirafrerythrop	Red winged	IV	Common,	Morning	April

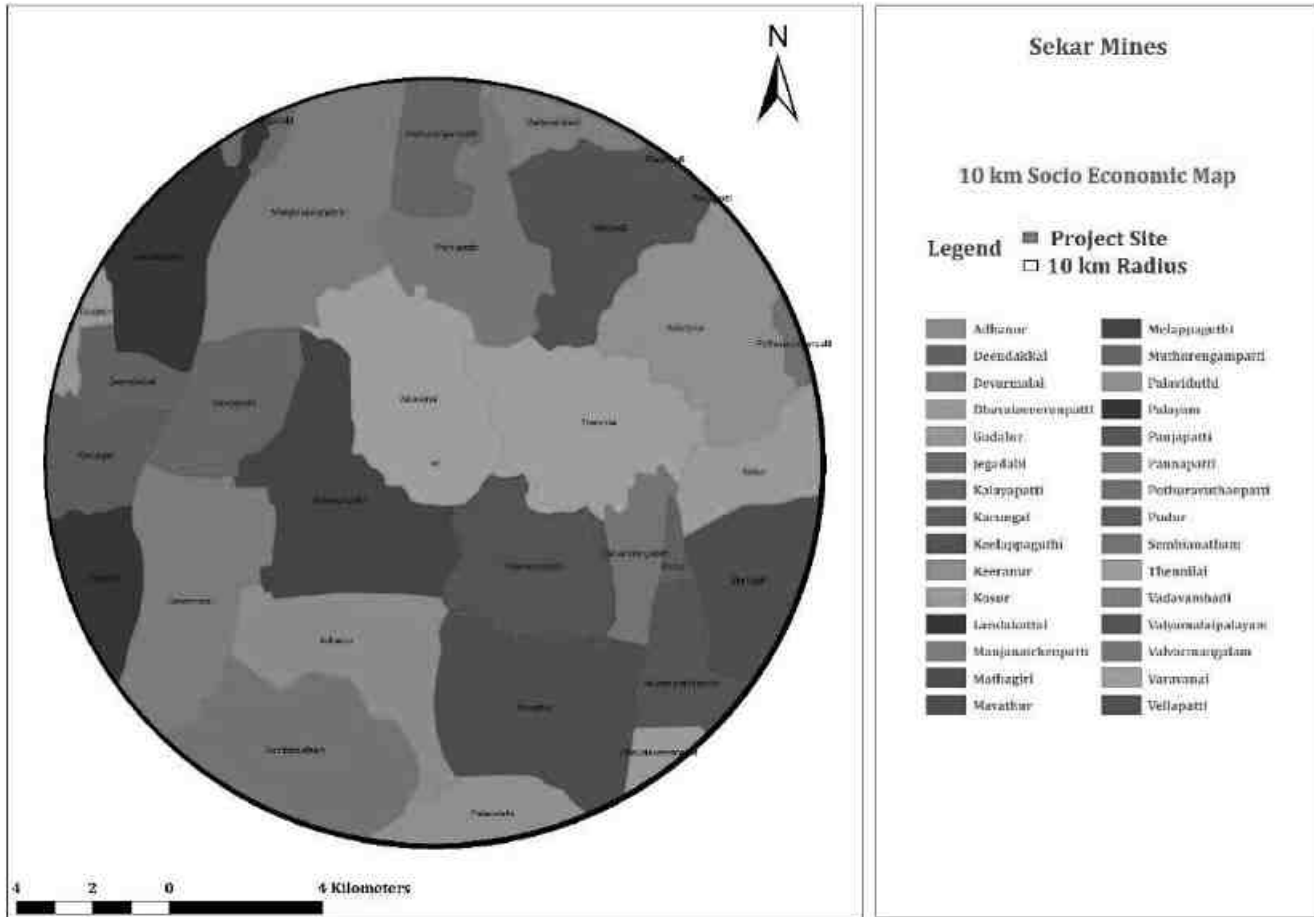
<i>Project Name</i>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<i>Chapter 3 Description of the Environment</i>
<i>Project Proponent</i>	<i>Sekhar Mines</i>	
<i>Project Location</i>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

tera	Bushlark		Resident		
Phalacrocorax carbo	Cormorant	IV	Common, Resident	Morning	May
Quills contronix	Grey quail	IV	Common	Seen in morning & evening multiple times	3 months
Saxicoloidesfulicata	Indian Robin	IV	Common, Resident	Morning	May
Tchitrea paradisi	Paradise Flycatcher	IV	Common	Morning	March, April
Temenuchuspagodarum	Brahmny myna	IV	Common	Seen in morning & evening multiple times	3 months
Tephrodornispondiceraianus	Common wood shrike	IV	Common	Evening	March
Uroloncha striata	Spotted munia	IV	Common	Morning	April

### 3.10 Demography and Socio Economics

The demography survey study is done within 10km from the project site.

<b>Project Name</b>	<b>Varavanai Limestone Quarry- 1.90.5 Ha</b>	<b>Chapter 3</b> <b>Description of the</b> <b>Environment</b>
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<b>Project Location</b>	<b>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</b>	



**Figure 3-10 Socio Economics Map Surrounding the Project Site**

The population, Household, Sex ratio, Literacy rate, SC, ST details for all the villages in the study area is listed below:

**Table 3-19 Demographic study around 10km from the project site**

Villages	Household	Population	Sex Ratio		Literacy Rate		SC	ST
			Male	Female	Male	Female		
Varavanai	1261	4985	2481	2504	1768	1259	1034	32
Melappaguthi	1304	5275	2586	2689	1589	1183	1259	0
Thennilai	1174	4323	2172	2151	1483	944	493	3
Keelappaguthi	1729	7483	3730	3753	2730	2201	1777	1

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<i>Project Location</i>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

Pannapatti	935	3680	1828	1852	1321	1076	359	1
Manjanaickenpatti	1205	4637	2273	2364	1630	1237	580	0
Kalayapatti	488	2075	1026	1049	729	526	503	0
Valvarmangalam	471	2074	1000	1074	661	604	197	0
Vellapatti	962	3854	1954	1900	1318	881	543	0
Adhanur	885	3526	1709	1817	1009	707	947	1
Devarmalai	993	4184	2127	2057	1436	1039	1025	0
Keeranur	1244	5469	2725	2744	1778	1181	460	1
Mavathur	1573	6706	3376	3330	2309	1672	2062	2
Palaviduthi	1693	7420	3694	3726	2605	2019	1695	0
Sembianatham	1364	5766	2926	2840	1808	1297	864	0
Puthur	895	3780	1885	1895	1314	975	1199	2
Kosur	1710	7638	3819	3819	2019	1303	1254	2
Muthurengampatti	350	1409	700	709	417	304	261	0
Vadavambadi	656	2752	1393	1359	835	546	355	0

### 3.11 Traffic Impact Assessment

Traffic data collected 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 each of the two directions for counting the traffic. At the end of each hour, fresh counting and recording was undertaken. Total numbers of vehicles per hour under the three categories were determined.



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<b>Project Location</b>	<b>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</b>	



**Figure 3-11 Site Connectivity**

**Table 3-20: Number of Vehicles Per Day**

<b>Sl. No.</b>	<b>Vehicles Distribution</b>	<b>Number of Vehicles Distribution/Day</b>	<b>Passenger Car Unit (PCU)</b>	<b>Total Number of Vehicle in PCU</b>
		SH-199		SH 199
1.	Cars	358	1	358
2.	Buses	203	3	609
3.	Trucks	139	3	417
4.	Two wheelers	457	0.5	228.5
5.	Three wheelers	173	1.5	259.5
	<b>Total</b>	<b>1330</b>		<b>1872</b>

<i>Project Name</i>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<i>Chapter 3 Description of the Environment</i>
<i>Project Proponent</i>	<i>Sekhar Mines</i>	
<i>Project Location</i>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

**Table 3-21: Existing Traffic Scenario and LOS**

<b>Road</b>	<b>V (Volume in PCU/hr)</b>	<b>C (Capacity in PCU/hr)</b>	<b>Existing V/C Ratio</b>	<b>LOS</b>
SH 40	1872/24 =78	205	0.38	B

Note; The existing level may be 'Very Good' for SH 199

<b>V/C</b>	<b>LOS</b>	<b>Performance</b>
0.0 -0.2	A	Excellent
0.2-0.4	B	Very good
0.4-0.6	C	Good/Average/Fair
0.6-0.8	D	Poor
0.8-1.0	E	Very Poor

<i>Project Name</i>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<i>Chapter 4 Impacts &amp; Mitigation Measures</i>
<i>Project Proponent</i>	<i>Sekhar Mines</i>	
<i>Project Location</i>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

## 4 Anticipated Environmental Impacts & Mitigation Measures

### 4.1 Introduction

Identification of all potential environmental impacts due to the project is an essential step of Environmental Impact Assessment. In case of mining projects, impacts on biodiversity, air pollution, water pollution, waste management and social issues are significant. Both direct and indirect environmental impacts will be created on various environmental attributes due to proposed mining activity in the surrounding environment during the operational phase.

The occurrence of limestone deposits being site specific, their exploitation often does not allow for any choice except adoption of eco-friendly operation. Positive impacts on socio-economic environment are expected due to creation of employment opportunities. Mining activities are normally carried out over a long period which also encourages development in the area such as roads, schools, hospitals etc.

Several scientific techniques and methodologies are available to predict impacts of physical environment. Mathematical models are the best tools to quantitatively describe the cause and effect relationships between sources of pollution and different components of environment. In cases where it is not possible to identify and validate a model for a particular situation, predictions have been arrived at based on logical reasoning/consultation/extrapolation.

The following parameters are of significance in the Environmental Impact Assessment and are being discussed in detail:

- Land Environment
- Water Environment
- Air Environment
- Noise Environment
- Biological Environment
- Socioeconomic Environment

<i>Project Name</i>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<i>Chapter 4 Impacts &amp; Mitigation Measures</i>
<i>Project Proponent</i>	<i>Sekhar Mines</i>	
<i>Project Location</i>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

"Environmental Impact" can be defined as any alteration of environmental conditions for creation of a new set of environmental conditions, adverse or beneficial, caused or induced by the action or set of actions under consideration.

Generally, the environmental impacts can be categorized as either primary or secondary. Primary impacts are those, which are attributed directly by the project, secondary impacts are those, which are indirectly induced and typically include the associated investment and changed pattern of social and economic activities by the proposed action.

## 4.2 Land Environment:

<b>Aspect</b>	<b>Impact</b>	<b>Mitigation Measures</b>								
<b><i>Mining of Limestone</i></b>	<p>The proposed 1.90.5 Ha mine in Varavanai, proposed to mines Limestone of 29,425 Tones for next 3 years. The quarry operation is proposed to carry out with open cast manual method of mining. The Limestone, totally seven benches will be 2.5 m height and 2.5 m width with 60° slope for next four years only. At the end of the mining period, mining lease area will be converted into ultimate pit and dimensions are given below:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;"><b>Dimensions</b></th> <th style="text-align: center;"><b>Ultimate pit dimension (m)</b></th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Length (m)</td> <td style="text-align: center;">108</td> </tr> <tr> <td style="text-align: center;">Width (m)</td> <td style="text-align: center;">86</td> </tr> <tr> <td style="text-align: center;">Depth (m)</td> <td style="text-align: center;">13.0</td> </tr> </tbody> </table> <p>This may lead to soil erosion, degradation and resource loss.</p>	<b>Dimensions</b>	<b>Ultimate pit dimension (m)</b>	Length (m)	108	Width (m)	86	Depth (m)	13.0	<p>The proposed project site is prone to stabilized dunes and sheet erosion and gully erosion <b>(Source: Bhuvan)</b>. In order to prevent erosion, thick vegetation will be provided along the safety distance on the mine lease area in the following way.</p> <ul style="list-style-type: none"> <li>- 3 Tier plantation will be done.</li> <li>- Herbs and shrubs will be planted alternatively between two thick canopy trees.</li> <li>- Tree species like Neem, Magizham, Tamarind, Elandhai and Vilvam will be planted along the roads, outer periphery of the mining area which will enhances the binding property of the soil.</li> <li>- In addition, garland drainage of 1m x 1m will</li> </ul>
<b>Dimensions</b>	<b>Ultimate pit dimension (m)</b>									
Length (m)	108									
Width (m)	86									
Depth (m)	13.0									

<i>Project Name</i>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<i>Chapter 4 Impacts &amp; Mitigation Measures</i>
<i>Project Proponent</i>	<i>Sekhar Mines</i>	
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	<p>The main impact of open cast mining on land-use is land degradation. The land is bound to be excavated for mining of Limestone.</p> <p>Impact on soil of the study area will be minimal as there are no wastewater generated, heavy metal infusion, stack emissions.</p> <p>Impact due to transformation of terrain characteristics over the large area results in soil degradation.</p> <p>Solid waste will be generated from the mining activity as there will be refuse also generation of domestic waste. If it not properly managed, may cause odor and health problem to the workers.</p>	<p>be provided to avoid storm water run-off affecting the mine lease area thereby preventing the erosion.</p> <ul style="list-style-type: none"> <li>- It is proposed to improve the affected land wherever possible for better land use, to support vegetation and creation of water reservoir in the ultimate pit after quarrying.</li> </ul> <p>The overburden will be dumped in the non-mineral bearing area of the East &amp; Southern side of the lease area. The dumping of waste material will be done in steps to avoid sliding. One end of the waste dump to be matured for stabilization will be taken up for afforestation.</p> <p>The source of dust generation is majorly due to loading &amp; unloading of the mined out mineral, the impact will be mitigated by water sprinkling regularly.</p> <p>After removal of minerals, undulating portion will be created. Excavated area or ultimate pit at the end of the mine period will be converted into water reservoir. Three tier tree belts will be planted along the safety distance.</p>
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<i>Project Name</i>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<i>Chapter 4 Impacts &amp; Mitigation Measures</i>
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		<p>The 60% recovery is achieved by extracting the entire mineable reserve. The total waste will be dumped in the non-mineral bearing area of the East and Southern side of the lease area. Apart from that, a very meagre quantity of domestic waste will be generated in the project, which will be handed over to the local body on daily basis.</p>
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### 4.3 Water Environment:

Aspect	Impact	Mitigation Measures
<b><i>Loading and unloading, Transportation of the excavated mineral.</i></b>	<p>The mining in the area may cause ground water contamination due to intersection of the water table and mine runoff.</p> <p>The ground water depletion may occur due to mining activity.</p>	<p>The water table will not be intersected during mining, as the ultimate depth is limited upto 13.0 meter below the ground level, whereas the ground water table is at 50 m below the ground level. The municipal wastewater will be disposed into septic tanks of 5 cum and soak pit. No chemicals consisting of toxic elements will be used for carrying out mining activity.</p> <p>The ground water table is at a depth of 50 BGL, the mining operation will not affect the aquifer. The ultimate pit at the end of the mining operation will be used for rainwater storage, the stored water will be used for green belt development and further the stored water will be used for domestic purposes (other than drinking) after proper treatment and after confirming to best designated usage stipulated by CPCB.</p>

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	Improper management of Domestic wastewater in the Mine lease may create unhygienic conditions in the site thereby causing health impacts to the labors	Provision of urinals/Latrines along with septic tank followed by soak pit arrangement will be provided in the Mine Lease area for the proper management of wastewater
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#### 4.4 Air Environment:

Aspect	Impact	Mitigation Measures
<i>Loading and unloading, Transportation of the excavated mineral.</i>	<p>Air pollution sources in the operating mine are classified into three categories</p> <p>Point source: Mining operations (Excavation)</p> <p>Area source: Extraction of limestone from the mine lease area</p> <p>Line source: Transportation of Limestone from mining bench to mineral stockpile</p> <ul style="list-style-type: none"> <li>➤ The pollutants released into the atmosphere would disperse in the down wind direction and finally reach the ground at farther distance from the source.</li> <li>➤ The concentrations at ground level mainly depends upon the strength of the emission source and micrometeorology of the study area.</li> <li>➤ Water tankers with</li> </ul>	<p>Limestone mining is being carried out by opencast manual method. The air borne particulate matter generated by handling operations and mineral transportation is the main air pollutant. The emission of Sulphur dioxide (SO<sub>3</sub>), oxides of Nitrogen (NO<sub>x</sub>) contributed by diesel operated excavation / loading equipment and vehicles plying on haul roads are marginal. Prediction of impacts on air environment has been carried out taking into consideration the proposed production and net increase in emissions.</p> <p>To assess the impact due to the production 9808 Tonnes of Limestone per annum on air environment predictions will be carried out using ISC - AERMOD MODEL.</p> <p><b>Proposed air pollution control measures</b></p> <ul style="list-style-type: none"> <li>➤ Regular sprinkling of water at the active mine faces and also on the haul roads.</li> </ul>

<i>Project Name</i>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<i>Chapter 4</i> <i>Impacts &amp; Mitigation</i> <i>Measures</i>
<i>Project Proponent</i>	<i>Sekhar Mines</i>	
<i>Project Location</i>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

	<p>spraying arrangement are being used for regular water sprinkling on the haul roads to ensure effective dust suppression. The tippers are being timely maintained so that exhaust smoke does not contribute abnormal values of noxious gases and un-burnt hydrocarbons.</p> <p><u>Effect on Human</u></p> <ul style="list-style-type: none"> <li>• Adverse effect on human health of working labourers and neighboring villagers like effect on breathing and respiratory system, damage to lung tissue, influenza or asthma.</li> <li>• Dust generation due to loading and unloading of mineral and due to transportation can also affect the workers as well as nearby villagers.</li> </ul> <p><u>Effect on Plants</u></p> <p>➤ Stomatal index may be minimized due to dust deposit on leaf.</p>	<p>➤ Regular maintenance of transport vehicles.</p> <p>➤ Provision of dust masks to the workers</p> <p>➤ Avoiding overloading of tippers and covering of loaded tippers with tarpaulins during mineral transportation.</p> <p>➤ Limiting the speed of transport vehicles</p> <p>➤ Regular maintenance of transportation road outside the mine lease area</p> <p>➤ Maintenance of 7.5m barrier zone all along the mine lease boundary and greenbelt in the barrier zone.</p> <p>➤ Periodical monitoring of air quality to take steps to control the pollutants.</p> <p><b>Proposed control measures for traffic density</b></p> <p>➤ Batch transport system has been adopted, thereby providing sufficient space for normal traffic.</p> <p>➤ Silencers of the transportation vehicles are maintained in good conditions to avoid high noise generators</p> <p>➤ Speed breakers, traffic signals, foot paths, etc has been provided at strategic locations for the safety of the pedestrians.</p> <p>➤ Only trained drivers are</p>
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		<p>employed and all traffic rules are being strictly followed.</p> <p>➤ Regular cleaning / sweeping of mineral transportation roads nearby habitations outside the mine lease area.</p>
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### **Air Quality Modeling:**

The AERMOD is actually a modeling system with three separate components:

- AERMOD (AERMIC Dispersion Model),
- AERMAP (AERMOD Terrain Preprocessor)
- AERMET (AERMOD Meteorological Preprocessor)

Special features of AERMOD include its ability to treat the vertical in homogeneity of the planetary boundary layer special treatment of surface releases, irregularly shaped area sources, a plume model for the convective boundary layer, limitation of vertical mixing in the stable boundary layer, and fixing the reflecting surface at the stack base.

The AERMET is the meteorological preprocessor for the AERMOD. Input data can come from hourly cloud cover observations, surface meteorological observations and twice-a-day upper air soundings. Output includes surface meteorological observations and parameters and vertical profiles of several atmospheric parameters.

The AERMAP is a terrain preprocessor designed to simplify and standardize the input of terrain data for the AERMOD. Input data include receptor terrain elevation data. Output includes, for each receptor, location and height scale, which are elevations used for the computation of airflow around hills.

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#### **4.4.1 Source Characterization**

A detailed listing of all emission sources and their corresponding modelling input release parameters and emission rates is listed in this report. A general description of how each source type was treated is presented below.

The emission Sources from the proposed operation are

##### **Point Sources:**

Point sources for mining operations typically include dust collectors, hot water heaters, and emergency generator(s). Since at the present project the following sources are anticipated.

1. Hydraulic excavator – 1.2 Cum Bucket Capacity (with Rock Breaker Attachment)
2. Jack Hammer 25.5mm Dia
3. Tipper
4. Tractor Mounted - Compressor
5. Drilling and excavation with Accessories

##### **Road Sources:**

A road network was developed to depict the anticipated haul truck routes and truck discharge locations during the mine operations. The anticipated emissions from the road sources and corresponding anticipated impact during the monitoring period of August- October 2022 emissions were estimated. Emissions due to haul road and general plant traffic on the unpaved road network were modelled as volume sources. The model volume source parameter for the haul roads initially utilized USEPA developed emission factors for hauling trucking. The haul road sources utilized source to source spacing of 6 meters along the simulated haul roads. The initial lateral dimension of the sources were set to 3 m were used as an input to replicate a 2 truck travel adjacent for a typical mining scenario.

The parameters considered for the hauling operation include the following,

- size of haul trucks commonly used
- degree of dust control/compaction of permanent haul roads

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### **Other fugitive particulate emission sources:**

Other fugitive particulate emission sources that were modelled as volume sources include the following:

- Fugitive emissions from trucks unloading at the primary crusher were represented by a single volume source. The release height was set to 0 meters (dump pocket is at grade level).
- Fugitive emissions due to wind erosion is not considered as the mining area is predominately rocky surface with minimal wind erosion. If a wind erosion is anticipated to occur, it would be localized.
- Fugitive emissions from transfer points were represented by single volume sources. The release heights for these sources were set to the actual height of the truck transfer process.

### **Post Project Scenario**

Emissions from operations will result from process equipment and mining operations. Process equipment was modeled at maximum capacity. Emissions from mining were based upon the mining rate and haul truck travel necessary to transport the stones and waste from the pit to the storage area.

Predicted maximum ground level concentrations considering micro meteorological data of August – October 2022 are superimposed on the maximum baseline concentrations obtained during the study period to estimate the post project scenario, which would prevail at the post operational phase. The overall scenario with predicted concentrations over the maximum baseline concentrations is shown in the following table along with isopleths.

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**Table 4-1 Emissions Factors for Uncontrolled mining**

<b>Activity</b>	<b>Emission Factor</b>		<b>References</b>	
Topsoil handling	Scraper	0.029 Kg TSPM/ average time between spray application	<b>USEPA (2008)</b>	Jose I. Huertas & Dumar A. Camacho & Maria E. Huertas, Standardized emissions inventory methodology for open-pit mining areas, Environmental Science Pollution Research, 2012.
	Bulldozing	15.048 kg PM10/ Hr excavation	<b>USEPA (2008)</b>	
	Loading	2.3237E-04 kg PM10/ average time between spray application	<b>USEPA (2006a)</b>	
	Haulage	0.69718 kg PM10/VKT	<b>USEPA (2006a) Cowherd (1988)</b>	
Rough stone mining	Wet drilling	8.00E-5 lbs PM10/ Ton produce	<b>EPA. August, 2004. Section 11.19.2, Crushed Stone Processing and Pulverized Mineral Processing. In: Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Fifth Edition, AP-42. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Research Triangle Park, North Carolina.</b>	
	Loading	1.00E-4 lbs PM10/ Ton produce		

#### **4.5 Noise Environment:**

<b>Aspect</b>	<b>Impact</b>	<b>Mitigation Measures</b>
<b><i>Loading and unloading, Transportation of the excavated mineral.</i></b>	Usage of Equipment and trucks used for transportation will generate noise.  Noise from the machinery can cause hypertension, high stress	Since the method of mining is opencast manual method, there will not be any major noise generation from machineries, even though, the equipment will be maintained in good running condition so that noise will be

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	<p>level, hearing loss, sleep disturbance etc due to prolonged exposure.</p> <p>Number of vehicles will be increased due to the proposed mining activity hence vehicle may collate which may result in unwanted sound and can also cause impact on human health like breathing and respiratory system, damage to lung tissue, influenza or asthma.</p>	<p>reduced to minimum possible level.</p> <ul style="list-style-type: none"> <li>• Awareness will be imparted to the workers once in six months about the permissible noise level and effect of maximum exposure to those levels. Adequate silencers will be provided in all the diesel engines of vehicles.</li> <li>• It will be ensured that all transportation vehicles carry a valid PUC Certificates.</li> <li>• Speed of trucks entering or leaving the mine will be limited to moderate speed (20km/hr) to prevent undue noise from empty vehicles.</li> <li>• It is proposed to plant 1000 Nos. of local species (Neem, Mandharai, Athi, Ashoka and Villam) to reduce the impact of noise in the study area. The development of green belts around the periphery of the mine will be implemented to attenuate noise.</li> <li>• The trucks will be diverted on two roads and a District road to avoid traffic congestion.</li> <li>• Health checkup camps will be organized once in six month.</li> <li>• Use of personal protective devices i.e., earmuffs and earplugs by workers, who are working in high noise generating areas.</li> </ul>
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		<ul style="list-style-type: none"> <li>• Provision of quiet areas, where employees can get relief from workplace noise.</li> </ul>
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#### 4.6 Biological Environment:

Aspect	Impacts	Mitigation Measures
Site Clearance	Loss of habitat due to site clearance which may lead to ecological disturbance.	The proposed mining lease is existing quarry and hence no site clearance is required. Only few shrubs and herbs like parthenium sp., prosopisjuliflora were present.
Planting of trees	Development of afforestation in the mine lease area will have a positive impact as the land was initially a barren.	7.5m safety distance will be provided all along the boundary of the mine lease area This will attract avifauna thus enhancing the existing ecological environment.

#### 4.7 Socio Economic Environment:

Aspect	Impact	Mitigation Measures
Proposed implementation of Mining activity	Land acquisition for the implementation of the project may result in loss of assets, which in return will make the PAP to shift, losing their normal routine and livelihood	The proposed project is a Patta land and where there are no human settlement within 300m radius. Hence the project does not involve Rehabilitation and Resettlement.
Loading and Transportation of the	The mining activities may cause dust emission, noise	No human activity is envisaged near the project site. The nearest

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mined out mineral	pollution thereby causing disturbance to the local habitat	human settlement is observed in, which is $\approx$ 0.3km away from the project site.
Grazing and Rearing activities in the nearby villages	The Grazing and rearing of local animals like Sheep, Goat and cows is observed in the nearby villages, which may be affected due to the project as the movement of the vehicles may affect/injure the animals	It is proposed to use graveled road and nearest paved road and preferred not to use unpaved roads. In addition to that, the speed of trucks will be limited to 20km/hr to avoid any accidents
Employment opportunity	The project will improve the livelihood of the local people	After the development of the proposed mine, it will improve the livelihood of local people and also provide the direct and indirect employment opportunities.
Corporate Environmental Responsibility	The proposed project will help in natural resource augmentation & Community resource development	As a part of CER, Rs. 2.5 Lakhs will be allocated. The detailed agenda, which is to be executed, has been framed. The salient features of the programme are as follows:  Provision of Desks, Benches, Computers, Painting of Class rooms in Varavanai Govt. middle School

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#### 4.8 Other Impacts:

<b>S. No.</b>	<b>Aspect</b>	<b>Impact</b>	<b>Mitigation measure</b>
1.	Risk due to the proposed mining	Accidents may occur in the mine area	Proper PPE kit (Safety jacket, Helmet, Safety Shoes, Gloves) etc will be provided to each and every employee in the mine lease concerning the safety of each labor
2.	Screening of Labors	Labors will be checked for health condition before employing them in mining activity	All the labors will be checked and screened for health before employing them. After employing them, periodical medical checkups will be held once in every six months



<b>Project Name</b>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<b>Chapter 5 Analysis of Alternatives</b>
<b>Project Proponent</b>	<i>Sekhar Mines</i>	
<b>Project Location</b>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

## 5 ANALYSIS OF ALTERNATIVES

### 5.1 General

Analysis of alternative is a significant aspect in planning and designing any project. Cost benefit analysis should be work out along with other parameters while choosing an alternative in such a way that the production is maximum and the mining operation is environment friendly and cost effective. The mine plan and mine closure plan has been approved by the Indian Bureau of Mines, Chennai prior to submission of the Form-1 and PFR.

ToR issued by the SEIAA-TN vide Letter No. SEIAA-TN/F.No.6557/SEAC/TOR-1168/2018 dated 30.05.2022. The study for alternative analysis involves in-depth examination of site and technology.

#### 5.1.1 Alternative Site

The proposed project is the mining of Limestone and is proposed after prospecting the area. In other words, these can be implemented in the mineral available zone.

#### 5.1.2 Analysis of Alternative Technology

The open cast mining could be manual/semi-mechanized/mechanized depending upon the geological and topographical setup of the mineral (ROM) to be won and the daily/annual targeted production Method of Mining.

**Table 5-1: Alternative for Technology and other Parameters**

<b>Sr. No.</b>	<b>Particular</b>	<b>Alternative Option 1</b>	<b>Alternative Option 2</b>	<b>Remarks</b>
1.	Technology	Opencast manual mining	Opencast mechanized mining	Opencast manual mining is preferred

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<b>Project Location</b>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

2.	Employment	Local employment.	Outsource employment	Local employment is preferred Benefits: Provides employment to local people along with financial benefits No residential building/housing is required.
3.	Labour transportation	Public transport	Private transport	Local labors will be deployed from nearby villages so they will either reach mine site by bicycle or by foot. Benefits: Cost of transportation of labors will be negligible
4.	Material transportation	Public transport	Private transport	Material will be transported through trucks/trolleys on the contract basis Benefits: It will give indirect employment.
5.	Water	Tanker Supplies	Ground water	Water will be supplied from approved vendors in nearby village.

<b>Project Name</b>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<b>Chapter 6</b> <b>Environmental</b> <b>Monitoring Program</b>
<b>Project Proponent</b>	<i>Sekhar Mines</i>	
<b>Project Location</b>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

## 6 Environmental Monitoring Program

### 6.1 General:

This chapter covers the planned environmental monitoring program. It also includes the technical aspects of monitoring the effectiveness of mitigation measures.

Monitoring is important to measure the efficiency of control measures. Post project monitoring of environmental parameters is of key importance to assess the status of environment. The monitoring program will serve as an indicator for identifying environmental degradation due to operation of the project and help in selection of appropriate mitigation measures to safeguard the environment.

Regular monitoring is as important as control of pollution since the efficacy of control measures can only be determined by monitoring. The project proponent has awarded **M/s. Ecotech Labs Pvt. Ltd** for carrying out the post project environmental monitoring (PPM) and timely compliance report submission to various regulatory authorities.

Therefore, regular monitoring programme of the environmental parameters is essential to take into account the changes in the environmental quality. The objectives of monitoring are to:-

- Verify effectiveness of planning decisions;
- Measure effectiveness of operational procedures;
- Confirm statutory and corporate compliance; and
- Identify unexpected changes.

**Table 6-1 :Environmental Monitoring Programme**

<b>Parameters</b>	<b>Sampling</b>	<b>Frequency</b>	<b>Location</b>
Air environment – Pollutants PM 10 PM 2.5 SO <sub>2</sub> NO <sub>x</sub> Lead in PM	5 locations	24 hourly twice a week 4 hourly. Twice a week, One non monsoon season 8 hourly, twice a week 24 hourly, twice a week	Project Site, Sri Murugan Temple Pappanampatty, Government Middle School, Marmathupatty , Indian Overseas Bank, Tharagampatti, Sri Kathir Narasinga Perumal Temple, Karungal
Noise	5 locations	24 hourly Once in 5	Project Site, Sri Murugan Temple

<b>Project Name</b>	<b>Varavanai Limestone Quarry- 1.90.5 Ha</b>	<b>Chapter 6 Environmental Monitoring Program</b>
<b>Project Proponent</b>	<b>Sekhar Mines</b>	
<b>Project Location</b>	<b>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</b>	

		locations	Pappanampatty, Government Middle School, Marmathupatty , Indian Overseas Bank, Tharagampatti, Sri Kathir Narasinga Perumal Temple, Karungal
Water (Ground water) <ul style="list-style-type: none"> <li>• pH</li> <li>• Temperature</li> <li>• Turbidity</li> <li>• Magnesium Hardness</li> <li>• Total Alkalinity</li> <li>• Chloride</li> <li>• Sulphate</li> <li>• Fluoride</li> <li>• Nitrate</li> <li>• Sodium</li> <li>• Potassium</li> <li>• Salinity</li> <li>• Total nitrogen</li> <li>• Total Coliforms</li> <li>• Fecal Coliforms</li> </ul>	5 locations	Once in 5 locations	Project Site, Sri Murugan Temple Pappanampatty, Government Middle School, Marmathupatty , Indian Overseas Bank, Tharagampatti, Sri Kathir Narasinga Perumal Temple, Karungal
Water (surface water) <ul style="list-style-type: none"> <li>• pH</li> <li>• Temperature</li> <li>• Turbidity</li> <li>• Magnesium Hardness</li> <li>• Total Alkalinity</li> <li>• Chloride</li> <li>• Sulphate</li> <li>• Fluoride</li> <li>• Nitrate</li> <li>• Sodium</li> </ul>	Sample from nearby lakes/river	One time Sampling	

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<ul style="list-style-type: none"> <li>• Potassium</li> <li>• Salinity</li> <li>• Total nitrogen</li> <li>• Total Coliforms</li> <li>• Fecal Coliforms</li> </ul>			
Soil (Organic matter, Texture, pH, Electrical Conductivity, Permeability, Water holding capacity, Porosity)	5 locations	Once in 5 locations	Project Site, Sri Murugan Temple Pappanampatty, Government Middle School, Marmathupatty, Indian Overseas Bank, Tharagampatti, Sri Kathir Narasinga Perumal Temple, Karungal
Ecology and biodiversity Study	Study area covering 5 km radius	One time Sampling	
Socio- Economic study (Population, Literacy Level, employment, Infrastructure like school, hospitals & commercial establishments)	Villages around 5 km radius	One time Sampling	

**Table 6-2 :Monitoring Schedule during Mining**

<b>S. No.</b>	<b>Attributes</b>	<b>Parameters</b>	<b>Frequency</b>	<b>Location</b>
1.	Ambient Air Quality at Mine Site & Fugitive Dust Sampling	PM 10 PM 2.5 SO <sub>2</sub> NO <sub>x</sub>	Once in a Month	Project Site

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2.	Ground water Quality	Drinking Water Parameters, As per IS -10500: 2012	Half yearly	Project Site
3.	Surface Water Quality	Class will be assessed as per the CPCB Guidelines	Half yearly	Project Site
4.	Soil Quality	(Organic matter, Texture, pH, Electrical Conductivity, Permeability, Water holding capacity, Porosity)	Half yearly	Project Site
5.	Noise Level Monitoring	Noise level in dB(A) Quarterly/half yearly	Half yearly	Project Site

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## 7 Additional Studies

### 7.1 General

This chapter covers the details of the additional studies viz. Risk assessment, Disaster Management, Public Hearing, Rehabilitation and resettlement.

### 7.2 Public Hearing:

As the proposed mining project falls under 1 (a), Category 'B1' Cluster , Violation.

Hence under 7 (III) of EIA Notification 2006 and its subsequent amendments, the project involves the Public Consultation and the same will be conducted under SPCB (TN) in Karur District. The proceedings of the same will be incorporated in the Final EIA Report.

### 7.3 Risk assessment:

For any industry to be successful, it should meet not only the production requirements, but also maintain the highest safety standards for all concerned. The industry has to identify the hazards, assess the associated risks and bring the risks to tolerable level on a continuous basis.

Mining is a hazardous operation and consists of considerable environmental, health and safety risk to miners. Safety risk assessment is the systematic identification of potential hazards in workplace as a first step to controlling the possible risk involved. Unsafe conditions in mines lead to a number of accidents and cause loss and injury to human lives, damage to property, interruption in production etc. Risk Assessment is a systematic method of identifying and analyzing the hazards associated with an activity and establishing a level of risk for each hazard.

The hazards cannot be completely eliminated, and thus there is a need to define and estimate an accident risk level possible to be presented either in quantitative or qualitative way. Because of the existing hazards of mining as an activity and the complexity of mining machinery and equipment and the associated systems, procedures and methods, it is not possible to be naturally safe. Regardless of how well the machinery or methods are designed, there will always be potential for serious accidents.

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It is not possible for an external agency to ensure the safety of an organization such as a mining company nor of the machinery or methods it uses.

Risk Assessment tools are used to help to prevent major hazards in mining industry, e.g., fire, explosion, wind-blast, outbursts, spontaneous combustion, roof instability, chemical and hazardous substances, etc., from injuring miners. The structured process associated with risk assessment helps to characterize the major hazards and evaluate engineering, management and work process factors that impact how a mine mitigates its highest risk. The degree of success is influenced by the existing risk management culture at the mining operation, identification of risk, the design of the risk assessment, the risk management, the character of the risk assessment process, the extent of the existing controls, and the quality of the new ideas.

### 7.3.1 Need for Risk Assessment

- Identify hazards—something with the potential to cause harm,
- Assess the likelihood, or probability, of harm arising from the hazard,
- Assess the severity of harm resulting from realization of the hazard,
- Combine assessments of likelihood and severity to produce an assessment of risk and
- Use the assessment of risk as an aid to decision making.

### 7.3.2 Objectives of Risk Assessment

- Identifying hazardous activities
- Assessment of risk level and severity in different operations
- Identification of control measures
- Setting monitoring process
- Reduce the impact of mishaps of all kinds
- Reduce the inherent potential for major accidents.

### 7.3.3 Different terminologies associated with Risk Assessment

Following are some of the important terminologies involved in hazard identification and risk analysis:

**Harm:** Physical injury or damage to the health of peoples either directly or indirectly as a result of damage to property or to the environment.



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**Hazard:** Hazard is a situation that poses a level of threat to life, health, property or environment. Most hazards are dormant with only a theoretical risk of harm however once a hazard becomes active it can create emergency situation.

**Hazardous Situation:** A circumstance in which a person is exposed to a hazard

**Hazardous Event:** A hazardous situation which results in harm

**Accident:** An accident is a specific, unidentifiable, unexpected, unusual and unintended eternal action which occurs in a particular time and place with no apparent and deliberate cause but with marked effect.

**Risk:** Risk concerns the deviation of one or more results of one or more future events from their expected value.

**Tolerable Risk:** Risk which is accepted in a given context based on the current values of society.

**Protective Measure:** The combination of risk reduction strategies taken to achieve at least the tolerable risk. Protective measures include risk reduction by inherent safety, protective devices, and personal protective equipment, information for use and installation and training.

**Severity:** Severity is used for the degree of something undesirable.

#### 7.3.4 Different forms of Injury

- Serious Bodily Injury means any injury which involves the permanent loss of any part or section of the body or the permanent loss of sight or hearing or any permanent physical incapability or the fracture of any bone or one or more joint or bone of any phalanges of hand or foot.
- Reportable Injury means any injury other than any serious bodily injury, which involves the enforced absence of injured person from work for a period of 72 hours or more.
- Minor Injury means any injury which results in enforced absence from work of the person exceeding 24hrs and less than 72 hours.

#### 7.3.5 Type of Hazard Identification and Risk Analysis

There are three types of hazard identification and risk assessments:

- Baseline Hazard Identification and Risk Analysis,
- Issue-based Hazard Identification and Risk Analysis and

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- Continuous Hazard Identification and Risk Analysis

They are all inter-related and form an integral part of a management system. A brief description of each of the three types of Hazard Identification and Risk Analysis is given below:

**Baseline Hazard Identification and Risk Analysis:**

The purpose of conducting a baseline HIRA is to establish a risk profile or set off risk profiles. It is used to priorities action programme for issue-based risk assessments.

**Issue-based Hazard Identification and Risk Analysis:**

The purpose of conducting an issue-based HIRA is to conduct a detailed assessment study that will result in the development of action plans for the treatment of significant risk.

**Continuous Hazard Identification and Risk Analysis:**

The purpose of conducting continuous Hazard Identification and Risk Analysis is to:

- Identify Operational health and safety hazards with the purpose of immediately treating significant risks.
- Gather information to feed back to issue-based Hazard Identification and Risk Analysis.
- Gather information to feed back to baseline Hazard Identification and risk Analysis.

The different steps of risk assessment procedure are as given below:

**STEP 1: HAZARD IDENTIFICATION:**

The purpose of hazard identification is to identify and develop a list of hazards for each job in the organization that are reasonably likely to expose people to injury, illness or disease if not effectively controlled. Workers can then be informed of these hazards and controls put in place to protect workers prior to them being exposed to the actual hazard.

**STEP 2: RISK ASSESSMENT:**

Risk assessment is the process used to determine the likelihood that people exposed to injury, illness or disease in the workplace arising from any situation identified during the hazard identification process prior to consideration or implementation of control measures.

Risk occurs when a person is exposed to a hazard. Risk is the likelihood that exposure to a hazard will lead to injury or health issues. It is a measure of probability and potential severity of harm or loss.

**STEP 3: RISK CONTROL:**

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Risk control is the process used to identify, develop, implement and continually review all practicable measures for eliminating or reducing the likelihood of an injury, illness or diseases in the workplace.

**STEP 4: IMPLEMENTATION OF RISK CONTROLS:**

All hazards that have been assessed should be dealt in order of priority in one or more of the following hierarchy of controls.

The most effective methods of control are:

1. Elimination of hazards
2. Substitute something safer
3. Use engineering/design controls
4. Use administrative controls such as safe work procedures
5. Protect the workers i.e. by ensuring competence through supervision and training ,etc.

Each measure must have a designated person and date assigned for the implementation of controls. This ensures that all required safety measures will be completed.

**7.3.6 Risk Analysis**

The risk assessment portion of the process involves three levels of site evaluation:

- 1) Initial Site Evaluation,
- 2) Detailed Site Evaluation,
- 3) Priority Site Investigations and Recommendations.

The risk assessment criteria used for all levels of site evaluation take into account two basic factors:

- The existing site conditions
- The level of the travelling public's exposure to those conditions.

The Initial Site Evaluation and Detailed Site Evaluation both apply weighted criteria to the existing information and information obtained from one site visit. The Initial Site Evaluation subdivides the initial inventory listing of sites into 5 risk assessment site groups. The Detailed Site Evaluation risk assessment is then performed on each of the three highest risks site groups in order of the group priority level of risk.

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The result of the Detailed Site Evaluation process is a prioritized listing of the sites within each of the three highest risk site groups.

Risk analysis is done for:

- Forecasting any unwanted situation
- Estimating damage potential of such situation
- Decision making to control such situation
- Evaluating effectiveness of control measures

## **7.4 Disaster Management Plan:**

### **7.4.1 Objective**

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. For effective implementation of the disaster management plan, it should be widely circulated and personnel training through rehearsals/drills. 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:

- Effect the 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;
- Identify any dead;
- Provide for the needs of relatives;
- Provide authoritative information to the news media;
- 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 effect, it is to optimize operational efficiency to rescue rehabilitation and render medical help and to restore normalcy.

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**EMERGENCY ORGANIZATION (EO):**

It is recommended to setup an emergency organization. A senior executive (mine manager) who has control over the affairs of the mine would be heading the emergency organization. He would be designated as site controller. As per the general organization chart, in the mines, the mines manager would be designated as the Incident Controller(IC). The incident controller would be reporting to the site controller. Each incident controller, for him-self, organizes a team responsible for controlling the incidence with the personnel under his control. Shift In-charge would be the reporting officer, who would bring the incidence to the notice of the incidence controller and site controller. Emergency coordinator’s would be appointed who would undertake the responsibilities like firefighting, rescue, rehabilitation, transport and provide essential and support services. For this purposes, Security in-charge, personnel department, essential services personnel would be engaged. All these personnel would be designated as key personnel.

In each shift, electrical supervisor, electrical fitters, pump house in-charge and other maintenance staff would be drafted for emergency operations. In the event of power or communication system failure, some of staff members in the mine offices would be drafted and their services would be utilized as messengers for quick passing of communications. All these personnel would be declared as essential personnel.

**EMERGENCY COMMUNICATION (EC):**

Whoever notices an emergency situation such as fire, growth of fire etc. would inform his immediate superior and Emergency Control Center (ECC). The person on duty in the emergency control center would appraise the site controller. Site Controller verifies the situation from the incident controller of that area or the Shift In-charge and takes a decision about an impending on site emergency. This would be communicated to the entire incident controllers, emergency coordinator’s. Simultaneously, the emergency warning system would be activated on the instructions of the site controller.

**EMERGENCY RESPONSIBILITIES:**

The responsibilities of the key personnel are appended below:

**Site Controller:**

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On receiving information about emergency he would rush to emergency control center and take charge of ECC and the situations which all are given below:

Assesses the magnitude of the situation on the advice of incident controller and decides;

- Whether the affected area needs to be evacuated;
- Whether personnel who are at assembly points need to be evacuated;
- Declares Emergency and orders for operation of emergency siren;
- Organizes announcement by public address system about location of emergency;
- Assesses which areas are likely to be affected, or need to be evacuated or are to be alerted;
- Maintains a continuous review of possible development and assesses the situation in consultation with Incident Controller and other Key Personnel as to whether shutting the mine operation required and if evacuation of persons is required;
- Directs personnel for Rescue, rehabilitation, transport, fire, brigade, medical and other designated mutual support systems locally available, for meeting emergencies;
- Controls evacuation of affected areas, if the situation is likely to go out of control or effects are likely to go beyond the mine boundary, informs to District Emergency Authority, Police, Hospital and seeks their intervention and help;
- Informs the statutory authorities;
- Gives a public statement if necessary;
- Keeps record of chronological events and prepares an investigation report and preserve evidence; and
- On completion of On Site Emergency and restoration of normalcy, declares all clear and orders for all clear warning.

**Incident Controller:**

Assembles the incident control team;

- Directs operations within the affected areas with the priorities for safety to personnel; minimize damage to property and environment and minimize the loss of materials;
- Directs the shutting down the operations and areas likely to be adversely affected by the emergency;

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- Ensures that all key personnel help is sought;
- Provides advice and information to the Fire and Security Officer and the Local Fire Services as and when they arrive;
- Ensures that all non-essential workers/staff of the affected areas evacuated to the appropriate assembly points, and the areas are searched for casualties;
- Has regard to the need for preservation of evidence so as to facilitate any inquiry into the cause and circumstances which caused or escalated the emergency;
- Co-ordinates with emergency services at the site;
- Provides tools and safety equipment to the team members;
- Keeps in touch with the team and advise them regarding the method of control to be used; and
- Keeps the Site Controller of Emergency informed of the progress being made.

#### **Emergency Coordinator – Rescue, Fire Fighting**

- On knowing about emergency, rushes to ECC;
- Helps the incident Controller in containment of the emergency;
- Ensure fire pumps in operating conditions and instructs pump house operator to ready for any emergency with standby arrangement;
- Guides the fire fighting crew i.e. firemen, trained mine personnel and security staff;
- Organizes shifting the fire fighting facilities to the emergency site, if required;
- Takes guidance of the Incident Controller for firefighting as well as assesses the requirements of outside help;
- Arranges to control the traffic at the incident area;
- Directs the security staff to the incident site to take part in the emergency operations under his guidance and supervision;
- Evacuates the people in the mine or in the nearby areas as advised by Site Controller;
- Searches for casualties and arranges proper aid for them;
- Assembles search and evacuation team;
- Arranges for safety equipment for the members of this team;
- Decides which paths the evacuated workers should follow; and

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- Maintains law and order in the area, and if necessary seeks the help of police.

**Emergency Coordinator** – Medical, Mutual Aid, Transport and Communication. In the event of failure of electric supply and thereby internal telephone, sets up communication point and establishes contact with the Emergency Control Center (ECC).

- Organizes medical treatment to the injured and if necessary will shift the injured to nearby hospitals;
- Mobilizes extra medical help from outside, if necessary;
- Keeps a list of qualified first aiders of the mines and seek their assistance;
- Maintains first aid and medical emergency requirements;
- Makes sure that all safety equipment are made available to the emergency team;
- Assists Site Controller with necessary data and to coordinate the emergency activities;
- Assists Site Controller in updating emergency plan, organizing mock drills verification of inventory of emergency facilities and furnishing report to Site Controller;
- Maintains liaison with Civil Administration;
- Ensure availability of canteen facilities and maintenance of rehabilitation center;
- He will be in liaison with Site Controller/Incident Controller;
- Ensure transportation facility;
- Ensures availability of necessary cash for rescue/rehabilitation and emergency expenditure;
- Controls rehabilitation of affected areas on discontinuation of emergency; and
- Makes available diesel/petrol for transport vehicles engaged in emergency operation.

**Emergency Coordinator – Essential Services:**

- He would assist Site Controller and Incident Controller;
- Maintains essential services like Diesel Generator, Water, Fire Water, power supply for lighting;
- Gives necessary instructions regarding emergency electrical supply, isolation of certain sections etc. to shift in-charge and electricians; and
- Ensures availability of adequate quantities of protective equipment and other emergency materials, spares etc.



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### **GENERAL RESPONSIBILITIES OF EMPLOYEES DURING AN EMERGENCY:**

During an emergency, it becomes more enhanced and pronounced when an emergency warning is raised, the workers in-charge, should adopt safe and emergency shut down and attend any prescribed duty as essential employee. If no such responsibility is assigned, he should adopt a safe course to assembly point and await instructions. He should not resort to spread panic. On the other hand, he must assist emergency personnel towards objectives of Disaster Management Plan.

### **EMERGENCY FACILITIES:**

**Emergency Control Center (ECC):** The Mine Office Block is identified as Emergency Control Center. It would have external Telephone, Fax, and Telex facility. All the Site Controller/ Incident Controller Officers, Senior Personnel would be located here. Also, it would be an elevated place.

The following information and equipment are to be provided at the Emergency:

#### **Control Center (ECC):**

- Intercom, telephone;
- Safe contained breathing apparatus;
- Fire suit/gas tight goggles/gloves/helmets;
- Hand tools, wind direction/velocities indications;
- Public address megaphone, hand bell, telephone directories;
- Mine layout, site plan;
- Emergency lamp/torch light/batteries;
- Plan indicating locations of hazard inventories, sources of safety equipment, work road plan, assembly points, rescue location vulnerable zones, escape routes;
- Hazard chart;
- Emergency shut-down procedures;
- Nominal roll of employees;
- List of key personnel, list of essential employees, list of Emergency Coordinators;
- Duties of key personnel;
- Address with telephone numbers and key personnel, emergency coordinator, essential employees; and

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- Important address and telephone numbers including Government agencies, neighbouring industries and sources of help, outside experts, population details around the Mine.

**Assembly Point:**

Number of assembly depending upon the mine location would be identified wherein employees who are not directly connected with the disaster management would be assembled for safety and rescue. Emergency breathing apparatus, minimum facilities like water etc. would be organized. In view of the size of mine, different locations should be ear marked as assembly points. Depending upon the location of hazard, the assembly points are to be used.

**Emergency Power Supply:**

Mine facilities are connected to power supply from the SEB. In the event of any grid supply failure, Diesel Generator will be provided at the mine, which is operated as soon as any power failure occurs. Thus water pumps, mine lighting and emergency control center, administrative building and other auxiliary services are connected to emergency power supply. In all the blocks flame proof type emergency lamps would be provided.

**Fire Fighting Facilities:**

First aid firefighting equipment suitable for emergency should be maintained in each operation areas of the mine as per statutory requirements.

**Location of Wind Sock:**

On the top of the administration block, windsocks would be installed to indicate direction of wind for emergency escape.

**Emergency Medical Facilities:**

Stretchers, gas masks and general first aid materials for dealing with chemical burns, fire burns etc. would be maintained in the medical center as well as in the emergency control room. Private medical practitioners help would be sought. Government hospital would be approached for emergency help. First aid facilities would be augmented. Names of medical personnel, medical facilities in the area would be prepared and updated. Necessary specific medicines for emergency treatment of burns patients and for those affected by toxicity would be maintained.

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Breathing apparatus and other emergency medical equipment would be provided and maintained. The help of nearby industrial management's in this regard would taken on mutual support basis.

**Ambulance:**

An ambulance with driver availability in all the shifts, emergency shift vehicle would be ensured and maintained to transport injured or affected persons. Number of persons would be trained in first aid so that, in every shift first aid personnel would be available.

**EMERGENCY ACTIONS:**

**Emergency Warning:**

Communication of emergency would be made familiar to the personnel inside the mine and people outside. An emergency warning system would be established.

**Evacuation of Personnel:**

In the event of an emergency, unconnected personnel have to escape to assembly point. Operators have to take emergency shutdown procedure and escape. Time Office maintains a copy of deployment of employees in each shift. If necessary, persons can be evacuated by rescue teams.

**All Clear Signal:**

Also, at the end of an emergency, after discussing with Incident Controllers and Emergency coordinators, the Site Controller orders an all clear signal. When it becomes essential, the site controller communicates to the district emergency authority, police and fire service personnel regarding help required or development of the situation into an Off-Site Emergency

**GENERAL:**

**Employee Information:**

During an emergency, employees would be warned by raising siren in specific pattern. Employees would be provided with information related to fire hazards, antidotes and first aid measures. Those who would designate as key personnel and essential employees should be given training to emergency response.

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**Co-ordination with Local Authorities:**

Keeping in view of the nature of emergency, two levels of coordination are proposed. In the case of an On Site Emergency, resources within the organization would be mobilized and in the event extreme emergency local authorities help should besought.

In the event of an emergency developing into an offsite emergency, local authority and District emergency Authority (normally the Collector) would be appraised and under his supervision, the Off Site Disaster Management Plan would be exercised. For this purpose, the facilities that are available locally, i.e. medical, transport, personnel, rescue accommodation, voluntary organizations etc. would be mustered. Necessary rehearsals and training in the form of mock drills should be organized.

**Mutual Aid:**

Mutual aid in the form of technical personnel, runners, helpers, special protective equipment, transport vehicles, communication facility etc. should be sought from the neighbouring industrial management's.

**Mock Drills:**

Emergency preparedness is an important aspect of planning in Industrial Disaster Management. Personnel would be trained suitably and prepared mentally and physically in emergency response through carefully planned, simulated procedures. Similarly, the key personnel and essential personnel should be trained in the operations.

**Important Information**

Important information such names and addresses of key personnel, essential employees, medical personnel, transporters address, address of those connected with Off Site Emergency such as Police, Local Authorities, Fire Services, District Emergency Authority should be prepared and maintained.

**Care and maintenance during temporary discontinuance:**

In case, of any temporary closure or discontinuous of mining operations, the following steps are proposed.

- a. Notice to be served to all concerned authority.
- b. The mining pit area shall be covered by temporary fencing.

<b>Project Name</b>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<b>Chapter 7 Additional Studies</b>
<b>Project Proponent</b>	<i>Sekhar Mines</i>	
<b>Project Location</b>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

c. Watchman will be posted round the clock to prevent any unauthorized or inadvertent entry of public.

d. Works on stabilization of dumps to provided vegetal cover would be taken up.

e. Construction of garland or retaining walls around the dumps will be attempted.

f. Watering of plants in the afforested area will be considered.

g. All safety precautions shall be taken care off as per rule.

## **7.5 Natural Resource Conservation**

There are no natural resources within the premises. The conservation strategies for energy will be followed in the proposed mine lease area. The pollutants of the mine will be minimized by adopting appropriate mitigation measures as mentioned in Chapter 5. No surface runoff from the project site will be let into the any water body.

## **7.6 Reclamation and Rehabilitation:**

It is an existing mining lease applied area. Reclamation and rehabilitation will be carried out at the end of the life of the mine. The mined out pit is proposed to be used as small reservoir for storing much needed rainwater at the end of the life of the mine when the mine reaches its ultimate pit limit. Since the surrounding areas are dry and experiences low rainfall, any amount of storage of water will be beneficial for recharging the groundwater in the adjacent areas. Along the permanent roads and vacant places, afforestation is being carried out at present. Before closure of the mine, a parapet wall will be constructed to prevent inadvertent entry of cattle and human beings. A watchman (Security guard) will be posted around the clock to prevent inherent entry of public and cattle which are growing in and around the area.

<b>Project Name</b>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<b>Chapter 8</b> <b>Project Benefits</b>
<b>Project Proponent</b>	<i>Sekhar Mines</i>	
<b>Project Location</b>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

## 8 Project Benefits

### 8.1 General

This chapter covers the benefits accruing to the locality, neighborhood, region and nation as a whole. It brings out the details of benefits by way of improvements in the physical infrastructure, social infrastructure, employment potential and other tangible benefits.

#### 8.1.1 Physical Benefits

The opening of the proposed project will enhance the following physical infrastructure facilities in the adjoining areas:

- a. **Market:** Generating useful economical resource for construction. Due to demand supply chain, excavated mineral will sold in the market in the affordable price.
- b. **Infrastructure:** The excavated Limestone will be used as raw material for the production of cement in cement factories.
- c. **Enhancement of Green Cover & Green Belt Development:** As a part of reclamation plan, native tree species will be planted along the safety boundary of the mine lease area. A suitable combination of trees that can grow fast and also have good leaf cover will be adopted to develop the green belt. It is proposed to plant 1000 numbers of native species along with some fruit bearing and medicinal trees during the mining plan period.

### 8.2 Social Benefits

The mining in the area will create rural employment. During site visit, it has been observed that the economic conditions of the villages in the study area is quite normal. After the development of the proposed mine, it will improve the livelihood of local people and also provide the indirect employment opportunities.

As a part of CER, Rs. 2,50,000 will be allocated. The detailed agenda, which is to be executed has been framed. The salient features of the programme are as follows:

Provision of Desks, Benches, Computers, Painting of Class rooms in Varavanai Govt. middle

<b>Project Name</b>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<b>Chapter 8 Project Benefits</b>
<b>Project Proponent</b>	<i>Sekhar Mines</i>	
<b>Project Location</b>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

School

### 8.3 Project Cost Budget:

**Table 8-1 Budget for the proposed project**

S.No	Description	Cost (Rs)
1.	Land Cost	7,00,000
2.	Operational Cost	3,35,080
<b>Total</b>		<b>10,35,080</b>

**Total Project Cost: Rs. 10,35,080/- (Eight-Seven Lakhs Fifty-Four Thousand and Five Hundred and Ninety- Four Rupees Only)**

**Table 8-2 Budgetary Allocation for EMP during Mining**

Categories	Mitigation Measure	Provision for Implementation	Capital Cost	Recurring Cost
			(Rs)	
Air Environment	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	19050	19050
	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	200000	20000
	Air Quality will be regularly monitored as per norms within ML area	Yearly Compliance as per CPCB norms	0	10000
	Muffle blasting – To control fly rocks during blasting	Blasting face will be covered with sand bags / steel mesh / old tyres / used conveyor belts	0	0

<b>Project Name</b>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<b>Chapter 8 Project Benefits</b>
<b>Project Proponent</b>	<i>Sekhar Mines</i>	
<b>Project Location</b>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

Categories	Mitigation Measure	Provision for Implementation	Capital Cost	Recurring Cost
			(Rs)	
	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	72500	7250
	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	25000	10000
	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	38100
	Installing wheel wash system near gate of quarry	Installation + Maintenance + Supervision	40000	10000
	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	Provision made in OHS part	0	0



<b>Project Name</b>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<b>Chapter 8 Project Benefits</b>
<b>Project Proponent</b>	<i>Sekhar Mines</i>	
<b>Project Location</b>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

Categories	Mitigation Measure	Provision for Implementation	Capital Cost	Recurring Cost
			(Rs)	
	site at the time of charging.			
	Ambient Noise will be regularly monitored as per norms within ML area	Yearly Compliance as per CPCB norms	0	10000
	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 / Competent Person	0	0
	Provision for Portable blaster shed	Installation of Portable blasting shelter	0	0
	NONEL Blasting will be practiced to control Ground vibration and fly rocks	Rs. 30/- per 6 Tonnes of Blasted Material	0	0
Water Environment	Water Environment	Provision for garland drain @ Rs. 10,000/- per Hectare with maintenance of Rs. 5,000/- per annum	19050	5000
Waste Management	Waste management (Spent Oil, Grease etc.,)	Provision for domestic waste collection and disposal through authorized agency	10000	5000
		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
Implementation of EC, Mining Plan & DGMS Condition	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	7000	1000

<b>Project Name</b>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<b>Chapter 8 Project Benefits</b>
<b>Project Proponent</b>	<i>Sekhar Mines</i>	
<b>Project Location</b>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

Categories	Mitigation Measure	Provision for Implementation	Capital Cost	Recurring Cost
			(Rs)	
	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)	28000	7000
	Health check up for workers will be provisioned	IME & PME Health check up @ Rs. 1000/- per employee	0	7000
	First aid facility will be provided	Provision of 2 Kits per Hectare @ Rs. 2000/-	0	3810
	Mine will have safety precaution signages, boards.	Provision for signages and boards made	10000	2000
	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	381000	10000
Implementation of EC, Mining Plan & DGMS Condition	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	95250	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 (1st Class / 2nd 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	40000
Greenbelt development	Green belt development - 1000 trees for 1.90.5 hectare (400 Inside Lease Area & 600 Outside Lease	Site clearance, preparation of land, digging of pits / trenches, soil amendments, transplantation of saplings @ 200 per plant (capital) for	80000	12000

<b>Project Name</b>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<b>Chapter 8 Project Benefits</b>
<b>Project Proponent</b>	<i>Sekhar Mines</i>	
<b>Project Location</b>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

Categories	Mitigation Measure	Provision for Implementation	Capital Cost	Recurring Cost
			(Rs)	
	Area)	plantation inside the lease area and @ 30 per plant maintenance (recurring)		
		Avenue Plantation @ 300 per plant (capital) for plantation outside the lease area and @ 30 per plant maintenance (recurring)	180000	18000
<b>Total</b>			<b>12,01,850</b>	<b>2,72,460</b>
<b>Total Cost</b>			<b>14,74,310</b>	

Year	Cost (@ 5% per year inflation adjustment) in Rs.
1 <sup>st</sup> Year	14,74,310
2 <sup>nd</sup> Year	2,86,083
3 <sup>rd</sup> Year	3,00,387
<b>Total</b>	<b>20,60,780</b>

**The total EMP Costing for 3 years- 20,60,780/-**

<i>Project Name</i>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<i>Chapter 8 Project Benefits</i>
<i>Project Proponent</i>	<i>Sekhar Mines</i>	
<i>Project Location</i>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

## 9 Environmental Cost Benefit Analysis

Environmental Cost Benefit Analysis is not recommended.

<b>Project Name</b>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<b>Chapter 10</b> <b>Environmental Management Plan</b>
<b>Project Proponent</b>	<i>Sekhar Mines</i>	
<b>Project Location</b>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

## 10 Environmental Management Plan

### 10.1 Introduction

This chapter comprehensively presents the Environmental Management Plan (EMP), which includes the administrative and technical setup, summary matrix of EMP, the cost involved to implement the EMP, during various Mining activities and provisions made towards the same in the cost estimates of project. This chapter describes the proposed monitoring scheme as well as inter-organizational arrangements for effective implementation of the mitigation measures.

### 10.2 Subsidence

Mining will be carried out by opencast manual method of mining as per mining plan approved by The Indian Bureau of Mines, Chennai. Subsidence/slope failures are not envisaged because there are no loose strata overlying the deposit (mineral to be excavated). The Limestone, totally seven benches will be 2.5 m height and 2.5 m width with 60° slope for next four years only, Moreover, all safety standards/safeguards will be implemented as per guidelines prescribed by Director General of Mines Safety.

### 10.3 Mine Drainage

#### **Minimum and maximum depth of water table based on observations from nearby wells and water bodies:**

The lease area is a flat terrain; the average elevation is about 192 m above MSL. Rain water finds its natural course. The water table is touched at a depth of 50m in summer and at 40m in NE monsoon. The water table fluctuation is verified by observing the water levels in the above seasons in the nearby wells. During the mining of fourth bench, it may be necessary to pump out water. A 5 HP pump can easily deal rain water and seepage water and keep the mine dry. The pumped out water will be drained out from the Lease boundary.

#### **Maximum and minimum depth of Workings**

<b>Project Name</b>	<b>Varavanai Limestone Quarry- 1.90.5 Ha</b>	<b>Chapter 10</b> <b>Environmental Management Plan</b>
<b>Project Proponent</b>	<b>Sekhar Mines</b>	
<b>Project Location</b>	<b>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</b>	

It is an existing mining area for Mining Lease. It is proposed to carry out the mining operations to a depth of about only 13 m. The water table is touched at a depth of 50m in summer and at 40m in NE monsoon.

Depth of the pit at present (maximum): 13 m

Average Depth proposed during the mining plan period: 13 m

**Quantity and quality of water likely to be encountered, the pumping arrangements and places where the mine water is finally proposed to be discharged:**

The mining operation for the mining plan period is proposed to restrict well above the water table. Hence, the water is not likely to encounter during the course of mining operations. The water table is found at the depth of 50m in summer and at 40m in NE monsoon. The water table fluctuation is verified by observing the water level in the nearby wells.

**Arrangements for arresting solid wash off**

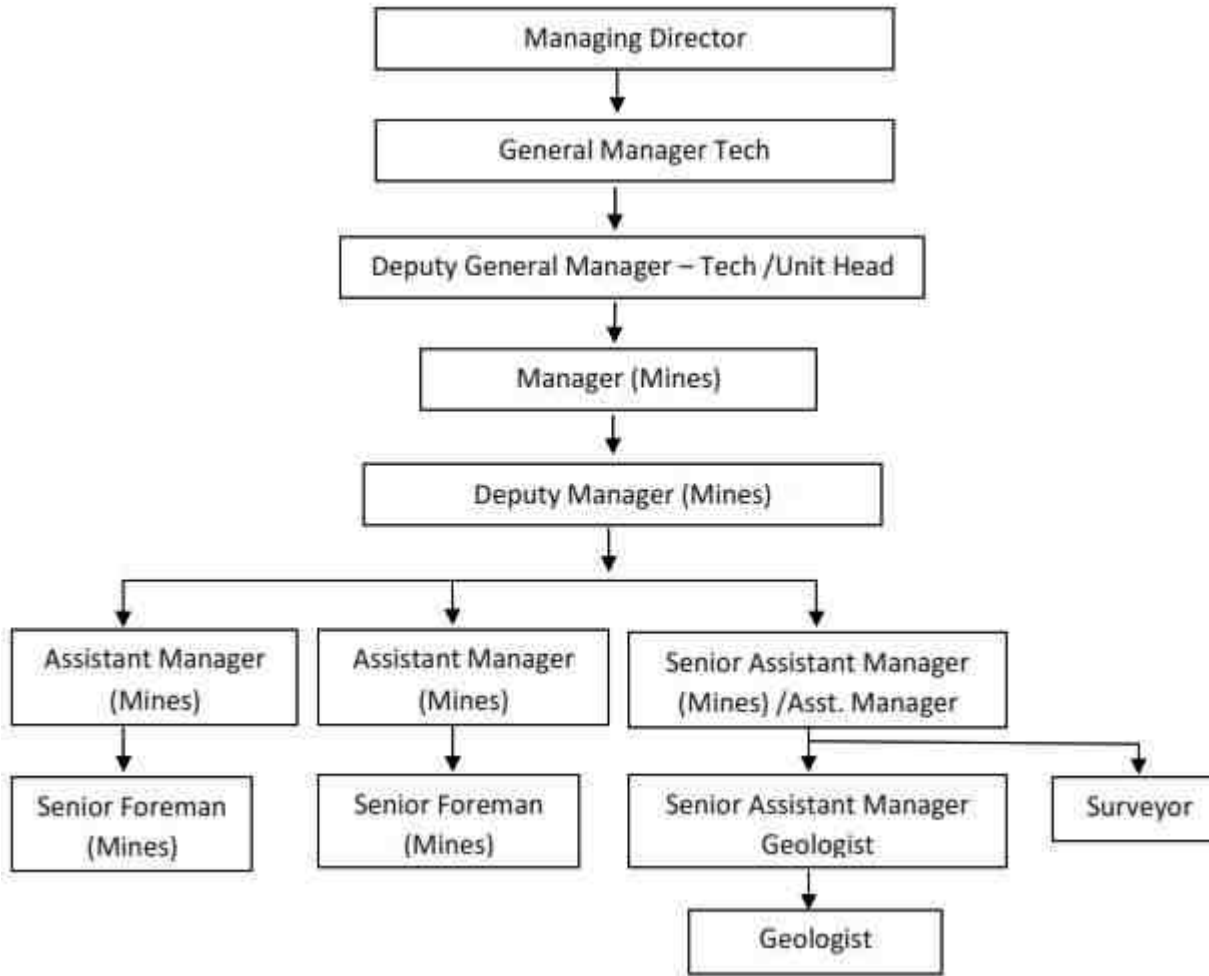
The rain water flow towards catchment area is not flowing through the area applied for mining lease as garland drains are proposed to be constructed around the area applied for mining lease. Hence, solid wash off will not occur.

**10.3.1 Administrative and Technical Setup**

The Environment Management Plan (EMP) will consist of all mitigation measures for each component of the environment due to the activities increased during mining operation to minimize adverse environmental impacts resulting from the activities of the project.

To carry out the above activities, Thiru. S. Sekhar, owner of Sekhar Mines will work in association with M/s. Eco tech Labs Pvt Ltd.

<b>Project Name</b>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<b>Chapter 10</b> <b>Environmental Management Plan</b>
<b>Project Proponent</b>	<i>Sekhar Mines</i>	
<b>Project Location</b>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	



<b>Project Name</b>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<b>Chapter 10</b> <b>Environmental Management Plan</b>
<b>Project Proponent</b>	<i>Sekhar Mines</i>	
<b>Project Location</b>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

**Table 10-1 :Impacts and mitigation measures**

<b>S. No.</b>	<b>Impacts on Environment</b>	<b>Activity /Aspect</b>	<b>Anticipated impacts</b>	<b>Mitigation measures</b>
1.	Air	Fugitive Emission	During mining operation, fugitive dust and other air pollutants like particulate matter (PM10 & PM 2.5) will be generated.	<ul style="list-style-type: none"> <li>Planting of trees along the safety distance of the Mine Lease Area</li> <li>Water will be sprinkled in the site as dust suppression measure.</li> </ul>
2.	Water	Wastewater Generation	Improper management of Domestic wastewater in the Mine lease may create unhygienic conditions in the site thereby causing health impacts to the labors	<ul style="list-style-type: none"> <li>Provision of urinals/Latrines along with septic tank followed by soak pit arrangement will be provided in the Mine Lease area for the proper management of wastewater</li> </ul>
3.	Noise	Mining activities like drilling, blasting, loading and transportation	Noise from the machinery can cause hypertension, high stress level, hearing loss, sleep disturbance etc due to prolonged exposure.	<ul style="list-style-type: none"> <li>Use of personal protective devices i.e., earmuffs and earplugs by workers, who are working in high noise generating areas</li> </ul>
4.	Land	Improper management of Storm water Runoff	Storm water Runoff may result in Soil Erosion	<ul style="list-style-type: none"> <li>Garland drainage of 1m x 1m will be provided to avoid storm water run-off.</li> </ul>
4.	Social Responsibility	Mining workers	Unhygienic site sanitation facilities may cause health damage to workers.	The objective is to ensure health and safety of the workers with effective provisions for the basic facilities of sanitation, drinking water, safety of equipments or machinery etc. The following will be



<b>Project Name</b>	<b>Varavanai Limestone Quarry- 1.90.5 Ha</b>	<b>Chapter 10</b> <b>Environmental Management Plan</b>
<b>Project Proponent</b>	<b>Sekhar Mines</b>	
<b>Project Location</b>	<b>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</b>	

				<p>done in the site</p> <ul style="list-style-type: none"> <li>✓ By complying with the safety procedures, norms and guidelines (as applicable) as outlined in the National Building Code of India, Bureau of Indian Standards.</li> <li>✓ Provide adequate number of decentralized latrines and urinals</li> <li>✓ Providing Septic tank along with Soak pit arrangement</li> <li>✓ Providing First Aid room, conducting frequent health checkups to labor and conducting free medical camps</li> <li>✓ Providing safety helmet, Gloves, Jacket &amp; Boots</li> <li>✓ Providing measures to prevent fires. Fire fighting extinguishers and buckets of sand will be provided in the construction site</li> </ul>
6.	Building materials resource conservation	Building Material consumption	Use of farfetched construction materials than the locally available construction materials may lead to over exploitation of natural resources & increase in carbon footprint.	<ul style="list-style-type: none"> <li>• Use of locally available construction materials.</li> </ul>

<b>Project Name</b>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<b>Chapter 12 Disclosure of Consultant</b>
<b>Project Proponent</b>	<i>Sekhar Mines</i>	
<b>Project Location</b>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

## 11 Summary & Conclusion

This chapter summarizes the overall justification for implementation of the project and explains how the potential impacts are mitigated.

### 11.1 Introduction

The individual mine lease area is 1.90.5 Ha of Varavanai Limestone Quarry located at S.F. No. 833/4B, 836 (P), 843/2 of Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District, Tamil Nadu. The area lies in the latitude of N 10° 45' 10.63" and longitude of E 78° 13' 49.84". The area is marked in the survey of India Topo sheet No. 58 J/2.

### 11.2 Project Overview

**Table 11-1 : Project Overview**

<b>S. No.</b>	<b>Description</b>	<b>Details</b>
1	Project Name	Varavanai Limestone Quarry of Sekhar Mines
2	Proponent	Thiru. S. Sekhar, owner of Sekhar Mines
3	Mining Lease Area Extent	1.90.5 Ha
4	Location	833/4B, 836 (P), 843/2 of Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District, Tamil Nadu
5	Latitude	N 10° 45' 10.63"
6	Longitude	E 78° 13' 49.84"
7	Topography	Flat terrain
8	Site Elevation above MSL	≈ 192 m from above MSL
9	Topo Sheet No.	58 J/2
10	Minerals of Mine	Limestone
11	Proposed production of Mine	Limestone capacity : ROM : 49,041 Tonnes Limestone @ 60% - 29,425 Tonnes Mineral Rejects @ 40% - 19,616 Tonnes
12	Ultimate depth of Mining	13 m below ground level (1 m Topsoil + 12 m Limestone)
13	Method of Mining	Open cast manual method of mining
14	Water demand	1.7 KLD
15	Source of water	Water will be supplied from nearby villages.
16	Man power	15 Nos.

<b>Project Name</b>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<b>Chapter 12</b> <b>Disclosure of</b> <b>Consultant</b>
<b>Project Proponent</b>	<i>Sekhar Mines</i>	
<b>Project Location</b>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

17	Mining Lease	G.O.3(D). No. 162 Industries (MMA-2) Department dated 10.08.1994 for a period of twenty years. MMDR Amendment Act 2015, the validity of the Mining Lease is extended upto 09.08.2044 (effective from 10.08.2014). The 1 <sup>st</sup> scheme of mining lease was granted by Indian Bureau of Mines dated 18.02.2001. Further, the 2 <sup>nd</sup> scheme of the mining lease approved by Indian Bureau of Mines dated 31.08.2012. 3 <sup>rd</sup> Scheme of Mining Plan was approved by Indian Bureau of Mines dated 31.03.2019. The Scheme of Mining Plan was lapsed on 31.03.2019 and the project proponent is in process of obtaining Approved Scheme of Mining from Indian Bureau of Mines
18	Boundary Fencing	7.5m safety distance to the boundary, fencing will be provided.
19	Ground water	The quarry operation is proposed up to a depth of 13 m below ground level. The water table is below 50 m from ground level which is observed from the nearby bore wells and wells. Hence the ground water will not be affected in any manner due to the quarrying operation during the entire lease period.
20	Habitations within 300m radius of the Project Site	There is no Habitation within 300m radius of the project site.
21	Drinking water	Water will be supplied from nearby villages.
22	Important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests	<b>Water bodies:</b> <ul style="list-style-type: none"> <li>➤ Mamathupatti Kanmai- 0.43 km SE</li> <li>➤ Varavanai Kanmai – 0.69 km SW</li> <li>➤ Mariyamman Kulam – 1.80 km NE</li> <li>➤ KarunamKulam – 2.71 km NW</li> <li>➤ P. UdayapattiKulam – 3.34 km NE</li> <li>➤ TharagampattiKulam – 3.79 km S</li> <li>➤ OttaKulam – 5.22 km NW</li> <li>➤ Poovaeekulam – 5.68 km NW</li> <li>➤ Perumaan Kulam–5.97 km NE</li> <li>➤ MavathurKulam – 6.39 km SE</li> <li>➤ Panjapatty Lake – 9.17 km NE</li> <li>➤ VellianaiKulam – 11.71 km NW</li> <li>➤ KaraiKulam–13.19 km NE</li> </ul>

<b>Project Name</b>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<b>Chapter 12 Disclosure of Consultant</b>
<b>Project Proponent</b>	<i>Sekhar Mines</i>	
<b>Project Location</b>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

		<ul style="list-style-type: none"> <li>➤ PothuravuthanpattyKulam – 14.40 km NE</li> </ul> <b>Reserve Forest:</b> <ul style="list-style-type: none"> <li>➤ Vaiyamalaippalaiyam RF – 8.36 km SE</li> <li>➤ MungilKaradu RF – 11.92 km SW</li> <li>➤ Veeramalai RF – 13.11 km SE</li> </ul>
23.	National Parks/Wild life Sanctuaries	➤ Kadavur Slender Loris Sanctuary – 12.76 km SW

### 11.3 Justification of the proposed project

India is the second largest producer of cement in the world. India has a lot of potential for development in the infrastructure and construction sector and the cement sector is expected to largely benefit from it. Some of the recent initiatives, such as development of 98 smart cities, is expected to provide a major boost to the sector.

Aided by suitable Government foreign policies, several foreign players such as Lafarge-Holcim, Heidelberg Cement, and Vicat have invested in the country in the recent past. A significant factor which aids the growth of this sector is the ready availability of raw materials for making cement, such as limestone and coal. Higher government spending on infrastructure and housing will be a key growth driver for the industry. The government has placed significant emphasis on infrastructure development with the aim of making 100 smart cities. The said project plays a significant role in the domestic as well as infrastructural market. Limestone is one of the key raw materials in the manufacturing process of Cement.

**Table 11-2 :Anticipate Impacts & Appropriate Mitigation Measures**

<b>S. No.</b>	<b>Potential Impact</b>	<b>Mitigation Measure</b>
1	The main impact in the air environment is dust emission during various mining activities such drilling, blasting, excavation, loading and transportation. The dust emission may affect the quality of	Proper mitigation measures like water sprinkling on haul roads will be adopted to control dust emissions. To control the emissions regular preventive maintenance of equipments

<b>Project Name</b>	<i>Varavanai Limestone Quarry- 1.90.5 Ha</i>	<b>Chapter 12 Disclosure of Consultant</b>
<b>Project Proponent</b>	<i>Sekhar Mines</i>	
<b>Project Location</b>	<i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i>	

	ambient air in the and around the mine area. The increased emission may cause respiratory & Cardiovascular problems in human health	will be carried out on contractual basis. Plantation will be carried out along approach roads & mine premises.
2	Waste water will be generated due to mining activity and from other domestic activities. These may contaminate the ground water leading to ground water. The mining activity may affect the ground water table	No waste water will be generated from the mining activity of minor minerals as the project only involves lifting of over burden from mine site. The wastewater generated from the domestic activity will be disposed off safely through the proposed septic tank.  Mining will not intersect ground water table. Hence the water table will not be impacted due to the proposed project
3	Noise will be generated in the mine area during various mining activities such as blasting, drilling, excavation. During transportation of the mined out mineral, there may be noise generation due to the movement of vehicles. This may impact the health condition of the workers by creating headache	Periodical monitoring of noise will be done.  No other equipments except the transportation vehicles and Excavator (as & when required) for loading will be allowed at site.  Noise generated by these equipments shall be intermittent and does not cause much adverse impact.  Plantation will be carried out along approach roads. The plantation minimizes propagation of noise and also arrest dust.
4	Solid waste will be generated from the	The 60% recovery is achieved by

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	mining activity as there will be refuse after 95% recovery and also generation of domestic waste	extracting the entire mineable reserve. The total waste will be be dumped in the non-mineral bearing area of the North East and Southern side of the lease area. Apart from that, a very meagre quantity of domestic waste will be generated in the project, which will be handed over to the local body on daily basis.
5	During mining activities, there are chances of workers getting health issues or may be prone to accidents	Dust masks will be provided as additional personal protection equipment to the workers working in the dust prone area. Periodical trainings will be conducted to create awareness about the occupational health hazards due to activities like blasting, drilling, excavation Workers health related problem if any, will be properly addressed.

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## **12 Disclosure of Consultant**

### **11.4 Introduction**

This chapter presents the details of the environmental consultants engaged, their background and the brief description of the key personnel involved in the project. Specific studies on the mining project have been carried out by engaging engineers/experts of Ecotech Labs Pvt. Ltd, Chennai. Ecotech Labs Pvt. Ltd (ETL), Chennai is NABET accredited consultancy organization. ETL is equipped with in-house, spacious laboratory, accredited by NABL (National Accreditation Board for Testing & Calibration Laboratories), Department of Science & Technology, Government of India and MoEF& CC.

### **11.5 Eco Tech Labs Pvt. Ltd – Environment Consultant**

Eco Tech Labs Pvt. Ltd is a multi-disciplinary testing and research laboratory in India. Eco Tech labs provides high quality services in environmental consultancy, engineering solution, chemical and microbiological laboratory analysis of food, water and environment (Air, Water, Soil) with highest accuracy.

#### **12.2.1 The Quality policy**

- We, at Eco Tech Labs Pvt. Ltd. engaged in providing Environmental consulting services and we are committed to strengthen our capabilities in all areas of our operations in line with customer requirements & expectations, applicable legal requirements & stakeholders expectations.
- We are committed to establish and maintain Quality Management System (QMS) for continual improvement in processes and Services
- We are committed to provide customized solutions in realistic, time bound and cost effective to achieve highest degree of customer satisfaction and Environmental improvement.
- We shall establish, maintain & periodically review our documented management systems, objectives and performance in consultation with our employees and prevailing best practices.

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- Effective communication of organization's policy and objectives to employees and seeking feedbacks from all our employees and concerned stakeholders for continual improvement.

### 12.2.2 Company Profile

Eco Tech Labs Pvt. Ltd. (formerly Eco Tech Consultants) was established in the year 2013. we offer environmental consultancy & Laboratory services for various residential, commercial & industrial development projects.

We provide high quality services in environmental consultancy, engineering solution, chemical and microbiological laboratory analysis of food, water and environment (AIR, WATER, SOIL) with highest Accuracy.

We are one of the largest Food Testing Lab in India, accredited by NABL as per ISO/IEC 17025 for chemical and biological testing of food, beverages and agricultural products. Eco Tech Labs is the partner you can trust for this critical service. With our experience, expertise and cutting-edge facilities, you can minimise the risk of microbiological contamination, protect your customers and your brand and ensure that you fully comply with all relevant food safety regulations.

We are now one of the leading solution provider in the field of environmental consultancy comprising of Impact assessment studies, laboratory services & all statutory clearances.

Our team has a decadal experience in the field of environmental technical consultancy and have successfully obtained all required statutory clearances from State Level Impact Assessment Authority (SEIAA), Pollution Control Boards in the region of South India & also from Ministry of Environment & Forest (MoEF).



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## **13 Assessment of Ecological Damage, Remediation Plan, Natural and Community Resource Augmentation Plan**

### **13.1 Need & Objectives of the Study**

The assessment of environmental damage caused due to an activity (mining) under Violation of a regulatory framework needs to be measured across different aspects viz. natural resource degradation, socio-economic effects versus the economic benefits gained at the cost of environmental damage. For estimation of environmental damage, all causes/aspects of the Project which may interact with Environmental Components (viz. Land, Air, Water, Soil, etc.,) are identified/evaluated and the resultant degradation/deterioration/damage attributed to the activity has to be assessed.

To compensate the degradation/deterioration/damage, remedial measures are to be identified based on the severity of the damage to the vulnerable Environmental Components (viz. Land, Air, Water, Soil, etc.,) of the environmental attribute (Natural Resource, Community Infrastructures, etc.,)

**The objectives of the Study are as described below :**

- i. **Ecological Damage Assessment** : Analyse and Assess the environmental impacts and ecological damages with respect to Environmental Attributes due to Production during Violation Period.
- ii. **Formulation of Remediation Plan (RP)** : Identify the corrective measures to compensate or restore or replace the damaged natural resources to mitigate the adverse impacts on such resources.”
- iii. **Formulation of Natural & Community Resource Augmentation Plan (NCRAP)** : Remedial measures to compensate for the damaged natural resource, community resource infrastructure, etc., which were providing Socio-economic benefit to the local community.

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## 13.2 Qualitative & Quantitative Assessment – Violation Period

The Lessee has operated the Varavanai Limestone Quarry during 15.01.2016 to 10.02.2016 and produced 150 Tonnes of Limestone. Operating the Lease after 15.01.2016 without EC is the Violation. However, the Environmental friendly Mining activities were carried out in the Lease as detailed below:

- Opencast Mechanized Non-conventional Method of Mining without Blasting.
- No Top Soil or Over Burden generation and thus No Waste Dumps in the Lease.
- No Ground Water-table Intersection due to the Mining.
- No Surface or Ground Water Drawl and Rain Water Harvested in the Pit was only gainfully utilized.

## 13.3 Ecological/Environmental Damage Assessment

During the Violation Period from 15.01.2016 to 10.02.2016, the Lessee has operated the Varavanai Limestone Quarry for a Production of 150 Tonnes of Limestone. During the Period, the impacts on the Environmental Components viz. Air, Water, Land, Biological and Socio Economics Environment etc. and the Environmental compensation are assessed based on the '*Guidelines for Quantification of Environmental Damage Assessment for Violation Cases under the Ministrys Notification No. S. O. 804 (E) dated 14.03.2017*'.

As per the guidelines, two methodologies were analyzed for quantifying the damage assessment equivalent to remediation cost, natural and community resources augmentation cost.

- **Methodology I - CPCB methodology for Environmental Compensation**
- **Methodology II - European Environmental Agency's Methodology**

The damage to an Environment Attribute can be resulted due to different causes and will lead to different impacts. An impact that poses risks to human health or degradation of environmental quality is considered as a significant damage due to the project activity. For estimation of environmental damage, all causes/aspects of the environmental degradation for a particular environmental attribute are identified and assessed. The Assessment of Ecological Damage and its Cost as per guidelines is given in Table 13.1.

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**Table 13-1 Assessment of Ecological Damage and its Cost**

Sl. No.	Environmental Components	Particulars	Remarks	Damage Cost (Rs.)
<b>Methodology 1:</b>				
	<b>CPCB Methodology for Environmental Compensation</b>	<b>EC = PI x N x R x S x LF</b>	PI = Pollution Index N = Number of days of violation took place R = Rupee factor for EC S = Scale of Operation factor LF = Location Factor	<b>55,350</b>
<b>Methodology 2:</b>				
<b>European Environmental Agency's Methodology</b>				
	<b>Environmental Components</b>	<b>Particulars</b>	<b>Remarks</b>	<b>Damage Cost (Rs.)</b>
<b>A)</b>	<b>Air Environment</b>	Dust generation is due to mining activities and movement of trucks. Fugitive emissions from mining equipment/ machineries and trucks	The project Limestone mining without blasting. To avoid the dust generation and fugitive emission from trucks, only valid PUC certified vehicles were used for transportation of minerals.	18,740
		Fugitive emissions from mining equipment/ machineries, trucks and DG		

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		sets			
<b>B)</b>	<b>Water Environment</b>	<i>Surface Water</i>	All surface runoffs from the mine lead to increase in Suspended Solids concentrations of Natural Water bodies.	The surface rain water flow through the seasonal water course as usual.	80
			Wastewater generation during mining operation	The project is limestone mining, hence no generation of wastewater from the mining activities. Domestic sewage generation was biologically treated in a Septic Tank. A total of 0.1 kLD sourced from authorized vendors in the nearby village	
	<i>Ground Water</i>		Usage of Ground water for construction and mining activities	No ground water used for mining activities. The water required during the operational phase were sourced from authorized vendors.	No damage cost
			Obstruction of rainwater percolation due to ground cementing.	No obstruction on the percolation of rainwater into the ground.	
		Percolation of contaminated ground water near the Building boundary	The limestone mining project does not involve any blasting for mining the minerals, hence no generation of contaminated water and its percolation into ground arises.		
		Pumping of ground water while basement excavation /construction	No pumping of ground water. The water requirement was met through authorized vendors.		

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	Obstruction of rainwater percolation / destruction of lineaments (leading to main aquifers) and micro watershed impacts.	No obstruction on the percolation of rainwater into the ground	
	Contamination of ground water.	No contamination of ground water.	
	Depletion of ground water level may result in water shortage in nearby villages during dry seasons	The ground water table is 50 m BGL and the existing and proposed depth of mining is 13 m. So, no depletion of ground water level due to the mining activity.	
	Wastewater from workshop/service building	The project is limestone mining, hence no generation of wastewater from the mining activities. Domestic sewage generation was biologically treated in a Septic Tank	
	Domestic effluent discharge.	Domestic sewage generation was biologically treated in a Septic Tank	
	Mine Drainage water discharge	No mine drainage water discharge.	
	Wash out from waste dump/stack piles	No Wash out from waste dump	
<i>Rainwater Harvesting</i>	Wastage of rainwater into surface runoff / into storm water drains	The surface rain water flow through the seasonal water course as usual.	No damage cost

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		Stagnation of rainwater in the nearby area to construction/ Industrial site. Overflow of storm water drains Stagnation of water will be breeding place for water borne disease to nearby inhabitants and workers at site.	A 5 HP pump was used for drain out the water during rainy season. Hence no stagnation of water which leads to the occurrence of water borne diseases.	
	<i>Sewage Treatment</i>	Improper management of sewage will lead to the contamination of nearby water bodies and ground water	No sewage generation other than domestic sewage during the operational phase. The domestic sewage generation was biologically treated in a Septic Tank	No damage cost
<b>C)</b>	<b>Noise and Vibration</b>	Increase in Noise level due mining activities is mainly due to machinery movement and operation, impact on operators, howling and honking by vehicles ,noise generation and running of generators., etc, Vibration beyond the permissible limits cause damage to the structures nearby especially by blasting and heavy equipment movements.	The method of mining was opencast manual method of mining (“B” category of small mine). Mining will be by simple open cast manual methods, with help of spades, baskets and jack hammer, drilling. No heavy earth moving machineries are proposed for limestone mining. Hence there is no necessity for blasting. PPE’s were provided to the employees during the operational hours. As per MoEF&CC as well as EEA norms, 1500 trees per hectare has been planted at the site. An amount 10,000 is allocated for greenbelt in the neighborhood	11,000

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			of the site.	
<b>D)</b>	<b>Land Environment</b>	Damage to agricultural, grazing and community lands, surface water and topsoil mismanagement	Topsoil is managed properly. No damage to the agricultural, grazing and community lands, since it is an existing quarry in Patta Land. Garland Drain will be provided.	25,000
<b>E)</b>	<b>Solid Waste Management</b>	Improper management of solid waste generation from the project will contaminate the	The mineral rejects dumped temporarily within the mine lease area and finally backfilling into the ultimate pit. Apart from that, a very meagre quantity of domestic waste generated from the project were handed over to the local body on daily basis.	No damage cost
<b>F)</b>	<b>Greenbelt</b>	Deforestation will affect the water cycle, it will destroy the flora and fauna and lead to an increase in carbon dioxide, thereby increasing global warming.	As per EEA & MoEF&CC norms, total of 1500 trees has been planted at the site . An amount 10,000 is allocated for greenbelt in the neighborhood of the site.	No damage cost
<b>G)</b>	<b>Wildlife Conservation Plan</b>	Any schedule-I species are found in the buffer zones, requiring wild life conservation plan, Damage will be assessed and damage cost will be levied based on due diligence up to 10% of the approved cost of the conservation plan by PCCF per year during the violation period of non-	No schedule I species are found in the buffer zone of the project site and no wildlife sanctuaries are within the 10 km radius of the project site	No damage cost

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		provision will be levied for urban infrastructure projects, and upto maximum 20% for mining and industry projects.		
<b>H)</b>	<b>Energy Conservation</b>	<p>The cost of compliance under different conditions shall be assessed as following:</p> <ul style="list-style-type: none"> <li>- If the project is under operation where it is partially complied except building envelope, there impact of excess energy consumption will be assessed on prorata basis and cost of damage will be levied.</li> <li>- If construction is under completion stage and the envelope is not provided with ECBC conditions, the PP will be directed to comply with ECBC conditions.</li> <li>- The cost of impact or damage will be applicable in operating projects where ECBC is partially complied excepting the building</li> </ul>	This is a Limestone mining project, hence no provision for conservation of energy.	No damage cost



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		<p>envelope. The percentage of energy saving will be assessed on prorata basis (Capex for provision of ECBC is around 7%-10% of the project cost and saving in energy is in the order of 20-30% as compared with conventional provision.</p> <ul style="list-style-type: none"> <li>- The committee will assess the cost of impact considering the excess energy consumption on prorata basis and the remediation will be assessed accordingly for the period for violation. Solar power generation at the rate of 1% of maximum demand to be provided, the impact cost will be assessed based on the gap and its Capex. The excess energy consumption will be assessed and the energy cost levied as damage /</li> </ul>		
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		remediation during violation period. - In case of commercial buildings, 20% of water heating by solar system and non provision will attract the cost of impact.		
<b>I)</b>	<b>RH/OHS</b>	Cost of GB around the ML Boundary, Periodical health check-up for the neighborhoods and workers.	This is a Limestone mining project without blasting. Health check up were provided for the workers and a count of 1500 trees as per norms are planted within the quarry premises. An amount 10,000 is allocated for greenbelt in the neighborhood of the site.	No damage cost
		Health issues of neighborhoods and workers located within 500 metres due to increase in PM and noise levels during mining operation	No health issues for neighborhoods and workers located within 500 metres, since the mining operation is performed without blasting. Proper health check up provided for workers. Noise generation from movement of vehicles were maintained less than 85 dB as prescribed by DGMS.	
		Impacts on local infrastructure like roads, buildings, sanitation and transportation and water. Cost of additional facilities to be provided if not complied by PP and Provision of PPE as approved by DGMS has to be	No impact on local infrastructure like roads, buildings, sanitation and transportation and water	

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		assessed and levied. Cost of periodical check-up as per DGMS guideline. Cost of compliance to payment of minimum wages act and welfare cess act.	Proper health check up provided for workers.	
<b>J)</b>	<b>Economic Benefits out of Violation</b>	Remediation Cost will be limited to 3% of Nett Profit Economic benefits accrued = Net profit [operation mines] = [Recurring EMP cost saved during violation period + Net profit during violation period]. 3.0% of the net profit towards community welfare shall be considered and exclusive of the cost towards CER amount and the remediation, natural and community augmentation plan.	Economic Benefit due to the Production is Rs.13,860/-. Remediation Cost will be limited to 3% of Net Profit.	416
<b>Total Damage Cost</b>				<b>55,236</b>

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<b>Project Location</b>	<b>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</b>	

It can be concluded that, Ecological damage cost due to violation as per the guidelines is relatively same in both methodologies. Hence total Ecological/Environmental Damage Cost can be taken as Rs. 0.56 Lakhs.

### 13.4 Ecological Damage Remediation Plan

The total Ecological/Environmental Damage Cost Rs. 0.56 Lakhs. The remedial measures have been identified based on the severity of the damage as well as the vulnerable agent (Infrastructure, Natural resource, Community etc.,) to which the damage was caused. To compensate the Ecological Damage caused due to mining during the Violation Period, the Remediation Plan is proposed which will be implemented on approval by SEIAA-TN.

An amount of Rs. 0.56 Lakhs toward Remediation Plan and Natural & Community Resource Augmentation Plans is allotted for approval which will be spent within 1 Month. The details of Remediation plan, Natural Resource Augmentation Plan and Community Resource Augmentation Plan with budgetary provisions & Action Plan are given in Tables 13.2-13.4 and their Summary in Table 13.5.

**Table 13-2 Ecological Damage Remediation Plan**

Sl. No.	Environmental Component	Remediation Plan / Activity Description	Total
			Rs. Lakhs
1	Air Quality & Ecology	Additional Green Belt by Planting 40 Trees in the neighboring Mine lease area @ Rs.500 per Tree including its maintenance	0.20
2	Water Environment	Provision of Rain water harvesting wells adjacent to the mining area for recharge of ground water	0.095

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3	Socio-economics & Public Health	Community/Public Buildings Maintenance	0.10
<b>Total</b>			<b>0.395</b>

**Table 13-3 Natural Resource Augmentation Plan**

Sl. No.	Activity Proposed	Total (Rs. Lakhs)
1	Providing Solar Street Lights to nearby Village @ Rs.10,000/- per Light, 1 Village	0.10
<b>Total</b>		<b>0.10</b>

**Table 13-4 Community Resource Augmentation Plan**

Sl. No.	Activity Proposed	Total, Rs. Lakhs
1	Varavanai Govt. middle School Soft skill Development Work: <ul style="list-style-type: none"> <li>• Awareness program for reduction of plastic waste reduction / solid waste Management</li> </ul>	0.0629
<b>Total</b>		<b>0.0629</b>

In addition to the above as stated in the economic benefits out of violation. 3% of the Net profit as computed for Community welfare exclusive of CER, Remediation, Natural and community and augmentation Plan.

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**Table 13-5 Community Welfare Plan**

<b>Sl. No.</b>	<b>Activity Proposed</b>	<b>Total, Rs. Lakhs</b>
1	Providing school essentials to economically backward students	0.00210
<b>Total</b>		<b>0.00210</b>

2

**Table 13-6 Summary of Remediation, Natural & Community Resource Augmentation Plan and Community Welfare Plan**

<b>Sl. No.</b>	<b>Activity Proposed</b>	<b>Total, Rs. Lakhs</b>
1	Cost of Damage Remediation Plan	0.395
2	Natural Resource Augmentation Plan	0.10
3	Community Resource Augmentation Plan	0.0629
4	Community Welfare Plan	0.00210
<b>Total</b>		<b>0.56</b>

### **13.5 Conclusion**

Total budgetary provision with respect to Remediation Plan and Natural & Community Resource Augmentation Plan is Rs. 0.56 Lakhs. The Lessee shall be required to submit a Bank Guarantee of an amount of Rs. 0.56 Lakhs towards Remediation Plan and Natural & Community Resource Augmentation Plan in favour of TNPCB prior to the grant of EC.

<b><i>Project Name</i></b>	<b><i>Varavanai Limestone Quarry- 1.90.5 Ha</i></b>	<b><i>Chapter 13</i></b> <b><i>Assessment of Ecological</i></b> <b><i>Damage, Remediation Plan,</i></b> <b><i>Natural &amp; Community Resource</i></b> <b><i>Augmentation Plan</i></b>
<b><i>Project Proponent</i></b>	<b><i>Sekhar Mines</i></b>	
<b><i>Project Location</i></b>	<b><i>Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District</i></b>	

The Remediation Plan will be completed in 1 month whereas Bank Guarantee will be for 1 year. The Bank Guarantee will be released after successful implementation of the Remediation Plan and Natural and Community Resource Augmentation Plan and after the recommendation by the Regional Office of the Ministry.

The Environmental Clearance will not be operational till such time the Project Proponent complies with all the statutory requirements and judgement of Hon'ble Supreme Court dated the 2nd August 2017 in Writ Petition (Civil) No.114 of 2014 in the matter of Common Cause versus Union of India and Ors.

The mining operation shall not be commenced till the entire compensation levied by the Department of Mining & Geology is paid.

Credible Action under Section 19 of the E(P) Act shall also be complied.

# **ANNEXURE**



**ANNEXURE 1**  
**TOR APPROVAL LETTER FROM SEIAA**



TMT. P. RAJESWARI, I.F.S.,  
MEMBER SECRETARY

STATE LEVEL ENVIRONMENT IMPACT  
ASSESSMENT AUTHORITY – TAMIL NADU  
3rd Floor, Panagal Maaligai,  
No.1 Jeenis Road, Saidapet,  
Chennai-15.  
Phone No.044-24359973  
Fax No. 044-24359975

**TERMS OF REFERENCE (ToR)**

**Lr No.SEIAA-TN/F.No.6557/SEAC/TOR-1168/2018 Dated:30.05.2022**

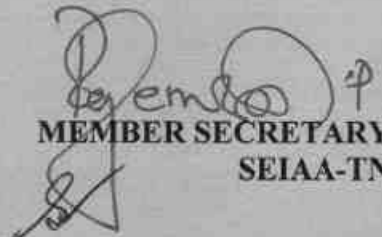
To

M/s. Sekhar Mines  
No.73, Raja colony  
Cantonment  
Trichy-620 001

Sir / Madam,

**Sub:** SEIAA, Tamil Nadu – Terms of Reference (ToR) under violation category with Public Hearing for the existing Lime stone quarry lease area over an extent of 1.90.5Ha at SF.No.833/4B, 836(p) & 843/2, Varavani Village, Kulithalai Taluk, Karur District, Tamil Nadu by Thiru Sekar under project category – B and Schedule S.No. 1(a) – TOR issued for the preparation of EIA report, EMP report, ecological damage assessment, remediation plan, natural resource augmentation and community resource augmentation and violation category –Regarding.

- Ref:** 1. MoEF & CC Notification S.O. 804 (E) dated 14.03.2017  
2. MoEF & CC Notification S.O.1030 (E) dated 08.03.2018  
3. Your Online application No. SIA/TN/MIN/22466/2018, dated: 19.03.2018,  
(Under Violation)  
4. Your Application for Terms of Reference dated: 13.04.2018  
5. Minutes of the 136<sup>th</sup> Meeting of SEAC held on 20.09.2019  
6. Project proponent reply dated: 01.04.2022

  
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7. Minutes of the 268<sup>th</sup> Meeting of SEAC held on 29.04.2022

8. Minutes of the 513<sup>th</sup> SEIAA Meeting held on 30.05.2022

Kindly refer to your proposal submitted to the State Level Impact Assessment Authority for Terms of Reference (Under Violation).

The proponent of M/s. Sekhar Mines submitted application for Terms of Reference (Under Violation) on 13.04.2018, in Form-I, Pre- Feasibility report for the existing Lime stone quarry lease area over an extent of 1.90.5Ha at SF.No.833/4B, 836(p) & 843/2, Varavani Village, Kulithalai Taluk, Karur District, Tamil Nadu seeking TOR under the MoEF & CC Notification cited under reference 1<sup>nd</sup> & 2<sup>nd</sup>.


**Remarks of SEAC:**

**Proposed Lime stone quarry lease area over an extent of 1.90.5Ha at SF.No.833/4B, 836(p) & 843/2, Varavani Village, Kulithalai Taluk, Karur District, Tamil Nadu by Thiru Sekar- For Terms of Reference under violation category. (SIA/TN/MIN/22466/2018 Dt. 19.3.2018).**

The proposal was placed in this 268<sup>th</sup> SEAC Meeting held on 29.4.2022. The project proponent gave a detailed presentation. The details of the project furnished by the proponent are available in the website (parivesh.nic.in).

The SEAC noted the following:

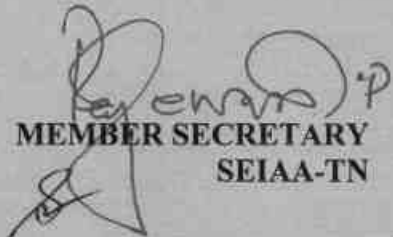
1. The project proponent, Thiru Sekar, has applied for Terms of Reference for the proposed lime stone quarry lease area over an extent of 1.90.5Ha at SF.No.833/4B, 836(p) & 843/2, Varavani Village, Kulithalai Taluk, Karur District, Tamil Nadu.
2. The project/activity is covered under Category "B2" of Item 1(a) "Mining of Minerals Projects" of the Schedule to the EIA Notification, 2006.
3. Mining Lease was granted in G.O.3 (D) No.162 Industries (MMA2) Department dated 14.06.1994, lease period of 20 years only (valid from 10.08.1994 to 09.08.2014), the Validity of the mining plan is extended up to 09.08.2044 from 10.08.2014 – 09.08.2044 (As per MMDR Amendment Act, 2015).
4. The 3<sup>rd</sup> Scheme of Mining Plan was approved by Indian Bureau of Mines, Chennai vide Letter No.TN/DGL/LST/MS-1372 MDS, dated 13.06.2016, Valid up to 31.03.2019

  
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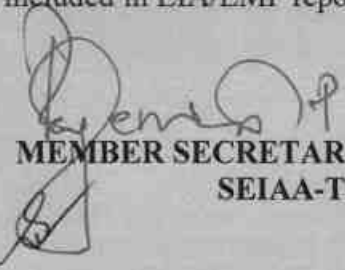
5. Now the PP has applied for ToR, the lease period is for five years. The production for 5 years not to exceed ROM - 59376 Tonnes & 35626 Tonnes of lime stone with ultimate depth of 13m BGL.

Based on the presentation and document furnished by the project proponent, SEAC decided to **recommend the proposal for the grant of Terms of Reference with public hearing**, subject to the following TORs, in addition to the standard terms of reference for EIA study for non-coal mining projects and details issued by the MOEF & CC to be included in EIA/EMP Report:

1. **The Proponent shall furnish the valid review/scheme of mining with a production for 5 years not to exceed ROM - 59376 Tonnes & 35626 Tonnes of Lime stone approved by IBM, along with EIA report.**
2. The Proponent shall carry out the cumulative & comprehensive impact study due to mining operations carried out in the quarry cluster specifically with reference to the environment in terms of air pollution, water pollution, health impacts and social impact accordingly the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.
3. The certified existing EC compliance report shall be included in the EIA Report.
4. The entire Cluster of mine lease area shall be video graphed through Drone and submit the same along with EIA report.
5. If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,
  - a) What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?
  - b) Quantity of minerals mined out.
  - c) Highest production achieved in any one year
  - d) Detail of approved depth of mining.
  - e) Actual depth of the mining achieved earlier.
  - f) Name of the person already mined in that leases area.
  - g) If EC and CTO already obtained, the copy of the same shall be submitted.
  - h) Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.


  
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6. All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
7. The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.
8. The Project proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment and the remedial measures for the same.
9. The Project proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent persons to be appointed as per the provisions of Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.
10. The Project proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. 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.
11. The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality & flora/fauna including traffic/vehicular movement study.
12. A tree survey study shall be carried out (nos., name of the species, age, diameter etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity.
13. A detailed mine closure plan for the proposed project shall be included in EIA/EMP report

  
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which should be site-specific.

14. The Public hearing advertisement shall be published in one major National daily and one most circulated vernacular daily.
15. The Public hearing details/EIA reports etc., shall be placed in Tamil language.
16. The recommendation for the issue of "Terms of Reference" is subjected to the 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.102/2017 and O.A.No.404/2016 (M.A.No. 758/2016, 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).
17. The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the **appendix-I** in consultation with the DFO, State Agriculture University. The plant species with dense/moderate canopy of native origin should be chosen. Species of small/medium/tall trees alternating with shrubs should be planted in a mixed manner.
18. Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted adopting proper spacing as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner.
19. A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
20. A Risk Assessment and management Plan shall be prepared and included in the EIA/EMP Report.
21. The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
22. If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified

  
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by MoEF&CC, Regional Office, Chennai (or) the concerned DEE/TNPCB.

23. Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Reference besides attracting penal provisions in the Environment (Protection) Act, 1986.
24. The onsite inspection shall be carried out by the subcommittee constituted by SEAC to assess the Environmental settings and furnish the report for further course of action.

#### Appendix -I

#### List of Native Trees Suggested for Planting


1. *Aeglemarmelos*-Vilvam
2. *Adenaantherapavonina*-Manjadi
3. *Albizialebbeck*-Vaagai
4. *Albiziaamara*-Usil
5. *Bauhinia purpurea* - Mantharai
6. *Bauhinia racemosa* - Aathi
7. *Bauhinia tomentosa*-Iruvathi
8. *Buchananiaaillaris*-Kattuma
9. *Borassusflabellifer*- Panai
10. *Buteamonosperma* - Murukkamaram
11. *Bobaxceiba*- Ilavu, Sevvilavu
12. *Calophylluminophyllum* - Punnai
13. *Cassia fistula*- Sarakondrai
14. *Cassia roxburghii*- Sengondrai
15. *Chloroxylonsweitenia* - Purasamaram
16. *Cochlospermumreligiosum*- Kongu, Manjallavu
17. *Cordiadichotoma*- Mookuchalimaram
18. *Cretevaadansonii*-Mavalingum
19. *Dilleniaindica*- Uva, Uzha
20. *Dilleniapentagyna*- SiruUva, Sitruzha
21. *Diospyrosebenum*- Karungali
22. *Diospyroschloroxylon*- Vaganai
23. *Ficusamplissima*- Kalltchi
24. *Hibiscus tiliaceous*-Aatrupoovarasu
25. *Hardwickiabinata*- Aacha
26. *Holopteliaintegrifolia*-Aayili
27. *Lanneacoromandelica* - Odhiam
28. *Lagerstroemia speciosa* - Poo Marudhu
29. *Lepisanthustetraphylla*- Neikottaimaram
30. *Limoniaacidissima* - Vila maram
31. *Litseaglutinosa*-Pisinpattai
32. *Madhucalongifolia* - Illuppai
33. *Manilkarahexandra*-UlakkaiPaalai

  
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34. *Mimusopselengi* - Magizhamaram
35. *Mitragynaparvifolia* - Kadambu
36. *Morindapubescens*-Nuna
37. *Morindacitrifolia*- VellaiNuna
38. *Phoenix sylvestre*-Eachai
39. *Pongamiapinnata*-Pungam
40. *Premnamollissima*- Munnai
41. *Premnaserratifolia*- Narumunnai
42. *Premnatomentosa*-PurangaiNaari, PudangaNaari
43. *Prosopiscinerea* - Vannimaram
44. *Pterocarpusmarsupium* - Vengai
45. *Pterospermumcanescens*-Vennangu, Tada
46. *Pterospermumxylocarpum* - Polavu
47. *Puthranjivaroxburghii*-Puthranjivi
48. *Salvadorapersica*- Ugaamaram
49. *Sapindusemarginatus*- Manipungan, Soapukai
50. *Saracaasoca* - Asoca
51. *Streblusasper*- Pirayamaram
52. *Strychnosnuxvomica*-Yetti
53. *Strychnopotatorum* - TherthangKottai
54. *Syzygiumcumini* - Naval
55. *Terminaliabellerica*- Thandri
56. *Terminalia arjuna*- Venmarudhu
57. *Toona ciliate* - Sandhanavembu
58. *Thespesiapopulnea*- Puvarasu
59. *Walsuratrifoliata*-valsura
60. *Wrightiatinctoria*- Vep

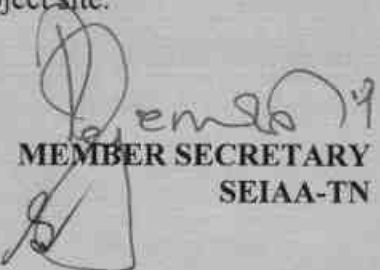
#### Discussion of SEIAA & Decision:

The proposal was placed in the 513<sup>th</sup> Authority meeting held on 30.05.2022. After detailed discussions, the Authority accepts the recommendation of SEAC and decided to grant Terms of Reference (ToR) along with Public Hearing under cluster for undertaking Environment Impact Assessment and preparation of Environment Management Plan with specific Terms of Reference under violation for assessment of ecological damage, remediation plan and natural and community resource augmentation plan to be done by an environmental laboratory duly notified under Environment (Protection) Act, 1986, or an environmental laboratory accredited by National Accreditation Board for Testing and Calibration Laboratories, or a laboratory of a Council of Scientific and Industrial Research institution working in the field of environment, and it shall be prepared as an independent chapter in the Environment Impact Assessment report and subject to General conditions in addition to the following conditions:

  
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1. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas.
2. The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological structures etc.
3. As per the MoEF& CC office memorandum F.No.22-65/2017-IA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management Plan.
4. The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.
5. The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem.
6. Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.
7. The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.
8. The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.
9. The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.
10. The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection.
11. The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.
12. The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.
13. The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock.
14. The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.

  
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15. The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.
16. The project proponent shall study and furnish the details on potential fragmentation impact of natural environment, by the activities.
17. The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.
18. The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic environment and fresh water systems due to activities, contemplated during mining may be investigated and reported.
19. The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife.
20. Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following
  - a) Soil health & bio-diversity.
  - b) Climate change leading to Droughts, Floods etc.
  - c) Pollution leading to release of Greenhouse gases (GHG), rise in Temperature, & Livelihood of the local people.
  - d) Possibilities of water contamination and impact on aquatic ecosystem health.
  - e) Agriculture, Forestry & Traditional practices.
  - f) Hydrothermal/Geothermal effect due to destruction in the Environment.
  - g) Bio-geochemical processes and its foot prints including environmental stress.
  - h) Sediment geochemistry in the surface streams.
21. Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. 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, covering the entire mine lease period.

  
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22. To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/untoward accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued.
23. To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.
24. Detailed Mine Closure Plan covering the entire mine lease period as per precise area communication order issued.
25. Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued.


And also, the Authority decided to request MS-SEIAA to address the State Government requesting to initiate credible action against the proponent under provision of the section 19 of the Environment (Protection) Act, 1986 for the violations since the proponent has initiated the development activities without the Environmental Clearance.

**Additional TOR specified by the SEAC to deal with the violation aspects of the mining projects**

**SECTION A**

As per the MoEF & CC Notification S.O. 1030 (E) dated: 08.03.2018,

1. "The cases of violations will be appraised by the Expert Appraisal Committee at the Central level or State or Union territory level Expert Appraisal Committee constituted under sub-section (3) of section 3 of the Environment (Protection) Act, 1986 with a view to assess that the project has been constructed at a site which under prevailing laws is permissible and expansion has been done which can run sustainably under compliance of environmental norms with adequate environmental safeguards, and in case, where the findings of Expert Appraisal Committee for projects under category A or State or Union territory level Expert Appraisal Committee for projects under category B is negative, closure of the project will be recommended along with other actions under the law.

  
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2. In case, where the findings of the Expert Appraisal Committee or State or Union territory level Expert Appraisal Committee on point at sub-paragraph (4) above are affirmative, the projects will be granted the appropriate Terms of Reference for undertaking Environment Impact Assessment and preparation of Environment Management Plan and the Expert Appraisal Committee or State or Union territory level Expert Appraisal Committee, will prescribe specific Terms of Reference for the project on assessment of ecological damage, remediation plan and natural and community resource augmentation plan and it shall be prepared as an independent chapter in the environment impact assessment report by the accredited consultants, and the collection and analysis of data for assessment of ecological damage, preparation of remediation plan and natural and community resource augmentation plan shall be done by an environmental laboratory duly notified under the Environment (Protection) Act, 1986, or a environmental laboratory accredited by the National Accreditation Board for Testing and Calibration Laboratories, or a laboratory of the Council of Scientific and Industrial Research institution working in the field of environment.”

After the appraisal of the project, the SEAC decided that the Para No.2 stated above is applicable to the project. Hence, the proponent is directed to prepare appropriate reports as contained in the Para 2.


While complying with the specific aspects of the MoEF & CC directions as stated in the Para 2 above, the following steps should be followed:

Step 1: Enumerate the aspects of Violation:

- a) The proponent should enumerate the violations as applicable to the project.
- b) Furnish a description of each violation with quantitative and qualitative data.
- c) Violation categories are to be decided taking into consideration the stage at which the project execution stands.

Step 2: Ecological Damage Assessment:

- a) For each aspect of violation enumerated in step (1), identify the resultant environmental damage that may have been caused.
- b) Furnish a description of the environmental damages with quantitative and qualitative data.

  
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**Step 3: Remediation Plan:**

- a) For the Environmental damage(s) identified in the step (2) above, prepare the remediation plan for the each or combination of damages.
- b) The remediation plan should essentially consists of problem statement, target to be achieved (quantity), standards, technology/ procedure for remediation, equipment and machinery to be used, time schedule and remediation cost(direct and indirect cost, capital as well as O&M costs).

**SECTION B****1. Natural resource Augmentation:**

- a) The resources that should be considered for augmentation should essentially consist of land, biota, air, water and other resources as applicable.
- b) Proponent may choose one or more of the resource augmentation as applicable and provide a description of the augmentation proposal in detail for each resource.
- c) The proponent should also furnish the cost for each augmentation scheme.

**2. Community resource Augmentation:**

- a) The proponent should prepare a plan of action for addressing the needs of the community in terms of resources in the sectors of education, health and sports primarily and other such resources as applicable to the community in the vicinity of the project.
- b) The community resource augmentation plan should consist of rehabilitation of houses and people, budget allocation and time schedule for completing the activity.

**SECTION C**

The proponent should prepare content for the ecological damage assessment, remediation plan, natural resource augmentation and community resource augmentation separately in a chapter and include in the EIA / EMP report.

**SECTION D**

- a) After the appraisal of the EIA / EMP report submitted by the proponent, the SEAC will make a judgement of the quality of the content in the EIA / EMP report specifically with reference to the chapter covering the ecological damage assessment, remediation plan, natural resource augmentation and community resource augmentation.

  
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- b) In the judgement of SEAC, if the quality of the content in the chapter is not satisfactory, the SEAC may direct the proponent to further revise the chapter and resubmit the EIA/EMP report.
- c) If SEAC concludes that the technical part is satisfactory and the costing aspect is not satisfactory then the SEAC may revert to legal provisions, MoEF & CC guidelines and similar expert committee recommendations for finalizing the cost aspects or the SEAC may use its own expertise and experience in finalizing the cost.

#### SECTION E

The proponent is directed to furnish data as per the questionnaire appended in Annexure I. It will help the SEAC in arriving the ecological damage and the associated cost.

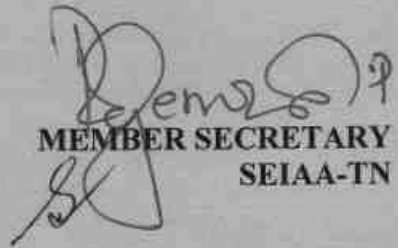
#### SECTION F

In compliance with the Supreme Court order stated in MoEF & CC letter F.No. 3-50/2017 IA.III-pt dated: 05<sup>th</sup> January 2018, the proponent is required to submit the No Objection Certificate obtained from the Department of Geology and Mining, Government of Tamil Nadu regarding payment of 100% cost of illegally mined mineral under section 21(5) of MMDR Act 1957 which would account for mining operations in violation of the following:

- a) Without Environmental Clearance (EC), or in excess of the quantity approved in EC
- b) Without Consent to Operate (CTO) or in excess of the quantity approved in CTO and
- c) Without mining plan/scheme of mining or in excess of the quantity approved in mining plan / scheme of mining
- d) Without Forest Clearance
- e) Any other violation

List out the details of reserve forest and wildlife sanctuary nearby the project site (the details should also include other districts which are nearby the project site) and also furnish the detail of distance between the project site and reserve forests/wildlife sanctuary.

Whether the project site attracts the HACA clearance? If so, also furnish the HACA clearance for the mining from the competent authority.

  
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The proponent is instructed to fill in the form contained in Annexure 1 to work out the details of the ecological damage during the violation period.


**A. 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.
- 2) A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.
- 3) 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.
- 4) All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ topo sheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).
- 5) Information should be provided in Survey of India Topo sheet 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.
- 6) 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.
- 7) 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

  
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of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.

- 8) 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.
- 9) 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.
- 10) 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.
- 11) 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&R issues, if any, should be given.
- 12) 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.
- 13) 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.
- 14) 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.
- 15) The vegetation in the RF / PF areas in the study area, with necessary details, should be given.
- 16) 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 protected area and accordingly, detailed mitigative measures required, should be

  
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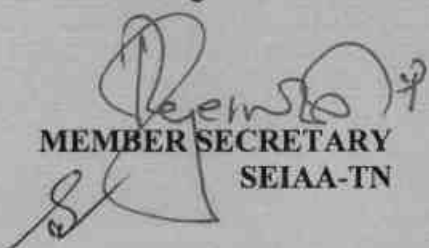


- worked out with cost implications and submitted.
- 17) Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map 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.
  - 18) 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.
  - 19) Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali 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.
  - 20) 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: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).
  - 21) R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & 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

  
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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&R and socio-economic aspects should be discussed in the Report.

- 22) 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 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.
- 23) 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. The wind roses showing pre-dominant wind direction may also be indicated on the map.
- 24) 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.
- 25) Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.
- 26) 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.
- 27) 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.
- 28) Based on actual monitored data, it may clearly be shown whether working will intersect


  
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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.

- 29) 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.
- 30) 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.
- 31) 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 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.
- 32) 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.
- 33) Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.
- 34) 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.

  
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- 35) 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.
- 36) 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.
- 37) Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
- 38) 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.
- 39) Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
- 40) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.
- 41) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.
- 42) 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.
- 44) Besides the above, the below mentioned general points are also to be followed:-
  - a) Executive Summary of the EIA/EMP Report
  - b) All documents to be properly referenced with index and continuous page numbering.
  - c) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.
  - d) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.
  - e) Where the documents provided are in a language other than English, an English

  
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- translation should be provided.
- f) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.
  - g) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF&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.
  - h) 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&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.
  - i) 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.
  - j) 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.

**In addition to the above, the following shall be furnished:-**

**The Executive summary of the EIA/EMP report in about 8-10 pages should be prepared incorporating the information on following points:**

- 1) Project name and location (Village, District, State, Industrial Estate (if applicable).
- 2) Products and capacities. If expansion proposal then existing products with capacities and reference to earlier EC.
- 3) Requirement of land, raw material, water, power, fuel, with source of supply (Quantitative)
- 4) Process description in brief, specifically indicating the gaseous emission, liquid effluent and solid and hazardous wastes.

  
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- 5) Measures for mitigating the impact on the environment and mode of discharge or disposal.
- 6) Capital cost of the project, estimated time of completion.
- 7) Site selected for the project - Nature of land - Agricultural (single/double crop), barren, Govt./ private land, status of its acquisition, nearby (in 2-3 km.) water body, population, with in 10km other industries, forest , eco-sensitive zones, accessibility, (note - in case of industrial estate this information may not be necessary)
- 8) Baseline environmental data - air quality, surface and ground water quality, soil characteristic, flora and fauna, socio-economic condition of the nearby population
- 9) Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.
- 10) Likely impact of the project on air, water, land, flora-fauna and nearby population
- 11) Emergency preparedness plan in case of natural or in plant emergencies
- 12) Issues raised during public hearing (if applicable) and response given
- 13) CER plan with proposed expenditure.
- 14) Occupational Health Measures
- 15) Post project monitoring plan

Besides the above, the below mentioned general points should also be followed:-


- a. A note confirming compliance of the TOR, with cross referencing of the relevant sections / pages of the EIA report should be provided.
- b. All documents may be properly referenced with index, page numbers and continuous page numbering.
- c. Where data are presented in the report especially in tables, the period in which the data were collected and the sources should be indicated.
- d. While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF&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 also be followed.
- e. The consultants involved in the preparation of EIA/EMP report after accreditation with Quality Council of India (QCI)/National Accreditation Board of Education and Training (NABET) would need to include a certificate in this regard in the EIA/EMP reports prepared by them and data provided by other organization/Laboratories including their status of approvals etc. In this regard circular no F. No.J -11013/77/2004-IA-II(I) dated 2nd

  
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December, 2009, 18th March 2010, 28th May 2010, 28th June 2010, 31st December 2010 & 30th September 2011 posted on the Ministry's website <http://www.moef.nic.in/> may be referred.

- After preparing the EIA (as per the generic structure prescribed in Appendix-III of the EIA Notification, 2006) covering the above mentioned points, the proponent will take further necessary action for obtaining environmental clearance in accordance with the procedure prescribed under the EIA Notification, 2006.
- The final EIA report shall be submitted to the SEIAA, Tamil Nadu for obtaining Environmental Clearance
- The TORs prescribed shall be **valid for a period of three years** from the date of issue, for submission of the EIA/EMP report as per OMNo.J-11013/41/2006-IA-II(I)(part) dated 29<sup>th</sup> August, 2017.

The receipt of this letter may be acknowledged.

  
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Copy to:

1. The Additional Chief Secretary to Government, Environment & Forests Dept, Govt. of Tamil Nadu, Fort St. George, Chennai - 9.
2. The Chairman, Central Pollution Control Board, Parivesh Bhavan, CBD Cum-Office Complex, East Arjun Nagar, New Delhi 110032.
3. The Member Secretary, Tamil Nadu Pollution Control Board, 76, Mount Salai, Guindy, Chennai-600 032.
4. SThe APCCF (C), Regional Office, Ministry of Environment Forest & CC (SZ), 34, HEPC Building, 1<sup>st</sup> & 2<sup>nd</sup> Floor, Cathedral Garden Road, Nungambakkam, Chennai -34.
5. Monitoring Cell, I A Division, Ministry of Environment Forest & CC, Paryavaran Bhavan, CGO Complex, New Delhi 110003
6. The District Collector, Karur District.
7. Stock File.

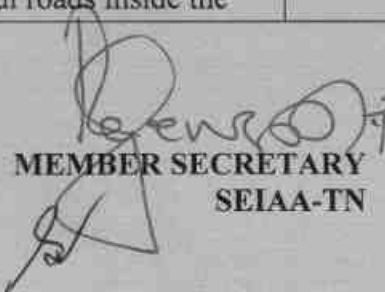
Annexure 1Additional information for considering EC for mining projects

S.No.	Details to be provided	Page no.
1)	Name of the project lease & owner	
2)	Lease Extent	
3)	Lease Validity	
4)	Approved Mining Plan/Scheme – Review a) Specify whether DSR is provided ( applicable in case of minor minerals only)	
5)	Specify - Nature and type of violation	
	I. Without EC or in excess of quantity approved in EC	
	II. Without CTO or in excess of quantity approved in CTO	
	III. Without mining plan/Scheme of mining or in excess of quantity approved in Mining plan/Scheme of mining.	
	IV. Without forest Clearance	
	V. Any other violation	
6)	Violation period	
	I. Number of months	
	II. Number of Years	
7)	Exploitation/Excavation quantity- Reserves proved through exploration by drilling	

  
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8)	Give details of production from the date of execution of the lease deed / since 1994																																			
	<table border="1"> <thead> <tr> <th rowspan="2">Year and quantity</th> <th colspan="2">2010-11*</th> <th colspan="2">2011-12*</th> <th colspan="2">2012-13*</th> </tr> <tr> <th>Planned</th> <th>Actual</th> <th>Planned</th> <th>Actual</th> <th>Planned</th> <th>Actual</th> </tr> </thead> <tbody> <tr> <td>Ore/mineral/granite blocks (tonnes)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Waste (tonnes/cu.m)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="7">* year of mining operation</td> </tr> </tbody> </table>	Year and quantity	2010-11*		2011-12*		2012-13*		Planned	Actual	Planned	Actual	Planned	Actual	Ore/mineral/granite blocks (tonnes)							Waste (tonnes/cu.m)							* year of mining operation							
Year and quantity	2010-11*		2011-12*		2012-13*																															
	Planned	Actual	Planned	Actual	Planned	Actual																														
Ore/mineral/granite blocks (tonnes)																																				
Waste (tonnes/cu.m)																																				
* year of mining operation																																				
9)	Quantity mined out during the violation period & if, yes indicate the violated quantity, in term of % of consented quantity.																																			
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Ore/mineral/granite blocks (tonnes)																																				
Waste excavation (tonnes/cu.m)																																				
10)	State illegal mining/encroachments outside the lease boundary? Percentage of quantity mined out outside the lease boundary.																																			
11)	Method of working																																			
	I. Category type: (a) Mechanised (b) Semi – Mechanised (c) Manual																																			
	II. Construction and design of haul roads																																			
	a) Dimension as per the statutory requirements which were followed or otherwise																																			
	b) Number of vehicles plying on the main haul roads inside the																																			

  
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	mine and the approach road to the pit located outside the mine, if any.										
	c) Are any measures taken to minimise fugitive dust generated from mine haul roads? Does it comply with the CPCB/PCB Guidelines?										
	d) Is there a possibility that air pollutants emitted from the project area that do not comply with air quality standards as per CPCB/PCB?										
12)	<b>Mechanized / Semi – Mechanized Method of Mining</b>										
	(i) Number of loading / excavating equipments as per approved mining plan and capacity.										
	(ii) Number of loading / excavating equipments actually being deployed and capacity.										
	(iii) Type and number of transporting equipments.										
	(iv) Type of transporting system used – (a) trucks (b) Any other mode										
	(v) Capacity and Number of trucks used as per approved mining plan										
	(vi) Capacity and Number of trucks used actually in the mine.										
	(vii) Number and capacity of loading equipments and trucks used not in line with approved mining plan.										
	<table border="1"> <thead> <tr> <th></th> <th>Capacity (m<sup>3</sup>)</th> <th>Numbers</th> </tr> </thead> <tbody> <tr> <td>Excavator</td> <td></td> <td></td> </tr> <tr> <td>Trucks</td> <td></td> <td></td> </tr> </tbody> </table>		Capacity (m <sup>3</sup> )	Numbers	Excavator			Trucks			
	Capacity (m <sup>3</sup> )	Numbers									
Excavator											
Trucks											
	(viii) Impact of excess deployment of loading equipments (excavators) and transporting equipments on environment. (a) Air pollutants (b) Water Quality (c) Land Quality (d) Noise level										
	(ix) Does the deployment of loading equipments (excavators) and trucks fulfil the statutory requirements as per MMR 1961, with respect to the site conditions?										
13)	<b>Method of Rock Breaking/Material preparation for the excavation:</b>										
	(i) Methodology adopted –										
	a) Drilling and blasting										

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	b) Rock breakers	
	c) Rippers	
	d) Surface miners	
	e) Direct mucking by excavators	
	f) Manual means	
	g) Any other methods or combination of above	
	(ii) In case of drilling and blasting method:	
	(a) Type of blasting: short hole or deep hole	
	(b) Whether controlled blasting technique adopted? If yes, specify the technique with details of study, year of study	
	(c) Impacts due to blasting defined as per the studies, if any carried out previously as indicated	
	(d) Dust pollution	
	(e) Noise level (dB(A))	
	(f) Ground vibration studies and Fly rock projection	
	(iii) Impact of preparation of Ore and waste on environment-	
	a) Air Pollution	
	b) Noise Pollution	
	c) Water Pollution	
	d) Safety standards	
	e) Traffic density	
	f) Road Condition (vulnerability)	
14)	Construction and Design of Dumps.	
	a) Place/Location	
	b) Approach to Dump form the mine distance and safety standards.	
	c) Area of extent occupied	
	d) Dimension of Dump and No. of terrace with heights (benches)	
	e) Vegetation covered ; If yes, specify the details of plants	
15)	Construction and Design of Waste Dumps	
	(i) Numbers and Location of Dumps as per approved Mining Plan	
	(ii) Specify whether reject dumps are located within or outside mining lease	
	(iii) Area occupied in excess of the approval mining plan.	

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	(iv) Dimension of Terracing, Light, shapes, etc., Dump as per approved Mining Plan	
	(v) Fresh/Existing Dimension Height, shape, width. etc., of Dumps in the mine.	
	(vi) Volume/Quantity added to Waste/Dump during the violated period.	
	(vii) Approach to the Dump-Dimension, distance.	
	(viii) Number of and type of equipments deployed in Dump.	
	(ix) Provision of Garland drains around the Dumps.	
	(x) Any vegetation made on the slopes.	
	(xi) Provision of safety standards.	
	(xii) Impact of Waste/Dumps on environment.	
	a) Air pollution	
	b) Water pollution	
	c) Dust pollution	
	d) Noise pollution	
	(xiii) Terracing	
16)	Construction and Design of Ore and sub grade ore/mineral Stacks:-	
	(i) Number and Location of Ore stacks.	
	(ii) Dimension of Ore/sub grade Stacks as per the Approved Mining Plan	
	(iii) Volume/Quantity added during the violation period.	
	(iv) Any Screening plant or any other loading equipment engaged during the violated period.	
	(v) Approach to Ore / sub grade stack –Distance, hazards.	
	(vi) Safety standards adopted while operation.	
	(vii) Impact of ore/sub grade on environment	
	a. Air pollution	
	b. Water pollution	
	c. Dust pollution	
	d. Noise pollution	
17)	Mine Pit Water	
	(i) Intersection of Ground water table, specify the measures taken.	
	(ii) Ground water table as per hydro geological Studies (Pumping test).	

  
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	(iii) Provision of Garland drains around pit and dumps	
	(iv) Water pollution	
	(v) Management of mine water.	
	(vi) Ultimate pit limit, w.r.t Ground water intersection and management of drainage of ground water.	
18)	Diversion of General Drainage/River/Nallah course for mining	
19)	Clearing of vegetation before the commencement of mining operation- Number of trees (species wise)	
20)	Man Power	
	(a) Statutory management	
	(b) Regular (Non -statutory) Manpower	
21)	Occupational Health and Safety.	
	(a) Periodical monitoring of health standards of persons employed as per Mine Act, 1952.	
	(b) Failure to inform statutory bodies periodically, if any	
22)	Population (Nearby Habitation)	
	(i) Population/Significant Population/Dense Population within the buffer zone of 10 Kms.	
	(ii) People displacement due to mining activities	
	(iii) Location/ Existence of habitation near the river or any other historical/sensitive/ forest distance.	
	(iv) Impact of mining on Surrounding and habitation-Air, Water, Noise, Pollution.	
	(v) Socio Economic aspects of mining.	
23)	CSR	
	(a) Field ground Activities or studies. Actual amount spent towards CSR and the future proposal.	
24)	NOC from DMG for quantity clarification in respect of settlement of all the amount payable against identified violation.	
25)	For the Clearance of EC, Public Hearing is mandated as per MoEF & CC Notification.	

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26)	Conceptual post mining land use/restoration	
27)	Litigation/court cases, if any pending	
28)	Disaster management plan for the mine	



  
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**ANNEXURE 2**  
**STANDARD TOR CONDITIONS WITH**  
**ADDITIONAL TOR POINTS**



TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

**COMPLIANCE OF TOR CONDITIONS**

**Point wise compliance of ToR points issued by SEIAA, TN vide letter No. SEIAA-TN/F. No. 6557/SEAC/ToR-1168/2018 Dated: 30.05.2022 for Mining of Major Minerals in the Mine of “Varavanai Limestone Quarry Over an Extent of 1.90.5 Ha at S.F.No. 833/4B, 836(P), 843/2 of Varavanai Village, Kulithalai Taluk (presently Kadavur Taluk), Karur District, Tamil Nadu State.**

**Standard TOR**

ToR Ref.	Description	Response	Page Ref. in EIA Report
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.	The Mining Plan for fresh grant of lease was approved by Indian Bureau of Mines in letter No.TN/TCR/MP/LST-546-MDS dated 30.12.1991 before the grant of Mining Lease. The Mining lease was granted for twenty years under G.O. Ms. No. 162 Industries (MMA-2) Department dated 14.06.1994. The lease deed was executed on 10.08.1994 and the mining operation commenced on 20.04.1996.  Hence, Year-wise production details since 1994 and before 1994 are not relevant or applicable.	-
2.	A copy of document in support of the fact that the Proponent is the rightful lessee of the mine should be given.	The 3rd Scheme of mining was approved by Indian Bureau of Mines vide letter no. TN/DGL/LST/MS-1372-MDS dated 13.06.2016.	Annexure-III

## TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

3	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 and mining technology and should be in the name of the lessee.	All the documents i.e., Mining Plan, EIA and public hearing are compatible with each other in terms of ML area production levels, waste generation and its management and mining technology are compatible with one another.  The 3rd Scheme of mining was approved by Indian Bureau of Mines vide letter no. TN/DGL/LST/MS-1372-MDS dated 13.06.2016.	Annexure-III
4	All corner coordinates of the mine lease area, superimposed on a High-Resolution Imagery/toposheet should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).	Details of coordinates of all corners of mining lease area have been incorporated in mining plan and Chapter 2 of EIA/ EMP Report.	Chapter-2,
5	Information should be provided in Survey of India Topo sheet in 1:50,000 scale indicating geological map of the area, important water bodies, streams and rivers and soil characteristics	Topo map as attached in Chapter-2	Chapter-2, Figure 2.4

## TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

6.	<p>Details about the land proposed for mining activities should be given with information as to whether 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>Details about the land for mining activities should be given Chapter 2.</p>	<p>Chapter-2 Table 2.4</p>
7	<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?</p> <p>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 /</p>	<p>Noted.</p>	

## TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

	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.		
8	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.	The mine will be worked with opencast manual method of mining ("B" category of small mine). Mining will be by simple open cast manual methods, with help of spades, baskets and jack hammer, drilling and blasting. There is no secondary blasting in the mine. No heavy earth moving machineries are for limestone mining. The proposed depth of mining is 13 m BGL.  The method of mining is detailed in Chapter 2 of the EIA Report.	Chapter-2
9	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.	Study area comprises of 10 km radius from the mine lease boundary. Key Plan showing core zone (ML area).	Chapter-2  Figure 2.5
10	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human	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 has been prepared and incorporated in Chapter-3 of	Chapter-3, Figure 3.2 and 3.3 Table 3.3

## TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

	<p>settlements and other ecological features should be indicated.</p> <p>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>EIA/ EMP Report.</p> <p>There is no wildlife sanctuary and national park, migratory routes of fauna in the study area.</p>	
11	<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>The overburden and the mineral will be dumped in the non-mineral bearing area of the East and Southern side of the lease area, which is having an adequate space for dumping the waste during the entire life of mine.</p>	Chapter-2
12	<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.</p> <p>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</p>	<p>The mining lease area is not falling under forest land.</p>	

## TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

	<p>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>		
13	<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>The mining lease area is not falling under forest land.</p>	
14	<p>Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006</p>	<p>Not Applicable.  There is no involvement of forest land in the project area.</p>	
15	<p>The vegetation in the RF / PF areas in the study area, with necessary details, should be</p>	<p>Details of flora have been discussed in Chapter-3 of the EIA/EMP Report.</p>	<p>Chapter-3</p>

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16	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 protected area and accordingly detailed mitigative measures required, should be worked out with cost implications and submitted.	There is a relatively poor sighting of animals in the core and buffer areas of the mining lease.  No significant impact is anticipated	
17	Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Tiger/Elephant Reserves/ (existing as well as proposed), if any, within 10km 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 State Wildlife Department/Chief	There is no National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Tiger / Elephant Reserves / Critically Polluted areas within 10 km radius of the mining lease area.	
18	A detailed biological study of	Details biological study (flora & fauna)	

## TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

	<p>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, 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 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>	<p>within 10 km radius of the project site have been incorporated in Chapter-3 of EIA/ EMP Report.</p> <p>No flora &amp; fauna listed in scheduled I have been found in study area so there is no need of conservation plan. However, all care will be taken for protection of flora &amp; fauna, if any in the lease hold area.</p>	<p>Chapter – 3</p>
<p>19</p>	<p>Proximity to Areas declared as ‘Critically Polluted’ or the Project areas likely to come under the ‘Aravali Range’, (attracting court restrictions for mining operations), should also be indicated and where so</p>	<p>The mining lease area is not falling under critically polluted area.</p>	



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	<p>required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Dept. Should be secured and furnished to the effect that the proposed mining activities could be considered.</p>		
20	<p>Similarly, for coastal projects, A CRZ map duly authenticated by one of the authorized agencies 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: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority)</p>	<p>There is no Coastal Zone within 15 km radius of the project site.</p>	
21	<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</p>	<p>There is no Rehabilitation and resettlement is involved. Land classified as Patta land</p>	

## TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

	<p>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 located in the mine lease area will be shifted or not. The issues relating to shifting of Village including their R&amp;R and socio-economic aspects should be discussed in the report.</p>		
22	<p>One season (non-monsoon) and (Summer Season), (Post monsoon) primary baseline data on ambient air quality 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</p>	<p>Baseline data collected during Post-Monsoon Season (August to October 2022) has been incorporated in EIA/EMP report.</p> <p>The key plan of monitoring station has been discussed in Chapter-4. Locations of the monitoring stations have been selected keeping in view the pre- dominant downwind direction and location of the sensitive receptors and also that they</p>	Chapter 3

## TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

	<p>EIA and EMP Report.</p> <p>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 500m of the mine lease in the pre- dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.</p>	<p>represent whole of the study area.</p>	
23	<p>Air quality modelling 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 modelling should be provided.</p>	<p>Air quality modelling &amp; Impact of Air quality is furnished in Final EIA report</p> <p>Transportation of mineral during operation of mines will be done by road &amp; SH 199 through dumpers and the impact of movement of vehicles are incorporated in EIA/EMP report.</p> <p>Air quality modelling &amp; Impact of Air quality is furnished in Final EIA report</p>	<p>Chapter-3 and 4</p>

## TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

	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. The wind roses showing predominant wind direction may also be indicated on the map.		
24	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.	Total water requirement: 1.7 KLD Dust Suppression: 0.5 KLD Domestic Purpose: 0.7 KLD Plantation :0.5 KLD Domestic Water will be sourced from nearby Villages.	Chapter-2 Table 2.12
25	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.	Not Applicable Water will be taken from nearby villages	
26	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.	At the last stage of mining operation, almost complete area will be worked to restore the land to its optimum reclamation for future use as water reservoir.	

## TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

27	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.	Impact of the project on the water quality & its mitigation measures has been incorporated in Chapter-4 of EIA/EMP report.	Chapter-4
28	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. 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.	Proposed Depth of Mining: 13 m BGL  The ground water table is reported as 50 m below ground level in nearby wells of this area. The mining depth above the water table and hence, quarrying may not affect the ground water So mine working will not be intersecting the ground water table.	Chapter-2  Table 2.1
29	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	There is no any stream crossing in the quarry	

## TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

	the hydrology should be brought out.		
30	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.	Highest elevation: 192 m AMSL Depth: 13 m Below Ground Level	Chapter-2 Table no. 2.1
31	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 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 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	Green Belt Development plan is proved given in Chapter 2.	Chapter-2

## TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

	the species which are tolerant pollution		
32	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	Impact on local transport infrastructure due to the project has been assessed. There shall not be much impact on local transport. Traffic density from the mining activity has been incorporated in Chapter 3 of EIA/EMP report.	Chapter-3
33	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA report.	Adequate infrastructure & other facilities will be provided to the mine workers. Details are given in chapter-2 of EIA/EMP	Chapter-2

## TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

34	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.	Conceptual post mining land use and Reclamation and restoration sectional plates are given in Mining Plan followed by Scheme of mining.	Mining plates Annexure V
35	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 in the mining area may be detailed.	Suitable measure will be adopted to minimize occupational health impacts of the project. The project will have positive impact on local environment. Details are given in chapter-9 of EIA/EMP.	Chapter-9
36	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.	Suitable measure will be adopted to minimize occupational health impacts of the project.	Chapter-9
37	Measures of socio-economic significance and influence to the local community proposed to be provided by the Project	Suitable measures has been discussed in Chapter 4	Chapter-4



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	Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.		
38	Detailed environmental management plan 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 has been described in detail in Chapter-9 of the EIA/EMP Report.	Chapter-9
39	Public hearing points raised and commitment of the project proponent on the same along with time bound action plan to implement the same should be provided and incorporated in the final EIA/EMP Report of the Project.	Public hearing will be conducted and the proceedings of the same will be incorporated in the Final EIA Report.	
40	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the project should be given.	Not applicable  No. litigation is pending against the project in any court.	

## TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

41	The cost of the project (capital cost and recurring cost) as well as the cost towards implementation of EMP should clearly be spelt out.	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">S. No</th> <th style="text-align: center;">Description</th> <th style="text-align: center;">Cost</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td>Land Cost</td> <td style="text-align: right;">7,00,000/-</td> </tr> <tr> <td style="text-align: center;">2</td> <td>Operational Cost</td> <td style="text-align: right;">3,35,080/-</td> </tr> <tr> <td></td> <td><b>Total</b></td> <td style="text-align: right;"><b>10,35,080/-</b></td> </tr> </tbody> </table>		S. No	Description	Cost	1	Land Cost	7,00,000/-	2	Operational Cost	3,35,080/-		<b>Total</b>	<b>10,35,080/-</b>	Chapter-8 Table 8.1 and 8.2
		S. No	Description	Cost												
		1	Land Cost	7,00,000/-												
		2	Operational Cost	3,35,080/-												
	<b>Total</b>	<b>10,35,080/-</b>														
<b>EMP Cost: 20,60,780/-</b>																
42	Disaster Management Plan shall be prepared and included in the EIA/EMP Report.	Disaster Management and Risk Assessment has been incorporated in Chapter-7		Chapter-7												
43	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.	Benefits of the project has incorporated		Chapter-8												
44	Besides the above, the below mentioned general points are also to be followed:															
a.	Executive Summary of the EIA/EMP report	Executive Summary is incorporated in the EIA Report														
b.	All documents to be properly referenced with index and continuous page numbering.	Complied														
c.	Where data are presented in the report especially in tables, the period in which the data were collected and the sources	Complied														

TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

	should be indicated.		
d.	Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF & CC NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the project.	Complied	
e.	Where the documents provided are in a language other than English, an English translation should be provided.	Complied	
f.	The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.	The complete questionnaire has been prepared	
g.	While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF 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 also be followed.	The EIA report has been prepared and complying with the circular issued by MoEF vide O.M. No. J-11013/41/2006-IA. II(I) dated 4th August 2009.	
h.	Changes, if any made in the	There are no changes in prepared EIA as per	

## TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

	<p>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 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>	submitted Form-1 & PFR	
i.	<p>As per the circular no. J- 11011/618/2010-IA. II(I) dated 30.5.2012, report on the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project by the Regional Office of Ministry of Environment &amp; Forests, if applicable.</p>	Will be complied after grant environment clearance from SEIAA, Tamil nadu	
j.	<p>The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii)</p>	All Sectional Plates of Quarry is enclosed in Mining Plan.	

## TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

	geological maps and sections (iii) sections of mine pit and external dumps, if any clearly showing the features of the adjoining area.		
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## TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

### Additional TOR by SEAC

S.No.	Condition	Compliance
1.	The Proponent shall furnish the valid review/ scheme of mining with a production for 5 years not to exceed ROM - 59376 Tonnes & 35626 Tonnes of Limestone approved by IBM, along with EIA report.	The valid scheme of mining with a production for 5 Years not to exceed ROM - 59376 Tonnes & 35626 Tonnes of Limestone approved by IBM will be submitted.
2.	The Proponent shall carry out the cumulative & comprehensive impact study due to mining operations carried out in the quarry cluster specifically with reference to the environment in terms of air pollution, water pollution, health impacts and social impact accordingly the Environment Management plan should be prepared keeping the concerned quarry and the surrounding habitations in the mind.	The cumulative & comprehensive impact study due to mining operations has been carried out in the quarry cluster specifically with reference to the environment in terms of air pollution, water pollution, health impacts and social impact accordingly the Environment Management plan has been prepared and the same is detailed in Chapter 4 and 9 of the EIA Report.
3.	The certified existing EC compliance report shall be included in the EIA Report.	The Mining Plan for fresh grant of lease was approved by Indian Bureau of Mines in letter No.TN/TCR/MP/LST-546-MDS dated 30.12.1991 before the grant of Mining Lease. The Mining lease was granted for twenty years under G.O. Ms. No. 162 dated 14.06.1994. The lease deed was executed on 10.08.1994 and the mining operation commenced on 20.04.1996. Later, as per MoEF&CC Notification S.O.804 (E) dated

## TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

		14.03.2017, our project is considered as violation, mine without obtaining prior EC. The mine was not operational from 11.02.2016. Thiru. S. Sekhar, owner of M/s. Sekhar Mines applied for Environmental Clearance. The project has been accorded with Terms of Reference from SEIAA, Tamil Nadu vide Letter. No. SEIAA-TN/F.No.6557/SEAC/TOR-1168/2018 dated 30.05.2022.
4.	The entire Cluster of mine lease area shall be video graphed through Drone and submit the same along with EIA report	The entire Cluster of mine lease area video graphed through Drone will be submitted.
5.	<p>If the proponent has already carried out the mining activity in the proposed mining lease area after 15.01.2016, then the proponent shall furnish the following details from AD/DD, mines,</p> <p>a) What was the period of the operation and stoppage of the earlier mines with last work permit issued by the AD/DD mines?</p> <p>b) Quantity of minerals mined out.</p> <p>c) Highest production achieved in any one year</p> <p>d) Detail of approved depth of mining.</p> <p>e) Actual depth of the mining achieved earlier.</p> <p>f) Name of the person already mined in that leases area.</p>	<p>The Proponent had carried out mining from 15.01.2016 to 10.02.2016 from the mine lease area. The Letter from the District collector, Karur stating the same is attached as Annexure VII.</p> <p>a) The 3<sup>rd</sup> Scheme of mining was approved by Indian Bureau of Mines vide letter no. TN/DGL/LST/MS-1372-MDS dated 13.06.2016, valid up to 31.03.2019. Later, as per MoEF&amp;CC Notification S.O.804 (E) dated 14.03.2017, the project is considered as violation, mine without obtaining prior EC. The</p>

## TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

	<p>g) If EC and CTO already obtained, the copy of the same shall be submitted.</p> <p>h) Whether the mining was carried out as per the approved mine plan (or EC if issued) with stipulated benches.</p>	<p>mine was not operational from 11.02.2016.</p> <p>b) The quantity of minerals mined out is 150 tonnes</p> <p>c) The lessee has not submitted the Scheme of Mining Plan during the plan period 2014-2015, due to lack of demand, non-availability of labour, monsoon and uneconomic operations and financial crisis. In the Period 2015 – 2016, the mine was operation from 15.01.2016 to 10.02.2016 and the quantity mined out was 150 Tonnes.</p> <p>d) The approve depth of mining is 13.0 m BGL</p> <p>e) The actual depth of mining achieved earlier is 13.0 m BGL</p> <p>f) Thiru. S. Sekhar, owner of M/s. Sekhar Mines</p> <p>g) EC and CTO has not obtained earlier</p> <p>h) The mining was carried out as per the approved mining plan.</p>
6.	<p>All comer coordinates of the mine lease area superimposed on a High Resolution Imagery/Topo sheet, topographic sheet, geomorphology, lithology and geology of the mining lease area should be provided. Such an Imagery of the proposed area should clearly show the land use and other</p>	<p>Detailed in Chapter 2 of the EIA Report</p>



## TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

	ecological features of the study area (core and buffer zone)	
7.	The proponent shall furnish photographs of adequate fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan.	The photographs of the fencing, green belt along the periphery including replantation of existing trees & safety distance between the adjacent quarries & water bodies nearby provided as per the approved mining plan will be furnished.
8.	The Project Proponent shall provide the details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications, the anticipated impacts of the mining operations on the surrounding environment and the remedial measures for the same.	The details of mineral reserves and mineable reserves, planned production capacity, proposed working methodology with justifications are detailed in Chapter 2 of the EIA Report.  The anticipated impacts of the mining operations on the surrounding environment and the remedial measures for the same is detailed in Chapter 4 of the EIA Report.
9.	The Project proponent shall provide the Organization chart indicating the appointment of various statutory officials and other competent person to be appointed as per the provisions of Mines Act'1952 and the MMR, 1961 for carrying out the quarrying operations scientifically and systematically in order to ensure safety and to protect the environment.	The Environment Management Plan (EMP) will consist of all mitigation measures for each component of the environment due to the activities increased during mining operation to minimize adverse environmental impacts resulting from the activities of the project.  To carry out the above activities, an administrative team will be arranged

## TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

		and the details of the same is incorporated in Chapter 10 of the EIA Report.
10.	The Project Proponent shall conduct the hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) along with the collected water level data for both monsoon and non-monsoon seasons from the PWD / TWAD so as to assess the impacts on the wells due to mining activity. 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.	The quarry operation is proposed up to a depth of 13 m below ground level. The water table is below 50m from ground level which is observed from the nearby bore wells and wells. Hence the ground water will not be affected in any manner due to the quarrying operation during the entire lease period.
11.	The proponent shall furnish the baseline data for the environmental and ecological parameters with regard to surface water/ground water quality, air quality, soil quality, & flora,/fauna including traffic/vehicular movement.	Complied. The baseline monitoring results and traffic assessment study details are incorporated in chapter 3 of EIA Report.
12.	A tree survey study shall be carried out (nos., name of the species, age etc.,) both within the mining lease applied area & 300m buffer zone and its management during mining activity.	The detailed tree survey study has been conducted and the same is incorporated in Chapter 3 of EIA Report. The management measure for the protection of environment due to the mining activities are detailed in Chapter 9 of EIA Report.
13.	A detailed mining closure plan for the proposed project shall be included in EIA/EMP Report which	The mine closure plan for the project is attached as plate no. 6 of the Mining

## TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

	should be site-specific	Plan which is enclosed as Annexure V.
14.	The Public hearing advertisement shall be published in one major National daily and one most circulated vernacular daily	The Public hearing advertisement will be published in one major National daily and one most circulated vernacular daily
15.	The Public hearing details, EIA reports etc., shall be placed in Tamil language	The Public hearing details, EIA reports etc., will be placed in Tamil language
16.	The recommendation for the issue of "Terms of Reference" is subjected to the 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.1132/2016) and O.A.No.102/2017 and O.A.No.404/2016 (M.A.No. 758/2016, M.A.No.920/2016, M.A.No.112212016, M.A.No.1212017 & M.A. No. 84312017) and O.A.No.405/2016 and O.A.No.520 of 2016 (M.A.No. 98U2016, M.A.No.982/2016 & M.A.No.384/2017).	Noted
17.	The purpose of Green belt around the project is to capture the fugitive emissions, carbon sequestration and to attenuate the noise generated, in addition to improving the aesthetics. A wide range of indigenous plant species should be planted as given in the appendix-I in consultation with the DFO, State Agriculture University. The plant species with dense/moderate canopy of native origin should be chosen. Species of small medium/tall trees alternating with shrubs should be planted in a mixed manner.	Complied.

## TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

18.	Taller/one year old Saplings raised in appropriate size of bags, preferably eco-friendly bags should be planted adopting proper spacing as per the advice of local forest authorities/botanist/Horticulturist with regard to site specific choices. The proponent shall earmark the greenbelt area with GPS coordinates all along the boundary of the project site with at least 3 meters wide and in between blocks in an organized manner	Complied.
19.	A Disaster management Plan shall be prepared and included in the EIA,/EMP Report	Disaster management Plan has been prepared and incorporated in Chapter 7 of the EIA EMP Report
20.	A Risk Assessment and management Plan shall be prepared and included in the EIA,/EMP Report	Risk Assessment and management Plan has been prepared and incorporated in Chapter 7 of the EIA EMP Report
21.	The Socio-economic studies should be carried out within a 5 km buffer zone from the mining activity. Measures of socio-economic significance and influence to the local community proposed to be provided by the Project proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation	The Socio-economic studies should be carried out and the same is detailed in Chapter 3 of the EIA Report.
22.	If any quarrying operations were carried out in the proposed quarrying site for which now the EC is sought, the Project proponent shall furnish the detailed compliance to EC conditions given in the previous EC with the site photographs which shall duly be certified by MoEF&CC, Regional Office,	As per MoEF&CC Notification S.O.804 (E) dated 14.03.2017, our project is considered as violation, mine without obtaining prior EC. The mine was not operational from 11.02.2016.

## TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

	Chennai (or) the concerned DEE/TNPCB.	
23.	Concealing any factual information or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this Terms of Reference besides attaching penal provisions in the Environment (protection) Act, 1986	Noted
24.	The onsite inspection shall be carried out by the sub-committee constituted by SEAC to assess the Environmental settings and furnish the report for further cause of action	Noted

### Additional TOR by SEIAA

S.No.	Condition	Compliance
1.	Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area on the nearby Villages, Water-bodies/ Rivers, & any ecological fragile areas	The cumulative & comprehensive impact study due to mining operations has been carried out and the same is incorporated in Chapter 4 of the EIA Report.
2.	The project proponent shall furnish VAO certificate with reference to 300m radius regard to approved habitations, schools, Archaeological structures etc	The VAO Certificate from the concern authority is attached as Annexure VI.
3.	As per the MoEF& CC office memorandum F.No.22 65/2017JA.III dated: 30.09.2020 and 20.10.2020 the proponent shall address the concerns raised during the public consultation and all the activities proposed shall be part of the Environment Management plan.	Public Hearing will be conducted and the proceedings of the same will be incorporated in the Final EIA Report.

## TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

4.	The Environmental Impact Assessment shall study in detail the carbon emission and also suggest the measures to mitigate carbon emission including development of carbon sinks and temperature reduction including control of other emission and climate mitigation activities.	Impact assessment is carried out on various environmental components and is provided in Chapter 4
5.	The Environmental Impact Assessment should study the biodiversity, the natural ecosystem, the soil micro flora, fauna and soil seed banks and suggest measures to maintain the natural Ecosystem	Impact assessment is carried out on various environmental components and is provided in Chapter 4
6.	Action should specifically suggest for sustainable management of the area and restoration of ecosystem for flow of goods and services.	Noted and Agreed to comply.
7.	The project proponent shall study impact on fish habitats and the food WEB/ food chain in the water body and Reservoir.	Project will not impact any waterbody as there is no surface waterbody within 15 km radius of project site except a seasonal pond at project site
8.	The Terms of Reference should specifically study impact on soil health, soil erosion, the soil physical, chemical components and microbial components.	Impact on land environment is provided in section 4.2
9.	The Environmental Impact Assessment should study impact on forest, vegetation, endemic, vulnerable and endangered indigenous flora and fauna.	Project will not have impact on any forest land, endemic, vulnerable and endangered indigenous flora and fauna.
10.	The Environmental Impact Assessment should study impact on standing trees and the existing trees should be numbered and action suggested for protection	The mine lease area does not support any trees except few plants of acacia

## TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

11.	The Environmental Impact Assessment should study on wetlands, water bodies, rivers streams, lakes and farmer sites.	No wetland, water bodies, rivers streams, lakes and farmer sites will be affected due to this project
12.	The Environmental Impact Assessment should hold detailed study on EMP with budget for Green belt development and mine closure plan including disaster management plan.	Environment management plan with budget is provided in chapter 9
13.	The Environmental Impact Assessment should study impact on climate change, temperature rise, pollution and above soil & below soil carbon stock	Impact assessment is carried out on various environmental components and is provided in Chapter 4
14.	The Environmental Impact Assessment should study impact on protected areas, Reserve Forests, National Parks, Corridors and Wildlife pathways, near project site.	Impact assessment is carried out on various environmental components and is provided in Chapter 4
15.	The project proponent shall study and furnish the impact of project on plantations in adjoining patta lands, Horticulture, Agriculture and livestock.	Green belt plantation plan is provided in Chapter 2. Approved mining plan including green belt development plan is attached as Annexure III
16.	The project proponent shall study and furnish the details on potential fragmentation impact of natural environment, by the activities.	No natural environment will be fragmented due to project.
17.	The project proponent shall study and furnish the impact on aquatic plants and animals in water bodies and possible scars on the landscape, damages to nearby caves, heritage site, and archaeological sites possible land form changes visual and aesthetic impacts.	Detailed in Chapter 2 of the EIA Report
18.	The project proponent shall study and furnish the possible pollution due to plastic and microplastic on the environment. The ecological risks and impacts of plastic & microplastics on aquatic	No such impacts are anticipated due to project

## TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

	environment and fresh water systems due to activities, contemplated during mining may be investigated and reported	
19.	The project proponent shall detailed study on impact of mining on Reserve forests free ranging wildlife.	No reserve forest site will be affected due to the project
20.	<p>Detailed study shall be carried out in regard to impact of mining around the proposed mine lease area covering the entire mine lease period as per precise area communication order issued from reputed research institutions on the following</p> <ul style="list-style-type: none"> <li>a) Soil health &amp; bio-diversity.</li> <li>b) Climate change leading to Droughts, Floods etc.</li> <li>c) Pollution leading to release of Greenhouse gases (GHG), dose in Temperature, &amp; Livelihood of the local people.</li> <li>d) Possibilities of water contamination and impact on aquatic ecosystem health.</li> <li>e) Agriculture, Forestry &amp; Traditional practices.</li> <li>f) Hydrothermal/Geothermal effect due to destruction in the Environment.</li> <li>g) Bio-geochemical processes and its foot prints including environmental stress.</li> <li>h) Sediment geochemistry in the surface streams.</li> </ul>	Impact assessment is carried out on various environmental components and is provided in Chapter 4



## TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

21.	Hydro-geological study considering the contour map of the water table detailing the number of ground water pumping & open wells, and surface water bodies such as rivers, tanks, canals, ponds etc. within 1 km (radius) so as to assess the impacts on the nearby waterbodies due to mining activity. 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, covering the entire mine lease period.	The quarry operation is proposed up to a depth of 13 m below ground level. The water table is below 50m from ground level which is observed from the nearby bore wells and wells. Hence the ground water will not be affected in any manner due to the quarrying operation during the entire lease period.
22.	To furnish disaster management plan and disaster mitigation measures in regard to all aspects to avoid/reduce vulnerability to hazards & to cope with disaster/unfavorable accidents in & around the proposed mine lease area due to the proposed method of mining activity & its related activities covering the entire mine lease period as per precise area communication order issued	Disaster management Plan is provided in Chapter 7 of the EIA Report
23.	To furnish risk assessment and management plan including anticipated vulnerabilities during operational and post operational phases of Mining.	Risk Assessment and management Plan is provided in Chapter 7 of the EIA Report.
24.	Detailed Mine Closure Plan covering entire mine lease period as per precise area communication order issued	Approved mining plan including mine closure plan is attached as Annexure III.
25.	Detailed Environment Management Plan along with adaptation, mitigation & remedial strategies covering the entire mine lease period as per precise area communication order issued	Environment Management Plan is provided in Chapter 10 of EIA report.

## TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

### **Additional TOR Specified by the SEAC to deal with the violation aspects of the mining projects**

<b>Section A</b>		
<b>Step 1: Enumerate the aspects of Violation:</b>		
a)	The proponent should enumerate the violations as applicable to the project	Varavanai Limestone Quarry was operated after 15.01.2016 without valid EC in violating the EIA Notification 2006 and produced 150 Tonnes of Limestone during 15.01.2016 to 10.02.2016
b)	Furnish a description of each violation with quantitative and qualitative data	Operating the Lease after 15.01.2016 without EC is the Violation. There is no Violation in any other Statute. However, the Environmental Management Plan (EMP) Measures were in place during the Violation Period also.
c)	Violation categories are to be decided taking into consideration the stage at which the project execution stands.	Violation of the Mine Project is detailed Chapter 13 of EIA Report
<b>Step 2: Ecological Damage Assessment</b>		
a)	For each aspect of violation enumerated in step (I), identify the resultant environmental damage that may have been caused.	The total Ecological/Environmental Damage Cost is 0.56 Lakhs
b)	Furnish a description of the environmental damages with quantitative and qualitative data.	Air Quality & Ecology : Rs.20,000/- Water Environment : Rs.9,500/- Socio-economics & Public Health : Rs.10,000/-
<b>Step 3: Remediation Plan:</b>		

## TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

a)	For the Environmental damage(s) identified in the step (2) above prepare the remediation plan for the each or combination of damages.	An amount of Rs. 0.56 Lakhs toward Remediation Plan and Natural & Community Resource Augmentation Plans is allotted for approval which will be spent within in one month.
b)	The remediation plan should essentially consists of problem statement target to be achieved (quantity), standards technology/ procedures for remediation equipment and machinery to be used. time schedule and remediation cost (direct and indirect cost, capital as well as O&M costs).	Additional Green Belt : Rs.0.20 Lakhs Provision of Rain water harvesting wells: Rs.0.095 Lakhs Community/Public Buildings Maintenance: Rs. 0.10 Lakhs Total : Rs. 0.395 Lakhs

### Section B

#### Natural Resource Augmentation

a)	The resources that should be considered for augmentation should essentially consist of land, biota, air, water and other resources as applicable.	Air Quality / GHG Emission Reduction
b)	Proponent may choose one or more of the resource augmentations as applicable and provide a description of the augmentation proposal in detail for each resource.	Providing Solar Street Lights to nearby Village @ Rs.10,000/- per Light, 1 per village, 1 village : Rs.0.10 Lakhs
c)	The proponent should also furnish the cost for each augmentation scheme.	Provided

#### Community resource Augmentation

a)	The proponent should prepare a plan of action for addressing the needs of the community in terms of resources in the sectors of education. health and sports primarily and other such resources as applicable to the community in the vicinity of the	Soft Skill Development Works : Rs.0.0629 Lakhs
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## TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

	project.	
b)	The community resource augmentation plan should consist of rehabilitation of houses and people, budget allocation and time schedule for completing the activity.	Not Applicable
Section C		
a)	The proponent should prepare content for the ecological damage assessment remediation plan, natural resource augmentation and community resource augmentation separately in a chapter and include in the EIA / EMP report.	Complied. Discussed in Chapter 13
Section D		
a)	After the appraisal of the EIA / EMP report submitted by the proponent, the SEAC will make a judgement of the quality of the content in the EIA / EMP report specifically with reference to the chapter covering the ecological damage assessment, remediation plan, natural resource augmentation and community resource augmentation.	Noted
b)	In the judgement of SEAC, if the quality of the content in the chapter is not satisfactory, the SEAC may direct the proponent to further revise the chapter and resubmit the EIA,EMP report.	Noted
c)	If SEAC concludes that the technical part is satisfactory and the costing aspect is not satisfactory then the SEAC may revert to legal provisions, MoEF & CC guidelines and similar expert committee recommendations for	Noted

## TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

	finalizing the cost aspects or the SEAC may use its own expertise and experience in finalizing the cost	
Section E		
a)	The proponent is directed to furnish data as per the questionnaire appended in Annexure I. It will help the SEAC in arriving the ecological damage and the associated cost	Complied
Section F		
1)	In compliance with the Supreme Court Order stated in MoEF&CC letter F. No. 3-50/2017 IA.III-pt dated 05th January 2018, the proponent is required to submit the No Objection certificate obtained from the department of Geology and Mining, Government of Tamil Nadu regarding payment of 100% cost of illegally mined mineral under section 21(5) of MMDR Act 1957 which would account for mining operations in violation of the following :	The legal requirements will be followed during the EC Process. Undertaking is being submitted. Also, the Mine will not be operated till all Statutory Dues are paid.
a)	Without Environmental Clearance (EC), or in excess of the quantity approved in EC	Operating the Lease after 15.01.2016 for a production of 150 Tonnes Limestone leads to the Violation. Applied for EC
b)	Without Consent to Operate (CTO) or in excess of the quantity approved in CTO and	There is no EC and CTO and hence applied under violation category .
c)	Without Mining Plan/Scheme of Mining or in excess of the quantity approved in Mining Plan/Scheme of Mining	There is no violation in this regard. IBM has accorded the periodic Approvals for Mining Plans/Schemes

## TOR Reply of Existing Limestone Quarry Over an Extent of 1.90.5 Ha

		of the Mine. Present ROMP is valid till. 2019.
d)	Without Forest Clearance	Without Forest Clearance
e)	Any other violation	Any other Violation
2)	List out the details of Reserve Forest and Wildlife Sanctuary nearby the project site (the details should also include other districts which are nearby the project site) and also furnish the detail of distance between the project site and Reserve Forests/Wildlife Sanctuary	<ul style="list-style-type: none"> <li>• Vaiyamalaippalaiyam RF – 8.30 km SE</li> <li>• Mungil Karadu RF – 11.82 km SW</li> <li>• Veeramalai RF – 12.92 km SE</li> </ul>
3)	Whether the project site attracts the HACA Clearance? If so, also furnish the HACA Clearance for the mining from the competent authority	No

**ANNEXURE 3**  
**MINING PLAN APPROVAL LETTER**

Speed post

GOVERNMENT OF INDIA  
MINISTRY OF MINES  
INDIAN BUREAU OF MINES  
D/O THE REGIONAL CONTROLLER OF MINES

Ph.No.24911295/4461/1570  
Fax No.044-24911295  
Email ID:ro.chennai@ibm.gov.in/  
rocmchennai@yahoo.co.in

C-4-A, Rajaji Bhawan  
CGO complex, Basanti Nagar  
Chennai - 600 090.

No.TN/DGL/LST/MS-1371.MDS

Date : 13/06/2016

To:

Sri S Sekhar,  
No.73, raja Colony,  
Collector office Road,  
Contanment, Trichy-620001

Sub : Approval of Scheme of Mining including PMCP for Varavasal Limestone Mine over 1.90.5 hectares in S.F.nos. 833/4B,836(p) & 843/2 in Varavasal Village, Kullithalai Taluk, Karur District, Tamilnadu submitted under rule 12 of MCDR, 1988

Ref : RCP letter No N0 dated 06.06.2016.

Sir,

In exercise of the power conferred by sub-rule (4) of rule 12 of Mineral Conservation and Development Rules, 1988, I hereby approve the aforesaid Scheme of Mining including Progressive Mine Closure Plan for Limestone mineral only. This approval is subjected to the following conditions:

1. The scheme of mining (including Progressive Mine Closure Plan) is approved without prejudice to any other laws applicable to the mine / area from time to time whether made by the Central Government, State Government or any other authority.
2. The scheme of mining (including Progressive Mine Closure Plan) is approved without prejudice to any other order or direction from any court of competent jurisdiction.
3. It is also clarified that the approval of your aforesaid scheme of mining (including Mine Closure Plan) does not in any way imply the approval of the Government in terms of any other provisions of the Mines & Minerals (Development & Regulation) Act, 1957 and its amendment or the rules framed there under and any other law.
4. It is further clarified that the approval of the Scheme of Mining (including Progressive Mine Closure Plan) is subject to the provisions of Forest (Conservation) Act, 1980, Forest Conservation Rules, 2003 and other relevant statutes, orders and guidelines as may be applicable to the lease area from time to time.
5. The provisions made under MM(D&R) Act, 2015 (Amended) & rules made thereunder shall be complied with.
6. Provisions of the Mines Act, 1952 and Rules and Regulations made there under including submission of notice of opening, appointment of manger and other statutory officials as required under the Mines Act, 1952 shall be complied with.
7. The execution of mining plan / scheme of mining shall be subjected to vacation of prohibitory orders / notices, if any.



- 2-
8. If anything is found to be concealed as required under the Mines Act in the contents of the Scheme of Mining and the proposal for rectification has not been made, the approval shall be deemed to have been withdrawn with immediate effect, further at any stage, if it is observed that the information furnished in the document are incorrect or misrepresent facts, the approval of the document shall be revoked with immediate effect.
  9. This approval of mining operations and associated activities is restricted to the mining lease area only. The mining lease area is as shown on the statutory plans under rule 28 of Mineral Conservation and Development Rules, 1988, by the lessee/RQP/applicant. Indian Bureau of Mines does not take any responsibility regarding correctness of the boundaries of the lease shown on the ground with reference to lease map and other plans furnished by the applicant / lessee.
  10. The Scheme of Mining is approved for the proposals contained therein and as applicable from the date of approval of the document for the mining activities to be carried out within the mining leasehold.
  11. Yearly report as required under Rule 23E(2) of MCDR, 1988 setting for the extent of protection and rehabilitation works carried out as envisaged in the approved progressive mine closure plan and if there is any deviations, reasons thereof shall be submitted before 1<sup>st</sup> July of every year to the regional office, IBM, Chennai.
  12. The validity period of the financial assurance should be renewed before the expiry of the same.
  13. The contents of Circular No.2/2010 issued by the Chief Controller of Mines, Indian Bureau of Mines, Nagpur vide his letter No.11013/3/MP/90-CCOM Vol VII dated 06.04.2010 shall be complied with.

Yours faithfully,

Encl : Copy of approved scheme of mining  
(including PMCP)

  
(T.K.Rath)

Regional Controller of Mines

Copy to:-

1. Sri S. Dhanasekar, 8/3 Kullappan Street, Opp. Indian Bank Line, Omalur Taluk, Salem, PIN-636455.
2. The Commissioner of Geology & Mining, Government of Tamilnadu, Guindy, Chennai -500 032, along with a copy of the approved scheme of mining.

Encl : as above.

  
(T.K.Rath)  
Regional Controller of Mines

**ANNEXURE 4**  
**500 M RADIUS LETTER**

உ.தமிழகப் புவியியல் அலுவலகம்  
 புதியியல் மற்றும் கண்காணிப்பு  
 அலுவலகம்  
 தஞ்சை. 02.2017

உ.எ.எண்.141/எஃசி/2017-2

அறிவிப்பு

கேள்வி: காவிரியின் கரங்கரையின் - கரநீர் மரபட்டம் - கட்டளை வட்டம்  
 வரலாற்று கிராமம் - புது எண்ணில், 835/3, 836 (P), 837/1B  
 ஆகியவற்றில் - 500 மீட்டர் சுற்றளவிற்குள் குவாரிசெய்தல்  
 விபரங்கள் கேள்வி - தொடர்பாக.

பதிலை: 1) அலுவலர் Ms.No.292 தெற்கில் (நக.எண்.2) துறை,  
 நாள்.04.10.1995.


2) திரு.எஸ்.சேகர், வரலாற்று கிராமம், கட்டளை வட்டம், கரநீர்  
 மரபட்டம் விபரத்துக்கு நாள்.02.02.2017.

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கரநீர் மரபட்டம், கட்டளை வட்டம், வரலாற்று கிராமம், புது எண்ணில், 835/3, 836 (P),  
 837/1B ஆகியவற்றில் மொத்தம் 225.0 ஹெக்டேர் பரப்பில் கண்ணாங்குளம் காவிரியின்  
 மெய்யமெய்யாக திரு.எஸ்.சேகர் விபரத்துக்கு பதிலை-1ல் கண்ட அலுவலர்மையின்படி  
 வரலாற்று கிராமம் குறித்து உரிமை 10.8.1994 முதல் 09.8.2014 உடன்  
 முடிவடைந்தது. Deemed Extension அட்டவணைக்கு குவாரி பணி நடைபெற்று  
 வருகிறது. மேற்படி குவாரிமீட்டிக்கு 500 மீட்டர் சுற்றளவிற்குள் இக்குவாரிமீட்டிமை தலை  
 /வரலாற்று கிராமம் / கண்ணாங்குளம் குவாரிசெய்தல் விபரங்கள் கீழ்க்கண்டவாறு  
 அளிக்கப்படுகிறது.

உ.எ.எண்.	எஃசி/எண்.	குறிப்புகள்/பெயர்	எஃசி/எண். கிராமம்	புது எண்ணில்	பரப்பு (ஹெக்டேர்/அகர்)	அலுவலர் எண்.	குறிப்புகள்/தேதி
1		திரு.எஸ்.சேகர், பெ.73, புது எண்ணில், கரநீர் மரபட்டம் ஆய்வு செய்தல், திருச்சி.		833/4B, 836 (P), 843/2	150.5	அலுவலர் எண்.3(D) பெ.162 தெற்கில் (நக.எண்.2) துறை, நாள்.14.6.94	10.08.1994-09.08.2014 (Deemed Extension)
2		திரு.எஸ்.சேகர், பெ.73, புது எண்ணில், கரநீர் மரபட்டம் ஆய்வு செய்தல், திருச்சி.		835/3, 836 (P), 837/1B	2.25.0	அலுவலர் எண்.3(D) பெ.292 தெற்கில் (நக.எண்.2) துறை, நாள்.04.10.95.	18.11.1995-17.11.2015 (Deemed Extension)
3		தி/எ.சேகர் குவாரிசெய்தல், பெ.14/22, அகர்ஜனம், காவிரியின் கரநீர் மரபட்டம், எண்.636 002	கட்டளை வட்டம், வரலாற்று கிராமம்	833/1B2, 833/4A2	2.34.5	அலுவலர் எண்.3(D) பெ.138 தெற்கில் (நக.எண்.2) துறை, நாள்.07.8.1997.	05.02.1998-04.02.2018
4		திரு.எஸ்.கிருஷ்ணமூர்த்தி, பெ.159/138, திரு.எஸ்.எண். 292, தேயல்		824/1B (Part), 824/2 (Part), 824/3 (Part), 825/1B (Part), 825/2B, 825/3B	4.15.8	புவியியல், புதியியல் மற்றும் கண்காணிப்பு அலுவலர் குவாரிசெய்தல் அட்டவணை எண்.14384/எண்.4/1995, நாள்.29.7.2005.	21.10.2005 முதல் 01.10.2025

5	சென்னை மாநகராட்சி திரு.பி.வி. நாராயணசாமி செ.162, சென்னை கோவில் தெரு, கோட்டை, சென்னை.		847/3A2	0.02.0	சென்னை மாந. 3(D) செ.83 கோவில் (செ.மா.மா.2) தளம், தே.26.5.1997	29.10.1997- 28.10.2017
			847/3B	0.13.0		
			847/3C	0.25.5		
			847/3D	0.22.0		
			847/3E2	0.02.0		
			850/1	0.64.5		
			<b>Total</b>	<b>1.29.0</b>		
<b>மொத்தம்</b>				<b>11.94.8</b>		

  
 உறுதிப்படுத்தப்பட்ட  
 முக்கியப் பணியை நிறைவேற்றும்  
 தேதி

சென்னை  
 திரு.வி.வேல்,  
 மாநகராட்சி தலைவர்,  
 செ.ஆர்.கட்டிடம், சென்னை மாநகராட்சி.

  
 சென்னை

**ANNEXURE 5**  
**MINING PLAN REPORT AND PLATES**



**SCHEME OF MINING PLAN**

**AND**

**PROGRESSIVE MINE CLOSURE PLAN**

**FOR**

**VARAVANAI LIMESTONE MINE**

**(UNDER RULE 12 & 23B OF MCDR, 1988)**

**(PRIVATE/SMALL "B" CATEGORY/SCHEME OF MINING PLAN/  
NON-FOREST/PATTA LAND/NON-CAPTIVE USE)**

**IBM REGN. No. : IBM/10612/2012**

**MINE CODE. No. : 38TMN28022**

**EXTENT : 1.90.5 HA.**  
**S.F.Nos. : 833/4B, 836(PART) & 843/2**  
**VILLAGE : VARAVANAI**  
**TALUK : KULITHALAI**  
**DISTRICT : KARUR**  
**STATE : TAMIL NADU**

**THE VALIDITY OF THE MINING LEASE IS EXTENDED UPTO 09.08.2044  
from 10.08.2014 – 09.08.2044 (MMDR Amendment Act, 2015)**

**SCHEME OF MINING PLAN PERIOD : 2014-2015 TO 2018-2019**

**LESSEE**

**THIRU. S. SEK HAR,**  
**NO.73, RAJA COLONY,**  
**COLLECTOR OFFICE ROAD,**  
**CANTONMENT,**  
**TRICHY – 620 001.**

**PREPARED BY :**

**S. DHANASEKAR, M.Sc., M.M.E.A.I.,**

**RQP/MAS/225/2011/A**

**VALID UPTO 12.01.2021**

**8/3, KULLAPPAN STREET, OPP. INDIAN BANK LINE,**

**OMALUR TALUK – 636 455,**

**SALEM DISTRICT.**

**E-mail : [geodhana@yahoo.co.in](mailto:geodhana@yahoo.co.in)**

**Cell: 98946-28970 & 73733-74702.**

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**SCHEME OF MINING PLAN  
AND  
PROGRESSIVE MINE CLOSURE PLAN  
FOR  
VARAVANAI LIMESTONE MINE IN  
VARAVANAI VILLAGE, KULITHALAI TALUK, KARUR DISTRICT  
(UNDER RULE 12 & 23B OF MCDR, 1988)**

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**1.0 General**

This concise report deals with the Scheme of Mining and Progressive Mine Closure Plan for for Varavanai Limestone Mine over an extent of 1.90.5 Ha. in S.F.Nos.833/4B, 836(PART) & 843/2 in Varavanai Village, Kulithalai Taluk, Karur District, Tamilnadu State prepared for Thiru. S. Sekhar, NO.73, Raja Colony, Collector Office Road, Cantonment, Trichy – 620 001.

The Mining Plan for fresh grant of lease was approved by Indian Bureau of Mines in letter No.TN/TCR/MP/LST-546-MDS dated 30.12.1991 before the grant of Mining Lease.

The 1<sup>st</sup> Scheme of Mining was approved by Indian Bureau of Mines in letter No.TN/KR/LST/MS-93-MDS dated 18.02.2001.

The 2<sup>nd</sup> Scheme of Mining was approved by Indian Bureau of Mines in letter No.TN/KRR/LST/MS-716-MDS dated 31.08.2012.

The Mining Lease was granted in G.O.Ms.No.162 Industries (MMD I) Department dated 14.06.1994 for the period of twenty years.

The lease deed was executed on 10.08.1994. Mining operation commenced on 20.04.1996. The lease will expire on 09.08.2014.

The lessee has preferred an application for First renewal of mining lease is to be before one year of expiry of lease, that's before 22<sup>th</sup> July 2013. Please refer Annexure- IV & IV-A for Renewal Application & Form-D. However as per the recent MMDR Amendment Act 2015, the validity of the Mining Lease is extended upto 09.08.2044. Hence, the Scheme of Mining Plan under Rule 12 of MCDR, 1988 has been prepared and submitted.

In this Scheme of Mining Plan period is 2014-2015 to 2018-2019. In the previous two years period (2014-2015 to 2015-16) time lessee was not submit Scheme of Mining Plan because, he is affected lack of demand, non-availability of labour, monsoon and uneconomic operations & financially crisis.

The mining operations will be done by opencast manual methods in this Scheme of Mining Plan.



**S. DHANASEKAR**  
RQP/MAS/225/2011/A

The approved Scheme of Mining, the average annual production is mentioned as about 3063 tonnes, whereas the actual production/year in the last five years is found to be about 3,496 tonnes of limestone. The targeted production level could not be maintained because of flexibility of the market demands.

The lessee is having a number of mining lease for different minerals in the state, the details furnished below : Table No.1

S.No .	Lease reference No. & Date	Area	Postal Address/ Location	Type of minerals	Remarks
1.	Go.(3D) No.292 dated 14.10.1995	extent of 2.24.0 Ha. in S.F.Nos.835/3, 836(P) & 837/1B in Varavanai Village, Kulithalai Taluk, Karur District.	Thiru. S. Sekhar, No.73, Raja Colony, Collector Office Road, Cantonment, Trichy – 620 001	Limestone	Working

**a) Name of lessee** : Thiru. S. Sekhar,  
Owner.

**Rule 45 registration no** : IBM/10612/2012

Address : No.73, Raja Colony,  
Collector Office Road,  
Cantonment,  
Trichy – 620 001

District : Salem

State : Tamil Nadu

Pin code : 637 303

Mobile No : 95786-80400

**b) Status of lessee**

The lessee is a Private and Individual.

**c) Mineral(s) which is / are included in the prospecting license (For Fresh grant):**

-Nil-

**d) Mineral(s) which is / are included in the letter of Intent / lease deed:**

The Mining Plan for fresh grant of lease was approved by Indian Bureau of Mines in letter No.TN/TCR/MP/LST-546-MDS dated 30.12.1991 before the grant of Mining Lease.

The 1<sup>st</sup> Scheme of Mining was approved by Indian Bureau of Mines in letter No.TN/KR/LST/MS-93-MDS dated 18.02.2001.

The 2<sup>nd</sup> Scheme of Mining was approved by Indian Bureau of Mines in letter No.TN/KRR/LST/MS-716-MDS dated 31.08.2012.

The Mining Lease was granted in G.O.Ms.No.162 Industries (MMD I) Department dated 14.06.1994 for the period of twenty years.

The lease deed was executed on 10.08.1994. Mining operation commenced on 20.04.1996. The lease will expire on 09.08.2014.

The lessee has preferred an application for First renewal of mining lease is to be before one year of expiry of lease, that's before 22<sup>th</sup> July 2013. Please refer Annexure- IV & IV-A for Renewal Application & Form-D. However as per the recent MMDR Amendment Act 2015, the validity of the Mining Lease is extended upto 09.08.2044. Hence, the Scheme of Mining Plan under Rule 12 of MCDR, 1988 has been prepared and submitted.

**e) Mineral(s) which is the lessee intends to mine:**

Limestone occurs in the Lease area and the Lessee intends to mine the same.

**f) Name of Recognised Person under rule 22C of MCR,1960 or a Person employed Under clause (c) of Sub rule (1) of rule 42 of MCDR, 1988 preparing Mining Plan:**

Name	:	<b>SHRI S. DHANASEKAR, M.Sc., M.M.E.A.I.,</b>
Address	:	8/3, Kullappan Street, Opp. Indian Bank Line, Omalur Taluk, SALEM DISTRICT – 636 455.
Email	:	<a href="mailto:geodhana@yahoo.co.in">geodhana@yahoo.co.in</a>
Mobile No.	:	98946-28970
Registration No.	:	RQP/MAS/225/2011/A.
Date of Grant	:	13.01.2011
Valid upto	:	12.01.2021

## **2.0 LOCATION AND ACCESSIBILITY**

### **a) Lease Details (Existing Mine)**

<b>Name of mine</b>	:	Varavanai Limestone Mine
Lat/long of any boundary point	:	N 11° 45' 10.63" & E 78° 13' 49.84"
Date of grant of lease	:	10.08.1994
Period/Expiry Date	:	09.08.2044
Name of leaseholder	:	Thiru. S. Sekhar, Owner.
Postal Address	:	No.73, Raja Colony, Collector Office Road, Cantonment, Trichy – 620 001.
Mobile No	:	93451-41471

**b) Details of lease area with location map (mine)**

Forest (specify)	Area (Ha.)- <b>NIL</b> -	i) Waste land	Nil
		ii) Grazing land	Nil
		iii) Agriculture land	Nil
		iv) Others, patta land (heavy mineral bearing sand)	1.90.5Ha.

Total lease area : 1.90.5 Ha

District & State : Karur & Tamil Nadu

Taluk : Kulithalai

Village : Varavanai

Whether the area is recorded : This is Patta land and is not covered  
to be in forest in Forest area of any kind.

Please refer Location Plan and Mine Lease Plan – Plate No. I & II.

**Existence of public road/railway line, if any nearby and approximate distance:**

Extent of the area is shown in the FMB. The area is at a distance of about 1.0 kms. from Varavanai Branch road. Varavanai Branch road is at a distance of about 12.0 kms. from Karur-Trichy main road.(NH-7).

Nearest Rail head is Karur Junction which is located about 16.0 kms. from the mine. Post office and Police Station are available in Palayam. Air Port is available in Trichy, about 72.0 kms. from the mine. Nearest Port in Tuticorin about 200 kms. far away from the area.

**The Mining lease area is bounded by four corners and the coordinates are:**

Table No:2

Toposheet No	: <b>58 J/2</b>
Latitude	: N 10°45' 10.63"
Longitude	: E 78°13' 49.84"
North East	: N 10°45' 10.63" E 78°13' 49.84"
South East	: N 10°45' 6.72" E 78°13' 50.51"
North West	: N 10°45' 10.17" E 78°13' 44.36"
South West	: N 10°45' 6.21" E 78°13' 44.06"

**c) Attach a general location map showing area and access routes. It is preferred That the area be marked on a Survey of India topographical map or a cadastral Map or forest map as the case may be. However, if none of these are available, The area may be shown on an administrative map:**

Attach a general location map showing area boundaries and existing access routes are shown on the Toposheet Plan (Key Plan) which is enclosed Plate No.Ia. Since existing routes are being followed to reach the lease area no fresh access routes are proposed hence not shown.

Top Sheet No. with : The area falls in Topo Sheet No.58 J/2  
 Latitude and longitude of Survey of India  
 Latitude : N 10° 45' 10.63"  
 Longitude : E 78° 13' 49.84'  
 Please refer Plate No.I.

**Land use pattern :**

It's a Dry agricultural land with seasonal cultivation by done. The main crops being cotton, cereals etc.,

**Location of the Area :**

The area for Mining Lease for Limestone Mine is located in S.F.Nos. 833/4B, 836(PART) & 843/2 over an extent of 1.90.5 Ha. in Varavanai Village, Kulithalai Taluk, Karur District, Tamilnadu State.

**3.0 DETAILS OF APPROVED SCHEME OF MINING :**

**3.1 Date and reference of earlier approved MP/SOM:**

The Mining Plan for fresh grant of lease was approved by Indian Bureau of Mines in letter No.TN/TCR/MP/LST-546-MDS dated 30.12.1991 before the grant of Mining Lease.

The 1<sup>st</sup> Scheme of Mining was approved by Indian Bureau of Mines in letter No.TN/KR/LST/MS-93-MDS dated 18.02.2001.

The 2<sup>nd</sup> Scheme of Mining was approved by Indian Bureau of Mines in letter No.TN/KRR/LST/MS-716-MDS dated 31.08.2012.

**3.2 Details of last modifications if any (for the previous approved period) of approved MP/SOM, indicating date of approval, reason for modification:**

-Nil-

**3.3 Give review of earlier approved proposal (if any) in respect of exploration, excavation, reclamation etc:**

**Exploration :**

The approved Scheme of Mining, it is mentioned that eight wagon drill in working pit of 115 mm dia. to a depth of about 10.0 depth from general ground level, whereas this exploration work has not been carried out during the period of Scheme of Mining, Because lessee has affected financially crisis.

Present mine working has been reached a depth of about 13.0m from general ground level. There is only one existing working pit, the dimensions of which is given below :

Table No.3

	<b>PIT</b>
Length (m) (aver.)	161.0
Width (m) (aver.)	49.0
Depth (m)	13.0

The attitude of the bands like width and length are clearly known. Depth persistence of Limestone in this area is already proved upto 13.0m.

#### **Mine Development :**

The present workings have reached a maximum depth of nearly 13.0m. Development of the pits has been done only in the areas where the Limestone could be easily mined. The workings at present are not systematic and the programme in the Approved Scheme of mining was not followed. However, the deficiencies will be corrected the period of Scheme of Mining Plan and the workings will be made to conform to systematic method adhering the provisions of Reg.106 of MMR 1961.

#### **Exploitation :**

This area is Patta land of the Lessee and is not covered in Forest area of any kind. The present workings have reached a maximum depth of nearly 13.0m.

There is only one existing working pit, the dimensions of which is given below :

Table No.4

	<b>PIT</b>
Length (m) (aver.)	161.0
Width (m) (aver.)	49.0
Depth (m)	13.0

The Planned and Actual Production for last five years figures are given as follows:

Table No.5

<b>YEAR</b>	<b>PLANNED(T)</b>	<b>ACTUAL(T)</b>
	<b>LIMESTONE</b>	<b>LIMESTONE</b>
2011-2012	-	520
2012-2013	1356	1396
2013-2014	1356	4091
2014-2015	-	4056
2015-2016	-	5250
<b>TOTAL</b>	<b>2712</b>	<b>15313</b>

### **Waste Management :**

In the approved Scheme of Mining, the proposal of the waste dumps in the Southern side of the lease area. But, presently, the top soil is mixed with boulders, sideburden and mineral waste are taken away by local villagers for road low laying adjacent areas, afforestation and also building purposes. There is only one Existing dumps, in the lease area.

The Actual and Planned Development for the last five years are furnished as follows:

Table No.6

<b>YEAR</b>	<b>PLANNED(T)</b>	<b>ACTUAL(T)</b>
	-	350
2012-2013	17352	750
2013-2014	17352	1900
2014-2015	-	1850
2015-2016	-	2050
<b>TOTAL</b>	<b>34704</b>	<b>6900</b>

There is only one present dump, the dimensions of which are given below :

Table No.6.a

	<b>Dump-I</b>
Length (m) (aver.)	101.0
Width (m) (aver.)	40.0
Height (m) (max.)	7.0
Quantity (t)	62216

Please refer Plate Nos.III & IV.

### **Afforestation and Reclamation :**

The approved Scheme of Mining, though afforestation programme is clearly stated to plant 15 Karuvela/Neem trees in the lease area.

But presently 10 neem trees are planted in the lease area in scattered manner. Please refer Plate Nos.III, IV & V for location of the existing plantation. Since, the mine is active; mining should be carried out in such a manner that after certain period, some part is available for reclamation.

### **Control of Dust, Noise & Ground Vibrations :**

The dust control was taken care by water sprinkling on the haul roads. The amount of ground vibration is very less since only jack hammers drilling and loading is used.



### **Reclamation & Rehabilitation :**

Reclamation of mined out area does not arise, as the mine is still operating and has not reached the full extent of working. After closure of the mine, the pit will be allowed to collect seepage and rain water. This will help to charge the nearby agricultural wells.

### **3.4 Give status of compliance of violations pointed out by IBM:**

In Letter No.TN/TCR/LST-65.MDS dated 15.02.2016 Indian Bureau of Mines was issued under Rule 12(3) a for submission of Scheme of Mining. The Scheme of Mining Plan is prepared to rectify the Copy of Violation pointed out Rule 12 (3). Please refer Annexure- VIII.

### **3.5 Indicate and give details of any suspension /closure/ prohibitory order issued by any Government agency under any rule or Court of law:**

In Letter No.TN/TCR/LST-65.MDS dated 15.02.2016 Indian Bureau of Mines was issued under Rule 12(3) a for submission of Scheme of Mining. The Scheme of Mining Plan is prepared to rectify the Copy of Violation pointed out Rule 12 (3). Please refer Annexure- VIII.

### **3.6 In case the MP/SOM is submitted under rules 9 and 10 of the MCDR'88 or Under rule 22(6) of the MCR'1960 for approval of modification, specify reason and justification for modification under these rules:**

-Nil-

## **PART - 'A'**

### **1.0 GEOLOGY AND EXPLORATION :**

#### **a) BRIEFLY DESCRIBE THE TOPOGRAPHY, DRAINAGE PATTERN, VEGETATION, CLIMATE AND RAINFALL DATA OF THE AREA APPLIED/MINING LEASE AREA:**

##### **a) Topography :**

The Mining Lease area is approximately at N 10° 45' 10.63" latitude and at E 78° 13' 49.84" longitude and is represented by Topo Sheet No.58 J/2 of Survey of India.

The area applied for mining lease by the lessee is almost a flat terrain with a gentle slope towards 80° South to Vertical. Except some thorny bushes, no trees or thick vegetation is found. Outcrops of limestone are visible in some areas.

##### **Vegetation:**

The village Varavanai is 700 Mtrs. SW of the area. There are about 15 small Velikaruvai trees in this area. In the non-mineralized portion the red soil is noted for a thickness of 1.0 Mtr. Agriculture is done with lift irrigation and mostly seasonal dry crops are grown.

##### **Water table and Drainage Pattern:**

Water table is touched at a depth of 40m in rainy season, ie. during North-East monsoon and at 50m in summer months. The water table fluctuation is verified by observing the water levels in the above seasons in the nearby wells.

During the mining of fourth bench, it may be necessary to pump out water. A 5 HP pump can easily deal rain water and seepage water and keep the mine dry.

**Climatic Conditions:**

Wind direction is NE to SW and vice-versa. The temperature in summer rises above 40°C and fall down to 25°C in winter months

**Rainfall Data:**

The area receives rain during North East monsoon season. The average amount of rainfall is about 400 mm per annum.

There are no national monuments, places of worship or archaeological interest, public buildings, permanent structures near the area.

There is no river, tank or reservoir, sanctuary or forest near the area.

There is no reserve forest or places of Archaeological interest or national monument within a radius of five km. from this area.

**b) Brief Descriptions of Regional Geology with reference to Location of Lease/applied area :**

The area is a part of the Archean complex of Peninsular India. The Geological formations consist of biotite-hornblende-gneisses, calc-gneisses and crystalline limestone, intruded by younger granites. The granite-gneisses and crystalline limestone represent ancient calcareous sediments which have suffered repeated metamorphism, intrusions by granites and folding during the Archaean age.

The Limestone in Varavanai area is fine grained crystalline limestone and are mainly made up of aggregates of calcite with sub-ordinate amount of quartz and silicate minerals. They occur as long, narrow bands and are conformable in foliation strike and dip, with the gneissic country rock adjacent to them. Where the gneisses or granite bodies are large enough they can be mined separately and removed. But where they occur as thin veins within the limestone, they bring down the purity of the limestone.

As such the mining involves recovery of limestone along with granitic material in all the areas, the rejects forming 40% of the mined material.

The limestone are generally white, pink and grey in colour. The main impurity in the limestone is silica. There appears to be no correlation between the colour and the chemical quality. In chemical composition, the limestone maybe termed as "Cement Grade".

The Calcium carbonate content is about 85%. The rest is mainly made up of silica in the form of free quartz or as silicate minerals such as wollastonite, feldspar etc.,

**GEOLOGICAL OF THE AREA :**

The rock formation in the area is of metamorphic crystalline varieties of archaean age. The chief rock types found in the area are limestone and Amphibole-gneisses. Limestone outcrops are noticed in the area. The area is covered by thin layer of top soil to a depth of about 1.0m.

In the area under consideration, there is only one limestone band almost in the centre of lease area and this band is divided into two portions by a intervening calc-gneiss intrusions on the Eastern End.(refer surface plan and Geological Plan). The regional trend of the rock in the area is N80° E -S80°W with foliation dip amount of 80° towards South to Vertical. The area is devoid of major geological disturbances.

The order of superposition is

Top soil

Limestone

Amphibole – Gneisses

The limestone band is intruded by Amphibole-gneisses.

Colour of Limestone is white-pink, massive in form, rhombohedral in cleavage, medium-fine crystalline in nature. Hardness-3, specific gravity 2.6, streak is white, vitreous in luster.

**d) Name of Prospecting Agency :**

The area was thoroughly explored by the RQP and his geological team. Department of Geology and Mining, Government of Tamilnadu have also made a detailed investigation of this area. In the area under consideration, there is only one limestone band almost in the centre of lease area and this band is divided into two portions by a intervening calc-gneiss intrusions on the Eastern End.(refer surface plan and Geological Plan). The regional trend of the rock in the area is N80° E -S80°W with foliation dip amount of 80° towards South to Vertical. In this area, having only one existing working pit gone upto a depth of about 13.0m from general ground level.

There is only one existing working pit, the dimensions of which are given below: Table No.7

	<b>PIT</b>
Length (m) (aver.)	161.0
Width (m) (aver.)	49.0
Depth (m)	13.0

Limestone is also exposed on the surface; hence it is demarked in the Surface plan and Geological Plan.

**e) Details of Exploration already carried out:**

The area was thoroughly explored by the RQP and his geological team. Department of Geology and Mining, Government of Tamilnadu have also made a detailed investigation of this area.

In this area, having only one existing working pit gone upto a depth of about 13.0m from general ground level, the dimensions of which are given below: Table No.8

	<b>PIT</b>
Length (m) (aver.)	161.0
Width (m) (aver.)	49.0
Depth (m)	13.0

Limestone is also exposed on the surface; hence it is demarked in the Surface plan and Geological Plan. In the approved Scheme of Mining Plan, it is mentioned that there is no further exploration in this area. Surface/Geological plan and section was done on a scale of 1:1000 & 1:500 and five representative sample has been collected from existing pits for Chemical Analysis.

All the samples collected from the existing working pit were packed carefully and take to the investigation recognized NABL Chemical Laboratory. In this mine Limestone % of CaCo<sub>3</sub> 78.04%, SiO<sub>2</sub> 10.12% and MgCo<sub>3</sub> 1.03%. The average grade of the limestone is cement and refractory grade brief description of the sample is given in following table :

Table No.9

<b>Parameters</b>	<b>Results %</b>
Calcium carbonate (CaCo <sub>3</sub> )	78.04
Magnesium carbonate (MgCo <sub>3</sub> )	1.03
Silica as SiO <sub>2</sub>	10.12
Aluminium Oxide (Al <sub>2</sub> O <sub>3</sub> )	Nil
Ferric Oxide (Fe <sub>2</sub> O <sub>3</sub> )	Nil
Sodium as Na <sub>2</sub> O	Nil
Potassium as k <sub>2</sub> O	Nil
Loss on Ignition	10.81

Please refer Annexure-II.

**The Physical Character of the Limestone:**

Colour of Limestone is grey to brown in colour, massive in form, hardness-3, specific gravity 2.6, streak is white. The details collected during the field survey and found to be sufficient for the preparation of the Scheme of Mining Plan.

**iii) Grade of Limestone :**

Since, the mining area is very small and the deposit is shallow the details exploration was carried out in the entire mining lease area. There is only one existing working pit available in this area pit gone upto a depth of about 13.0m from the general ground level.

The occurrence of Limestone is proved to be at upto 13.0m depth. More than 10 samplings were collected in the existing working pit and out crops to ascertain the quality of Limestone.

**f) Surface Plan**

Surface Plan is prepared as per rule 28(1)(a) of MCDR, 1988 and enclosed as Plate No. III. This Plan is drawn on scale of 1: 1000. The occurrence and depth persistence of Limestone upto 13.0m (1.0m top soil + 12.0m Limestone) can be taken 'Proved' based on the existing working pit.

**g) Geological Plan:**

Geological Plan is prepared as per rule 28(1)(b) of MCDR, 1988 and enclosed as Plate No.IV. This Plan is drawn on scale of 1: 1000.Please refer Plate No.IV.

Surface/Geological plan and section was done on a scale of 1: 1000 & 1:500.

**h) Geological sections may be prepared on natural scale of geological plan at suitable interval across the lease area from boundary to boundary:**

Geological Sections are prepared on a scale of 1:500, 50.0m intervals for the across the entire length of the area. Please refer Plate No.IV-A.

**i) Broadly indicate the future programme of exploration with due justification (duly marking on Geological plan year wise location in different colours) taking into consideration the future tentative excavation programme planned in next Three years as in table below:**

There is a Mining lease area and the extent is small. The attitude of the band is established to certain extent by the observations made in the working pits.

There is a seven bore holes are proposed for future programme.

In this Scheme of Mining Plan, lessee proposed that five wagon drill in working pit and two core drill to virgin area of 100 mm dia. to a depth of about 20.0 from Present working pit depth from 87.0m and general ground level as drilling at particular 50.0m grid interval for confirm the depth continuity of the Limestone. This wagon and core bore hole will be made after First year (2016-17) in this Scheme of Mining Plan period. Please refer Plate No.III & IV.

The details of the proposed exploration are given below : Table-10

<b>Year</b>	<b>Month</b>	<b>No. of wagon &amp; Diamond core bore holes</b>	<b>Total Metreage</b>	<b>Location</b>
2016-2017	June 2016	3 (100mm dia.)	20(d) x 3 = 60M (depth)	North - PBH-1 (Working pit-97M- 77M) North- PBH-2 (Working pit-95M- 75M) North East- PBH-3 (Working pit-97M- 77M)
	September 2016	4 (100 mm dia.)	20(d) x 4 = 80M (depth)	West- PBH-4 (Vergin area) Middle - PBH -5 (Working pit-98M- 78M) East - PBH-6 (Working Pit - 95M- 75M) South- PBH-7 (Vergin area)

The expenditure of proposed drilling wagon & core bore hole cost is intimate to IBM at the time.

## **J)RESERVES :**

### **Method of Estimation of Reserves : RESERVE AND RESOURCES**

Selecting a method of reserve estimation depends upon the geology of the mineral deposit, exploration method, purpose of computation and the required degree of accuracy and also on the contemplated mining system.

The ideal method should be simple, rapid, reliable, consistent with the character of the mineral body and available data and suitable for rapid checking. The method adopted for calculation of reserves in this area is by computing the volume by cross sectional method upto a particular level. The volume is calculated by multiplying the cross sectional area with the length of the sectional influences. For example S is the cross sectional area (in sq.m.) and L is the length of the cross sectional influence (in m) the produce of L and S gives the volume in cu.m. If the volume in cum, is multiplied by bulk density T, the reserve is obtained in tonnes. In short  $L \times S \times T$  gives the reserve in tonnes where T is bulk density in tonnes/cu.m.

When this reserve is multiplied by the recovery factor, effective reserve of the field is obtained in tonnes. The fresh estimation of the reserves is based on the present working pits and strike and dip extension and existing working mines in this region. The present mine workings has been already reached a depth of about 13.0m (max.) depth from general ground level. Hence, reserve is calculated upto a depth of 13.0m (1.0m top soil + 12.0m Limestone). The reserve estimation is based on the UNFC Code 111 and 222.

The parameter of the Reserves are described as follows :Table No.11

<b>Classification</b>	<b>Total Quantity (t)</b>	<b>Recoverable Reserve 60% (t)</b>	<b>UNFC Code</b>	<b>Grade</b>
<b>A. Mineral Reserves</b>				
1. Mineral Reserve	59376	35626	111	CEMENT & REFRACTORY
<b>B. Remaining Resources</b>				
Mineral locked up in benches	10273	6164	222	CEMENT & REFRACTORY
Mineral locked up in boundary barrier 7.5m	124332	74599	222	CEMENT & REFRACTORY
<b>TOTAL</b>	<b>193981</b>	<b>116389</b>		

Please refer Table No.12 & 13. A major portion of mineral is locked up in benches and boundary barrier. Please refer Plate No.IV & IV-A.

#### **Recoverable Reserve and Grade :**

Systematic mining will be done upto 13.0m (1.0m top soil + 12.0m Limestone) depth. There is no change in the grade of Limestone. The balance recoverable reserve at 60% recovery and upto 13.0m depth is about 35,626 tonnes. Please refer Table No.12 and Plate Nos.IV & IV-A. Since the lease area is small, a huge quantity of mineral is locked up in benches and boundary barrier. However, there is a considerable reduction in recoverable reserve. However the locked up mineral will be exploited to the maximum with permission from IBM and DGMS. The Grade of Limestone is found to be Refractory Grade. Analysis Report is enclosed as Annexure-II.

#### **k)Detailed Calculation of Reserve/Resources section Wise:**

**RESERVE ESTIMATION**  
(Please Refer Plate Nos.IV & IV-A)

**Thiru. S. Sekhar,**  
**Trichy-620 001.**

TABLE NO.12

Section	Bench	L (m)	W (m)	D (m)	Volume CUM	Bulk Den-Sity	Over Burden (t)	Side Burden (t)	Total Reserve (t)	Mineral Reject 40%(t)	Recoverable Reserve 60% (t)	Total Waste (t)	UNFC Code
<b>OVERBURDEN</b>													
XY-A1B1	I	60	1	1.0	60								
XY-A2B2	I	50	1	1.0	50								
					<u>110</u>	2.0	220	-	-	-	-	220	
<b>SIDEBURDEN</b>													
XY-A1B1	II	30	1	2.5	75								
	III	20	1	2.5	50								
	IV	14	1	2.5	35								
	V	7	1	2.5	18								
	VI	1	1	2.0	2								
XY-A2B2	II	30	1	2.5	75								
	III	34	10	2.5	850								
	IV	23	38	2.5	2185								
	V	12	81	2.5	2430								
	VI	2	86	2.0	<u>344</u>								
					<u>6064</u>	2.5	-	-	-	-	-	15160	
<b>LIMESTONE</b>													
XY-A1B1	II	34	1	2.5	85								
	III	34	1	2.5	85								
	IV	46	1	2.5	115								
	V	41	1	2.5	103								
	VI	37	28	2.0	2072								



1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
XY-A2B2	II	1	23	2.5	58								
	III	10	24	2.5	600								
	IV	38	42	2.5	3990								
	V	81	42	2.5	8505								
	VI	86	42	2.0	<u>7224</u>								
					<u>22837</u>	2.0	-	-	59376	23750	35626	39130	111
<b>Total</b>							<b>220</b>	<b>15160</b>	<b>59376</b>	<b>23750</b>	<b>35626</b>	<b>39130</b>	

Over burden : 220 tonnes  
Side burden : 15,160 tonnes  
Mineral Reject : 23,750 tonnes  
Total waste : 39,130 tonnes

Total Reserve : 59,376 tonnes  
Recoverable Reserve : 35,626 tonnes  
Ore : Waste ratio : 1:0.98

**RESOURCES ESTIMATION**  
(Please Refer Plate Nos.IV & IV-A)

**Thiru. S. Sekhar,**  
**Trichy-620 001.**

**TABLE NO.13**

<b>Classification</b>	<b>Section</b>	<b>Bench</b>	<b>L (m)</b>	<b>W (m)</b>	<b>D (m)</b>	<b>Volume CUM</b>	<b>Bulk Den Sity</b>	<b>Total Reserves (t)</b>	<b>Mineral Reject 40%(t)</b>	<b>Recoverable Reserve 60% (t)</b>	<b>Grade</b>	<b>UNFC Code</b>
Mineral Locked up in benches	XY-A1B1	IV	5	1	2.5	13	2.6	10273	4109	6164	CEMENT & REFRACTORY	222
		V	10	1	2.5	25						
		VI	14	28	2.0	784						
	XY-A2B2	IV	6	42	2.5	630						
		V	11	42	2.5	1155						
		VI	16	42	2.0	<u>1344</u> <u>3951</u>						
Mineral locked up in 7.5m boundary barrier			1450sq.m (29x50.0m) 2535.5sq.m (338x7.5m)	12.0	47820	2.6	124332	49733	74599	CEMENT & REFRACTORY	222	
<b>TOTAL</b>								<b>134605</b>	<b>53842</b>	<b>80763</b>		

Total Resources : 1,34,605 tonnes

### I) Mineral Reserves/Resources:

The fresh estimation of the reserves is based on the present working pits and strike and dip extension and existing working mines in this region. The present mine workings has been already reached a depth of about 13.0m (max.) depth from general ground level. Hence, reserve is calculated upto a depth of 13.0m (1.0m top soil + 12.0m Limestone). The reserve estimation is based on the UNFC Code 111 and 222.

The parameter of the Reserves are described as follows : Table No.14 as on 26.04.2016

Level of Exploration	Resources in million tonnes	Grade
G1 – Detailed Exploration	-	-
G2 – General Exploration	134605	CEMENT & REFRACTORY
G3 – Prospecting	-	-
G4 - Reconnaissance	-	-

Please refer Table No.12 & 13. A major portion of mineral is locked up in benches and boundary barrier as the lease area. Please refer Plate No.IV & IV-A.

#### a) Mining Method :

The mining operations will be done by opencast manual methods.

#### b) Grade & Ultimate pit depth :

Limestone grade at CEMENT & REFRACTORY and ultimate pit depth is 13.0m(1.0m Overbuden + 12.0m Limestone).

**c) Mineral/ore blocked dues to benches, barriers, pillars, road, railway, river, nala, reservoir, electric line and other statutory barriers etc., under forest, sanctuaries etc., where necessary permissions are not available.**

Table No.15.

Classification	UNFC Code	Quantity in tonnes	Grade
<b>A. Total Mineral Reserves</b>			
Proved Mineral Reserve on 01.04.2016	111	59,376	Cement & Refractory Grade
Probable Mineral Reserve	121 & 222	-	-
<b>B. Total Remaining Resources</b>			
Feasibility mineral Resource	211	-	-
Prefeasibility mineral resource	221 & 222	1,34,605	Cement & Refractory Grade
Measured mineral resource	331	-	-
Indicated mineral resource	332	-	-
Inferred mineral resource	333	-	-
Reconnaissance mineral resource	334	-	-
<b>Total Reserves + Resources</b>		<b>1,93,981</b>	-

## 2.0 MINING :

### A. Opencast mining:

**a) Briefly describe the existing as well as proposed method for excavation with all Design parameters indicating on plans /sections:**

#### Existing method:

The mining operations will be done by opencast manual method. There is only one existing working pit available in this area. Existing pit dimensions are given below:

Table No .16

	<b>PIT</b>
Length (m) (aver.)	161.0
Width (m) (aver.)	49.0
Depth (m)	13.0

#### Proposed method :

The mine is proposed to carry out mining operation with manual opencast method ("B" category of small mine).

Mining will be by simple open cast manual methods, with help of spades, baskets and jack hammer, drilling. The development and production of mining operations will confine to this area for the next Three years, starting from existing working pit from North to Southern direction towards Eastern side of the Mining lease area. Please refer Plate No.V.

The operation will be confined to general shift only ie. from 8.00 AM to 5.00 OM with one hour lunch interval between 12.00 PM to 1.00 PM. In overburden soil, a bench will be 1.0m height and width with 45° slope.

The Limestone, totally Five benches will be 2.5m height and 2.5m width with 60° slope for next Three years only. Please refer Plate No.V & V-A.

A bund will be constructed around the pit to prevent accident call and inrush of rain water. Proper foot paths will be provided between benches for easy accessibility for men. Haul roads, to conform to statutory standards will be made according to convenience for smooth transport of ore and waste. Wherever necessary, crossing plat forms will be provided in the haul roads at suitable point for safe crossing as tractors, tippers, trucks etc.,

The top soil and mineral reject will be dumped separately in the next Three years. The top soil will be utilized for the formation of mine roads, construction of bund and afforestation purpose. There is adequate space available for dumping the mineral reject will be dumped in the non-mineral bearing area of the East & Southern side of the lease area.

Average annual production is about 9808 tonnes of Limestone with 250 working days in a Year. Per day production will be about 39 tonnes. Considering the nature of the deposit and the anticipated daily production level, only manual mining is proposed.

A boundary barrier of 7.5m width will be maintained as per statue. Limestone locked up in this barrier will be excavated after obtaining permission from DGMS under Regulation 111 of Mines and Mineral Regulation, 1961.

**b) Indicate year-wise tentative Excavation in Tonnes Meters indicating development, ROM, pit wise as in table below.**

**I. Insitu Tentative Excavation:**

In this Scheme of Mining Plan period from 2014-2015 to 2018-2019.

Table No .17

YEAR	PIT NO.	Total Tentative Excavation (Cum)	Top Soil (Cum)	OB (Cum)	Side burden (Cum)	ROM (Cum)		Mineral Reject	ROM/Waste ratio
						Ore (Limestone @ 60% of ROM) (Cum)	Mineral Reject (@ 40% of ROM) (Cum)		
1	2	3	4	5	6	7	8	9	10
2016-2017	I	5305	-	60	1905	3183	2122	2122	1:1.28
In tonnes		13793	-	120	4763	8276	5517	5517	1:1.28
2017-2018	I	8303	-	-	1418	4982	3321	3321	1:0.95
In tonnes		21588	-	-	3545	12953	8635	8635	1:0.95
2018-2019	I	5254	-	-	142	3152	2102	2102	1:0.71
In tonnes		13660	-	-	355	8196	5464	5464	1:0.71
<b>TOTAL in Cum</b>		<b>18862</b>	-	<b>60</b>	<b>3465</b>	<b>11317</b>	<b>7545</b>	<b>7545</b>	<b>1:0.97</b>
<b>TOTAL in Tonnes</b>		<b>49041</b>	-	<b>120</b>	<b>8663</b>	<b>29425</b>	<b>19616</b>	<b>19616</b>	<b>1:0.97</b>

The average production of Limestone per year will be about  $11317/3=3772\text{cum}$  ( $3772 \times 2.6(\text{B.D}) = 9808\text{tonnes}$ ). Please refer Plate No.18 and Plate No.V & V-A. From Total ROM the Limestone deposits are categorized with the following percentage Limestone 60 %, Mineral waste : 40%.

**Economic Viability :**

The saleable Limestone mineral production for next Three years is about 29424 tonnes. The rate of annual production of Limestone is about 9,808 tonnes ( $29424 \div 3 = 9808.0$ ).

Hence, only 250 days in a year are assumed as full working days.

The Royalty amount of limestone per tonne : Rs. 80/-  
 Total no. of working days in a year : 250  
 Production (Expected) per year (Limestone) : 9,808 tonnes

Production/day		: 39 ie. $\frac{9808}{250} = 39.2$
	Say	: 39 tonnes
Total Production (Expected) Per Year (Limestone)		: 20 tonnes
Output/manshift including waste handling		: 4.0 tonnes
No. of face workers/day		: $8(39 \div 4 = 9.7)$
For absenteeism 20%		: 2
Total no. of Labour (on contract basis of production of mineral)		: 10 Nos.
Pay per day for Labour		: Rs.200/-
Pay per tonne for Labour (One labour)		: $\text{Rs.}200/\text{-(Rs.}200 = 50)$
		4.0(OMS)
	Say	: Rs.50/-

The drilling parameters :

Dia. of hole	: 32 mm
Spacing	: 0.9 m
Burden	: 0.6 m
Depth	: 1.5 m
Charge per hole	: 0.42 kg.
Material that will be dislodged	: $\frac{0.9 \times 0.6 \times 1.5 \times 2.6}{0.42} = 5$ tonnes of ROM

Blasting : Per hole 5.0 tonnes of ROM

Blasting contract pay per hole Rs.200/- (Drilling, Explosives and Labour)

Blasting cost per tonne : Rs.40/- ( $200 \div 5 = 40$ )

Diploma Mining Engineer : Rs.15/- ( $\text{Rs.}15000/25 \text{ days} = \text{Rs.}600$   
(For per tonne) per day/39 tonnes = 15.3)

Foreman/Mate & Blaster (For per tonne) : Rs.1/- ( $\text{Rs.}10000/25 \text{ days} = \text{Rs.}400$   
Per day/39 tonnes = 10.2)

Water man (per tonne) : Rs.4/- ( $150 \text{ per day}/39 \text{ tonnes} = 3.8$ )

Miscellaneous : Rs.100/-

Salary and miscellaneous per tonne : Rs.129/- ( $15 + 10 + 4 + 100$ )

Total cost of production per tonne : Labour cost + Blasting cost +  
Salary and Miscellaneous  
:  $50 + 40 + 129$

Total cost of Production per tonne : Rs.219/-

The cost of Production is Rs.219/- per tonne and selling price for Limestone is Rs.450/- per tonnes (including Royalty amount of Rs.80/-). Hence, the mining is economically viable at present market conditions.

### YEARWISE DEVELOPMENT & PRODUCTION SCHEDULE

Thiru. S. Sekhar,  
Trichy-620 001.

(Please Refer Plate No.V & V-A)

[Section XY Along with AB]

TABLE NO.18

Year	Be nch	L (m)	W (m)	D (m)	Volume Cum	Bulk Density	Over Burden (Cum)	Side Burden (Cum)	Total Reserve (Cum)	Mineral Reject 40% (Cum)	Production 60% (Cum)	Total waste (Cum)	Ore : Waste ratio	
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	
2016-2017	I	60	1	1.0	60	2.0	60	-	-	-	-	-		
	II	30	1	2.5	75									
	III	20	10	2.5	500									
	IV	14	28	2.5	<u>1330</u>									
					<u>1905</u>	2.5	-	1905	-	-	-	-	-	
	II	34	1	2.5	85									
	III	34	10	2.5	850									
IV	46	38	2.5	<u>4370</u>										
				<u>5305</u>	2.6	-	-	-	5305	2122	3183	4087	1:1.28	
<b>In Cum</b>							<b>60</b>	<b>1905</b>	<b>5305</b>	<b>2122</b>	<b>3183</b>	<b>4087</b>	<b>1:1.28</b>	
<b>In Tonnes</b>						<b>2.6</b>	<b>120</b>	<b>4763</b>	<b>13793</b>	<b>5517</b>	<b>8276</b>	<b>10400</b>	<b>1:1.28</b>	
2017-2018	V	81	7	2.5	1418	2.5	-	1418	-	-	-	-		
	V	41	81	2.5	8303	2.6	-	-	8303	3321	4982	4739	1:0.95	
<b>In Cum</b>								1418	8303	3321	4982	4739	1:0.95	
<b>In Tonnes</b>						<b>2.6</b>		3545	21588	8635	12953	12180	1:0.95	
2018-2019	VI	71	1	2.0	142	2.5	-	142	-	-	-	-		
	VI	71	37	2.0	5254	2.6	-	-	5254	2102	3152	2244	1:0.71	
<b>In Cum</b>								142	5254	2102	3152	2244	1:0.71	
<b>In Tonnes</b>						<b>2.6</b>		355	13660	5464	8196	5819	1:0.71	
<b>TOTAL in Cum</b>							<b>60</b>	<b>3465</b>	<b>18862</b>	<b>7545</b>	<b>11317</b>	<b>11070</b>	<b>1:0.97</b>	
<b>TOTAL in Tonnes</b>							<b>120</b>	<b>8663</b>	<b>49041</b>	<b>19616</b>	<b>29425</b>	<b>28399</b>	<b>1:0.97</b>	

Overburden : 60 Cum/ 120 tonnes  
 Sideburden : 3,465 Cum/ 8663 Tonnes  
 Mineral Reject : 7,545 Cum/19616 Tonnes  
 Total waste : 11,070 Cum

Total Excavation : 18,862 Cum /49041 Tonnes  
 Production : 11,317 Cum/29425 Tonnes  
 Ore : Waste ratio : 1.0.97

**Marketing :**

Since the entire mined out mineral has been utilized by the Cement and refractory based industries and Manufacturing unit in Karur. The grade is been already approved and fit for Cement and refractory industries. This Limestone has good demand from customers and the sale value is not less than Limestone is Rs.450/- per tonne in the market.

**Economic Viability :**

As shown earlier the labour cost works out to Rs.50/- per tonne and total cost at Rs.219/- per tonne.

There is good demand for this Limestone with a sale value if not less than Rs.450/- per tonne (including Royalty amount of Rs.80/-).

Net Profit for Limestone (per tonne) : Sale value - Cost of Production  
: Rs.450/- (-) Rs.219/-

Net Profit (per tonne) : Rs.231/-

**II. Dump re -handling (for the purpose of recovery of mineral):**

At present no re handling of dump materials.

**c). Composite development plans showing pit layouts, dumps, stacks of mineral reject, if any, etc. and year wise sections in case of 'B' category mines:**

A composite development year wise Plan and Sections are shown in Plate Nos.V & V-A. The details are furnished in Table-18. The average annual production of Limestone per year will be about 9,808 tonnes.

**d). Describe briefly giving salient features of the proposed method of working****Indicating Category of mine:**

The mine worked manually and "B" category mines. Limestone is removed by jack hammer drilling and blasting by deploying a tractor compressor. There is no secondary blasting in the mine. The removal blasted Limestone material is loaded into 10 MT capacity trucks by manual.

**Extent of Mechanization:**

The mine will be worked by manual method. However for drilling and hauling, jack hammers and tippers will be used respectively.

**Drilling Machines :**

Only jack hammer, operated by compressor mounted on tractor will be used for drilling.

Table 20

Type	Nos.	Dia. of hole	Compressor capacity	Make	Motive Power	H.P.
Jack Hammer	Two	32 mm	140 cfm	Atlas	Diesel	45
Tractor Compressor	One	-	-	Atlas	Diesel	75



The Jack-Hammer steel rod height ranges from 1.0m to 5.0m. While, drilling with Jack-hammer, the bench height will be maintained to the height of about 3.5m accordingly.

**Loading Equipment:**

Loading will be done manually. Proper foot paths and ranges will be maintained between benches.

**Haulage and transport equipment:**

**Haulage within mining lease hold :**

The excavated quantity of Limestone and waste will be transported within the lease area through comet tippers of 10 tonnes capacity. Crossing platforms will be provided and other safety precautions are observed as per statute. Table - 21

Type	Nos.	Size/Capacity	Make	Motive power	H.P.
Comet Tipper	Two	10 tonnes	Ashok Leyland	Diesel	90

The tippers will be fitted with exhaust conditioner.

**Transport from pit head to destination:**

Since the entire mined out mineral has been utilized by the Cement and refractory based industries and Manufacturing unit in karur.

Details of hauling/transport equipment: Table - 22

Type	Nos.	Size/Capacity	Make	Motive Power	H.P.
Leyland Trucks	One	10 tonnes	Leyland	Diesel	90

**Miscellaneous :**

There is no other miscellaneous operation worth mentioning except drilling by jack hammer, working of ore deposit by manual means, transport of waste and ore by tippers and trucks and pumping out storm and seepage water during rainy season.

**Afforestation :**

There is vast scope for planting trees in the non-mineralised area and along the boundaries. Yearly 30 Casurina trees will be planted in this area and the same will be planted in this area and the same will be dewatered and mannered by person appointed for this purpose. Please see Plate No.VI of land use and afforestation. An extent of area will be afforested in first five years 0.13.0 Ha. interval between trees – 5m, survival rate : 80%.

A retaining wall will be constructed around the dumping yard.

The afforestation programme for the next Three years are described as follows :

Table – 23

<b>Year</b>	<b>Name of the species</b>	<b>No. Of species</b>	<b>Interval</b>	<b>Area in Ha.</b>	<b>Survival rate</b>
2016-2017	Casurina	30	5m	0.04.0	80%
2017-2018	Casurina	30	5m	0.04.0	80%
2018-2019	Casurina	30	5m	0.05.0	80%
<b>TOTAL</b>		<b>90</b>		<b>0.13.0</b>	

**e). Describe briefly the layout of mine workings, pit road layout, the layout of faces and sites for disposal of overburden/waste along with ground preparation prior to disposal of waste, reject etc. A reference to the plans and sections may be given. UPL or ultimate size of the pit is to be shown for identification of the suitable dumping site:**

The mining operations will be done by opencast manual method with help of spades; baskets and jack hammer, drilling. The development and production of mining operations will confine to this area for the next Three years, starting from existing working pit from North to Southern direction towards Eastern side of the Mining lease area. Please refer Plate No.V.

The operation will be confined to general shift only ie. from 8.00 AM to 5.00 OM with one hour lunch interval between 12.00 PM to 1.00 PM. In overburden soil, a bench will be 1.0m height and width with 45° slope.

The Limestone, totally Five benches will be 2.5m height and 2.5m width with 60° slope for next Three years only. Please refer Plate No.V & V-A.

A bund will be constructed around the pit to prevent accident call and inrush of rain water. Proper foot paths will be provided between benches for easy accessibility for men. Haul roads, to conform to statutory standards will be made according to convenience for smooth transport of ore and waste. Wherever necessary, crossing plat forms will be provided in the haul roads at suitable point for safe crossing as tractors, tippers, trucks etc.,

The top soil and mineral reject will be dumped separately in the next Three years. The top soil will be utilized for the formation of mine roads, construction of bund and afforestation purpose. There is adequate space available for dumping the mineral reject will be dumped in the non-mineral bearing area of the East & Southern side of the lease area.

Average annual production is about 9808 tonnes of Limestone with 250 working days in a Year. Per day production will be about 39 tonnes. Considering the nature of the deposit and the anticipated daily production level, only manual mining is proposed.

A boundary barrier of 7.5m width will be maintained as per statue. Limestone locked up in this barrier will be excavated after obtaining permission from DGMS under Regulation 111 of Mines and Mineral Regulation, 1961.

**f) Conceptual Mine planning upto the end of lease period taking into consideration the present available reserves and resources describing the excavation, recovery of ROM, Disposal of waste, backfilling of voids, reclamation and rehabilitation showing on a plan with few relevant sections:**

**Conceptual Mining Plan :**

While making the Conceptual Mining Plan and deciding the ultimate pit limits the following factors are considered.

i) Pit dimension : for 1 to 5 Years

**BAND**

Length	:	50.0
Width (m)	:	38.0
Depth (m)	:	13.0(1.0m Top Soil + 12.0m Limestone)

**01. Boundary Barriers of 7.5m**

Boundary barrier of 7.5m is left all along the lease boundary.

**02. Depth of Mining :**

The depth of mining is about 13.0m (1.0m top soil + 12.0m Limestone).

**03. No. of benches :**

The no. of benches will be seven including the overburden soil bench.

**04. Size and slope of benches :**

In overburden soil the bench height and width will be 1.0m with 45° slope.

In Limestone, the bench 2.5m height and 2.5m width with 60° slope for next Three years.

**05. Nature of Overburden :**

The overburden is reddish and gravelly in nature. The top most layer is reddish and gravelly, this layer which is thickness of about 1.0m from general ground level. It consists of iron and magnesium rich content and some minor and magnesium and aluminium.

**06. The size of the lease hold :**

The lease has an extent of 1.90.5 Ha.

**07. Nature of ore body :**

There is only one band of Limestone band, Biotite-schist and without much of geological disturbances.

**i) The ultimate pit limits will be :**

Ultimate pit limits have been marked in the Conceptual Mining Plan.

**BAND**

Length	:	108.0
Width (m)	:	86.0
Depth (m)	:	13.0(1.0m Top Soil + 12.0m Limestone)

01. The outline of the area to be worked out in the next Three years : 0.19.0Ha.  
Plate No. IV.
02. The area to be worked upto life of the mine-Plate No.VIII. : 0.93.0 Ha.
03. Yearwise area to be planted for next Three years-Plate No.V. : 0.13.0 Ha.
04. Subsequent blocks to be afforested in future-Plate No.VIII : 0.20.0 Ha.
05. Extent of areas occupied by dumps, roads, site services, : 0.16.0 Ha.  
etc., - Plate No.VIII.

Table – 24

Sl. No.	Description	Present Area (Ha.)	Area to be reclaimed & rehabilitated at the end of present MP/MS period (Ha.)	Area to be reclaimed & rehabilitated at the end of life of mine (Ha.)
01.	Mining (Quarry)	0.79.0	0.19.0	0.93.0
02.	Waste dump	0.40.0	0.14.0	0.14.0
03.	Office-Infrastructure	-	0.01.0	0.01.0
04.	Mineral Stackl/ Processing Yard	-	-	-
05.	Sub-grade Mineral stacks	-	-	-
06.	Mine Roads	0.12.0	0.01.0	0.01.0
07.	Area under Plantation	0.01.0	0.13.0	0.20.0
08.	Unutilised Area	0.59.5	0.42.5	0.61.5
	<b>TOTAL</b>	<b>1.90.5</b>	<b>1.90.5</b>	<b>1.90.5</b>

ii) **Ultimate pit boundaries:**

Ultimate pit limits have been marked in the Conceptual Plan in Plate Nos.III & VIII.

ii) **Waste dumps :**

The quantities of different category of wastes that will be generated for the first five years are furnished below :

<u>Nature of Waste</u>	<u>Quantity in tonnes</u>
Overburden	120
Sideburden	8,663
Mineral reject	19,617
Total waste	28,400

Please refer Plate No.V & V-A and Table No.19.

The suitable 30 of Casurina trees to be afforested over these dumps to prevent wash off or erosion. When the ultimate pit limit is drawn for 13.0m depth, the wastes are dumped together in the non-mineral bearing area of the East & Southern side of the lease area.

The dumping details is furnished below : Table – 25

	<b>Overburden</b>	<b>Sideburden</b>	<b>Mineral Reject</b>
Length (m)	28.0	37.0	48.0
Width (m)	12.0	13.0	12.0
Height (m)	1.0	7.0	34.0
Total Quantity (t)	120	8663	19617

In the next Three years nearly 28,400 tonnes of waste will be generated. The stabilization measures, to be made for Year wise (future) dumps. Please refer Plate No.V.

### **Proposed rate of Production and expected life of the Mine :**

The entire reserves have been re-estimated as per the UNFC guidelines. The total proved a limestone recoverable reserve in the mine as on 26.04.2016 is around 35,626 tonnes. The limestone blocked in the 7.5m safety barrier and lockedup in benches is calculated separately as per UNFC and it will become under feasible mineral resource with UNFC code 222. It is proposed to mine around 9,808 tonnes per annum of limestone in the next Three years. On this basis, the expected life of the mine is around four Years only ( $35626 \div 9808 = 3.6$ ). Lessee will be given renewal application for one year before of expiry of lease period.

### **BLASTING:**

#### **a. Broad blasting parameters :**

Dia. of hole (mm)	: 32
Depth (m)	: 1.5
Spacing (m)	: 0.9
Burden (m)	: 0.6
Charge per hole	: 3 cartridge of 140 gm each 0.42 kg.
Yield/kg. Of Explosives	: $\frac{0.9 \times 0.6 \times 1.5 \times 2.6}{0.42}$
	: 5 tonnes of ROM

The hole will be fired with ordinary detonators and safety fuse.

#### **b) During dry season, ANFO as base charge and any conventional type of explosives as booster charge will be used:**

In rainy season, it is preferable to use only conventional type of explosives like slurry and NG based explosives.

Since it is a small mine and the working of the mine is also seasonal, drilling will be done by contractors and supply of explosives will be done by authorized dealer. However, blasting will be done by a qualified Mate or Blaster.

#### **c) Power Factor :**

Ore	: 5 tonnes/kg. Of Explosives
Top soil	: Will be handled manually

Waste rock : 5 tonnes/kg. Of explosives

**d) Secondary Blasting:**

Secondary blasting is not needed, since the primary blasting itself will take care of the required fragmentation of waste rock and mineral body.

**e) Storage of Explosives:**

Initially the explosives will be supplied at site by authorized explosives dealers as per the day's requirement. Hence, question of storage of explosives does not arise. However, the lessee has been advised to install one portable magazine of his own.

**B) Underground Mines :**

Not applicable.

**3.0 Mine Drainage**

**a.** The area is almost a flat ground. Rain water finds its natural course.

The water table is touched at a depth of 50m in summer and at 40m in NE monsoon.

The water table fluctuation is verified by observing the water levels in the above seasons in the nearby wells.

During the mining of fourth bench, it may be necessary to pump out water. A 5 HP pump can easily deal rain water and seepage water and keep the mine dry. The pumped out water will be left out will away from the Western boundary.

**b. Depth of Mining:**

The working in Limestone will reach a depth of 13.0m (1.0m top soil + 12.0m Limestone) in the next Three years. So that the lessee can quickly recover the amount spent for obtaining mining lease etc., and also can build up some reserve of money for future working since handling of waste will be minimum and the lead and lift will be less. More ever the contamination of overburden soil in second level will be less.

**c) Quantity and quality of water likely to be encountered:**

In the initial five years, the water table will not pose any problem. However, to deal with storm water and seepage water, a diesel pump of 5 HP capacities is proposed.

In future, proper dewatering pumping arrangements to be made from pit bottom to nearby agricultural lands.

**D) Describe regional and local drainage pattern. Also indicate annual rain fall, catchments area, and likely quantity of rain water to flow through the lease area, arrangement for arresting solid wash off etc.**

Ground water is the main source in this area, apart from rain in the monsoon period. The water table is interested 20 to 30 meters the surface. The ground water will be collected in the sump for the deposition of solid particles.

Once the suspended particles are deposited it will be pumped out for domestic purpose, dust suppression system, gardening and afforestation purpose. The excess water only will be pumped out to the ponds/closer water bodies-pond after the deposition of solid particles. There are no toxic elements found in the sump water. The water table is found at a depth of 16 meters in rainy season and at 20m in dry season.

To cope up with storm water and seepage water, an energy efficient electrical pump of 20 H.P capacity will be installed and the discharge will be let-out in the nallah/pond. Garland drains will be made all along the periphery of dumpsites to prevent the water carrying the wash-offs from the dumps and top black cotton clay yard entering into the mines . The water collected in the garland drains will flow towards a settling tank formed near by the dumpsite. The water will be allowed to settle the wash offs from the dumps in the settling tank and pure and clear water will be utilized for afforestation purposes and for haul roads arrest the dust generation. Average rainfall in this area during Northeast monsoon is around 80 cm.

#### **4.0. STACKING OF MINERAL REJECT /SUB GRADE MATERIAL AND DISPOSAL OF WASTE**

**a) Indicate briefly the nature and quantity of top soil, Overburden/waste and Mineral Reject to be disposed off.**

##### **Top soil:**

The overburden soil is red gravelly earth. It occurs to a depth of 1.0m. The generation of top soil for Next Three years is about 120 tonnes.

##### **Sideburden:**

The sideburden consists of Biotite-schist. The generation of sideburden for next Three years is about 8663 tonnes.

##### **Sub-grade Mineral:**

Sub-grade Mineral is not produced in the next Three years.

##### **Mineral reject:**

Mineral reject forms nearly 40% of ROM which is manually sorted out. Mineral waste includes mining loss which relates to breaking, chipping etc., The dumping details is furnished below :

Table No.26

	<b>Overburden</b>	<b>Sideburden</b>	<b>Mineral Reject</b>
Length (m)	28.0	37.0	48.0
Width (m)	12.0	13.0	12.0
Height (m)	1.0	7.0	34.0
Total Quantity (t)	120	8663	19617

The size of the dumps for next Three years is marked in Plate Nos.V & VI.

**b) The proposed dumping ground within the lease area be proved for presence or absence of mineral and be outside the UPL unless simultaneous backfilling is proposed or purely temporary dumping for a short period is proposed in mineralized area with technical constraints & justification.**

The generation of overburden and mineral waste for next Three years will be dumped in the non-mineral bearing area of the East & Southern side of the lease area. The waste that will be generated in life of the mine, adequate space for dumping the overburden and mineral waste in the non-mineral bearing area of the East & Southern side of the lease area.

The dumping of waste material, will be done in steps to avoid sliding. One end of the waste dump to be matured for stabilization will be taken up for afforestation.

Construction of garland drain in around the pit and dump and also settling tank will be provided to guard against the heavy rain water.

Periodically sprinkling/spraying water on roads leading from working face to waste dump, so that these areas are always kept wet to prevent emission of air borne dust.

Retaining wall will be constructed around the dumping yard. Stabilization measures, to be made for Yearwise (future) dumps. The size of the waste dumping yard next Three years are furnished as follows:

Table – 27

	<b>Overburden</b>	<b>Sideburden</b>	<b>Mineral Reject</b>
Length (m)	28.0	37.0	48.0
Width (m)	12.0	13.0	12.0
Height (m)	1.0	7.0	34.0
Total Quantity (t)	120	8663	19617

Please refer Plate Nos. V & VI.

**c) Attach a note indicating the manner of disposal of waste, configuration and sequence of year wise build up of dumps along with the proposals for protective measures.**

The wastes will be loaded by manual means into tipper and dumped in the respective places ear-marked for the same.

The generation of wastes for the life of the mine is furnished below :

Overburden	220
Sideburden	15,160
Mineral reject	23,750
Total waste	39,130



There is adequate space available for dumping overburden soil, Sideburden and mineral reject (life of the mine) will be dumped in the non-mineral bearing area of the East & Southern side of the lease area.

Construction of garland drain in around the pit and dump and also settling tank will be provided to guard against the heavy rain water.

Periodically sprinkling/spraying water on roads leading from working face to waste dump, these areas are always kept wet to prevent emission of air borne dust.

Retaining wall and garland drain will be constructed around the dumping yard. The dumping of waste material, will be done in steps to avoid sliding. One end of the waste dump to be matured for stabilization will be taken up for afforestation.

The parameters of the disposal of waste is overburden and mineral reject for the life of the mine are furnished below : Table – 28

	<b>Overburden</b>	<b>Sideburden</b>	<b>Mineral Reject</b>
Length (m)	28.0	37.0	48.0
Width (m)	12.0	13.0	12.0
Height (m)	1.0	13.0	16.0
Total Quantity (t)	220	15160	23750

Please refer Table No.12 & 13 and Plate No.VIII.

## **5.0 USE OF MINERAL AND MINERAL REJECT:**

### **a) Describe briefly the requirement of end-use industry specifically in terms of Physical and chemical composition:**

Since the entire mined out mineral has been utilized by the Cement and refractory Manufacturing unit and industries in Karur. The grade is been already approved and fit for Cement and refractory industries.

### **b) Give brief requirement of intermediate industries involved in up gradation of Mineral before its end-use:**

There is no necessary for intermediate industries involved up gradation of Mineral.

### **c) Give detail requirements for other industries, captive consumption, export, Associated industrial use etc:**

Not Applicable.

### **d). Chemical and Physical specifications stipulated by buyers :**

#### **Chemical Specifications :**

In this mine limestone of CaCo<sub>3</sub> 78.04%, SiO<sub>2</sub> 10.12% and MgCo<sub>3</sub> 1.03%.

The average grade of the limestone is cement and refractory grade brief description of the sample is given in following table : Table No.29

<b>Parameters</b>	<b>Results %</b>
Calcium carbonate (CaCo3)	78.04
Magnesium carbonate (MgCo3)	1.03
Silica as SiO2	10.12
Aluminium Oxide (Al2O3)	Nil
Ferric Oxide (Fe2O3)	Nil
Sodium as Na2O	Nil
Potassium as k2O	Nil
Loss on Ignition	10.81

**Physical specifications:**

Colour of Limestone is grey to brown in colour, massive in form, hardness-3, specific gravity 2.6, streak is white.

**Supply of buyers :**

Used in nearby Cement and refractory industries at Karur.

**Details of blending :**

The blending of ore will be done at site. Mineral with less Caco3 is mixed with higher Sio2 mineral in the required proportion to get a uniform grade.

**e) Give details of processes adopted to upgrade the ROM to suit the user**

**Requirements:**

Not applicable.

**6.0 PROCESSING OF ROM AND MINERAL REJECT :**

**a) If processing / beneficiation of the ROM or Mineral Reject is planned to be conducted, briefly describe nature of processing / beneficiation. This may indicate size and grade of feed material and concentrate (finished marketable product), recovery etc:**

In this area production materials lessee will be using screen for recovering Limestone fines from ROM, after screening material send to used in own indigenous micro fine roller mill located in Since the entire mined out mineral is been utilized by the Cement and refractory Manufacturing unit in Salem. The grade is been already approved and fit for Cement and refractory industries.

**Mineral Beneficiation Of Mineral :**

Not applicable, since the mineral was required and supplied in raw form.

**Beneficiation Test Done On Sub-Grade Mineral:**

Not applicable, since the sub-grade mineral is anticipated.

**b) Give a material balance chart with a flow sheet or schematic diagram of the Processing procedure indicating feed, product, recovery, and its grade at each stage of processing:**

Not applicable.

**c) Explain the disposal method for tailings or reject from the processing plant:**

Not applicable.

**d) Quantity and quality of tailings / reject proposed to be disposed, size and capacity of tailing pond, toxic effect of such tailings, if any, with process adopted to neutralize any such effect before their disposal and dealing of excess water from the tailings dam:**

Not applicable.

**e) Specify quantity and type of chemicals if any to be used in the processing plant:**

Not applicable.

**f) Specify quantity and type of chemicals to be stored on site / plant:**

Not applicable.

**g) Indicate quantity (cum per day) of water required for mining and processing And sources of supply of water, disposal of water and extent of recycling: Water balance chart may be given.**

Not applicable.

**7.0. OTHERS****a. Site Services :**

The proposed site services are:

Drinking water, rest shed, store room, public convenience etc., mines office and blaster shelter etc., please refer Plate Nos.III, IV and VI.

**b) Employment Potential:**

Most of the people in this area are agriculture based. Mining is done as a seasonal work. Hence, only 250 days in a year are assumed as full working days.

The Royalty amount of limestone per tonne	: Rs. 80/-
Total no. of working days in a year	: 250
Production (Expected) per year (Limestone)	: 9,808 tonnes
Production/day	: 39 ie. $\frac{9808}{250} = 39.2$
	Say
Total Production (Expected) Per Year (Limestone)	: 39 tonnes
	: 20 tonnes

Output/manshift including waste handling	: 4.0 tonnes
No. of face workers/day	: $8(39 \div 4 = 9.7)$
For absenteeism 20%	: 2
Total no. of Labour (on contract basis of production of mineral)	: 10 Nos.

Total this small mine, a "Mine Foreman" is proposed to be appointed as Manager with authorization from DGMS.

The details of proposed employment are given below:

**Supervisory:**

Manager (Foreman)	:	1
Part-time Mining Engineer	:	1
Clerk	:	1
<b>Total</b>	:	<b>3 Nos.</b>

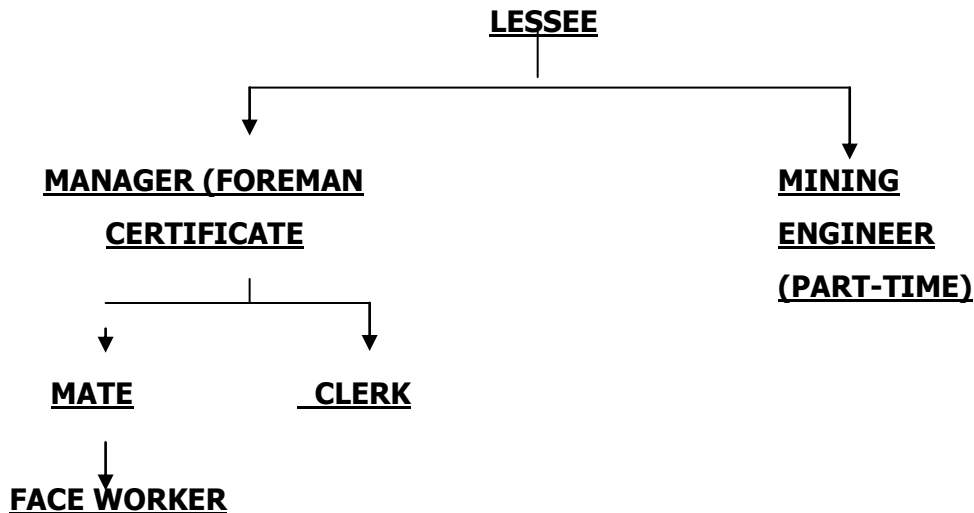
**Labour:**

Highly skilled, Skilled, a Semi-skilled and Unskilled:

Highly Skilled	:	-
Skilled	:	2
Semi-skilled	:	-
Unskilled	:	10

A Part-time Mining Engineer will be appointed as per rule 42(1) (b) (ii) of MCDR 1988.

The proposed organization chart :



The drilling will be done by contractors. The Manager will carry out blasting.

The mine will work in a single shift from 8.00 AM to 5.00 PM with one hour lunch interval between 12.00 Noon and 1.00 PM.

## 8.0 Progressive Mine Closure Plan –Under Rule 23 of MCDR'1988

### INTRODUCTION

Name of the Mine	: Varavanai Limestone Mine
Lessee	: Thiru.S.Sekhar, Owner.
Address	: No.73, Raja Colony, Collector Office Road, Cantonment, Trichy – 620 001.
IBM Register. No.	: IBM/10612/2012
Pin code	: 620 001
Cell	: 93451-41471
Category of Mines	: Mining operation is manual opencast 'B' category of mine.
Name of the Executive Authority/Agency	: Less is the Executive Authority Person, Name and Address are given above.

#### Location :

Extent	: 1.90.5 Ha.
S.F.Nos.	: 833/4B, 836(PART) & 843/2
Village	: Varavanai
Taluk	: Kulithalai
District	: Karur
Type of Lease Area	: Non-Forest
Present land use pattern	: Mining of Limestone
Method of Mining	: Manual
Mineral processing operation	: only breaking, hand sorting is done.

### 8.1 Environment Base line information: Attach a note on the status of baseline

#### Information with regard to the following:

#### Existing land use pattern:

The lease area is almost a flat ground gently sloping towards North to South and Depth of about 1 or 2 meters above the Mean Sea level as per the Topo Sheet contours. The area comprises soil with boulders of Limestone.

The lease area under consideration has the following use as detailed below: -

Area occupied by mining	:	0.93.0 Ha.
Area occupied by dumping	:	0.14.0 Ha.
Area occupied by boundary barrier/roads/Planets	:	0.83.5 Ha.
		-----
<b>Total</b>	<b>:</b>	<b>1.90.5 Ha.</b>
		-----

Table No:30

Sl. No.	Description	Present Area (Ha.)	Area to be reclaimed & rehabilitated at the end of present MP/MS period (Ha.)	Area to be reclaimed & rehabilitated at the end of life of mine (Ha.)
01.	Mining (Quarry)	0.79.0	0.19.0	0.93.0
02.	Waste dump	0.40.0	0.14.0	0.14.0
03.	Office-Infrastructure	-	0.01.0	0.01.0
04.	Mineral Stack/ Processing Yard	-	-	-
05.	Sub-grade Mineral stacks	-	-	-
06.	Mine Roads	0.12.0	0.01.0	0.01.0
07.	Area under Plantation	0.01.0	0.13.0	0.20.0
08.	Unutilised Area	0.59.5	0.42.5	0.61.5
	<b>TOTAL</b>	<b>1.90.5</b>	<b>1.90.5</b>	<b>1.90.5</b>

### **Water Regime**

Ground water is touched at a depth of 50m in summer and at 40m in NE monsoon season. The average rainfall is around 400 mm. There is no lake, reservoir or river near the area.

Villagers use open well water for drinking and other domestic purposes for ages without any adverse health effects. However drinking water will be supplied from the public water supply system from nearby hamlets. There is no wild life or bird sanctuary or reserve or any protected or social forests close to the area.

### **Air-Quality:**

There will be generation of only dust during drilling and blasting. No heavy earth moving machinery is conducted. Since this is an open area, the impact on air quality will be to the minimum. The air is fresh and unpolluted. Even when the quarry is in operation, because of its small size, the air will not get polluted. The mine roads will be sprinkled with water before starting the transportation of mineral and wastes to minimize air pollution.

### **Noise Level:**

Drilling, Blasting, loading, hauling and lifting equipment etc., are bound to produce certain level of noise which will be bring down to acceptable norms.

### **Flora and Fauna**

Since the sub-seed area is a stony waste, it does not contain much vegetation and villages. There is no report of existence of wild animals in this region.

### Climate Conditions

The area receives rain during NE monsoon. The temperature in summer goes above 43°C in the months of April, May and June and it drops down to 25°C in December, January and February. The wind direction is from NE-SW and vice-versa.

### Human Settlement

The hamlets near the area are: Table No:31

Name of Hamlet	Population	Direction from the area	Distance
Pannapatti	750	North	4.0 kms.
Varavanai	600	South	3.0 kms.
Kalaiyappatti	750	West	5.0 kms.
Vellappatti	500	East	5.5 kms.

### Public building, Places of worship and Monuments

There is no public building, places of worship or archaeological or national monuments near the area. The area does not fall under Hill Taluk as notified by Hill Area Conservation Authority. There is no wild life or bird sanctuary or no reserve or any protected social forest closer to the area.

### Indicate Any Sanctuary Is Located In The Vicinity Of Leasehold:

Not applicable.

**8.2 Impact Assessment:** Attach an Environmental Impact Assessment Statement Describing the impact of mining and beneficiation on environment on the following:

#### b) Environmental Impact Assessment Statement:

The factors that should be covered in this para are: -

01. Land
02. Air Quality
03. Water Quality
04. Noise Levels
05. Vibration Levels
06. Water Regime
07. Socio-Economics
08. Historical Monuments etc.

#### Land:

It is a working mine. There is no proposal for back filling and reclamation.

Before closure of the mine, a parapet wall will be constructed to prevent inadvertent entry as cattle and human beings. The dumps will be vegetated to prevent sliding.

After closure of the mine, the pit will be allowed to collect seepage and rain water. This will help to charge the nearby agricultural wells. Fish forming will also be attempted.

The total area under mining lease is about 1.90.5 Ha.

Conceptual position of the mining details :

The area covered by pits	:	0.93.0 Ha.
The area covered by waste dumps	:	0.14.0 Ha.
The area covered by afforestation	:	0.20.0 Ha.
The area covered by mine roads	:	0.01.0 Ha.
Virgin area	:	0.61.5Ha

There is adequate space available for dumping the waste materials with in the lease area for next Three years. Afforestation will be attempted in the boundary barrier.

#### **Air-Quality:**

There will be generation of dust during drilling and movement of heavy earth moving equipment and during blasting. Since this is an open area, the impact on air quality will be to the minimum. The air is fresh and unpolluted. Even when the quarry is in operation, because of its small size, the air will not get polluted. The mine roads will be sprinkled with water before starting the transportation of mineral and wastes to minimize air pollution.

#### **Water Quality:**

Mining operation will not produce any toxic effluent in the form of solid, liquid or gas.

The existing water quality will not be affected by mining operation.

The Surface rain water flow through the seasonal water course as usual.

#### **Noise Level:**

Drilling, loading, hauling and lifting equipment blasting, etc., are bound to produce certain level of noise which will be bring down to acceptable norms. Table No:32

<b>Duration per day (Hrs)</b>	<b>Sound level dBa)</b>
16	80
8	85
4	90
2	95
1	100
1/2	105
1/4	110
1/8	115

#### **Vibration levels:**

The ground vibration will be caused due to movement of earth moving equipment and blasting. But the impact on the environment will be negligible, since the quantity of explosives used will be very small and the movement of earth moving equipment will be intermittent.



**Water Regime:**

Mining operation will not produce any toxic effluent in the form of solid, liquid or gas and will not be any impact on quality of water and also on ground water.

**Socio-Economics:**

The local population is mostly agriculture based. Agricultural is done only on seasonal basis. Mining in this area is an avenue for employment. It has created an awareness on the value and applications of granite in building and in industries.

Mining certainly has created an impact in the Socio-economic standards of the local people. It has improved the life style of the local people and has improve the standard of living.

**Historical Monuments:**

There is no historical or Archaeological monument near the area. There is no scope for mining operation to have any impact on these aspects.

**8.3 PROGRESSIVE RECLAMATION PLAN:**

Since, it is a new mine, the only proposal now is to plant 30 Casurina trees every year in the boundary barrier. A retaining wall will be constructed around the dumping yard. Please refer Plate Nos.VI. The afforestation programme for the next Three years are described as follows :Table – 33

<b>Year</b>	<b>Name of the species</b>	<b>No. Of species</b>	<b>Interval</b>	<b>Area in Ha.</b>	<b>Survival rate</b>
2016-2017	Casurina	30	5m	0.04.0	80%
2017-2018	Casurina	30	5m	0.04.0	80%
2018-2019	Casurina	30	5m	0.05.0	80%
<b>TOTAL</b>		<b>90</b>		<b>0.13.0</b>	

After complete extraction of mineral, the pit will be allowed to collect rain 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.

**8.3.1. MINED OUT LAND:**

It is a new mining lease. There is no proposal for back filling and reclamation at this stage.

- |   |              |
|---|--------------|
| 01. The area covered by pits                  | : 0.93.0 Ha. |
| 02. The area covered by waste dumps           | : 0.14.0 Ha. |
| 03. The area covered by afforestation         | : 0.20.0 Ha. |
| 04. The area covered by roads, infrastructure | : 0.02.0 Ha. |
| 04. Virgin area                               | : - Ha.      |

**8.3.2. TOP SOIL MANAGEMENT:**

The reddish soil will be stacked separated for afforestation purpose, which is being dumped separately will be used for forming earth bund all along the mine. Casurina's trees are planted on the bund for protecting the bund.

**8.3.3. TAILING DAM MANAGEMENT**

Does not arise.

**8.3.4 . Acid mine drainage, if any and its mitigative measures.**

Not applicable.

**8.3.5. Surface subsidence mitigation measures through backfilling of mine voids or by A0ny other means and its monitoring mechanism.**

**The information on protective measures for reclamation and rehabilitation works year wise may be provided as per the following table.**

Information on target and achievement proposals as per Rule 23(E)2 made of Information on target and achievement proposals as per Rule 23(F)2 made of protective measures undertaken for environmental protection during the period 2016-2017.

Table No.34

ITEMS		DETAILS		AREA (Ha)	QUANTITY	EXPENDITURE (Rs.)
				Proposal	Proposal	Proposal
A)	Reclamation & Rehabilitation of mined out area	i)	Backfilling	Nil	Nil	Nil
		ii)	Afforestation on the backfilled area	Nil	Nil	Nil
		iii)	Others (Please specify) ie, afforestation on exhausted benches	Nil	Nil	Nil
		iv)	Pisciculture	Nil	Nil	Nil
		v)	Converting in water reservoir	Nil	Nil	Nil
		vi)	Picnic spot	Nil	Nil	Nil
B)	Stabilisation & Rehabilitation of dumps	i)	Terracing	Nil	Nil	Nil
		ii)	Pitching	Nil	Nil	Nil
		iii)	Construction of parapet walls/ retaining wall at toe of dumps	Nil	Nil	Nil
		iv)	Construction of check dams along slopes	Nil	Nil	Nil
		v)	Construction of settling pond	Nil	Nil	Nil
		vi)	Details of settling pond/ channels	Nil	Nil	Nil
		vii)	Afforestation on dumps	Nil	Nil	Nil
		viii)	Others (Please specify)	Nil	Nil	Nil
C)	Rehabilitation of barren area within lease	i)	Afforestation (Green land building)	0.04.0	30 saplings	Rs.1000
		ii)	Others (Please specify)	Nil	Nil	Nil

D) Environmental monitoring (core zone & buffer zone) – Table No.35

Air quality (Rs. / sample)	Water quality (Rs. / sample)	Noise (Rs. / area)	Ground vibration (Rs. / area)
1500	850	900	750

Information on target and achievement proposals as per Rule 23(E)2 made of protective measures undertaken for environmental protection during the period 2017-2018.

Table No.38

ITEMS		DETAILS		AREA (Ha)	QUANTITY	EXPENDITURE (Rs.)
				Proposal	Proposal	Proposal
A)	Reclamation & Rehabilitation of mined out area	i)	Backfilling	Nil	Nil	Nil
		ii)	Afforestation on the backfilled area	Nil	Nil	Nil
		iii)	Others (Please specify) ie, afforestation on exhausted benches	Nil	Nil	Nil
		iv)	Pisciculture	Nil	Nil	Nil
		v)	Converting in water reservoir	Nil	Nil	Nil
		vi)	Picnic spot	Nil	Nil	Nil
B)	Stabilisation & Rehabilitation of dumps	i)	Terracing	Nil	Nil	Nil
		ii)	Pitching	Nil	Nil	Nil
		iii)	Construction of parapet walls/ retaining wall at toe of dumps	Nil	Nil	Nil
		iv)	Construction of check dams along slopes	Nil	Nil	Nil
		v)	Construction of settling pond	Nil	Nil	Nil
		vi)	Details of settling pond/ channels	Nil	Nil	Nil
		vii)	Afforestation on dumps	Nil	Nil	Nil
		viii)	Others (Please specify)	Nil	Nil	Nil
C)	Rehabilitation of barren area within lease	i)	Afforestation (Green land building)	0.04.0	30 saplings	Rs.1000
		ii)	Others (Please specify)	Nil	Nil	Nil

D) Environmental monitoring (core zone & buffer zone) – Table No.39

Air quality (Rs. / sample)	Water quality (Rs. / sample)	Noise (Rs. / area)	Ground vibration (Rs. / area)
1500	850	900	750

Information on target and achievement proposals as per Rule 23(E)2 made of protective measures undertaken for environmental protection during the period 2018-2019.

Table No.40

ITEMS		DETAILS		AREA (Ha)	QUANTITY	EXPENDITURE (Rs.)
				Proposal	Proposal	Proposal
A)	Reclamation & Rehabilitation of mined out area	i)	Backfilling	Nil	Nil	Nil
		ii)	Afforestation on the backfilled area	Nil	Nil	Nil
		iii)	Others (Please specify) ie, afforestation on exhausted benches	Nil	Nil	Nil
		iv)	Pisciculture	Nil	Nil	Nil
		v)	Converting in water reservoir	Nil	Nil	Nil
		vi)	Picnic spot	Nil	Nil	Nil
B)	Stabilisation & Rehabilitation of dumps	i)	Terracing	Nil	Nil	Nil
		ii)	Pitching	Nil	Nil	Nil
		iii)	Construction of parapet walls/ retaining wall at toe of dumps	Nil	Nil	Nil
		iv)	Construction of check dams along slopes	Nil	Nil	Nil
		v)	Construction of settling pond	Nil	Nil	Nil
		vi)	Details of settling pond/ channels	Nil	Nil	Nil
		vii)	Afforestation on dumps	Nil	Nil	Nil
		viii)	Others (Please specify)	Nil	Nil	Nil
C)	Rehabilitation of barren area within lease	i)	Afforestation (Green land building)	0.05.0	30 saplings	Rs.1000
		ii)	Others (Please specify)	Nil	Nil	Nil

D) Environmental monitoring (core zone & buffer zone) – Table No.41

Air quality (Rs. / sample)	Water quality (Rs. / sample)	Noise (Rs. / area)	Ground vibration (Rs. / area)
1500	850	900	750

Summary of information on target and achievement proposals as per Rule 23(E)2 made of protective measures undertaken for environmental protection during the period 2016-2019.

Table No.42

ITEMS	DETAILS	AREA (Ha)	QUANTITY	EXPENDITURE (Rs.)		
		Proposal	Proposal	Proposal		
A)	Reclamation & Rehabilitation of mined out area	Nil				
B)	Stabilisation & Rehabilitation of dumps	Nil				
C)	Rehabilitation of barren area within lease	i)	Afforestation (Green land building on boundary barrier)	0.13.0 Ha.	90 saplings	Rs.3,000/-
		ii)	Others - watchman	Nil		

D) Environmental monitoring (core zone & buffer zone) – Table No.43

Air quality (Rs. / sample)	Water quality (Rs. / sample)	Noise (Rs. / area)	Ground vibration (Rs. / area)
4500 x 2 (Core+ buffer zone)	2550 x 2 (Core+ buffer zone)	2700 x 2 (Core+ buffer zone)	2250 x 2 (Core+ buffer zone)

Budget Provision for the present scheme period

Afforestation cost outside the mining lease area	=	Rs. 3,000/-
Air Quality Sampling	=	Rs. 9,000/-
Water Quality Sampling	=	Rs. 5,100/-
Noise Monitoring	=	Rs. 5,400/-
Ground vibration test	=	Rs. 4,500/-
<b>Total Abandonment Cost</b>	=	<b>Rs. 27,000/-</b>

## **SAFETY AND SECURITY**

If any major accident, it will be reported to Tashildar, Police Station, Panchayat, DGMS etc., for necessary action. Mining Manager will be responsible for this. All the Employer will be shifted to the nearest hamlet. The Mining operation is very small in nature and is in an almost plain ground with opencast workings. The anticipated mining depth is limited. There is no nullah or river near the area. The stratigraphy is hard in nature. The chances for disaster due to land sliding, subsidence, flood, inundation etc., are to the barest minimum and are almost Nil.

However Cell/Mobile phones will be provided to the Manager/Supervisor for easy communication during any emergency.

To prevent inadvertent entry of general public and for safety reasons a well designed iron gate is provided at the entrance which will be kept locked when there is no work in the mines. Parapet wall or bund has been constructed on all sides of the openings. Proper pumping arrangements during rainy season. Trees plantation all along the mining lease boundary. Watchman has been posted round the clock.

### **8.4 DISASTER MANAGEMENT AND RISK ASSESSMENT**

The nearby town is Puliur which is at a distance of 10.0 kms. Where facilities like Primary Health Centre etc., are available. Mode of transport available for Jeep.

If any flooding due to heavy rain occurs, it will be reported to Tashildar, Police Station, Panchayat, DGMS etc., for necessary action. Mining Manager will be responsible for this. All the employee will be shifted to the nearest hamlet Varavanai. Mobile phone will be provided to the Mines Manager. The Manager/Supervisor will be provided with a mobile phone. The Mining area is very small. There is no chance for risk for any disaster.

However, the details of contact person are given :

Name : Thiru.S.Sekhar,  
Address : No.73, Raja Colony,  
Collector Office Road,  
Cantonment,  
Trichy – 620 001.  
Cell : 93451-41471

### **8.5 CARE AND MAINTENANCE DURING TEMPORARY DISCONTINUANCE:**

In case, of any temporary closure or discontinuance of mining operations, the following steps are proposed.

- a. Watchman will be posted round the clock to prevent any unauthorized or inadvertent entry of general public.
- b. Works on stabilization of dumps to provide vegetal cover will be taken up.
- c. Construction of garland drains in the pit and retaining walls around the dumps will be attempted.

**8.6 FINANCIAL ASSURANCE:**

**Table indicating the break-up of areas in the Mining Lease for calculation of Financial Assurance:**


Table No:44

Sl. No.	Head	Area put on use at start of plan (in Ha.)	Additional requirement during plan period (in Ha.)	Total (in Ha.)	Area considered as fully reclaimed & rehabilitated (in Ha.)	Net Area considered for calculation (in Ha.)
1.	Area under mining	0.79.0	0.19.0	0.98.0	-	0.98.0
2.	Storage for top soil	-	-	-	-	-
3.	Overburden/dump	0.40.0	0.14.0	0.54.0	-	0.54.0
4.	Mineral storage	-	-	-	-	-
5.	Infrastructure (workshop, administrative building etc.,)	-	0.01.0	0.01.0	-	0.01.0
6.	Roads	0.12.0	0.01.0	0.13.0	-	0.13.0
7.	Railways	-	-	-	-	-
8.	Green Belt	0.01.0	0.13.0	0.14.0	-	0.14.0
9.	Tailing pond	-	-	-	-	-
10.	Effluent Treatment Plant	-	-	-	-	-
11.	Mineral Separation Plant	-	-	-	-	-
12.	Township area	-	-	-	-	-
13.	Others to specify	-	-	-	-	-
	<b>GRAND TOTAL</b>	<b>1.32.0</b>	<b>0.48.0</b>	<b>1.80.0</b>		<b>1.80.0</b>

The total area put to use for mining and allied activities is about 1.80.0 Ha.

The mining lease was originally executed on 10.08.1994. The financial assurance as per the Rule 23(F) (2) of Mineral Conservation and Development (Amendment) Rules, 1988. Required to be submitting minimum amount of Rs.15,000/- (Rupees Fifteen Thousand only) by the lessee. However, as per the order of the honorable high court of madras the Financial Assurance at the Rate of Rs. 15000/-(Rupees Fifteen Thousand only) per ha for the area put to use for mining purpose works out as 1.80.0 Ha x 15000=Rs.27,000/- .

Hence, the Financial Assurance in the form of Bank Guarantee for Rs. 30,000/- (Rupees Thirty Thousand only) is enclosed in Annexure-X.



**S. DHANASEKAR**  
RQP/MAS/225/2011/A



# **PART-B**

**CERTIFICATES/UNDERTAKINGS/CONSENTS**

**S. SEKHAR,**

NO.73, RAJA COLONY,  
COLLECTOR OFFICE ROAD,  
CANTONMENT,  
TRICHY - 620 001.

Date :

**UNDERTAKING OF THE LESSEE**

I **S. Sekhar**, Owner of the Mining Lease No. G.O.Ms.No.162 INDUSTRIES (MMA-2) DEPARTMENT dated 14.06.1994/ Lessee for the Mining Lease in village **Varavanai**, taluka **Kulithalai**, district **Karur**, State **Tamilnadu** over an extent of 1.90.5 hectares for **Limestone** Mineral hereby undertake that no matter is pending against the said lease/ Applied Mining Lease area on the following issues:

- 1) Issues related to illegal mining with State Government. - NIL
- 2) Royalty and revision matter with the State Government. - NIL
- 3) Safety & Environment issues of General Public concern. - NIL
- 4) Public Interest Litigation(PIL) and court cases, etc. - NIL

If anything is found wrong in the declaration and found incorrect during the period of document, suitable action may be initiated including withdrawal of the approval of the document.

Place :

Date :



**(S. SEKHAR)**  
Signature with Name

**S. SEKCHAR,**

NO.73, RAJA COLONY,  
COLLECTOR OFFICE ROAD,  
CANTONMENT,  
TRICHY - 620 001.

Date :

**CONSENT LETTER/UNDERTAKING/CERTIFICATE FROM THE LESSEE**

01 The Modified Mining Plan in respect of Varavanai Limestone Mine over an area 1.90.5 Ha., S.F.Nos. 833/4B, 836(P) & 843/2 in Varavanai Village, Kulithalai Taluk, Karur District, Tamilnadu State, under Rule 22(6) of MCR, 1960 has been prepared by **Shri S. DHANASEKAR, M.Sc.,** Recognised Qualified Person (Reg.No.RQP/MAS/225/2011/A).

This is to request the Regional Controller of Mines, Indian Bureau of Mines, C-4-A, Rajaji Bhavan, C.G.O. Complex, Besant Nagar, Chennai, to make further correspondence regarding any correction of the Modified Mining Plan with the said Recognized Person at his address below:-

**SHRI S. DHANASEKAR, M.Sc., M.M.E.A.I.,**  
Consultant (Mining),  
8/3, Kullappan Street, Opp. Indian Bank Line,  
Omalar Taluk,  
SALEM DISTRICT - 636 455.

We hereby undertake that all the modifications / updating as made in the said Modified Mining Plan by the said recognized person be deemed to have been made with our knowledge and consent and shall be acceptable on us and binding in all respects.

02 It is certified that the CCOM Circular No-2/2010 will be implemented and complied with when an authorized agency is approved by the State Government.

03 It is certified that the Progressive Mine Closure Plan of Varavanai Limestone Mine of Shri. S. Sekhar over an area of 1.90.5Ha. complies with all statutory rules, Regulations, Orders Made by the Central or State Government, Statutory organization, Court etc which have been taken into consideration and wherever any specific permission is required the lessee will approach the concerned authorities.

The information furnished in the Progressive Mine Closure Plan is true and correct to the best of our knowledge and records.

**S. SEK HAR,**

NO.73, RAJA COLONY,  
COLLECTOR OFFICE ROAD,  
CANTONMENT,  
TRICHY - 620 001.

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-2-

04 "The Provisions of Mines Act, Rules and Regulations made there under have been observed in the Modified Mining Plan over an area of 1.90.5 hectares in Varavanai Village, Kulithalai Taluk, Karur District in Tamilnadu State belonging to Varavanai Limestone Mine of Shri. S. Sekhar, and Where specific permissions are required, the applicant will approach the D.G.M.S. Further, standards prescribed by D.G.M.S. in respect of miners health will be strictly implemented".

Place:

Date:



(S. SEK HAR)

Owner

**S. DHANASEKAR, M.Sc.,**  
RECOGNISED QUALIFIED PERSON  
RQP/MAS/225/2011/A

**8/3, KULLAPPAN STREET,  
OPP. INDIAN BANK LINE,  
OMALUR TALUK,  
SALEM DISTRICT-636 455.**

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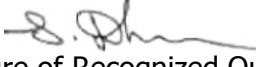
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**CERTIFICATE FROM RQP:**

The Provisions of the Mineral Conservation and Development Rules 1988 have been observed in the preparation of the Scheme of Mining and Progressive Mine Closure Plan for Varavanai Limestone Mine over an area of 1.90.5 Ha, of Thiru. S. Sekhar, NO.73, Raja Colony, Collector Office Road, Cantonment, Trichy – 620 001 of Tamilnadu State and whenever specific permissions are required, the applicant will approach the concerned authorities of Indian Bureau of Mines.

The information furnished in Scheme of Mining and Progressive Mine Closure Plan for true and correct to the best of our knowledge.

Certified

  
Signature of Recognized Qualified Person.  
**S. DHANASEKAR**  
RQP/MAS/225/2011/A

Place: Salem

Date: 03.06.2016

## **LIST OF ANNEXURES**

**ANNEXURE-I-A**

**FEASIBILITY REPORT OF VARAVANAI LIMESTONE MINE OF  
Thiru. S. SEKHAR, TRICHY – 620 001.**

**PREAMBLE :**

The lessee Thiru. S. Sekhar, No.73, Raja Colony, Collector Office Road, Cantonment, Trichy – 620 001 has adequate experience and knowledge in mining, mineral trading and on value of minerals. The lessee has an aptitude for systematic and scientific mining of minerals.

The Mining Plan for fresh grant of lease was approved by Indian Bureau of Mines in letter No.TN/TCR/MP/LST-546-MDS dated 30.12.1991 before the grant of Mining Lease.

The 1<sup>st</sup> Scheme of Mining was approved by Indian Bureau of Mines in letter No.TN/KR/LST/MS-93-MDS dated 18.02.2001.

The 2<sup>nd</sup> Scheme of Mining was approved by Indian Bureau of Mines in letter No.TN/KRR/LST/MS-716-MDS dated 31.08.2012.

The Mining Lease was granted in G.O.Ms.No.162 Industries (MMD I) Department dated 14.06.1994 for the period of twenty years.

The lease deed was executed on 10.08.1994. Mining operation commenced on 20.04.1996. The lease will expire on 09.08.2014.

The lessee has preferred an application for First renewal of mining lease is to be before one year of expiry of lease, that's before 22<sup>th</sup> July 2013. Please refer Annexure- IV & IV-A for Renewal Application & Form-D. However as per the recent MMDR Amendment Act 2015, the validity of the Mining Lease is extended upto 09.08.2044. Hence, the Scheme of Mining Plan under Rule 17(3) of MCR, 2016 has been prepared and submitted.

The lessee has preferred an application for First renewal of mining lease is to be before one year of expiry of lease, that's before 22<sup>th</sup> July 2013. Please refer Annexure-IV for Renewal Application. However as per the recent MMDR Amendment Act 2015, the validity of the Mining Lease is extended upto 09.08.2044. Hence, the Scheme of Mining Plan under Rule 12 of MCDR, 1988 has been prepared and submitted.

**I. GENERAL MINE DESCRIPTION :****1.1. Name and Address of the lessee :**

Name of the Mine	: Varavanai Limestone Mine
Lessee	: Thiru.S.Sekhar, Owner.
Address	: No.73, Raja Colony, Collector Office Road, Cantonment, Trichy – 620 001.



IBM Register. No.	: IBM/10612/2012
Pin code	: 620 001
Cell	: 93451-41471
Category of Mines	: Mining operation is manual opencast 'B' category of mine.

## **2.2. Status of The lessee:**

The lessee is an Private and Individual. They have adequate experience and knowledge in mining, mineral trading and on value of minerals. The lessee has an aptitude for systematic and scientific mining of minerals.

## **II. Exploration :**

### **Primary Data :**

The area has been already explored by M/s. K. Radhakrishnan and K. Ramalingam in the Year 1986-87 Geological Survey of India (1985), State Government of Geology and Mining (1933).

Tamilnadu Refractory Limited TANCEM (a Government of Tamilnadu Undertaking) has carried out a detail feasibility survey in the entire district of Madurai and Varavanai to ascertain the attitude of the deposit. The report reveals that the Limestone band are bound to occur in the entire Village Varavanai upto 13.0m depth as an average with 1.0m top soil and Limestone 12.0m. This report gives a concrete confidence for the presence and distribution of Limestone Mines in the mining lease area.

### **Secondary data :**

Based on the primary data carried out by the different agencies the lessee (himself RQP & a Geologist) carried out the detailed exploration in the mining lease area related to G1, F1, E1 axis as per UNFC system to ascertain the resource and reserves in the mining lease area.

### **a. Geological Mapping : (Topographical and Contour Map in 1 : 1000 Scale)**

The geological mapping deals with surface geology; existing features of vegetation cover, soil cover etc., such as study of the detailed geological mapping in the scale of 1:50000 was carried out by Survey of India in the Topo Sheet No.58 J/2. Please refer Plate No.Ib.

### **b. Geo-physical prospecting in the way of vertical electrical sounding.**

Geo-physical prospecting in the form of vertical electrical sounding (VES), was conducted in the lease area to ascertain the lateral variations, vertical in homogeneities and the sub-surface geology with respect to the availability of resources and reserves of pegmatite deposits.

Based on the results obtain by the geo-physical prospecting ie. Electric resistivity testing, the bore holes location and the depth persistence of each station were formulated with the help of total station survey.

**c. Geo-chemical prospecting.**

Since, the mining area is very small and the deposit is shallow the details exploration was carried out in the entire mining lease area. There is only one existing working pit available in this area. The samples were carefully collected in the existing working pit crops and out presence of the logging incharge-cum-geologist.

More than 10 samplings were collected in the existing working pit and out crops to ascertain the quality of Limestone. All the samples collected from the existing working pit were packed carefully and take to the investigation site at office and correlated with recognized NABL Chemical Laboratory.

**d. Core drilling and bore hole logging.**

The exploration work has not been carried out in this area. Because, present mine working has been reached a depth of about 13.0m from general ground level. The occurrence of Limestone is Proved to be at upto 13.0m depth.

There is only one existing working pit, the dimensions of which are given below:

Table No.1

	<b>PIT</b>
Length (m) (aver.)	101.0
Width (m) (aver.)	40.0
Depth (m)	13.0

The advancement of the pit will be existing working pit depth from existing working pit from North to Southern direction towards Eastern side of the present working pit in the next Three years. Please refer Plate No.V for the location of the proposed working pit. The attitude of the band like width and length is clearly known.

In this Scheme of Mining Plan, lessee proposed that five wagon drill in working pit and two core drill to virgin area of 100 mm dia. to a depth of about 20.0 from Present working pit depth from 87.0m and general ground level as drilling at particular 50.0m grid interval for confirm the depth continuity of the Limestone. This wagon and core bore hole will be made after First year (2016-17) in this Scheme of Mining Plan period. Please refer Plate No.III & IV.

The details of the proposed exploration are given below : Table-2

Year	Month	No. of wagon & Diamond core bore holes	Total Metreage	Location
2016-2017	June 2016	3 (100mm dia.)	20(d) x 3 = 60M (depth)	North - PBH-1 (Working pit-97M- 77M) North- PBH-2 (Working pit-95M- 75M) North East- PBH-3 (Working pit-97M- 77M)
	September 2016	4 (100 mm dia.)	20(d) x 4 = 80M (depth)	West- PBH-4 (Vergin area) Middle - PBH -5 (Working pit-98M- 78M) East - PBH-6 (Working Pit - 95M- 75M) South- PBH-7 (Vergin area)

The expenditure of proposed drilling wagon & core bore hole cost is intimate to IBM at the time.

#### **e. Technological Prospecting**

Since the entire mined out mineral is send to nearby Limestone Manufacturing unit at Salem. The grade is been already approved and fit for Cement & Refractory grade. Hence further technological prospecting is not required.

#### **GRADE :**

Since, the mining area is very small and the deposit is shallow the details exploration was carried out in the entire mining lease area. There is only one existing working pit available in this area. The samples were carefully collected in the existing working pit crops and out presence of the logging incharge-cum-geologist. More than 10 samplings were collected in the existing working pit and out crops to ascertain the quality of Limestone. All the samples collected from the existing working pit were packed carefully and take to the investigation site at office and correlated with recognized NABL Chemical Laboratory.

The average grade of the limestone is cement and refractory grade brief description of the sample is given in following table : Table No.3

Parameters	Results %
Calcium carbonate (CaCo3)	78.04
Magnesium carbonate (MgCo3)	1.03
Silica as SiO2	10.12
Aluminium Oxide (Al2O3)	Nil
Ferric Oxide (Fe2O3)	Nil
Sodium as Na2O	Nil
Potassium as k2O	Nil
Loss on Ignition	10.81

Please refer Annexure-II.

### III. RESERVES ASSESSMENT :

The UNFC consists of three-dimensional system with the following three axes.

1. GEOLOGICAL Axis (G1 – Detailed Exploration)
2. FEASIBILITY Axis (F1 – Feasibility Study)
3. ECONOMIC Axis (E1 – Economics)

The reserves and resources under UNFC system of classification is described in detail in UNFC Chapter.

### IV. PRODUCTION SCHEDULE :

The limestone bed is found below (average) 1.0m top soil. Hence, the proposal of mining is carried out existing working pit from North to Southern direction towards Eastern side of the lease area. It is proposed to product about 9,808 tonnes/year of limestone during the next Three years period. Please refer Table No.18.

#### YEARWISE DEVELOPMENT AND PRODUCTION SCHEDULE AS PER UNFC SYSTEM:

##### Development Schedule:

In this Scheme of Mining Plan period from 2014-2015 to 2018-2019.

Table No .5

YEAR	PIT NO.	Total Tentative Excavation (Cum)	Top Soil (Cum)	OB (Cum)	Side burden (Cum)	ROM (Cum)		Mineral Reject	ROM/Waste ratio
						Ore (Limestone @ 60% of ROM) (Cum)	Mineral Reject (@ 40% of ROM) (Cum)		
1	2	3	4	5	6	7	8	9	10
2016-2017	I	5305	-	60	1905	3183	2122	2122	1:1.28
In tonnes		13793	-	120	4763	8276	5517	5517	1:1.28
2017-2018	I	8303	-	-	1418	4982	3321	3321	1:0.95
In tonnes		21588	-	-	3545	12953	8635	8635	1:0.95
2018-2019	I	5254	-	-	142	3152	2102	2102	1:0.71
In tonnes		13660	-	-	355	8196	5464	5464	1:0.71
<b>TOTAL in Cum</b>		<b>18862</b>	<b>-</b>	<b>60</b>	<b>3465</b>	<b>11317</b>	<b>7545</b>	<b>7545</b>	<b>1:0.97</b>
<b>TOTAL in Tonnes</b>		<b>49041</b>	<b>-</b>	<b>120</b>	<b>8663</b>	<b>29425</b>	<b>19616</b>	<b>19616</b>	<b>1:0.97</b>

The average production of Limestone per year will be about  $11317/3=3772\text{cum}$  ( $3772 \times 2.6(\text{B.D}) = 9808\text{tonnes}$ ). Please refer Plate No.18 and Plate No.V & V-A. From Total ROM the Limestone deposits are categorized with the following percentage Limestone 60 %, Mineral waste : 40%.

##### V. Existing method :

The mine is existing carry out mining operation with manual opencast method.

There is only one existing working pit available in this area. These existing pit dimensions are given below:

Table No .6

	<b>PIT</b>
Length (m) (aver.)	101.0
Width (m) (aver.)	40.0
Depth (m)	13.0

**Proposed method :**

The mine is proposed to carry out mining operation with manual opencast method ("B" category of small mine).

Mining will be by simple open cast manual methods, with help of spades, baskets and jack hammer, drilling. The development and production of mining operations will confine to this area for the next Three years, starting from existing working pit from North to Southern direction towards Eastern side of the Mining lease area. Please refer Plate No.V.

The operation will be confined to general shift only ie. from 8.00 AM to 5.00 OM with one hour lunch interval between 12.00 PM to 1.00 PM. In overburden soil, a bench will be 1.0m height and width with 45° slope.

The Limestone, totally Five benches will be 2.5m height and 2.5m width with 60° slope for next Three years only. Please refer Plate No.V & V-A.

A bund will be constructed around the pit to prevent accident call and inrush of rain water. Proper foot paths will be provided between benches for easy accessibility for men. Haul roads, to conform to statutory standards will be made according to convenience for smooth transport of ore and waste. Wherever necessary, crossing plat forms will be provided in the haul roads at suitable point for safe crossing as tractors, tippers, trucks etc.,

The top soil and mineral reject will be dumped separately in the next Three years. The top soil will be utilized for the formation of mine roads, construction of bund and afforestation purpose. There is adequate space available for dumping the mineral reject will be dumped in the non-mineral bearing area of the North and Eastern side of the lease area.

Average annual production is about 9808 tonnes of Limestone with 250 working days in a Year. Per day production will be about 39 tonnes. Considering the nature of the deposit and the anticipated daily production level, only manual mining is proposed.

A boundary barrier of 7.5m width will be maintained as per statue. Limestone locked up in this barrier will be excavated after obtaining permission from DGMS under Regulation 111 of Mines and Mineral Regulation, 1961.

**VI. MINERAL BENEFICIATION:**

Except hand sorting ore, no other process is involved.

## VII. MARKETING TYPE :

Since the entire mined out mineral is send to nearby Limestone Manufacturing unit at Karur. The grade is been already approved and fit for Cement & Refractory grade. Hence further technological prospecting is not required.

The saleable Limestone mineral production for next Three years is about 29424 tonnes. The rate of annual production of Limestone is about 9,808 tonnes ( $29424 \div 3 = 9808.0$ ).

Hence, only 250 days in a year are assumed as full working days.

The Royalty amount of limestone per tonne	: Rs. 80/-
Total no. of working days in a year	: 250
Production (Expected) per year (Limestone)	: 9,808 tonnes
Production/day	: 39 ie. $(\frac{9808}{250} = 39.2)$
	250
Say	: 39 tonnes
Total Production (Expected) Per Year (Limestone)	: 20 tonnes
Output/manshift including waste handling	: 4.0 tonnes
No. of face workers/day	: $8(39 \div 4 = 9.7)$
For absenteeism 20%	: 2
Total no. of Labour (on contract basis of production of mineral)	: 10 Nos.
Pay per day for Labour	: Rs.200/-
Pay per tonne for Labour (One labour)	: Rs.200/- $(\frac{Rs.200}{4.0} = 50)$
	4.0(OMS)
Say	: Rs.50/-

The drilling parameters :

Dia. of hole	: 32 mm
Spacing	: 0.9 m
Burden	: 0.6 m
Depth	: 1.5 m
Charge per hole	: 0.42 kg.

Material that will be dislodged :  $\frac{0.9 \times 0.6 \times 1.5 \times 2.6}{0.42} = 5$  tonnes of ROM

Blasting : Per hole 5.0 tonnes of ROM

Blasting contract pay per hole Rs.200/- (Drilling, Explosives and Labour)

Blasting cost per tonne : Rs.40/- ( $200 \div 5 = 40$ )

Diploma Mining Engineer : Rs.15/-  $(\frac{Rs.15000}{25 \text{ days}} = Rs.600$   
(For per tonne) per day/39 tonnes = 15.3)

Foreman/Mate & Blaster (For per tonne) : Rs.1/-  $(\frac{Rs.10000}{25 \text{ days}} = Rs.400$   
Per day/39 tonnes = 10.2)

Water man (per tonne)	: Rs.4/- (150 per day/39 tonnes = 3.8)
Miscellaneous	: Rs.100/-
Salary and miscellaneous per tonne	: Rs.129/-(15+ 10 + 4 + 100)
Total cost of production per tonne	: Labour cost + Blasting cost + Salary and Miscellaneous
	: 50 + 40 + 129
Total cost of Production per tonne	: Rs.219/-

The cost of Production is Rs.219/- per tonne and selling price for Limestone is Rs.450/- per tonnes (including Royalty amount of Rs.80/-). Hence, the mining is economically viable at present market conditions.

#### **VII. INFRASTRUCTURE :**

The proposed site services are :

Drinking water, rest shed, store room, toilet room, office room and first aid room etc.,  
Please refer Plate Nos.IV & V.

#### **IX. LEGAL FEATURES :**

The mine is been in operation since 1994, it is neither a forest land nor government revenue land of any kind. It is the patta land owned by the lessee. S.F.Nos.833/4B, 836(PART) & 843/2 in over an extent of 1.90.5 Ha. in Varavanai Village, Kulithalai Taluk, Kulithalai Taluk, Karur District, as such the lessee has got surface rights over the mining lease area.

The Mining Plan for fresh grant of lease was approved by Indian Bureau of Mines in letter No.TN/TCR/MP/LST-546-MDS dated 30.12.1991 before the grant of Mining Lease.

The 1<sup>st</sup> Scheme of Mining was approved by Indian Bureau of Mines in letter No.TN/KR/LST/MS-93-MDS dated 18.02.2001.

The 2<sup>nd</sup> Scheme of Mining was approved by Indian Bureau of Mines in letter No.TN/KRR/LST/MS-716-MDS dated 31.08.2012.

The Mining Lease was granted in G.O.Ms.No.162 Industries (MMD I) Department dated 14.06.1994 for the period of twenty years.

The lease deed was executed on 10.08.1994. Mining operation commenced on 20.04.1996. The lease will expire on 09.08.2014.

The lessee has preferred an application for First renewal of mining lease is to be before one year of expiry of lease, that's before 22<sup>th</sup> July 2013. Please refer Annexure- IV & IV-A for Renewal Application & Form-D. However as per the recent MMDR Amendment Act 2015, the validity of the Mining Lease is extended upto 09.08.2044. Hence, the Scheme of Mining Plan under Rule 12 of MCDR, 1988 has been prepared and submitted.

In this Scheme of Mining Plan period is 2014-2015 to 2018-2019. In the previous two years period (2014-2015 to 2015-16) time lessee was not submit Scheme of Mining Plan because, he is affected lack of demand, non-availability of labour, monsoon and uneconomic operations & financially crisis.

**X. TRIBAL ISSUES, NATIONAL MONUMENTS, ETC.,**

There is no tribal issues, public Building, places of worship, national monuments or places of archaeological interest near the area.

**XI. ECONOMIC EVALATION :**


The Cost of Land per Hect. is Rs.5,00,000/- x 1.90.5 Ha. = Rs. 9,52,500/-

The Total cost of Production per tonne is Rs.219/-

Total Recoverable Reserve Proved category will be 35,626 tonnes

Total cost of Production at present market conditions : Rs. 78,02,094/-

Depending upon the market demand for Refractory industries & Manufacturing units, the Limestone mine is economically viable at present market conditions.



**S. DHANASEKAR**  
RQP/MAS/225/2011/A



**UNFC**

**THE RESERVES AND RESOURCES WERE ASSESSED BASED ON THE UNITED NATIONS FRAME WORK CLASSIFICATIONS AS AMENDED IN THE MINERAL CONSERVATION AND DEVELOPMENT RULES (SECOND AMENDMENT) RULE 2003 AND IN EXERCISE OF THE POWERS CONFERRED BY SECTION 18 OF THE MINES AND MINERALS (DEVELOPMENT AND REGULATIONS) ACT 1957 (67 OF 1957) AND SUBSEQUENTLY TO THE CCOM CIRCULAR No.4 2009 DATED 21.10.2009.**

In order to implement UNFC system, Mineral deposits are classified into SEVEN types and accordingly exploration norms/field guidance has been formulated to assign different level of Geological codes.

The Seven types of deposit classification proposed in UNFC is intended to assist in finding reasonable degree of detail of exploration of mineral deposits by providing clear definitions of individual categories of reserves/resources according to the criteria accepted.

**II. STRATIFORM, STRATA BOUND AND TABULAR DEPOSITS OF IRREGULAR HABIT  
Characteristics of deposit:**

Highly erratic distribution of minerals and metals. No trend in grade and thickness, no assured continuity, cluster of high values in barren zones, structural and litho logic controls under terminate.

**Principal kinds of Minerals:**

Tin-tungstun-tantalum-molybdenum veins and pegmatite's, beryl, topaz, emerald, caesium deposits, mineralization associated with alkaline rocks, complexes and veins and plugs of carbonatites.

**GEOLOGICAL AXIS (G1)**

**(Detailed Exploration)**

The lessee and RQP geological team carried out the detail exploration to ascertain the reserves and resources and all the parameters required under UNFC System.

**UNFC IN A NUTSHELL :**

UNFC designed as an umbrella system, which is internationally applicable and acceptable to harmonize existing different terminologies and definitions by using 3 Digit numerical codification systems. This has resulted improvements in the comparability of mineral statistics and ultimately facilitate National Mineral Inventory, International trade and provide efficient link between market economies.

The UNFC consists of three dimensional systems with the following three axes.

1. GEOLOGICAL AXIS (G1 – Detailed Exploration)
2. FEASIBILITY AXIS (F1 – Feasibility Study)
3. ECONOMIC AXIS (E1 – Economics)

## **GEOLOGISTL AXIS (G1)**

### **1. Geological Survey :**

i) Mapping a) Coal : 1:5000 b) For other minerals – 1:1000 or larger scale :

Geological Mapping (1:1000 Scale)

The geological mapping deals with surface geology; existing features of vegetation cover, soil cover etc., such as study of the detailed geological mapping in the scale of 1:50000 was carried out by Survey of India in the Topo Sheet No.58 J/2. Please refer Plate No.Ib.

The Topo Sheet Map were correlated with the mapping carried out by the lessee with RQP team in the local map scale 1:1000 with help of total station survey and micro station software, to prepare the Topographical cum-geological plan which reflects the topographical features, geological features and surface features of the area along with the extent of the area 1.90.5 Ha. S.F.Nos.833/4B, 836(PART) & 843/2 in Varavanai Village, Kulithalai Taluk, Karur District, surface exposures, structural features, location of bore holes, contour of the area and assay plan and sections of exploratory mine development. Please refer Plate No.III (Surface Plan) and Plate No.IV & IV-A(Geological Plan and Sections).

### **2. Geo-chemical Survey:**

Detailed litho geo-chemical analysis:

Since the mining area is very small and the deposit is shallow the details exploration was carried out in the entire mining lease area. There is only one existing working pit available in this area pit gone upto a depth of about 13.0m from the general ground level. The occurrence of Limestone is proved to be at upto 13.0m depth. More than 10 samplings were collected in the existing working pit to ascertain the quality of Limestone. All the samples collected from the existing working pit were packed carefully and take to the investigation site of office and correlated with recognized laboratory.

The average chemical analysis to the limestone is as follows :Table No.1

<b>Parameters</b>	<b>Results %</b>
Calcium carbonate (CaCo <sub>3</sub> )	78.04
Magnesium carbonate (MgCo <sub>3</sub> )	1.03
Silica as SiO <sub>2</sub>	10.12
Aluminium Oxide (Al <sub>2</sub> O <sub>3</sub> )	Nil
Ferric Oxide (Fe <sub>2</sub> O <sub>3</sub> )	Nil
Sodium as Na <sub>2</sub> O	Nil
Potassium as k <sub>2</sub> O	Nil
Loss on Ignition	10.81

Please refer Annexure-II.

### 3. Geo-physical Survey :

Detailed survey if necessary and specific bore hole geo-physical studies :

Geo-physical prospecting in the form of vertical electrical sounding (VES), was conducted in the lease area to ascertain the lateral variations, vertical in homogeneities and the sub-surface geology with respect to the availability of resources and reserves Limestone deposits. Based on the results obtain by the geo-physical prospecting ie. Electric resistivity testing, the bore holes location and the depth persistence of each station were formulated with the help of total station survey.

### 4. Technological :

#### i) Pitting : 3 to 5 Nos. for every mass body or at 100-200 meter grid interval :

In this Mining lease area is having only one existing working pit available with 13.0m depth showing Limestone exposures.

There is only one working pit available in this area. The existing pits dimensions are given below:

Table No.2

	<b>PIT</b>
Length (m) (aver.)	101.0
Width (m) (aver.)	40.0
Depth (m)	13.0

In this Scheme of Mining Plan, lessee proposed that five wagon drill in working pit and two core drill to virgin area of 100 mm dia. to a depth of about 20.0 from Present working pit depth from 87.0m and general ground level as drilling at particular 50.0m grid interval for confirm the depth continuity of the Limestone. This wagon and core bore hole will be made after First year (2016-17) in this Scheme of Mining Plan period. Please refer Plate No.III & IV. The details of the proposed exploration are given below : Table-3

<b>Year</b>	<b>Month</b>	<b>No. of wagon &amp; Diamond core bore holes</b>	<b>Total Metreage</b>	<b>Location</b>
2016-2017	June 2016	3 (100mm dia.)	20(d) x 3 = 60M (depth)	North - PBH-1 (Working pit-97M- 77M) North- PBH-2 (Working pit-95M- 75M) North East- PBH-3 (Working pit-97M- 77M)
	September 2016	4 (100 mm dia.)	20(d) x 4 = 80M (depth)	West- PBH-4 (Vergin area) Middle - PBH -5 (Working pit-98M- 78M) East - PBH-6 (Working Pit - 95M- 75M) South- PBH-7 (Vergin area)

The expenditure of proposed drilling wagon & core bore hole cost is intimate to IBM at the time.

**ii) Trenching – At spacing of 50 to 200 meters:**

The area is having only one existing working pit with 13.0m Limestone depth from general ground level in different location of the Mining lease area.

In all only one existing working pit Limestone is exposed. The entire terrain consist of metamorphic crystalline Limestone formation and active mines in an around the area no trenching were conducted.

**iii) Drilling – Closer spaced than that for G2 to 3 – 4 levels down to a workable depth :**

The exploration work has not been carried out in this area. Because, present mine working has been reached a depth of about 13.0m from general ground level.

There is only one working pit available in this area. The existing pit dimensions are given below:

Table No.4

	<b>PIT</b>
Length (m) (aver.)	101.0
Width (m) (aver.)	40.0
Depth (m)	13.0

In this Scheme of Mining Plan, lessee proposed that five wagon drill in working pit and two core drill to virgin area of 100 mm dia. to a depth of about 20.0 from Present working pit depth from 87.0m and general ground level as drilling at particular 50.0m grid interval for confirm the depth continuity of the Limestone. This wagon and core bore hole will be made after First year (2016-17) in this Scheme of Mining Plan period. Please refer Plate No.III & IV.

The details of the proposed exploration are given below : Table-5

<b>Year</b>	<b>Month</b>	<b>No. of wagon &amp; Diamond core bore holes</b>	<b>Total Metreage</b>	<b>Location</b>
2016-2017	June 2016	3 (100mm dia.)	20(d) x 3 = 60M (depth)	North - PBH-1 (Working pit-97M- 77M) North- PBH-2 (Working pit-95M- 75M) North East- PBH-3 (Working pit-97M- 77M)
	September 2016	4 (100 mm dia.)	20(d) x 4 = 80M (depth)	West- PBH-4 (Vergin area) Middle - PBH -5 (Working pit-98M- 78M) East - PBH-6 (Working Pit - 95M- 75M) South- PBH-7 (Vergin area)

The expenditure of proposed drilling wagon & core bore hole cost is intimate to IBM at the time.

**iv) Sampling – Core and sludge, pits samples for grade analysis or beneficiation, bulk samples for laboratory scale/pilot plant investigation:**

**Sampling Technique :**

Sampling is done to ascertain the grade of mineral values that vary in proportion from one place to another. One single sample taken from one part of the ore body generally does not provide a representative picture of the grade of the entire ore body.

A large number of well-space samples are required for ascertaining the average grade with an acceptable amount of accuracy. Normally, no amount of sampling will give a truly representative picture of the ore body. There is always some degree of error between the actual value and the value computed from the samples.

The aim of sampling is only to reduce the error to the minimum possible level.

In addition to know the grade of the ore, sampling also reveals the pattern of mineralization within the ore body. A systematic mine sampling program can demarcate the richer and leaner ore portions. Similarly, the limits of mineralization towards both the hanging and footwall contacts can also be precisely defined by careful sampling.

Sampling is also necessary to determine the processing and extractability characteristics of the mineral. For this purpose, bulk/grab representative/simulated samples representing the quality and type of material to be treated is collected.

Since the area is very small and the deposit is shallow the details exploration was carried out in the entire mining lease area. There is only one existing working pit available in this area. These pit gone upto a depth of about 13.0m from general ground level.

The Limestone samples were collected in the existing working pit. More than 10 samplings were collected in the existing working pit to ascertain the quality of Limestone.

All the samples collected from the existing working pit were packed carefully and take to the investigation site of office. These samples are gathered to for (Coning and Quartering which is as follows).

First the material is thoroughly mixed then it is headed by pouring the material at one single point which will ultimately be the centre of the heap for this it will be helpful if a tall peg is fixed into the plate on which sampling is done. So that the material is always poured down all round the top of the peg to obtain uniform distribution when all the materials are heaped top of the cone in flattened gently by a plate. Then the top is divided into four quarters as shown. Now, the opposite quarters are scooped out and rejected. The remaining portion represents approximately one-half of the original samples. (A basic technique used for sampling).

Again it is passed through control sorting, mixing. The balance available sample is analyzed in the company in-house laboratory and also sent to the NABL laboratory for calculating the parameters required for mineral assemblages.

This sampling technique was adopted to find out the concentration of calcium carbonate in the metamorphic crystalline Limestone Mine.

The average chemical analysis to the limestone is as follows : Table No.6

<b>Parameters</b>	<b>Results %</b>
Calcium carbonate (CaCo3)	78.04
Magnesium carbonate (MgCo3)	1.03
Silica as SiO2	10.12
Aluminium Oxide (Al2O3)	Nil
Ferric Oxide (Fe2O3)	Nil
Sodium as Na2O	Nil
Potassium as k2O	Nil
Loss on Ignition	10.81

Please refer Annexure-II.

#### **5) Petro graphic and miner graphic study :**

Texture of limestone is fine grained, tough and porous. Its surface is smooth and breaks with a circular/conchoidal fracture. Limestone mineral is mainly made up of calcium carbonate (CaCo3) . Limestone occurs as extensive beds and is a typical metamorphic rock.

#### **6. Geo-statistical analysis of bore hole data thickness of ore waste encountered in holes, assay values of samples, if considered necessary :**

More than 10 samplings were collected in the existing working pit to ascertain the quality and grade of Limestone. Locations of existing working pit are marked in the Geological Plan and Surface Plan. Based on the above exploration results, the occurrence of Limestone are proved to be at upto 13.0m with 1.0m top soil.

### **FEASIBILITY AXIS (F1)**

#### **(Feasibility Study)**

#### **1. Geology :**

**Geology of area and project, detailed exploration, closed space drilling; ore body modelling, bulk samples for beneficiation, geo-technical and ground water & surface waters studies :**

#### **Geology of the Area :**

The rock formation in the area is of metamorphic crystalline varieties of archaean age. The chief rock types found in the area are limestone and Amphibole-gneisses. Limestone outcrops are noticed in the area. The area is covered by thin layer of top soil to a depth of about 1.0m.

In the area under consideration, there is only one limestone band almost in the centre of lease area and this band is divided into two portions by a intervening calc-gneiss intrusions on the Eastern End.(refer surface plan and Geological Plan).

The regional trend of the rock in the area is N80° E -S80°W with foliation dip amount of 80° towards South to Vertical. The area is devoid of major geological disturbances.

The order of superposition is

Top soil

Limestone

Amphibole – Gneisses

The limestone band is intruded by Amphibole-gneisses.

Colour of Limestone is white-pink, massive in form, rhombohedral in cleavage, medium-fine crystalline in nature. Hardness-3, specific gravity 2.6, streak is white, vitreous in luster.

### **Ground water & Surface waters studies:**

The area is dry for most part of the year and receives rainfall during the NW monsoon period from October – December. There are no major monsoon river courses very close to the deposit area and hence that would not be inundation or seepage of water.

The depth of water table is around 40-50 mtrs. the ultimate mining which is vertical upto 55.0m which would not pose any problem for mining operations. Suitable earth bunds will be formed around the area to protect the entry of rain water from outside.

A small portable 5 HP diesel pump will be maintained and kept ready for de-watering the mine after the monsoon season period and as and when it is required.

There will be no toxic effluent generated due to mining operation in the form of solid liquid or gas. The water will not be contaminated by the Limestone mining by any means. Since the Limestone occurrence is below 1.0m and there will be no problem to the ground water. The mine waste will not produce any toxic effluent. But any how minor pollutant may occur during mining operation and it will be within the permissible limits. Anyhow periodically water samples will be collected and analysed as per statutory norms of IBM.

### **2. Mining:**

**Methods with special emphasis on detailed geo-technical test work/site characterization studies, safely measures: mining plan, mine recoveries and efficiency with variability due to structural complexities like close folds and faults : detailed estimates of man power :**

The Limestone area almost soft and can be easily removed. Occasionally whenever the hard strata are encountered, blasting is practiced. The Limestone Mine will be developed and worked by simple opencast manual mining method. Separate benches will be provided for top soil and Limestone.

The top soil shall be stripped off as top slice to prevent the contamination with Limestone bench. The top soil is removed without drilling. The top soil is stacked in all along the boundary barrier of the lease applied area.

Limestone is removed with jack hammer drilling with help of compressor. Limestone is directly transported after manual loading to the Cement and Refractory industries through 10 tonnes capacity tippers.

The width of the benches is more than 2.5m and 2.0m. The width of the haul roads is kept more than 2.5 m. The gradient of the haul roads are maintained at 1 in 20.

**Existing/Proposed method for development/working the deposit with all design parameter:**

**Existing method :**

The mine is existing carry out mining operation with manual opencast method.

There is only one existing working pit available in this area. These existing pit dimensions are given below:

Table No .7

	<b>PIT</b>
Length (m) (aver.)	101.0
Width (m) (aver.)	40.0
Depth (m)	13.0

**Proposed method :**

The mine is proposed to carry out mining operation with manual opencast method ("B" category of small mine).

Mining will be by simple open cast manual methods, with help of spades, baskets and jack hammer, drilling. The development and production of mining operations will confine to this area for the next Three years, starting from existing working pit from North to Southern direction towards Eastern side of the Mining lease area. Please refer Plate No.V.

The operation will be confined to general shift only ie. from 8.00 AM to 5.00 OM with one hour lunch interval between 12.00 PM to 1.00 PM. In overburden soil, a bench will be 1.0m height and width with 45° slope.

The Limestone, totally Five benches will be 2.5m height and 2.5m width with 60° slope for next Three years only. Please refer Plate No.V & V-A.

A bund will be constructed around the pit to prevent accident call and inrush of rain water. Proper foot paths will be provided between benches for easy accessibility for men. Haul roads, to conform to statutory standards will be made according to convenience for smooth transport of ore and waste. Wherever necessary, crossing plat forms will be provided in the haul roads at suitable point for safe crossing as tractors, tippers, trucks etc.,



The top soil and mineral reject will be dumped separately in the next Three years. The top soil will be utilized for the formation of mine roads, construction of bund and afforestation purpose. There is adequate space available for dumping the mineral reject will be dumped in the non-mineral bearing area of the North and Eastern side of the lease area.

Average annual production is about 9808 tonnes of Limestone with 250 working days in a Year. Per day production will be about 39 tonnes. Considering the nature of the deposit and the anticipated daily production level, only manual mining is proposed.

A boundary barrier of 7.5m width will be maintained as per statue. Limestone locked up in this barrier will be excavated after obtaining permission from DGMS under Regulation 111 of Mines and Mineral Regulation, 1961.

### **3. Environmental :**

#### **i) Environmental impact assessment (ETA) studies/environmental(EMP) including socio-economic impacts :**

##### **Environment Impact Assessment/Statement :**

The mining operation is proposed to carry out by simple manual opencast mining. No heavy earth moving machineries is deployed to win the mineral proposed during the mining activities, hence the impact on environment like noise, dust, sound, vibration, air, water pollution is minimal and well within the prescribed standards.

The mine is been operated for the last 22 years, there is one pit has been exploited. The mining is only simple opencast manual method and no heavy earth moving machinery is conducted. The land use pattern in and around the mine have no adverse effect in the environment changes. Any how an Environment Management Plan will be prepared if required. The mining is only simple opencast manual method and no heavy earth moving machinery is conducted. The land use pattern in and around the mine have no adverse effect in the environment changes. Any how an Environment Management Plan will be prepared if required. Villagers use open well water for drinking and other domestic purpose for ages without any adverse health effects.

The method of mining proposed is manual; hence noise will be within permissible limit. There is no wild life or bird sanctuary or no reserve or any protected social forest closer to the area.

There is no public building, places of worship or archaeological or national monuments near the area. The area is a plain land sloping towards West direction. It is a dry area. Only seasonal cultivation is done. The main crops are groundnut, maize, cereals, etc., and in one or two place lift irrigation is done raising coconut groves.

Since this mining operation will be in a very small scale with manual mining method, it will not have any adverse effect on quality of air. Wet drilling will be carried out to control dust and haul roads will be periodically sprayed with water.

Heavy earth moving equipments are not deployed. Hence, dust problem does not arise. Ground water in this area and the surrounding wells are potable.

There is no public building, places of worship or archaeological or national monuments near the area. There is no permanent building or structures near the area. Hence question of damage due to blasting or any other cause does not arise.

Since blasting will be done in a very small scale and heavy earth moving equipment will not be deployed, there is no possibility of any noise and vibration nuisance.

There are no surface water bodies near this area. Mining operation will not produce any toxic effluent in the form of liquid. There will be no chance for ground water pollution.

The area is small. Mining will not reach such a depth to create any depression in water table. Hence, the impact will be less.

As the Mining activity is done manually, several unskilled persons will get employment. Due to mining activity teashops and mess have sprung up in this area. The mining provides self-employment and business opportunities to those persons.

#### **Socio-Economics:**

The mining operation will create awareness for the importance of minerals and of their value in the market. It will create an urge to search and prospect for the same or different minerals in the other areas. Mining, whether it is small or big, is an avenue of employment. It will improve the standard of living and will change the life style of village habitants.

#### **4. Processing:**

**Details of proven pilot plant scale/industrial scale investigations, appended with layout design, equipment list fuel/power consumption, specification for product/by-product, disposal of tailings, effluent and future remedial measures:**

Mineral processing operation only breaking and hand sorting of ore is involved.

The Limestone will be neatly chipped from its weathered part and sized between 4" to 10" lumps with the help of 3-4 pound hammers manually, for easy handling and loading into trucks. As this raw material sold to refractory and cement industries in Karur District.

Hence, no pilot plant is proposed are investigation on industries scale carried out, the disposal of tailing, effluent and further premedical measures does not arise.

Hence, no pilot plant is proposed are investigation on industries scale carried out, the disposal of tailing, effluent and further premedical measures does not arise.

#### **5. Infrastructure and Services, construction activities :**

The proposed site services are :

Drinking water, rest shed, store room, toilet room, office room and first aid room etc., Please refer Plate Nos.III & IV.

## 6. Costing :

### Detailed breakup of capital and operating costs details of working capital

Since it is a simple opencast manual mining, spades, axes, showels and semi-skilled labours are the only capital investment which is around Rs.1,00,000/- and the working capital may not exceed Rs.2,50,000/- (excavation and compensation will be used on hired basis).

## 7. Marketing :

### Overview, specific market aspects :

Since the entire mined out mineral is been utilized by the Cement and refractory based Manufacturing industries in Karur. The grade is been already approved and fit for Cement and refractory industries. During production all ingredients will be separated by blasting and segregation manually.

Limestone is mainly used in Refractory industries, iron-steel, chemical, sugar and paper industries. The other user of Limestone are fertilizer, ferro-alloys, glass manufactures, lime manufactures, foundry, refractory's, textile, electrode, ceramic and sponge iron etc.,

The cost of Production is Rs.219/- per tonne and selling price for Limestone is Rs.450/- per tonnes(including Royalty amount of Rs.80/-). Hence, the mining is economically viable at present market conditions.

## 8. Economic Viability:

### Cash flow forecast, inflation effects, sensitivity studies :

The saleable Limestone mineral production for next Three years is about 29424 tonnes. The rate of annual production of Limestone is about 9,808 tonnes ( $29424 \div 3 = 9808.0$ ). Hence, only 250 days in a year are assumed as full working days.

The Royalty amount of limestone per tonne	: Rs. 80/-
Total no. of working days in a year	: 250
Production (Expected) per year (Limestone)	: 9,808 tonnes
Production/day	: 39 ie. $\frac{9808}{250} = 39.2$
	Say : 39 tonnes
Total Production (Expected) Per Year (Limestone)	: 20 tonnes
Output/manshift including waste handling	: 4.0 tonnes
No. of face workers/day	: $8(39 \div 4 = 9.7)$
For absenteeism 20%	: 2
Total no. of Labour (on contract basis of production of mineral)	: 10 Nos.
Pay per day for Labour	: Rs.200/-
Pay per tonne for Labour (One labour)	: Rs.200/- ( $\frac{Rs.200}{4.0} = 50$ )
	Say : Rs.50/-

The drilling parameters :

Dia. of hole	: 32 mm
Spacing	: 0.9 m
Burden	: 0.6 m
Depth	: 1.5 m
Charge per hole	: 0.42 kg.
Material that will be dislodged	: $\frac{0.9 \times 0.6 \times 1.5 \times 2.6}{0.42} = 5$ tonnes of ROM

Blasting : Per hole 5.0 tonnes of ROM

Blasting contract pay per hole Rs.200/- (Drilling, Explosives and Labour)

Blasting cost per tonne : Rs.40/- (200 ÷ 5 = 40)

Diploma Mining Engineer : Rs.15/- (Rs.15000/25 days= Rs.600  
(For per tonne) per day/39 tonnes = 15.3)

Foreman/Mate & Blaster (For per tonne) : Rs.1/- (Rs.10000/ 25 days=Rs.400  
Per day/39 tonnes= 10.2)

Water man (per tonne) : Rs.4/- (150 per day/39 tonnes = 3.8)

Miscellaneous : Rs.100/-

Salary and miscellaneous per tonne : Rs.129/- (15+ 10 + 4 + 100)

Total cost of production per tonne : Labour cost + Blasting cost +  
Salary and Miscellaneous  
: 50 + 40 + 129

Total cost of Production per tonne : Rs.219/-

The cost of Production is Rs.219/- per tonne and selling price for Limestone is Rs.450/- per tonnes (including Royalty amount of Rs.80/-). Hence, the mining is economically viable at present market conditions.

## 9. Other factors:

### Statutory provisions (Labour, land, mining, taxation etc.,)

The Mining operation is very small in nature and is in an almost plain ground with opencast workings. The anticipated mining depth is limited. There is no nullah or river near the area. The stratigraphy is hard in nature. The chances for disaster due to land sliding, subsidence, flood, inundation etc., are to the barest minimum and are almost Nil.

This area is Government Revenue land and is not covered in Forest area of any kind. The labourers are available surrounding from nearby villages. The lessee has been encouraged to concentrate on afforestation and on systematic mining. There may be increase or decrease in production based on demand from the customers.

**ECONOMIC AXIS (E1)**  
**(Economic)**

**1. Detailed Exploration:**

The lessee and RQP geological team carried out the detailed exploration in the mining lease area in the 2016. The exploration data carried out during the past is sufficient to carryout the pre-feasibility/feasibility studies related to G1, F1, E1 axis as per UNFC System and to ascertain the resource and reserves in the mining lease area.

**a. Geological Mapping :** (Topographical and Contour Map in 1 : 1500 Scale)

The geological mapping deals with surface geology; existing features of vegetation cover, soil cover etc., such as study of the detailed geological mapping in the scale of 1:50000 was carried out by Survey of India in the Topo Sheet No.58 J/2. Please refer Plate No.I.

**b. Geo-physical prospecting in the way of vertical electrical sounding.**

Geo-physical prospecting in the form of vertical electrical sounding (VES), was conducted in the lease area to ascertain the lateral variations, vertical in homogeneities and the sub-surface geology with respect to the availability of resources and reserves of Limestone deposits. Based on the results obtain by the geo-physical prospecting ie. Electric resistivity testing, the bore holes location and the depth persistence of each station were formulated with the help of total station survey.

**c. Geo-chemical prospecting.**

Since the mining area is very small and the deposit is shallow the details exploration was carried out in the entire mining lease area. There is only one existing working pit available in this area pit gone upto a depth of about 13.0m from the general ground level. The occurrence of Limestone is proved to be at upto 13.0m depth. All the samples collected from the existing working pit were packed carefully and take to the investigation site at office and correlated with recognized NABL Chemical Laboratory.

The average chemical analysis to the limestone is as follows :Table No.8

<b>Parameters</b>	<b>Results %</b>
Calcium carbonate (CaCo3)	78.04
Magnesium carbonate (MgCo3)	1.03
Silica as SiO2	10.12
Aluminium Oxide (Al2O3)	Nil
Ferric Oxide (Fe2O3)	Nil
Sodium as Na2O	Nil
Potassium as k2O	Nil
Loss on Ignition	10.81

Please refer Annexure-II.

#### d. Core drilling and bore hole logging.

The exploration work has not been carried out in this area. Because, present mine working has been reached a depth of about 13.0m from general ground level. The occurrence of Limestone is Proved to be at upto 13.0m depth with 1.0m top soil.

There is only one existing working pit, the dimensions of which are given below:

Table No.9

	<b>PIT</b>
Length (m) (aver.)	101.0
Width (m) (aver.)	40.0
Depth (m)	13.0

The advancement of the pit will be existing working pit depth from existing working pit from North to Southern direction towards Eastern side of the present working pit in the next Three years. Please refer Plate No.V for the location of the proposed working pit. The attitude of the band like width and length is clearly known.

In this Scheme of Mining Plan, lessee proposed that five wagon drill in working pit and two core drill to virgin area of 100 mm dia. to a depth of about 20.0 from Present working pit depth from 87.0m and general ground level as drilling at particular 50.0m grid interval for confirm the depth continuity of the Limestone. This wagon and core bore hole will be made after First year (2016-17) in this Scheme of Mining Plan period. Please refer Plate No.III & IV.

The details of the proposed exploration are given below : Table-10

<b>Year</b>	<b>Month</b>	<b>No. of wagon &amp; Diamond core bore holes</b>	<b>Total Metreage</b>	<b>Location</b>
2016-2017	June 2016	3 (100mm dia.)	20(d) x 3 = 60M (depth)	North - PBH-1 (Working pit-97M- 77M) North- PBH-2 (Working pit-95M- 75M) North East- PBH-3 (Working pit-97M- 77M)
	September 2016	4 (100 mm dia.)	20(d) x 4 = 80M (depth)	West- PBH-4 (Vergin area) Middle - PBH -5 (Working pit-98M- 78M) East - PBH-6 (Working Pit - 95M- 75M) South- PBH-7 (Vergin area)

The expenditure of proposed drilling wagon & core bore hole cost is intimate to IBM at the time.

### e. Technological Prospecting

Since the entire mined out mineral is been utilized by the Cement and refractory manufacturing industries in Karur. The grade is been already approved and fit for Cement and refractory industries. Hence further technological prospecting is not required.

### 2. Mining Report/Mining Plan/Working Mines:

In these deposits, mining is carried out by simple opencast method by engaging manual labourers with the help of spades, baskets. Blasting or Jack hammer drilling is practiced. No heavy earth moving machineries are proposed.

The working of the mines is restricted to only one general shift from 8.00 AM to 5.00 PM with one hour lunch interval between 12.00 to 1.00 PM. Separate benches will be provided for Limestone with 2.5m height and 2.5m height and width proper foot path will be maintained between the benches for the easy access of men.

After hand sorting, the mined out Limestone is directly transported to the Refractory and chemical based industries plant through 10 MT capacity tippers.

### 3. Specific end-use grades of reserves (above economic cut-off grade) :

Limestone sample was analysis in Ita Lab certified chemical laboratory in Chennai, the Limestone carries a good economical value. In this Mining lease area, Limestone is Cement and Refractory and chemical grade and is used in Refractory and chemical based industries.

#### Grade :

The average chemical analysis to the limestone is as follows : Table No.11

Parameters	Results %
Calcium carbonate (CaCo <sub>3</sub> )	78.04
Magnesium carbonate (MgCo <sub>3</sub> )	1.03
Silica as SiO <sub>2</sub>	10.12
Aluminium Oxide (Al <sub>2</sub> O <sub>3</sub> )	Nil
Ferric Oxide (Fe <sub>2</sub> O <sub>3</sub> )	Nil
Sodium as Na <sub>2</sub> O	Nil
Potassium as k <sub>2</sub> O	Nil
Loss on Ignition	10.81

Please refer Annexure-II.

### 4. Specific knowledge of Forest/Non-Forest and other land use data :

The Mining Lease area is a patta land S.F.Nos.833/4B, 836(PART) & 843/2 over an extent of 1.90.5 Ha. in Varavanai Village, Kulithalai Taluk, Karur District owned by M Thiru. S. sekhar, NO.73, Raja Colony, Collector Office Road, Cantonment, Trichy – 620 001, it is neither a forest land nor a Government land of any kind. There is no reserve forest or social forest with in the vicinity of the mining lease area.

The present and Post Mining land use pattern is given as under :Table No.12

Sl. No.	Description	Present Area (Ha.)	Area to be reclaimed & rehabilitated at the end of present MP/MS period (Ha.)	Area to be reclaimed & rehabilitated at the end of life of mine (Ha.)
01.	Mining (Quarry)	0.79.0	0.19.0	0.93.0
02.	Waste dump	0.40.0	0.14.0	0.14.0
03.	Office-Infrastructure	-	0.01.0	0.01.0
04.	Mineral Stack/ Processing Yard	-	-	-
05.	Sub-grade Mineral stacks	-	-	-
06.	Mine Roads	0.12.0	0.01.0	0.01.0
07.	Area under Plantation	0.01.0	0.13.0	0.20.0
08.	Unutilised Area	0.59.5	0.42.5	0.61.5
	<b>TOTAL</b>	<b>1.90.5</b>	<b>1.90.5</b>	<b>1.90.5</b>

The based on the economical axis it is inferred that the mine lease economical viable to exploitation Limestone deposit at present market scenario.

#### **INFERENCE :**

As mentioned earlier limestone deposit at Varavanai Limestone Mine holds is of simple and metamorphic crystalline in nature. Detailed geological explorations is carried out with existing working pits and the limestone samples were collected systematically for existing working pits for detailed chemical analysis. Since the entire lease area is limestone deposit, the mineral reserve is calculated by cross section method. The total limestone available at the Varavanai Limestone Mine lease as on 26.04.2016 is 1,93,981 tonnes.

The mine is under operation economically since 1996. So the as per UNFC guidelines the deposit is :

Economic : E1 Axis

Feasibility study is carried out  
(Scheme of Mining is prepared & found Feasible) : F1 Axis

Detailed exploration is carried out : G1 Axis  
(Limestone deposit proved upto present working pit)

As mentioned above the total limestone available in the lease hold area is 193,981 tonnes which will come under proved reserve with UNFC code 111. Out of this quantity around 10,273 tonnes and 1,24,332 tonnes of limestone will be blocked up in the Mineral lockedup in benches and 7.5m boundary barrier. So this portion of the reserve will comes under the UNFC Code 222 ie. part of proved reserve blocked in lockedup in benches and 7.5m boundary barrier. The balance proved reserve in the mine is 35,626 tonnes after deduction of mineral lockedup in benches and 7.5m boundary barrier reserves.



So the summary of updated limestone reserves & resources estimated as per UNFC guidelines is given below : Table – 13

<b>Classification</b>	<b>Total Quantity (t)</b>	<b>Recoverable Reserve 60% (t)</b>	<b>UNFC Code</b>	<b>Grade</b>
<b>A. Mineral Reserves</b>				
1. Mineral Reserve	59376	35626	111	CEMENT & REFRACTORY
<b>B. Remaining Resources</b>				
Mineral locked up in benches	10273	6164	222	CEMENT & REFRACTORY
Mineral locked up in boundary barrier 7.5m	124332	74599	222	CEMENT & REFRACTORY
<b>TOTAL</b>	<b>193981</b>	<b>116389</b>		

Please refer Table No.12 & 13 in Scheme of Mining.

After obtaining necessary permission under Regulation 111(3) of MCR 1961, Limestone in the boundary barrier will be exploited up to the lease boundary line to extend the life of the mine.



**S. DHANASEKAR**  
RQP/MAS/225/2011/A

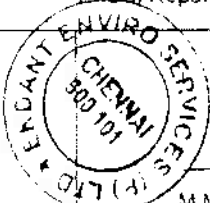


# ANNEXURE-II EKDANT ENVIRO SERVICES (P) LIMITED


SSI Reg. No. JJ 001 21 00223  
Dt: 26-07-2007



An ISO 9001-2008 Certified Organization  
Govt. Reg.No. (Registrar of Firms Chennai Central - 501 of 2005)  
ISO/IEC 17025 : 2005 ACCREDITED BY NABL FOR CHEMICAL & BIOLOGICAL TESTING  
No.28/41, Park Road, Anna Nagar West Extn., Chennai - 600 101, India  
Phone : 044-42017072 Fax : 044-42017071  
E-mail : [ekdantlab@gmail.com](mailto:ekdantlab@gmail.com) / [info@ekdantlab.co.in](mailto:info@ekdantlab.co.in)  
Web : [www.ekdantlab.co.in](http://www.ekdantlab.co.in)

TEST REPORT			
Sample Ref No.853/15		Report No. : 918/15	
Issued to : Thiru.S. Sekhar, No.73, Raja Colony, Collector Office Road, Cantonment, Trichy – 620 001.		Report Date : 22.02.16 Page : 1 of 1	
Sample Description : LIMESTONE		Received On : 16.02.16	
Sample Drawn BY : Courier/16.02.16		Commenced On : 16.02.16	
Customer Reference : Letter dated on 16.02.16		Completed On : 22.02.16	
Sl. No.	PARAMETERS	RESULTS (%)	Procedure
1	Silica as SiO <sub>2</sub> (w/w %)	10.12	IS 9749 : 2007
2	Ferric Oxide as Fe <sub>2</sub> O <sub>3</sub> (w/w %)	Nil	IS 9749 : 2007
3	Aluminum oxide as Al <sub>2</sub> O <sub>3</sub> (w/w %)	Nil	IS 9749 : 2007
4	Calcium Carbonate as CaCO <sub>3</sub> (w/w %)	78.04	IS 9749 : 2007
5	Magnesium Carbonate as MgCO <sub>3</sub> (w/w %)	1.03	IS 9749 : 2007
6	Sodium as Na <sub>2</sub> O (w/w %)	Nil	IS 9749 : 2007
7	Potassium as K <sub>2</sub> O (w/w %)	Nil	IS 9749 : 2007
8	Loss on Ignition (LOI) (w/w %)	10.81	IS 9749 : 2007
9	Bulk Density (g/cc)	2.6	EPA Method
End of Report			
Authorized By  Nirmala Devi Deputy Technical Manager		 for EKDANT ENVIRO SERVICES (P) LTD Laboratory Services Division  Authorized Signatory M Mana Frank Omer - Quality Cum Tech Manager	

NOTE: 1. Test results shown in this test report relate only to the items tested  
2. This test report shall not be reproduced anywhere except in full and in same format without the approval of the laboratory  
3. Unless informed by the customer the test items will not be retained for more than 15 days from the date of issue of test report (exceptional for Microbiology and wastewater)

  
**S. DHANASEKAR**  
RQP/MAS/225/2011/A

ABSTRACT

MINES AND MINERALS - Major Mineral - Limestone -  
Tiruchirapalli district - Kulithalai taluk - Varavanai  
village - Over an extent of 4.71 acres - S.F.Nos. 833/4B,  
836 (part) and 843/2 - Mining lease application of  
Thiru S. Sekhar - Grant of lease - orders - Issued.

INDUSTRIES (MMA-2) DEPARTMENT

G.O.Ms. No. 162

DATED: 14.6.1994

Read again:

1. Mining lease application of Thiru S. Sekhar,  
dated 22.7.91.
2. From Collector, Tiruchirapalli D, Dis.(A)/1341/91  
dated 24.10.91 and Lr. Rc. A.1058/92,  
dated 4.12.92.
3. From the Commissioner of Geology and Mining  
Lr. Rc. No. 14430/B3/91, dated 14.1.92,  
2.7.92 and 25.1.93.
4. Govt. Lr. No. 4014/ MMA-2/92-5, Industries,  
dated 4.1.94.
5. From the Government of India, Ministry of Mines,  
Lr. No. 4/20/94-MIV, dated 29.4.94.
6. From the Commissioner of Geology and Mining  
Lr. No. 14430/B2/91, dated 16.5.94.

...

ORDER:

Thiru S. Sekhar, Tiruchirapalli has applied for  
the grant of fresh mining lease for limestone over an  
extent of 4.71 acres in S.F. Nos. 833/4 (part), 836(part)  
and 843/2 of Varavanai village, Kulithalai taluk,  
Tiruchirapalli district for a period of twenty years.

2. The Collector and Commissioner of Geology  
and Mining have recommended for the grant of fresh mining  
lease to Thiru S. Sekhar for limestone, over an extent of  
4.71 acres in S.F. Nos. 833/4, 836 (part) and 843/2 of  
Varavanai village, Kulithalai taluk, Tiruchirapalli  
district for a period of ten years and five years  
respectively with the following special conditions to be  
imposed that;

pto

*[Signature]*

9/2/94  
1-91

- (i) that no mining should be carried out within a distance of 50 metres on either side from the power line passing through the areas (western side of S.F. No. 836) OR alternatively the electric line should be shifted with the concurrence of Tamil Nadu Electricity Board and other pattadars beyond the area applied for mining lease at the cost of the applicant.
- (ii) the applicant should set up his proposed stabilised mud-block industry within a period of one year from the date of grant of mining lease; so as to utilise the cement plus grade limestone in his own industry ; and
- (iii) the applicant may be permitted to sell only less than cement grade (less than 42% CaO or high silica or high Magnesia) to needy buyers subject to prior approval of the Government of India, under Section 5(1) of the Mines and Minerals (Regulation and Development) Act, 1957 and Rule 27(3) of Mineral Concession Rules, 1960 for imposing the special conditions.

The Government have accepted the recommendations of the Commissioner of Geology and Mining and addressed the Government of India for their concurrence to grant of fresh mining lease to the applicant in the said area.

3. The Government of India, in their letter fourth read above have conveyed their approval under Section 5(1) of the Mines and Minerals (Regulation and Development) Act, 1957 and Rule 27 (3) of the Mineral Concession Rules, 1960 for the grant of fresh mining lease for limestones over an extent of 4.71 acres in S.F. Nos. 833/4B, 836(part) and 843/2 of Vapavahai village, Kulithalai taluk, Tiruchirapalli District for a period of twenty years in accordance with provisions in the Mines and Minerals (Regulation and Development) Act, 1957 as amended, in favour of Thiru S. Sekhar, subject to the conditions under Rule 27(3) of Mineral Concession Rules, 1960 incorporated in para 2 above.

4. In exercise of the powers conferred under Section 10(3) of the Mines and Minerals (Regulation and Development) Act, 1957 (Central Act, 67 of 1957), the Governor of Tamil Nadu hereby sanctions the grant of fresh mining lease in favour of Thiru S. Sekhar, Tiruchirapalli for mining limestone over an extent of 4.71 acres in S.F. Nos. 833/4B, 836(part) and 843/2 of Vapavahai village, Kulithalai taluk, Tiruchirapalli district for a period of twenty years subject to the special conditions indicated in paragraph 2 above and to the conditions specified in the appendix to this order.



5. The rate of royalty, dead rent, and surface rent shall be as follows:

Royalty: Limestone (including lime kankar)

(A) L.D. Grade (Less than 1.5% silica content) - Rs.50/- per tonne

(B) Others .. Rs.25/- per tonne.

Dead rent:

First year of the lease - Nil.

Second to fifth year of the lease - Rs.30/- per hectare per annum

Sixth to tenth year of the lease - Rs.60/- per hectare per annum

Eleventh year of the lease onwards: - Rs.90/- per hectare per annum

Surface rent and water rate:

At such rates as the land revenue and other accesses assessable on the land are paid.

6. The applicant should pay a deposit of Rs.2000/- (Rupees two thousand only) as prescribed in the Rules of Mineral Concession Rules, 1960 before the lease deed is actually executed. 32,

7. The terms and conditions stated in the order are subject to such further modifications, additions and alterations as may be included in the lease deed finalised.

8. The Collector of Tiruchirapalli is requested to take necessary further action for the execution of the lease deed in the prescribed form. AS soon as the deed is executed, the date of such execution should be reported to the Government and Commissioner of Geology and Mining. The Collector is

pto



also requested to ensure compliance by the applicant firm of the amended provisions of Mines and Minerals (Regulation and Development) Act, 1957 and Mineral Concession Rules, 1960 and other applicable Acts and Rules including Forest (Conservation) Act, 1980 before the lease deed is executed.

(BY ORDER OF THE GOVERNOR)

C. RAMACHANDRAN  
PRINCIPAL SECRETARY TO GOVERNMENT

To

The Commissioner of Geology and Mining,  
Guindy, Madras.32(we)

The Collector, Tiruchirappalli (we) BY RPAD.

Thiru S. Sekhar,  
73, Raja Colony, Collector Office Road,  
Contonment, Tiruchirappalli.

The Secretary to Government of India,  
Ministry of Mines,  
NEW DELHI.

The Controller General,  
IBM, New Secretariat Building,  
Nagpur-

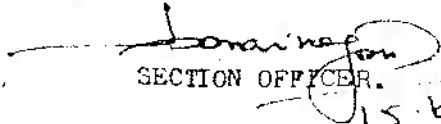
The Regional Inspector of Mines,  
K.G.F., Karnataka State.

The Regional Controller of Mines,  
IBM, 29, Vijayaraghava Road,  
Madras.17.

The Industries (OP) Department,  
Madras.5

sf/sc.

/forwarded/by order/

  
SECTION OFFICER.

15.6.92

5. The rate of royalty, dead rent, and surface rent shall be as follows:

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Eleventh year of the lease onwards: - Rs.90/- per hectare per annum

Surface rent and water rate:

At such rates as the land revenue and other accesses assessable on the land are paid.

6. The applicant should pay a deposit of Rs.2000/- (Rupees two thousand only) as prescribed in the Rules of Mineral Concession Rules, 1960 before the lease deed is actually executed. 32

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pto



**S. DHANASEKAR**  
RQP/MAS/225/2011/A

**FORM - J**  
(to be submitted in Tripliable)  
See Rule 24A of MCR 1960

Received  
at ..... (Place) GOVERNMENT OF  
on ..... (Date) MODEL FORM  
Initial of Receiving

Officer

Dated day of 20.....

**APPLICATION FOR RENEWAL OF MINING LEASE**

To

The Commissioner of Geology of Mining  
Industrial Estate  
Guindy  
Chennai -600 032.

Through : The District collector Karur District Karur.

Sir,

I request for renewal of my mining lease under the Mineral Concession Rules, 1960. A sum of (Rs.500) being the application fee payable under sub-rule (3) (i) (a) of rule 22 of the said rules has been deposited.

2. The required particulars are given below:-

(i) Name of the applicant with complete address.	S.SEKHAR No.73, Raja Colony, Collector Office Road, Cantonment, Trichy-620 001.
(ii) Is the applicant a private individual / private company /public company/firm or association?	PRIVATE INDIVIDUAL
(iii) In case applicant is:	
(a) an individual his nationality,	INDIAN
(b) a company, an attested copy of the certificate of registration shall be enclosed	Not applicable
(c) Omitted	



(a) already holds under mining lease;	Lime Stone G.O. 3(D) No.292 — Industries (MMA2) Dept. Dtd. 4.10.95 for a period of 20 years in S.F. Nos. 835/3, 836 (part) 837/18 of Varavanai Village, Tharagampatty Tk. (Formerly Kulithalai) Karur District. Tamil Nadu an affidavit enclosed.
(b) has already applied for but not granted; or	Nil
(c) being applied for simultaneously.	Nil
(xc) a mining plan which shall include	
(a) the plan of the area showing the nature and extent of the mineral body, spot or spots where the excavation is to be done in the first year and its extent, a detailed cross-section and detailed plan of spot(s) of excavation based on prospecting data gathered by the applicant, a tentative scheme of mining for the first five years of the lease;	Mining Plan will be prepared accurately and submitted incorporating all these details. Mining scheme approval No. TN/KRR/LST/MS-716-MDS for the subject area is valid till the expiry of the original mining lease period.
(b) the details of geology and lithology of the area, the extent of manual mining and through machines;	Will be incorporated in the mining plan to be prepared on grant of renewal of mining lease.
(c) annual programme and plan for excavation for five years; and	-do-
(d) the plan of the area showing natural water courses; limit of reserved and other forest areas and density of trees, assessment of impact of mining activity of Forest, Land surface and	-do-
Environment including air and water pollution, and details, of the scheme for afforestation, land reclamation, use of pollution control devices.	Details will be furnished in the M.P. to be submitted on the grant of the renewal of M.L.
(xD) Is the mineral going to be used in his own industry? if so, give full details; (for "own industry" see Explanation under Rule 24B).	Mineral will be supplied to the needy industries.
(xi) In case the renewal applied for is only for part of the lease hold:	Renewal is applied for whole of the area granted on original lease.
(a) the area applied for renewal,	Extent 1.90.5 HA
(b) description of the area applied for renewal (description should be adequate for the purpose of demarcating the plot),	S.F.Nos : 833/4B, 836 (Part) 843/2 Extent: 1.90.5 HA Village : Varavanai Taluk, Taragampatty District, Karur
(c) particulars of map of the leasehold with area applied for renewal clearly marked on it (attached).	Attached: (FMB and Combined Sketch)

(d) particulars of existing or created dumps of ore, if any.	Details will be given accurately in the mining plan preparation
(xii) Means by which the mineral is to be raised, i.e., by hand, labour or mechanical or electric power.	By hand labour and partly mechanical
(xiii) Manner in which the mineral raised is to be utilised:	
(a) for manufacture in India,	Yes, for manufacture in India
(b) for exports to foreign countries,	Not for exports outside India
(c) in the former case the industries in connection with which it is required, should be specified. In the latter case, the countries to which the mineral will be exported and whether the mineral is to be exported after processing or in raw form should be stated.	Commonly used as raw material in Cement Industries, Pulvarising Industries.  Not for exports outside India.
(xiv) Details of output during the last three years and phased programme for production during the next three years along with a layout plan for development, if any.	Details of output given in the enclosed Annexure. Other production programme in scheme of mining
(xv) In case of coal, details of existing railway transport facility available and additional transport facility, if any, required.	Not applicable
(xvi) Any other particulars which the applicant wishes to furnish.	

I do hereby declare that the particulars furnished above are correct and am you before ready to furnish any other details, including accurate plans as required by the grant of renewal of the lease.

Yours faithfully,

Place:

Date:

(S. SEKHAR)  
Lessee

Encl: No of Pages of Annexure enclosed.

N.B:- If the application is signed by an authorised agent of the applicant, Power of Attorney should be attached.



S. DHANASEKAR  
RQP/MAS/225/2011/A

G.O. No. 162-Ind (mm A2) Dt: 16.6.13



TNTC9  
CHALAN  
REMITTER COPY  
DATE 22 JUL 2013

For payment of Money at  
Paid into the credit of

For payment of Money at  
Paid into the credit of

73 Raja colony  
contonment  
Trichy

0853-00 Non Ferrous Mining and  
Metallurgical Industries-102  
Mineral Concession Fees, Rents and  
Royalties - AA Quarries and Minerals  
DP.Code : 0853-00-102-AA-0007

AMOUNT	P.	00
Rs.		2500
		2500 00

Received Rs. (Rupees)  
Entered in

Signature of Remitter  
Assistant Director  
GEOLOGY AND MINING  
KARNATAKA STATE BANK TREASURY

Manager / Accountant  
Sub - Treasury Officer  
Cashier  
Head of Account should be filled in by the Department Officer

G.O. No. 162-Ind (mm A2) Dt: 16.6.13



TNTC9  
CHALAN  
REMITTER COPY  
DATE 22 JUL 2013

For payment of Money at  
Paid into the credit of

For payment of Money at  
Paid into the credit of

73 Raja colony  
contonment  
Trichy

0853-00 Non Ferrous Mining and  
Metallurgical Industries-102  
Mineral Concession Fees, Rents and  
Royalties - AA Quarries and Minerals  
DP.Code : 0853-00-102-AA-0007

AMOUNT	P.	00
Rs.		500
		500 00

Received Rs. (Rupees)  
Entered in

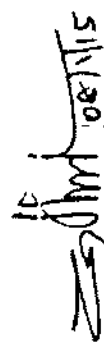
Signature of Remitter  
Assistant Director  
GEOLOGY AND MINING  
KARNATAKA STATE BANK TREASURY

Manager / Accountant  
Sub - Treasury Officer  
Cashier  
Head of Account should be filled in by the Department Officer

**TO WHOMSOEVER IT MAY CONCERN**

A Mining lease has been granted to Thiru.S.Sekar, for Mining Limestone in S.F.Nos.833/48, 836 and 843/2, over an extent of 1.90.5 hectares of patta lands in Varavanai Village, Kadavur Taluk, Karur District for a period of 20 years from 10.8.1994 to 09.8.2014 vide G.O.Ms.No.162/Industries (MMA2) Department, Dated:14.6.1994. The lease period expired on 09.08.2014.

The lessee submitted the 1<sup>st</sup> renewal of Mining Lease application in time as per 24 A (1) of the Mineral Concession Rules, 1960. i.e., Twelve months before the date on which the lease is due to expire. Hence the Lessee is entitled to carry out mining operation as per 24 A (6) of the Mineral Concession Rules, 1960.

  
Assistant Director,  
Geology and Mining,  
Karur.

S. DHANASEKAR  
ROP/MAS/225/2011/A

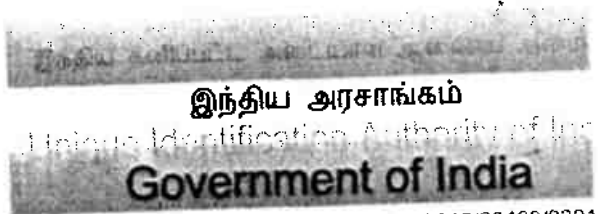


# ANNEXURE - V



தகவல்

- அடையாளத்திற்கான சான்று குடியரிமைக்கு அல்ல.
- அடையாள சான்றை இணையதளம் மூலம் உறுதிப்படுத்திக் கொள்ளவும்.



பதிவு அடையாளம் / Enrollment No.: 2040/60460/0301

## INFORMATION

- Aadhaar is proof of identity, not of citizenship.
- To establish identity, authenticate online.

To  
சேகர் சேர்  
Sekar S  
S/O. Sonachalam  
73 RAJA COLONY  
COLLECTOR OFFICE ROAD CANTONMENT  
Tiruchirappalli  
Tiruchirappalli  
Tiruchirappalli Tiruchirappalli  
Tamil Nadu 620001  
9345141471

28/01/2016  
330376179



ஆதார் நாடு முழுவதிலும் செல்லுபடியாகும்.  
வருங்காலத்தில் அரசு மற்றும் அரசு சாரா சேவைகளை பயன்படுத்திக் கொள்ள ஆதார் உதவிகரமாக இருக்கும்.  
ஆதார் is valid throughout the country.  
ஆதார் will be helpful in availing Government and Non-Government services in future.

உங்கள் ஆதார் எண் / Your Aadhaar N  
**4939 3574 6888**

ஆதார் - சாதாரண மனிதனின் அதிகாரம்

**Unique Identification Authority of India**  
முகவரி  
தலைநகர் தாய் பெயர்  
சோனாச்சலம் 73 ராஜா காலனி  
கலெக்டர் ஆபீஸ் ரோடு.  
கனடோமெண்ட்.  
திருச்சிராப்பள்ளி  
திருச்சிராப்பள்ளி தமிழ் நாடு  
620001

Address:  
S/O Sonachalam, 73, RAJA  
COLONY, COLLECTOR OFFICE  
ROAD CANTONMENT,  
Tiruchirappalli, Tiruchirappalli,  
Tamil Nadu. 620001

**4939 3574 6888**

1947  
1800 300 1947  
help@uidai.gov.in  
www.uidai.gov.in



**இந்திய அரசாங்கம்**  
**Government of India**  
சேகர் சேர்  
Sekar S  
பிறந்த நாள் / DOB: 26/10/1952  
ஆண்பால் / Male

**4939 3574 6888**

ஆதார் - சாதாரண மனிதனின் அதிகாரம்

*S. Dhanasekar*

**S. DHANASEKAR**  
RQP/MAS/225/2011/A

ANNEXURE -VI

**ELECTION COMMISSION OF INDIA**  
**IDENTITY CARD**

திருச்சிராப்பள்ளி தொகுதி  
அரசியல் அலுவலர்

TN/27/167/0045401



Elector's Name : **Sekar**  
 வாக்குமேளியின் பெயர் : **சேகர்**  
 Father / Mother : **Sonasalam**  
 Husband's Name : **சோனசலாம்**  
 தந்தை/அம்மையின் பெயர் : **சோனசலாம்**  
 Sex / பாலினம் : **Male / ஆண்**  
 Age as on 11/1998 : **39**  
 11/1998 அன்றைய வயது :

Address / முகவரி :  
 73 Collector Office Road  
 Tiruchirappalli (C)  
 Tiruchirappalli (Tk)  
 Tiruchirappalli (Dt)  
 73 கலெக்டர் அலுவலர் கோடு  
 திருச்சிராப்பள்ளி (சா)  
 திருச்சிராப்பள்ளி (வர)  
 திருச்சிராப்பள்ளி (தா)

Facsimile Signature of the Electoral Registration Officer  
 for 167 - Tiruchirappalli-I Assembly Constituency

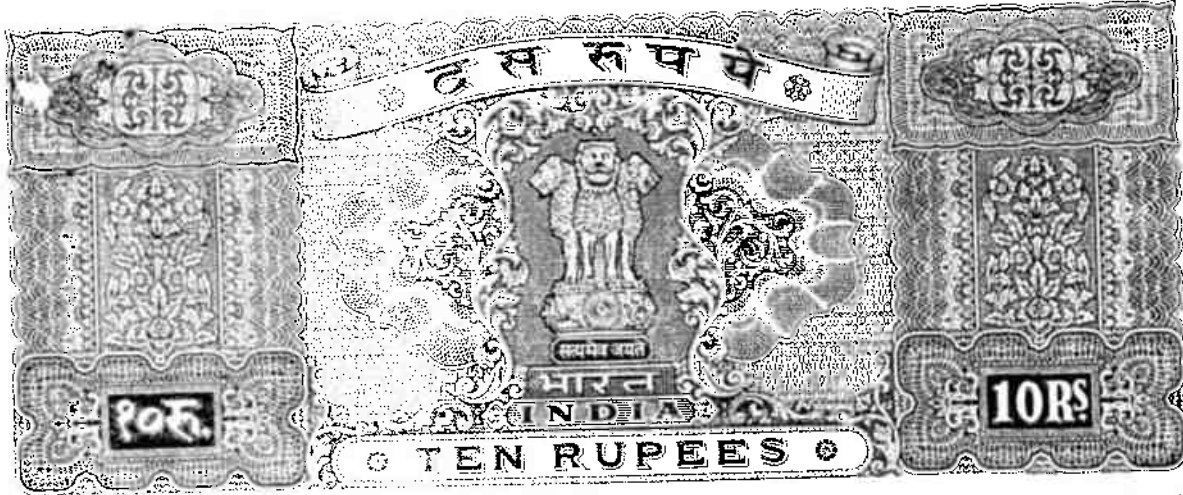
167 - திருச்சிராப்பள்ளி-2  
 சட்டமன்றத் தொகுதிக்கான வாக்குமேளியின்  
 அதிகாரியின் கையெழுத்து முத்திரை

Place : **Tiruchirappalli**  
 இடம் : **திருச்சிராப்பள்ளி**  
 Date / நாள் : **14.09.1998**

This Card may be used as an Identity Card  
 under different Government Schemes.

இந்த அட்டையை அரசின் பல்வேறு திட்டங்களின்  
 கீழ் குடிமகனாக அட்டையாகப் பயன்படுத்தலாம்.

**S. DHANASEKAR**  
 RQP/MAS/225/2011/A



-10  
114

V. V. V. V. V.  
V. V. V. V. V. V. V.  
L. NO: 15352  
63 482  
620 017

10/-

S. SEKCHAR

MINING LEASE DEED

Mining Lease Sanctioned in G.O.Ms.No.162

Industries (MMA,2) Department, Dated: 14.06.1994

...

THIS INSTRUMENT made this 10<sup>th</sup> day of August 1994 between the GOVERNOR OF TAMIL NADU (hereinafter referred to as the "State Government which expression shall where the context so admits be deemed to include his successors and assigns) of the one part and Thiru S.Sekhar, 73 Raja Colony, Collector's Office Road, Contanment, Tiruchirappalli-1

*[Signature]*  
LESSEE

(DISTRICT COLLECTOR)  
LESSOR


S. S. KHAR

- 2 -

(hereinafter referred to as "the lessee" which expression shall where the context so admits be deemed to include its successors and permitted assigns) of the other part.

WHEREAS the lessee have applied to the State Government in accordance with the Mineral Concession Rules, 1960 (hereinafter referred to as the said rules) for a mining lease for LIMESTONE in respect of the lands described in Part-I of the Schedule hereunder written and has deposited with the State Government the sum of Rs.2,000/- as Security Deposit and a sum of Rs.1,000/- for meeting out

  
LESSEE

  
(DISTRICT COLLECTOR)  
LESSOR

- 3 -




S. SEKHAR

- 3 -

the preliminary expenses for a mining lease and whereas the Central Government have approved the grant of lease.

WITNESSETH that in consideration of the rents and royalties covenants and agreements by and in these presents and the Schedule hereunder written reserved and contained and on the part of the lessee to be paid observed, and performed, the State Government with the approval of the Central Government hereby grants and demised unto lessee.

  
56  
195  
(DISTRICT COLLECTOR)  
LESSOR

- 4 -

S. SEKHAR

- 4 -

All those the mines bed / veins seams of LIMESTONE state the mineral (hereinafter and in the Schedule referred to the said mineral) situated lying and being in or under the lands which are referred to in Part-I of the said Schedule, together with the liberties, powers and privileges to be exercised and enjoyed in connection herewith which are mentioned in Part-II of the said Schedule subject to the restrictions and conditions as to the exercise and enjoyment of such liberties, powers and privileges which are mentioned in Part-III of the said Schedule

LESSEE

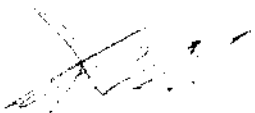
(DIRECTOR)  
MINES

- 5 -

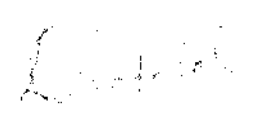
S. SEK HAR

- 5 -

EXCEPT and reserving out of demise unto the State Government the liberties, powers and privileges mentioned in Part-IV of the said Schedule to HOLD the premises hereby granted and demised unto the lessee for the terms of 20 years with effect from 10.08.1994 thence next ensuring YIELDING AND PAYING therefore unto the State Government the several rents and royalties mentioned in Part-V of the said Schedule at the respect times therein specified subject to the provisions contained in

  
LESSEE

SP  
196

  
(DISTRICT COLLECTOR)  
LESSOR

- 6 -

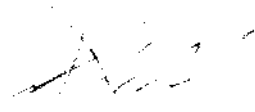
S. SEKHAR

- 6 -

Part-VI of the said Schedule and the lessee hereby covenant with the State Government as in Part-VII of the said Schedule as expressed and the State Government hereby covenants with the lessee as in Part-VIII of the said Schedule as expressed and it is hereby mutually agreed between the parties hereto as in Part-IX of the said Schedule is expressed.

IN WITNESS WHEREOF these presents have been executed in manner hereunder appearing the day and year first above written.

The Schedule above referred to.



5/2  
1/16

(DIRECTOR)

CHIEF - 7 -

S. SEKHAR

- 7 -

PART - I


THE AREA OF THIS LEASE

LOCATION AND AREA OF THE LEASE

All that track of lands situated at Varavanai village in Kulithalai Taluk, Tiruchirappalli District in the Registration District of Karur and in the Sub District of Tharagampatti bearing cadastral survey numbers:

<u>TALUK</u>	<u>VILLAGE</u>	<u>S.F.NO.</u>	<u>EXTENT</u>		<u>CLASSIFI-</u>
			<u>IN ACRES</u>	<u>IN HECT.</u>	<u>CATION.</u>
	KULITHALAI-VARAVANAI	833/4B	0.22	0.09.0	Ryotwari Dry
		836(Part)	1.41	0.57.0	Ryotwari Dry
		843/2	3.08	1.24.5	Ryotwari Dry
			<u>4.71</u>	<u>1.90.5</u>	

  
LESSEE

  
(DISTRICT COLLECTOR)  
LESSOR

- 8 -

containing an area of 1.90.5 Hects. (4.71 Acres) of there-  
about delineated on the plans here to annexed and thereon  
coloured RED and bounded as follows:-

TALUK : KULITHALAI  
VILLAGE : VARAVANAI

<u>S.F.NO.</u>	<u>B O U N D A R I E S</u>			
	<u>NORTH</u>	<u>SOUTH</u>	<u>EAST</u>	<u>WEST</u>
833/4B	833/3	836	843	833/4A
836 (Part)	833	836	843	835
	843			
843/2	843/1	836	842	835
		837		

hereinafter referred to as "the said lands".

PART - II


LIABILITIES, POWERS AND PRIVILEGES TO BE EXERCISED AND  
ENJOYED BY THE LESSEE SUBJECT TO THE RESTRICTIONS AND  
CONDITIONS IN PART-III.


To enter upon land search and for win work etc.

1. Liberty and power at all times during the term  
hereby demised to enter upon the said lands and to search  
for mine bore big drill for win work dress process covert,  
carry away and dispose of the said mineral.

To sink drive and machinery equipment etc.

2. Liberty and power for or in connection with any of  
the purpose mentioned in this part to sink, drive made,  
maintain and use in the said lands and pits, shafts,  
inclines drifts levels, waterways, airways and other works

  
LESSEE

  
(DISTRICT COLLECTOR)  
LESSOR

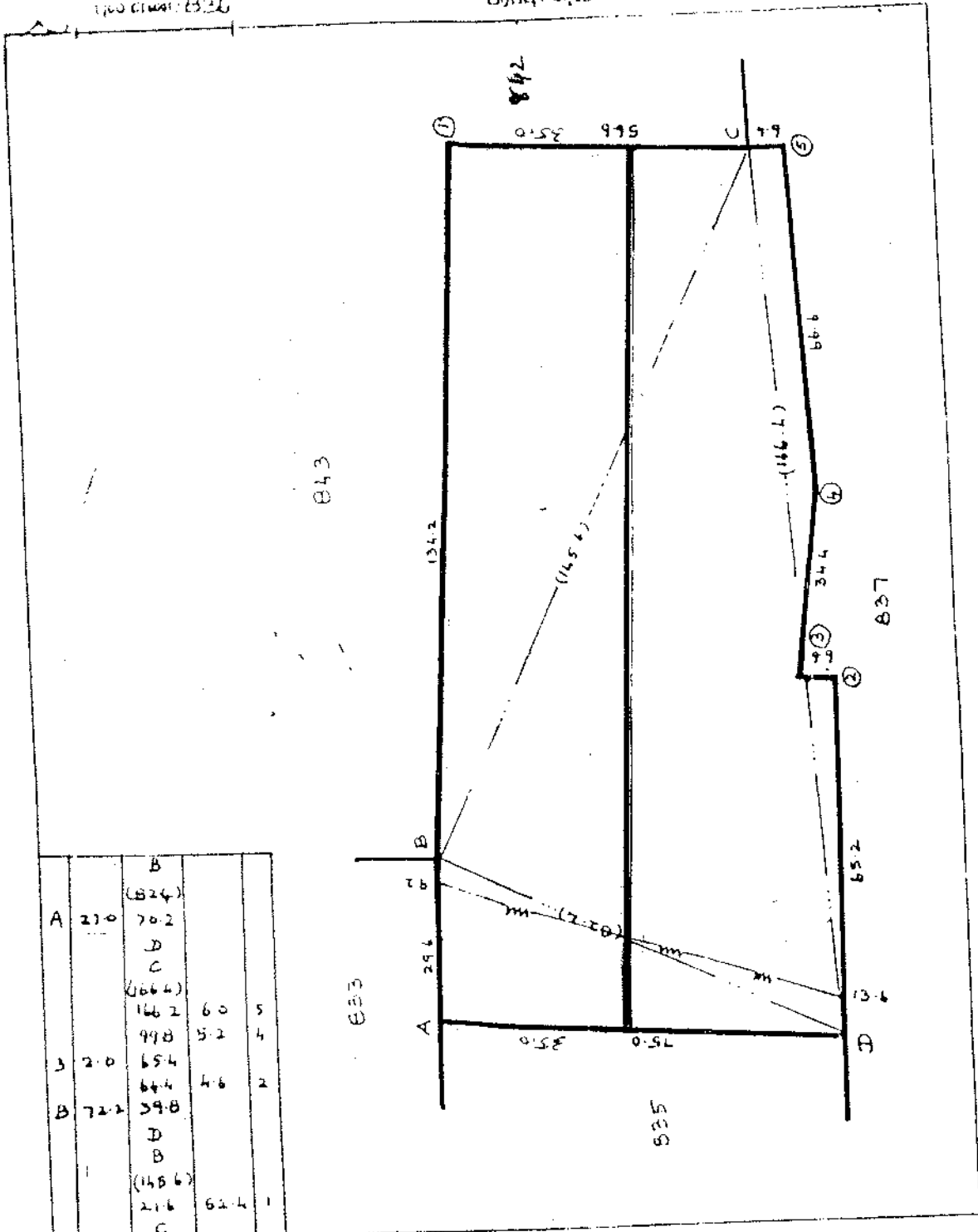
சென்னை மாவட்டம்

சுற்றுலா துறை

பெரிய காலனி

அளவு: 69  
பெரிய காலனி

பெரிய காலனி: 1 சதுர மீ. 0



		B		
		(B24)		
A	230	70.2		
		D		
		C		
		(664)		
		166.2	60	5
		99.8	5.2	4
3	2.0	65.4		
		64.4	4.6	2
B	72.2	59.8		
		D		
		B		
		(148.6)		
		21.6	62.4	1
		C		

சென்னை  
7.5.85

அளவு: 1: 1000

(True Copy)  
6.7.94

LESSEE

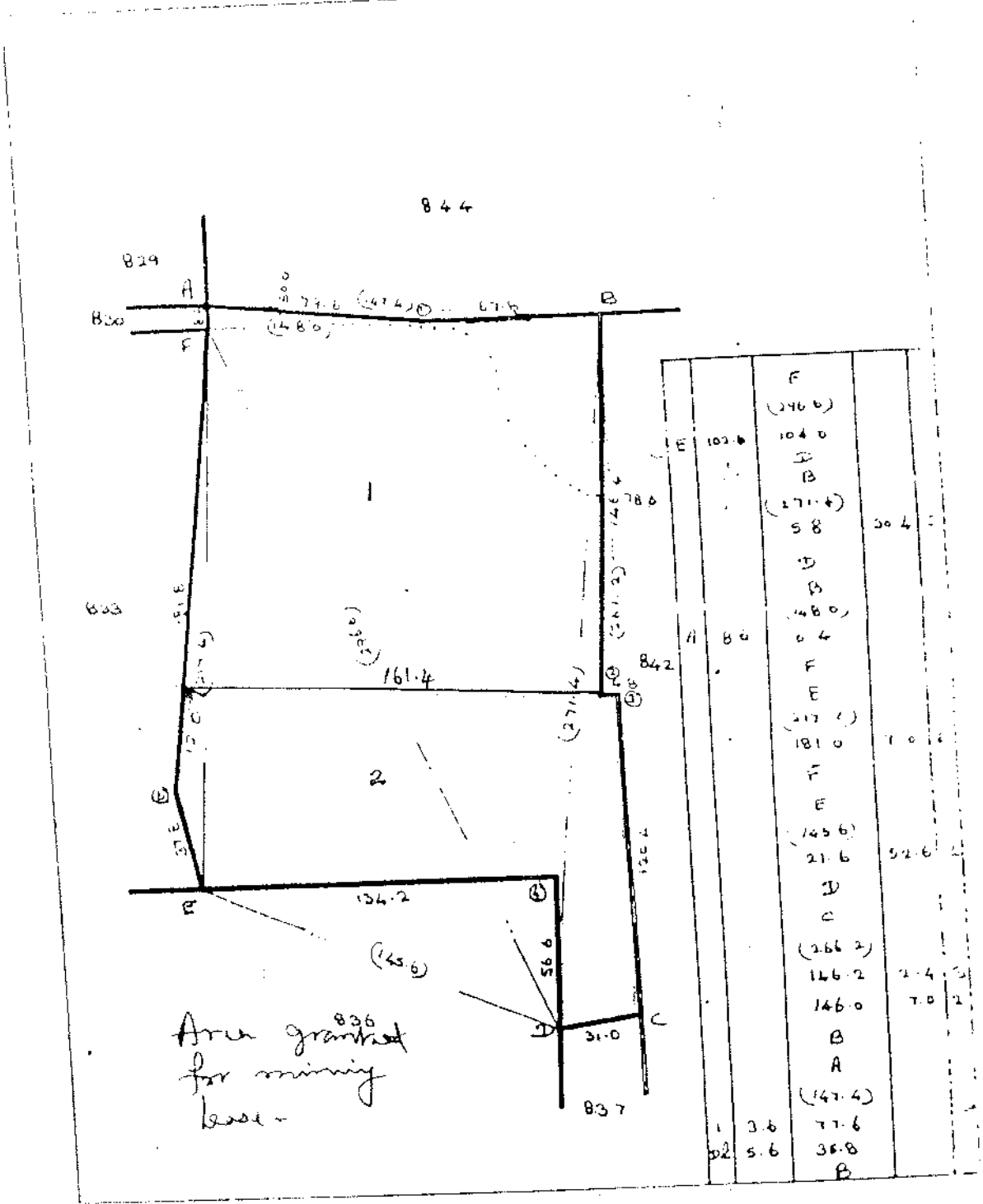
(DISTRICT COLLECTOR)  
LESSOR

சமீபத்தில் (பெரிய அளவில்)

மொத்தம் 64  
பெயர்: ...  
3 மா. 625

மேலே உள்ள பகுதி  
மொத்தம் 843

மொத்தம்: 844



Area granted for mining lease

தளம்: 1: 2000

சமீபத்தில் (பெரிய அளவில்)  
2.9.85

(முத்திரை)  
ச. சமீபத்தில்  
- 6244

LESSEE

(DISTRICT COLLECTOR)  
LESSOR

S. DHANASEKAR  
RQP/MAS/225/2011/A



# ANNEXURE - VIII

Regd. A/D  
Violation cum Show-Cause Notice

GOVERNMENT OF INDIA  
MINISTRY OF MINES  
INDIAN BUREAU OF MINES  
OFFICE OF THE REGIONAL CONTROLLER OF MINES  
Tel: 044-24914461/1570  
Fax No. 044-24911295  
C-4-A, Rajaji Bhawan,  
CGO complex, Besant Nagar,  
Chennai - 600090.

No TN/TCR/LST-65.MDS

Mine Code : 38TMN28022

Date : 15/02/2016

To  
Shri S. Sekhar  
No.73, Raja Colony  
Contonment  
Trichy - 620 001.

Sub: Violation of provisions of Mineral Conservation and Development Rules, 1988, in respect of your Varavanai Limestone Mine over an area of 1.90.5 Ha. in Varavanai Village, Karur district, Tamil Nadu State.

Sir,  
The following provisions of the Mineral Conservation and Development (Amendment) Rules, 1988 were found violated in your above mine based on the scrutiny of office records.

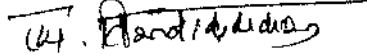
Rule No	Nature of Violation
12(3)	The scheme of mining for the above mine was approved vide letter No.TN/KRR/LST/MS-716.MDS dated 31.08.2012 and validity period expired on 31.03.2014. But the lessee have not submitted the scheme of mining for the next five years period, 120 days before the expiry of the validity period as mentioned above. The mining operation is being carried out in the mine, without having valid proposal in the form of scheme of mining.

02. In this connection, it is brought to your notice that the above violations constitute an offence punishable under Rule 58 of MCDR, 1988. Further the mining operations are liable to be suspended under Rule 13(2) of MCDR, 1988.

03. You are therefore, directed to show cause within a period of 30(thirty) days from the date of issue of this letter as to why you should not be prosecuted and / or the mining operations suspended under rule 13(2) of MCDR, 1988 for the above offence.

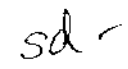
04. Please note that no further notice will be given to you in this regard.

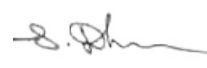
Yours faithfully,

  
(S. Thirunavukkarrasu)  
Junior Mining Geologist.

Copy forwarded for information to :

1. The Commissioner, Directorate of Geology & Mining, Govt. of Tamilnadu, Guindy, Chennai - 600 032.
2. The Controller of Mines(SZ), IBM, Bangalore.

  
(S. Thirunavukkarrasu)  
Junior Mining Geologist.

  
S. DHANASEKAR  
RQP/MAS/225/2011/A

ANNEXURE - IX



**CERTIFICATE OF RECOGNITION AS  
QUALIFIED PERSON TO PREPARE MINING PLANS**  
(Under Rule 22 C of Mineral Concession Rules 1960)

Shri S. DHANASEKAR, resident of Old No.6, New No.3/3, Kullappan Street, Opp. Indian Bank Line, Omalur (P.O), Salem - 636 455, son of Shri A. SUNDARAM having given satisfactory evidence of his qualifications and experience is hereby granted recognition under Rule 22C of the Mineral Concession Rules, 1960 as a Qualified Person to prepare Mining Plans.

His registration number is

RQP/MAS/225/2011/A

recognition is valid for a period of ten years ending 12.01.2021.

Regional Controller of Mines  
Indian Bureau of Mines  
Chennai Region

Place : Chennai

Date : 13.01.2011

S. DHANASEKAR  
RQP/MAS/225/2011/A

BG-6

ANNEXURE - X

THE KARUR VYSYA BANK LIMITED,  
OLD NO.30, NEW NO 22/2, POTTERS STREET,  
SAIDAPET , CHENNAI-600015  
PH: 044-24323231

GEN/BG-/4 /2016-17

DATE:24.05.2016

To  
M/s The Regional Controller of Mines,  
Indian Bureau of Mines,  
Chennai.

Dear Sirs,

**Reg: Bank Gurantee No. P04IBGP161450005 dated 24.05.2016  
for Rs. 25,000/- issued by our Bank in your Favour on  
behalf of Mr Sekhar Sonachalam**

\*\*\*\*\*

We refer to the Bank Guarantee No. **P04IBGP161450005 dated 24.05.2016** issued by us in your favour for **Rs.25,000/- (Rupees Twenty Five Thousand Only)** on behalf of **Mr Sekhar Sonachalam**.

Please note that a confirmation of the said Bank Guarantee No. **P04IBGP161450005** is available at our Divisional Office at "KVB TOWERS, 1 FLOOR, 568, ANNA SALAI, TEYNAMPET, CHENNAI - 600018.

In your own interest, if you want to have confirmation about the authenticity of the said Bank Guarantee No. **P04IBGP161450005** , you may please write to the said office in the said address.

Thanking you,

Yours faithfully,

For THE KARUR VYSYA BANK LTD.,

  
MANAGER.

Copy to: The Divisional Office, Chennai - We have issued a Bank Guarantee No. **P04IBGP161450005 dated 24.05.2016** for **Rs.25,000/-** favouring **M/s The Regional Controller of Mines, Indian Bureau of Mines, Chennai**  
A copy of the same is enclosed for your reference and records.

भारतीय गैर न्यायिक

एक सौ रुपये

Rs. 100

रु. 100



ONE  
HUNDRED RUPEES

सत्यमेव जयते

भारत INDIA  
INDIA NON JUDICIAL

தமிழ்நாடு தமில்நாடு TAMILNADU

KVB

BA 973938

032020

17 MAY 2016

M. KAILASH CHANE  
STAMP VENDOR-L.No.11727/C/91  
SAIDAPET, CHENNAI-15. 98401730

**BANK GUARANTEE**

B.G.NO : P04IBGP161450005  
DATE OF ISSUE OF B.G : 24/05/2016  
AMOUNT OF B.G. : Rs.25,000/- (Rupees Twenty Five Thousand Only)  
B.G VALID UPTO. : 31.03.2020  
LAST DATE FOR LODGEMENT OF CLAIM : 30.04.2020

To,

M/s The Regional Controller of Mines,  
Indian Bureau of Mines,  
Chennai.

The Branch Manager, Chennai-15

Branch Manager, Chennai-15

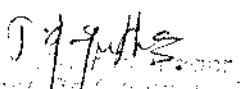
The Branch Manager, Chennai-15

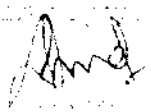
Branch Manager, Chennai-15

1. Agreement on production of a bank guarantee for Rs.25,000/- (Rupees Twenty Five Thousand Only) under rule 23 F of MCDR, 1988
2. We, The Karur Vysya Bank (bank name), at the request of Mr Sekhar Sonachalam, No C-9 Raj Anughara Apts, South Avenue Sri Nagar Colony, Saidapet, Chennai-600015 (lessee) do hereby undertake to pay to the Regional Controller of Mines, Indian Bureau of Mines, Chennai or any other officer authority nominated by the controller General, Indian Bureau of Mines an amount not exceeding **Rs.25,000/- (Rupees Twenty Five Thousand Only)** against any loss or damage caused to or suffered or would be caused to or suffered by the government or towards non compliance of provisions of rule 23A, B & 23E of MCDR, 1988 i.e mine closure plan/progressive Mine closure plan approved in respect of the mining lease for limestone (ore/ores) over an area of 2.24 Heets, granted by State Government to Mr Sekhar Sonachalam s/o Shri Sonachalam (lessee) situated in Varavanai Village Kuluthali, Karur Dist Tamilnadu State by reason of any breach of the said lessee of any of the terms or conditions contained in the Mine closure plan/progressive Mine closure plan.
3. We, The Karur Vysya Bank Ltd do hereby undertake to pay the amount due to payable under this guarantee without any demur, to the authority merely on a demand from the Regional Controller of Mines, Indian Bureau of Mines Chennai or any other claimed is due by way of loss or loss of damage caused to or would be caused to or suffered by the government by reason of breach by the said lessee or any of the terms or conditions contained in the mining plan/mining scheme or by reason of lessee's failure to perform the said mine closure plan/progressive mine closure plan. However our liability under closure plan/ progressive mine closure plan. However our liability under this guarantee shall be restricted to an amount not exceeding **Rs.25,000/- (Rupees Twenty Five Thousand Only)**
4. We undertake to the authority on a demand from the Regional Controller of Mines, Indian Bureau of Mines Chennai or any other officer authorized by the Controller General, Indian Bureau of Mines Or Govt of India any money so demanded notwithstanding any dispute or disputes raised by the lessee in any suit or proceedings pending before any court or tribunal relating thereto our liability under this present being absolute and unequivocal.

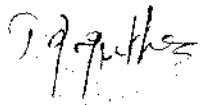
The payment so made by us under this bond shall be valid discharge of our liability for payment there under and lessee shall have no claim against us for making such payment.

5. We, The Karur Vysya Bank Ltd, further agree that the guarantee herein contained shall remain in full force and effect during the period upto the end of the Mining plan/Scheme of Mining period of five years that would be taken for performance of the said agreement and that shall continue to be enforce till all the dates of the Govt. under or by virtue of the said agreement have been fully paid and its claims satisfied or discharged till Regional Controller of Mines, Indian Bureau of Mines, Chennai or any other officer authorised by the Controller General, Indian Bureau of mines certifies that the terms and conditions of the said progressive mine closure plan/final mine closure plan have been fully and properly carried out by the said lessee and accordingly discharge this guarantee. Unless a demand or claim under this guarantee is made us in writing on or before **30.04.2020**, we shall be discharged from all liability under this guarantee thereafter.

  
D. J. G. H. S.  
General Manager

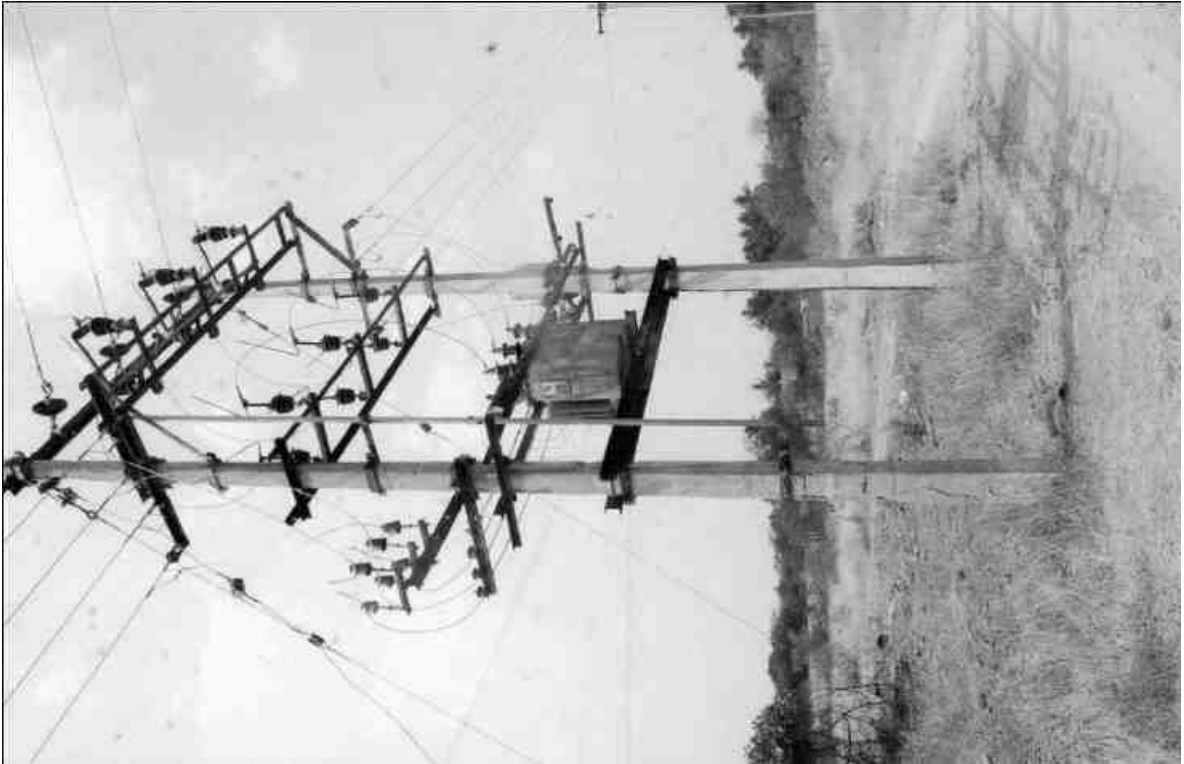
  
Regional Controller of Mines  
Indian Bureau of Mines  
Chennai

6. We further agree that Regional Controller of Mines ,Indian Bureau of Mines,Chennai or any other officer authorised by the Controller General,Indian Bureau of mines shall have fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said agreement or to extend time of performance by the said lessee from time to time or to postpone for any time or from time to time any powers exercisable by Regional Controller of mines,Chennai against the said lessee and to forbear or enforce any of the terms and conditions relating to the to the said agreement,we(bank) shall not be relieved from our liability by reason of any forbearance,act or omission on the part of Regional Controller of Mines,Indian Bureau of Mines, Chennai or any indulgence by Regional controller of Mines, Indian Bureau of Mines,Chennai to the said lessee or any manner or thing whatsoever which under the law relating to sureties,Would but this provision have effect of so relieving us.
7. This guarantee will not be discharged due to change in constitution of the bank or lessee.
8. We,The Karur Vysya Bank Ltd ,lastly undertake not to revoke this guarantee during its currency except with the previous consent of The Regional Controller of Mines ,Indian Bureau of Mines,Chennai in writing.
9. Notwithstanding anything contained herein above:
  - 1)Our liability under this Bank Guarantee shall not exceed **Rs.25,000/-(Rupees Twenty Five Thousand Only)**
  - 2) The bank guarantee shall be valid upto **31.03.2020**
  - 3)We are liable to pay the guaranteed amount or any part thereof under the Bank Guarantee only and only if you serve upon us a written claim or demand on or before **30.04.2020**
  - 4)Thereafter the bank shall stand discharged from all its liability under this guarantee and all your rights under this guarantee shall stand extinguished,irrespective of the fact whether the guarantee in original is returned back to us or not
10. If the bank guarantee is to be encashed through the court,in that case the (city where Regional Office,IBM is located)court will have jurisdiction.
11. In witness whereof,the bank through its authorised officer has set its hand and stamp on this 24<sup>th</sup> day of May 2016 at chennai



**S. DHANASEKAR**  
RQP/MAS/225/2011/A

**GROUND CONTROL POINT-1**



**GROUND CONTROL POINT-2**



*S. Dhanasekar*

**S. DHANASEKAR**  
RQP/MAS/225/2011/A

**GROUND CONTROL POINT-3**



**WORKING PIT VIEW - 1**



*S. Dhanasekar*

**S. DHANASEKAR**  
RQP/MAS/225/2011/A



**WORKING PIT VIEW – 2**



**EXISTING DUMP VIEW**



**S. DHANASEKAR**  
RQP/MAS/225/2011/A

**PART-B**  
**LIST OF PLAN AND SECTIONS**

VARAVANAIL LIMESTONE MINE OF SHRI.S. SEKHAR



**PLATE NO. I**

**LESSEE ADDRESS:**

SHRI S. SEKHAR,  
78, RAJA COLONY,  
COLLECTOR OFFICE ROAD,  
CANTONMENT,  
TRICHY - 620 001.

**LOCATION OF THE MINE :**

EXTENT : 1.90 ± Ha  
S.F.Nos. : 833/4B, 836 (P) & 843/2  
VILLAGE : VARAVANAI  
TALUK : KULITHALAI  
DISTRICT : KARUR

**INDEX**

LEASE AREA : ●  
LATITUDE : 10°45'10.63\"N  
LONGITUDE : 78°13'49.84\"E  
TOPOSHEET NO. : 58I/2

**LOCATION PLAN**

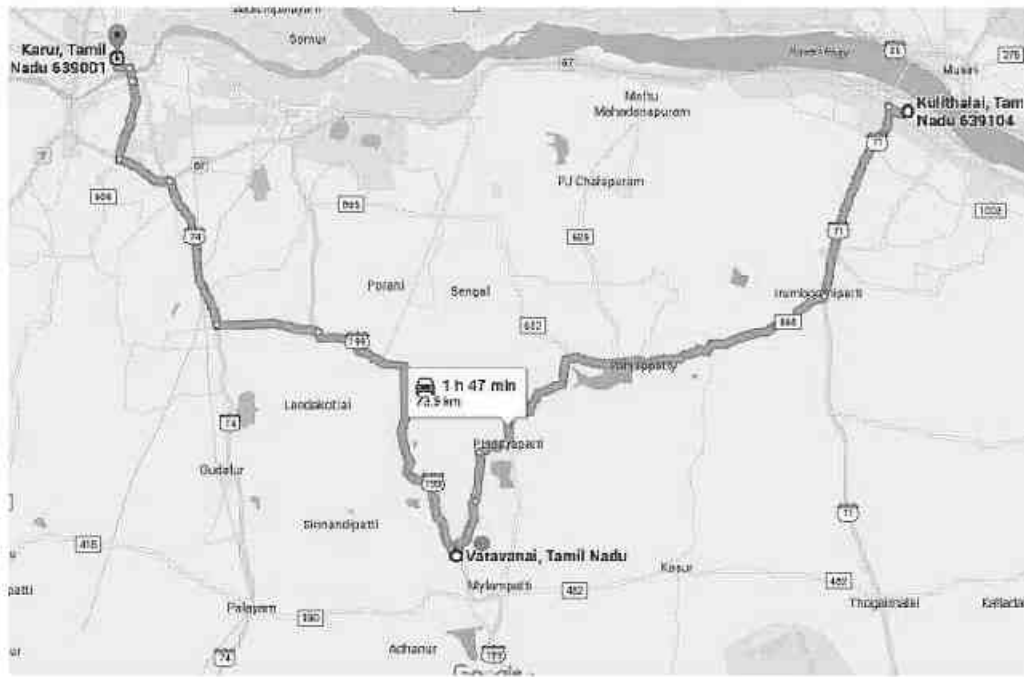
NOT TO SCALE

**PREPARED BY:**

I DO HEREBY CERTIFY THAT THE PLATE HAS BEEN CHECKED  
BY ME AND IS CORRECT TO THE BEST OF MY KNOWLEDGE.

S. DHARMABALAN, M.Sc.,  
REGONORDED QUALIFIED PERSON  
R&P/M&S/220/2011/A

**VARAVANAI LIMESTONE MINE OF SHRLS. SEKHAR**



**PLATE NO. IA**

**LESSEE ADDRESS:**

SHRIS. SEKHAR,  
78, RAJA COLONY,  
COLLECTOR OFFICE ROAD,  
CANTONMENT,  
TRICHY - 620 001.

**LOCATION OF THE MINE :**

EXTENT : 190.5 Ha  
S.F.Nos. : 833/4B, 836 (P) & 8432  
VILLAGE : VARAVANAI  
TALUK : KULITHALAI  
DISTRICT : KARUR

**INDEX**

Q.L. BOUNDARY:   
ROAD:

**KEY MAP /ROUTE MAP**

1:10000 SCALE

**PREPARED BY:**

I DO HEREBY CERTIFY THAT THE PLATE HAS BEEN CHECKED BY ME AND IS CORRECT TO THE BEST OF MY KNOWLEDGE

*S. D. S.*

SUBREGISTERAR, M.S.  
REGONNESSE QUARTERS PERSON  
RPF/WAS/225/2011/A

# VARAVANAI LIMESTONE MINE OF SHRI. S. SEK HAR

Extent: 1.90.5 Ha.

OCTOBER  
TO  
DECEMBER

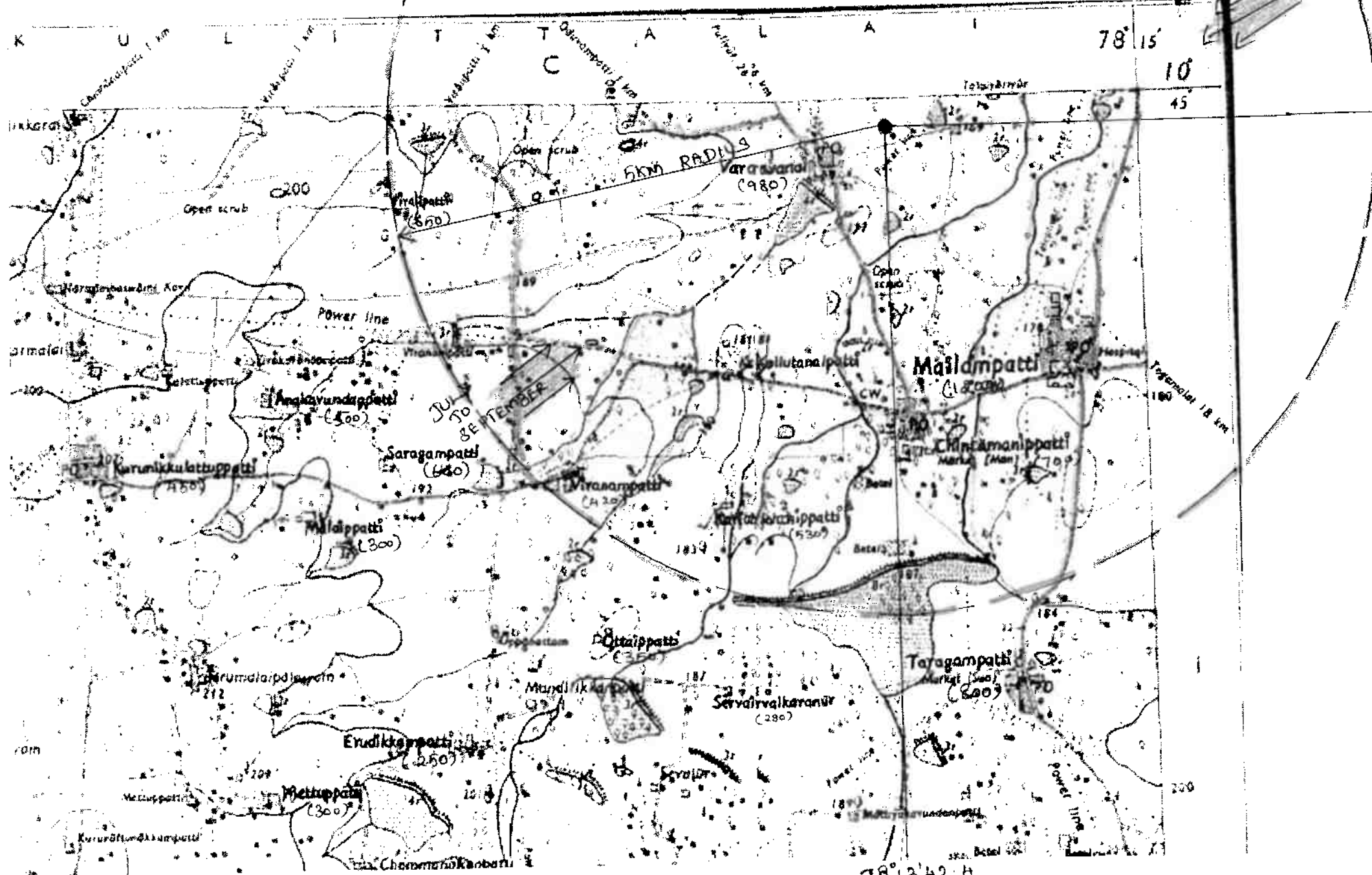


PLATE NO : 1B

### LESSEE ADDRESS:

SHRI.S.SEKHAR,  
NO.73, RAJA COLONY,  
COLLECTOR OFFICE ROAD,  
CANTONMENT,  
TRICHY-620 001.

### INDEX

Lease Area	
5 KM Radius	
Wind direction	
Roads:metalled: according to importance: distance stone	
unmetalled: do. do. bridge	
Cart-track: Pack-track and pass: Foot-path with bridge	
Bridges: with pier: without: Causeway: Ford or Ferry	
Streams: with track in bed: undefined: Canal	
Dams: masonry or rockfilled:earthwork: Weir	
River banks: shelving: steep: 3 to 6 metres: over 6 metres	
dry with water channel: with island & rocks:Tidal river	
Submerged rocks: Shoal: Swamp: Reeds	
Wells: head: unlined: Tube-well: Spring: Tanks: perennial: dry	
Embankments: road or rail: tank: Broken ground	
Railways: broad gauge: double: single with station: under constn	
other gauges: do. do. with distance stone: do.	
Light railway or tramway: Telegraph line: Cutting with tunnel	
Contours with sub-features: Rocky slopes: Cliffs	
Land features: hill: etc.	
Towns or Villages: inhabited: deserted: Fortifications	
Huts: permanent: temporary: Tower: Antiquities	
Temple: Chhattri: Church: Mosque: Idgah: Tomb: Graves	
Lighthouse: Lightship: Buoys: lighted: unlighted: Anchorages	
Mine: Vine on trellis: Grass: Scrub	
Palms: palmyra: other Plants: Conifer: Bamboo: Other trees	
Boundary: international	
state: demarcated: undemarcated	
district: subdivision: taluk: forest	
Boundary pillars: surveyed: unlocated: village trijunction	
Heights: triangulated: station: point: approximate	
Bench-mark: geodetic: tertiary: canal	
Post office: Telegraph office: Combined office: Police station	
Sunglows: dak or traveller: inspection: Rest-house	
Circuit house: Camping ground: Forest: reserved: protected	
Spaced names: administrative: locality or tribal	

### KEY PLAN

TOPO SHEET NO : 58J/2 SCALE 1:50 000

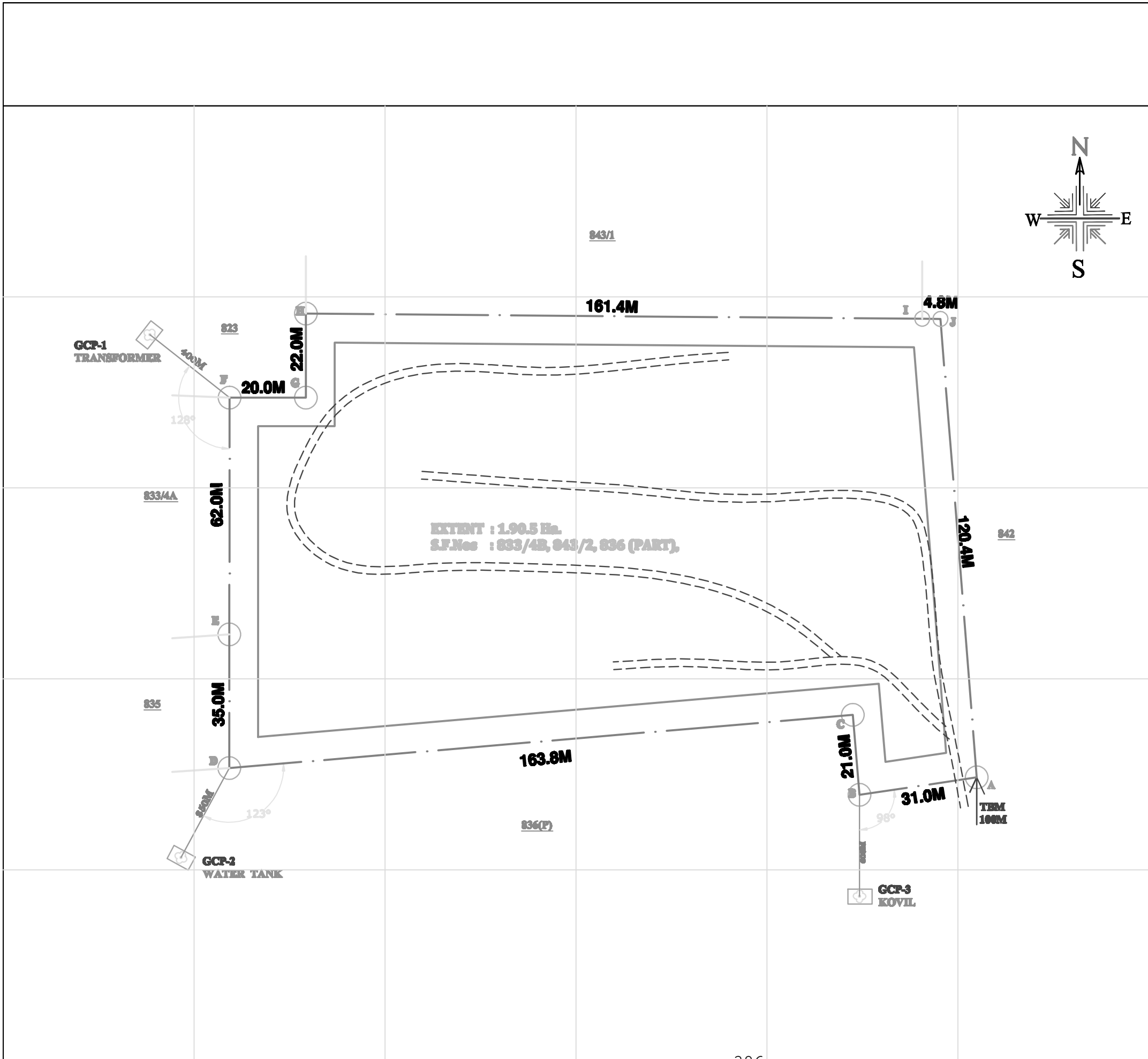
### PREPARED BY

ALL THE PLANS AND SECTIONS PREPARED  
BASED ON THE LEASE MAP AUTHENTICATED  
BY THE STATE GOVERNMENT

S. DHANASEKAR  
ROP/MAS/225/2011 A

### LOCATION OF THE MINE:

EXTENT : 1.90.5 Ha.  
S.F.Nos. : 833/4B, 836(P) & 843/2  
VILLAGE : VARAVANAI  
TALUK : KULITHALAI  
DISTRICT : KARUR



LABEL	LATITUDE	LONGITUDE
A	10° 45' 6.72"N	78° 13' 50.51"E
B	10° 45' 6.48"N	78° 13' 49.49"E
C	10° 45' 7.13"N	78° 13' 49.36"E
D	10° 45' 6.21"N	78° 13' 44.06"E
E	10° 45' 7.34"N	78° 13' 43.95"E
F	10° 45' 9.38"N	78° 13' 43.79"E
G	10° 45' 9.46"N	78° 13' 44.41"E
H	10° 45' 10.17"N	78° 13' 44.36"E
I	10° 45' 10.62"N	78° 13' 49.67"E
J	10° 45' 10.63"N	78° 13' 49.84"E

**VARAVANAI LIMESTONE MINE OF SHRI S. SEK HAR,**

**PLATE NO:II**  
**DATE OF SURVEY: 22 - 04 - 2016**

**LESSEE ADDRESS:**  
**SHRI S. SEK HAR,**  
**78, RAJA COLONY,**  
**COLLECTOR OFFICE ROAD,**  
**CANTONMENT,**  
**TRICHY - 690 001.**

**INDEX**

ML BOUNDARY	
7.5M & 50.0M SAFETY DISTANCE	
TEMPORARY BENCH MARK	
APPROACH ROAD	

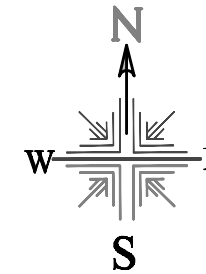
**LOCATION OF MINE:**  
**EXTENT : 1.90.5 Ha**  
**S.F.Nos. : 833/4B, 836 (P) & 843/2**  
**VILLAGE : VARAVANAI**  
**TALUK : KULITHALAI**  
**DISTRICT : KARUR**

**MINE LEASE PLAN**  
**SCALE:1:1000**

**PREPARED BY:**  
**ALL THE PLANS AND SECTIONS PREPARED BASED ON THE LEASE MAP AUTHENTICATED BY THE STATE GOVERNMENT, I DO HEREBY CERTIFY THAT THE PLATE HAS BEEN CHECKED BY ME AND IS CORRECT TO THE BEST OF MY KNOWLEDGE**

**S.DHANASEKAR,M.Sc.,**  
**RECOGNISED QUALIFIED PERSON**  
**RQP/MAS/225/2011/A**

LABEL	LATITUDE	LONGITUDE
A	10° 45' 6.72"N	78° 13' 50.51"E
B	10° 45' 6.48"N	78° 13' 49.49"E
C	10° 45' 7.13"N	78° 13' 49.36"E
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I	10° 45' 10.62"N	78° 13' 49.67"E
J	10° 45' 10.63"N	78° 13' 49.84"E



**VARAVANAI LIMESTONE MINE OF SHRI S. SEKCHAR,**

**PLATE NO:III**

**DATE OF SURVEY: 22 - 04 - 2016**

**LESSEE ADDRESS:**

**SHRI S. SEKCHAR,  
78, RAJA COLONY,  
COLLECTOR OFFICE ROAD,  
CANTONMENT,  
TRICHY - 690 001.**

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ML.BOUNDARY	
TOP SOIL	
WORKING PIT	
MINERAL CONTACT	
LIMESTONE	
GRANITE GNEISS	
EXISTING DUMP	
7.5M & 50.0M SAFETY DISTANCE	
MINE ROAD	
LT LINE	
TREES	

**LOCATION OF MINE:**

**EXTENT : 190.5 Ha**  
**S.F.Nos. : 833/4B, 836 (F) & 843/2**  
**VILLAGE : VARAVANAI**  
**TALUK : KULITHALAI**  
**DISTRICT : KARUR**

**SURFACE PLAN**

**SCALE:1:1000**

**PREPARED BY:**

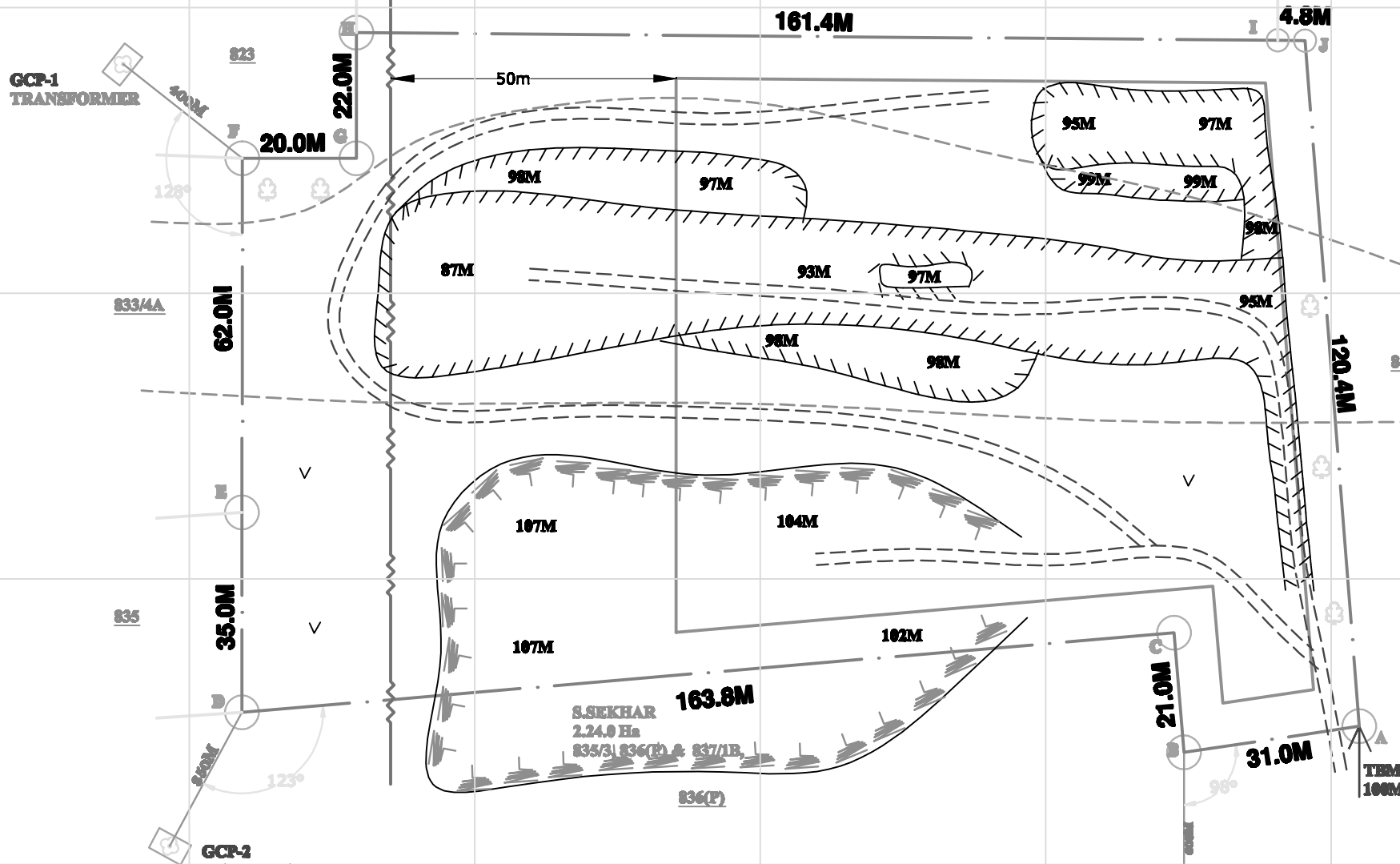
ALL THE PLANS AND SECTIONS PREPARED BASED ON THE LEASE MAP AUTHENTICATED BY THE STATE GOVERNMENT, I DO HEREBY CERTIFY THAT THE PLATE HAS BEEN CHECKED BY ME AND IS CORRECT TO THE BEST OF MY KNOWLEDGE

**S.DHANASEKAR,M.Sc.,  
RECOGNISED QUALIFIED PERSON  
RQP/MAS/225/2011/A**

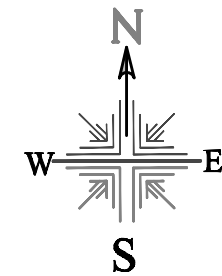
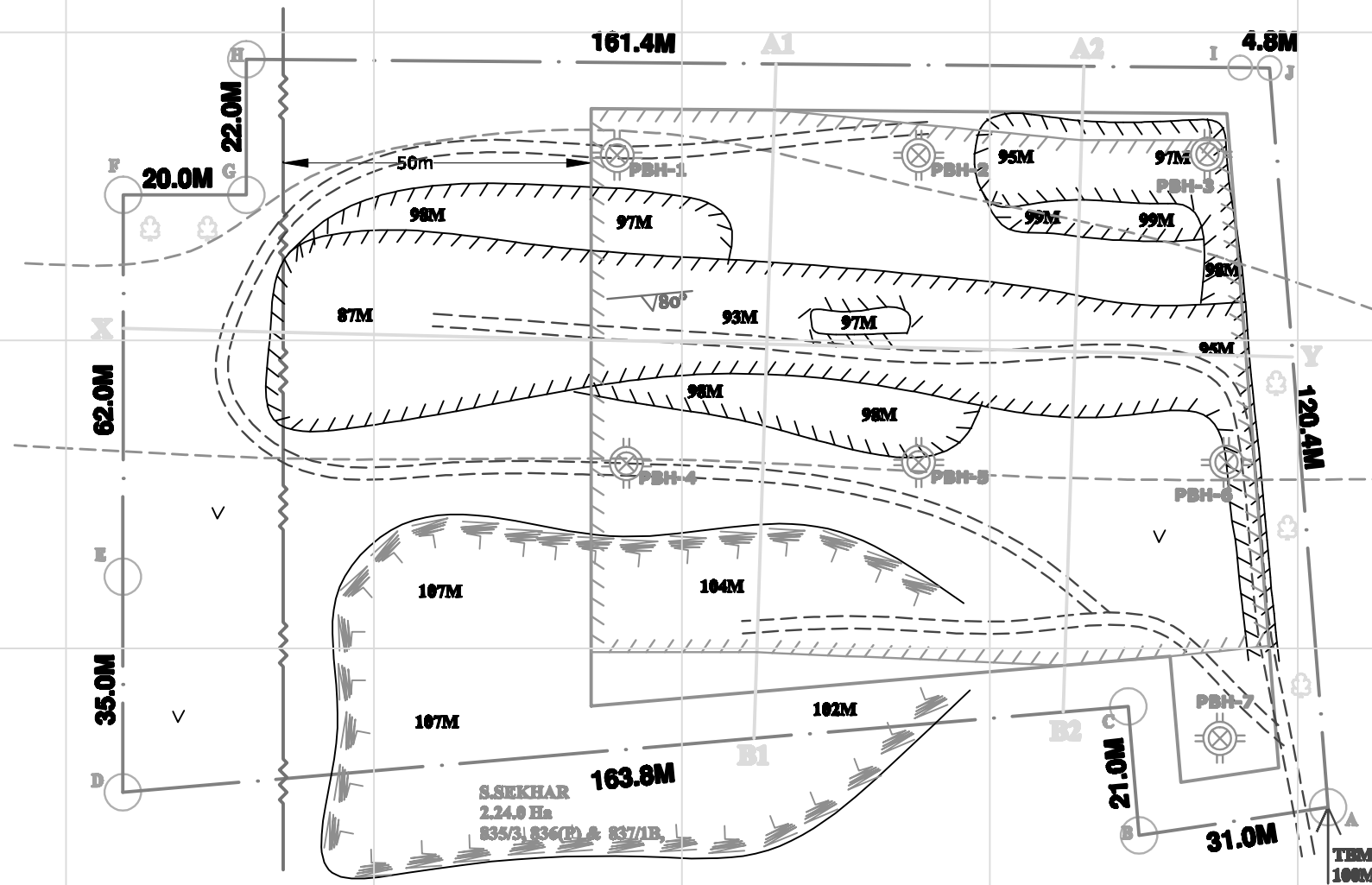
GCP-1 TRANSFORMER

GCP-2 WATER TANK

GCP-3 KOVIL



LABEL	LATITUDE	LONGITUDE
A	10° 45' 6.72"N	78° 13' 50.51"E
B	10° 45' 6.48"N	78° 13' 49.49"E
C	10° 45' 7.13"N	78° 13' 49.36"E
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J	10° 45' 10.63"N	78° 13' 49.84"E



**VARAVANAI LIMESTONE MINE OF SHRI S. SEK HAR,**

**PLATE NO:IV**

**DATE OF SURVEY: 22 - 04 - 2016**

**LESSEE ADDRESS:**

**SHRI S. SEK HAR,  
78, RAJA COLONY,  
COLLECTOR OFFICE ROAD,  
CANTONMENT,  
TRICHY - 690 001.**

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GRANITE GNEISS	
EXISTING DUMP	
7.5M & 50.0M SAFETY DISTANCE	
MINE ROAD	
LT LINE	
TREES	
STRIKE AND DIP	
ULTIMATE PIT LIMIT	
PROPOSED BORE HOLES	

**LOCATION OF MINE:**

**EXTENT : 1.90.5 Ha**  
**S.F.Nos. : 833/4B, 836 (F) & 843/2**  
**VILLAGE : VARAVANAI**  
**TALUK : KULITHALAI**  
**DISTRICT : KARUR**

**GEOLOGICAL PLAN**

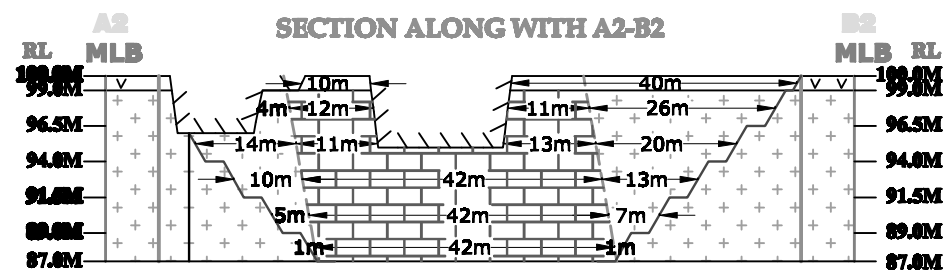
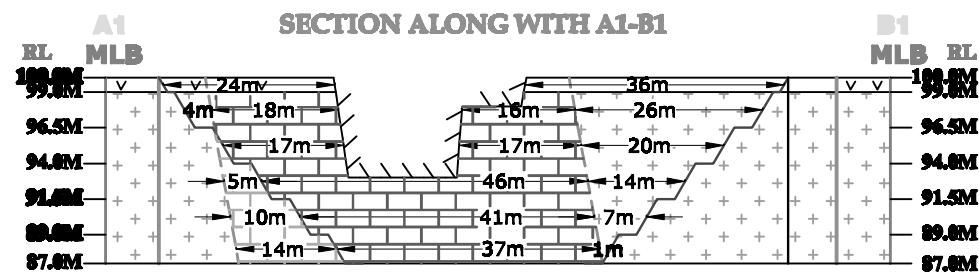
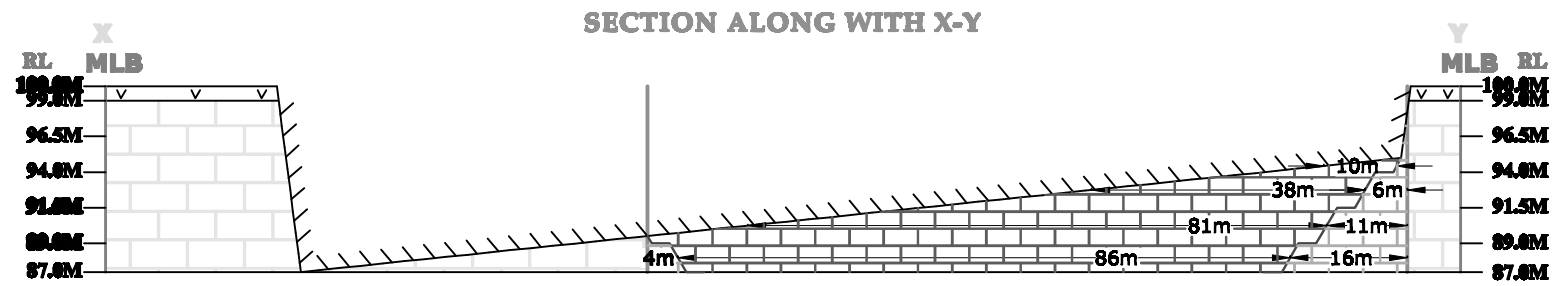
**SCALE:1:1000**

**PREPARED BY:**

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**S.DHANASEKAR,M.Sc.,  
RECOGNISED QUALIFIED PERSON  
RQP/MAS/225/2011/A**





**VARAVANAI LIMESTONE MINE OF SHRI S. SEK HAR,**

**PLATE NO:IV-A**

**DATE OF SURVEY: 22 - 04 - 2016**

**LESSEE ADDRESS:**

**SHRI S. SEK HAR,  
78, RAJA COLONY,  
COLLECTOR OFFICE ROAD,  
CANTONMENT,  
TRICHY - 690 001.**

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- M.L.BOUNDARY**
- 7.5M & 50.8M SAFETY DISTANCE**
- TOP SOIL**
- LIMESTONE**
- GRANITE GNEISS**
- WORKING PIT**
- MINERAL CONTACT**
- ULTIMATE PIT LIMIT**
- ULTIMATE PIT SLOPE**

**LOCATION OF MINE:**

**EXTENT : 1.90.5 Ha**  
**S.F.No. : 833/4B, 836 (P) & 843/2**  
**VILLAGE : VARAVANAI**  
**TALUK : KULITHALAI**  
**DISTRICT : KARUR**

**GEOLOGICAL SECTIONS**

**SECTION: HOR-1:1000  
VER-1:500**

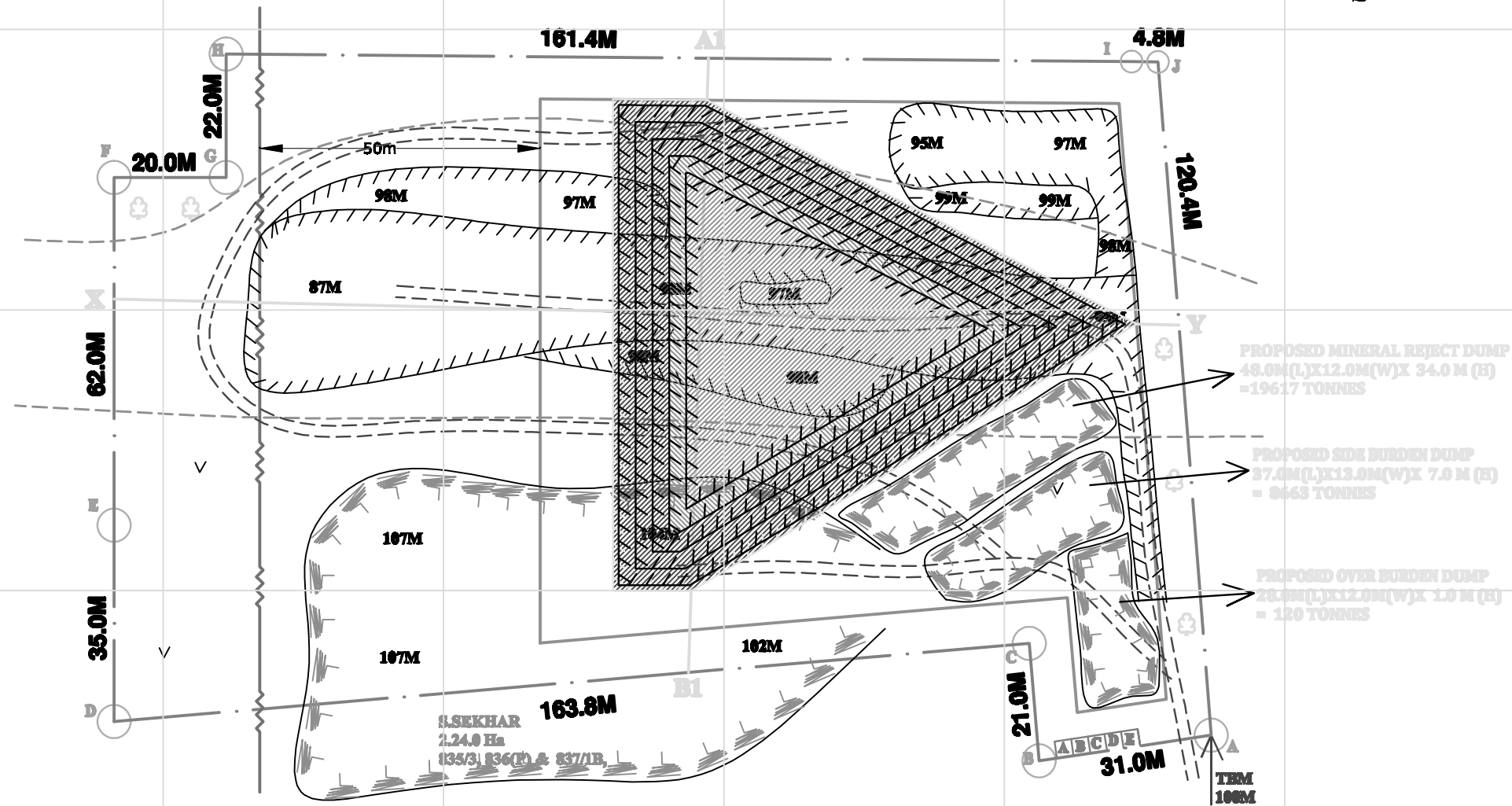
**PREPARED BY:**

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**S.DHANASEKAR, M.Sc.,  
RECOGNISED QUALIFIED PERSON  
RQP/MAS/225/2011/A**

DESCRIPTION	ROM T <sub>s</sub>	UNFC CODE	COLOR INDEX
MINERAL RESERVES(Proved)	59376	111	
MINERAL LOSS IN BENCHES	10273	222	
RESERVES LOCKED UP BY 7.5m SAFETY DISTANCE	134693	222	

LABEL	LATITUDE	LONGITUDE
A	10° 45' 6.72"N	78° 13' 50.51"E
B	10° 45' 6.48"N	78° 13' 49.49"E
C	10° 45' 7.13"N	78° 13' 49.36"E
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G	10° 45' 9.46"N	78° 13' 44.41"E
H	10° 45' 10.17"N	78° 13' 44.36"E
I	10° 45' 10.62"N	78° 13' 49.67"E
J	10° 45' 10.63"N	78° 13' 49.84"E



**VARAVANAI LIMESTONE MINE OF SHRI S. SEK HAR,**

**PLATE NO:V**

**DATE OF SURVEY: 22 - 04 - 2016**

**LESSEE ADDRESS:**

**SHRI S. SEK HAR,  
78, RAJA COLONY,  
COLLECTOR OFFICE ROAD,  
CANTONMENT,  
TRICHY - 690 001.**

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<b>ML.BOUNDARY</b>	
<b>TOP SOIL</b>	
<b>WORKING PIT</b>	
<b>MINERAL CONTACT</b>	
<b>LIMESTONE</b>	
<b>GRANITE GNEISS</b>	
<b>EXISTING DUMP</b>	
<b>7.5M &amp; 50.0M SAFETY DISTANCE</b>	
<b>MINE ROAD</b>	
<b>LT LINE</b>	
<b>TREES</b>	
<b>PROPOSED DUMP</b>	

**LOCATION OF MINE:**

**EXTENT : 1.90.5 Ha**  
**S.F.Nos. : 833/4B, 836 (P) & 843/2**  
**VILLAGE : VARAVANAI**  
**TALUK : KULITHALAI**  
**DISTRICT : KARUR**

**YEARWISE DEVELOPMENT AND PRODUCTION PLAN**

**SCALE:1:1000**

**PREPARED BY:**

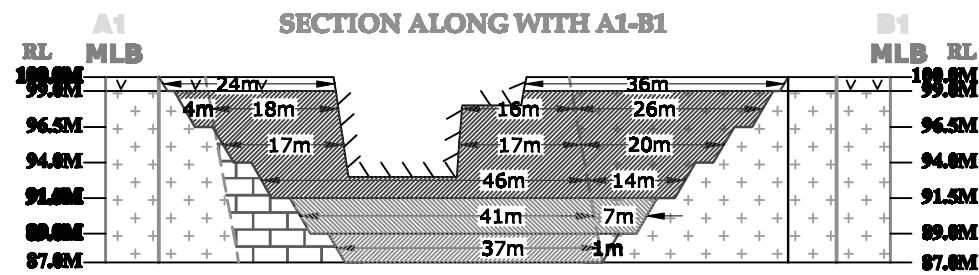
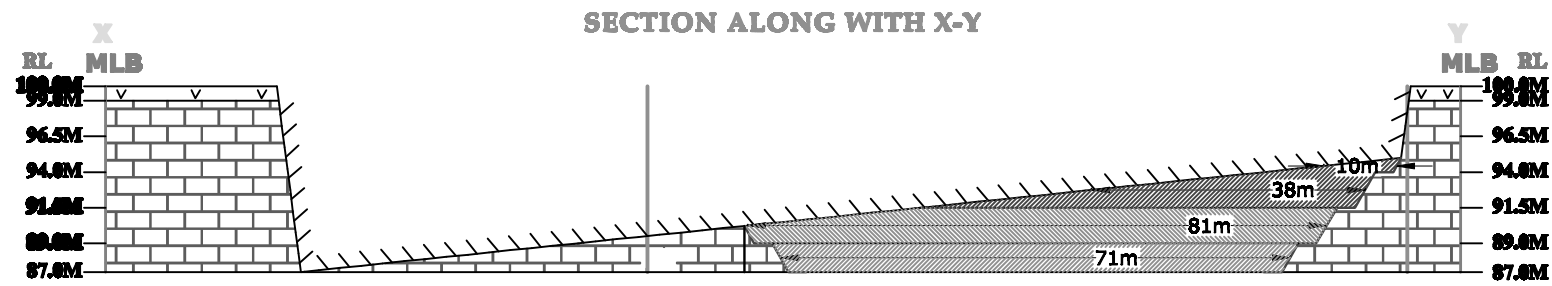
**ALL THE PLANS AND SECTIONS PREPARED BASED ON THE LEASE MAP AUTHENTICATED BY THE STATE GOVERNMENT, I DO HEREBY CERTIFY THAT THE PLATE HAS BEEN CHECKED BY ME AND IS CORRECT TO THE BEST OF MY KNOWLEDGE**

*S. Dhanasekar*

**S.DHANASEKAR, M.Sc.,  
RECOGNISED QUALIFIED PERSON  
RQP/MAS/225/2011/A**

2014-2015 ACHIEVED	
2015-2016 ACHIEVED	
2016-2017 YEAR EXCAVATION	
2017-2018 YEAR EXCAVATION	
2018-2019 YEAR EXCAVATION	

**SITE SERVICES**  
A-OFFICE  
B-FIRST AID ROOM  
C-STORE  
D-REST SHED  
E-TOILET



2014-2015	ACHIEVED
2015-2016	ACHIEVED
2016-2017	YEAR EXCAVATION
2017-2018	YEAR EXCAVATION
2018-2019	YEAR EXCAVATION

**VARAVANAI LIMESTONE MINE OF SHRI S. SEK HAR,**

**PLATE NO:V-A**

**DATE OF SURVEY: 22 - 04 - 2016**

**LESSEE ADDRESS:**

**SHRI S. SEK HAR,  
78, RAJA COLONY,  
COLLECTOR OFFICE ROAD,  
CANTONMENT,  
TRICHY - 690 001.**

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TOP SOIL	
LIMESTONE	
GRANITE GNEISS	
WORKING PIT	
MINERAL CONTACT	
ULTIMATE PIT LIMIT	
ULTIMATE PIT SLOPE	

**LOCATION OF MINE:**

**EXTENT : 1.90.5 Ha  
S.F.Nos. : 833/4B, 836 (P) & 843/2  
VILLAGE : VARAVANAI  
TALUK : KULITHALAI  
DISTRICT : KARUR**

**YEARWISE DEVELOPMENT AND PRODUCTION SECTIONS**

**SECTION: HOR-1:1000  
VER-1:500**

**PREPARED BY:**

ALL THE PLANS AND SECTIONS PREPARED BASED ON THE LEASE MAP AUTHENTICATED BY THE STATE GOVERNMENT, I DO HEREBY CERTIFY THAT THE PLATE HAS BEEN CHECKED BY ME AND IS CORRECT TO THE BEST OF MY KNOWLEDGE

**S. DHANASEKAR, M.Sc.,  
RECOGNISED QUALIFIED PERSON  
RQP/MAS/225/2011/A**

**VARAVANAI LIMESTONE MINE OF SHRI S. SEKCHAR,**

**PLATE NO:VI**

DATE OF SURVEY: 22 - 04 - 2016

**LESSEE ADDRESS:**

SHRI S. SEKCHAR,  
78, RAJA COLONY,  
COLLECTOR OFFICE ROAD,  
CANTONMENT,  
TRICHY - 690 001.

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EXISTING DUMP	
7.5M & 50.0M SAFETY DISTANCE	
MINE ROAD	
LT LINE	
TREES	
PROPOSED DUMP	
MINE LAYOUT	

**LOCATION OF MINE:**

EXTENT : 1.90.5 Ha  
S.F.Nos. : 833/4B, 836 (P) & 843/2  
VILLAGE : VARAVANAI  
TALUK : KULITHALAI  
DISTRICT : KARUR

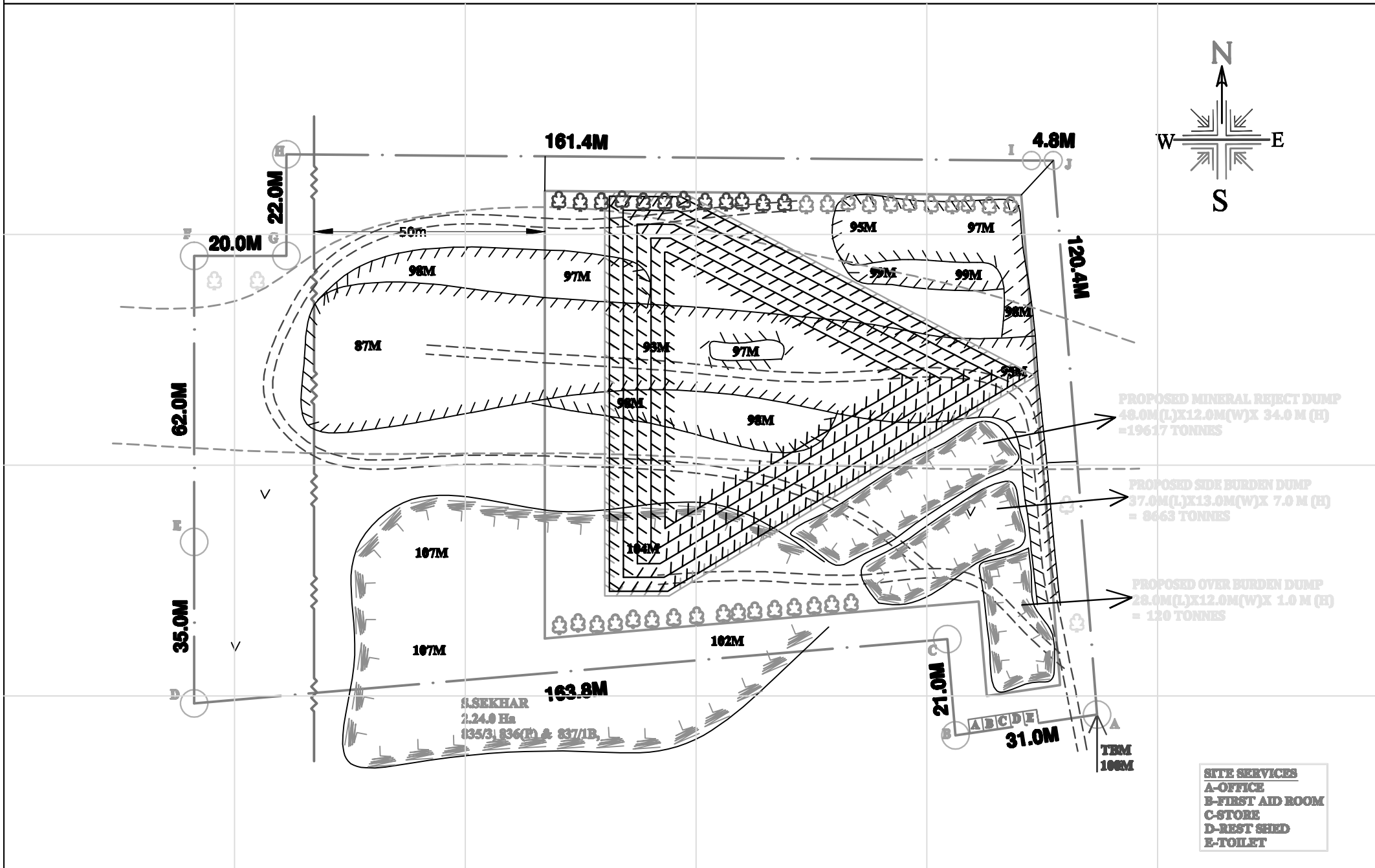
**MINE LAYOUT LANDUSE AND AFFORESTATION PLAN**

SCALE:1:1000

**PREPARED BY:**

ALL THE PLANS AND SECTIONS PREPARED BASED ON THE LEASE MAP AUTHENTICATED BY THE STATE GOVERNMENT, I DO HEREBY CERTIFY THAT THE PLATE HAS BEEN CHECKED BY ME AND IS CORRECT TO THE BEST OF MY KNOWLEDGE

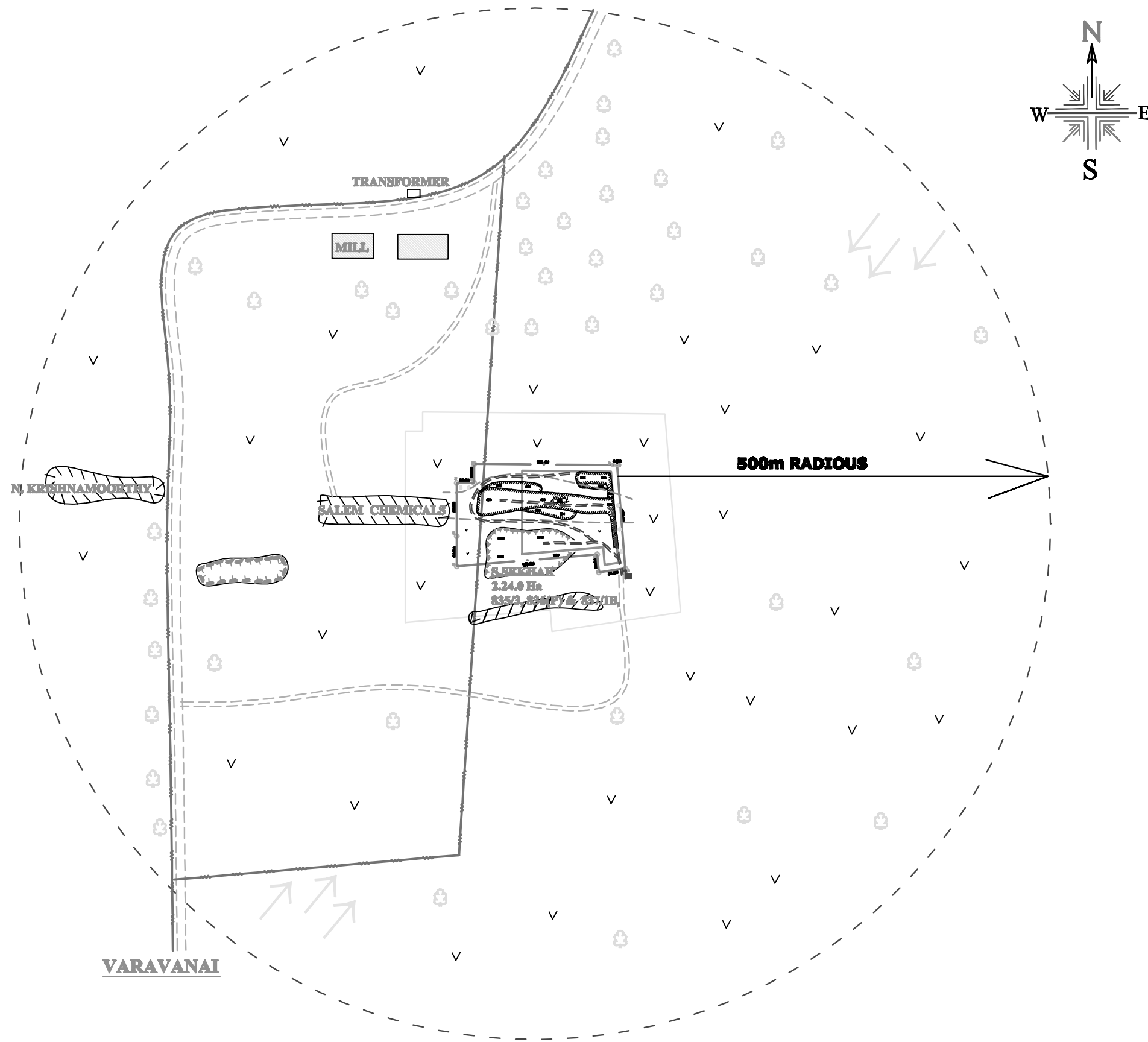
S.DHANASEKAR,M.Sc.,  
RECOGNISED QUALIFIED PERSON  
RQP/MAS/225/2011/A



PRESENT MINING LAND USE PATTERN				
SL NO	DESCRIPTION	PRESENT AREA Ha.	AREA AT THE END OF PRESENT MP/MS PERIOD Ha.	AREA AT THE END OF LIFE OF PERIOD (Ha)
1	MINING (QUARRY)	0.79.0	0.19.0	0.93.0
2	WASTE DUMP	0.40.0	0.14.0	0.14.0
3	OFFICE & INFRA STRUCTURE	-	0.01.0	0.01.0
4	SUBGRADE MINERAL STACKS	-	-	-
5	MINE ROAD	0.12.0	0.01.0	0.01.0
6	AREA UNDER PLANTATION	0.01.0	0.13.0	0.13.0
7	UN UTILIZED AREA	0.59.5	1.42.5	0.68.5
<b>TOTAL</b>		<b>1.90.5</b>	<b>1.90.5</b>	<b>1.90.5</b>

**2014-2015 ACHIEVED**  
**2015-2016 ACHIEVED**  
**2016-2017 PROPOSED PLANTATION**   
**2017-2018 PROPOSED PLANTATION**   
**2018-2019 PROPOSED PLANTATION**

LABEL	LATITUDE	LONGITUDE
A	10° 45' 6.72"N	78° 13' 50.51"E
B	10° 45' 6.48"N	78° 13' 49.49"E
C	10° 45' 7.13"N	78° 13' 49.36"E
D	10° 45' 6.21"N	78° 13' 44.06"E
E	10° 45' 7.34"N	78° 13' 43.95"E
F	10° 45' 9.38"N	78° 13' 43.79"E
G	10° 45' 9.46"N	78° 13' 44.41"E
H	10° 45' 10.17"N	78° 13' 44.36"E
I	10° 45' 10.62"N	78° 13' 49.67"E
J	10° 45' 10.63"N	78° 13' 49.84"E



**VARAVANAI LIMESTONE MINE OF SHRI S. SEKHTAR,**

**PLATE NO:VII**  
**DATE OF SURVEY: 22 - 04 - 2016**

**LESSEE ADDRESS:**  
**SHRI S. SEKHTAR,**  
**73, RAJA COLONY,**  
**COLLECTOR OFFICE ROAD,**  
**CANTONMENT,**  
**TRICHY - 620 001.**

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<b>ML.BOUNDARY</b>	
<b>500m RADIUS</b>	
<b>60m RADIUS</b>	
<b>VILLAGE ROAD</b>	
<b>MINE ROAD</b>	
<b>EXISTING MINE</b>	
<b>WIND DIRECTION</b>	
<b>TREES</b>	
<b>MILL</b>	
<b>DRY AGRI LAND</b>	
<b>LT LINE</b>	
<b>EXISTING DUMP</b>	

**LOCATION OF MINE:**  
**EXTENT : 1.90.5 Ha**  
**S.F.Nos. : 833/4B, 836 (P) & 843/2**  
**VILLAGE : VARAVANAI**  
**TALUK : KULITHALAI**  
**DISTRICT : KARUR**

**ENVIRONMENT PLAN**  
**SCALE:1:5000**

**PREPARED BY:**  
**ALL THE PLANS AND SECTIONS PREPARED**  
**BASED ON THE LEASE MAP AUTHENTICATED**  
**BY THE STATE GOVERNMENT, I DO HEREBY**  
**CERTIFY THAT THE PLATE HAS BEEN CHECKED**  
**BY ME AND IS CORRECT TO THE BEST OF**  
**MY KNOWLEDGE**

**S.DHANASEKAR,M.Sc.,**  
**RECOGNISED QUALIFIED PERSON**  
**RQP/MAS/225/2011/A**

**VARAVANAI LIMESTONE MINE OF SHRI S. SEK HAR,**

**PLATE NO:VIII**

**DATE OF SURVEY: 22 - 04 - 2016**

**LESSEE ADDRESS:**

**SHRI S. SEK HAR,  
78, RAJA COLONY,  
COLLECTOR OFFICE ROAD,  
CANTONMENT,  
TRICHY - 690 001.**

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<b>M.L.BOUNDARY</b>	
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<b>MINERAL CONTACT</b>	
<b>LIMESTONE</b>	
<b>GRANITE GNEISS</b>	
<b>EXISTING DUMP</b>	
<b>7.5M &amp; 50.0M SAFETY DISTANCE</b>	
<b>MINE ROAD</b>	
<b>LT LINE</b>	
<b>TREES</b>	
<b>PROPOSED DUMP</b>	
<b>ULTIMATE PIT LIMIT</b>	
<b>PROPOSED WATER STORAGE</b>	

**LOCATION OF MINE:**

**EXTENT : 1.90.5 Ha  
S.F.Nos. : 833/4B, 836 (P) & 843/2  
VILLAGE : VARAVANAI  
TALUK : KULITHALAI  
DISTRICT : KARUR**

**CONCEPTUAL PLAN**

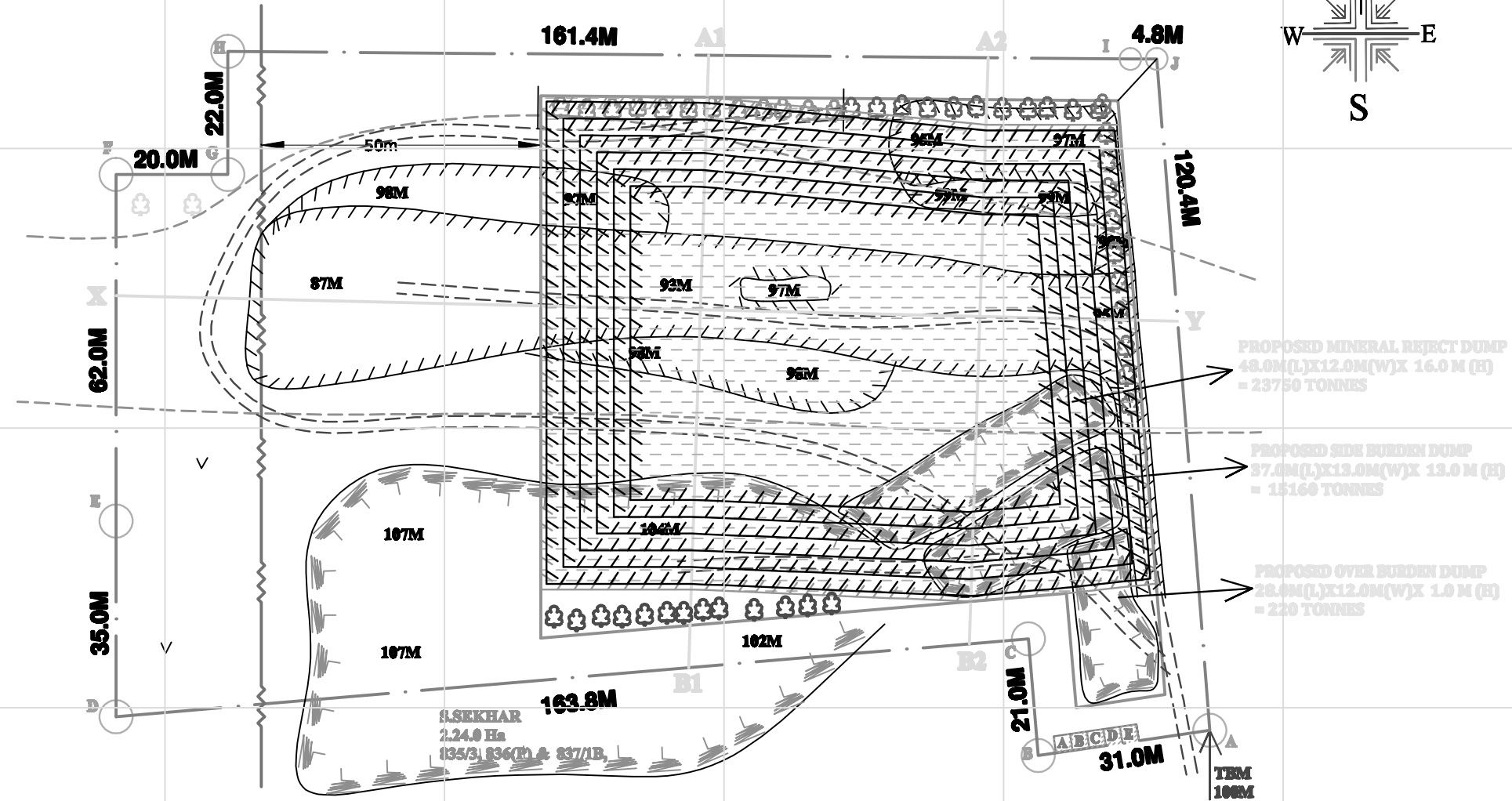
**SCALE:1:1000**

**PREPARED BY:**

**ALL THE PLANS AND SECTIONS PREPARED BASED ON THE LEASE MAP AUTHENTICATED BY THE STATE GOVERNMENT, I DO HEREBY CERTIFY THAT THE PLATE HAS BEEN CHECKED BY ME AND IS CORRECT TO THE BEST OF MY KNOWLEDGE**

*S. Dhanasekar*

**S.DHANASEKAR,M.Sc.,  
RECOGNISED QUALIFIED PERSON  
RQP/MAS/225/2011/A**



<b>Ist V YEAR PLANTATION</b>	
<b>IIInd V YEAR PLANTATION</b>	
<b>IIIrd V YEAR PLANTATION</b>	
<b>IVth V YEAR PLANTATION</b>	

LABEL	LATITUDE	LONGITUDE
A	10° 45' 6.72"N	78° 13' 50.51"E
B	10° 45' 6.48"N	78° 13' 49.49"E
C	10° 45' 7.13"N	78° 13' 49.36"E
D	10° 45' 6.21"N	78° 13' 44.06"E
E	10° 45' 7.34"N	78° 13' 43.95"E
F	10° 45' 9.38"N	78° 13' 43.79"E
G	10° 45' 9.46"N	78° 13' 44.41"E
H	10° 45' 10.17"N	78° 13' 44.36"E
I	10° 45' 10.62"N	78° 13' 49.67"E
J	10° 45' 10.63"N	78° 13' 49.84"E

**SITE SERVICES**  
A-OFFICE  
B-FIRST AID ROOM  
C-STORE  
D-REST SHED  
E-TOILET

**VARAVANAI LIMESTONE MINE OF  
SHRI S. SEK HAR,**

**PLATE NO:VIII-A**

**DATE OF SURVEY: 22 - 04 - 2016**

**LESSEE ADDRESS:**

**SHRI S. SEK HAR,  
79, RAJA COLONY,  
COLLECTOR OFFICE ROAD,  
CANTONMENT,  
TRICHY - 690 001.**

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ML BOUNDARY	
7.5M & 50.0M SAFETY DISTANCE	
TOP SOIL	
LIMESTONE	
GRANITE GNEISS	
WORKING PIT	
MINERAL CONTACT	
ULTIMATE PIT LIMIT	
ULTIMATE PIT SLOPE	
PROPOSED WATER STORAGE	

**LOCATION OF MINE:**

**EXTENT : 1.90.5 Ha  
S.F.Nos. : 833/4B, 836 (P) & 843/2  
VILLAGE : VARAVANAI  
TALUK : KULITHALAI  
DISTRICT : KARUR**

**CONCEPTUAL SECTIONS**

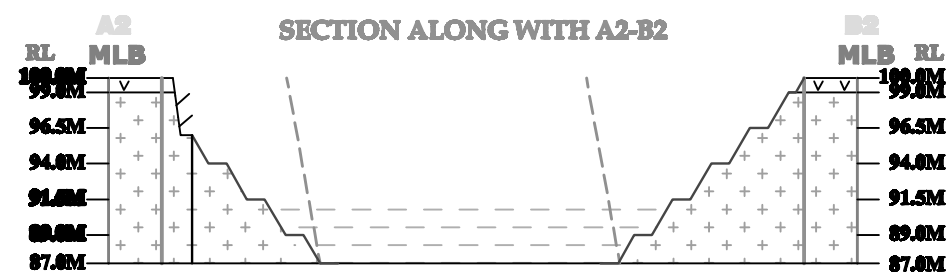
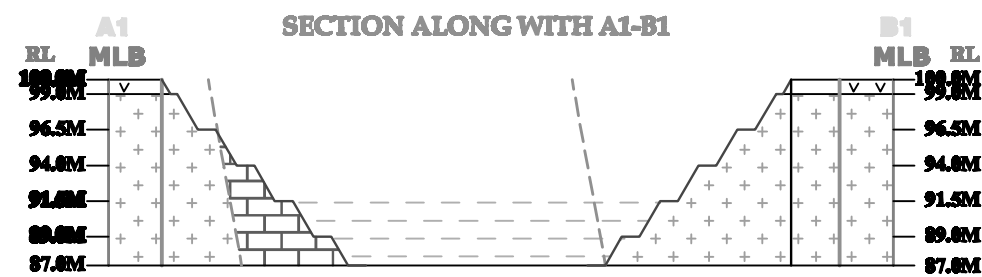
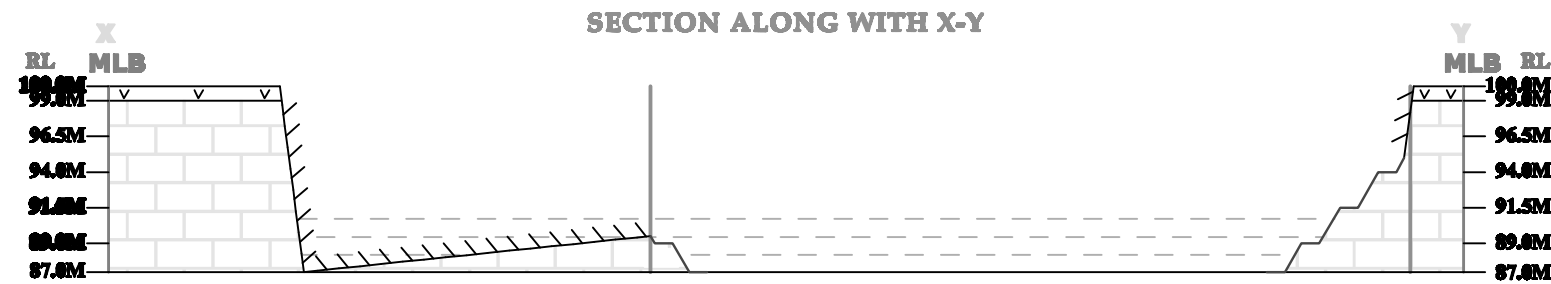
**SECTION:HOR-1:1000  
VER-1:500**

**PREPARED BY:**

**ALL THE PLANS AND SECTIONS PREPARED  
BASED ON THE LEASE MAP AUTHENTICATED  
BY THE STATE GOVERNMENT, I DO HEREBY  
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BY ME AND IS CORRECT TO THE BEST OF  
MY KNOWLEDGE**



**S.DHANASEKAR,M.Sc.,  
RECOGNISED QUALIFIED PERSON  
RQP/MAS/225/2011/A**



**VARAVANAI LIMESTONE MINE OF SHRI S. SEKSHAR,**

**PLATE NO:IX**

DATE OF SURVEY: 22 - 04 - 2016

**LESSEE ADDRESS:**

SHRI S. SEKSHAR,  
78, RAJA COLONY,  
COLLECTOR OFFICE ROAD,  
CANTONMENT,  
TRICHY - 690 001.

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ML.BOUNDARY	
TOP SOIL	
WORKING PIT	
MINERAL CONTACT	
LIMESTONE	
GRANITE GNEISS	
EXISTING DUMP	
7.5M & 50.0M SAFETY DISTANCE	
MINE ROAD	
LT LINE	
TREES	
PROPOSED DUMP	
MINE LAYOUT	

**LOCATION OF MINE:**

EXTENT : 1.90.5 Ha  
S.F.Nos. : 833/4B, 836 (P) & 843/2  
VILLAGE : VARAVANAI  
TALUK : KULITHALAI  
DISTRICT : KARUR

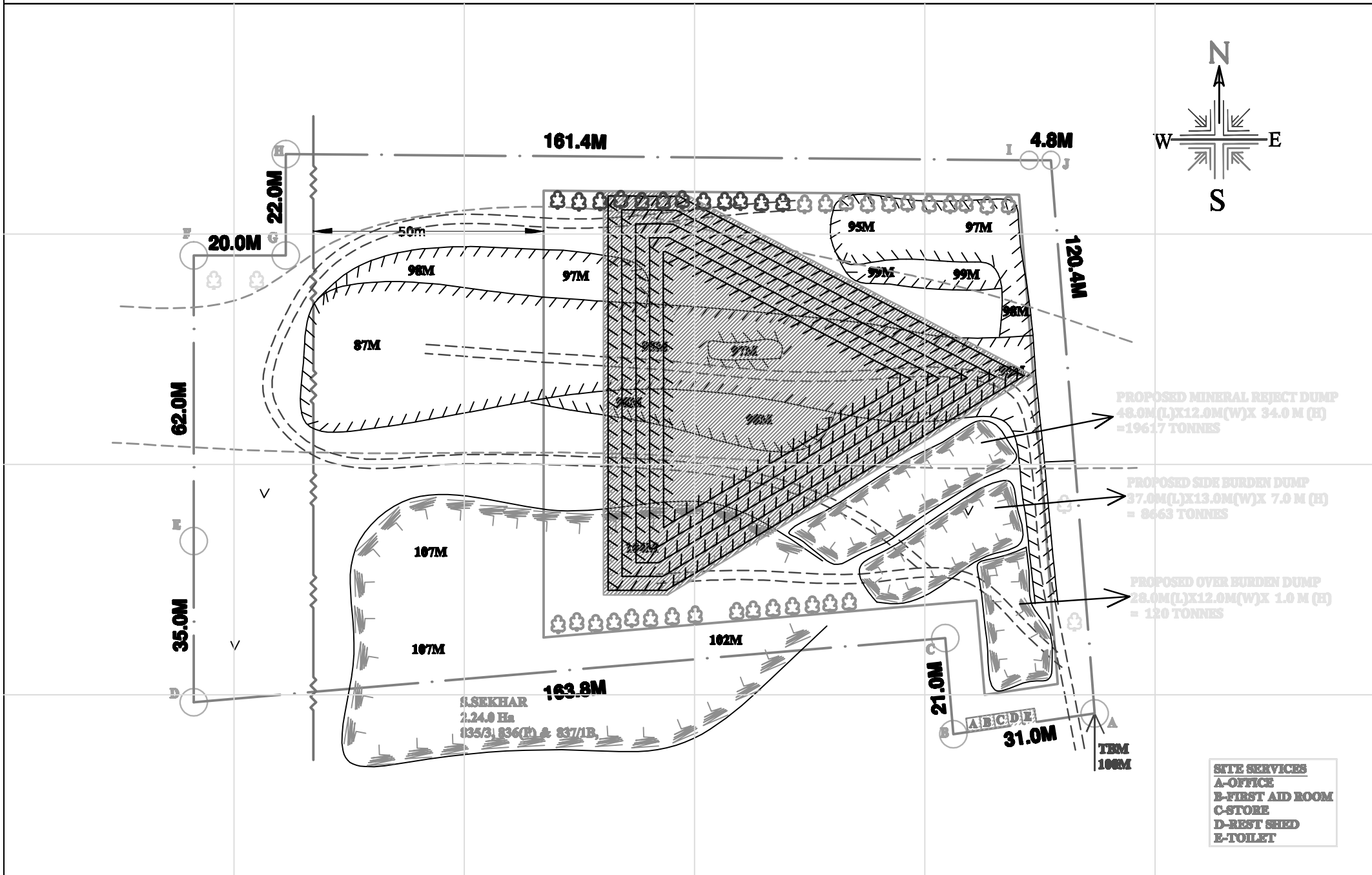
**FINANCIAL ASSURANCE AREA PLAN**

SCALE:1:1000

**PREPARED BY:**

ALL THE PLANS AND SECTIONS PREPARED BASED ON THE LEASE MAP AUTHENTICATED BY THE STATE GOVERNMENT, I DO HEREBY CERTIFY THAT THE PLATE HAS BEEN CHECKED BY ME AND IS CORRECT TO THE BEST OF MY KNOWLEDGE

S.DHANASEKAR, M.Sc.,  
RECOGNISED QUALIFIED PERSON  
RQP/MAS/225/2011/A



AREA CONSIDERED FOR FINANCIAL ASSURANCE					
S.L. NO	DESCRIPTION	PRESENT AREA Ha.	ADDITIONAL AREA REQUIRED DURING THE M.S. PERIOD (Ha)	NET AREA CONSIDERED FOR SCHEME PERIOD (Ha)	COLOR INDEX
1	MINING (QUARRY)	0.79.0	0.19.0	0.98.0	
2	WASTE DUMP	0.40.0	0.14.0	0.54.0	
3	OFFICE & INFRA STRUCTURE	-	0.01.0	0.01.0	
4	SUBGRADE MINERAL STACKS	-	-	-	
5	MINE ROAD	0.12.0	0.01.0	0.13.0	
6	AREA UNDER PLANTATION	0.01.0	0.13.0	0.14.0	
<b>TOTAL</b>		<b>1.32.0</b>	<b>0.48.0</b>	<b>1.80.0</b>	

2014-2015 ACHIEVED  
2015-2016 ACHIEVED  
2016-2017 PROPOSED PLANTATION   
2017-2018 PROPOSED PLANTATION   
2018-2019 PROPOSED PLANTATION

LABEL	LATITUDE	LONGITUDE
A	10° 45' 6.72"N	78° 13' 50.51"E
B	10° 45' 6.48"N	78° 13' 49.49"E
C	10° 45' 7.13"N	78° 13' 49.36"E
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G	10° 45' 9.46"N	78° 13' 44.41"E
H	10° 45' 10.17"N	78° 13' 44.36"E
I	10° 45' 10.62"N	78° 13' 49.67"E
J	10° 45' 10.63"N	78° 13' 49.84"E



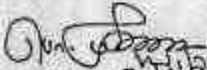
**ANNEXURE 6**  
**VAO LETTER**

## சான்று

கரூர் மாவட்டம், வரவணை கிராமம், புல எண் 833/4, 836, 843/2 மொத்த பரப்பளவு 4.71 ஏக்கர் மற்றும் 835/3, 836, 837/18 பரப்பளவு 5.53 ஏக்கர் ஆக மொத்தம் 10.24 ஏக்கர் பட்டா நிலத்தில் கண்ணாம்புக்கல் வெட்டியெடுக்க திரு. S.சேகர், த/பெ. தெ.கோணசவம் என்பவருக்கு G.O. MS No. 162 Industries (MMA-2) Department Dated 14.06.1994 and G.O. 3(D) No. 292 Inds (MMA2) Department Dated 04.10.1995ன்படி அரசால் ஆணை வழங்கப்பட்டு மேற்படி கரங்கம் செயல்பாட்டில் உள்ளது. மேற்படி கரங்கத்திற்கு அருகே 300 மீட்டர் சுற்றளவில் அங்கீகரிக்கப்பட்ட குடியிருப்பு மனைகள் மற்றும் புராதானச் சின்னங்கள், உயர்மின் அழுத்த கம்பிகள் ஏதும் இல்லை என்பதற்கு இந்த சான்று வழங்கப்படுகிறது.

இடம் : வரவணை

தேதி : 20-01-2017

  
M. S. Senthil  
30/1/2017  
கிராம நிர்வாக அலுவலர்,  
வரவணை கிராமம்,  
கடலூர் வட்டம், கரூர் மாவட்டம்.

**ANNEXURE 7**  
**LETTER FROM DISTRICT COLLECTOR**

நாள் : 02.08.2019

**அறிவிப்பு**

**பொருள்:** கனிமம் மற்றும் சுரங்கம் - கரூர் மாவட்டம் - கடலூர் வட்டம் - வரவணை கிராமம் - பட்டா புல எண்.833/4பி Etc.,-ன் விஸ்தீரணம் - 190.5 ஹெக்டேர் பரப்பளவில் கண்ணாம்புகல் வெட்டியெடுக்க குவாரி குத்தகை உரிமம் வழங்கப்பட்டது - சுற்றுச்சூழல் இசைவு சமர்ப்பிக்காமல் குவாரிப்பணி மேற்கொண்டது - கனிமத்தொகை செலுத்தக்கோருவது - தொடர்பாக.

- பார்வை:**
1. அரசாணை எண்.Ms.No.162 Industries (MMA2) Department Dt.14.06.1994.
  2. அரசாணை எண்.(எம்.எஸ்) எண்.79 தொழில் (எம்.எம்.சி) துறை நாள்.06.04.2015.
  3. சுற்றுச்சூழல் அமைச்சகம், இந்திய அரசின் வனம் மற்றும் பருவ நிலைமாற்றம், அறிவிக்கை S.O.141 (E) நாள்.15.01.2016.
  4. மாண்பும உச்சநீதி மன்ற தீர்ப்புரை நாள்.02.08.2017 வழக்கு எண்.W.P.(Civil) No.114 of 2014.
  5. இயக்குநர் புவியியல் மற்றும் சுரங்கத்துறை, சென்னை அவர்களின் கடித எண்.1375/LC/2016, நாள்.20.08.2018.
  6. இயக்குநர் புவியியல் மற்றும் சுரங்கத்துறை, சென்னை அவர்களின் நேர்முக கடித ந.க.எண்.1375/LC/2016, நாள்.18.06.2019.

\*\*\*\*\*

கரூர் மாவட்டம், கடலூர் வட்டம், வரவணை கிராமம், பட்டா புல எண்.833/4பி Etc.,-ன் விஸ்தீரணம் 190.5 ஹெக்டேர் பரப்பளவில் கண்ணாம்புகல் வெட்டியெடுக்க பார்வை 1-ல் காணும் அரசாணையின்படி 10.08.1994 முதல் 09.08.2014 வரை 20 வருட காலத்திற்கு குவாரி குத்தகை உரிமம் வழங்கப்பட்டுள்ளது.

பார்வை 3-ல் காணும் 15.01.2016 நாளிட்ட மத்திய சுற்றுச்சூழல்-அமைச்சக அறிவிக்கையில் குவாரி குத்தகை உரிமம் பெற்ற அனைத்து வகை கனிமக்குவாரிகள் /சுரங்களும் சுற்றுச்சூழல் ஒப்புதலினைப் பெற்று குவாரிப்பணி மேற்கொள்ள வேண்டும் எனத் தெரிவிக்கப்பட்டுள்ளது. மேலும் பார்வை 4-ல் காணும் மாண்பும இந்திய உச்சநீதிமன்ற தீர்ப்பில் சுற்றுச்சூழல் இசைவு பெறாமல் குவாரிப்பணி செய்து கனிமங்களை எடுத்துச் சென்ற குத்தகைதாரர்களிடமிருந்து கனிமத் தொகையினை வசூல் செய்ய உத்தரவிடப்பட்டுள்ளது.

எனவே பார்வை 4-ல் காணும் மாண்புமிகு இந்திய உச்சநீதி மன்ற உத்தரவு நாள். 02.08.2017-ன்படி 15.01.2016 முதல் 10.01.2017 முடிய உள்ள காலக்கட்டத்தில் அரசின் சுற்றுச்சூழல் இசைவு இன்றி குவாரி பணி மேற்கொண்டு எடுத்துச்சென்ற சுண்ணாம்புகல் கனிமத்திற்கான கனிமத்தொகை கீழ்க்காணும் பட்டியலில் கணக்கிடப்பட்டவாறு ரூ.69,300/- (ரூபாய் அறுபத்து ஒன்பதாயிரத்து முந்நாறு மட்டும்)-ஐ கீழ்க்குறிப்பிடப்பட்டுள்ள கணக்குத்தலைப்பில் அரசுக்கருவூலம் அல்லது பாரத ஸ்டேட் வங்கி, கரூர் கிளையில் செலுத்தில் அசல் சலாளை இவ்வலுவலகத்தில் சுமர்ப்பிக்குமாறு கேட்டுக்கொள்ளப்படுகிறது. தவறும்பட்சத்தில் தமிழ்நாடு வருவாய் வகுச் சட்டம் 1964-ன் கீழ் உரிய மேல் நடவடிக்கை எடுக்கப்படும் எனவும் தெரிவிக்கப்படுகிறது.

வ.எண்.	கனிமம்	கனிமம் எடுத்துச் சென்ற காலம்	எடுத்துச் செல்லப்பட்ட கனிமத்தின் அளவு (மெட்ரிக் டன்னில்)	கனிமத் தொகை (1 மெடக்கு)	மொத்தம் செலுத்த வேண்டிய கனிமத்தொகை (ரூ)
1	சுண்ணாம்பு கல்	15.01.2016 முதல் 10.02.2016 வரை	150	462	69300
		மொத்தம்	150		69300

**Head of Account**

- Major : 0853 Non Ferrous Mining and Metallurgical Industries
- Sub-Major : 00 Non Ferrous Mining and Metallurgical Industries
- Minor : 800 Miscellaneous Receipts
- Sub-Head : AC Miscellaneous Receipts
- Sub-Detail : 2997-Fines and Penalties- Forfeiture, Seizure, confiscation, etc.,
- D.P.Code : 0853-00-800-AC-29 97.

(ஓம்) த. அன்பழகன்,  
மாவட்ட ஆட்சித் தலைவர்,  
கரூர்.

/ உண்மை நகல் உத்தரவு படி/

மாவட்ட ஆட்சித் தலைவருக்காக,  
கரூர்.

பெறுநர்

Thiru. S.Sekar,  
73, Raja colony,  
Collector's Office Road,  
Contonment,  
Tiruchirapalli.

2/2/17

Violance Period.

Penalty  
SAVINGS CREATE PROSPERITY  
REMITTER COPY

DATE 9.9.2019.



LNTG9  
CHALAN

NO. 16

SBE Thanthoni

For Payment of Money at  
Paid to the credit of

By whom paid : Name and Address

Reason / Authority Kadavayy etc.

S. Selvar.  
#3. Raja colony  
Tiruchy.

(u) S.F No. 23/4B Etc

Head of Account\*

A sum of Rs

0853-00 Non Ferrous Mining and Metallurgical  
Industries 800 Miscellaneous Receipts  
AC Miscellaneous Receipts 29 97-Fines and  
Penalties - Forfeiture, Seizure, confiscation, etc.,  
0853-00-800-AC-29 97

69300

Rupees

Sixty nine thousand

Three hundred only

AMOUNT

Rs.	Ps.
69300	-
69300	-

ASSISTANT DIRECTOR  
Signature of the Officer  
Verifying the Collection and Mining  
Designation  
KARUN . 7

Signature of the Remitter

For use of Bank / Treasury

Received Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_)

Cashier

Manager / Accountant  
Sub - Treasury Office

\* Head of Account should be filled in by the Departmental Officer.

**ANNEXURE 8**  
**AFFIDAVIT TO SEIAA**



कालिका तमिलनाडु TAMILNADU

BG 669852

005001  
30 JAN 2017

S. Sekhar  
Durg - Encland  
Kali Kundam Rd  
Chennai

M<sup>rs</sup> KAILASH CHAND  
STAMP VENDOR-L.No.11727/C/91  
SAIDAPET, CHENNAI-15. 9840173094

**AFFIDAVIT to SEIAA/TamilNadu**

I, S.Sekhar, M.A.M.L., Lessee of M/s.Sekhar Limestone mines mines, 73 Raja Colony, collector Office Road, Cantonment, Trichy District, Tamil Nadu state Solemnly declare and sincerely affirm that:

I have applied for getting Environmental clearance to SEIAA Tamilnadu for mine Lease for mining Limistone over an extent of 4.71 acres in S.F.No.833/4 (Part), 836 (Part), and 843/2 and another over an extent of 5.53 acres in S.F.Nos.835/3, 836 (Part) and 837/1b total measuring an area of 10.24 acres in Vararanai Village, Kadavur Taluk, Karur District.



1. I Swear to state and confirm that within 10 KMs area of the mine site, we have applied for environmental clearance none of the following in situated.

- a) Protected area as notified under the wild life (protection) act, 1972
- b) Critically polluted are as 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) Intestate boundaries and international boundaries within 5 KM radius from the boundary of the proposed site.

2. There are few mines are located within 500m radius from the periphery of our mine site details as shown below.

S.No	Name of the Owner	Extent	SFNos	Lease status
1.	Salem Chemicals 14/22, Agraharam Sevaipettai, Salem.	G.O.MS 136 MMA2 Inds Dept. Dtd. 7.8.97 Period 5.2.98 to 4.2.18	833/1B2 833/4A2	Existing
2.	N.Krishnamoorthy 159/136, Siruvakoundanoor, Salem	Proceedings of D.G.M.14384/MMA4/1995 29.7.2005 from 21.10.2005 to 20.10.2025	824/1B, 824/2, 824/3, 825/1B, 825/2B, 825/3B	Existing
3.	T.V.Ilayaperumal, 14B, Perumal Koil Street, Peramanur, Salem.	G.O.M.S.3D 83 MMA2 INds, 26.5.97 from 29.10.1972 28.10.2017	847/3A2, 847/3B, 847/3C, 847/3D, 847/3E2, 850/1	Existing

3. There will not be hindrance or disturfance to the people living in enrout / nearby mine site while transporting the mineral my material and due to mining activities.



(3)

4. Few habitations / village within 500m radius from the periphery of our mine site.
5. We swear that afforestation will be carried out during the course of mining operation and maintained.
6. The required insurance will be taken in the name of the labourers working in our mine site.
7. Approach road belongs to local panchayat only and no other private patta roads encountered.
8. We will not engage any child labour in our mine site and we aware that engaging child labour is punishable under the law.
9. All types of safety / protective equipment will be provided to all labourers working in our mine.
10. No permanent structures, temples etc. are located within 500ms radus from the periphery of our mine I ensure to do all the social and environmental commitment as mentioned in the mining plan to the best of our knowledge.



(S.SEKHAR)

LESSEE

(DEPONENT)

**ANNEXURE 9**  
**PRECISE AREA COMMUNICATION LETTER**

ABSTRACT

MINES AND MINERALS - Major Mineral - Limestone -  
Tiruchirapalli district - Kulithalai taluk - Varavanai  
village - Over an extent of 4.71 acres - S.F.Nos. 833/4B,  
836 (part) and 843/2 - Mining lease application of  
Thiru S. Sekhar - Grant of lease - orders - Issued.

INDUSTRIES (MMA-2) DEPARTMENT

G.O.Ms. No. 162

DATED: 14.6.1994

Read again:

1. Mining lease application of Thiru S. Sekhar,  
dated 22.7.91.
2. From Collector, Tiruchirapalli D, Dis.(A)/1341/91  
dated 24.10.91 and Lr. Rc. A.1058/92,  
dated 4.12.92.
3. From the Commissioner of Geology and Mining  
Lr. Rc. No. 14430/B3/91, dated 14.1.92,  
2.7.92 and 25.1.93.
4. Govt. Lr. No. 4014/ MMA-2/92-5, Industries,  
dated 4.1.94.
5. From the Government of India, Ministry of Mines,  
Lr. No. 4/20/94-MIV, dated 29.4.94.
6. From the Commissioner of Geology and Mining  
Lr. No. 14430/B2/91, dated 16.5.94.

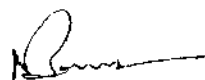
...

ORDER:

Thiru S. Sekhar, Tiruchirapalli has applied for  
the grant of fresh mining lease for limestone over an  
extent of 4.71 acres in S.F. Nos. 833/4 (part), 836(part)  
and 843/2 of Varavanai village, Kulithalai taluk,  
Tiruchirapalli district for a period of twenty years.

2. The Collector and Commissioner of Geology  
and Mining have recommended for the grant of fresh mining  
lease to Thiru S. Sekhar for limestone, over an extent of  
4.71 acres in S.F. Nos. 833/4, 836 (part) and 843/2 of  
Varavanai village, Kulithalai taluk, Tiruchirapalli  
district for a period of ten years and five years  
respectively with the following special conditions to be  
imposed that;

pto



977 036  
1-91

- (i) that no mining should be carried out within a distance of 50 metres on either side from the power line passing through the areas (western side of S.F. No. 836) OR alternatively the electric line should be shifted with the concurrence of Tamil Nadu Electricity Board and other pattadars beyond the area applied for mining lease at the cost of the applicant.
- (ii) the applicant should set up his proposed stabilised mud-block industry within a period of one year from the date of grant of mining lease; so as to utilise the cement plus grade limestone in his own industry ; and
- (iii) the applicant may be permitted to sell only less than cement grade (less than 42% CaO or high silica or high Magnesia) to needy buyers subject to prior approval of the Government of India, under Section 5(1) of the Mines and Minerals (Regulation and Development) Act, 1957 and Rule 27(3) of Mineral Concession Rules, 1960 for imposing the special conditions.

The Government have accepted the recommendations of the Commissioner of Geology and Mining and addressed the Government of India for their concurrence to grant of fresh mining lease to the applicant in the said area.

3. The Government of India, in their letter fourth read above have conveyed their approval under Section 5(1) of the Mines and Minerals (Regulation and Development) Act, 1957 and Rule 27 (3) of the Mineral Concession Rules, 1960 for the grant of fresh mining lease for limestones over an extent of 4.71 acres in S.F. Nos. 833/4B, 836(part) and 843/2 of Vapavahai village, Kulithalai taluk, Tiruchirapalli District for a period of twenty years in accordance with provisions in the Mines and Minerals (Regulation and Development) Act, 1957 as amended, in favour of Thiru S. Sekhar, subject to the conditions under Rule 27(3) of Mineral Concession Rules, 1960 incorporated in para 2 above.

4. In exercise of the powers conferred under Section 10(3) of the Mines and Minerals (Regulation and Development) Act, 1957 (Central Act, 67 of 1957), the Governor of Tamil Nadu hereby sanctions the grant of fresh mining lease in favour of Thiru S. Sekhar, Tiruchirapalli for mining limestone over an extent of 4.71 acres in S.F. Nos. 833/4B, 836(part) and 843/2 of Vapavahai village, Kulithalai taluk, Tiruchirapalli district for a period of twenty years subject to the special conditions indicated in paragraph 2 above and to the conditions specified in the appendix to this order.



5. The rate of royalty, dead rent, and surface rent shall be as follows:

Royalty: Limestone (including lime kankar)

(A) L.D. Grade (Less than 1.5% silica content) - Rs.50/- per tonne

(B) Others .. Rs.25/- per tonne.

Dead rent:

First year of the lease - Nil.

Second to fifth year of the lease - Rs.30/- per hectare per annum

Sixth to tenth year of the lease - Rs.60/- per hectare per annum

Eleventh year of the lease onwards: - Rs.90/- per hectare per annum

Surface rent and water rate:

At such rates as the land revenue and other accesses assessable on the land are paid.

6. The applicant should pay a deposit of Rs.2000/- (Rupees two thousand only) as prescribed in the Rules of Mineral Concession Rules, 1960 before the lease deed is actually executed. 32,

7. The terms and conditions stated in the order are subject to such further modifications, additions and alterations as may be included in the lease deed finalised.

8. The Collector of Tiruchirapalli is requested to take necessary further action for the execution of the lease deed in the prescribed form. AS soon as the deed is executed, the date of such execution should be reported to the Government and Commissioner of Geology and Mining. The Collector is

pto



also requested to ensure compliance by the applicant firm of the amended provisions of Mines and Minerals (Regulation and Development) Act, 1957 and Mineral Concession Rules, 1960 and other applicable Acts and Rules including Forest (Conservation) Act, 1980 before the lease deed is executed.

(BY ORDER OF THE GOVERNOR)

C. RAMACHANDRAN  
PRINCIPAL SECRETARY TO GOVERNMENT

To

The Commissioner of Geology and Mining,  
Guindy, Madras.32(we)

The Collector, Tiruchirappalli (we) BY RPAD.

Thiru S. Sekhar,  
73, Raja Colony, Collector Office Road,  
Contonment, Tiruchirappalli.

The Secretary to Government of India,  
Ministry of Mines,  
NEW DELHI.

The Controller General,  
IBM, New Secretariat Building,  
Nagpur-

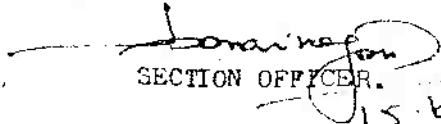
The Regional Inspector of Mines,  
K.G.F., Karnataka State.

The Regional Controller of Mines,  
IBM, 29, Vijayaraghava Road,  
Madras.17.

The Industries (OP) Department,  
Madras.5

sf/sc.

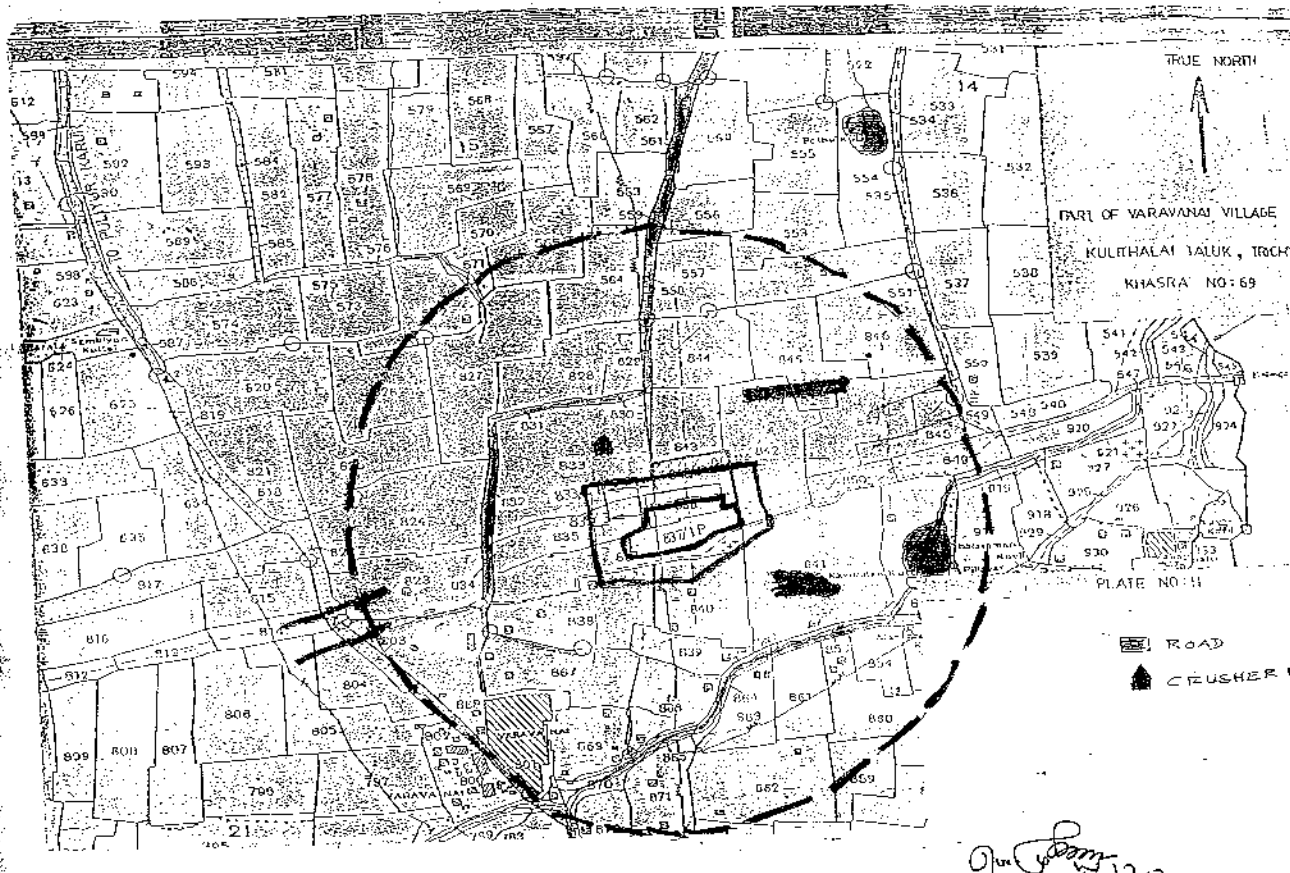
/forwarded/by order/

  
SECTION OFFICER.

**ANNEXURE 10**  
**VILLAGE MAP**



# VILLAGE MAP



PART OF VARAVANA VILLAGE  
KULIHALAI YALUK, TRICH  
KHASRA NO: 69

PLATE NO: 11

ROAD  
CRUSHER

*Prasanna*  
20/11/2017  
Village Engineer's Office  
Kadavur Taluk,  
Marur District.

**ANNEXURE 11**  
**NABET CERTIFICATE**



## National Accreditation Board for Education and Training



### Certificate of Accreditation

#### Eco Tech Labs Pvt Ltd.,

48, 2nd Main Road, Ram Nagar South Extension, Pallikaranai, Chennai- 600100, T.N.

The organization is accredited as **Category-A** under the QCI-NABET Scheme for Accreditation of EIA Consultant Organization, Version 3: for preparing EIA-EMP reports in the following Sectors –

S. No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1	Mining of minerals - including Open cast only	1	1 (a) (i)	B
2	Thermal power plants	4	1(d)	A
3	Coal washeries	6	2 (a)	B
4	Metallurgical industries - Ferrous only	8	3 (a)	B
5	Synthetic organic chemicals industry (dyes & dye intermediates; bulk drugs and intermediates excluding drug formulations; synthetic rubbers; basic organic chemicals, other synthetic organic chemicals and chemical intermediates)	21	5 (f)	A
6	Airports	29	7 (a)	A
7	Industrial estates/ parks/ complexes/areas, export processing Zones (EPZs), Special Economic Zones (SEZs), Biotech Parks, Leather Complexes	31	7 (c)	A
8	Building and construction projects	38	8 (a)	B
9	Townships and Area development projects	39	8 (b)	B

**Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in SAAC minutes dated Apr. 20, 2021 and supplementary minutes dated Oct.19, 2021 posted on QCI-NABET website**

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no. QCI/NABET/ENV/ACO/22/2217 dated Jan. 19, 2022. The accreditation needs to be renewed before the expiry date by Eco Tech Labs Pvt. Ltd., Chennai following due process of assessment.



Sr. Director, NABET  
Dated: Jan. 19, 2022

Certificate No.  
NABET/EIA/2124/SA 0147

Valid up to  
Sep. 15, 2023

For the updated List of Accredited EIA Consultant Organizations with approved Sectors please refer to QCI-NABET website.



QCI/NABET/ENV/ACO/23/2877

September 15, 2023

To,

**Eco Tech Labs Pvt Ltd.,**  
48, 2nd main road, Ram Nagar South Extn,  
Pallikaranai, Chennai-600100, Tamil Nadu  
(**Kind Attention:** Mr. A Dhamodharan)

**Sub.:** Extension of Validity of Accreditation till December 14, 2023– regarding  
**Ref.:** 1. Certificate no. NABET/EIA/2124/SA 0147  
2. Request e-mail dated September 11, 2023

Dear Sir,

This has reference to the Accreditation of your organization under the QCI-NABET EIA Scheme and your request email dated May 15, 2023. It is to inform your good self that the validity of **Eco Tech Labs Pvt Ltd.**, is hereby extended till **December 14, 2023**, or the completion of the accreditation process, whichever is earlier.

2. The above extension is subject to the submission of required documents/information concerning your existing application, timely submission/closure of NC/Obs (if any), and applicable fee (pending if any) during the application process.
3. You are requested not to use this letter after the expiry of the above-stated date.

With best regards.

**(A K Jha)**  
Senior Director  
QCI-NABET